User's Manual

# Model MX190
# API for the MX100/DARWIN

vigilantplant.®

YOKOGAWA
Yokogawa Electric Corporation

IM MX190-01E
3rd Edition

## Foreword

Thank you for purchasing the API for the MX100/DARWIN. This user's manual explains the operating procedures of the API for the MX100/DARWIN. To ensure correct use, please read this manual thoroughly before beginning operation. After reading the manual, keep it in a convenient location for quick reference whenever a question arises during operation.

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## Revisions

| | |
|---|---|
| 1st Edition: | May, 2003 |
| 2nd Edition: | November, 2004 |
| 3rd Edition: | March, 2008 |

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# Checking the Contents of the Package

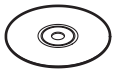
Unpack the box and check the contents before operating the software. If some of the contents are not correct, or if any items are missing or damaged, contact the dealer from whom you purchased them.

## Model

| Model | Name |
|---|---|
| MX190 | API for the MX100/DARWIN |

## Package Contents

**CD-ROM 1 piece**
**API for the MX100/DARWIN**



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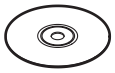

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**WARNING**

- **Do not use or store the CD-ROM in a place with excessive dirt or dust.**
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- **Do not bend or scratch the CD-ROM.**
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- **Store the CD-ROM in its storage case.**
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# How to Use This Manual

## Structure of this Manual

This user's manual consists of the following twenty-six chapters, appendix, and index.

| Ch | Title | Description |
|---|---|---|
| 1 | Before Using the Software | Gives an overview of the API for the MX100/DARWIN. Describes the PC requirements needed to run the software, the installation procedures, and other information. |
| 2 | API for MX100 - Visual C++ - | Describes how to apply the API to the MX100 using Visual C++. Describes the functions, program examples, and the details of the classes. |
| 3 | API for MX100 - Visual C - | Describes how to apply the API to the MX100 using Visual C. Describes the functions and program examples. |
| 4 | API for MX100 - Visual Basic - | Describes how to apply the API to the MX100 using Visual Basic. Describes the functions and program examples. |
| 5 | Functions for the MX100 API - Visual C/Visual Basic - | Describes the details of the MX100 functions that can be used by Visual C and Visual Basic. |
| 6 | MX100 API Constants and Types | Describes the details of the constants and types for the MX100 that can be used by Visual C++, Visual C, and Visual Basic. |
| 7 | API for DARWIN - Visual C++ - | Describes how to apply the API to DARWIN using Visual C++. Describes the functions, program examples, and the details of the classes. |
| 8 | API for DARWIN - Visual C - | Describes how to apply the API to DARWIN using Visual C. Describes the functions and program examples. |
| 9 | API for DARWIN -Visual Basic - | Describes how to apply the API to the DARWIN using Visual Basic. Describes the functions and program examples. |
| 10 | Functions for the DARWIN API - Visual C/Visual Basic - | Describes the details of the DARWIN functions that can be used by Visual C and Visual Basic. |
| 11 | DARWIN Constants and Types | Describes the details of the constants and types for DARWIN that can be used by Visual C++, Visual C, and Visual Basic. |
| 12 | MX100 for Extended API - Visual C++ - | Describes how to apply the extended API to the MX100 using Visual C++. Describes the functions, program examples, and the details of the classes. |
| 13 | MX100 for Extended API - Visual C - | Describes how to apply the extended API to the MX100 using Visual C. Describes the functions and program examples. |
| 14 | MX100 for Extended API - Visual Basic - | Describes how to apply the extended API to the MX100 using Visual Basic. Describes the functions and program examples. |
| 15 | MX100 for ExtendedAPI - Visual Basic.NET - | Describes how to apply the extended API to the MX100 using Visual Basic.NET. Describes the functions and program examples. |
| 16 | MX100 for Extension API - Visual C# - | Describes how to apply the extendedAPI to the MX100 using Visual C#. Describes the functions and program examples. |
| 17 | Functions for the MX100 (Extended API) - Visual C/Visual Basic/ Visual Basic.NET/C# - | Describes the details of the MX100 functions that can be used by Visual C, Visual Basic, and Visual Basic.NET/C#. |

| Ch | Title | Description |
|---|---|---|
| 18 | MX100 Constants and Types Extended API - Visual Basic - | Describes the details of the constants and types for the for MX100 that can be used by Visual C++, Visual C, Visual Basic, and Visual Basic.NET/C#. |
| 19 | DARWIN for Extended API - Visual C++ - | Describes how to apply the extended API to DARWIN using Visual C++. Describes the functions and program examples. |
| 20 | DARWIN for Extended API - Visual C - | Describes how to apply the extended API to DARWIN using Visual C. Describes the functions and program examples. |
| 21 | DARWIN for Extended API - Visual Basic - | Describes how to apply the extended API to DARWIN using Visual Basic. Describes the functions and program examples. |
| 22 | DARWIN for Extended API - Visual Basic.NET - | Describes how to apply the extended API to DARWIN using Visual Basic.NET. Describes the functions and program examples. |
| 23 | DARWIN for Extended API - Visual C# - | Describes how to apply the extended API to DARWIN using Visual C#. Describes the functions and program examples. |
| 24 | DARWIN for Extended API - Visual C/Visual Basic/ Visual Basic.NET/C# - | Describes the details of the DARWIN functions that can be used by Visual C, Visual Basic, Visual Basic.NET/C#. |
| 25 | DARWIN for Extended API Constants and Types | Describes the details of the constants and types for DARWIN that can be used by Visual C++, Visual C, Visual Basic, and Visual Basic.NET/C#. |
| 26 | Error messages | Lists and explains error messages. |
| Appendix | | Describes the terminology used by this software and the terminology for the MX100/DARWIN. |
| Index | | An alphabetical index of the contents of the manual. |

## Scope of the Manual

### OS

This manual does not cover the basic operations of Windows. For information regarding the basic operations of Windows, see the user's guide that came with Windows. Also, this manual does not cover the Visual Studio environment or languages supported. See the relevant user's manual for information on those topics.

### MX100/DARWIN

Describes only the terminology used by the API. For details on the MX100 and DARWIN, see the relevant user's manuals.

## Manual Revision History

| Revision | Description |
|---|---|
| 2 | Supports API R2.01 |
| 3 | Supports API R3.01 |

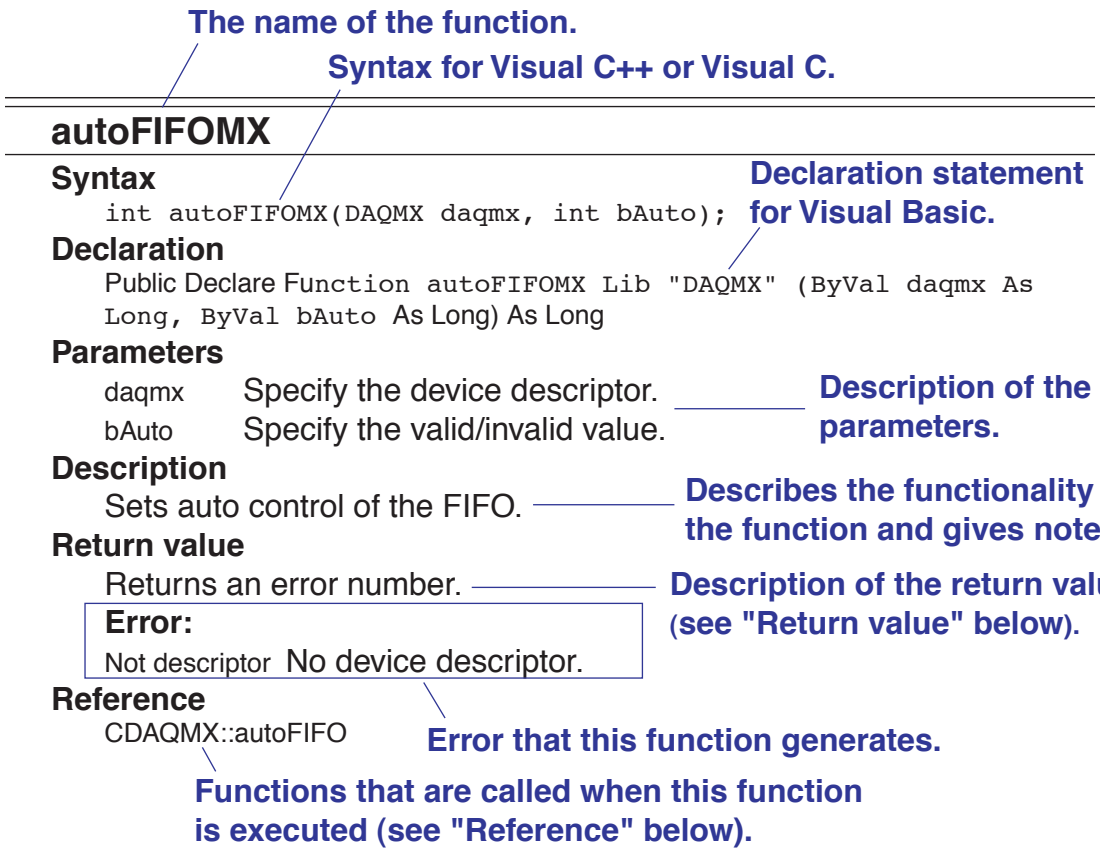
# Sample Programs

- This manual contains sample programs for each programming language.
- The sample programs can be downloaded from the Web site below.
  http://www.yokogawa.com/ns/daq/mx100/daq-mx100_01.htm
  * You can access the Web site by clicking the Up-to-Date Information button on the startup screen of the user's manual CD-ROM and then moving on to MX100 PC-Based Data Acquisition Unit.
  * URL is subject to change.
    When you have accessed the Web site, click Software Download and then search for the sample program in the screen that appears.
    keyword:sample program
    product category:Data Acquisition Equipment

# Format Used in This Manual

## Explanation of Description of Functions

The functions are explained using the following format. This format is also applied to the description of the function members of the classes.




### Return Value (Error Numbers)

There are three types of errors: errors generated by the function itself, errors caused by other component functions upon execution of the main function, and communication errors.

The errors generated by the function itself are listed in the ìError:”section.

The errors generated by one of the component functions that is called when the main function is executed are described in the explanation of those functions which are listed under ìReference.”**Communication Errors**

Communication execution errors generated when communication is performed using the communication descriptor. A communication error is any error between error numbers 0 and 3.

For a description of error numbers and corrective actions, see section 12.1, ìAPI Error Messages.”

### Reference

A function consists of multiple, simpler functions. The Reference section lists the functions that make up a given function. This information can be used to understand the action of the function and/or troubleshoot errors.
Functions for Visual C and Visual Basic are executed by calling the Visual C++ class instance. Therefore, the Reference section lists the class name and the member function name and/or the function name.
The names are listed in alphabetical order.

## Program Description

Sample programs are printed in this manual in monospaced font. Note the following.

- Due to the limitation of the width of a page, a long statement is written across multiple lines.

## Terminology Reference

The terminology for the API and the terminology for the MX100 and DARWIN are described in the appendix.

## Miscellaneous

### Units

K Denotes 1024. Example: 100 KB
M Denotes 1024 K. Example: 10 MB

### Symbols

*Note* Calls attention to information that is important for proper operation of the software.

# CONTENTS

# 1.1 Introduction to Functions

## Supported Models

This software provides the API (Application Programming Interface) that supports the MX100 and DARWIN, and the extension API that makes the main API easier to use.

MX100: All models

DARWIN: All models (DA, DC, and DR). However, the Ethernet communication function (Ethernet module) is required.

## Supported Languages

Languages supported by the API: Visual C++, Visual C, and Visual Basic

Languages supported by the extension API:
Visual C++, Visual C, Visual Basic, Visual Basic.NET, and Visual C#

## Functions for the MX100

### Communication Functions

Functions used to communicate with the MX100 via the Ethernet interface.

### Setup Functions

For configuring the MX100, modules, and channels. However, CAN Bus Module hardware settings are not supported. For hardware settings, use the software that came with the module.

### Data Retrieval Functions

- Retrieval of measured data using FIFO
  Retrieves the most recently measured data via the FIFO (first-in first-out) buffer. Also retrieves instantaneous values. The retrieval interval of instantaneous values is 100 ms or more.
- Retrieval of measured data by channel
  Retrieves the most recent measured data of the specified channel. Also retrieves instantaneous values. The retrieval interval of instantaneous values is 100 ms or more.
- Retrieval of setup data
  Retrieves the system configuration of the MX100, network information such as the IP address, and setup data related to channels.
- Collective retrieval of DO (digital output) data
  Collectively retrieves the ON/OFF status of the DO.
- Retrieval of channel information data (channel number, etc.)
- Retrieval of AO/PWM data
  Retrieves data that shows the AO/PWM channel output.

- Retrieval of transmission output data
  Data that indicates the AO/PWM channel transmission status.
  When data is retrieved, it indicates the status of the current transmission output.
  When data is sent, it is the specification that controls the start and stop of the transmission output.

### Control Functions

- Date/time setting
- Setting of the backup function that saves the measured data to the CF card, and formatting of the CF card
- Initialization and reconfiguration of the system (unit)
- Resetting of alarms (acknowledge alarm)
- Designation of the information displayed on the 7-segment LED

### Utilities

Provides functions for converting measured values into character strings, retrieving error message strings, and other utility functions.

## Functions for DARWIN

The API provides functions that are equivalent to the DARWIN communication functions. Some of the basic functions of the DARWIN communication functions are provided as API classes (for Visual C++) or functions (for Visual Basic, Visual C, Visual Basic.NET, and C#). Other functions can be implemented using the commands of the DARWIN communication function.

### Functions Provided by this Software

- **Communication Functions**
  Functions used to communicate with DARWIN via the Ethernet interface.
- **Setup Functions**
  Sets the measurement range and alarms.
- **Data Retrieval Functions**
  - Retrieval of the measured data
    Retrieves measured data in ASCII or binary format. The values are instantaneous values.

  - Retrieval of setup data
    Retrieves the setup data of the operation mode, basic setting mode, and A/D calibration mode.
  - Retrieval of channel information data (channel number, etc.)

- **Control Functions**
  - Date/time setting
  - Reconfiguring the system
  - RAM clear (initialization of operation mode parameters)
  - Alarm reset
  - Setting mode switching
- **Utilities**

  Provides functions for converting measured values into character strings, retrieving error message strings, and other utility functions.

### Implementing Functions Corresponding to the Commands of the DARWIN Communication Function

Functions corresponding to commands of the DARWIN communication function can be implemented according to the procedure below.

- Visual C++: Create an inheritance class of CDAQDARWIN and add member functions that execute the commands of the DARWIN communication function using the runCommand member function.
- Visual C and Visual Basic: Create functions that execute the commands of the DARWIN communication function using the runCommandDARWIN function.
- Visual Basic.NET/C#: Create functions that execute the commands of the DARWIN communication function using the runCommandDA100 function of the extension API.

### Notes

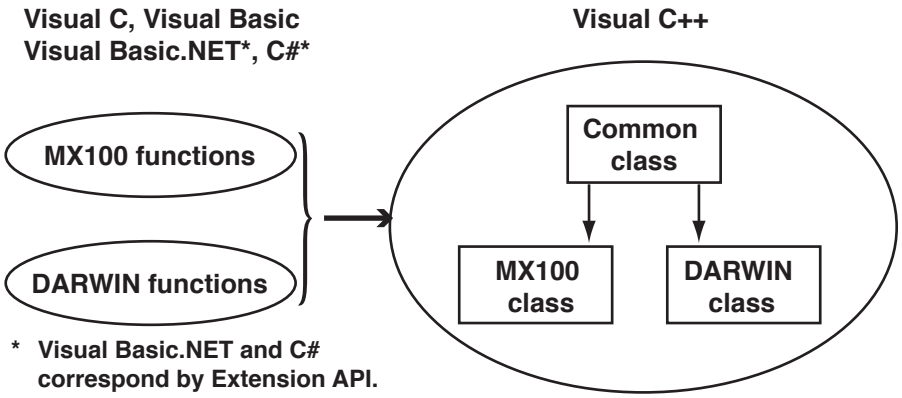
- The user program needs to be recompiled and re-linked because the structure and other aspects of the API R3.01 were changed.

# 1.2 Software Components and Features

## Software Components

The software consists of the API and an extension API.
The software provides Visual C++ classes.
The classes are Common Class, MX100 class, and DARWIN class. The MX100 Class and DARWIN Class are derived from the Common Class.

Functions used by Visual C, Visual Basic, Visual Basic.NET, and C# are provided. Functions for the MX100 and functions for DARWIN are also available. These functions are executed by calling the Visual C++ class instance.




## Features

- Control is achieved by retrieving the handle (device descriptor) that represents the connection with the controlled unit. This means that, programs can be created independently of the hardware environment of the MX100 or DARWIN.
- The API provides structures for collection of data corresponding to the function. For example, the MX100 module information structure contains the module type, the number of channels, the scan interval, and other information related to the module. The same structure can be used even when the same data is retrieved using different commands and different formats.
- This API is subordinate to the extension API. Call the API to activate. The extension API holds the current status data internally. The extension API can describe a program without using a structure.

## Files Included

The software consists of the files listed below.

| Type | Extension | Description |
|---|---|---|
| Executable module | .dll | Executable files. |
| Include file | .h | Include file for Visual C and Visual C++. |
| Library file | .lib | Files linked in Visual C and Visual C++. |
| Standard module for Visual Basic | .bas | Files containing definitions for Visual Basic. |
| API viewer text file | .txt | Files containing functions, types, and constants for Visual Basic in text format. Can be used by the API Viewer of Visual Studio. |
| Standard module for Visual Basic.NET | .vb | Files containing definitions for Visual Basic.NET. |
| Standard module for C# | .cs | Files containing definitions for C#. |

# 1.3 Operating Environment

## PC (Personal Computer)

The software can be used by installing the API on a PC that meets the conditions below.

***Note***

- No limitation is placed on the CPU, memory, and hard disk. However, the performance of the software depends on them.
- At least 10 MB of free space on the hard disk is required for installing the API.

### Operating System

One of the following operating systems must be running.

- Windows NT 4.0 SP3 or later
- Windows 2000
- Windows XP
- Windows Vista Home Premium
- Windows Vista Business

### CD-ROM Drive

Used to install the API.

### Mouse

Mouse supported by the OS.

### Display

Display supported by the OS.

### Communication Port

Ethernet port supported by the OS. The TCP/IP protocol must be installed.

### Supported Languages

- Visual C++
- Visual C
- Visual Basic
- Visual Basic.NET (extended API only)
- C# (extended API only)

### User Development Environment

A supported language must be installed and functional.

You must use Visual Studio 6.0 SP5 or later. The functions of this software are not guaranteed when used with other platforms.

Visual C/ Visual C++ in Visual Studio 2005 or later is not compatible with the time_t type.

For Visual Studio 2005, specify the Preprocessor Definition as USE_32BIT_TIME_T under Properties > C/C++ > Preprocessor.

## MX100

No limitations in particular.

## DARWIN

DA100, DC100, DR130, DR230, or DR240

The Ethernet communication function (Ethernet module) is required.

# 1.4 Installation

## Procedure

1. Turn ON the PC and allow the operating system to start.

***Note***

Close memory resident programs such as virus protection programs before installation.

2. Insert the CD-ROM containing the software into the CD-ROM drive.
3. After a few moments, the DAQMASTER DARWIN MXAPI window and the Install Shield Wizard window appear. Next, the following screen appears. Follow the instructions on the screen.


If the DAQMASTER DARWIN MXAPI window does not appear, carry out the procedure below.

Click My Computer and double-click the CD-ROM icon. Double-click the Disk 1 icon and double-click Setup.exe in the folder. The DAQMASTER DARWIN MXAPI window and the Install Shield Wizard window appear. Then, the following screen appears. Follow the instructions on the screen.

***Note***

- Reinstalling the Software
  If you carry out step 3 on a PC that has the software already installed, a window for confirming the file deletion opens. Click OK to delete the software. Then, carry out step 3 to reinstall the software.
- You can uninstall the API by double-clicking Add/Remove Programs in the Windows Control Panel.

# 2.1 MX100 Class



The API consists of the MX100/DARWIN Common Class and the class dedicated to the MX100 (see the figure below).

- ■ **CDAQChInfo**
  - • **CDAQMXChID**
    - • **CDAQMXChInfo**
    - • **CDAQMXChConfig**
- ■ **CDAQDataInfo**
  - • **CDAQMXDataInfo**
- ■ **CDAQDateTime**
  - • **CDAQMXDateTime**
- ■ **CDAQHandler**
  - • **CDAQMX**
- • **CDAQMXChConfigData**
- • **CDAQMXConfig**
- • **CDAQMXDOData**
- • **CDAQMXNetInfo**
- • **CDAQMXSegment**
- • **CDAQMXStatus**
- • **CDAQMXSysInfo**
- • **CDAQMXBalanceData**
  - • **CDAQMXBalanceResult**
- • **CDAQMXOutputData**
- • **CDAQMXAOPWMData**
- • **CDAQMXTransmit**

■ : Class common to the MX100 and the DARWIN.
• : Class dedicated to the MX100.

### CDAQChInfo Class

Base class for storing the channel information data.

### CDAQDataInfo Class

Base class for storing the measured data.

### CDAQDateTime Class

Base class for storing the time information data.

### CDAQHandler Class

Handler base class for performing communications with the instrument (MX100/DARWIN).

### CDAQMX Class

Class derived from the CDAQHandler class. Provides functions for the MX100.

### CDAQMXAOPWMData

Class for storing the AO/PWM data on the MX100. It is a wrapper class of the MXAOPWMData structure.

### CDAQMXBalanceData

Class for storing the initial balance data on the MX100. It is a wrapper class of the MXBalanceData structure.

### CDAQMXBalanceResult

Class for storing the initial balance results on the MX100. It is a wrapper class of the MXBalanceResult structure.

### CDAQMXChConfig Class

Class derived from the CDAQMXChID class. Class for storing the channel setup data. It is a wrapper class of the MXChConfig structure.

### CDAQMXChConfigData class

Class for storing the channel setup data for all the channels. It is a wrapper class of the MXChConfigData structure.

### CDAQMXChID Class

Class derived from the CDAQChInfo class. Class for storing channel ID information. It is a wrapper class of the MXChID structure.

### CDAQMXChInfo Class

Class derived from the CDAQMXChID class. Class for storing the channel information data. It is a wrapper class of the MXChInfo structure.

### CDAQMXConfig Class

Class for storing the setup data. It is a wrapper class of the MXChConfigData structure.

### CDAQMXDataInfo Class

Class derived from the CDAQDataInfo class. Class for storing the measured data. It is a wrapper class of the MXDataInfo structure.

### CDAQMXDateTime Class

Class derived from the CDAQDateTime class. Class for storing time information data. It is a wrapper class of the MXDateTime structure.

### CDAQMXDOData Class

Class for storing the DO data. It is a wrapper class of the MXDOData structure.

### CDAQMXNetInfo Class

Class for storing the network information data. It is a wrapper class of the MXNetInfo structure.

### CDAQMXOutputData

Class for storing the output channel data of the MX100. It is a wrapper class of the MXOutputData structure.

### CDAQMXSegment Class

Class for storing the display pattern of the 7-segment LED. It is a wrapper class of the MXSegment structure.

### CDAQMXStatus Class

Class for storing the MX100 status data. It is a wrapper class of the MXStatus structure.

### CDAQMXSysInfo Class

Class for storing the system configuration data of the MX100. It is a wrapper class of the MXSystemInfo structure.

### CDAQMXTransmit

Class for storing the transmission output data of the MX100. It is a wrapper class of the MXTransmit structure.

# 2.2 Correspondence between the Functions and Class/Member Functions - MX100 -

This section indicates the correspondence between the functions that the software supports and the class.

## Communication Functions

| Function | Class and Member Function |
|---|---|
| Connect to the MX100. | CDAQMX::open |
| Disconnect from the MX100. | CDAQMX::close |
| Set the communication timeout. | CDAQMX::setTimeOut |

***Note***

Setting of the communication timeout is not recommended because unexpected disconnection may occur due to the conflict with the timeout time when data is retrieved.

## Control Functions

### Starting/Stopping the FIFO

| Function | Class and Member Function |
|---|---|
| Start the FIFO | CDAQMX::startFIFO |
| Stop the FIFO | CDAQMX::stopFIFO |
| Set auto control of the FIFO | CDAQMX::autoFIFO |

### Other Controls

| Function | FIFO | Class and Member Function |
|---|---|---|
| Set time information on the MX100 as the number of seconds from the reference date/time (Jan. 1, 1970). | Stop | CDAQMX::setDateTime |
| Turn ON/OFF data saving to the CF card (data backup). | Continue | CDAQMX::setBackup |
| CF write mode | Stop | CDAQMXSysInfo: setCFWriteMode |
| Format the CF card. | Stop | CDAQMX::formatCF |
| • Reconfigure the system of the unit.<br>• Initialize the system of the unit.<br>• Reset alarms (alarm ACK) of the unit. | Stop<br>Stop<br>Continue | CDAQMX::initSystem |

The FIFO column in the table indicates the FIFO operation when the function is executed while FIFO is running.
Stop: The FIFO stops when the function is executed.
Continue: The FIFO continues even when the function is executed.
With the backup settings, the CF write mode represents a partial change of the collectively obtained data. After changing the data, it must be sent all together.

***Note***

If the auto control of the FIFO is enabled, the FIFO is automatically resumed when the FIFO is stopped due to an execution of a function.

# Setup Functions

## Collective Setup

| Function | | FIFO | Class and Member Function |
|---|---|---|---|
| Configure the setup data collectively | | Stop | CDAQMX::setConfig |
| Set the DO (Digital Output) data collectively | | Continue | CDAQMX::setDOData |
| Set the basic settings collectively | | Stop | CDAQMX::setMXConfig |
| Set the 7-segment LED display | | Continue | CDAQMX::setSegment |
| Transmit AO/PWM data | | Continue | CDAQMX::setAOPWMData |
| Send transmission output data | | Continue | CDAQMX::setTransmit |
| Set initial balance data | | Stop | CDAQMX::setBalance |
| Set output channel data | | Stop | CDAQMX::setOutput |
| Initial balance data | Execute | Stop | CDAQMX::runBalance |
| | Reset | Stop | CDAQMX::resetBalance |

For a description of the FIFO column in the table, see the explanation given in “Other Controls” on the previous page. With Visual Basic, setting data cannot be handled collectively.

## Setup Changes

| Function | | Class and Member Function |
|---|---|---|
| Range setting | SKIP (not used) | CDAQMXConfig::setSKIP |
| | DC voltage input | CDAQMXConfig::setVOLT |
| | Thermocouple input | CDAQMXConfig::setTC |
| | RTD input | CDAQMXConfig::setRTD |
| | Digital input (DI) | CDAQMXConfig::setDI |
| | Difference computation between channels | CDAQMXConfig::setDELTA |
| | Remote RJC | CDAQMXConfig::setRRJC |
| | Resistance | CDAQMXConfig::setRES |
| | Strain | CDAQMXConfig::setSTRAIN |
| | AO | CDAQMXConfig::setAO |
| | PWM | CDAQMXConfig::setPWM |
| | Pulse | CDAQMXConfig::setPULSE |
| | Communication | CDAQMXConfig::setCOM |
| Set the unit name of the channel. | | CDAQMXChID::setUnit |
| Set the channel tag. | | CDAQMXChID::setTag |
| Set a comment for the channel. | | CDAQMXChID::setComment |
| Set the alarm. | | CDAQMXChConfig::setAlarm |
| Set the RJC used on the channel. | | CDAQMXChConfig::setRJCType |
| Set the filter on the channel. | | CDAQMXChConfig::setFilter |
| Set the burnout detection action. | | CDAQMXChConfig::setBurnout |
| Set the alarm to be assigned to the DO channel to which an alarm output was specified. (To set a DO channel to alarm output, use the setDOType function member.) | | CDAQMXChConfig::setRefAlarm |
| Sets the chattering filter on the channel. | | CDAQMXChConfig::setChatFilter |
| Set the scan interval. | | CDAQMXConfig::setInterval |
| Set the temperature unit. | | CDAQMXConfig::setTempUnit |
| Set the ID number of the unit. | | CDAQMXSysInfo::setUnitNo |
| Set the timeout value (the time from the disconnection to the start of saving to the CF card. For the calculation method of the timeout value, see appendix 3. | | CDAQMXSysInfo::setCFTimeout |
| Select the signal type to be assigned to the DO channel. | | CDAQMXConfig::setDOType |
| Select the signal type to be assigned to the AO channel. | | CDAQMXConfig::setAOType |
| Select the signal type to be assigned to the PWM ch. | | CDAQMXConfig::setPWMType |
| Set the output channel data type. | | CDAQMXOutputData::setOutputType |
| Set the output value when the output data power supply is ON and an error occurs. | | CDAQMXOutputData::setChoice |
| Set the PWM output channel pulse interval (integral multiplication factor). | | CDAQMXOutputData::setPulstime |
| Set the signal type to be assigned to the DO channel. | | CDAQMXConfig::setDOType |
| Change a portion of the DO data. | | CDAQMXDOData::setDO |
| Change a portion of the AO/PWM data. | | CDAQMXAOPWMData::setAOPWM |
| Change a portion of the initial balance data. | | CDAQMXBalanceData::setBalance |
| Change a portion of the transmission output data. | | CDAQMXTransmit::setTransmit |

***Note***

- To change the settings, use CDAQMX::getConfig to retrieve the setup data, use the setup change function member to modify the settings, and use CDAQMX::setConfig to set the data to the MX100 collectively.
- For DO data, after modifying the contents of CDAQMXDOData with the setup change function member, use CDAQMX::setDOData to set the data on the MX100 collectively.
- For AO/PWM data, after modifying the contents of CDAQMXAOPWMData with the setup change function member, use CDAQMX::setAOPWMData to set the data on the MX100 collectively.
- For transmission data, after modifying the contents of CDAQMXTransmit with the setup change function member, use CDAQMX::setTransmit to set the data on the MX100 collectively.

## Data Retrieval Functions

### Retrieval of System Status Data and System Configuration Data

| Function | Class and Member Function |
|---|---|
| Get system status data. | CDAQMX::getStatusData |
| Get system configuration data. | CDAQMX::getSystemConfig |

### Retrieval of Setup Data

| Function | Class and Member Function |
|---|---|
| Get the setup data collectively. | CDAQMX::getConfig |
| Get basic settings collectively. | CDAQMX::getMXConfig |
| Declare the retrieval of the setup data.<br>Retrieves setup data other than the channel setup data. | CDAQMX::talkConfig |
| Get channel setup data.<br>Function used to retrieve channel setup data after declaring the retrieval of setup data using the talkConfig function member. | CDAQMX::getChConfig |

### Retrieval of DO Data

| Function | Class and Member Function |
|---|---|
| Get the DO data collectively. | CDAQMX::getDOData |

### Retrieval of Channel Information Data

| Function | Class and Member Function |
|---|---|
| Declare the retrieval of the channel information data. | CDAQMX::talkChInfo |
| Get channel information data. | CDAQMX::getChInfo |

### Retrieval of Measured Data (Channel Designation)

| Function | Class and Member Function |
|---|---|
| Get the most recent data range of the specified channel. | CDAQMX::getChDataNo |
| Declare the retrieval of the measured data of the specified channel. Declare the retrieval of the instantaneous values of the specified channel. | CDAQMX::talkChData |
| Get the time information of the specified channel for each data number. | CDAQMX::getTimeData |
| Get the measured data of the specified channel. | CDAQMX::getChData |

## Retrieval of Measured Data (FIFO Designation)

| Function | Class and Member Function |
|---|---|
| Get the most-recent data range of the specified FIFO no. | CDAQMX::getFIFODataNo |
| Declare the retrieval of the measured data of the specified FIFO number. Declare the retrieval of the instantaneous values of the specified FIFO number. | CDAQMX::talkFIFOData |
| Get the time information of the specified FIFO number for each data number. | CDAQMX::getTimeData |
| Get the measured data of the specified FIFO number. | CDAQMX::getChData |

## Retrieval of Initial Balance Data

| Function | Class and Member Function |
|---|---|
| Get initial balance data. | CDAQMX::getBalance |

## Retrieves output channel data

| Function | Class and Member Function |
|---|---|
| Get output channel data. | CDAQMX::getOutput |
| Get AO/PWM data and transmission output data. | CDAQMX::getAOPWMData |

## Utilities

| Function | Class and Member Function |
|---|---|
| Insert the specified user count (user-defined order information) in the next packet to be issued. | CDAQMX::setUserTime |
| Get the MX100-specific error that was received last through communications. | CDAQMX::getLastError |
| Convert the measured value into a double-precision floating point number. | CDAQMXDataInfo::toDoubleValue |
| Convert the measured value into string. | CDAQMXDataInfo::toStringValue |
| Get the alarm type string. | CDAQMXDataInfo::getAlarmName |
| Get the maximum length of the alarm string. | CDAQMXDataInfo::getMaxLenAlarmName |
| Get the version number of this API. | CDAQMX::getVersionAPI |
| Get the revision number of this API. | CDAQMX::getRevisionAPI |
| Get the error message string. | CDAQMX::getErrorMessage |
| Get the maximum length of the error message string. | CDAQMX::getMaxLenErrorMessage |
| Get the number of the parameter on which an error was detected. | CDAQMX::getItemError |
| Convert AO/PWM output values to output data values. | DAQMXAOPWMData::toAOPWMValue |
| Convert AO/PWM output data values to output values. | CDAQMXAOPWMData::toRealValue |
| Check the validity of data numbers. | CDAQMXStatus::isDataNo |
| Convert to style version. | CDAQMXSysInfo::toStyleVersion |

# 2.3 Programming - MX100/Visual C++ -



## Adding the Path of the Include File

Add the path of the include file (DAQMX.h) to the project. The method of adding the include file varies depending on the environment used.

## Declaration in the Source File

Write the declaration in the source file.

```
#include "DAQMX.h"
```

***Note***

The include file of the common section (DAQHandler.h) is referenced from the include file described above. Thus, declaration for it is not necessary.

## Library Designation

Add the library (DAQMX.lib, DAQ Handler.lib) to the project. The method of adding the include file varies depending on the environment used.
This enables the use of all classes. It also enables the use of all Visual C functions.

# Retrieval of the Measured Data

## Program Example 1

This program retrieves measured data.

```
////////////////////////////////////////////////////////////
// MX100 sample for measurement
#include <stdio.h>
#include "DAQMX.h"//////////////////////////////////////////
//////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  CDAQMX daqMX; //class
  int flag;
  MXDataNo startNo, endNo, dataNo;
  MXUserTime usertime;
  CDAQMXDateTime datetime;
  CDAQMXChInfo chinfo;
  CDAQMXDataInfo datainfo(NULL, &chinfo);
  //connect
  rc = daqMX.open("192.168.1.12");
  //get by FIFO
  rc = daqMX.startFIFO();
  rc = daqMX.getFIFODataNo(0, &startNo, &endNo);
  rc = daqMX.talkFIFOData(0, startNo, endNo);
  do { //date time
    rc = daqMX.getTimeData(&dataNo, datetime, &usertime,
&flag);
  } while (! (flag & DAQMX_FLAG_ENDDATA));
  do { //measured data
    rc = daqMX.getChData(&dataNo, datainfo, &flag);
  } while (! (flag & DAQMX_FLAG_ENDDATA));
  rc = daqMX.stopFIFO();
  //disconnect
  rc = daqMX.close();
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Overview

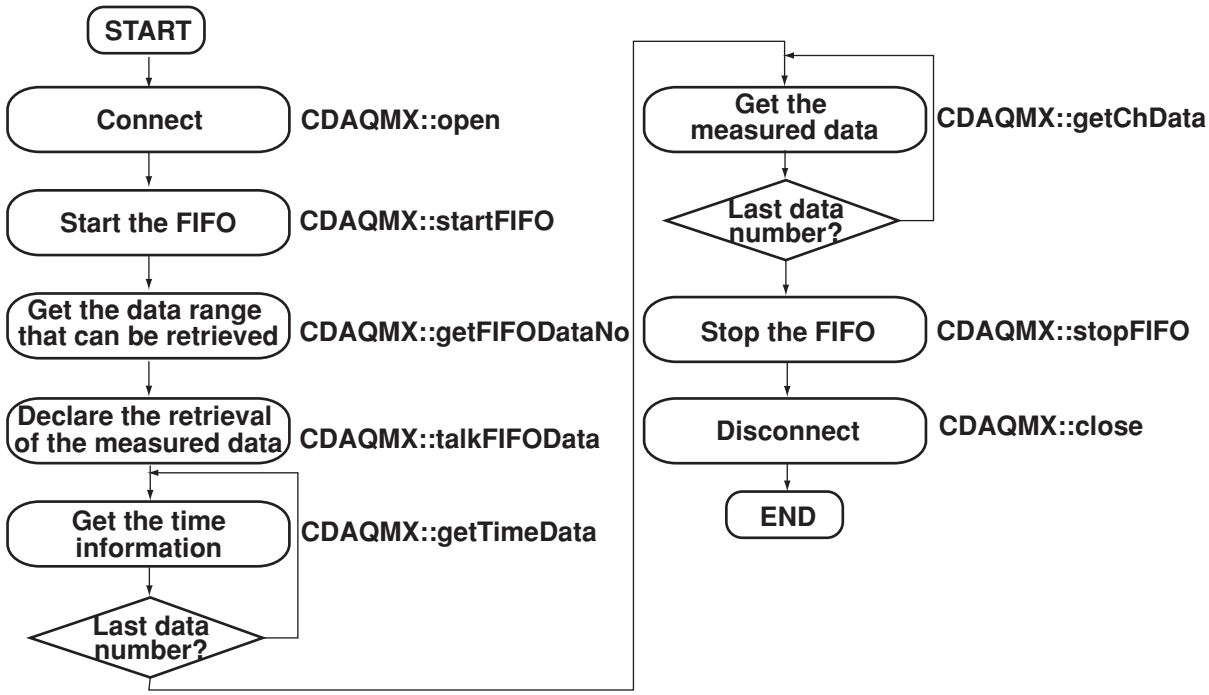
Data retrieval is possible by starting the FIFO. The range to be retrieved is specified by the FIFO number and the data number. The time stamp corresponding to the data number and the measured data are retrieved separately. The end is determined by the flag.

### Include File Statement

```
#include "DAQMX.h"
```

### Flow of the Process

The flow chart shown below omits the declaration section.




### Communication Process

First, make a connection. After making the connection, the member functions become available. As a termination procedure, disconnect the communication.

***Note***

If there is no access for approximately three minutes, the MX100 drops the connection. Drop the connection if you are not accessing the MX100 for an extended time. Make the connection only when necessary.

### Communication Connection

```
open("192.168.1.12")
```

The IP address of the MX100 is specified.

This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

***Note***

Communication can also be made when constructing the class. The connection is dropped when the class is destructed.

### FIFO Start

```
startFIFO()
```

Starts the FIFO.

**Retrieval of Data Range**

```
getFIFODataNo(0, &startNo, &endNo)
```

Retrieves the range from the next data following the data retrieved last to the most recent data of the specified FIFO number using data numbers.

**Talker**

```
talkFIFOData(0, startNo, endNo)
```

Specifies the data range and declares the retrieval of the FIFO data (measured data retrieval declaration).

**Retrieval of the FIFO Data Time Information**

```
getTimeData(&dataNo, datetime, &usertime, &flag)
```

Gets the time information in the specified range in units of data numbers.
The end is determined by the flag (constant DAQMX_FLAG_ENDDATA).

***Note***

"usertime"is the user-defined sequence information (user count). The value specified in advance using the setUserTime member function is stored.

**Retrieval of FIFO Data**

```
getChData(&dataNo, datainfo, &flag)
```

Gets the measured data in the specified range in units of channels.
The end is determined by the flag (constant DAQMX_FLAG_ENDDATA).

**FIFO Stop**

```
stopFIFO()
```

Stops the FIFO.

**Comm. cut**

```
closeMX(comm)
```

Drops the connection.

# Retrieval of Setup Data and Configuration

## Program Example 2

This program executes the following three items. This program contains all three items, but each item can be written and executed separately.

- Collective retrieval of setup data
- Collective setting of setup data
- Setting a DC voltage range for the channels

```
////////////////////////////////////////////////////////////
// MX100 sample for configuration
#include <stdio.h>
#include "DAQMX.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  CDAQMX daqMX; //class
  CDAQMXConfig configdata;
  //connect
  rc = daqMX.open("192.168.1.12");
  //get
  rc = daqMX.getConfig(configdata);
  //set
  rc = daqMX.setConfig(configdata);
  //range
  rc = daqMX.getConfig(configdata);
  configdata.setVOLT(1, DAQMX_RANGE_VOLT_20MV);
  rc = daqMX.setConfig(configdata);
  //disconnect
  rc = daqMX.close();
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Collective Retrieval of Setup Data

`getConfig(configdata)`

The setup data below can be retrieved by the collective retrieval of setup data.

- System configuration data: See the CDAQMXSysInfo class (section 2.5).
- Status: See the CDAQMXStatus class (section 2.5).
- Basic settings: See the CDAQMXConfig class (section 2.5).

***Note***

The setup data can also be retrieved using the talkConfig member function and the getChConfig member function. The talkConfig function is used to declare the retrieval of the setup data and retrieve the system configuration data, status, and network information data. Then, the getChConfig function is used to retrieve channel setup data in units of channels.

**Collective Setting of Setup Data**

```
setConfig(configdata)
```

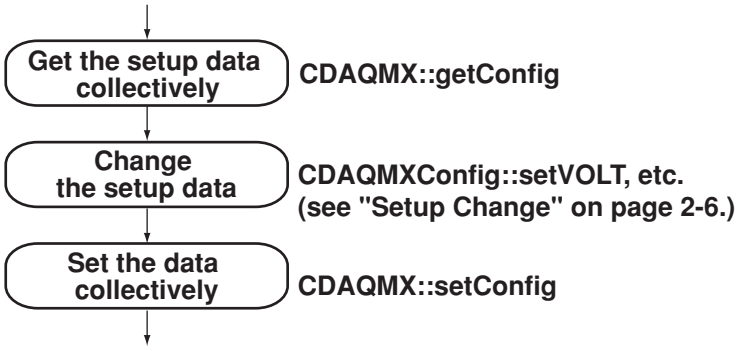
The data below can be set by the collective setting of setup data.

- System configuration data: See CDAQMXSysInfo class (section 2.5).
- Basic settings: See the CDAQMXConfig class (section 2.5).

**Setting a DC Voltage Range for the Channels**

```
setVOLT(1, DAQMX_RANGE_VOLT_20MV)
```

Sets channel number 1 to DC voltage range 20 mV. Scaling is not used.
First, the setup data is retrieved collectively. Next, the change described above is made. Then, the data is set on the MX100 collectively. Use similar steps when making changes to the settings.




## Error Processing

- Most member functions return the result of the function process using an error number (0 if successful).
- The member function CDAQMX::getErrorMessage can be used to get the error message string corresponding to the error number. The member function CDAQMX::getMaxLenErrorMessage can be used to get the maximum length of the error message string.
- The member function CDAQMX::getLastError can be used to get the errors from the MX100.

# 2.4 Details of the MX100/DARWIN Common Class

The classes are listed in alphabetical order by the class name.

## CDAQChInfo Class

This class is a base class of the channel information data.
If necessary, you can override member data manipulation with an inheritance class.
A function is provided that checks whether the instance has inherited this class.
You can override with an inheritance class.

### Public Members

#### Construct/Destruct

| | |
|---|---|
| CDAQChInfo | Constructs an object. |
| ~CDAQChInfo | Destructs an object. |

#### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getChType | Gets the channel type. |
| getChNo | Gets the channel number. |
| getPoint | Gets the decimal point position. |
| setChType | Sets the channel type. |
| setChNo | Sets the channel number. |
| setPoint | Sets the decimal point position. |

#### Utilities

| | |
|---|---|
| isObjedt | Checks an object. |

#### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Protected Members

#### Data Members

| | |
|---|---|
| m_chType | Field for storing the channel type. |
| m_chNo | Field for storing the channel number. |
| m_point | Field for storing the decimal point position. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQChInfo::CDAQChInfo

### Syntax

```
CDAQChInfo(int chType = 0, int chNo = 0, int point= 0);
virtual ~CDAQChInfo(void);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| point | Specify the decimal point position. |

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value.

### Reference

```
setChNo setChType setPoint
```

## CDAQChInfo::getChNo

### Syntax

```
virtual int getChNo(void);
```

### Description

Gets the value of the channel number field of the data member.

### Return value

Returns the channel number.

## CDAQChInfo::getChType

### Syntax

```
virtual int getChType(void);
```

### Description

Gets the value of the channel type field of the data member.

### Return value

Returns the channel type.

## CDAQChInfo::getPoint

### Syntax

```
virtual int getPoint(void);
```

### Description

Gets the value of the decimal point position field of the data member.

### Return value

Returns the decimal point position.

## CDAQChInfo::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value is 0.

### Reference

```
setChType setChNo setPoint
```

## CDAQChInfo::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQChInfo");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overriden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a return value of 1 (true), or 0 (false).

## CDAQChInfo::operator=

### Syntax

```
CDAQChInfo & operator=(CDAQChInfo & cChInfo);
```

### Parameters

cChInfo Specify an object for substitution.

### Description

Copies the data member using the specified object information data.

### Return value

Returns the reference to the object.

## CDAQChInfo::setChNo

### Syntax

```
virtual void setChNo(int chNo);
```

### Parameters

chNo  Specify the channel number.

### Description

Stores the specified value in the channel number field of the data member.

## CDAQChInfo::setChType

### Syntax

```
virtual void setChType(int chType);
```

### Parameters

chType  Specify the channel type.

### Description

Stores the specified value in the channel type field of the data member.

## CDAQChInfo::setPoint

### Syntax

```
virtual void setPoint(int point);
```

### Parameters

point  Specify the decimal point position.

### Description

Stores the specified value in the decimal point position field of the data member

# CDAQDataInfo Class

This class is a base class of the measured data.
Measured values can be retrieved by associating them with the channel information data.
If necessary, you can override member data manipulation with an inheritance class.
A function is provided that checks whether the instance has inherited this class.
You can override with an inheritance class.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQDataInfo | Constructs an object. |
| ~CDAQDataInfo | Destructs an object. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getValue | Gets the data value. |
| setValue | Sets the data value. |

### Association

| | |
|---|---|
| getClassChInfo | Gets the association with the channel information data. |
| setClassChInfo | Sets the association with the channel information data. |

### Measured value Format

| | |
|---|---|
| getDoubleValue | Gets the measured value. |
| getStringValue | Gets the measured value as a string. |
| toDoubleValue | Generates the measured value. |
| toStringValue | Generates the measured value as a string. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

## Protected Members

### Data Members

| | |
|---|---|
| m_value | Field for storing the data value. |
| m_pChInfo | Association with the channel information data. Field for storing the pointer to CDAQChInfo. |

## Private Members

None.

# Member Functions (Alphabetical Order)

## CDAQDataInfo::CDAQDataInfo

### Syntax

```
CDAQDataInfo(int value = 0, CDAQChInfo * pcChInfo = NULL);
virtual ~CDAQDataInfo(void);
```

### Parameters

| | |
|---|---|
| value | Specify the data value. |
| pcChInfo | Specify the association with the channel information data. |

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value.

When destructing, the associated channel information data is not deleted.

### Reference

```
setClassChInfo setValue
```

## CDAQDataInfo::getClassChInfo

### Syntax

```
CDAQChInfo * getClassChInfo(void);
```

### Description

Gets the value of the field associated with the channel information data of the data member. Returns NULL if the value is not specified.

### Return value

Returns the association with the channel information data.

## CDAQDataInfo::getDoubleValue

### Syntax

```
double getDoubleValue(void);
```

### Description

Generates the measured value from the data value of the data member and the decimal point position associated with the channel information data.

If there is no association with the channel information data, the decimal point position is 0.

### Return value

Returns the measured value as a double-precision floating number.

### Reference

```
getClassChInfo getValue toDoubleValue
CDAQChInfo::getPoint
```

## CDAQDataInfo::getStringValue

### Syntax

```
int getStringValue(char * strValue, int lenValue);
```

### Parameters

| | |
|---|---|
| strValue | Specify the field where the string is to be stored. |
| lenValue | Specify the byte size of the field where the string is to be stored. |

### Description

Generates the measured value from the data value of the data member and the decimal point position associated with the channel information data.

Converts the generated measured value into a string and stores it in the specified field.

If there is no association with the channel information data, the decimal point position is 0.

The string stored to the field includes the terminator.

The return value is the length of the actual string. The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

```
getClassChInfo getValue toStringValue
CDAQChInfo::getPoint
```

## CDAQDataInfo::getValue

### Syntax

```
virtual int getValue(void);
```

### Description

Gets the value of the data value field of the data member.

### Return value

Returns the data value.

## CDAQDataInfo::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value is 0.

The association with the channel information data is not initialized.

### Reference

```
setValue
```

## CDAQDataInfo::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQDataInfo");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overriden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a return value of 1 (true), or 0 (false).

## CDAQDataInfo::operator=

### Syntax

```
CDAQDataInfo & operator=(CDAQDataInfo & cDataInfo);
```

### Parameters

cDataInfo Specify an object for substitution.

### Description

Copies the data member of the specified object.

Also copies the association with the channel information data.

### Return value

Returns the reference to the object.

## CDAQDataInfo::setClassChInfo

### Syntax

```
void setClassChInfo(CDAQChInfo * pcChInfo);
```

### Parameters

pcChInfo Specify the association with the channel information data.

### Description

Stores the specified value in the association field of the channel information data of the data member.

## CDAQDataInfo::setValue

### Syntax

```
virtual void setValue(int value);
```

### Parameters

| | |
|---|---|
| value | Specify the data value. |

### Description

Stores the specified value in the data value field of the data member.

## CDAQDataInfo::toDoubleValue

### Syntax

```
static double toDoubleValue(int value, int point);
```

### Parameters

| | |
|---|---|
| value | Specify the data value. |
| point | Specify the decimal point position. |

### Description

Generates the measured value from the specified data value and decimal point position.

### Return value

Returns the measured value as a double-precision floating number.

## CDAQDataInfo::toStringValue

### Syntax

```
static int toStringValue(int value, int point, char *
strValue, int lenValue);
```

### Parameters

| | |
|---|---|
| value | Specify the data value. |
| point | Specify the decimal point position. |
| strValue | Specify the field where the string is to be stored. |
| lenValue | Specify the byte size of the field where the string is to be stored. |

### Description

Generates the measured value from the specified data value and decimal point position. Converts the generated measured value into a string and stores to the specified field. The string stored to the field includes the terminator.

The return value is the length of the actual string. The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`toDoubleValue`

# CDAQDateTime Class

This class is a base class of time information data.
Numbers of seconds and milliseconds are passed to the data member.
If necessary, you can override member data manipulation with an inheritance class.
A function is provided that checks whether the instance has inherited this class.
You can override with an inheritance class.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQDateTime | Constructs an object. |
| ~CDAQDateTime | Destructs an object. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getTime | Gets seconds. |
| getMilliSecond | Gets milliseconds. |
| setTime | Sets seconds. |
| setMilliSecond | Sets milliseconds. |
| setNow | Sets the current date/time. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |
| toLocalDateTime | Converts to years, months, days, hours, minutes, and seconds according to the local time zone. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

## Protected Members

### Data Members

| | |
|---|---|
| m_time | Field for storing the number of seconds from Jan. 1, 1970. |
| m_milli Second | Field for storing the number of milliseconds. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQDateTime::CDAQDateTime

### Syntax

```
CDAQDateTime(time_t time = 0, int millisecond = 0);
virtual ~CDAQDateTime(void);
```

### Parameters

| | |
|---|---|
| time | Specify seconds. |
| milliSecond | Specify milliseconds. |

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value.

### Reference

```
setMilliSecond setTime
```

## CDAQDateTime::getMilliSecond

### Syntax

```
virtual int getMilliSecond(void);
```

### Description

Gets the value of the milliseconds field of the data member.

### Return value

Returns milliseconds.

## CDAQDateTime::getTime

### Syntax

```
virtual time_t getTime(void);
```

### Description

Gets the value of the decimal point position field of the data member.

### Return value

Returns seconds.

## CDAQDateTime::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value is 0.

### Reference

```
setMillioSecond setTime
```

## CDAQDateTime::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQDateTime");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overriden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a return value of 1 (true), or 0 (false).

## CDAQDateTime::operator=

### Syntax

```
CDAQDateTime & operator=(CDAQDateTime & cDateTime);
```

### Parameters

cDateTime Specify an object for substitution.

### Description

Copies the data member of the specified object .

### Return value

Returns the reference to the object.

## CDAQDateTime::setMilliSecond

### Syntax

```
virtual void setMilliSecond(int milliSecond);
```

### Parameters

milliSecond Specify milliseconds.

### Description

Stores the specified value in the millisecond field of the data member

## CDAQDateTime::setNow

### Syntax

```
virtual void setNow(void);
```

### Description

Gets the current data/time and stores it in the data member.

Milliseconds are set to 0.

### Reference

```
setMilliSecond setTime
```

## CDAQDateTime::setTime

### Syntax

```
virtual void setTime(time_t time);
```

### Parameters

| | |
|---|---|
| time | Specify seconds. |

### Description

Stores the specified value in the seconds field of the data member.

## CDAQDateTime::toLocalDateTime

### Syntax

```
void toLocalDateTime(int * pYear, int * pMonth, int * pDay,
int * pHour, int * pMinute, int * pSecond);
static void toLocalDateTime(time_t sectime, int * pYear, int *
pMonth, int * pDay, int * pHour, int * pMinute, int *
pSecond);
```

### Parameters

| | |
|---|---|
| sectime | Specify seconds. |
| pYear | Specify the destination where the year value is returned. |
| pMonth | Specify the destination where the month value is returned. |
| pDay | Specify the destination where the day value is returned. |
| pHour | Specify the destination where the hour value is returned. |
| pMinute | Specify the destination where the minute value is returned. |
| pSecond | Specify the destination where the second value is returned. |

### Description

Converts the specified number of seconds to years, months, days, hours, minutes, and seconds according to the local time zone.

The specified number is the number of seconds from Jan. 1, 1970. Seconds are obtained from the data member for parameters with no seconds specified.

A four digit value is returned in year.

A value between 1 and 12 is returned for the month.

A value between 1 and 31 is returned for the day.

A value between 0 and 23 is returned for the hour.

A value between 0 and 59 is returned for the minutes.

A value between 0 and 59 is returned for the seconds.

Returns 0 if conversion fails.

### Reference

`getTime`

# CDAQHandler Class

This class is a base class of the handler. It provides communication functions.
The communication format is TCP/IP. The communication is controlled using the communication descriptor. The communication descriptor is stored in the communication descriptor field of the data member using a pointer to the general type. The communication descriptor is constructed when the connection is made and destructed when the connection is dropped.
To change the communication format, create an inheritance class and override all communication member functions.
The data acquisition function is defined so that it can be called without knowing the model. However, this class cannot be used with only the definition. It must be overridden with the inheritance class before being implemented.
A function is provided that checks whether the instance has inherited this class.
You can override with an inheritance class.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQHandler | Constructs an object. |
| ~CDAQHandler | Destructs an object. |

### Communication Functions

| | |
|---|---|
| open | Establishes a connection. |
| close | Drops the connection. |
| sendLine | Sends string data. |
| receiveLine | Receives string data by lines. |
| setTimeOut | Sets the communication timeout (setting of the communication timeout is not recommended (see section 2.2)). |

### Data Retrieval Functions

| | |
|---|---|
| getData | Gets the measured data. |
| getChannel | Gets the channel information data. |

### Utilities

| | |
|---|---|
| getVersionAPI | Gets the version number of this API. |
| getRevisionAPI | Gets the revision number of this API. |
| getErrorMessage | Gets the error message string |
| getMaxLenErrorMessage | Gets the maximum length of the error message string. |
| isObject | Checks an object. |

## Protected Members

### Data Members

| | |
|---|---|
| m_comm | Field for storing the communication descriptor. |
| m_nRemainSize | Field for storing the remaining size of the received data. |

### Communication Functions

| | |
|---|---|
| send | Sends the data. |
| receive | Receives the data. |

### Utilities

| | |
|---|---|
| receiveRemain | Receives the remaining bytes and discards them. |
| getVersionDLL | Gets the version number of the DLL. |
| getRevisionDLL | Gets the revision number of the DLL. |

## Private Members

None

## Member Functions (Alphabetical Order)

## CDAQHandler::CDAQHandler

### Syntax

```
CDAQHandler(void);
CDAQHandler(const char * strAddress, unsigned int uiPort, int
* errCode = NULL);
virtual ~CDAQHandler(void);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| uiPort | Specify the port number. |
| errCode | Specify the destination where the error number is to be returned. |

### Description

Constructs or destructs an object.

When constructing, the data member is initialized. The default value as a general rule is 0 (NULL). When the parameters are specified, a connection is established (open) during construction. If the return destination is specified, the error number during connection is returned.

When destructing, the data member field is released. Connection is dropped (close) when the communication descriptor exists. The error number is not returned.

### Reference

`close open`

## CDAQHandler::close

### Syntax

```
virtual int close(void);
```

### Description

Drops the connection. Destructs the communication descriptor.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not connected | Not connected. |
| Communication error | An error was detected in communications. |

## CDAQHandler::getChannel

### Syntax

```
virtual int getChannel(int chType, int chNo, CDAQChInfo &
cChInfo);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| cChInfo | Specify the destination where the channel information data is to be returned. |

### Description

This function gets the channel information data by channels.

This function must be overridden with the inheritance class of each model. Returns an error number if not overridden.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Support | Not supported. |

## CDAQHandler::getData

### Syntax

```
virtual int getData(int chType, int chNo, CDAQDateTime &
cDateTime, CDAQDataInfo & cDataInfo);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| cDateTime | Specify the destination where the time information data is to be returned. |
| cDataInfo | Specify the destination where the measured data is to be returned. |

### Description

This function gets the instantaneous values in units of channels.
This function must be overridden with the inheritance class of each model. Returns an error number if not overridden.

### Return value

Returns an error number.
Error:

| | |
|---|---|
| Not Support | Not supported. |

## CDAQHandler::getErrorMessage

### Syntax

```
static const char * getErrorMessage(int errCode);
```

### Parameters

| | |
|---|---|
| errCode | Specify the error number. |

### Description

Gets the error message string corresponding to the error number specified by the parameter. If the value is outside the range, the message string is set to Unknown.

### Return value

Returns a pointer to the error message string.

## CDAQHandler::getMaxLenErrorMessage

### Syntax

```
static const int getMaxLenErrorMessage(void);
```

### Description

Gets the maximum length of the error message string.

The value is the number of bytes.

The return value does not include the terminator.

### Return value

Returns the length of the string.

## CDAQHandler::getRevisionAPI

### Syntax

```
static const int getRevisionAPI(void);
```

### Description

Gets the revision number of this API.

### Return value

Returns the revision number.

## CDAQHandler::getRevisionDLL

### Syntax

```
static const int getRevisionDLL(void);
```

### Description

Gets the revision number of the DLL.

### Return value

Returns the revision number.

## CDAQHandler::getVersionAPI

### Syntax

```
static const int getVersionAPI(void);
```

### Description

Gets the version number of this API.

### Return value

Returns the version number.

## CDAQHandler::getVersionDLL

### Syntax

```
static const int getVersionDLL(void);
```

### Description

Gets the version number of the DLL.

### Return value

Returns the version number.

## CDAQHandler::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQHandler");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overriden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a return value of 1 (true), or 0 (false).

## CDAQHandler::open

### Syntax

```
virtual int open(const char * strAddress, unsigned int
uiPort);
```

### Parameters

strAddress Specify the IP address as a string.

uiPort Specify the port number.

### Description

Connects to the device with the IP address and port number specified by the parameters. Constructs the communication descriptor and stores it in the communication descriptor field of the data member.

If the communication descriptor already exists, it is not changed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Creating connection is failure | Failed to construct the communication descriptor. |
| Connection exists already | Communication descriptor already exists. |
| Communication error | An error was detected in communications. |

## CDAQHandler::receive

### Syntax

```
virtual int receive(unsigned char * bufData, int maxData, int
* lenData);
```

### Parameters

| | |
|---|---|
| bufData | Specify the field where the received data is to be stored using a byte array. |
| maxData | Specify the byte size of the received data. |
| lenData | Specify the destination where the byte size of the actual data received is returned. |

### Description

Stores the received data in the field specified by the parameter up to the specified byte size.

Returns the byte size of the actual data received if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not connected | Not connected. |
| Communication error | An error was detected in communications. |

## CDAQHandler::receiveLine

### Syntax

```
virtual int receiveLine(char * strLine, int maxLine, int *
lenLine);
```

### Parameters

| | |
|---|---|
| strLine | Specify the field where the received string is to be stored. |
| maxLine | Specify the byte size of the field where the received string is to be stored. |
| lenLine | Specify the destination where the byte size of the actual string received is returned. |

### Description

Stores the received string to the field specified by the parameter until a line feed is detected or up to the specified byte size. Stores the received string excluding line feeds. Returns the byte size of the actual data received and stored if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not connected | Not connected. |
| Communication Errors | An error was detected in communications. |

## CDAQHandler::receiveRemain

### Syntax

```
int receiveRemain(void);
```

### Description

If the remaining size field is greater than 0, the amount of data that is equal to the remaining size is received and discarded.

The remaining size field is set to 0.

If the remaining size field is 0 or less, the operation concludes successfully.

### Return value

Returns an error number.

### Reference

`receive`

## CDAQHandler::send

### Syntax

```
virtual int send(const unsigned char * bufData, int lenData);
```

### Parameters

| | |
|---|---|
| bufData | Specify the data to be sent using a byte array. |
| lenData | Specify the byte size of the data to be sent. |

### Description

Sends the amount of data to be sent specified by the parameter for the byte size.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not connected | Not connected. |
| Communication error | An error was detected in communications. |

## CDAQHandler::sendLine

### Syntax

```
virtual int sendLine(const char * strLine);
```

### Parameters

strLine Specify the string to be sent.

### Description

Sends the specified string.

The line feed is added to the string before it is sent. Specify the string excluding the line feed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not connected | Not connected. |
| Communication error | An error was detected in communications. |

## CDAQHandler::setTimeOut

### Syntax

```
virtual int setTimeOut(int seconds);
```

### Parameters

seconds Specify the communication timeout value in units of seconds.

### Description

Sets the transmission and reception timeout to the value specified by the parameter.

If a negative value is specified, the timeout is discarded.

The use of the timeout is not recommended.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not connected | Not connected. |
| Communication error | An error was detected in communications. |

# 2.5 Details of the MX100 Class

The classes are listed in alphabetical order by the class name.

## CDAQMX Class

- **CDAQHandler**
  - **CDAQMX**

This class is derived from the CDAQHandler class.
This class provides functions for the MX100. The communication is in binary, therefore do not use primitive communication functions of the base class.
Information necessary for communications is stored internally. Send packets are generated internally from command number, user count, and communication packet version.
When retrieving data, execute the member of the retrieval declaration, then execute the member that retrieves the data number's worth of data, for each data. The presence or absence of the declaration is checked here.
A function is provided that checks whether the instance has inherited this class.
You can override with an inheritance class.

### Public Members

#### Construct/Destruct

| | |
|---|---|
| CDAQMX | Constructs an object. |
| ~CDAQMX | Destructs an object. |

#### Control Functions

**Starting/Stopping the FIFO**

| | |
|---|---|
| startFIFO | Starts the FIFO. |
| stopFIFO | Stops the FIFO. |
| autoFIFO | Sets auto control of the FIFO. |

**Other Controls**

| | |
|---|---|
| setDateTime | Sets the time information data. |
| setBackup | Sets backup to the CF card. |
| formatCF | Formats the CF card. |
| initSystem | Initializes the system. |
| setSegment | Sets the 7-segment LED. |
| setDOData | Sets the DO data. |
| setAOPWMData | Sets AO/PWM data. |
| setTransmit | Sets the transmission output data. |

## Setup Functions

### Collective Setup

| | |
|---|---|
| setConfig | Sets the setup data. |
| setMXConfig | Sets the basic settings. |
| setOutput | Sets the basic setting output channel data. |
| setBalance | Sets initial balance data. |
| runBalance | Executes initial balancing. |
| resetBalance | Initializes the initial balance value. |

## Data Retrieval Functions

### Retrieval of System Status Data and System Configuration Data

| | |
|---|---|
| getStatusData | Gets the status. |
| getSystemConfig | Gets the system configuration data. |

### Retrieval of Setup Data

| | |
|---|---|
| getConfig | Gets the setup data. |
| talkConfig | Declares the retrieval of the setup data. |
| getChConfig | Gets the channel setup data. |
| getMXConfig | Gets the basic settings. |
| getOutput | Gets the basic output channel data. |
| getBalance | Gets initial balance data. |

### Retrieval of Output Data

| | |
|---|---|
| getDOData | Gets the DO data. |
| getAOPWMData | Gets AO/PWM data and transmission output data. |

### Retrieval of Channel Information Data

| | |
|---|---|
| talkChInfo | Declares the retrieval of the channel information data. |
| getChInfo | Gets the channel information data. |

### Retrieval of the Measured Data

| | |
|---|---|
| getChDataNo | Gets the data number of the channel. |
| talkChData | Declares the retrieval of the measured data according to the channel specification. |
| getTimeData | Gets the time information data of the measured data. |
| getFIFODataNo | Gets the data number of the FIFO. |
| talkFIFOData | Declares the retrieval of the measured data according to the FIFO specification. |
| getChData | Gets the measured data. |
| getTimeData | Gets the time information data of the measured data. |

## Utilities

| | |
|---|---|
| getUserTime | Gets the user count. |
| setUserTime | Sets the user count. |
| getLastError | Gets the MX100-specific error. |
| getItemError | Gets the setting item number. |

- **Overridden Members**

**Communication Functions**

| | |
|---|---|
| open | Establishes connection. |

**Data Retrieval Functions**

| | |
|---|---|
| getData | Gets the measured data. |
| getChannel | Gets the channel information data. |

**Utilities**

| | |
|---|---|
| isObject | Checks an object. |

- **Inherited Members**

See CDAQHandler.

close getErrorMessage getMaxLenErrorMessage getRevisionAPI getVersionAPI receiveLine sendLine setTimeOut

## Protected Members

**Data Members**

| | |
|---|---|
| m_nNo | Field for storing the command number. |
| m_nLastError | Field for storing MX100-specific errors. |
| m_bAutoFIFO | Field for storing the FIFO auto control. |
| m_llUserTime | Field for storing the user count. |
| m_nSessionNo | Field for storing the session number. |
| m_chFIFONo | Field for storing the FIFO number per channel. |
| m_chFIFOIndex | Field for storing the channel sequence number in the FIFO per channel. |
| m_chDataType | Field for storing the data type per channel. |
| m_chDeciPos | Field for storing the decimal point position per channel. |
| m_lastFIFODataNo | Field for storing the last data number per FIFO. |
| m_lastChDataNo | Field for storing the last data number per channel. |
| m_startChNo | Field for storing the start channel number. |
| m_endChNo | Field for storing the end channel number. |
| m_curChNo | Field for storing the current channel number. |
| m_startFIFOIdx | Field for storing the start channel sequence number of the FIFO. |
| m_endFIFOIdx | Field for storing the end channel sequence number of the FIFO. |
| m_curFIFOIdx | Field for storing the current channel sequence number of the FIFO. |
| m_startDataNo | Field for storing the start data number. |
| m_endDataNo | Field for storing the end data number. |
| m_curDataNo | Field for storing the current data number. |
| m_nFIFONo | Field for storing the FIFO number. |

| | |
|---|---|
| m_nDataNum | Field for storing the data number. |
| m_nChNum | Field for storing the number of channels. |
| m_nTimeNum | Field for storing the remaining number of time information data of the measured data. |
| m_packetVer | Field for storing the communication packet version. |
| m_nItemError | Field for storing the setting item number. |
| m_bTalkConfig | Declaration flag for retrieval of the setup data. |
| m_bTalkChInfo | Declaration flag for retrieval of the channel information data. |
| m_bTalkData | Declaration flag for retrieval of the measured data. |

### Communication Functions

| | |
|---|---|
| runCommand | Executes a command. |
| sendPacket | Sends a packet. |
| receivePacket | Receives a packet. |
| receiveBlock | Receives a block. |
| runPacket | Sends/receives packets. |
| receiveBuffer | Receives the “size” amount of data, including the size information. |

### Internal Commands

| | |
|---|---|
| nop | Executes the NOP command. |
| registry | Executes the registry command. |

### Member Data Manipulation

| | |
|---|---|
| getNo | Gets the command number. |
| incCurDataNo | Increments the current data number. |
| incCurFIFOIdx | Increments the channel sequence number in the current FIFO. |
| getDataNo | Gets the data number. |
| searchChNo | Gets the channel number from the channel sequence number in the FIFO. |
| clearAttr | Initializes the data member. |
| clearData | Initializes the data member related to the retrieval of the measured data. |
| getPacketVersion | Gets the communication packet version. |
| clearLastDataNoCh | Initializes the last data number of each channel. |
| clearLastDataNoFIFO | Initializes the last data number of each FIFO. |

### Utilities

| | |
|---|---|
| getVersionDLL | Gets the version number of the DLL. |
| getRevisionDLL | Gets the revision number of the DLL. |

- **Inherited Members**

  See CDAQHandler.

```
m_comm m_nRemainSize
receive receiveRemain send
```

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMX::autoFIFO

### Syntax

```
int autoFIFO(int bAuto);
```

### Parameters

| | |
|---|---|
| bAuto | Specify auto control using a Boolean value. |

### Description

Sets auto control.

Stores the specified value in the automatic control field of the data member.

When enabled, the FIFO is started.

### Return value

Returns an error number.

### Reference

```
startFIFO
```

## CDAQMX::CDAQMX

### Syntax

```
CDAQMX(void);
CDAQMX(const char * strAddress, unsigned int uiPort =
DAQMX_COMMPORT, int * errCode = NULL);
virtual ~CDAQMX(void);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| uiPort | Specify the port number. |
| errCode | Specify the destination where the error number is to be returned. |

### Description

Constructs or destructs an object.

When constructing, the data member is initialized. The default value as a general rule is 0 (NULL). When the parameters are specified, a connection is established (open) during construction. If the return destination is specified, the error number during connection is returned.

When destructing, the data member field is released. The connection is dropped (close) when the communication descriptor exists. The error number is not returned.

### Reference

```
clearAttr close open
CDAQHandler::CDAQHandler
```

## CDAQMX::clearAttr

### Syntax

```
void clearAttr(void);
```

### Description

Initializes all the data members. The default value as a general rule is 0.

### Reference

clearData

## CDAQMX::clearData

### Syntax

```
void clearData(int sessionNo = 0);
```

### Parameters

sessionNo Specify the session number.

### Description

Initializes the data member to start the retrieval of the measured data.

Stores the specified value in the session number field of the data member.

### Reference

`clearLastDataNoCh clearLastDataNoFIFO`

## CDAQMX::clearLastDataNoCh

### Syntax

```
void clearLastDataNoCh(int chNo = DAQMX_CHNO_ALL);
```

### Parameters

chNo Specify the channel number.

### Description

Initializes the last data number field of each channel specified in the data member.

If the constant for “Specify all Channels”is specified for the channel numbers, all channels are processed.

## CDAQMX::clearLastDataNoFIFO

### Syntax

```
void clearLastDataNoFIFO(int fifoNo = DAQMX_FIFONO_ALL);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Initializes the last data number field of each FIFO in the FIFO numbers specified in the data member.

If the constant for “Specify all FIFO numbers”is specified for the FIFO numbers, all FIFOs are processed.

## CDAQMX::formatCF

### Syntax

```
virtual int formatCF(void);
```

### Description

Formats the CF card.

The FIFO stops. If auto control is enabled, the FIFO starts after the function completes successfully.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand startFIFO
stopFIFO
```

## CDAQMX::getAOPWMData

### Syntax

```
int getAOPWMData(CDAQMXAOPWMData & cMXAOPWMData,
CDAQMXTransmit & cMXTransmit);
```

### Parameters

| | |
|---|---|
| cMXAOPWMData | Specify the destination where the AO/PWM data is to be returned. |
| cMXTransmit | Specify the destination where the transmission output data is to be returned. |

### Description

Gets of AO/PWM data and transmission output data.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand
CDAQMXAOPWMData::initialize CDAQMXAOPWMData::setAOPWM
CDAQMXTransmit::initialize CDAQMXTransmit::setTransmit
```

## CDAQMX::getBalance

### Syntax

```
int getBalance(CDAQMXBalanceData & cMXBalanceData);
```

### Parameters

| | |
|---|---|
| cMXBalanceData | Specify the destination where the initial balance data is to be returned. |

### Description

Gets initial balance data.

Gets the setup data, and stores the initial balance data portion in the specified return destination.

### Return value

Returns an error number.

### Reference

```
getMXConfig CDAQMXBalanceData::initialize
CDAQMXConfig::getClassMXBalanceData
```

## CDAQMX::getChannel

### Syntax

```
virtual int getChannel(int chType, int chNo, CDAQChInfo &
cChInfo);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| cChInfo | Specify the destination where the channel information data is to be returned. |

### Description

This function gets the channel information data by channels.

Gets the channel information data of the specified channel.

The channel type is ignored.

### Return value

Returns an error number.

### Reference

```
getChInfo talkChInfo
```

## CDAQMX::getChConfig

### Syntax

```
int getChConfig(CDAQMXChConfig & cMXChConfig, int * pFlag =
NULL);
```

### Parameters

| | |
|---|---|
| cMXChConfig | Specify the destination where the channel setup data is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the channel information data that was declared to be retrieved using the talkConfig function in units of channels. Analyzes information and stores the data in the return destination. When the last set of data is retrieved, the flag status is set. It is also set when the function ends in error. Do not perform communications using other functions until the data retrieval is completed.

Packets differ with the style number of the main unit.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not support | Unsupported version. Or, the sequence of execution was incorrect. |

### Reference

`getPacketVersion receiveBlock CDAQMXChConfig::setChNo`

## CDAQMX::getChData

### Syntax

```
int getChData(MXDataNo * dataNo, CDAQMXDataInfo & cMXDataInfo,
int * pFlag = NULL);
```

### Parameters

| | |
|---|---|
| dataNo | Specify the destination where the data number is to be returned. |
| cMXDataInfo | Specify the destination where the measured data is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the measured data that was declared to be retrieved using the talkChData and talkFIFOData functions in units of channels. Analyzes information and stores the data in the return destination.

If an association with channel information data exists in the measured data return destination, channel information data that identifies the measured data is stored.

When the last set of data is retrieved, the flag status is set.

It is also set when the function ends in error.

Do not perform communications using other functions until the data retrieval is completed.

### Return value

Returns an error number.

### Reference

`incCurFIFOIdx receiveBlock searchChNo CDAQMXChInfo::setChNo CDAQMXChInfo::setFIFONo CDAQMXChInfo::setPoint CDAQMXChInfo::setValid CDAQMXDataInfo::getClassMXChInfo`

## CDAQMX::getChDataNo

### Syntax

```
int getChDataNo(int chNo, MXDataNo * startDataNo, MXDataNo *
endDataNo);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| startDataNo | Specify the destination where the start data number is to be returned. |
| endDataNo | Specify the destination where the end data number is to be returned. |

### Description

Gets the data number of measured data that can be retrieved.

Gets the data range that can be retrieved starting from the next data after the measured data that was received last through channel designation.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not support | The channel number is outside the range. |

### Reference

`getDataNo`

## CDAQMX::getChInfo

### Syntax

```
int getChInfo(CDAQMXChInfo & cMXChInfo, int * pFlag = NULL);
```

### Parameters

| | |
|---|---|
| cMXChInfo | Specify the destination where the channel information data is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the channel information data that was declared to be retrieved using the talkChInfo function in units of channels. Analyzes information and stores the data in the return destination. When the last set of data is retrieved, the flag status is set. It is also set when the function ends in error. Do not perform communications using other functions until the data retrieval is completed.

Stores required information in the each channel information storage field of the data member.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not support | The sequence of execution was incorrect. |

### Reference

```
receiveBlock CDAQMXChInfo::getFIFOIndex
CDAQMXChInfo::getFIFONo CDAQMXChInfo::getPoint
CDAQMXChInfo::setChNo CDAQMXChInfo::setFIFOIndex
CDAQMXChInfo::setFIFONo
```

## CDAQMX::getConfig

### Syntax

```
int getConfig(CDAQMXConfig & cMXConfig);
```

### Parameters

| | |
|---|---|
| cMXConfig | Specify the destination where the setup data is to be returned. |

### Description

Gets the setup data.

Gets the System configuration data, status, and basic settings and merges the information.

### Return value

Returns an error number.

### Reference

```
getMXConfig getStatusData getSystemConfig
```

## CDAQMX::getData

### Syntax

```
virtual int getData(int chType, int chNo, CDAQDateTime &
cDateTime, CDAQDataInfo & cDataInfo);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| cDateTime | Specify the destination where the time information data is to be returned. |
| cDataInfo | Specify the destination where the measured data is to be returned. |

### Description

This function gets the instantaneous values in units of channels.

Gets the measured data of the specified channel.

The channel type is ignored.

### Return value

Returns an error number.

### Reference

`getChData getTimeData talkChData`

## CDAQMX::getDataNo

### Syntax

```
int getDataNo(int fifoNo, MXDataNo prevLast, MXDataNo *
startDataNo, MXDataNo * endDataNo);
```

### Parameters

| | |
|---|---|
| fifoNo | Specify the FIFO number. |
| prevLast | Specify the data number retrieved last. |
| startDataNo | Specify the destination where the start data number is to be returned. |
| endDataNo | Specify the destination where the end data number is to be returned. |

### Description

Gets the status data and calculates the range of measured data that can be retrieved. If measured data that can be retrieved does not exist, negative numbers are returned.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not support | The FIFO number is outside the range. |

### Reference

`getStatusData`
`CDAQMXStatus::getNewDataNo CDAQMXStatus::getOldDataNo`

## CDAQMX::getDOData

### Syntax

```
int getDOData(CDAQMXDOData & cMXDoData);
```

### Parameters

cMXDoData Specify the destination where the DO data is to be returned.

### Description

Gets the DO data.

Gets the data of all the channels collectively.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand
CDAQMXDOData::initialize CDAQMXDOData::setDO
```

## CDAQMX::getFIFODataNo

### Syntax

```
int getFIFODataNo(int fifoNo, MXDataNo * startDataNo, MXDataNo
* endDataNo);
```

### Parameters

fifoNo Specify the FIFO number.

startDataNo Specify the destination where the start data number is to be returned.

endDataNo Specify the destination where the end data number is to be returned.

### Description

Gets the data number of measured data that can be retrieved.

Gets the data range that can be retrieved starting from the next data after the measured data that was received last through FIFO designation.

### Return value

Returns an error number.

Error:

Not support The FIFO number is outside the range.

### Reference

```
getDataNo
```

## CDAQMX::getItemError

### Syntax

```
int getItemError(void);
```

### Description

Gets the value of the setting item number field from the data member.

### Return value

Returns the setting item number.

## CDAQMX::getLastError

### Syntax

```
int getLastError(void);
```

### Description

Gets the value in the MX100-specific error field from the data member.

### Return value

Returns the MX100-specific error.

## CDAQMX::getMXConfig

### Syntax

```
int getMXConfig(CDAQMXConfig & cMXConfig);
```

### Parameters

cMXConfig  Specify the destination where the setup data is to be returned.

### Description

Gets the basic settings.

Packets differ with the style number of the MX100.

### Return value

Returns an error number.

Error:

Not support  Unsupported version.

### Reference

```
getNo getPacketVersion getUserTime runCommand
```

## CDAQMX::getNo

### Syntax

```
int getNo(void);
```

### Description

Gets the value in the command number field from the data member.

Increments the command number.

### Return value

```
Returns the command number.
```

## CDAQMX::getOutput

### Syntax

```
int getOutput(CDAQMXOutputData & cMXOutputData);
```

### Parameters

cMXOutputData Specify the destination where the output channel data is to be returned.

### Description

Gets the basic output channel data.

Gets the setup data, and stores the output channel data portion in the specified return destination.

### Return value

Returns an error number.

### Reference

```
getMXConfig CDAQMXConfig::getClassMXOutputData
CDAQMXOutputData::initialize
```

## CDAQMX::getPacketVersion

### Syntax

```
int getPacketVersion(void);
```

### Description

Gets the value of the communication packet version field from the data member.

### Return value

Returns the communication packet version.

## CDAQMX::getRevisionDLL

### Syntax

```
static const int getRevisionDLL(void);
```

### Description

Gets the revision number of this DLL.

### Return value

Returns the revision number of this DLL.

## CDAQMX::getStatusData

### Syntax

```
int getStatusData(CDAQMXStatus & cMXStatus);
```

### Parameters

cMXStatus Specify the destination where the status data is to be returned.

### Description

Gets the status data.

Packets differ with the style number of the MX100.

### Return value

Returns an error number.

Error:

Not support Unsupported version.

### Reference

```
getNo getPacketVersion getUserTime runCommand
```

## CDAQMX::getSystemConfig

### Syntax

```
int getSystemConfig(CDAQMXSysInfo & cMXSysInfo);
```

### Parameters

cMXSysInfo Specify the destination where the system configuration data is to be returned.

### Description

Gets the system configuration data.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand
```

## CDAQMX::getTimeData

### Syntax

```
int getTimeData(MXDataNo * dataNo, CDAQMXDateTime &
cMXDateTime, MXUserTime * pUserTime = NULL, int * pFlag =NULL);
```

### Parameters

| | |
|---|---|
| dataNo | Specify the destination where the data number is to be returned. |
| cMXDateTime | Specify the destination where the time information data is to be returned. |
| pUserTime | Specify the destination where the user count is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the time information data that was declared to be retrieved using the talkChData and talkFIFOData functions in units of data numbers. Analyzes information and stores the data in the return destination.

When the last set of data is retrieved, the flag status is set. It is also set when the function ends in error.

Do not perform communications using other functions until the data retrieval is completed.

After the data is retrieved by this function member, use getChData to retrieve the data for each channel within the data number.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not support | The sequence of execution was incorrect. |

### Reference

```
incCurDataNo receiveBlock CDAQMXDateTime::setMilliSecond
CDAQMXDateTime::setTime
```

## CDAQMX::getUserTime

### Syntax

```
MXUserTime getUserTime(void);
```

### Description

Gets the value in the user count field from the data member.

### Return value

Returns the user count.

## CDAQMX::getVersionDLL

### Syntax

```
static const int getVersionDLL(void);
```

### Description

Gets the version number of this DLL.

### Return value

Returns the version number of this DLL.

## CDAQMX::incCurDataNo

### Syntax

```
MXDataNo incCurDataNo(void);
```

### Description

Gets the value in the current data number field from the data member.

Increments the current data number. When the end data number is exceeded, the number is reset to the start data number.

### Return value

Returns the current data number.

## CDAQMX::incCurFIFOIdx

### Syntax

```
int incCurFIFOIdx(void);
```

### Description

Gets the value in the channel sequence number field in the current FIFO from the data member.

Increments the channel sequence number in the current FIFO. When the end channel sequence number in the FIFO is exceeded, the number is reset to the start channel sequence number in the FIFO.

### Return value

Returns the channel sequence number in the current FIFO.

## CDAQMX::initSystem

### Syntax

```
int initSystem(int iCtrl);
```

### Parameters

| | |
|---|---|
| iCtrl | Specify the system control type. |

### Description

Executes the operation of the specified system control type.

The FIFO stops. If auto control is enabled, the FIFO starts after the function completes successfully.

However, the alarm reset time is excluded.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand getConfig
setMXConfig CDAQMXConfig::reconstruct
```

## CDAQMX::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMX");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQHandler::isObject`

## CDAQMX::nop

### Syntax

```
int nop(void);
```

### Description

Executes a command.

The MX100 only returns a response.

### Return value

Returns an error number.

### Reference

`getNo getPacketVersion getUserTime runCommand`

## CDAQMX::open

### Syntax

```
virtual int open(const char * strAddress, unsigned int uiPort
= DAQMX_COMMPORT);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| uiPort | Specify the port number. |

### Description

Connects to the device with the IP address and port number specified by the parameters.

The port number can be omitted. If omitted, it is set to the MX100 communication port number.

Initializes the data member.

Executes the registry command. If execution fails, the connection is dropped.

### Return value

Returns an error number.

### Reference

`clearAttr close registry`
`CDAQHandler::open`

## CDAQMX::receiveBlock

### Syntax

```
int receiveBlock(unsigned char * pBlock, int lenBlock);
```

### Parameters

| | |
|---|---|
| pBlock | Specify the field where the block is to be stored using a byte array. |
| lenBlock | Specify the byte size of the block. |

### Description

Receives the specified block.

Updates the remaining size field.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not data | The field size is not consistent. |

### Reference

`receive`

## CDAQMX::receiveBuffer

### Syntax

```
int receiveBuffer(unsigned char * pBuf, int lenBuf, int *
realLen, int * sizeBuf = NULL)
```

### Parameters

| | |
|---|---|
| pBuf | Specify the field where the data is to be stored using a byte array. |
| lenBuf | Specify the number of bytes of the data field. |
| realLen | Specify the destination where the byte size of the actual data received is returned. |
| sizeBuf | Specify the destination where the size information is to be returned. |

### Description

Receives the data including the size information. Receives and stores the amount of data specified by the size information or the specified number of bytes in the field specified by the parameter. Returns the number of bytes and size information of the actual data received if the return destination is specified.

### Return value

Returns an error number.

Error:

Not acknowledgeThe size of the response packet is wrong.

### Reference

`receiveRemain receive`

## CDAQMX::receivePacket

### Syntax

```
virtual int receivePacket(unsigned char * ackBuf, int lenAck,
int * realLen);
```

### Parameters

| | |
|---|---|
| ackBuf | Specify the field where the response packet is to be stored using a byte array. |
| lenAck | Specify the byte size of the response packet. |
| realLen | Specify the destination where the byte size that is actually received is returned. |

### Description

Receives the specified packet and decodes it.

If the received packet is an error packet, the MX100-specific error is stored in the MX100-specific error field.

### Return value

Returns an error number.

Error:

Commands are not processed successfully

Received an error packet.

### Reference

`receiveBuffer`

## CDAQMX::registry

### Syntax

```
int registry(void);
```

### Description

Executes a command.

This command notifies the MX100 main unit of the PC information (host name and address).

Stores the communication packet version in the communication packet version field of the data member.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand
```

## CDAQMX::resetBalance

### Syntax

```
int resetBalance(CDAQMXBalanceResult & cMXBalanceResult);
```

### Parameters

| | |
|---|---|
| cMXBalanceResult | Specify the destination where the initial balance result is to be returned. |

### Description

Resets initial balancing.

Stores the reset result, initial balance result, and initial balance value in the specified return destination.

Only channels specified as valid are reset.

The FIFO stops. If auto control is enabled, the FIFO starts after the function completes successfully.

The response to this function may take five seconds or longer.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand startFIFO
stopFIFO CDAQMXBalanceResult::getBalanceValid
CDAQMXBalanceResult::setBalance CDAQMXBalanceResult::setResult
```

## CDAQMX::runBalance

### Syntax

```
int runBalance(CDAQMXBalanceResult & cMXBalanceResult);
```

### Parameters

| | |
|---|---|
| cMXBalanceResult | Specify the destination where the initial balance result is to be returned. |

### Description

Executes initial balancing.
Stores the execution result, initial balance result, and initial balance value in the specified return destination.
Execution takes place only on channels specified as valid.
The FIFO stops. If auto control is enabled, the FIFO starts after the function completes successfully.
The response to this function may take five seconds or longer.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand startFIFO
stopFIFO CDAQMXBalanceResult::getBalanceValid
CDAQMXBalanceResult::setBalance
CDAQMXBalanceResult::setResult
```

## CDAQMX::runCommand

### Syntax

```
virtual int runCommand(unsigned char * reqBuf, int lenReq,
unsigned char * ackBuf, int lenAck);
```

### Parameters

| | |
|---|---|
| reqBuf | Specify the request packet using a byte array. |
| lenReq | Specify the byte size of the request packet. |
| ackBuf | Specify the field where the response packet is to be stored using a byte array. |
| lenAck | Specify the byte size of the response packet. |

### Description

Sends the specified request packet and receives the response packet. The response packet is stored in the specified field.

### Return value

Returns an error number.
Error:

| | |
|---|---|
| Not acknowledge | No response was generated for the request. |
| Not support | The request packets were incorrect. |
| Not data | The response packet field is insufficient. |

### Reference

```
receivePacket sendPacket
```

## CDAQMX::runPacket

### Syntax

```
virtual int runPacket(unsigned char * reqBuf, int lenReq,
unsigned char * ackBuf, int lenAck);
```

### Parameters

| | |
|---|---|
| reqBuf | Specify the request packet using a byte array. |
| lenReq | Specify the byte size of the request packet. |
| ackBuf | Specify the field where the response packet is to be stored using a byte array. |
| lenAck | Specify the byte size of the response packet. |

### Description

Sends the specified request packet and receives the response packet. The response packet is stored in the specified field. This is a member provided for non-standard packets. The packets must be processed on the user side.

The use of a timeout is not recommended.

### Return value

Returns an error number.

### Reference

`receiveBuffer send`

## CDAQMX::searchChNo

### Syntax

```
int searchChNo(int fifoNo, int fifoIndex);
```

### Parameters

| | |
|---|---|
| fifoNo | Specify the FIFO number. |
| fifoIndex | Specify the channel sequence number in the FIFO. |

### Description

Searches for the channel number corresponding to the specified value from the information stored in the data member.

Returns 0 if it does not exist.

### Return value

`Returns the channel number.`

## CDAQMX::sendPacket

### Syntax

```
virtual int sendPacket(unsigned char * reqBuf, int lenReq);
```

### Parameters

| | |
|---|---|
| reqBuf | Specify the request packet using a byte array. |
| lenReq | Specify the byte size of the request packet. |

### Description

Encodes the specified packet and sends it.

### Return value

Returns an error number.

### Reference

`send`

## CDAQMX::setAOPWMData

### Syntax

```
int setAOPWMData(CDAQMXAOPWMData & cMXAOPWMData);
```

### Parameters

| | |
|---|---|
| cMXAOPWMData | Specify the AO/PWM data. |

### Description

Sets AO/PWM data.

### Return value

Returns an error number.

### Reference

`getNo getPacketVersion getUserTime runCommand`
`CDAQMXAOPWMData::getAOPWMValid`
`CDAQMXAOPWMData::getAOPWMValue`

## CDAQMX::setBalance

### Syntax

```
int setBalance(CDAQMXBalanceData & cMXBalanceData);
```

### Parameters

cMXBalanceData Specify initial balance data.

### Description

Sets initial balance data.

Gets the setup data, updates it according to the specified initial balance data, and sends the setup data.

Only channels specified as valid are updated.

### Return value

Returns an error number.

### Reference

```
getMXConfig setMXConfig
CDAQMXBalanceData::getBalanceValid
CDAQMXBalanceData::setBalance
CDAQMXConfig::getClassMXBalanceData
```

## CDAQMX::setBackup

### Syntax

```
int setBackup(int bBackup);
```

### Parameters

bBackup Specify backup using a Boolean value.

### Description

Sets backup on the device.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand
```

## CDAQMX::setBalance

### Syntax

```
int setBalance(CDAQMXBalanceData & cMXBalanceData);
```

### Parameters

cMXBalanceData Specifies initial balance data.

### Description

Sets initial balance data.

Gets the setup data, updates it according to the specified initial balance data, and sends the setup data.

Only channels specified as valid are updated.

### Return value

Returns an error number.

### Reference

```
getMXConfig setMXConfig
CDAQMXBalanceData::getBalanceValid
CDAQMXBalanceData::setBalance
CDAQMXConfig::getClassMXBalanceData
```

## CDAQMX::setConfig

### Syntax

```
int setConfig(CDAQMXConfig & cMXConfig);
```

### Parameters

cMXConfig Specify the setup data.

### Description

Sets the setup data.

Sets the basic settings.

### Return value

Returns an error number.

### Reference

```
setMXConfig
```

## CDAQMX::setDateTime

### Syntax

```
virtual int setDateTime(CDAQMXDateTime * pcMXDateTime = NULL);
```

### Parameters

pcMXDateTime Specify the time information data.

### Description

Sets time information data on the device.

If the parameter's time information data is omitted, the current date/time of the PC is used.

Milliseconds are discarded.

The FIFO stops. If auto control is enabled, the FIFO starts after the function completes successfully.

The response to this function may take one second or longer.

An error occurs if the time is a negative number.

### Return value

Returns an error number.

Error:

Not data Specified value incorrect.

### Reference

```
getNo getPacketVersion getUserTime
runCommand startFIFO stopFIFO
CDAQMXDateTime::getMilliSecond
CDAQMXDateTime::getTime
CDAQMXDateTime::setNow
```

## CDAQMX::setDOData

### Syntax

```
int setDOData(CDAQMXDOData & cMXDoData);
```

### Parameters

cMXDoData Specify the DO data.

### Description

Sets the DO data.

Sets the data of all the channels collectively.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand
CDAQMXDOData::getDOONOFF CDAQMXDOData::getDOValid
```

## CDAQMX::setMXConfig

### Syntax

```
int setMXConfig(CDAQMXConfig & cMXConfig);
```

### Parameters

cMXConfig Specify the setup data.

### Description

Sets basic settings on the device.

The input data is validated before it is sent.

The FIFO stops. If auto control is enabled, the FIFO starts after the function completes successfully.

Packets differ with the style number of the main unit.

The setting item number of the validation results are stored in the setting item number field of the data member.

### Return value

Returns an error number.

Error:

Not data The input data is not valid.

Not support Unsupported version.

### Reference

```
getNo getPacketVersion getUserTime runCommand startFIFO
stopFIFO CDAQMXConfig::isCorrect CDAQMXConfig::getItemError
```

## CDAQMX::setOutput

### Syntax

```
int setOutput(CDAQMXOutputData & cMXOutputData);
```

### Parameters

cMXOutputData Specify the output channel data.

### Description

Sets the output channel data.

Gets the setup data, updates it according to the specified output channel data, and sends the setup data.

If the output type is changed, it will not match the channel setup data.

### Return value

Returns an error number.

### Reference

```
getMXConfig setMXConfig CDAQMXConfig::getClassMXOutputData
```

## CDAQMX::setSegment

### Syntax

```
int setSegment(int dispType, int dispTime, CDAQMXSegment &
cNewMXSegment, CDAQMXSegment & cOldMXSegment);
```

### Parameters

| | |
|---|---|
| dispType | Specify the display format. |
| dispTime | Specify the display time. |
| cNewMXSegment | Specify the display pattern. |
| cOldMXSegment | Specify the destination where the previous display pattern is to be returned. |

### Description

Sets the display of the 7-segment LED.

Stores the 7-segment LED display pattern before the change if the return destination is specified.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand
CDAQMXSegment::getPattern CDAQMXSegment::setPattern
```

## CDAQMX::setTransmit

### Syntax

```
int setTransmit(CDAQMXTransmit & cMXTransmit);
```

### Parameters

| | |
|---|---|
| cMXTransmit | Specify the transmission output data. |

### Description

Sets the transmission output data.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand
CDAQMXTransmit::getTransmit
```

## CDAQMX::setUserTime

### Syntax

```
void setUserTime(MXUserTime userTime);
```

### Parameters

userTime Specify the user count.

### Description

Stores the specified value in the user count field of the data member.

## CDAQMX::startFIFO

### Syntax

```
int startFIFO(void);
```

### Description

Starts the FIFO.

Gets the channel information data and sets necessary information in the data member related to the retrieval of the measured data.

### Return value

Returns an error number.

### Reference

```
clearData getNo getPacketVersion getUserTime getChInfo
runCommand talkChInfo
```

## CDAQMX::stopFIFO

### Syntax

```
int stopFIFO(void);
```

### Description

Stops the FIFO.

Stops even if auto control is enabled.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime runCommand
```

## CDAQMX::talkChData

### Syntax

```
int talkChData(int chNo, MXDataNo startDataNo =
DAQMX_INSTANTANEOUS, MXDataNo endDataNo =
DAQMX_INSTANTANEOUS);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| startDataNo | Specify the start data number. |
| endDataNo | Specify the end data number. |

### Description

Declares the retrieval of the measured data.

Gets the measured data in the specified data number range. The range that is actually retrieved is not necessarily equal to the specified range.

If the data number is omitted, the instantaneous value is retrieved.

After executing this function member, use getTimeData to get the time information data for each data number.

Then, use getChData to retrieve the data for each channel within the data number.

### Return value

Returns an error number.

### Reference

`getNo getPacketVersion getUserTime receivePacket sendPacket`

## CDAQMX::talkChInfo

### Syntax

```
int talkChInfo(int startChNo = 1, int endChNo =
DAQMX_NUMCHANNEL);
```

### Parameters

| | |
|---|---|
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Declares the retrieval of the channel information data from the start channel number to the end channel number.

After executing this function member, use the getChInfo function to retrieve the data for each channel.

### Return value

Returns an error number.

### Reference

`getNo getPacketVersion getUserTime receivePacket sendPacket`

## CDAQMX::talkConfig

### Syntax

```
int talkConfig(CDAQMXSysInfo & cMXSysInfo, CDAQMXStatus &
cMXStatus, CDAQMXNetInfo & cMXNetInfo);
```

### Parameters

| | |
|---|---|
| cMXSysInfo | Specify the destination where the system configuration data is to be returned. |
| cMXStatus | Specify the destination where the status data is to be returned. |
| cMXNetInfo | Specify the destination where the network information data is to be returned. |

### Description

Declares the retrieval of the setup data. Gets the setup data excluding the channel setup data. After executing this function member, use the getChConfig function to retrieve the data for each channel. Within the setup data, initial balance data and output channel data is retrieved using a separately-named retrieval function.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getStatusData getSystemConfig
getUserTime receivePacket sendPacket
```

## CDAQMX::talkFIFOData

### Syntax

```
int talkFIFOData(int fifoNo, MXDataNo startDataNo =
DAQMX_INSTANTANEOUS, MXDataNo endDataNo =
DAQMX_INSTANTANEOUS);
```

### Parameters

| | |
|---|---|
| fifoNo | Specify the FIFO number. |
| startDataNo | Specify the start data number. |
| endDataNo | Specify the end data number. |

### Description

Declares the retrieval of the measured data. Gets the measured data in the specified data number range. The range that is actually retrieved is not necessarily equal to the specified range. If the data number is omitted, the instantaneous value is retrieved. After executing this function member, use getTimeData to get the time information data for each data number.

Then, use getChData to retrieve the data for each channel within the data number.

### Return value

Returns an error number.

### Reference

```
getNo getPacketVersion getUserTime receivePacket sendPacket
```

# CDAQMXAOPWMData Class

This class stores the AO/PWM data of the MX100.
It is a wrapper class of the MXAOPWMData structure.
It is a group of AO/PWM data from all the channels.
Each data can be accessed by PWM data number or AO data number.
This class can be used as an interface for setting and retrieving AO/PWM data.
This class supports the utility that converts the specified output data values and actual output values.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXAOPWMData | Constructs an object. |
| ~CDAQMXAOPWMData | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXAOPWMData | Gets the data in a structure. |
| setMXAOPWMData | Sets the data in a structure. |
| initMXAOPWMData | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getAOPWMValid | Gets the Boolean value. |
| getAOPWMValue | Gets the output data value. |
| setAOPWM | Sets AO/PWM data. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Utilities

| | |
|---|---|
| toAOPWMValue | Converts the output values to output data values. |
| toRealValue | Converts the output data values to output values. |
| isObject | Checks an object. |

## Protected Members

### Data Members

| | |
|---|---|
| m_MXAOPWMData | The AO/PWM data storage field. |

### Member Access

| | |
|---|---|
| getMXAOPWM | Gets the AO/PWM data structure for each channel. |

## Private Members

None.

## Member Functions

## CDAQMXAOPWMData::CDAQMXAOPWMData

### Syntax

```
CDAQMXAOPWMData(MXAOPWMData * pMXAOPWMData = NULL);
virtual ~CDAQMXAOPWMData(void);
```

### Parameters

pMXAOPWMData  Specify AO/PWM data.

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

`setMXAOPWMData`

## CDAQMXAOPWMData::getAOPWMValid

### Syntax

```
int getAOPWMValid(int aopwmNo);
```

### Parameters

aopwmNo  Specify the AO/PWM data number.

### Description

Gets the Boolean value of the specified data number from the data member.

If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

`getMXAOPWM`

## CDAQMXAOPWMData::getAOPWMValue

### Syntax

```
int getAOPWMValue(int aopwmNo);
```

### Parameters

aopwmNo Specify the AO/PWM data number.

### Description

Gets the output data value of the specified data number from the data member.
Returns 0 if it does not exist.

### Return value

Returns the output data value.

### Reference

`getMXAOPWM`

## CDAQMXAOPWMData::getMXAOPWM

### Syntax

```
MXAOPWM * getMXAOPWM(int aopwmNo);
```

### Parameters

aopwmNo Specify the AO/PWM data number.

### Description

Gets the structure of the specified data number from the data member.
Returns NULL if it does not exist.

### Return value

`Returns a pointer to the structure.`

## CDAQMXAOPWMData::getMXAOPWMData

### Syntax

```
void getMXAOPWMData(MXAOPWMData * pMXAOPWMData);
```

### Parameters

pMXAOPWMData Specify the destination where the AO/PWM data is to be returned.

### Description

Gets the data in a structure.
Stores the contents of the data member in the specified structure.

## CDAQMXAOPWMData::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value as a general rule is 0.

### Reference

`initMXAOPWMData`

## CDAQMXAOPWMData::initMXAOPWMData

### Syntax

```
static void initMXAOPWMData(MXAOPWMData * pMXAOPWMData);
```

### Parameters

pMXAOPWMData Specify AO/PWM data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXAOPWMData::isObject

### Syntax

```
virtual int isObject(const char * classname =
"CDAQMXAOPWMData");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited. If parameters are omitted, checks whether it is this class. Classes that inherit this class must be overridden in order to check their own classes. Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

```
Returns a Boolean value.
```

## CDAQMXAOPWMData::operator=

### Syntax

```
CDAQMXAOPWMData & operator=(CDAQMXAOPWMData & cMXAOPWMData);
```

### Parameters

cMXAOPWMData Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQMXAOPWMData::setAOPWM

### Syntax

```
void setAOPWM(int aopwmNo, int bValid, int iAOPWMValue);
```

### Parameters

| | |
|---|---|
| aopwmNo | Specify the AO/PWM data number. |
| bValid | Specify the Boolean value. |
| iAOPWMValue | Specify the output data value. |

### Description

Stores the specified value in the field indicated by the specified data number of the data member.

If the data number is set to the constant for “Specify All AO/PWM data numbers,” the same value is stored to all data.

### Reference

`getMXAOPWM`

## CDAQMXAOPWMData::setMXAOPWMData

### Syntax

```
void setMXAOPWMData(MXAOPWMData * pMXAOPWMData);
```

### Parameters

| | |
|---|---|
| pMXAOPWMData | Specify AO/PWM data. |

### Description

Sets the data in a structure.

Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

`initMXAOPWMData`

## CDAQMXAOPWMData::toAOPWMValue

### Syntax

```
static int toAOPWMValue(double realValue, int iRangeAOPWM);
```

### Parameters

| | |
|---|---|
| realValue | Specify the output value. |
| iRangeAOPWM | Specify the range type of the AO or PWM range. |

### Description

Converts the output values to output data values according to the specified range type.

Returns 0 if the range type is invalid.

### Return value

Returns the output data value.

## CDAQMXAOPWMData::toRealValue

### Syntax

```
static double toRealValue(int iAOPWMValue, int iRangeAOPWM);
```

### Parameters

iAOPWMValue Specify the output data value.

iRangeAOPWM Specify the range type of the AO or PWM range.

### Description

Converts the output data values to output values according to the specified range type.

Returns 0 if the range type is invalid.

### Return value

Returns the output value.

# CDAQMXBalanceData Class

This class stores the initial balance data of the MX100.
It is a wrapper class of the MXBalanceData structure.
It is a group of initial balance data of all the channels.
Each data can be accessed by initial balance data number. The initial balance number is the number of the strain channel.
This class can be used as an interface for setting and retrieving initial balance data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXBalanceData | Constructs an object. |
| ~CDAQMXBalanceData | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXBalanceData | Gets the data in a structure. |
| setMXBalanceData | Sets the data in a structure. |
| initMXBalanceData | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getBalanceValid | Gets the Boolean value. |
| getBalanceValue | Gets the initial balance value. |
| setBalance | Sets initial balance data. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

## Protected Members

### Data Members

| | |
|---|---|
| m_MXBalanceData | Field for storing the initial balance data. |

### Member Access

| | |
|---|---|
| getMXBalance | Gets the initial balance data structure for each channel. |

## Private Members

None.

## Member Functions

## CDAQMXBalanceData::CDAQMXBalanceData

### Syntax

```
CDAQMXBalanceData(MXBalanceData * pMXBalanceData = NULL);
virtual ~CDAQMXBalanceData(void);
```

### Parameters

pMXBalanceData  Specify initial balance data.

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

`setMXBalanceData`

## CDAQMXBalanceData::getBalanceValid

### Syntax

```
int getBalanceValid(int balanceNo);
```

### Parameters

balanceNo  Specify the initial balance data number.

### Description

Gets the Boolean value of the specified data number from the data member.

If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

`getMXBalance`

## CDAQMXBalanceData::getBalanceValue

### Syntax

```
int getBalanceValue(int balanceNo);
```

### Parameters

balanceNo Specify the initial balance data number.

### Description

Gets the initial balance value of the specified data number from the data member.
Returns 0 if it does not exist.

### Return value

Returns the initial balance value.

### Reference

`getMXBalance`

## CDAQMXBalanceData::getMXBalance

### Syntax

```
MXBalance * getMXBalance(int balanceNo);
```

### Parameters

balanceNo Specify the initial balance data number.

### Description

Gets the structure of the specified data number from the data member.
Returns NULL if it does not exist.

### Return value

Returns a pointer to the structure.

## CDAQMXBalanceData::getMXBalanceData

### Syntax

```
void getMXBalanceData(MXBalanceData * pMXBalanceData);
```

### Parameters

pMXBalanceData Specify the destination where the initial balance data is to be returned.

### Description

Gets the data in a structure.
Stores the contents of the data member in the specified structure.

## CDAQMXBalanceData::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value as a general rule is 0.

### Reference

initMXBalanceData

## CDAQMXBalanceData::isObject

### Syntax

```
virtual int isObject(const char * classname =
“CDAQMXBalanceData”;
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a Boolean value.

## CDAQMXBalanceData::operator=

### Syntax

```
CDAQMXBalanceData & operator=(CDAQMXBalanceData &
cMXBalanceData);
```

### Parameters

cMXBalanceData Specify the data to be substituted using an object.

### Description

Copies the data member from the specified object.

### Return value

Returns the reference to the object.

## CDAQMXBalanceData::setBalance

### Syntax

```
void setBalance(int balanceNo, int bValid, int iBalanceValue);
```

### Parameters

| | |
|---|---|
| balanceNo | Specify the initial balance data number. |
| bValid | Specify the Boolean value. |
| iBalanceValue | Specify the initial balance value. |

### Description

Stores the specified value in the field indicated by the specified data number of the data member.

If the data number is set to the constant for “Specify All initial balance data numbers,”the same value is stored to all data.

### Reference

`getMXBalance`

## CDAQMXBalanceData::setMXBalanceData

### Syntax

```
void setMXBalanceData(MXBalanceData * pMXBalanceData);
```

### Parameters

| | |
|---|---|
| pMXBalanceData | Specify initial balance data. |

### Description

Sets the data in a structure.

Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

`initMXBalanceData`

## CDAQMXBalanceResult::initMXBalanceData

### Syntax

```
static void initMXBalanceData(MXBalanceData * pMXBalanceData);
```

### Parameters

| | |
|---|---|
| pMXBalanceData | Specify the initial balance data field. |

### Description

Initializes the specified field.

The default value as a general rule is 0.

# CDAQMXBalanceResult Class

- **CDAQMXBalanceData**
  - **CDAQMXBalanceResult**

This class stores the initial balance result of the MX100.
It is a wrapper class of the MXBalanceResult structure.
It inherits the CDAQMXBalanceData class, and includes the initial balance data.
It is an group of initial balance results of all the channels.
Each data can be accessed by initial balance data number. The initial balance number is the number of the strain channel.
This class can be used as an interface for specification and results when executing or resetting initial balancing.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXBalanceResult | Constructs an object. |
| ~CDAQMXBalanceResult | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXBalanceResult | Gets the data in a structure. |
| setMXBalanceResult | Sets the data in a structure. |
| initMXBalanceResult | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| getResult | Gets the initial balance result. |
| setResult | Sets the initial balance result. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

- **Overridden Members**

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### Inherited Members

CDAQMXBalanceData Reference

```
getMXBalanceData setMXBalanceData initMXBalanceData
getBalanceValid getBalanceValue setBalance
```

## Protected Members

### Data Members

See also, “Inherited Members.”

m_MXBalanceResult Field for storing the initial balance result.

### Inherited Members

CDAQMXBalanceData Reference

```
getMXBalance m_MXBalanceData
```

## Private Members

None.

## Member Functions

## CDAQMXBalanceResult::CDAQMXBalanceResult

### Syntax

```
CDAQMXBalanceResult(MXBalanceData * pMXBalanceData =
NULL,MXBalanceResult * pMXBalanceResult = NULL);
virtual ~CDAQMXBalanceResult(void);
```

### Parameters

| | |
|---|---|
| pMXBalanceData | Specify initial balance data. |
| pMXBalanceResult | Specify the initial balance result. |

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

```
CDAQMXBalanceData::CDAQMXBalanceData
setMXBalanceResult
```

## CDAQMXBalanceResult::getMXBalanceResult

### Syntax

```
void getMXBalanceResult(MXBalanceResult * pMXBalanceResult);
```

### Parameters

pMXBalanceResult  Specify the destination where the initial balance result is to be returned.

### Description

Gets the data in a structure.

Stores the contents of the data member in the specified structure.

## CDAQMXBalanceResult::getResult

### Syntax

```
int getResult(int balanceNo);
```

### Parameters

balanceNo  Specify the initial balance data number.

### Description

Gets the initial balance result of the specified data number from the data member.

If it does not exist, Unspecified is returned.

### Return value

Returns the initial balance result.

## CDAQMXBalanceResult::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member.

The default value as a general rule is 0.

### Reference

```
initMXBalanceResult
CDAQMXBalanceData::initialize
```

## CDAQMXBalanceResult::initMXBalanceResult

### Syntax

```
static void initMXBalanceResult(MXBalanceResult *
pMXBalanceResult);
```

### Parameters

pMXBalanceResult  Specify the field for the initial balance result.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXBalanceResult::isObject

### Syntax

```
virtual int isObject(const char * classname =
"CDAQMXBalanceResult");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid value) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checked with the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQMXBalanceData::isObject`

## CDAQMXBalanceResult::operator=

### Syntax

```
CDAQMXBalanceResult & operator=(CDAQMXBalanceResult &
cMXBalanceResult);
```

### Parameters

cMXBalanceResult Specify the data to be substituted using an object.

### Description

Copies the data member from the specified object.

### Return value

Returns the reference to the object.

## CDAQMXBalanceResult::setMXBalanceResult

### Syntax

```
void setMXBalanceResult(MXBalanceResult * pMXBalanceResult);
```

### Parameters

pMXBalanceResult  Specify the initial balance result.

### Description

Sets the data in a structure.

Stores the contents in the structure specified in the data member.

If not specified, the data member is initialized.

### Reference

`initMXBalanceResult`

## CDAQMXBalanceResult::setResult

### Syntax

```
void setResult(int balanceNo, int iResult);
```

### Parameters

balanceNo  Specify the initial balance data number.

iResult  Specify the initial balance result.

### Description

Stores the specified value in the field indicated by the specified data number of the data member.

If the data number is set to "Specify All initial balance numbers,Åh the same value is stored in all data.

# CDAQMXChConfig Class

- **CDAQChInfo**
  - **CDAQMXChID**
    - **CDAQMXChConfig**

This class stores the channel setup data of the MX100.
It is a wrapper class of the MXChConfig structure.
This class can be used as an interface for storing setup data by channel when retrieving setup data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXChConfig | Constructs an object. |
| ~CDAQMXChConfig | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXChConfig | Gets the data in a structure. |
| setMXChConfig | Sets the data in a structure. |
| initMXChConfig | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| getSpanMin | Gets the span minimum. |
| getSpanMax | Gets the span maximum. |
| getScaleMin | Gets the scale minimum. |
| getScaleMax | Gets the scale maximum. |
| getRefChNo | Gets the reference channel number. |
| getFilter | Gets the filter coefficient. |
| getRJCType | Gets the RJC type. |
| getRJCVolt | Gets the RJC voltage. |
| getBurnout | Gets the burnout type. |
| isDeenergize | Gets the Boolean value of “de-energize”action of relays. |
| isHold | Gets the Boolean value of “hold”action of relays. |
| isRefAlarm | Gets the reference alarm. |
| isChatFilter | Gets the chattering filter value. |
| setRefChNo | Sets the reference channel number. |
| setFilter | Set the filter coefficient. |
| setBurnout | Sets the burnout type. |
| setRJCType | Sets the RJC type. |
| setAlarm | Sets the alarm value. |
| setDeenergize | Sets the Boolean value of “de-energize”action of relays. |
| setHold | Sets the Boolean value of “hold”action of relays. |
| setRefAlarm | Sets the reference alarm. |
| setChatFilter | Sets the chattering filter. |

### Range Settings

| | |
|---|---|
| setSKIP | Sets SKIP (not used). |
| setVOLT | Sets DC voltage input. |
| setTC | Sets thermocouple input. |
| setRTD | Sets RTD input. |
| setDI | Sets Digital input (DI). |
| setDELTA | Sets difference computation between channels. |
| setSpan | Sets the span. |
| setScalling | Sets the scale. |
| changeRange | Changes the range using the temperature unit type. |
| setRES | Sets the resistance range. |
| setSTRAIN | Sets the strain range. |
| setAO | Sets the AO range. |
| setPWM | Sets the PWM range. |
| setCOM | Sets the communication range. |
| setPULSE | Sets the pulse range. |

### Check

| | |
|---|---|
| isCorrect | Checks the validity. |

### Utilities

| | |
|---|---|
| getItemError | Gets number of the parameter on which error was detected. |
| getRangePoint | Gets the decimal point position of the range type. |
| getRangeMin | Gets minimum value of the setting range of the range type. |
| getRangeMax | Gets maximum value of the setting range of the range type. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

- **Overridden Members**

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

- **Inherited Members**

See CDAQChInfo.
getChNo getPoint setChNo setPoint
CDAQMXChIDReference
`getAlarmType getAlarmValueOFF getAlarmValueON getChName getChType getComment getKind getMXChID getRange getScale getTag getUnit isValid setAlarmValue setComment setChType setMXChID setTag setType setUnit setValid toChName toChNo toUnitNo`

## Protected Members

### Data Members

| | |
|---|---|
| m_MXChConfigAIDI | Field for storing AI and DI setup data. |
| m_MXChConfigAI | Field for storing AI setup data. |
| m_MXChConfigDO | Field for storing DO setup data. |
| m_nItemError | Field for storing the setting item number. |

### Inherited Members

See CDAQChInfo.

```
m_chNo m_chType m_point
```

CDAQMXChIDReference

```
m_alarm m_comment m_kind m_range m_scaleType m_tag m_unit
m_valid
```

getMXAlarm

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXChConfig::CDAQMXChConfig

### Syntax

```
CDAQMXChConfig(MXChConfig * pMXChConfig = NULL);
virtual ~CDAQMXChConfig(void);
```

### Parameters

pMXChConfig  Specify the channel setup data.

### Description

Constructs or destructs an object.

When constructing, the specified data is stored in the data member. If not specified, the data member is initialized.

### Reference

```
setMXChConfig
```

## CDAQMXChConfig::changeRange

### Syntax

```
void changeRange(int iTempUnit);
```

### Parameters

iTempUnit Specify the temperature unit type.

### Description

Changes the range using the temperature unit type.

The settings of the thermocouple input and RTD input are set to default values.

The span, scale, decimal point position, unit name, and reference channel number become the rated values. The alarm setting is initialized (cleared).

### Reference

```
getRange setRTD setTC
```

## CDAQMXChConfig::getBurnout

### Syntax

```
int getBurnout(void);
```

### Description

Gets the burnout value from the AI setup data field of the data member.

### Return value

Returns the burnout value.

## CDAQMXChConfig::getFilter

### Syntax

```
int getFilter(void);
```

### Description

Gets the filter coefficient value from the AI setup data field of the data member.

### Return value

Returns the filter time constant.

## CDAQMXChConfig::getItemError

### Syntax

```
int getItemError(void);
```

### Description

Gets the value of the setting item number field of the data member.

### Return value

Returns the setting item number.

## CDAQMXChConfig::getMXChConfig

### Syntax

```
void getMXChConfig(MXChConfig * pMXChConfig);
```

### Parameters

| | |
|---|---|
| pMXChConfig | Specify the destination where the channel setup data is to be returned. |

### Description

Gets the data in a structure.

Stores the contents of the data member in the specified structure.

### Reference

`getMXChID`

## CDAQMXChConfig::getRangeMax

### Syntax

```
static int getRangeMax(int iRange, int iTempUnit =
DAQMX_TEMPUNIT_C);
```

### Parameters

| | |
|---|---|
| iRange | Specify the range type. |
| iTempUnit | Specify the temperature unit type. |

### Description

Gets the maximum value of the setting range of the specified range type.

Specify the detailed range of the digital input.

Returns 0 if the designation is unknown.

The value returned is the value without the decimal places.

### Return value

`Returns the maximum value of the range setting.`

## CDAQMXChConfig::getRangeMin

### Syntax

```
static int getRangeMin(int iRange, int iTempUnit =
DAQMX_TEMPUNIT_C);
```

### Parameters

| | |
|---|---|
| iRange | Specify the range type. |
| iTempUnit | Specify the temperature unit type. |

### Description

Gets the minimum value of the setting range of the specified range type.

Specify the detailed range of the digital input.

Returns 0 if the designation is unknown.

The value returned is the value without the decimal places.

### Return value

Returns the minimum value of the range setting.

## CDAQMXChConfig::getRangePoint

### Syntax

```
static int getRangePoint(int iRange, int iTempUnit =
DAQMX_TEMPUNIT_C);
```

### Parameters

| | |
|---|---|
| iRange | Specify the range type. |
| iTempUnit | Specify the temperature unit type. |

### Description

Gets the decimal point position of the specified range type.

Specify the detailed range of the digital input.

Returns 0 if the designation is unknown.

### Return value

Returns the decimal point position.

## CDAQMXChConfig::getRefChNo

### Syntax

```
int getRefChNo(void);
```

### Description

Gets the reference channel number from the AI and DI setup data field of the data member.

### Return value

Returns the reference channel number.

## CDAQMXChConfig::getRJCType

### Syntax

```
int getRJCType(void);
```

### Description

Gets the RJC type value from the AI setup data field of the data member.

### Return value

Returns the RJC type.

## CDAQMXChConfig::getRJCVolt

### Syntax

```
int getRJCVolt(void);
```

### Description

Gets the RJC voltage value from the AI setup data field of the data member.

### Return value

Returns the RJC voltage.

## CDAQMXChConfig::getScaleMax

### Syntax

```
int getScaleMax(void);
```

### Description

Gets the scale maximum from the AI and DI setup data field of the data member.

### Return value

Returns the scale maximum.

## CDAQMXChConfig::getScaleMin

### Syntax

```
int getScaleMin(void);
```

### Description

Gets the scale minimum from the AI and DI setup data field of the data member.

### Return value

Returns the scale minimum.

## CDAQMXChConfig::getSpanMax

### Syntax

```
int getSpanMax(void);
```

### Description

Gets the maximum value of span from the AI and DI setup data field of the data member.

### Return value

Returns the span maximum.

## CDAQMXChConfig::getSpanMin

### Syntax

```
int getSpanMin(void);
```

### Description

Gets the minimum value of span from the AI and DI setup data field of the data member.

### Return value

Returns the span minimum.

## CDAQMXChConfig::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value as a general rule is 0.

### Reference

`CDAQMXChID::initialize`

## CDAQMXChConfig::initMXChConfig

### Syntax

```
static void initMXChConfig(MXChConfig * pMXChConfig);
```

### Parameters

pMXChConfig  Specify the channel setup data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXChConfig::isChatFilter

### Syntax

```
int isChatFilter(void);
```

### Description

Gets the chattering filter value from the setup data storage field of the data member.

The value of 0 is invalid; other values are valid.

### Return value

Returns a Boolean value.

## CDAQMXChConfig::isCorrect

### Syntax

```
int isCorrect(int iTempUnit = DAQMX_TEMPUNIT_C);
```

### Parameters

iTempUnit Specify the temperature unit type.

### Description

Checks the validity.

Checks each setting item according to the channel type.

If an invalid value is detected, Invalid is returned.

If an invalid value is detected, the setting item number than indicates the detected location is stored in the setting item number field of the data member.

### Return value

Returns a Boolean value.

### Reference

```
getAlarmType getAlarmValueOFF getAlarmValueON getBurnout
getErrorChoice getFilter getIdleChoice getKind getPoint
getPresetValue getPulseTime getRange getRJCType getRJCVolt
getScale getScaleMax getScaleMin getSpanMax getSpanMin isValid
```

## CDAQMXChConfig::isDeenergize

### Syntax

```
int isDeenergize(void);
```

### Description

Gets the de-energized action value from the DO setup data field of the data member.

The value of 0 is invalid; other values are valid.

### Return value

Returns a Boolean value.

## CDAQMXChConfig::isHold

### Syntax

int isHold(void);

### Description

Gets the hold action value from the DO setup data field of the data member.

The value of 0 is invalid; other values are valid.

### Return value

Returns a Boolean value.

## CDAQMXChConfig::isObject

### Syntax

```
virtual int isObject(const char * classname =
"CDAQMXChConfig");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQMXChID::isObject`

## CDAQMXChConfig::isRefAlarm

### Syntax

```
unsigned char isRefAlarm(int refChNo, int levelNo);
```

### Parameters

| | |
|---|---|
| refChNo | Specify the reference channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified reference alarm value from the DO setup data field of the data member.

The value of 0 is invalid; other values are valid.

Returns Invalid if the designation is outside the range.

### Return value

Returns a Boolean value.

## CDAQMXChConfig::operator=

### Syntax

```
CDAQMXChConfig & operator=(CDAQMXChConfig & cMXChConfig);
```

### Parameters

cMXChConfig Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

### Reference

```
getMXChConfig setMXChConfig
```

## CDAQMXChConfig::setAlarm

### Syntax

```
void setAlarm(int levelNo, int iAlarmType, int value, int
histerisys = 0);
```

### Parameters

| | |
|---|---|
| levelNo | Specify the alarm level. |
| iAlarmType | Specify the alarm type. |
| value | Specify the alarm value. |
| histerisys | Specify the hysteresis. |

### Description

Stores the specified value in the alarm field of the data member.

Generates the threshold level for alarm activation (ON value) and the threshold level for alarm termination (Off value) from the alarm value and hysteresis.

If the alarm type is not allowed per the previously set channel type, it is ignored.

### Reference

```
getkind setAlarmValue
```

## CDAQMXChConfig::setAO

### Syntax

```
void setAO(int iRangeAO);
```

### Parameters

iRangeAO Specify the AO range type.

### Description

Sets the specified range.

Makes the channel status valid.

The settings are set to the default values of the specified range type.

Holds the reference channel number according to the previously set channel type.

For command AO channels, the reference channel number is the “undefined reference channel number.”

Any channels other than the AO range are ignored. If AO or command AO channels are unspecified, they are ignored.

The span, scale, decimal point position, and unit name are set to the default values.

The alarm setting is initialized (cleared).

### Reference

```
getKind getRefChNo setAlarm setPoint setRefChNo setScalling
setSpan setType setUnit setValid
```

## CDAQMXChConfig::setBurnout

### Syntax

```
void setBurnout(int iBurnout);
```

### Parameters

iBurnout Specify the burnout value.

### Description

Stores the specified value in the AI setup data field of the data member.

## CDAQMXChConfig::setChatFilter

### Syntax

```
void setChatFilter(int bChatFilter);
```

### Parameters

bChatFilter Specify chattering filter using a Boolean value.

### Description

Stores the specified value in the AI or DI setup data field of the data member.

## CDAQMXChConfig::setCOM

### Syntax

```
void setCOM(int iRangeCOM);
```

### Parameters

iRangeCOM Specify the communication range from the range type.

### Description

Sets the specified range.

Makes the channel status valid.

The settings are set to the default values of the specified range type.

The channel type is set to the CAN Bus input.

Any channels other than the communication range are ignored.

The span, scale, decimal point position, and reference channel number are set to the default values.

The alarm setting is initialized (cleared).

### Reference

```
setAlarm setPoint setRefChNo setScalling setSpan setType
setUnit setValid
```

## CDAQMXChConfig::setDeenergize

### Syntax

```
void setDeenergize(int bDeenergize);
```

### Parameters

bDeenergize Specify the de-energize action using a Boolean value.

### Description

Stores the specified value in the DO setup data field of the data member.

## CDAQMXChConfig::setDELTA

### Syntax

```
void setDELTA(int refChNo, int iRange, int iTempUnit =
DAQMX_TEMPUNIT_C);
```

### Parameters

| | |
|---|---|
| refChNo | Specify the reference channel number. |
| iRange | Specify the range type. |
| iTempUnit | Specify the temperature unit type. |

### Description

Sets the specified range.

Makes the channel status valid. The settings are set to the default values of the specified range type.

The channel types for the API before R3.01 are AI (difference between channels) or DI (difference between channels). The API R3.01 or later supports Pulse input (difference between channels) and CAN Bus input (difference between channels).

Specify the range type independently without using reference ranges. For the digital input (DI), it must be a digital input (DI) detailed range.

Any specification other than the input range is ignored.

The span, scale, decimal point position, unit name, and reference channel are set to the default values.

The alarm setting is initialized (cleared).

### Reference

```
setAlarm setPoint setRefChNo setScalling setSpan setType
setUnit setValid
```

## CDAQMXChConfig::setDI

### Syntax

```
void setDI(int iRangeDI);
```

### Parameters

| | |
|---|---|
| iRangeDI | Specify the range type of the digital input (DI) detailed range. |

### Description

Sets the specified range.

Makes the channel status valid. The settings are set to the default values of the specified range type.

The channel type is set to DI.

Any specification other than the digital input detailed range is ignored.

The span, scale, decimal point position, unit name, and reference channel are set to the default values.

The alarm setting is initialized (cleared).

### Reference

```
setAlarm setPoint setRefChNo setScalling setSpan setType
setUnit setValid
```

## CDAQMXChConfig::setFilter

### Syntax

```
void setFilter(int iFilter);
```

### Parameters

iFilter Specify the filter coefficient.

### Description

Stores the specified value in the AI setup data field of the data member.

## CDAQMXChConfig::setHold

### Syntax

```
void setHold(int bHold);
```

### Parameters

bHold Specify the hold action using a Boolean value.

### Description

Stores the specified value in the DO setup data field of the data member.

## CDAQMXChConfig::setMXChConfig

### Syntax

```
void setMXChConfig(MXChConfig * pMXChConfig);
```

### Parameters

pMXChConfig Specify the channel setup data.

### Description

Sets the data in a structure. Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

```
initialize setMXChID
```

## CDAQMXChConfig::setPULSE

### Syntax

```
void setPULSE(int iRangePULSE);
```

### Parameters

iRangePULSE  Specify the pulse range from the range type.

### Description

Sets the specified range.

Makes the channel status valid.

The settings are set to the default values of the specified range type.

The channel type is set to the pulse input.

Any channels other than the pulse range are ignored.

The span, scale, decimal point position, and reference channel number are set to the default values.

The alarm setting is initialized (cleared).

### Reference

```
setAlarm setPoint setRefChNo setScalling setSpan setType
setUnit setValid
```

## CDAQMXChConfig::setPWM

### Syntax

```
void setPWM(int iRangePWM);
```

### Parameters

iRangePWM  Specify the PWM range type.

### Description

Sets the specified range.

Makes the channel status valid.

The settings are set to the default values of the specified range type.

Holds the reference channel number according to the previously set channel type.

For command PWM channels, the reference channel number is the “undefined reference channel number.”

Any specification other than the PWM range is ignored. If PWM or command PWM channels are unspecified, they are ignored.

The span, scale, decimal point position, and unit name are set to the default values.

The alarm setting is initialized (cleared).

### Reference

```
getKind getRefChNo setAlarm setPoint setRefChNo setScalling
setSpan setType setUnit setValid
```

## CDAQMXChConfig::setRefAlarm

### Syntax

```
void setRefAlarm(int refChNo, int levelNo, int bValid);
```

### Parameters

| | |
|---|---|
| refChNo | Specify the reference channel number. |
| levelNo | Specify the alarm level. |
| bValid | Specify the Boolean value. |

### Description

Stores the specified value in the DO setup data field of the data member.
If the constant for “Specify all reference channel numbers”is specified for the channel numbers to be referenced, the value is stored for all the channels.
If the “Specify all alarm level numbers”constant is specified for the alarm level, the value is stored for all alarm levels.

## CDAQMXChConfig::setRefChNo

### Syntax

```
void setRefChNo(int refChNo);
```

### Parameters

| | |
|---|---|
| refChNo | Specify the reference channel number. |

### Description

Stores the specified value in the AI and DI setup data fields of the data member.
Channel numbers other than its own range are ignored.
If no reference channels exist for the specification, the constant for “Undefined reference channel numbers”is specified.

## CDAQMXChConfig::setRES

### Syntax

```
void setRES(int iRangeRES);
```

### Parameters

iRangeRES Specify the range type of the resistance range.

### Description

Sets the specified range.

Makes the channel status valid.

The settings are set to the default values of the specified range type.

The channel type is set to AI.

Any specification other than the resistance range is ignored.

The span, scale, decimal point position, unit name, and reference channel are set to the default values.

The alarm setting is initialized (cleared).

### Reference

```
setAlarm setPoint setRefChNo setScalling setSpan setType
setUnit setValid
```

## CDAQMXChConfig::setRJCType

### Syntax

```
void setRJCType(int iRJCType, int volt = 0);
```

### Parameters

iRJCType Specify the RJC type.

volt Specify the RJC voltage.

### Description

Stores the specified value in the AI setup data field of the data member.

## CDAQMXChConfig::setRTD

### Syntax

```
void setRTD(int iRangeRTD, int iTempUnit = DAQMX_TEMPUNIT_C);
```

### Parameters

| | |
|---|---|
| iRangeRTD | Specify the range type of the RTD input. |
| iTempUnit | Specify the temperature unit type. |

### Description

Sets the specified range.

Makes the channel status valid. The settings are set to the default values of the specified range type.

The channel type is set to the value of AI.

Any specification other than the RTD range is ignored.

The span, scale, decimal point position, unit name, and reference channel are set to the default values. The alarm setting is initialized (cleared).

### Reference

```
setAlarm setPoint setRefChNo setScalling setSpan setType
setUnit setValid
```

## CDAQMXChConfig::setScalling

### Syntax

```
void setScalling(int scaleMin, int scaleMax, int scalePoint,
int iTempUnit = DAQMX_TEMPUNIT_C);
```

### Parameters

| | |
|---|---|
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position. |
| iTempUnit | Specify the temperature unit type. |

### Description

Stores the specified value in the AI and DI setup data fields of the data member.

Sets the scale type to Linear.

Checks the value according to the range type and channel type that are already set.

If the maximum and minimum values are the same, the scale type is set to None.

The decimal point position is set to the default value.

AI (remote RJC), DO, AO, PWM, and other channel types on which the scale cannot be set are ignored.

### Reference

```
getKind setPoint getRange getRangePoint setType
```

## CDAQMXChConfig::setSKIP

### Syntax

```
void setSKIP(void);
```

### Description

Sets SKIP (not used).

Makes the channel status invalid.

### Reference

```
setValid
```

## CDAQMXChConfig::setSpan

### Syntax

```
void setSpan(int spanMin, int spanMax, int iTempUnit =
DAQMX_TEMPUNIT_C);
```

### Parameters

| | |
|---|---|
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| iTempUnit | Specify the temperature unit type. |

### Description

Stores the specified value in the AI and DI setup data fields of the data member.
Checks the value according to the range type and channel type that are already set.
If the maximum and minimum values are equal, the value is not stored. If the value is outside the range, it is rounded to a valid value.
If the maximum and minimum values are reversed for the AO/PWM channels, they are ignored.

### Reference

```
getKind getRange
```

## CDAQMXChConfig::setSTRAIN

### Syntax

```
void setSTRAIN(int iRangeSTR);
```

### Parameters

| | |
|---|---|
| iRangeSTR | Specify the strain range type. |

### Description

Sets the specified range.
Makes the channel status valid.
The settings are set to the default values of the specified range type.
The channel type is set to AI.
Any specification other than the strain range is ignored.
The span, scale, decimal point position, unit name, and reference channel are set to the default values.
The alarm setting is initialized (cleared).

### Reference

```
setAlarm setPoint setRefChNo setScalling setSpan setType
setUnit setValid
```

## CDAQMXChConfig::setTC

### Syntax

```
void setTC(int iRangeTC, int iTempUnit = DAQMX_TEMPUNIT_C);
```

### Parameters

iRangeTC Specify the range type of the thermocouple input.

iTempUnit Specify the temperature unit type.

### Description

Sets the specified range.

Makes the channel status valid. The settings are set to the default values of the specified range type.

The channel type is set to the value of AI.

Any specification other than the TC range is ignored.

The span, scale, decimal point position, unit name, and reference channel are set to the default values.

The alarm setting is initialized (cleared).

### Reference

```
setAlarm setPoint setRefChNo setScalling setSpan setType
setUnit setValid
```

## CDAQMXChConfig::setVOLT

### Syntax

```
void setVOLT(int iRangeVOLT);
```

### Parameters

iRangeVOLT Specify the range type of the DC voltage input.

### Description

Sets the specified range.

Makes the channel status valid. The settings are set to the default values of the specified range type.

The channel type is set to the value of AI.

Any specification other than the DC voltage range is ignored.

The span, scale, decimal point position, unit name, and reference channel are set to the default values.

The alarm setting is initialized (cleared).

### Reference

```
setAlarm setPoint setRefChNo setScalling setSpan setType
setUnit setValid
```

# CDAQMXChConfigData class

This class stores the channel setup data of all the channels of the MX100.
It is a wrapper class of the MXChConfigData structure.
This class can be used as an interface for storing setup data for all channels when retrieving setup data.
This class is a group of all channels of the CDAQMXChConfig class.
It implements any processing required for the between-channel association information.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXChConfigData | Constructs an object. |
| ~CDAQMXChConfigData | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXChConfigData | Gets the data in a structure. |
| setMXChConfigData | Sets the data in a structure. |
| initMXChConfigData | Initializes the data in a structure. |
| setMXChConfig | Sets the data in a structure for each channel. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getClassMXChConfig | Gets the data for each channel. |

### Range Settings

| | |
|---|---|
| setRRJC | Sets remote RJC. |
| changeRange | Changes the range using the temperature unit type. |

### Check

| | |
|---|---|
| isCorrect | Checks the validity. |

### Utilities

| | |
|---|---|
| getItemError | Gets the number of the parameter on which an error was detected. |
| isObject | Checks an object. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

## Protected Members

### Data Members

| | |
|---|---|
| m_cMXChConfig | Field for storing the channel setup data of all the channels. |
| m_pcMXChConfig | Head pointer of the field for storing the channel setup data of all the channels. |
| m_nItemError | Field for storing the setting item number. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXChConfigData::CDAQMXChConfigData

### Syntax

```
CDAQMXChConfigData(MXChConfigData * pMXChConfigData = NULL);
virtual ~CDAQMXChConfigData(void);
```

### Parameters

pMXChConfigData Specify the channel setup data for all channels.

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

`setMXChConfigData`

## CDAQMXChConfigData::changeRange

### Syntax

```
void changeRange(int iTempUnit);
```

### Parameters

iTempUnit Specify the temperature unit type.

### Description

Changes the range using the temperature unit type.

The settings of the thermocouple input and RTD input are set to default values.

All channels are changed collectively.

### Reference

`CDAQMXChConfig::changeRange`

## CDAQMXChConfigData::getClassMXChConfig

### Syntax

```
CDAQMXChConfig * getClassMXChConfig(int chNo);
```

### Parameters

chNo Specify the channel number.

### Description

Gets from the data member the channel setup data field corresponding to the specified channel number as an object.

Returns NULL if it does not exist.

### Return value

Returns the reference to the object.

## CDAQMXChConfigData::getItemError

### Syntax

```
int getItemError(void);
```

### Description

Gets the value of the setting item number field of the data member.

### Return value

Returns the setting item number.

## CDAQMXChConfigData::getMXChConfigData

### Syntax

```
void getMXChConfigData(MXChConfigData * pMXChConfigData);
```

### Parameters

pMXChConfigData Specify the destination where the channel setup data is to be returned.

### Description

Gets the data in a structure. Stores the contents of the data member in the specified structure.

### Reference

`CDAQMXChConfig::getMXChConfig`

## CDAQMXChConfigData::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value as a general rule is 0.

### Reference

`CDAQMXChConfig::initialize`

## CDAQMXChConfigData::initMXChConfigData

### Syntax

```
static void initMXChConfigData(MXChConfigData *
pMXChConfigData);
```

### Parameters

pMXChConfig Specify the field for the channel setup data for all channels.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXChConfigData::isCorrect

### Syntax

```
int isCorrect(int iTempUnit = DAQMX_TEMPUNIT_C);
```

### Parameters

iTempUnit Specify the temperature unit type.

### Description

Checks the validity.

All channels are checked collectively.

Checks the associations between channels.

If an invalid value is detected, Invalid is returned.

If an invalid value is detected, the setting item number that indicates the detected location is stored in the setting item number field of the data member.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMXChConfig::getItemError CDAQMXChConfig::getKind
CDAQMXChConfig::getRange CDAQMXChConfig::getRefChNo
CDAQMXChConfig::isCorrect CDAQMXChConfig::isValid
```

## CDAQMXChConfigData::isObject

### Syntax

```
virtual int isObject(const char * classname =
"CDAQMXChConfigData");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a Boolean value.

## CDAQMXChConfigData::operator=

### Syntax

```
CDAQMXChConfigData & operator=(CDAQMXChConfigData &
cMXChConfigData);
```

### Parameters

cMXChConfigData Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQMXChConfigData::setMXChConfig

### Syntax

```
void setMXChConfig(MXChConfig * pMXChConfig);
```

### Parameters

pMXChConfig Specify the channel setup data.

### Description

Sets the data in a structure.

Stores the contents of the specified structure to the data member field corresponding to the channel number within the specified structure. If the corresponding data member field does not exist, the function does nothing.

### Reference

```
getClassMXChConfig
CDAQMXChConfig::setMXChConfig
```

## CDAQMXChConfigData::setMXChConfigData

### Syntax

```
void setMXChConfigData(MXChConfigData * pMXChConfigData);
```

### Parameters

pMXChConfigData  Specify the channel setup data for all channels.

### Description

Sets the data in a structure. Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

```
initialize
CDAQMXChConfig::setMXChConfig
```

## CDAQMXChConfigData::setRRJC

### Syntax

```
void setRRJC(int chNo, int refChNo);
```

### Parameters

chNo  Specify the channel number.

refChNo  Specify the reference channel number.

### Description

Sets remote RJC.

The measurement range is set to the same range as the specified reference channel.

Copies the contents of the reference channel and overwrites the channel number, channel type, and reference channel number.

The channel type is set to AI (remote RJC).

The scale type is set to NONE.

If the channel is not for the thermocouple input, the function does nothing.

The alarm setting is initialized.

### Reference

```
getClassMXChConfig
CDAQMXChConfig::getKind CDAQMXChConfig::getRange
CDAQMXChConfig::isValid CDAQMXChConfig::setAlarm
CDAQMXChConfig::setChNo CDAQMXChConfig::setRefChNo
CDAQMXChConfig::setType
```

# CDAQMXChID Class

- **CDAQChInfo**
  - **CDAQMXChID**

This class stores the channel ID information of the MX100.
It is a wrapper class of the MXChID structure.
This is the common section of the channel information data and channel setup data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXChID | Constructs an object. |
| ~CDAQMXChID | Destructs an object. |
| initMXChID | Initializes the data in a structure. |

### Structure Manipulation

| | |
|---|---|
| getMXChID | Gets the data in a structure. |
| setMXChID | Sets the data in a structure. |
| initMXChID | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| isValid | Gets the channel status. |
| getKind | Gets the channel type. |
| getRange | Gets the range type. |
| getScale | Gets the scale type. |
| getUnit | Gets the unit name. |
| getTag | Gets the tag. |
| getComment | Gets the comment. |
| getAlarmType | Gets the alarm type. |
| getAlarmValueON | Gets the ON value. |
| getAlarmValueOFF | Gets the OFF value. |
| setValid | Sets the channel status. |
| setType | Sets the channel type, range type, and scale type. |
| setUnit | Sets the unit name. |
| setTag | Sets the tag. |
| setComment | Sets the comment. |
| setAlarmValue | Sets the alarm value. |

### Utilities

| | |
|---|---|
| getChName | Gets the channel name. |
| toChName | Creates the channel name. |
| toChNo | Extracts the channel number from the channel name. |
| toUnitNo | Extracts the unit number from the channel name. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Overridden Members

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getChType | Gets the channel type. |
| setChType | Set the channel type. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### Inherited Members

See CDAQChInfo.

getChNo getPoint setChNo setPoint

## Protected Members

### Data Members

| | |
|---|---|
| m_valid | Field for storing the channel status. |
| m_kind | Field for storing the channel type. |
| m_range | Field for storing the range type. |
| m_scaleType | Field for storing the scale type. |
| m_unit | Field for storing the unit name. |
| m_tag | Field for storing the tag. |
| m_comment | Field for storing the comment. |
| m_alarm | Field for storing the alarm. |

### Member Access

| | |
|---|---|
| getMXAlarm | Gets the alarm information structure for each alarm level. |

### Inherited Members

See CDAQChInfo.

m_chNo m_chType m_point

## Private Members

None.

## Member Functions

## CDAQMXChID::CDAQMXChID

### Syntax

```
CDAQMXChID(MXChID * pMXChID = NULL);
virtual ~CDAQMXChID(void);
```

### Parameters

pMXChID  Specify the channel ID information.

### Description

Constructs or destructs an object. When constructing, the specified data is stored in the data member. If not specified, the data member is initialized.

### Reference

`setMXChID`

## CDAQMXChID::getAlarmType

### Syntax

```
int getAlarmType(int levelNo);
```

### Parameters

levelNo  Specify the alarm level.

### Description

Gets the alarm type of the specified alarm level from the alarm field of the data member.

Returns DAQMX_ALARM_NONE if it does not exist.

### Return value

Returns the alarm type.

### Reference

`getMXAlarm`

## CDAQMXChID::getAlarmValueOFF

### Syntax

```
int getAlarmValueOFF(int levelNo);
```

### Parameters

levelNo  Specify the alarm level.

### Description

Gets the threshold level for alarm termination (OFF value) of the specified alarm level from the alarm field of the data member. Returns 0 if the alarm level is outside the range.

### Return value

Returns the threshold level (OFF value) for alarm termination.

### Reference

`getMXAlarm`

## CDAQMXChID::getAlarmValueON

### Syntax

```
int getAlarmValueON(int levelNo);
```

### Parameters

levelNo  Specify the alarm level.

### Description

Gets the threshold level for alarm generation (ON value) of the specified alarm level from the alarm field of the data member.

Returns 0 if the alarm level is outside the range.

### Return value

Returns the threshold level (On value) for alarm activation.

### Reference

`getMXAlarm`

## CDAQMXChID::getChName

### Syntax

```
int getChName(int unitno = 0);
```

### Parameters

unitno  Specify the unit number.

### Description

Creates the channel name from the channel number and specified unit number of the data member.

### Return value

Returns the channel name.

### Reference

`getChNo toChName`

## CDAQMXChID::getChType

### Syntax

```
virtual int getChType(void);
```

### Description

Gets the channel type field from the data member.

Always returns 0, since the channel type is 0.

### Return value

Returns the channel type.

## CDAQMXChID::getComment

### Syntax

```
const char * getComment(void);
```

### Description

Gets the comment in the comment field from the data member.

### Return value

Returns a pointer to the string.

## CDAQMXChID::getKind

### Syntax

```
int getKind(void);
```

### Description

Gets the value of the channel type field from the data member.

### Return value

Returns the channel type.

## CDAQMXChID::getMXAlarm

### Syntax

```
MXAlarm * getMXAlarm(int levelNo);
```

### Parameters

| | |
|---|---|
| levelNo | Specify the alarm level. |

### Description

Gets the structure of the specified alarm level from the alarm field of the data member.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the structure.

## CDAQMXChID::getMXChID

### Syntax

```
void getMXChID(MXChID * pMXChID);
```

### Parameters

| | |
|---|---|
| pMXChID | Specify the destination where the channel ID information is to be returned. |

### Description

Gets the data in a structure. Stores the contents of the data member in the specified structure.

### Reference

```
getChNo getComment getKind getPoint getRange getScale getTag
getUnit isValid
```

## CDAQMXChID::getRange

### Syntax

```
int getRange(void);
```

### Description

Gets the range type field from the data member.

### Return value

Returns the range type.

## CDAQMXChID::getScale

### Syntax

```
int getScale(void);
```

### Description

Gets the scale type field from the data member.

### Return value

Returns the scale type.

## CDAQMXChID::getTag

### Syntax

```
const char * getTag(void);
```

### Description

Gets the tag in the tag field from the data member.

### Return value

Returns a pointer to the string.

## CDAQMXChID::getUnit

### Syntax

```
const char * getUnit(void);
```

### Description

Gets unit name of the unit name field from the data member.

### Return value

Returns a pointer to the string.

## CDAQMXChID::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value as a general rule is 0.

### Reference

`CDAQChInfo::initialize`

## CDAQMXChID::initMXChID

### Syntax

```
static void initMXChID(MXChID * pMXChID);
```

### Parameters

pMXChID Specify the channel ID information field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXChID::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMXChID");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQChInfo::isObject`

## CDAQMXChID::isValid

### Syntax

```
int isValid(void);
```

### Description

Gets the channel status field from the data member.

The value of 0 is invalid; other values are valid.

### Return value

Returns a Boolean value.

## CDAQMXChID::operator=

### Syntax

```
CDAQMXChID & operator=(CDAQMXChID & cMXChID);
```

### Parameters

| | |
|---|---|
| cMXChID | Specify an object for substitution. |

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

### Reference

```
getMXChID setMXChID
```

## CDAQMXChID::setAlarmValue

### Syntax

```
void setAlarmValue(int levelNo, int iAlarmType =
DAQMX_ALARM_NONE, int valueON = 0, int valueOFF = 0);
```

### Parameters

| | |
|---|---|
| levelNo | Specify the alarm level. |
| iAlarmType | Specify the alarm type. |
| valueON | Specify the threshold level (ON value) for alarm activation. |
| valueOFF | Specify the threshold level (OFF value) for alarm termination. |

### Description

Stores the specified value in the alarm field of the data member.

If the “Specify all alarm levels” constant is specified for the alarm level, the same value is stored for all alarm levels.

## CDAQMXChID::setChType

### Syntax

```
virtual void setChType(int chType);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |

### Description

Stores the channel type field of the data member to the specified value.

Since the channel type is 0, this function does nothing.

## CDAQMXChID::setComment

### Syntax

```
void setComment(const char * strComment);
```

### Parameters

strComment Specify the comment.

### Description

Stores the specified value in the comment field of the data member.

## CDAQMXChID::setMXChID

### Syntax

```
void setMXChID(MXChID * pMXChID);
```

### Parameters

pMXChID Specify the channel ID information.

### Description

Sets the data in a structure. Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

```
initialize setChNo setComment setPoint setTag setType setUnit
setValid
```

## CDAQMXChID::setTag

### Syntax

```
void setTag(const char * strTag);
```

### Parameters

strTag Specify the tag.

### Description

Stores the specified value in the tag field of the data member.

## CDAQMXChID::setType

### Syntax

```
void setType(int iKind, int iRange, int iScale =
DAQMX_SCALE_NONE);
```

### Parameters

| | |
|---|---|
| iKind | Specify the channel type. |
| iRange | Specify the range type. |
| iScale | Specify the scale type. |

### Description

Stores the specified values in the channel type field, range type field, and scale type field of the data member.

## CDAQMXChID::setUnit

### Syntax

```
void setUnit(const char * strUnit);
```

### Parameters

| | |
|---|---|
| strUnit | Specify the unit name. |

### Description

Stores the specified value in the unit name field of the data member.

## CDAQMXChID::setValid

### Syntax

```
void setValid(int bValid);
```

### Parameters

| | |
|---|---|
| bValid | Specify the Boolean value. |

### Description

Stores the specified value in the channel status field of the data member.

## CDAQMXChID::toChName

### Syntax

```
static int toChName(int chno, int unitno = 0);
```

### Parameters

| | |
|---|---|
| chno | Specify the channel number. |
| unitno | Specify the unit number. |

### Description

Creates the channel name from the specified channel number and unit number.

### Return value

Returns the channel name.

## CDAQMXChID::toChNo

### Syntax

```
static int toChNo(int chname);
```

### Parameters

chname Specify the channel name.

### Description

Separates the channel number from the specified channel name.

### Return value

Returns the channel number.

## CDAQMXChID::toUnitNo

### Syntax

```
static int toUnitNo(int chname);
```

### Parameters

chname Specify the channel name.

### Description

Separates the unit number from the specified channel name.

### Return value

Returns the unit number.

# CDAQMXChInfo Class

- **CDAQChInfo**
  - **CDAQMXChID**
    - **CDAQMXChInfo**

This class stores the channel information data of the MX100.
It is a wrapper class of the MXChInfo structure.
Reference minimum and maximum values are not used.
This class can be used as an interface for storing channel information data when retrieving channel information data.
Measured data is easier to handle when associated with the measured data class.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXChInfo | Constructs an object. |
| ~CDAQMXChInfo | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXChInfo | Gets the data in a structure. |
| setMXChInfo | Sets the data in a structure. |
| initMXChInfo | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| getFIFONo | Gets the FIFO number. |
| getFIFOIndex | Gets the channel sequence number in the FIFO. |
| getOriginalMin | Gets the reference minimum value.* |
| getOriginalMax | Gets the reference maximum value.* |

* The reference minimum/maximum values are currently not used.

| | |
|---|---|
| getDisplayMin | Gets the display minimum value. |
| getDisplayMax | Gets the display maximum value. |
| getRealMin | Gets the measurable minimum value. |
| getRealMax | Gets the measurable maximum value. |
| setFIFONo | Sets the FIFO number. |
| setFIFOIndex | Sets the channel sequence number in the FIFO. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Overridden Members

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### Inherited Members

See CDAQChInfo.

getChNo getPoint setChNo setPoint

CDAQMXChIDReference

```
getAlarmType getAlarmValueOFF getAlarmValueON getChName
getChType getComment getKind getMXChID getRange getScale
getTag getUnit initMXChID isValid setAlarmValue setChType
setComment setMXChID setUnit setType setTag setValid toChName
toChNo toUnitNo
```

## Protected Members

### Data Members

| | |
|---|---|
| m_FIFONo | Field for storing the FIFO number. |
| m_FIFOIndex | Field for storing the channel sequence number in the FIFO. |
| m_origMin | Field for storing the reference minimum value.* |
| m_origMax | Field for storing the reference maximum value.* |

*The reference minimum/maximum values are currently not used.

| | |
|---|---|
| m_dispMin | Field for storing the display minimum value. |
| m_dispMax | Field for storing the display maximum value. |
| m_realMin | Field for storing the measurable minimum value of the range. |
| m_realMax | Field for storing the measurable maximum value of the range. |

### Inherited Members

See CDAQChInfo.

```
m_chNo m_chType m_point
```

CDAQMXChIDReference

```
m_alarm m_comment m_kind m_range m_scaleType m_tag m_unit
m_valid
getMXAlarm
```

## Private Members

None.

# Member Functions (Alphabetical Order)

## CDAQMXChInfo::CDAQMXChInfo

### Syntax

```
CDAQMXChInfo(MXChInfo * pMXChInfo = NULL);
virtual ~CDAQMXChInfo(void);
```

### Parameters

pMXChInfo Specify the channel information data.

### Description

Constructs or destructs an object.

When constructing, the specified data is stored in the data member. If not specified, the data member is initialized.

### Reference

`setMXChInfo`

## CDAQMXChInfo::getDisplayMax

### Syntax

```
double getDisplayMax(void);
```

### Description

Gets value of the display maximum field from the data member.

### Return value

Returns the display maximum value.

## CDAQMXChInfo::getDisplayMin

### Syntax

```
double getDisplayMin(void);
```

### Description

Gets value of the display minimum field from the data member.

### Return value

Returns the display minimum value.

## CDAQMXChInfo::getFIFOIndex

### Syntax

```
int getFIFOIndex(void);
```

### Description

Gets the value in the channel sequence number field in the FIFO from the data member.

### Return value

Returns the channel sequence number in the FIFO.

## CDAQMXChInfo::getFIFONo

### Syntax

```
int getFIFONo(void);
```

### Description

Gets the value in the FIFO number field from the data member.

### Return value

Returns the FIFO number.

## CDAQMXChInfo::getMXChInfo

### Syntax

```
void getMXChInfo(MXChInfo * pMXChInfo);
```

### Parameters

pMXChInfo Specify the destination where the channel information data is to be returned.

### Description

Gets the data in a structure. Stores the contents of the data member in the specified structure.

### Reference

```
getDisplayMax getDisplayMin getFIFOIndex getFIFONo getMXChID
getOriginalMax getOriginalMin getRealMax getRealMin
```

## CDAQMXChInfo::getOriginalMax

### Syntax

```
double getOriginalMax(void);
```

### Description

Gets value of the reference maximum field from the data member.

*__Reference__ minimum value is not used currently.

### Return value

Returns the reference maximum value.

## CDAQMXChInfo::getOriginalMin

### Syntax

```
double getOriginalMin(void);
```

### Description

Gets value of the reference minimum field from the data member.

*__Reference__ minimum value is not used currently.

### Return value

Returns the reference minimum value.

## CDAQMXChInfo::getRealMax

### Syntax

```
double getRealMax(void);
```

### Description

Gets the value in the measurable maximum value field from the data member.

### Return value

Returns the measurable maximum value.

## CDAQMXChInfo::getRealMin

### Syntax

```
double getRealMin(void);
```

### Description

Gets the value in the measurable minimum value field from the data member.

### Return value

Returns the measurable minimum value.

## CDAQMXChInfo::initMXChInfo

### Syntax

```
static void initMXChInfo(MXChInfo * pMXChInfo);
```

### Parameters

pMXChInfo Specify the channel information data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXChInfo::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value as a general rule is 0.

### Reference

`CDAQMXChID::initialize`

## CDAQMXChInfo::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMXChInfo");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQMXChID::isObject`

## CDAQMXChInfo::operator=

### Syntax

```
CDAQMXChInfo & operator=(CDAQMXChInfo & cMXChInfo);
```

### Parameters

cMXChInfo Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

### Reference

`getMXChInfo setMXChInfo`

## CDAQMXChInfo::setFIFOIndex

### Syntax

```
void setFIFOIndex(int fifoIndex);
```

### Parameters

fifoIndex Specify the channel sequence number in the FIFO.

### Description

Stores the specified value in the channel sequence number field in the FIFO from the data member.

## CDAQMXChInfo::setFIFONo

### Syntax

```
void setFIFONo(int fifoNo);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Stores the specified value in the FIFO number field of the data member.

## CDAQMXChInfo::setMXChInfo

### Syntax

```
void setMXChInfo(MXChInfo * pMXChInfo);
```

### Parameters

pMXChInfo Specify the channel information data.

### Description

Sets the data in a structure. Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

```
initialize setFIFOIndex setFIFONo setMXChID
```

# CDAQMXConfig Class

This class stores the setup data of the MX100.
It is a wrapper class of the MXConfigData structure.
This class can be used as an interface for storing setup data when retrieving setup data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXConfig | Constructs an object. |
| ~CDAQMXConfig | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXConfigData | Gets the data in a structure. |
| setMXConfigData | Sets the data in a structure. |
| initMXConfigData | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getClassMXSysInfo | Gets the system configuration data. |
| getClassMXStatus | Gets the status. |
| getClassMXNetInfo | Gets the network information data. |
| getClassMXChConfigData | Gets the channel setup data. |
| getClassMXBalanceData | Gets initial balance data. |
| getClassMXOutputData | Gets the basic output channel data. |
| getClassMXChConfig | Gets individual channel setup data. |
| reconstruct | Reconstructs the system. |
| setTempUnit | Sets the temperature unit type. |
| setDOType | Sets the DO channel type. |
| setInterval | Set the interval type. |
| setAOType | Sets the AO channel type. |
| setPWMType | Sets the PWM channel type. |

### Range Settings

| | |
|---|---|
| setSKIP | Sets SKIP (not used). |
| setVOLT | Sets DC voltage input. |
| setTC | Sets thermocouple input. |
| setRTD | Sets RTD input. |
| setDI | Sets digital input (DI). |
| setDELTA | Sets difference computation between channels. |
| setRRJC | Sets remote RJC. |
| setScalling | Sets the scale. |

| | |
|---|---|
| setRES | Sets the resistance range. |
| setSTRAIN | Sets the strain range. |
| setAO | Sets the AO range. |
| setPWM | Sets the PWM range. |
| setCOM | Specify the communication range. |
| setPULSE | Specify the pulse range. |

**Check**

| | |
|---|---|
| isCorrect | Checks the validity. |

**Operator**

| | |
|---|---|
| operator= | Executes substitution. |

**Utilities**

| | |
|---|---|
| getItemError | Gets the number of the parameter on which an error was detected. |
| isObject | Checks an object. |
| getSpanPoint | Gets the decimal point position of the channel. |
| getRangePoint | Gets the decimal point position of the range type. |
| getChName | Gets the channel name. |
| setChKind | Sets the channel type. |

## Protected Members

**Data Members**

| | |
|---|---|
| m_cMXSysInfo | Field for storing the system configuration data. |
| m_cMXStatus | Field for storing the status data. |
| m_cMXNetInfo | Field for storing the network information data. |
| m_cMXChConfigData | Field for storing the channel setup data. |
| m_cMXBalanceData | Field for storing the initial balance data. |
| m_cMXOutputData | Field for storing the output channel data. |
| m_nItemError | Field for storing the setting item number. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXConfig::CDAQMXConfig

### Syntax

```
CDAQMXConfig(MXConfigData * pMXConfigData);
virtual ~CDAQMXConfig(void);
```

### Parameters

pMXConfigData  Specify the setup data.

### Description

Constructs or destructs an object.

When constructing, the specified data is stored in the data member. If not specified, the data member is initialized.

### Reference

`setMXConfigData`

## CDAQMXConfig::getChName

### Syntax

```
int getChName(int chNo);
```

### Parameters

chNo  Specify the channel number.

### Description

Creates the channel name from the specified channel number and system structure data field of the data member.

### Return value

Returns the channel name.

### Reference

`getClassMXChConfig`
`getClassMXSysInfo`
`CDAQMXChConfig::getChName`
`CDAQMXSysInfo::getUnitNo`

## CDAQMXConfig::getClassMXBalanceData

### Syntax

```
CDAQMXBalanceData & getClassMXBalanceData(void);
```

### Description

Gets initial balance data from the data member.

### Return value

Returns the reference to the object.

## CDAQMXConfig::getClassMXChConfig

### Syntax

```
CDAQMXChConfig * getClassMXChConfig(int chNo);
```

### Parameters

chNo Specify the channel number.

### Description

Gets the channel setup data of the specified channel number.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the object.

### Reference

```
getClassMXChConfigData
CDAQMXChConfigData::getClassMXChConfig
```

## CDAQMXConfig::getClassMXChConfigData

### Syntax

```
CDAQMXChConfigData & getClassMXChConfigData(void);
```

### Description

Gets the channel setup data field from the data member.

### Return value

Returns a reference to the object.

## CDAQMXConfig::getClassMXNetInfo

### Syntax

```
CDAQMXNetInfo & getClassMXNetInfo(void);
```

### Description

Gets the network information data field as a data member.

### Return value

Returns a reference to the object.

## CDAQMXConfig::getClassMXOutputData

### Syntax

```
CDAQMXOutputData & getClassMXOutputData(void);
```

### Description

Gets the output channel data field as a data member.

### Return value

Returns the reference to the object.

## CDAQMXConfig::getClassMXStatus

### Syntax

```
CDAQMXStatus & getClassMXStatus(void);
```

### Description

Gets the status field as a data member.

### Return value

Returns a reference to the data member.

## CDAQMXConfig::getClassMXSysInfo

### Syntax

```
CDAQMXSysInfo & getClassMXSysInfo(void);
```

### Description

Gets the System configuration data field as a data member.

### Return value

Returns a reference to the object.

## CDAQMXConfig::getItemError

### Syntax

```
int getItemError(void);
```

### Description

Gets the value of the setting item number field from the data member.

### Return value

Returns the setting item number.

## CDAQMXConfig::getMXConfigData

### Syntax

```
void getMXConfigData(MXConfigData * pMXConfigData);
```

### Parameters

pMXConfigData  Specify the destination where the setup data is to be returned.

### Description

Gets the data in a structure.

Stores the contents of the data member in the specified structure.

### Reference

```
DAQMXBalanceData::getMXBalanceData
CDAQMXOutputData::getMXOutputData
CDAQMXChConfigData::getMXChConfigData
CDAQMXNetInfo::getMXNetInfo
CDAQMXStatus::getMXStatus
CDAQMXSysInfo::getMXSystemInfo
```

## CDAQMXConfig::getRangePoint

### Syntax

```
int getRangePoint(int iRange);
```

### Parameters

iRange Specify the range type.

### Description

Gets the decimal point position of the specified range type.

For the contact range, specify the contact detailed range.

Returns 0 if it does not exist.

### Return value

Returns the decimal point position.

### Reference

```
getClassMXSysInfo
CDAQMXChConfig::getRangePoint
CDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::getSpanPoint

### Syntax

```
int getSpanPoint(int chNo);
```

### Parameters

chNo Specify the channel number.

### Description

Gets the decimal point position of the range type of the specified channel number.

Returns 0 if it does not exist.

### Return value

```
Returns the decimal point position.
```

## CDAQMXConfig::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value as a general rule is 0.

### Reference

```
CDAQMXBalanceData::initialize
CDAQMXChConfigData::initialize
CDAQMXNetInfo::initialize
CDAQMXOutputData::initialize
CDAQMXStatus::initialize
CDAQMXSysInfo::initialize
```

## CDAQMXConfig::initMXConfigData

### Syntax

```
static void initMXConfigData(MXConfigData * pMXConfigData);
```

### Parameters

pMXConfigData  Specify the setup data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

### Reference

```
CDAQMXBalanceData::initMXBalanceData
CDAQMXChConfigData::initMXChConfigData
CDAQMXNetInfo::initMXNetInfo
CDAQMXOutputData::initMXOutputData
CDAQMXStatus::initMXStatus
CDAQMXSysInfo::initMXSystemInfo
```

## CDAQMXConfig::isCorrect

### Syntax

```
int isCorrect(void);
```

### Description

Checks the validity.

Checks each setting item according to the system configuration data.

If an invalid value is detected, Invalid is returned.

If an invalid value is detected, the setting item number than indicates the detected location is stored in the setting item number field of the data member.

### Return value

Returns a Boolean value.

### Reference

```
getClassMXBalanceData getClassMXChConfig
getClassMXChConfigData getClassMXOutputData getClassMXSysInfo
CDAQMXBalanceData::getBalanceValid
CDAQMXBalanceData::getBalanceValue
CDAQMXChConfig::getRange
CDAQMXChConfig::getKind
CDAQMXChConfigData::getItemError
CDAQMXChConfigData::isCorrect
CDAQMXOutputData::getOutputType
CDAQMXOutputData::getPulseTime
CDAQMXSysInfo::getItemError
CDAQMXSysInfo::getModuleType
CDAQMXSysInfo::getTempUnit
CDAQMXSysInfo::isCorrect
```

## CDAQMXConfig::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMXConfig");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a Boolean value.

## CDAQMXConfig::operator=

### Syntax

```
CDAQMXConfig & operator=(CDAQMXConfig & cMXConfig);
```

### Parameters

cMXConfig Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQMXConfig::reconstruct

### Syntax

```
void reconstruct(int bRealType);
```

### Parameters

| | |
|---|---|
| bRealType | Specify whether or not to set the actual module types to reconstruct the system using a Boolean. |

### Description

Reconstructs the system.

When Valid is specified, creates setup data according to the actual module types.

When Invalid is specified, creates setup data according to the current module types.

Settings are set to default values.

### Reference

```
setAO setAOType setDI setDOType setPWM setPWMType setSTRAIN
setVOLT
CDAQMXChConfigData::initialize
CDAQMXSysInfo::getChNum
CDAQMXSysInfo::getModuleType
CDAQMXSysInfo::setCFTimeout
CDAQMXSysInfo::setCFWriteMode
CDAQMXSysInfo::setRealModule
CDAQMXSysInfo::setTempUnit
CDAQMXSysInfo::setUnitNo
```

## CDAQMXConfig::setAO

### Syntax

```
void setAO(int chNo,int iRangeAO,int spanMin = 0,int spanMax =
0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRangeAO | Specify the AO range type. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist or the channel is not on the corresponding module, the setting is void.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

The output type of the output channel data is reset to match the specified range.

### Reference

```
getClassMXChConfig getClassMXOutputData getClassMXSysInfo
CDAQMXChConfig::setAO
CDAQMXChConfig::setSpan
CDAQMXOutputData::setOutputType
CDAQMXSysInfo::getModuleType
CDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::setAOType

### Syntax

```
void setAOType(int aoNo,int iKind,int refChNo =
DAQMX_REFCHNO_NONE);
```

### Parameters

| | |
|---|---|
| aoNo | Specify the AO data number. |
| iKind | Specify the AO type using channel type. |
| refChNo | Specify the reference channel number. |

### Description

Sets the channel type of the AO module.

If unused is specified for the channel type, the channel is set to SKIP (not used).

If AO (transmission output) is specified for the channel type, specify the channel number of the input channel for the reference channel.

If the channel does not exist, the channel is not on the AO module, or the specified type is not an AO type, the channel type is not set.

If the constant for “Specify all AO/PWM numbers”is specified for the AO data numbers, all AO channels are processed.

Each setting type for the channels is reset to match the output type of the output channel data.

### Reference

```
getClassMXChConfig getClassMXOutputData getClassMXSysInfo
setSKIP
CDAQMXChConfig::setAO
CDAQMXChConfig::setRefChNo
CDAQMXChConfig::setType
CDAQMXChConfig::setValid
CDAQMXOutputData::getOutputType
CDAQMXSysInfo::getModuleType
```

## CDAQMXConfig::setChKind

### Syntax

```
void setChKind(int chNo,int iKind,int refChNo =
DAQMX_REFCHNO_NONE);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iKind | Specify the channel type. |
| refChNo | Specify the reference channel number. |

### Description

Sets the channel type on the channel of the specified channel number.

If the channel type is AI (difference between channels), DI (difference between channels), AI (remote RJC), AO (transmission output), or PWM (transmission output), the reference channel specification is valid.

The settings for each channel are set to the default values.

### Reference

`setAOType setDELTA setDI setDOType setPWMType setRRJC setSKIP setVOLT`

## CDAQMXConfig::setCOM

### Syntax

```
void setCOM(int chNo, int iRangeCOM, int spanMin = 0, int
spanMax = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRangeCOM | Specify the communication range from the range type. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist or the channel is not on the corresponding module, the setting is void.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

### Reference

`getClassMXChConfig getClassMXSysInfo CDAQMXChConfig::setCOM CDAQMXChConfig::setSpan CDAQMXSysInfo::getModuleType CDAQMXSysInfo::getTempUnit`

## CDAQMXConfig::setDELTA

### Syntax

```
void setDELTA(int chNo, int refChNo, int spanMin = 0, int
spanMax = 0, int iRange = DAQMX_RANGE_REFERENCE);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| refChNo | Specify the reference channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| iRange | Specify the range type. |

### Description

Sets the channel of the specified channel number to the specified range.
If the maximum and minimum values are the same, the span is considered omitted.
If the channel does not exist or the channel is not on the corresponding module, the setting is void. If the range type is set to “Reference Channel” the range of the channel specified by the reference channel number is applied. If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed. If the range type is strain, the initial balancing data is reset.
Channels which have the same channel number as the reference channel number cannot be processed (R3.01 or later).

### Reference

```
getClassMXBalanceData getClassMXChConfig getClassMXSysInfo
CDAQMXBalanceData::setBalance CDAQMXChConfig::getRange
CDAQMXChConfig::isValid CDAQMXChConfig::setDELTA
CDAQMXChConfig::setSpan CDAQMXSysInfo::getModuleType
CDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::setDI

### Syntax

```
void setDI(int chNo, int iRangeDI, int spanMin = 0, int
spanMax = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRangeDI | Specify the range type of the digital input (DI). |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist or the channel is not on the corresponding module, the setting is void. Sets the range type using the digital input (DI) detailed range.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

### Reference

```
getClassMXChConfig getClassMXSysInfo
CDAQMXChConfig::setDI CDAQMXChConfig::setSpan
CDAQMXSysInfo::getModuleType CDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::setDOType

### Syntax

```
void setDOType(int doNo, int iKind, int bDeenergize =
DAQMX_VALID_OFF, int bHold = DAQMX_VALID_OFF);
```

### Parameters

| | |
|---|---|
| doNo | Specify the data number. |
| iKind | Specify the DO type using channel type. |
| bDeenergize | Specify the de-energize action using a Boolean value. |
| bHold | Specify hold action using a Boolean value. |

### Description

Sets the channel type of the DO module.

If unused is specified for the channel type, the channel is set to SKIP (not used).

If the channel does not exist, the channel is not on the DO module, or the specified type is not a DO type, the channel type is not set. If the constant for “Specify all DO numbers” is specified for the DO data numbers, all channels are processed.

### Reference

```
getClassMXChConfig setSKIP
CDAQMXChConfig::setDeenergize CDAQMXChConfig::setHold
CDAQMXChConfig::setType CDAQMXChConfig::setValid
CDAQMXSysInfo::getModuleType
```

## CDAQMXConfig::setInterval

### Syntax

```
void setInterval(int moduleNo, int iInterval, int iHz =
DAQMX_INTEGRAL_AUTO);
```

### Parameters

| | |
|---|---|
| moduleNo | Specify the module number. |
| iInterval | Specify the interval type. |
| iHz | Specify the type of A/D integration time. |

### Description

Sets the module of the specified module number to the specified value.

If the module does not exist, the value is not set.

If the constant for “Specify all module numbers” is specified for the module numbers, all modules are processed.

### Reference

```
CDAQMXSysInfo::getChNum CDAQMXSysInfo::getModuleType
CDAQMXSysInfo::setModule
```

## CDAQMXConfig::setMXConfigData

### Syntax

```
void setMXConfigData(MXConfigData * pMXConfigData);
```

### Parameters

| | |
|---|---|
| pMXConfigData | Specify the setup data. |

### Description

Sets the data in a structure. Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

```
initialize
CDAQMXBalanceData::setMXBalanceData
CDAQMXChConfigData::setMXChConfigData
CDAQMXNetInfo::setMXNetInfo
CDAQMXOutputData::setMXOutputData
CDAQMXStatus::setMXStatus
CDAQMXSysInfo::setMXSystemInfo
```

## CDAQMXConfig::setPULSE

### Syntax

```
void setPULSE(int chNo, int iRangePULSE, int spanMin = 0, int
spanMax = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRangePULSE | Specify the pulse range from the range type. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist or the channel is not on the corresponding module, the setting is void.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

### Reference

```
getClassMXChConfig getClassMXSysInfo CDAQMXChConfig::setPULSE
CDAQMXChConfig::setSpan CDAQMXSysInfo::getModuleType
ßCDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::setPWM

### Syntax

```
void setPWM(int chNo,int iRangePWM,int spanMin = 0,int spanMax
= 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRangePWM | Specify the PWM range type. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist or the channel is not on the corresponding module, the setting is void.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

The output type of the output channel data is reset to match the specified range.

### Reference

```
getClassMXChConfig getClassMXOutputData
getClassMXSysInfo CDAQMXChConfig::setSpan
CDAQMXChConfig::setPWM CDAQMXOutputData::setOutputType
CDAQMXSysInfo::getModuleType CDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::setPWMType

### Syntax

```
void setPWMType(int pwmNo,int iKind,int refChNo =
DAQMX_REFCHNO_NONE);
```

### Parameters

| | |
|---|---|
| pwmNo | Specify the PWM data number. |
| iKind | Specify the PWM type with the channel type. |
| refChNo | Specify the reference channel number. |

### Description

Sets the channel type of the PWM module.

If unused is specified for the channel type, the channel is set to SKIP (not used).

If PWM (transmission output) is specified for the channel type, specify the channel number of the input channel for the reference channel.

If the channel does not exist, the channel is not on the PWM module, or the specified type is not a PWM type, the channel type is not set.

If the constant for “Specify all AO/PWM numbers” is specified for the PWM data numbers, all PWM channels are processed.

Each setting type for the channels is reset to match the output type of the output channel data.

### Reference

```
getClassMXChConfig getClassMXOutputData getClassMXSysInfo
setSKIP
CDAQMXChConfig::setPWM
CDAQMXChConfig::setRefChNo
CDAQMXChConfig::setType
CDAQMXChConfig::setValid
CDAQMXOutputData::getOutputType
CDAQMXSysInfo::getModuleType
```

## CDAQMXConfig::setRES

### Syntax

```
void setRES(int chNo,int iRangeRES,int spanMin = 0,int spanMax
= 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRangeRES | Specify the range type of the resistance range. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist or the channel is not on the corresponding module, the setting is void. If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

### Reference

```
getClassMXChConfig getClassMXSysInfo
CDAQMXChConfig::setRES CDAQMXChConfig::setSpan
CDAQMXSysInfo::getModuleType CDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::setRRJC

### Syntax

```
void setRRJC(int chNo, int refChNo, int spanMin = 0, int
spanMax = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| refChNo | Specify the reference channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist, if the range is not TC, or if the channel is not on the corresponding module, the setting is void. If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

### Reference

```
getClassMXChConfig getClassMXChConfigData getClassMXSysInfo
CDAQMXChConfig::getRange CDAQMXChConfig::isValid
CDAQMXChConfig::setSpan CDAQMXChConfigData::setRRJC
CDAQMXSysInfo::getModuleType CDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::setRTD

### Syntax

```
void setRTD(int chNo, int iRangeRTD, int spanMin = 0, int
spanMax = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRangeRTD | Specify the range type of the RTD input. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist or the channel is not on the corresponding module, the setting is void.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

### Reference

```
getClassMXChConfig getClassMXSysInfo CDAQMXChConfig::setRTD
CDAQMXChConfig::setSpan CDAQMXSysInfo::getModuleType
CDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::setScalling

### Syntax

```
void setScalling(int chNo, int scaleMin = 0, int scaleMax = 0,
int scalePoint = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position. |

### Description

Sets the scale on the channel of the specified channel number.

Sets the scale type to Linear. If the maximum and minimum values are the same, it is set to None.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

### Reference

```
getClassMXChConfig getClassMXSysInfo
CDAQMXChConfig::setScalling CDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::setSKIP

### Syntax

```
void setSKIP(int chNo);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |

### Description

Sets the channel of the specified channel number to SKIP (not used).

If the module does not exist, the value is not set.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

### Reference

```
getClassMXChConfig CDAQMXChConfig::setSKIP
```

## CDAQMXConfig::setSTRAIN

### Syntax

```
void setSTRAIN(int chNo,int iRangeSTRAIN,int spanMin = 0,int
spanMax = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRangeSTRAIN | Specify the strain range type. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist or the channel is not on the corresponding module, the setting is void.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

Resets the initial balance data.

### Reference

```
getClassMXBalanceData
getClassMXChConfig
getClassMXSysInfo
CDAQMXBalanceData::setBalance
CDAQMXChConfig::setSpan
CDAQMXChConfig::setSTRAIN
CDAQMXSysInfo::getModuleType
CDAQMXSysInfo::getTempUnit
```

## CDAQMXConfig::setTC

### Syntax

```
void setTC(int chNo, int iRangeTC, int spanMin = 0, int
spanMax = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRangeTC | Specify the range type of the thermocouple input. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist or the channel is not on the corresponding module, the setting is void.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

### Reference

`getClassMXChConfig getClassMXSysInfo CDAQMXChConfig::setSpan CDAQMXChConfig::setTC CDAQMXSysInfo::getModuleType CDAQMXSysInfo::getTempUnit`

## CDAQMXConfig::setTempUnit

### Syntax

```
void setTempUnit(int iTempUnit);
```

### Parameters

| | |
|---|---|
| iTempUnit | Specify the temperature unit type. |

### Description

Changes the temperature unit type of the setup data.

Stores the specified value in the System configuration data field.

Changes the settings of the channels affected.

### Reference

`CDAQMXChConfigData::changeRange CDAQMXSysInfo::setTempUnit`

# CDAQMXConfig::setVOLT

## Syntax

```
void setVOLT(int chNo,int iRangeVOLT,int spanMin = 0,int
spanMax = 0);
```

## Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRangeVOLT | Specify the range type of the DC voltage input. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

## Description

Sets the channel of the specified channel number to the specified range.

If the maximum and minimum values are the same, the span is considered omitted.

If the channel does not exist or the channel is not on the corresponding module, the setting is void.

If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

## Reference

`getClassMXChConfig getClassMXSysInfo`
`CDAQMXChConfig::setSpan`
`CDAQMXChConfig::setVOLT`
`CDAQMXSysInfo::getModuleType`
`CDAQMXSysInfo::getTempUnit`

# CDAQMXDataInfo Class

- **CDAQDataInfo**
  - **CDAQMXDataInfo**

This class stores the measured data of the MX100.
It is a wrapper class of the MXDataInfo structure.
This class can be used as an interface for storing measured data when retrieving measured data.
Actual measured data can be calculated by associating with the channel information data class.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXDataInfo | Constructs an object. |
| ~CDAQMXDataInfo | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXDataInfo | Gets the data as a structure. |
| setMXDataInfo | Sets the data in a structure. |
| initMXDataInfo | Initializes the structure data. |

### Member Data Manipulation

| | |
|---|---|
| getStatus | Gets the data status. |
| isAlarm | Gets the alarm value. |
| setStatus | Set the data status. |
| setAlarm | Sets the alarm value. |

### Association

| | |
|---|---|
| getClassMXChInfo | Gets the association with the channel information data. |
| setClassMXChInfo | Sets the association with the channel information data. |

### Utilities

| | |
|---|---|
| getAlarmName | Gets the name of the alarm type. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Overridden Members

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### Inherited Members

CDAQDataInfoReference

```
getClassChInfo getDoubleValue getStringValue getValue
setClassChInfo setValue toDoubleValue toStringValue
```

## Protected Members

### Data Members

| | |
|---|---|
| m_dataStatus | Field for storing the data status. |
| m_alarm | Field for storing the presence or absence of the alarm. |

### Inherited Members

CDAQDataInfoReference

```
m_pChInfo m_value
```

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXDataInfo::CDAQMXDataInfo

### Syntax

```
CDAQMXDataInfo(MXDataInfo * pMXDataInfo = NULL, CDAQMXChInfo *
pcMXChInfo = NULL);
virtual ~CDAQMXDataInfo(void);
```

### Parameters

| | |
|---|---|
| pMXDataInfo | Specify the measured data. |
| pcMXChInfo | Specify the association with the channel information data. |

### Description

Constructs or destructs an object.

When constructing, the specified data is stored in the data member. If not specified, the data member is initialized.

### Reference

```
setClassMXChInfo setMXDataInfo
```

## CDAQMXDataInfo::getAlarmName

### Syntax

```
static const char * getAlarmName(int iAlarmType);
```

### Parameters

iAlarmType Specify the alarm type.

### Description

Gets the string corresponding to the specified alarm type.

If outside the range, the string is set the same as no alarm.

### Return value

Returns a pointer to the string.

## CDAQMXDataInfo::getClassMXChInfo

### Syntax

```
CDAQMXChInfo * getClassMXChInfo(void);
```

### Description

Gets the association with the channel information data of the data member.

Returns NULL if the value is not specified.

### Return value

Returns the association with the channel information data.

### Reference

`getClassChInfo`

## CDAQMXDataInfo::getMXDataInfo

### Syntax

```
void getMXDataInfo(MXDataInfo * pMXDataInfo);
```

### Parameters

pMXDataInfo Specify the destination where the measured data is to be returned.

### Description

Gets the data in a structure. Stores the contents of the data member in the specified structure.

### Reference

`getStatus getValue`

## CDAQMXDataInfo::getStatus

### Syntax

```
int getStatus(void);
```

### Description

Gets the value in the data status field of the data member.

### Return value

Returns the data status.

## CDAQMXDataInfo::initialize

### Syntax

```
void initialize(void);
```

### Description

Initializes the data member.

The default value as a general rule is 0.

The association with the channel information data is not initialized.

### Reference

```
CDAQDataInfo::initialize
```

## CDAQMXDataInfo::initMXDataInfo

### Syntax

```
static void initMXDataInfo(MXDataInfo * pMXDataInfo);
```

### Parameters

pMXDataInfo  Specify the measured data field.

### Description

```
Initializes the specified field.
The default value as a general rule is 0.
```

## CDAQMXDataInfo::isAlarm

### Syntax

```
int isAlarm(int levelNo);
```

### Parameters

levelNo  Specify the alarm level.

### Description

Gets the value of the alarm presence/absence field of the data member.

Returns the value corresponding to the specified alarm level. Returns Invalid Value(OFF) if the alarm level is outside the range.

### Return value

Returns a Boolean value.

## CDAQMXDataInfo::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMXDataInfo");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQDataInfo::isObject`

## CDAQMXDataInfo::operator=

### Syntax

```
CDAQMXDataInfo & operator=(CDAQMXDataInfo & cMXDataInfo);
```

### Parameters

cMXDataInfo Specify an object for substitution.

### Description

Copies the data member of the specified object.

Also copies the association with the channel information data.

### Return value

Returns the reference to the object.

### Reference

`getClassMXChInfo getMXDataInfo setClassMXChInfo setMXDataInfo`

## CDAQMXDataInfo::setAlarm

### Syntax

```
void setAlarm(int levelNo, int bValid);
```

### Parameters

| | |
|---|---|
| levelNo | Specify the alarm level. |
| bValid | Specify the Boolean value. |

### Description

Sets the alarm presence/absence field of the data member to the specified value.
If the alarm level is outside the range, it is not set.

## CDAQMXDataInfo::setClassMXChInfo

### Syntax

```
void setClassMXChInfo(CDAQMXChInfo * pcMXChInfo);
```

### Parameters

| | |
|---|---|
| pcMXChInfo | Specify a pointer to the channel information data class. |

### Description

Stores the specified value to the association with the channel information data of the data member.

### Reference

`setClassChInfo`

## CDAQMXDataInfo::setMXDataInfo

### Syntax

```
void setMXDataInfo(MXDataInfo * pMXDataInfo);
```

### Parameters

| | |
|---|---|
| pMXDataInfo | Specify the association with the channel information data. |

### Description

Sets the data in a structure.
Stores the contents of the specified structure in the data member.
If not specified, the data member is initialized.

### Reference

`initialize setStatus setValue`

## CDAQMXDataInfo::setStatus

### Syntax

```
void setStatus(int iDataStatus);
```

### Parameters

| | |
|---|---|
| iDataStatus | Specify the data status. |

### Description

Stores the data status field of the data member to the specified value.

# CDAQMXDateTime Class

- **CDAQDateTime**
  - **CDAQMXDateTime**

This class stores the time information data of the MX100.
It is a wrapper class of the MXDateTime structure.
This class can be used as an interface for storing time information data when retrieving time information data for the retrieval of measured data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXDateTime | Constructs an object. |
| ~CDAQMXDateTime | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXDateTime | Gets the data in a structure. |
| setMXDateTime | Sets the data in a structure. |
| initMXDateTime | Initializes the data in a structure. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Overridden Members

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### Inherited Members

CDAQDateTimeReference
getMilliSecond getTime initialize setMilliSecond setNow setTime toLocalDateTime

## Protected Members

### Inherited Members

CDAQDateTimeReference
`m_milliSecond m_time`

## Private Members

None.

# Member Functions (Alphabetical Order)

## CDAQMXDateTime::CDAQMXDateTime

### Syntax

```
CDAQMXDateTime(time_t time = 0, int milliSecond = 0);
CDAQMXDateTime(MXDateTime * pMXDateTime);
virtual ~CDAQMXDateTime(void);
```

### Parameters

| | |
|---|---|
| time | Specify seconds. |
| milliSecond | Specify milliseconds. |
| pMXDateTime | Specify the time information data. |

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

`setMXDateTime`

## CDAQMXDateTime::getMXDateTime

### Syntax

```
void getMXDateTime(MXDateTime * pMXDateTime);
```

### Parameters

| | |
|---|---|
| pMXDateTime | Specify the destination where the time information data is to be returned. |

### Description

Gets the data in a structure.

Stores the contents of the data member in the specified structure.

## CDAQMXDateTime::initMXDateTime

### Syntax

```
static void initMXDateTime(MXDateTime * pMXDateTime);
```

### Parameters

pMXDateTime Specify the time information data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXDateTime::isObject

### Syntax

```
virtual int isObject(const char * classname =
"CDAQMXDateTime");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQDateTime::isObject`

## CDAQMXDateTime::operator=

### Syntax

```
CDAQMXDateTime & operator=(CDAQMXDateTime & cMXDateTime);
```

### Parameters

cMXDateTime Specify the data to be substituted using an object.

### Description

Copies the data member from the specified object.

### Return value

Returns the reference to the object.

## CDAQMXDateTime::setMXDateTime

### Syntax

```
void setMXDateTime(MXDateTime * pMXDateTime);
```

### Parameters

pMXDateTime  Specify the time information data.

### Description

Sets the data in a structure.

Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

`initialize`

# CDAQMXDOData Class

This class stores the DO data of the MX100.
It is a wrapper class of the MXDOData structure.
It is a group of DO data of all the channels.
This class can be used as an interface for storing DO data when retrieving or setting DO data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXDOData | Constructs an object. |
| ~CDAQMXDOData | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXDOData | Gets the data in a structure. |
| setMXDOData | Sets the data in a structure. |
| initMXDOData | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getDOValid | Gets Boolean. |
| getDOONOFF | Gets ON/OFF. |
| setDO | Sets the DO data. |
| setDOONOFF | Sets ON/OFF. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

## Protected Members

### Data Members

| | |
|---|---|
| m_MXDOData | Field for storing the DO data. |

### Member Access

| | |
|---|---|
| getMXDO | Gets the DO data structure for each channel. |

## Private Members

None.

# Member Functions (Alphabetical Order)

## CDAQMXDOData::CDAQMXDOData

### Syntax

```
CDAQMXDOData(MXDOData * pMXDOData = NULL);
virtual ~CDAQMXDOData(void);
```

### Parameters

pMXDOData  Specify the DO data.

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

`setMXDOData`

## CDAQMXDOData::getDOONOFF

### Syntax

```
int getDOONOFF(int doNo);
```

### Parameters

doNo  Specify the data number.

### Description

Gets the ON/OFF value indicated by the specified DO data number from the DO data field of the data member.

If it does not exist, returns Invalid.

### Return value

Returns a Boolean value.

### Reference

`getMXDO`

## CDAQMXDOData::getDOValid

### Syntax

```
int getDOValid(int doNo);
```

### Parameters

doNo Specify the data number.

### Description

Gets the Boolean value indicated by the specified DO data number from the DO data field of the data member.
If it does not exist, returns Invalid.

### Return value

Returns a Boolean value.

### Reference

getMXDO

## CDAQMXDOData::getMXDO

### Syntax

```
MXDO * getMXDO(int doNo);
```

### Parameters

doNo Specify the data number.

### Description

Gets the structure indicated by the specified DO data number from the DO data field of the data member.
Returns NULL if it does not exist.

### Return value

Returns a pointer to the structure.

## CDAQMXDOData::getMXDOData

### Syntax

```
void getMXDOData(MXDOData * pMXDOData);
```

### Parameters

pMXDOData Specify the destination where the DO data is to be returned.

### Description

Gets the data in a structure.
Stores the contents of the data member in the specified structure.

## CDAQMXDOData::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member.

The default value as a general rule is 0.

### Reference

initMXDOData

## CDAQMXDOData::initMXDOData

### Syntax

```
static void initMXDOData(MXDOData * pMXDOData);
```

### Parameters

pMXDOData  Specify the DO data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXDOData::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMXDOData");
```

### Parameters

classname  Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited.  Otherwise, returns false (invalid).

### Return value

Returns a Boolean value.

## CDAQMXDOData::operator=

### Syntax

```
CDAQMXDOData & operator=(CDAQMXDOData & cMXDOData);
```

### Parameters

cMXDOData Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQMXDOData::setDO

### Syntax

```
void setDO(int doNo, int bValid, int bONOFF = DAQMX_VALID_OFF);
```

### Parameters

doNo Specify the data number.

bValid Specify valid or invalid using a Boolean value.

bONOFF Specify ON/OFF using a Boolean value.

### Description

Stores the specified value in the field indicated by the specified DO data number in the DO data field of the data member.

If the constant for “Specify all DO numbers” is specified for the DO data number, the value is stored to all DO data.

### Reference

`getMXDO`

## CDAQMXDOData::setDOONOFF

### Syntax

```
void setDOONOFF(int bONOFF);
```

### Parameters

bONOFF Specify ON/OFF using a Boolean value.

### Description

Changes to the specified value, the DO ON/OFF setting of all DO data whose DO data number is Valid in the DO data field of the data member.

### Reference

`getMXDO`

## CDAQMXDOData::setMXDOData

### Syntax

```
void setMXDOData(MXDOData * pMXDOData);
```

### Parameters

pMXDOData  Specify the DO data.

### Description

Sets the data in a structure. Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

`initialize`

# CDAQMXNetInfo Class

This class stores the network information data of the MX100.
It is a wrapper class of the MXNetInfo structure.
This class can be used as an interface for storing network information data when retrieving setup data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXNetInfo | Constructs an object. |
| ~CDAQMXNetInfo | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXNetInfo | Gets the data in a structure. |
| setMXNetInfo | Sets the data in a structure. |
| initMXNetInfo | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getAddress | Gets the IP address. |
| getPort | Gets the port number. |
| getSubMask | Gets the subnet mask. |
| getGateway | Gets the gateway address. |
| getHost | Gets the host name |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Utilities

| | |
|---|---|
| getPart | Gets parts of the IP address. |
| isObject | Checks an object. |

## Protected Members

### Data Members

| | |
|---|---|
| m_MXNetInfo | Field for storing the network information data. |

## Private Members

None.

# Member Functions (Alphabetical Order)

## CDAQMXNetInfo::CDAQMXNetInfo

### Syntax

```
CDAQMXNetInfo(MXNetInfo * pMXNetInfo);
virtual ~CDAQMXNetInfo(void);
```

### Parameters

pMXNetInfo  Specify the network information data.

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

setMXNetInfo

## CDAQMXNetInfo::getAddress

### Syntax

```
unsigned int getAddress(void);
```

### Description

Gets the IP address from the network information data field of the data member.

### Return value

Returns the IP address

## CDAQMXNetInfo::getGateway

### Syntax

```
unsigned int getGateway(void);
```

### Description

Gets the GATEWAY address from the network information data field of the data member.

### Return value

Returns the gateway address

## CDAQMXNetInfo::getHost

### Syntax

```
const char * getHost(void);
```

### Description

Gets the host name from the network information data field of the data member.

### Return value

Returns a pointer to the string.

## CDAQMXNetInfo::getMXNetInfo

### Syntax

```
void getMXNetInfo(MXNetInfo * pMXNetInfo);
```

### Parameters

| | |
|---|---|
| pMXNetInfo | Specify the destination where the network information data is to be returned. |

### Description

Gets the data in a structure. Stores the contents of the data member in the specified structure.

## CDAQMXNetInfo::getPart

### Syntax

```
static int getPart(unsigned int address, int index);
```

### Parameters

| | |
|---|---|
| address | Specify the IP address. |
| index | Specify the part position. |

### Description

Gets the byte value of the specified IP address where the address is divided at teh specified part position.

Returns the byte value of the specified part position.

The part position is specified with the index value (starting from 0) in units of bytes. The range is from 0 to 3.

Returns 0 if it does not exist.

### Return value

Returns the byte value.

## CDAQMXNetInfo::getPort

### Syntax

```
unsigned int getPort(void);
```

### Description

Gets the port number from the network information data field of the data member.

### Return value

Returns the port number.

## CDAQMXNetInfo::getSubMask

### Syntax

```
unsigned int getSubMask(void);
```

### Description

Gets the subnet mask from the network information data field of the data member.

### Return value

Returns the subnet mask.

## CDAQMXNetInfo::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member.

The default value as a general rule is 0.

### Reference

initMXNetInfo

## CDAQMXNetInfo::initMXNetInfo

### Syntax

```
static void initMXNetInfo(MXNetInfo * pMXNetInfo);
```

### Parameters

pMXNetInfo  Specify the network information data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXNetInfo::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMXNetInfo");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a Boolean value.

## CDAQMXNetInfo::operator=

### Syntax

```
CDAQMXNetInfo & operator=(CDAQMXNetInfo & cMXNetInfo);
```

### Parameters

cMXNetInfo Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQMXNetInfo::setMXNetInfo

### Syntax

```
void setMXNetInfo(MXNetInfo * pMXNetInfo);
```

### Parameters

pMXNetInfo Specify the network information data.

### Description

Sets the data in a structure.

Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

`initialize`

# CDAQMXOutput Class

This class stores the output channel data on the MX100.
It is a wrapper class of the MXOutputData structure.
It is a group of all the channels worth of output channel data.
Each data can be accessed by output channel data number.
The output channel data number is the AO/PWM data number.
This class can be used as an interface for setting and retrieving output channel data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXOutputData | Constructs an object. |
| ~CDAQMXOutputData | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXOutputData | Gets the data in a structure. |
| setMXOutputData | Sets the data in a structure. |
| initMXOutputData | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getOutputType | Gets the output terminal type. |
| getIdleChoice | Gets the selected value when idling. |
| getErrorChoice | Gets the selected value when an error occurs. |
| getPresetValue | Gets the value if the selected value is the “specified value.” |
| getPulseTime | Gets the integer multiple of the pulse interval. |
| setOutputType | Sets the output type. |
| setChoice | Sets the selected value. |
| setPulseTime | Sets the integer multiple of the pulse interval. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

## Protected Members

### Data Members

| | |
|---|---|
| m_MXOutputData | Field for storing the output channel data. |

### Member Access

| | |
|---|---|
| getMXOutput | Gets the output channel data structure for each channel. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXOutputData::CDAQMXOutputData

### Syntax

```
CDAQMXOutputData(MXOutputData * pMXOutputData = NULL);
virtual ~CDAQMXOutputData(void);
```

### Parameters

pMXOutputData Specify the output channel data.

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If the specification is omitted, the data member is initialized.

### Reference

`setMXOutputData`

## CDAQMXOutputData::getErrorChoice

### Syntax

```
int getErrorChoice(int outputNo);
```

### Parameters

outputNo Specify the output channel data number.

### Description

Gets the selected value when an error occurs of the specified data number from the data member.

If it does not exist, “Previous value” is returned.

### Return value

Returns the selected value.

### Reference

`getMXOutput`

## CDAQMXOutputData::getIdleChoice

### Syntax

```
int getIdleChoice(int outputNo);
```

### Parameters

outputNo Specify the output channel data number.

### Description

Gets the selected value during idling of the specified data number from the data member.

If it does not exist, “Previous value” is returned.

### Return value

Returns the selected value.

### Reference

`getMXOutput`

## CDAQMXOutputData::getMXOutput

### Syntax

```
MXOutput * getMXOutput(int outputNo);
```

### Parameters

outputNo Specify the output channel data number.

### Description

Gets the structure of the specified data number from the data member.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the structure.

## CDAQMXOutputData::getMXOutputData

### Syntax

```
void getMXOutputData(MXOutputData * pMXOutputData);
```

### Parameters

pMXOutputData Specify the destination where the output channel data is to be returned.

### Description

Gets the data in a structure.

Stores the contents of the data member in the specified structure.

## CDAQMXOutputData::getOutputType

### Syntax

```
int getOutputType(int outputNo);
```

### Parameters

outputNo Specify the output channel data number.

### Description

Gets the output type of the specified data number from the data member.

If it does not exist, “No output” is returned.

### Return value

Returns the output type.

### Reference

```
getMXOutput
```

## CDAQMXOutputData::getPresetValue

### Syntax

```
int getPresetValue(int outputNo);
```

### Parameters

outputNo Specify the output channel data number.

### Description

Gets the value when the selected value that indicates the specified data number is the “Specified value” from the data member.

Returns 0 if it does not exist.

### Return value

Returns the value if the selected value is the “specified value.”

### Reference

```
getMXOutput
```

## CDAQMXOutputData::getPulseTime

### Syntax

```
int getPulseTime(int outputNo);
```

### Parameters

outputNo Specify the output channel data number.

### Description

Gets the integral multiple of the pulse interval of the specified data number from the data member.

Returns 1 if it does not exist.

### Return value

Returns the integer multiple of the pulse interval .

### Reference

```
getMXOutput
```

## CDAQMXOutputData::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member.

The default value as a general rule is 0.

### Reference

```
initMXOutputData
```

## CDAQMXOutputData::initMXOutputData

### Syntax

```
static void initMXOutputData(MXOutputData * pMXOutputData);
```

### Parameters

pMXOutputData  Specify the output channel data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXOutputData::isObject

### Syntax

```
virtual int isObject(const char * classname =
"CDAQMXOutputData");
```

### Parameters

classname  Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited.  Otherwise, returns false (invalid).

### Return value

Returns a Boolean value.

## CDAQMXOutputData::operator=

### Syntax

```
CDAQMXOutputData & operator=(CDAQMXOutputData &
cMXOutputData);
```

### Parameters

cMXOutputData  Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQMXOutputData::setChoice

### Syntax

```
void setChoice(int outputNo, int idleChoice, int errorChoice,
int presetValue = 0);
```

### Parameters

| | |
|---|---|
| outputNo | Specify the output channel data number. |
| idleChoice | Specify the selected value when idling. |
| errorChoice | Specify the selected value when an error occurs. |
| presetValue | Specify the value if the selected value is the “specified value.” |

### Description

Stores the specified value in the field indicated by the specified data number of the data member.

If the data number is set to “Specify All output data numbers,” the same value is stored in all data.

### Reference

`getMXOutput`

## CDAQMXOutputData::setMXOutputData

### Syntax

```
void setMXOutputData(MXOutputData * pMXOutputData);
```

### Parameters

pMXOutputData  Specify the output channel data.

### Description

Sets the data in a structure.

Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

`initMXOutputData`

## CDAQMXOutputData::setOutputType

### Syntax

```
void setOutputType(int outputNo, int iOutput);
```

### Parameters

| | |
|---|---|
| outputNo | Specify the output channel data number. |
| iOutput | Specify the output type. |

### Description

Stores the specified value in the field indicated by the specified data number of the data member.

If the data number is set to “Specify All output data numbers,” the same value is stored in all data.

Other item fields are set to default values.

### Reference

```
getMXOutput setChoice setPulseTime
```

## CDAQMXOutputData::setPulseTime

### Syntax

```
void setPulseTime(int outputNo, int pulseTime);
```

### Parameters

| | |
|---|---|
| outputNo | Specify the output channel data number. |
| pulseTime | Specify the integer multiple of the pulse interval. |

### Description

Stores the specified value in the field indicated by the specified data number of the data member.

If the data number is set to “Specify All output data numbers,” the same value is stored in all data.

### Reference

```
getMXOutput
```

# CDAQMXSegment Class

This class stores the display pattern of the 7-segment LED on the MX100.
It is a wrapper class of the MXSegment structure.
This class can be used as an interface for storing the display pattern of the 7-segment LED.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXSegment | Constructs an object. |
| ~CDAQMXSegment | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXSegment | Gets the data in a structure. |
| setMXSegment | Sets the data in a structure. |
| initMXSegment | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getPattern | Gets the display pattern. |
| setPattern | Sets the display pattern. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

## Protected Members

### Data Members

| | |
|---|---|
| m_MXSegment | Field for storing the 7-segment LED. |

## Private Members

None.

# Member Functions (Alphabetical Order)

## CDAQMXSegment::CDAQMXSegment

### Syntax

```
CDAQMXSegment(MXSegment * pMXSegment = NULL);
CDAQMXSegment(int pattern0, int pattern1);
virtual ~CDAQMXSegment(void);
```

### Parameters

pMXSegment Specify the 7-segment LED.

pattern0 Specify the display pattern of segment number 0.

pattern1 Specify the display pattern of segment number 1.

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

```
initialize setMXSegment setPattern
```

## CDAQMXSegment::getMXSegment

### Syntax

```
void getMXSegment(MXSegment * pMXSegment);
```

### Parameters

pMXSegment Specify the destination where the 7-segment LED is to be returned.

### Description

Gets the data in a structure. Stores the contents of the data member in the specified structure.

## CDAQMXSegment::getPattern

### Syntax

```
int getPattern(int segmentNo);
```

### Parameters

segmentNoSpecify the segment number.

### Description

Gets the display pattern value of the specified segment number from the 7-segment LED field of the data member.

Returns 0 if it does not exist.

### Return value

Returns the display pattern.

## CDAQMXSegment::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member.

The default value as a general rule is 0.

### Reference

`initMXSegment`

## CDAQMXSegment::initMXSegment

### Syntax

```
static void initMXSegment(MXSegment * pMXSegment);
```

### Parameters

pMXSegment Specify the 7-segment LED field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXSegment::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMXSegment");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a Boolean value.

## CDAQMXSegment::operator=

### Syntax

CDAQMXSegment & operator=(CDAQMXSegment & cMXSegment);

### Parameters

cMXSegment Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQMXSegment::setMXSegment

### Syntax

```
void setMXSegment(MXSegment * pMXSegment);
```

### Parameters

pMXSegment Specify the 7-segment LED.

### Description

Sets the data in a structure. Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

```
initialize
```

## CDAQMXSegment::setPattern

### Syntax

```
void setPattern(int segmentNo, int pattern);
```

### Parameters

segmentNo Specify the segment number.

pattern Specify the display pattern.

### Description

Stores the specified value to the field indicated by the specified segment number in the 7-segment LED field of the data member.

If the constant for “Specify all segment numbers” is specified for the segment number, the value is stored for all 7-segment LEDs.

# CDAQMXStatus Class

This class stores the status data of the MX100.
It is a wrapper class of the MXStatus structure.
This class can be used as an interface for storing status data when retrieving status data and setup data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXStatus | Constructs an object. |
| ~CDAQMXStatus | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXStatus | Gets the data in a structure. |
| setMXStatus | Sets the data in a structure. |
| initMXStatus | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getFIFONum | Gets the valid number of FIFOs. |
| getFIFOStatus | Gets the FIFO status value. |
| getInterval | Gets the interval type. |
| getOldDataNo | Gets the oldest data number. |
| getNewDataNo | Gets the newest data number. |
| getCFStatus | Gets the CF status type. |
| getCFSize | Gets the size of the CF. |
| getCFRemain | Gets the remaining size. |
| getUnitStatus | Gets the unit status value. |
| getConfigCnt | Gets the setup number (a sequential number that counts the setup execution). |
| getTimeCnt | Gets the time number (a sequential number that counts the execution of time setting). |
| isBackup | Gets the presence/absence of backup. |
| getTime | Gets the time. |
| getMilliSecond | Gets milliseconds. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Utilities

| | |
|---|---|
| isDataNo | Checks the validity of data numbers. |
| isObject | Checks an object. |

## Protected Members

Data Members

| | |
|---|---|
| m_MXStatus | Field for storing the status data. |

Member Access

| | |
|---|---|
| getMXFIFOInfo | Gets the FIFO information structure for each FIFO. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXStatus::CDAQMXStatus

### Syntax

```
CDAQMXStatus(MXStatus * pMXStatus = NULL);
virtual ~CDAQMXStatus(void);
```

### Parameters

| | |
|---|---|
| pMXStatus | Specify the status data. |

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

`setMXStatus`

## CDAQMXStatus::getCFRemain

### Syntax

```
int getCFRemain(void);
```

### Description

Gets the CF remaining capacity value from the status data field of the data member. The unit is KB.

### Return value

Returns the remaining size.

## CDAQMXStatus::getCFSize

### Syntax

```
int getCFSize(void);
```

### Description

Gets the CF capacity value from the status data field of the data member.
The unit is KB.

### Return value

Returns the size.

## CDAQMXStatus::getCFStatus

### Syntax

```
int getCFStatus(void);
```

### Description

Gets the CF status type value from the status data field of the data member.

### Return value

Returns the CF status type.

## CDAQMXStatus::getConfigCnt

### Syntax

```
int getConfigCnt(void);
```

### Description

Gets the setting number value from the status data field of the data member.

### Return value

Returns the setup number.

## CDAQMXStatus::getDateTime

### Syntax

```
void getDateTime(CDAQDateTime & cDateTime);
```

### Parameters

| | |
|---|---|
| cDateTime | Specify the destination where the time information data is to be returned. |

### Description

Stores the time information data from the status data field of the data member in the specified field.

### Reference

```
getMilliSecond getTime
CDAQDateTime::setMilliSecond
CDAQDateTime::setTime
```

## CDAQMXStatus::getFIFONum

### Syntax

```
int getFIFONum(void);
```

### Description

Gets the valid number of FIFO value from the status data field of the data member.

### Return value

Returns the valid number of FIFOs.

## CDAQMXStatus::getFIFOStatus

### Syntax

```
int getFIFOStatus(int fifoNo);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Gets the FIFO status value of the FIFO information corresponding to the specified FIFO number from the status data field of the data member.

If it does not exist, “Unknown” is returned.

### Return value

Returns the FIFO status value.

### Reference

`getMXFIFOInfo`

## CDAQMXStatus::getInterval

### Syntax

```
int getInterval(int fifoNo);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Gets the interval type value of the FIFO information corresponding to the specified FIFO number from the status data field of the data member.

Returns 0 if it does not exist.

### Return value

Returns the interval type.

### Reference

`getMXFIFOInfo`

## CDAQMXStatus::getMilliSecond

### Syntax

int getMilliSecond(void);

### Description

Gets milliseconds from the status data field of the data member.

### Return value

Returns milliseconds.

## CDAQMXStatus::getMXFIFOInfo

### Syntax

```
MXFIFOInfo * getMXFIFOInfo(int fifoNo);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Gets the structure of the specified FIFO number from the status data field of the data member.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the structure.

## CDAQMXStatus::getMXStatus

### Syntax

```
void getMXStatus(MXStatus * pMXStatus);
```

### Parameters

pMXStatus Specify the destination where the status data is to be returned.

### Description

Gets the data in a structure.

Stores the contents of the data member in the specified structure.

## CDAQMXStatus::getNewDataNo

### Syntax

```
MXDataNo getNewDataNo(int fifoNo);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Gets the newest data number of the FIFO information corresponding to the specified FIFO number from the status data field of the data member.

Returns the constant for “Data number for instantaneous value specification” if it does not exist.

### Return value

Returns the data number.

### Reference

`getMXFIFOInfo`

## CDAQMXStatus::getOldDataNo

### Syntax

```
MXDataNo getOldDataNo(int fifoNo);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Gets the oldest data number of the FIFO information corresponding to the specified FIFO number from the status data field of the data member.

Returns the constant for “Data number for instantaneous value specification” if it does not exist.

### Return value

Returns the data number.

### Reference

`getMXFIFOInfo`

## CDAQMXStatus::getTime

### Syntax

```
time_t getTime(void);
```

### Description

Gets the number of seconds from the status data field of the data member.

### Return value

Returns seconds.

## CDAQMXStatus::getTimeCnt

### Syntax

```
int getTimeCnt(void);
```

### Description

Gets the time number value from the status data field of the data member.

### Return value

Returns the time number.

## CDAQMXStatus::getUnitStatus

### Syntax

```
int getUnitStatus(void);
```

### Description

Gets the unit status value from the status data field of the data member.

### Return value

Returns the unit status value.

## CDAQMXStatus::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member.

The default value as a general rule is 0.

### Reference

initMXStatus

## CDAQMXStatus::initMXStatus

### Syntax

```
static void initMXStatus(MXStatus * pMXStatus);
```

### Parameters

pMXStatus Specify the status data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXStatus::isBackup

### Syntax

```
int isBackup(void);
```

### Description

Gets the presence/absence of backup from the status data field of the data member.

### Return value

Returns a Boolean value.

## CDAQMXStatus::isDataNo

### Syntax

```
static int isDataNo(MXDataNo dataNo);
```

### Parameters

dataNo Specify the data number.

### Description

Checks whether the specified data number is a valid number.

Returns “Valid” if the data number is 0 or greater.

### Return value

Returns a Boolean value.

## CDAQMXStatus::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMXStatus");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a Boolean value.

## CDAQMXStatus::operator=

### Syntax

```
CDAQMXStatus & operator=(CDAQMXStatus & cMXStatus);
```

### Parameters

cMXStatus Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQMXStatus::setMXStatus

### Syntax

```
void setMXStatus(MXStatus * pMXStatus);
```

### Parameters

pMXStatus Specify the status data.

### Description

Sets the data in a structure.

Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

`initialize`

# CDAQMXSysInfo Class

This class stores the System configuration data of the MX100.
It is a wrapper class of the MXSystemInfo structure.
This class can be used as an interface for storing system configuration data when retrieving system configuration data and setup data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXSysInfo | Constructs an object. |
| ~CDAQMXSysInfo | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXSystemInfo | Gets the data in a structure. |
| setMXSystemInfo | Sets the data in a structure. |
| initMXSystemInfo | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getUnitType | Gets the unit type. |
| getStyle | Gets the style. |
| getUnitNo | Gets the unit number. |
| getTempUnit | Gets the temperature unit type. |
| getCFTimeout | Gets the timeout value. |
| getCFWriteMode | Gets the CF write mode. |
| getFrequency | Gets the power supply frequency. |
| getPartNo | Gets the part number. |
| getOption | Gets the option. |
| getUnitSerial | Gets the serial number of the unit. |
| getMAC | Gets the MAC address. |
| getModuleType | Gets the module type. |
| getChNum | Gets the number of channels. |
| getInterval | Gets the interval type. |
| getIntegral | Gets the type of A/D integration time. |
| getStandbyType | Gets the module type at startup. |
| getRealType | Gets the actual module type. |
| isModuleValid | Gets the Boolean value of the module. |
| getModuleVersion | Gets the module version. |
| getTerminalType | Gets the terminal type. |
| getFIFONo | Gets the FIFO number. |
| getModuleSerial | Gets the serial number of the module. |
| setUnitNo | Sets the unit number. |

| | |
|---|---|
| setTempUnit | Sets the temperature unit type. |
| setCFTimeout | Sets the timeout value. |
| setCFWriteMode | Sets the CF write mode. |
| setModule | Sets the module. |
| setRealModule | Changes the module to the actual module. |

**Check**

| | |
|---|---|
| isCorrect | Checks the validity. |

**Utilities**

| | |
|---|---|
| getItemError | Gets the number of the parameter on which an error was detected. |
| isObject | Checks an object. |

**Operator**

| | |
|---|---|
| operator= | Executes substitution. |

## Protected Members

**Data Members**

| | |
|---|---|
| m_MXSystemInfo | Field for storing the system configuration data. |
| m_nItemError | Field for storing the setting item number. |

**Member Access**

| | |
|---|---|
| getMXModuleData | Gets the module information structure for each module. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXSysInfo::CDAQMXSysInfo

**Syntax**

```
CDAQMXSysInfo(MXSystemInfo * pMXSystemInfo = NULL);
virtual ~CDAQMXSysInfo(void);
```

**Parameters**

| | |
|---|---|
| pMXSystemInfo | Specify the system configuration data. |

**Description**

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

**Reference**

`setMXSystemInfo`

## CDAQMXSysInfo::getCFTimeout

### Syntax

```
int getCFTimeout(void);
```

### Description

Gets the timeout value from the System configuration data field of the data member.

### Return value

Returns the timeout value.

## CDAQMXSysInfo::getCFWriteMode

### Syntax

```
int getCFWriteMode(void);
```

### Description

Gets the CF write mode value from the System configuration data field of the data member.

### Return value

Returns the CF write mode.

## CDAQMXSysInfo::getChNum

### Syntax

```
int getChNum(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the number of channels of the module corresponding to the specified module number from the System configuration data field of the data member.

Returns 0 if it does not exist.

### Return value

Returns the number of channels.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::getFIFONo

### Syntax

```
int getFIFONo(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the FIFO number of the module corresponding to the specified module number from the System configuration data field of the data member.
Returns a negative value if it does not exist.

### Return value

Returns the FIFO number.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::getFrequency

### Syntax

```
int getFrequency(void);
```

### Description

Gets the power supply frequency from the System configuration data field of the data member.

### Return value

Returns the power supply frequency.

## CDAQMXSysInfo::getIntegral

### Syntax

```
int getIntegral(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the type of A/D integration time of the module corresponding to the specified module number from the System configuration data field of the data member.
If it does not exist, “Automatic” is returned.

### Return value

Returns the type of AD integration time.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::getInterval

### Syntax

```
int getInterval(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the interval type of the module corresponding to the specified module number from the System configuration data field of the data member.

Returns 0 if it does not exist.

### Return value

Returns the interval type.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::getItemError

### Syntax

```
int getItemError(void);
```

### Description

Gets the value of the setting item number field of the data member.

### Return value

Returns the setting item number.

## CDAQMXSysInfo::getMAC

### Syntax

```
unsigned char getMAC(int index);
```

### Parameters

index Specify the byte position.

### Description

Gets the MAC address from the System configuration data field of the data member.

The address is retrieved in units of bytes. Returns 0 if the value is outside the range.

The byte position is an integer starting with 0.

There is a definition for the number of MAC address elements.

### Return value

Returns the byte value.

## CDAQMXSysInfo::getModuleSerial

### Syntax

```
const char * getModuleSerial(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the serial number of the module corresponding to the specified module number from the System configuration data field of the data member.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::getModuleType

### Syntax

```
int getModuleType(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the module type of the module corresponding to the specified module number from the System configuration data field of the data member.

If it does not exist, “No module” is returned.

### Return value

Returns the module type.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::getModuleVersion

### Syntax

```
int getModuleVersion(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the module version of the module corresponding to the specified module number from the System configuration data field of the data member.

Returns 0 if it does not exist.

### Return value

Returns the module version.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::getMXModuleData

### Syntax

```
MXModuleData * getMXModuleData(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the structure of the specified module number from the System configuration data field of the data member.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the structure.

## CDAQMXSysInfo::getMXSystemInfo

### Syntax

```
void getMXSystemInfo(MXSystemInfo * pMXSystemInfo);
```

### Parameters

pMXSystemInfo Specify the destination where the system configuration data is to be returned.

### Description

Gets the data in a structure.

Stores the contents of the data member in the specified structure.

## CDAQMXSysInfo::getOption

### Syntax

```
int getOption(void);
```

### Description

Gets the option value from the System configuration data field of the data member.

### Return value

Returns the option.

## CDAQMXSysInfo::getPartNo

### Syntax

```
const char * getPartNo(void);
```

### Description

Gets the part number from the System configuration data field of the data member.

### Return value

Returns a pointer to the string.

## CDAQMXSysInfo::getRealType

### Syntax

```
int getRealType(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the actual module type of the module corresponding to the specified module number from the System configuration data field of the data member.

If it does not exist, “No module” is returned.

### Return value

Returns the module type.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::getStandbyType

### Syntax

```
int getStandbyType(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the module type upon startup of the module corresponding to the specified module number from the System configuration data field of the data member.
If it does not exist, “No module” is returned.

### Return value

Returns the module type.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::getStyle

### Syntax

```
int getStyle(void);
```

### Description

Gets the style from the System configuration data field of the data member.

### Return value

Returns the style value.

## CDAQMXSysInfo::getTempUnit

### Syntax

```
int getTempUnit(void);
```

### Description

Gets the temperature units from the System configuration data field of the data member.

### Return value

Returns the temperature unit type.

## CDAQMXSysInfo::getTerminalType

**Syntax**

```
int getTerminalType(int moduleNo);
```

**Parameters**

moduleNo Specify the module number.

**Description**

Gets the terminal type of the module corresponding to the specified module number from the System configuration data field of the data member.
If it does not exist, “Clamp” is returned.

**Return value**

Returns the terminal type.

**Reference**

getMXModuleData

## CDAQMXSysInfo::getUnitNo

**Syntax**

```
int getUnitNo(void);
```

**Description**

Gets the unit number value from the System configuration data field of the data member.

**Return value**

Returns the unit number.

## CDAQMXSysInfo::getUnitSerial

**Syntax**

```
const char * getUnitSerial(void);
```

**Description**

Gets the serial number of the unit from the System configuration data field of the data member.

**Return value**

Returns a pointer to the string.

## CDAQMXSysInfo::getUnitType

**Syntax**

```
int getUnitType(void);
```

**Description**

Gets the unit type value from the System configuration data field of the data member.

**Return value**

Returns the unit type.

## CDAQMXSysInfo::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member.

The default value as a general rule is 0.

The timeout value is set to default.

### Reference

```
initMXSystemInfo setCFTimeout
```

## CDAQMXSysInfo::initMXSystemInfo

### Syntax

```
static void initMXSystemInfo(MXSystemInfo * pMXSystemInfo);
```

### Parameters

pMXSystemInfo  Specify the system configuration data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQMXSysInfo::isCorrect

### Syntax

```
int isCorrect(void);
```

### Description

Checks the validity.

Checks each setting item.

Checks the FIFO number limit.

If an invalid value is detected, Invalid is returned.

If an invalid value is detected, the setting item number than indicates the detected location is stored in the setting item number field of the data member.

### Return value

Returns a Boolean value.

### Reference

```
getCFTimeout getCFWriteMode getMXModuleData getTempUnit
getUnitNo
```

## CDAQMXSysInfo::isModuleValid

### Syntax

```
int isModuleValid(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Gets the Boolean value of the module corresponding to the specified module number from the System configuration data field of the data member.

If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMXSysInfo");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a Boolean value.

## CDAQMXSysInfo::operator=

### Syntax

```
CDAQMXSysInfo & operator=(CDAQMXSysInfo & cMXSysInfo);
```

### Parameters

cMXSysInfo Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQMXSysInfo::setCFTimeout

### Syntax

```
void setCFTimeout(int timeout = 60);
```

### Parameters

| | |
|---|---|
| timeout | Sets the timeout value. |

### Description

Stores the specified value in the System configuration data field of the data member.
The unit is seconds.

## CDAQMXSysInfo::setCFWriteMode

### Syntax

```
void setCFWriteMode(int iCFWriteMode);
```

### Parameters

| | |
|---|---|
| iCFWriteMode | Specify the CF write mode. |

### Description

Stores the specified value in the System configuration data field of the data member.

## CDAQMXSysInfo::setModule

### Syntax

```
void setModule(int moduleNo, int iModuleType, int iChNum, int
iInterval, int iHz = DAQMX_INTEGRAL_AUTO);
```

### Parameters

| | |
|---|---|
| moduleNo | Specify the module number. |
| iModuleType | Specify the module type. |
| iChNum | Specify the number of channels. |
| iInterval | Specify the interval type. |
| iHz | Specify the type of A/D integration time. |

### Description

Stores the specified values in the data member's System configuration data field of the module corresponding to the specified module number.
If the module does not exist, the value is not stored.

### Reference

`getMXModuleData`

## CDAQMXSysInfo::setMXSystemInfo

### Syntax

```
void setMXSystemInfo(MXSystemInfo * pMXSystemInfo);
```

### Parameters

pMXSystemInfo Specify the system configuration data.

### Description

Sets the data in a structure.

Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

```
initialize
```

## CDAQMXSysInfo::setRealModule

### Syntax

```
int setRealModule(int moduleNo);
```

### Parameters

moduleNo Specify the module number.

### Description

Sets the module corresponding to the specified module number to the actual module type.

Updates the module settings corresponding to the module number specified in the System configuration data field of the data member.

The settings are set to the default values of the module type.

Returns the actual module type.

### Return value

Returns the module type.

### Reference

```
getRealType setModule
```

## CDAQMXSysInfo::setTempUnit

### Syntax

```
void setTempUnit(int iTempUnit);
```

### Parameters

iTempUnit Specify the temperature unit type.

### Description

Stores the specified value in the System configuration data field of the data member.

## CDAQMXSysInfo::setUnitNo

### Syntax

```
void setUnitNo(int unitNo);
```

### Parameters

| | |
|---|---|
| unitNo | Specify the unit number. |

### Description

Stores the specified value in the System configuration data field of the data member.

# CDAQMXTransmit Class

This class stores the transmission output data of the MX100.
It is a wrapper class of the MXTransmit structure.
It is a group of transmissions statuses of all the channels.
Each data can be accessed by transmission output data number. The transmission output data number is the PWM data number or the AO data number.
This class can be used as an interface for setting and retrieving transmission output data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXTransmit | Constructs an object. |
| ~CDAQMXTransmit | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getMXTransmit | Gets the data in a structure. |
| setMXTransmit | Sets the data in a structure. |
| initMXTransmit | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getTransmit | Gets the transmission status. |
| setTransmit | Sets the transmission status. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

## Protected Members

### Data Members

| | |
|---|---|
| m_MXTransmit | Field for storing the transmission status. |

## Private Members

None.

# Member Functions (Alphabetical Order)

## CDAQMXTransmit::CDAQMXTransmit

### Syntax

```
CDAQMXTransmit(MXTransmit * pMXTransmit = NULL);
virtual ~CDAQMXTransmit(void);
```

### Parameters

pMXTransmit Specify the transmission status.

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

`setMXTransmit`

## CDAQMXTransmit::getMXTransmit

### Syntax

```
void getMXTransmit(MXTransmit * pMXTransmit);
```

### Parameters

pMXTransmit Specify the return destination of the transmission status.

### Description

Gets the data in a structure.

Stores the contents of the data member in the specified structure.

## CDAQMXTransmit::getTransmit

### Syntax

```
int getTransmit(int aopwmNo);
```

### Parameters

aopwmNo Specify the AO/PWM data number.

### Description

Gets the transmission status of the specified data number from the data member.

If it does not exist, “Unspecified (unknown)” is returned.

### Return value

Returns the transmission status.

## CDAQMXTransmit::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member.

The default value as a general rule is 0.

### Reference

```
initMXTransmit
```

## CDAQMXTransmit::initMXTransmit

### Syntax

```
static void initMXTransmit(MXTransmit * pMXTransmit);
```

### Parameters

pMXTransmit Specify the transmission status field.

### Description

Initializes the specified field.

```
The default value as a general rule is 0.
```

## CDAQMXTransmit::isObject

### Syntax

```
virtual int isObject(const char * classname =
"CDAQMXTransmit");
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a Boolean value.

## CDAQMXTransmit::operator=

### Syntax

```
CDAQMXTransmit & operator=(CDAQMXTransmit & cMXTransmit);
```

### Parameters

cMXTransmit Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQMXTransmit::setMXTransmit

### Syntax

```
void setMXTransmit(MXTransmit * pMXTransmit);
```

### Parameters

pMXTransmit Specify the transmission status.

### Description

Sets the data in a structure.

Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

`initMXTransmit`

## CDAQMXTransmit::setTransmit

### Syntax

```
void setTransmit(int aopwmNo, int iTransmit);
```

### Parameters

aopwmNo Specify the AO/PWM data number.

iTransmit Specify the transmission status.

### Description

Stores the specified value in the field indicated by the specified data number of the data member.

If the data number is set to “Specify All AO/PWM data numbers” the same value is stored in all data.

# 3.1 Functions and Their Functionalities - MX100/ Visual C -

This section indicates the correspondence between the functionalities that the API supports and the C functions.



## Communication Functions

| Function | Function |
|---|---|
| Connect to the MX100. | openMX |
| Disconnect from the MX100. | closeMX |
| Set the communication timeout. | setTimeOutMX |

*Note*

Setting of the communication timeout is not recommended because unexpected disconnection may occur due to the conflict with the timeout time when data is retrieved.

## Control Functions

### Starting/Stopping the FIFO

| Function | Function |
|---|---|
| Start the FIFO | startFIFOMX |
| Stop the FIFO | stopFIFOMX |
| Set auto control of the FIFO. | autoFIFOMX |

### Other Controls

| Function | FIFO | Function |
|---|---|---|
| Set the number of seconds from the reference date/time (Jan. 1, 1970) on the MX100. | Stop | setDateTimeMX |
| Set the MX100 to the current date/time. | Stop | setDateTimeNowMX |
| Turn ON/OFF data saving to the CF card (data backup). | Continue | setBackupMX |
| Format the CF card. | Stop | formatCFMX |
| • Reconfigure the system of the unit. | Stop | initSystemMX |
| • Initialize the system of the unit. | Stop | |
| • Reset alarms (alarm ACK) of the unit. | Continue | |
| Set the 7-segment LED display. | Continue | setSegmentMX |

The FIFO column in the table indicates the FIFO operation when the function is executed while FIFO is running.
Stop: Stops the FIFO when the function is executed.
Continue: Continues the FIFO even when the function is executed.
With the backup settings, if the CF write mode is changed, the FIFO stops. The CF write mode for backup settings performs a setting change (modifies collectively acquired data and sends it collectively).

*Note*

If the auto control of the FIFO is enabled, the FIFO is automatically resumed when the FIFO is stopped due to an execution of a function.

# Functionality

## Collective Setup

| Function | FIFO | Function |
|---|---|---|
| Configure the setup data collectively. | Stop | setConfigDataMX |
| Set the setup data (system setup data). | Stop | setSystemConfigMX |
| Configure the setup data (channel setup data). | Stop | setChConfigMX |
| Set the DO (Digital Output) data collectively. | Continue | setDODataMX |
| Send AO/PWM data collectively. | Continue | setAOPWMDataMX |
| Send transmission output data | Continue | setTransmitMX |

For a description of the FIFO column in the table, see the explanation given in “Other Controls” on the previous page. If an invalid data error occurs during entry of setup data, the last detected item is saved as a setup item number. It can be retrieved with a utility.  It can be retrieved with a utility.

## Individual Setup

| Function | | FIFO | Function |
|---|---|---|---|
| Set initial balance data | | Stop | setBalanceMX |
| Set output channel data | | Stop | setOutputMX |
| Initial balance data | Execute | Stop | runBalanceMX |
| | Reset | Stop | resetBalanceMX |

## Setup Change

| Function | | FIFO | Function |
|---|---|---|---|
| Range Settings | SKIP (not used) | Stop | setSKIPMX |
| | DC voltage input | Stop | setVOLTMX |
| | Thermocouple input | Stop | setTCMX |
| | RTD input | Stop | setRTDMX |
| | Digital input (DI) | Stop | setDIMX |
| | Difference computation between channels | Stop | setDELTAMX |
| | Remote RJC | Stop | setRRJCMX |
| | Resistance input | Stop | setRESMX |
| | Strain | Stop | setSTRAINMX |
| | AO | Stop | setAOMX |
| | PWM | Stop | setPWMMX |
| | Pulse | Stop | setPULSEMX |
| | Communication | Stop | setCOMMX |
| Set the unit name of the channel. | | Stop | setScallingUnitMX |

| Function | | FIFO | Function |
|---|---|---|---|
| Set the channel tag. | | Stop | setTagMX |
| Set a comment for the channel. | | Stop | setCommentMX |
| Set the alarm. | | Stop | setAlarmMX |
| Set the RJC used on the channel. | | Stop | setRJCTypeMX |
| Set the filter. | | Stop | setFilterMX |
| Set the burnout detection action. | | Stop | setBurnoutMX |
| Set the alarm to be assigned to the DO channel (To set a DO channel to alarm output, use the setDOTypeMX function.) | | Stop | setRefAlarmMX |
| Set the scan interval. | | Stop | setIntervalMX |
| Set the temperature unit. | | Stop | setTempUnitMX |
| Set the ID number of the unit. | | Stop | setUnitNoMX |
| Set the timeout value (the time from the disconnection to the start of saving to the CF card). For the calculation method of the timeout value, see appendix 3. | | Stop | setSystemTimeoutMX |
| Set the signal type to be assigned to the DO channel. | | Stop | setDOTypeMX |
| Set the AO channel type. | | Stop | setAOTypeMX |
| Set the PWM channel type. | | Stop | setPWMTypeMX |
| Output channel data | Output types | Stop | setOutputTypeMX |
| | Selected value | Stop | setChoiceMX |
| | Pulse interval integer multiple | Stop | setPulseTimeMX |
| Change a portion of the DO data. | | Continue | changeDODataMX |
| Change a portion of the AO/PWM data changeAOPWMDataMX | | Continue | |
| Change a portion of the initial balance data | | Continue | changeBalanceMX |
| Change a portion of the transmission output data | | Continue | changeTransmitMX |
| Sets the chattering filter on the channel. | | Stop | setChatFilterMX |

For a description of the FIFO column in the table, see the explanation given in “Other Controls” on the previous page. If an invalid data error occurs, the last detected item is saved as a setting item number. It can be retrieved with a utility.

## Data Retrieval Functions

### Retrieval of System Status Data and System Configuration Data

| Function | Function |
|---|---|
| Get system status data. | getStatusDataMX |
| Get system configuration data. | getSystemConfigMX |

## Retrieval of Setup Data

| Function | Function |
|---|---|
| Get the setup data collectively | getConfigDataMX |
| Declare the retrieval of the setup data.<br>Retrieves setup data other than the channel setup data. | talkConfigMX |
| Get channel setup data.<br>Function used to retrieve channel setup data after declaring the retrieval of setup data using the talkConfigMX function. | getChConfigMX |

## Retrieval of DO Data

| Function | Function |
|---|---|
| Get the DO data collectively. | getDODataMX |

## Retrieval of AO/PWM Data and Transmission Output Data

| Function | Function |
|---|---|
| Get AO/PWM data and transmission output data collectively. | getAOPWMDataMX |

## Retrieval of Channel Information Data

| Function | Function |
|---|---|
| Declare the retrieval of the channel information data. | talkChInfoMX |
| Get channel information data collectively. | getChInfoMX |

## Retrieval of Measured Data (Channel Designation)

| Function | Function |
|---|---|
| Get the most recent data range of the specified channel. | getChDataNoMX |
| Declare the retrieval of the measured data of the specified channel. | talkChDataMX |
| Declare the retrieval of the instantaneous values of the specified channel. | talkChDataInstMX |
| Get the time information of the specified channel for each data number. | getTimeDataMX |
| Get the measured data of the specified channel. | getChDataMX |

## Retrieval of Measured Data (FIFO Designation)

| Function | Function |
|---|---|
| Get the most recent data range of the specified FIFO number. | getFIFODataNoMX |
| Declare the retrieval of the measured data of the specified FIFO number. | talkFIFODataMX |
| Declare the retrieval of the instantaneous values of the specified FIFO number. | talkFIFODataInstMX |
| Get the time information of the specified FIFO number for each data number. | getTimeDataMX |
| Get the measured data of the specified FIFO number. | getChDataMX |

Measured data retrieval is possible only when the FIFO is running.

### Retrieval of Initial Balance Data

| Function | Function |
|---|---|
| Get initial balance data collectively. | getBalanceMX |

### Retrieve Output Channel Data

| Function | Function |
|---|---|
| Get output channel data collectively. | getOutputMX |

## Utilities

| Function | | Function |
|---|---|---|
| Insert the specified user count (user-defined order information) in the next packet to be issued. | | setUserTimeMX |
| Get the MX100-specific error that was received last through communications. | | getLastErrorMX |
| Convert the measured value into double-precision floating point number. | | toDoubleValueMX |
| Convert the measured value into string. | | toStringValueMX |
| Get the alarm type string. | | toAlarmNameMX<br>getAlarmNameMX |
| Get the version number of this API. | | getVersionAPIMX |
| Get the revision number of this API. | | getRevisionAPIMX |
| Get the error message string. | | getErrorMessageMX<br>toErrorMessageMX |
| Get the maximum length of the error message string. | | getMaxLenErrorMessageMX |
| Create data number equal to increment (specified data number) + (specified value). | | incrementDataNoMX |
| Create data number equal to (specified data number). | | decrementDataNoMX |
| Compare the two specified data numbers. | | compareDataNoMX |
| Convert the time information to date and time. | | toDateTimeMX |
| Get the number of the parameter on which an error was detected. | | getItemErrorMX |
| Get the maximum length of the alarm string. | | getMaxLenAlarmNameMX |
| AO/PWM | Convert the output values to output data values. | toAOPWMValueMX |
| | Convert the output data values to output values. | toRealValueMX |
| Check the validity of data numbers. | | isDataNoMX |
| Convert to style version. | | toStyleVersionMX |

# 3.2 Program - MX100/Visual C -

## Adding the Path to the Include File

Add the path of the include file (DAQMX.h) to the project. The method of adding the include file varies depending on the environment used.

## Declaration in the Source File

Write the declaration in the source file.

```
#include "DAQMX.h"
```

*Note*

The include file of the common section (DAQHandler.h) is referenced from the include file described above. Thus, declaration for it is not necessary.

## Load Library Statement

The statement below is added so that the executable module (.dll) of the API can link to the process.

The executable module (.dll) of the API is mapped within the address space (LoadLibrary). Next, the address of the export function in the executable module is retrieved (GetProcAddress).

The callback type of the function pointer is the function name with a prefix “DLL” added and converted to uppercase. It is defined in the include file of the API.

```
HMODULE pDll = LoadLibrary("DAQMX");
DLLOPENMX openMX = (DLLOPENMX)GetProcAddress(pDll, "openMX");
```

# Retrieval of the Measured Data

## Program Example 1

This program retrieves measured data.

```
////////////////////////////////////////////////////////////
// MX100 sample for measurement
#include <stdio.h>
#include "DAQMX.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  DAQMX comm; //discriptor
  int flag;
  MXDataNo startNo, endNo, dataNo;
  MXUserTime usertime;
  MXDateTime datetime;
  MXChInfo chinfo;
  MXDataInfo datainfo;
#ifdef WIN32
  HMODULE pDll; //DLL handle
  //callback
  DLLOPENMX openMX;
  DLLCLOSEMX closeMX;
  DLLSTARTFIFOMX startFIFOMX;
  DLLSTOPFIFOMX stopFIFOMX;
  DLLGETFIFODATANOMX getFIFODataNoMX;
  DLLTALKFIFODATAMX talkFIFODataMX;
  DLLGETTIMEDATAMX getTimeDataMX;
  DLLGETCHDATAMX getChDataMX;
  //laod
  pDll = LoadLibrary("DAQMX");
  //get address
  openMX = (DLLOPENMX)GetProcAddress(pDll, "openMX");
  closeMX = (DLLCLOSEMX)GetProcAddress(pDll, "closeMX");
  startFIFOMX = (DLLSTARTFIFOMX)GetProcAddress(pDll,
"startFIFOMX");
  stopFIFOMX = (DLLSTOPFIFOMX)GetProcAddress(pDll,
"stopFIFOMX");
  getFIFODataNoMX = (DLLGETFIFODATANOMX)GetProcAddress(pDll,
"getFIFODataNoMX");
  talkFIFODataMX = (DLLTALKFIFODATAMX)GetProcAddress(pDll,
"talkFIFODataMX");
  getTimeDataMX = (DLLGETTIMEDATAMX)GetProcAddress(pDll,
"getTimeDataMX";
  getChDataMX = (DLLGETCHDATAMX)GetProcAddress(pDll,
"getChDataMX");
#endif //WIN32
```

```
  //connect
  comm = openMX("192.168.1.12" &rc);
  //get by FIFO
  rc = startFIFOMX(comm);
  rc = getFIFODataNoMX(comm, 0, &startNo, &endNo);
  rc = talkFIFODataMX(comm, 0, startNo, endNo);
  do { //date time
    rc = getTimeDataMX(comm, &dataNo, &datetime, &usertime,
&flag);
  } while (! (flag & DAQMX_FLAG_ENDDATA));
  do { //meaasured data
    rc = getChDataMX(comm, &dataNo, &chinfo, &datainfo,
&flag);
  } while (! (flag & DAQMX_FLAG_ENDDATA));
  rc = stopFIFOMX(comm);
  //disconenct
  rc = closeMX(comm);
#ifdef WIN32
  FreeLibrary(pDll);
#endif
  return rc;
}
////////////////////////////////////////////////////////////////
```

## Description

### Overview

Data retrieval is possible by starting the FIFO. The range to be retrieved is specified by the FIFO number and the data number. The time stamp corresponding to the data number and the measured data are retrieved separately. The end is determined by the flag.

### Include File Statement

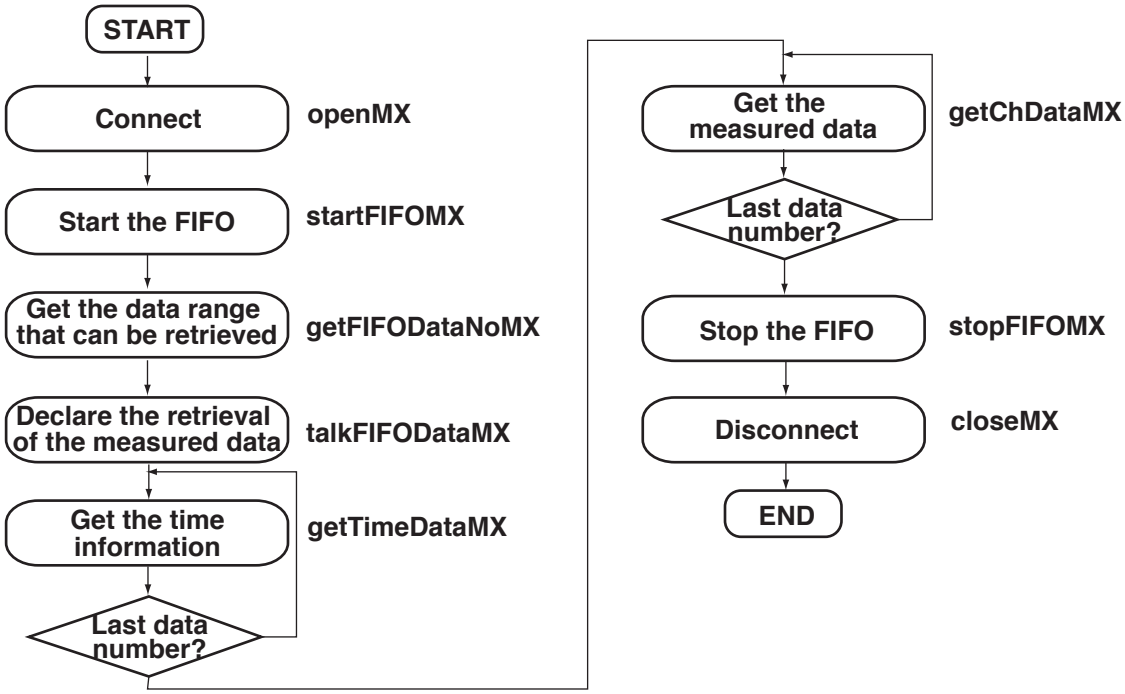
```
#include "DAQMX.h"
```

### Load Library Statement

The load library statement is from #ifdef WIN32 to #endif //WIN32.A callback type (such as DLLOPENMX) is used.

### Flow of the Process

The flow chart shown below omits the declaration section.




### Communication Process

First, make a connection. After making the connection, the functions become available. As a termination procedure, disconnect the communication.

*Note*

- If there is no access for approximately three minutes, the MX100 drops the connection. Drop the connection if you are not accessing the MX100 for an extended time. Make the connection only when necessary.
- If you want to keep the connection open, run status retrieval.

### Communication Connection

```
openMX("192.168.1.12" &rc)
```

The IP address of the MX100 is specified.

This statement implicitly specifies the communication constant for the communication port number of the MX100.

### FIFO Start

```
startFIFOMX(comm)
```

Starts the FIFO.

### Retrieval of Data Range

```
getFIFODataNoMX(comm, 0, &startNo, &endNo)
```

Retrieves the range from the next data following the data retrieved last to the most recent data of the specified FIFO number using data numbers.

### Talker

```
talkFIFODataMX(comm, 0, startNo, endNo)
```

Specifies the data range and declares the retrieval of the FIFO data (measured data retrieval declaration).

### Retrieval of the FIFO Data Time Information

```
getTimeDataMX(comm, &dataNo, &datetime, &usertime, &flag)
```

Gets the time information in the specified range in units of data numbers.
The end is determined by the flag status of “end data.”

*Note*

usertime is the user-defined sequence information (user count). The value specified in advance using the setUserTimeMX function is returned.

### Retrieval of FIFO Data

```
getChDataMX(comm, &dataNo, &chinfo, &datainfo, &flag)
```

Gets the measured data in the specified range in units of channels.
The end is determined by the flag status of “end data.”

### FIFO Stop

```
stopFIFOMX(comm)
```

Stops the FIFO.

### Comm. cut

```
closeMX(comm)
```

Drops the connection.

# Retrieval of Setup Data and Configuration

## Program Example 2

This program executes the following three items. This program contains all four items, but each item can be written and executed separately.

- Get the setup data collectively
- Configure the setup data collectively.
- Set a DC voltage range to the channel

```
////////////////////////////////////////////////////////////
// MX100 sample for configuration
#include <stdio.h>
#include "DAQMX.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  DAQMX comm; //discriptor
  //data
  MXConfigData configdata;
#ifdef WIN32
  HMODULE pDll; //DLL handle
  //callback
  DLLOPENMX openMX;
  DLLCLOSEMX closeMX;
  DLLGETCONFIGDATAMX getConfigDataMX;
  DLLSETCONFIGDATAMX setConfigDataMX;
  DLLSETVOLTMX setVOLTMX;
  //laod
  pDll = LoadLibrary(ìDAQMX”;
  //get address
  openMX = (DLLOPENMX)GetProcAddress(pDll, "openMX");
  closeMX = (DLLCLOSEMX)GetProcAddress(pDll, "closeMX");
  getConfigDataMX = (DLLGETCONFIGDATAMX)GetProcAddress(pDll,
"getConfigDataMX");
  setConfigDataMX = (DLLSETCONFIGDATAMX)GetProcAddress(pDll,
"setConfigDataMX");
  setVOLTMX = (DLLSETVOLTMX)GetProcAddress(pDll, "setVOLTMX");
#endif //WIN32
  //connect
  comm = openMX("192.168.1.12" &rc);
  //get
  rc = getConfigDataMX(comm, &configdata);
  //set
  rc = setConfigDataMX(comm, &configdata);
  //range
  rc = setVOLTMX(comm, DAQMX_RANGE_VOLT_20MV, 1, 1, 0, 0, 0,
0, 0);
```

```
  //disconnect
  rc = closeMX(comm);
#ifdef WIN32
  FreeLibrary(pDll);
#endif
  return rc;
}
////////////////////////////////////////////////////////////
```

### Description

#### Collective Retrieval of Setup Data

`getConfigDataMX(comm, &configdata)`

The setup data below can be retrieved by the collective retrieval of setup data. For details on the items that can be retrieved, see section 6.4, “MX100 Types.”

- System configuration data: Stored in the MXSystemInfo structure.
- Status: Stored in the MXStatus structure.
- Basic settings: Basic settings of the system.

*Note*

The setup data can also be retrieved using the talkConfigMX function and the getChConfigMX function. The talkConfigMX function is used to declare the retrieval of the setup data and retrieve the system configuration data, status, and network information data. Then, the getChConfigMX function is used to retrieve channel setup data in units of channels.

#### Collective Setting of Setup Data

`setConfigDataMX(comm, &configdata)`

The data below can be set by the collective setting of setup data. For details on the items that can be set, see section 6.4, “MX100 Types.”

- System configuration data: Contents of the MXSystemInfo structure.
- Basic settings: Basic settings of the system.

#### Setting a DC voltage range to the channel

`setVOLTMX(comm, DAQMX_RANGE_VOLT_20MV, 1, 1, 0, 0, 0, 0, 0)`

Sets channel number 1 to DC voltage range 20 mV. Scaling is not used.

## Error Processing

- Most functions return the result of the function process using an error number (0 if successful).
- The function getErrorMessageMX can be used to get the error message string corresponding to the error number. The function getMaxLenErrorMessageMX can be used to get the maximum length of the error message string.
- The function getLastErrorMX can be used to get the errors from the MX100.
- If an invalid data error occurs in the settings, the setting item number of the detected error is retrieved by the function.

# 4.1 Functions and Their Functionalities - MX100/ Visual Basic -

This section indicates the correspondence between the functionalities that the API supports and the Visual Basic functions.

## Communication Functions

| Function | Function |
|---|---|
| Connect to the MX100. | openMX |
| Disconnect from the MX100. | closeMX |
| Set the communication timeout. | setTimeOutMX |

*Note*

Setting of the communication timeout is not recommended because unexpected disconnection may occur due to the conflict with the timeout time when data is retrieved.

## Control Functions

### Starting/Stopping the FIFO

| Function | Function |
|---|---|
| Start the FIFO | startFIFOMX |
| Stop the FIFO | stopFIFOMX |
| Set auto control of the FIFO. | autoFIFOMX |

### Other Controls

| Function | FIFO | Function |
|---|---|---|
| Set the number of seconds from the reference date/time (Jan. 1, 1970) on the MX100. | Stop | setDateTimeMX |
| Set the MX100 to the current date/time. | Stop | setDateTimeNowMX |
| Turn ON/OFF data saving to the CF card (data backup). | Continue | setBackupMX |
| Format the CF card. | Stop | formatCFMX |
| • Reconfigure the system of the unit. | Stop | initSystemMX |
| • Initialize the system of the unit. | Stop | |
| • Reset alarms (alarm ACK) of the unit. | Continue | |
| Set the 7-segment LED display. | Continue | setSegmentMX |

The FIFO column in the table indicates the FIFO operation when the function is executed while FIFO is running.
Stop: Stops the FIFO when the function is executed.
Continue: Continues the FIFO even when the function is executed.
With the backup settings, if the CF write mode is changed, the FIFO stops. The CF write mode for backup settings performs a setting change (modifies collectively acquired data and sends it collectively).

*Note*

If the auto control of the FIFO is enabled, the FIFO is automatically resumed when the FIFO is stopped due to an execution of a function.

# Functionality

## Collective Setup

| Function | FIFO | Function |
|---|---|---|
| Set the setup data (system setup data). | Stop | setSystemConfigMX |
| Configure the setup data (channel setup data). | Stop | setChConfigMX |
| Set the DO (Digital Output) data collectively. | Continue | setDODataMX |
| Transmit AO/PWM data | Continue | setAOPWMDataMX |
| Send transmission Output Data | Continue | setTransmitMX |

For a description of the FIFO column in the table, see the explanation given in "Other Controls" on the previous page. Setup data cannot be handled collectively. If an invalid data error occurs, the last detected item is saved as a setting item number. It can be retrieved with a utility.

## Individual Setup

| Function | | FIFO | Function |
|---|---|---|---|
| Set initial balance data | | Stop | setBalanceMX |
| Set output channel data | | Stop | setOutputMX |
| Initial balance data | Execute | Stop | runBalanceMX |
| | Reset | Stop | resetBalanceMX |

## Setup Change

| Function | | FIFO | Function |
|---|---|---|---|
| Range Settings | SKIP (not used) | Stop | setSKIPMX |
| | DC voltage input | Stop | setVOLTMX |
| | Thermocouple input | Stop | setTCMX |
| | RTD input | Stop | setRTDMX |
| | Digital input (DI) | Stop | setDIMX |
| | Difference computation between channels | Stop | setDELTAMX |
| | Remote RJC | Stop | setRRJCMX |
| | Resistance | Stop | setRESMX |
| | Strain | Stop | setSTRAINMX |
| | AO | Stop | setAOMX |
| | PWM | Stop | setPWMMX |
| | Pulse | Stop | setPULSEMX |
| | Communication | Stop | setCOMMX |
| Set the unit name of the channel. | | Stop | setScallingUnitMX |
| Set the channel tag. | | Stop | setTagMX |
| Set a comment for the channel. | | Stop | setCommentMX |
| Set the alarm. | | Stop | setAlarmMX |

| Function | | FIFO | Function |
|---|---|---|---|
| Set the RJC used on the channel. | | Stop | setRJCTypeMX |
| Set the filter. | | Stop | setFilterMX |
| Set the burnout detection action. | | Stop | setBurnoutMX |
| Set the alarm to be assigned to the DO channel to which an alarm output was specified. (To set a DO channel to alarm output, use the setDOTypeMX function.) | | Stop | setRefAlarmMX |
| Set the scan interval. | | Stop | setIntervalMX |
| Set the temperature unit. | | Stop | setTempUnitMX |
| Set the ID number of the unit. | | Stop | setUnitNoMX |
| Set the timeout value (the time from the disconnection to the start of saving to the CF card. For the calculation method of the timeout value, see appendix 3. | | Stop | setSystemTimeoutMX |
| Set the signal type to be assigned to the DO channel. | | Stop | setDOTypeMX |
| Sets the AO channel type. | | Stop | setAOTypeMX |
| Set the PWM type for the channel | | Stop | setPWMTypeMX |
| Output channel data | Output types | Stop | setOutputTypeMX |
| | Selected value | Stop | setChoiceMX |
| | Pulse interval integer multiple | Stop | setPulseTimeMX |
| Change a portion of the DO data. | | Continue | changeDODataMX |
| Change a portion of the AO/PWM data | | Continue | changeAOPWMDataMX |
| Change a portion of the initial balance data | | Continue | changeBalanceMX |
| Change a portion of the transmission output data | | Continue | changeTransmitMX |
| Sets the chattering filter on the channel. | | Stop | setChatFilterMX |

Automatically sent individually. The FIFO stops.
For a description of the FIFO column in the table, see the explanation given in “Other Controls” on the previous page.

# Data Retrieval Functions

## Retrieval of System Status Data and System Configuration Data

| Function | Function |
|---|---|
| Get system status data. | getStatusDataMX |
| Get system configuration data. | getSystemConfigMX |

## Retrieval of Setup Data

| Function | Function |
|---|---|
| Declare the retrieval of the setup data.<br>Retrieve setup data other than the channel setup data. | talkConfigMX |
| Get channel setup data.<br>Function used to retrieve channel setup data after declaring the retrieval of setup data using the talkConfigMX function. | getChConfigMX |

## Retrieval of DO data

| Function | Function |
|---|---|
| Get the DO data collectively. | getDODataMX |

## Retrieval of AO/PWM Data and Transmission Output Data

| Function | Function |
|---|---|
| Get AO/PWM data and transmission output data collectively. | getAOPWMDataMX |

## Retrieval of Channel Information Data

| Function | Function |
|---|---|
| Declare the retrieval of the channel information data. | talkChInfoMX |
| Get channel information data | getChInfoMX |

## Retrieval of Measured Data (Channel Designation)

| Function | Function |
|---|---|
| Get the most recent data range of the specified channel. | getChDataNoMX |
| Declare the retrieval of the measured data of the specified channel. | talkChDataVBMX |
| Declare the retrieval of the instantaneous values of the specified channel. | talkChDataInstMX |
| Get the time information of the specified channel for each data number. | getTimeDataMX |
| Get the measured data of the specified channel. | getChDataMX |

## Retrieval of Measured Data (FIFO Designation)

| Function | Function |
|---|---|
| Get the most recent data range of the specified FIFO number. | getFIFODataNoMX |
| Declare the retrieval of the measured data of the specified FIFO number. | talkFIFODataVBMX |
| Declare the retrieval of the instantaneous values of the specified FIFO number. | talkFIFODataInstMX |
| Get the time information of the specified FIFO number for each data number. | getTimeDataMX |
| Get the measured data of the specified FIFO number. | getChDataMX |

Measured data retrieval is possible only when the FIFO is running.

## Initial Balance Data

| Function | Function |
|---|---|
| Get initial balance data collectively | getBalanceMX |

## Retrieve output channel data

| Function | Function |
|---|---|
| Get output channel data collectively | getOutputMX |

## Utilities

| Function | | Function |
|---|---|---|
| Insert the specified user count (user-defined order information) in the next packet to be issued. | | setUserTimeVBMX |
| Get the MX100-specific error that was received last through communications. | | getLastErrorMX |
| Convert the measured value into double-precision floating point number. | | toDoubleValueMX |
| Convert the measured value into a string. | | toStringValueMX |
| Get the alarm type string. | | toAlarmNameMX |
| Get the version number of this API. | | getVersionAPIMX |
| Get the revision number of this API. | | getRevisionAPIMX |
| Get the error message string. | | toErrorMessageMX |
| Get the maximum length of the error message string. | | getMaxLenErrorMessageMX |
| Create data number equal to (specified data number) + (specified value). | | incrementDataNoMX |
| Create data number equal to (specified data number) - (specified value). | | decrementDataNoMX |
| Compare the two specified data numbers. | | compareDataNoMX |
| Convert the time information to date and time. | | toDateTimeMX |
| Get the number of the parameter on which an error was detected | | getItemErrorMX |
| Get the maximum length of the alarm string. | | getMaxLenAlarmNameMX |
| AO/PWM | Convert the output values to output data values. | toAOPWMValueMX |
| | Convert the output data values to output values. | toRealValueMX |
| Check the validity of data numbers. | | isDataNoVBMX |
| Convert to style version. | | toStyleVersionMX |

# 4.2 Programming - MX100/Visual Basic -

## Declaration of Types, Functions, and Constants

To use types, functions, and constants for Visual Basic, they must be declared in advance. The following methods of declaration statements are available.

### Statement of All Declarations

Adding the standard module library file for Visual Basic (DAQMX.bas) to the project is equivalent to declaring all types, functions, and constants.

### Statement of Selective Declarations

The API Viewer that comes with Visual Studio can be used to copy the declaration statements of arbitrary types, functions, and constants. Load the text file for the API Viewer (DAQMX.txt) on the API Viewer to use this function.

For a description of how to use the API Viewer, read the operation manual for Visual Studio.

### Writing Declarations Directly

Below is an example of a declaration statement.

```
Public Declare Function openMX Lib "DAQMX"(ByVal strAddress As
String, ByRef errorCode As Long) As Long
```

# Retrieval of the Measured Data

## Program Example 1

This program retrieves measured data.

```
Public Function main()
Dim startNo As MXDataNo
Dim endNo As MXDataNo
Dim dataNo As MXDataNo
Dim usertime As MXUserTime
Dim datetime As MXDateTime
Dim chinfo As MXChInfo
Dim datainfo As MXDataInfo
'connect
host = "192.168.1.12"comm = openMX(host, rc)
'get FIFO
rc = startFIFOMX(comm)
rc = getFIFODataNoMX(comm, 0, startNo, endNo)
rc = talkFIFODataVBMX(comm, 0, startNo, endNo)
Do
    rc = getTimeDataMX(comm, dataNo, datetime, usertime, flag)
Loop While (flag And DAQMX_FLAG_ENDDATA) = 0
Do
    rc = getChDataMX(comm, dataNo, chinfo, datainfo, flag)
Loop While (flag And DAQMX_FLAG_ENDDATA) = 0
rc = stopFIFOMX(comm)
'disconnect
rc = closeMX(comm)
End Function
```

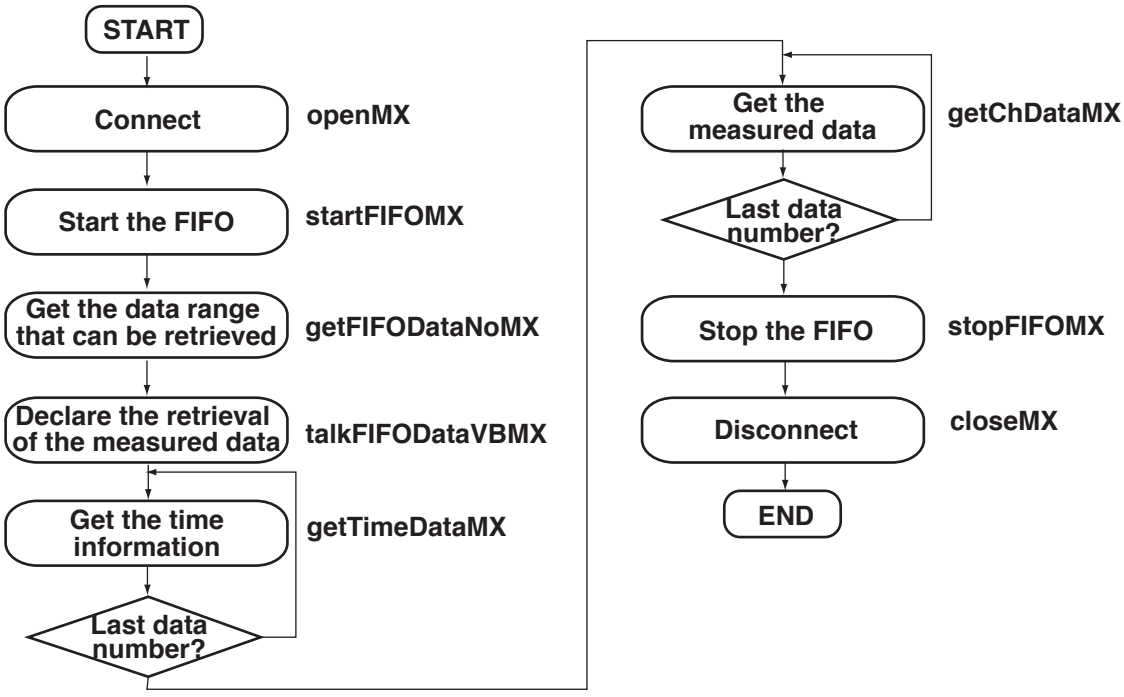
## Description

### Overview

Data retrieval is possible by starting the FIFO. The range to be retrieved is specified by the FIFO number and the data number. The time stamp corresponding to the data number and the measured data are retrieved separately. The end is determined by the flag.

### Flow of the Process

The flow chart shown below omits the declaration section.




### Communication Process

First, make a connection. After making the connection, the functions become available. As a termination procedure, disconnect the communication.

*Note*

If there is no access for approximately three minutes, the MX100 drops the connection. Drop the connection if you are not accessing the MX100 for an extended time. Make the connection only when necessary. If you want to keep the connection open, run status retrieval.

### Communication Connection

```
openMX(host, rc)
```

The IP address of the MX100 is specified.

This statement implicitly specifies the communication constant for the communication port number of the MX100.

### FIFO Start

```
startFIFOMX(comm)
```

Starts the FIFO.

**Retrieval of Data Range**

`getFIFODataNoMX(comm, 0, startNo, endNo)`

Retrieves the range from the next data following the data retrieved last to the most recent data of the specified FIFO number using data numbers.

**Talker**

`talkFIFODataVBMX(comm, 0, startNo, endNo)`

Specifies the data range and declares the retrieval of the FIFO data (measured data retrieval declaration).

**Retrieval of the FIFO Data Time Information**

`getTimeDataMX(comm, dataNo, datetime, usertime, flag)`

Gets the time information in the specified range in units of data numbers.
The end is determined by the flag status of “end data.”

*Note*

usertime is the user-defined sequence information (user count). The value specified in advance using the setUserTimeVBMX function is returned.

**Retrieval of FIFO Data**

`getChDataMX(comm, dataNo, chinfo, datainfo, flag)`

Gets the measured data in the specified range in units of channels.
The end is determined by the flag status of “end data.”

**FIFO Stop**

`stopFIFOMX(comm)`

Stops the FIFO.

**Comm. cut**

`closeMX(comm)`

Drops the connection.

# Retrieval of Setup Data and Configuration

## Program Example 2

This program executes the following four items. This program contains all four items, but each item can be written and executed separately.

- Get setup data.
- Set setup data other than channel setup data collectively.
- Set the channel setup data
- Set a DC voltage range to the channel

```
Public Function main()
Dim sysinfo As MXSystemInfo
Dim status As MXStatus
Dim netinfo As MXNetInfo
Dim chconfig As MXChConfig
'connect
host = "192.168.1.12"comm = openMX(host, rc)
'get
rc = talkConfigMX(comm, sysinfo, status, netinfo)
Do
    rc = getChConfigMX(comm, chconfig, flag)
Loop While (flag And DAQMX_FLAG_ENDDATA) = 0
'set
rc = setSystemConfigMX(comm, sysinfo)
rc = setChConfigMX(comm, chconfig)
'range
rc = setVOLTMX(comm, DAQMX_RANGE_VOLT_20MV, 1, 1, 0, 0, 0, 0,
0)
'disconnect
rc = closeMX(comm)
End Function
```

## Description

### Retrieval of Setup Data

`talkConfigMX(comm, sysinfo, status, netinfo)`

Declares the retrieval of the setup data.

Gets the setup data (system configuration data, status, and network information data) excluding the channel setup data.

The system configuration data, the status, and the network information data are stored in the MXSystemInfo, MXStatus, and MXNetInfo structures, respectively.

`getChConfigMX(comm, chconfig, flag)`

Gets the channel setup data for each channel.

The end is determined by the flag status of “end data.”

**Collective Setting of Setup Data Other Than Channel Setup Data**

```
setSystemConfigMX(comm, sysinfo)
```

The contents of the specified MXSystemInfo structure are assigned to the MX100.

**Setting of the Channel Setup Data**

```
setChConfigMX(comm, chconfig)
```

The contents of the specified MXChConfig structure are assigned to the MX100.

**Setting a DC Voltage Range to the Channel**

```
setVOLTMX(comm, DAQMX_RANGE_VOLT_20MV, 1, 1, 0, 0, 0, 0, 0)
```

Sets channel number 1 to DC voltage range 20 mV. Scaling is not used.

## Error Processing

- Most functions return the result of the function process using an error number (0 if successful).
- The function toErrorMessageMX can be used to get the error message string corresponding to the error number. The function getMaxLenErrorMessageMX can be used to get the maximum length of the error message string.
- The function getLastErrorMX can be used to get the errors from the MX100.
- If an invalid data error occurs in the settings, the setting item number of the detected error is retrieved by the function.

# 5.1 Details of Functions - MX100 (Visual C/Visual Basic) -

This section describes the MX100 functions that are used in C and Visual Basic.
The functions are listed in alphabetical order by the function name.

For details on constants and types, see chapter 6.
For information about the MX100, see appendix 1.

Most functions return an error number as a return value.Error number 0 is returned if there is no error.

# autoFIFOMX

## Syntax

```
int autoFIFOMX(DAQMX daqmx, int bAuto);
```

## Declaration

```
Public Declare Function autoFIFOMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal bAuto As Long) As Long
```

## Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| bAuto | Specify the boolean value. |

## Description

Sets auto control of the FIFO.

## Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

## Reference

`CDAQMX::autoFIFO`

## changeAOPWMDataMX

### Syntax

```
int changeAOPWMDataMX(MXAOPWMData * pMXAOPWMData, int aopwmNo,
int bValid, int iAOPWMValue);
```

### Declaration

```
Public Declare Function changeAOPWMDataMX Lib "DAQMX"(ByRef
pMXAOPWMData As MXAOPWMData, ByVal aopwmNo As Long, ByVal
bValid As Long, ByVal iAOPWMValue As Long) As Long
```

### Parameters

| | |
|---|---|
| cMXAOPWMData | Specify AO/PWM data. |
| aopwmNo | Specify the AO/PWM data number. |
| bValid | Specify the boolean value. |
| iAOPWMValue | Specify the output data value. |

### Description

Changes the data of the specified AO/PWM data.

- If the constant for “Specify all AO/PWM numbers” is specified for the AO data numbers, all AO data are changed.
- If the AO/PWM data number is outside of the range and invalid, the specification is discarded.
- The output data specifies the changed value of the actually output value.
- Completes normally.

### Return value

Returns an error number.

### Reference

```
CDAQMXAOPWMData::getMXAOPWMData
CDAQMXAOPWMData::setAOPWM
```

## changeBalanceMX

### Syntax

```
int changeBalanceMX(MXBalanceData * pMXBalanceData, int
balanceNo, int bValid, int iValue);
```

### Declaration

```
Public Declare Function changeBalanceMX Lib "DAQMX"(ByRef
pMXBalanceData As MXBalanceData, ByVal balanceNo As Long,
ByVal bValid As Long, ByVal iValue As Long) As Long
```

### Parameters

| | |
|---|---|
| pMXBalanceData | Specify initial balance data. |
| balanceNo | Specify the initial balance data number. |
| bValid | Specify the boolean value. |
| iValue | Specify the initial balance value. |

### Description

Changes the data of the specified initial balance data.

- If the constant for “Specify all initial balance numbers” is specified for the initial balance data numbers, all data are changed.
- If the initial balance data number is outside of the range and invalid, the specification is discarded.
- Completes normally.

### Return value

Returns an error number.

### Reference

```
CDAQMXBalanceData::getMXBalanceData
CDAQMXBalanceData::setBalance
```

## changeDODataMX

### Syntax

```
int changeDODataMX(MXDOData * pMXDOData, int doNo, int bValid,
int bONOFF);
```

### Declaration

```
Public Declare Function changeDODataMX Lib "DAQMX"(ByRef
pMXDOData As MXDOData, ByVal doNo As Long, ByVal bValid As
Long, ByVal bONOFF As Long) As Long
```

### Parameters

| | |
|---|---|
| pMXDOData | Specify the DO data. |
| doNo | Specify the data number. |
| bValid | Specify the boolean value. |
| bONOFF | Specify the boolean value. |

### Description

Changes the data of the DO data number of the specified DO data.

- When DO data is transmitted, the value specified by parameter bONOFF is output for the DO data that is specified as “valid” by parameter bValid.
- If the DO data number is invalid, the specification is discarded.
- Completes normally.

### Return value

Returns an error number.

### Reference

```
CDAQMXDOData::setDO
CDAQMXDOData::CDAQMXDOData
```

## changeTransmitMX

### Syntax

```
int changeTransmitMX(MXTransmit * pMXTransmit, int aopwmNo,
int iTrans);
```

### Declaration

```
Public Declare Function changeTransmitMX Lib "DAQMX"(ByRef
pMXTransmit As MXTransmit, ByVal pwmNo As Long, ByVal iTrans
As Long) As Long
```

### Parameters

| | |
|---|---|
| pMXTransmit | Specify the transmission output data. |
| aopwmNo | Specify the AO/PWM data number. |
| iTrans | Specify the transmission status. |

### Description

Changes the data of the specified transmission output data.

- If the constant for “Specify all AO/PWM data numbers” is specified for the AO/PWM data numbers, all data are changed.
- If the AO/PWM data number is outside of the range and invalid, the specification is discarded.
- Completes normally.

### Return value

Returns an error number.

### Reference

```
CDAQMXTransmit::getMXTransmit
CDAQMXTransmit::setTransmit
```

## closeMX

### Syntax

```
int closeMX(DAQMX daqmx);
```

### Declaration

```
Public Declare Function closeMX Lib "DAQMX"(ByVal daqmx As
Long) As Long
```

### Parameters

daqmx Specify the device descriptor.

### Description

Disconnects the communication using the specified device descriptor.

When the communication is disconnected, the value of the device descriptor is meaningless.Do not use the value as a device descriptor.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX::close`

## compareDataNoMX

### Syntax

```
int compareDataNoMX(MXDataNo * prevDataNo, MXDataNo *
nextDataNo);
```

### Declaration

```
Public Declare Function compareDataNoMX Lib "DAQMX"(ByRef
prevDataNo As MXDataNo, ByRef nextDataNo As MXDataNo) As Long
```

### Parameters

| | |
|---|---|
| prevDataNo | Specify the data number (previous). |
| nextDataNo | Specify the data number (next). |

### Description

Compares the specified data numbers.

- The data number is 64 bits while the return value is 32 bits. Therefore, the returned value is not the difference between the two.
- In the case of Visual C, if NULL is specified for a parameter, an indefinite value is returned.

### Return value

Returns 0 if the data numbers are the same.

Returns a positive number if the data number (previous) is less than the data number (next).

Returns a negative number if the data number (previous) is greater than the data number (next).

## decrementDataNoMX

### Syntax

```
void decrementDataNoMX(MXDataNo * dataNo, int decrement);
```

### Declaration

```
Public Declare Sub decrementDataNoMX Lib "DAQMX"(ByRef dataNo
As MXDataNo, ByVal decrement As Long)
```

### Parameters

| | |
|---|---|
| dataNo | Specify the data number. |
| decrement | Specify the value to decrement by. |

### Description

Decrements the specified data number by the specified amount. The field of the specified data number is changed.

## formatCFMX

### Syntax

```
int formatCFMX(DAQMX daqmx);
```

### Declaration

```
Public Declare Function formatCFMX Lib "DAQMX"(ByVal daqmx As
Long) As Long
```

### Parameters

daqmx Specify the device descriptor.

### Description

Formats the CF (Compact Flash) card.

- The response to this function may take several seconds or longer. The time required varies depending on the medium used.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX::formatCF`

## getAlarmNameMX [Visual C only]

### Syntax

```
const char * getAlarmNameMX(int iAlarmType);
```

### Parameters

iAlarmType Specify the alarm type.

### Description

Gets the string corresponding to the specified alarm type.

- In Visual Basic, use the toAlarmNameMX function.

### Return value

Returns a pointer to the string.

### Reference

`CDAQMXDataInfo::getAlarmName`

# getAOPWMDataMX

## Syntax

```
int getAOPWMDataMX(DAQMX daqmx, MXAOPWMData * pMXAOPWMData,
MXTransmit * pMXTransmit);
```

## Declaration

```
Public Declare Function getAOPWMDataMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXAOPWMData As MXAOPWMData, ByRef pMXTransmit
As MXTransmit) As Long
```

## Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXAOPWMData | Specify the destination where the AO/PWM data is to be returned. |
| pMXTransmit | Specify the destination where the transmission output data is to be returned. |

## Description

Gets AO/PWM data and transmission output data collectively.

- Stores retrieved data if the return destination is specified.

## Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

## Reference

```
CDAQMX::getAOPWMData
CDAQMXAOPWMData::getMXAOPWMData
CDAQMXTransmit::getMXTransmit
```

## getBalanceMX

### Syntax

```
int getBalanceMX(DAQMX daqmx, MXBalanceData * pMXBalanceData);
```

### Declaration

```
Public Declare Function getBalanceMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXBalanceData As MXBalanceData) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXBalanceData | Specify the destination where the initial balance data is to be returned. |

### Description

Gets initial balance data collectively.

- Stores initial balance data to the specified location if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getBalance
CDAQMXBalanceData::getMXBalanceData
```

## getChConfigMX

### Syntax

```
int getChConfigMX(DAQMX daqmx, MXChConfig * pMXChConfig, int *
pFlag);
```

### Declaration

```
Public Declare Function getChConfigMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXChConfig As MXChConfig, ByRef pFlag As Long)
As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXChConfig | Specify the destination where the channel setup data is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the channel setup data that was declared to be retrieved using the talkConfigMX function in units of channels.

- When the last set of data is retrieved, the flag status is set.
- Do not perform communications using other functions until the data retrieval is completed.Other functions may not operate properly.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getChConfig
CDAQMXChConfig::getMXChConfig
```

## getChDataMX

### Syntax

```
int getChDataMX(DAQMX daqmx, MXDataNo * pMXDataNo, MXChInfo *
pMXChInfo, MXDataInfo * pMXDataInfo, int * pFlag);
```

### Declaration

```
Public Declare Function getChDataMX Lib "DAQMX"(ByVal daqmx As
Long, ByRef pMXDataNo As MXDataNo, ByRef pMXChInfo As
MXChInfo, ByRef pMXDataInfo As MXDataInfo, ByRef pFlag As
Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXDataNo | Specify the destination where the data number is to be returned. |
| pMXChInfo | Specify the destination where the channel information data is to be returned using the MXChInfo structure. |
| pMXDataInfo | Specify the destination where the measured data is to be returned using the MXDataInfo structure. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

After declaring with a data retrieval start function (talkChDataMX, talkFIFODataMX, etc.), retrieve time information data with the getTimeDataMX function and then retrieve the measured data, data by data.

- When the last set of data is retrieved, the flag status is set.
- Do not perform communications using other functions until the data retrieval is completed.Other functions may not operate properly.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getChData
CDAQMXChInfo::getMXChInfo
CDAQMXDataInfo::getMXDataInfo
```

## getChDataNoMX

### Syntax

```
int getChDataNoMX(DAQMX daqmx, int chNo, MXDataNo *
startDataNo, MXDataNo * endDataNo);
```

### Declaration

```
Public Declare Function getChDataNoMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal chNo As Long, ByRef startDataNo As MXDataNo,
ByRef endDataNo As MXDataNo) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| chNo | Specify the channel number. |
| startDataNo | Specify the destination where the start data number is to be returned. |
| endDataNo | Specify the destination where the end data number is to be returned. |

### Description

Gets the range of measured data that can be retrieved at the specified channel.

- The start data number is set to the next number following the data number that was retrieved last.
- If the measured data that must be retieved does not exist, the negative of each data number is returned.

  Example:

  If data numbers from 10 to 49 exist on the main unit and the last retrieved data number was 29, a start data number of 30 and an end data number of 49 is returned.

  If the last retrieved data number was 49, the negative of each data number is returned, and the function ends normally.
- For the validity check of the returned data, see the isDataNoMX function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::getChDataNo`

## getChInfoMX

### Syntax

```
int getChInfoMX(DAQMX daqmx, MXChInfo * pMXChInfo, int *
pFlag);
```

### Declaration

```
Public Declare Function getChInfoMX Lib "DAQMX"(ByVal daqmx As
Long, ByRef pMXChInfo As MXChInfo, ByRef pFlag As Long) As
Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXChInfo | Specify the destination where the channel information data is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the channel information data that was declared to be retrieved using the talkChInfoMX function in units of channels.

- When the last set of data is retrieved, the flag status is set.
- Do not perform communications using other functions until the data retrieval is completed.Other functions may not operate properly.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::getChInfo`

## getConfigDataMX [Visual C only]

### Syntax

```
int getConfigDataMX(DAQMX daqmx, MXConfigData *
pMXConfigData);
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXConfigData | Specify the destination where the setup data is to be returned. |

### Description

Gets the setup data collectively.

- Stores setup data in the specified location if the return destination is specified.
- In the case of Visual Basic, retrieve data collectively for each data structure individually. Or, retrieve them one after another.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getConfig
CDAQMXConfig::getMXConfigData
```

## getDODataMX

### Syntax

```
int getDODataMX(DAQMX daqmx, MXDOData * pMXDOData);
```

### Declaration

```
Public Declare Function getDODataMX Lib "DAQMX"(ByVal daqmx As
Long, ByRef pMXDOData As MXDOData) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXDOData | Specify the destination where the DO data is to be returned. |

### Description

Gets the DO data collectively.

Stores DO data in the specified location if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getDOData
CDAQMXDOData::getMXDOData
```

## getErrorMessageMX [Visual C only]

### Syntax

```
const char * getErrorMessageMX(int errCode);
```

### Parameters

errCode Specify the error number.

### Description

Gets the error message string corresponding to the error number.

In Visual Basic, use the toErrorMessageMX function.

### Return value

Returns the length of the string.

### Reference

`CDAQMX::getErrorMessage`

## getFIFODataNoMX

### Syntax

```
int getFIFODataNoMX(DAQMX daqmx, int fifoNo, MXDataNo *
startDataNo, MXDataNo * endDataNo);
```

### Declaration

```
Public Declare Function getFIFODataNoMX Lib "DAQMX"(ByVal
daqmx As Long, ByVal fifoNo As Long, ByRef startDataNo As
MXDataNo, ByRef endDataNo As MXDataNo) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |
| startDataNo | Specify the destination where the start data number is to be returned. |
| endDataNo | Specify the destination where the end data number is to be returned. |

### Description

Gets the range of measured data that can be retrieved at the specified FIFO number.

The start data number is set to the next number following the data number that was retrieved last.

- The start data number is set to the next number following the data number that was retrieved last.
- If the measured data that must be retieved does not exist, the negative of each data number is returned.

  Example:

  If data numbers from 10 to 49 exist on the main unit and the last retrieved data number was 29, a start data number of 30 and an end data number of 49 is returned.

  If the last retrieved data number was 49, the negative of each data number is returned, and the function ends normally.
- For the validity check of the returned data, see the isDataNoMX function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::getFIFODataNo`

## getItemErrorMX

### Syntax

```
int getItemErrorMX(DAQMX daqmx, int * itemErr);
```

### Declaration

```
Public Declare Function getItemErrorMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef itemErr As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| itemErr | Specify the destination where the setting item number is to be returned. |

### Description

Gets the number of the parameter on which an error was last detected.

- Returns the setting item number to the specified return destination.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::getItemError`

## getLastErrorMX

### Syntax

```
int getLastErrorMX(DAQMX daqmx, int * lastErr);
```

### Declaration

```
Public Declare Function getLastErrorMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef lastErr As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| lastErr | Specify the destination where the MX100-specific error is to be returned. |

### Description

Gets the MX100-specific error that was received last through communications.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

## getMaxLenAlarmNameMX

### Syntax

```
int getMaxLenAlarmNameMX(void);
```

### Declaration

```
Public Declare Function getMaxLenAlarmNameMX Lib "DAQMX"() As
Long
```

### Description

Gets the maximum length of the alarm type.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

```
CDAQMXDataInfo::getMaxLenAlarmName
```

## getMaxLenErrorMessageMX

### Syntax

```
int getMaxLenErrorMessageMX(void);
```

### Declaration

```
Public Declare Function getMaxLenErrorMessageMX Lib "DAQMX"()
As Long
```

### Description

Gets the maximum length of the error message string.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`CDAQMX::getMaxLenErrorMessage`

## getOutputMX

### Syntax

```
int getOutputMX(DAQMX daqmx, MXOutputData * pMXOutputData);
```

### Declaration

```
Public Declare Function getOutputMX Lib "DAQMX"(ByVal daqmx As
Long, ByRef pMXOutputData As MXOutputData) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXOutputData | Specify the destination where the output channel data is to be returned. |

### Description

Gets the output channel data.

- Stores retrieved data if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMXConfig::getClassMXOutputData
CDAQMXOutputData::getMXOutputData
CDAQMXOutputData::setMXOutputData
```

## getRevisionAPIMX

### Syntax

```
const int getRevisionAPIMX(void);
```

### Declaration

```
Public Declare Function getRevisionAPIMX Lib "DAQMX"() As Long
```

### Description

Gets the revision number of this API.

### Return value

Returns the revision number of this API as an integer value.

### Reference

`CDAQMX::getRevisionAPIMX`

## getStatusDataMX

### Syntax

```
int getStatusDataMX(DAQMX daqmx, MXStatus * pMXStatus);
```

### Declaration

```
Public Declare Function getStatusDataMX Lib "DAQMX"(ByVal
daqmx As Long, ByRef pMXStatus As MXStatus) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXStatus | Specify the destination where the status is to be returned. |

### Description

Gets the status.

- Stores the status in the specified location if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getStatusData
CDAQMXStatus::getMXStatus
```

## getSystemConfigMX

### Syntax

```
int getSystemConfigMX(DAQMX daqmx, MXSystemInfo * pSysInfo);
```

### Declaration

```
Public Declare Function getSystemConfigMX Lib "DAQMX"(ByVal
daqmx As Long, ByRef pSysInfo As MXSystemInfo) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pSysInfo | Specify the destination where the system configuration data is to be returned. |

### Description

Gets the system configuration data.

- Stores system configuration data in the specified location if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getSystemConfig
CDAQMXSysInfo::getMXSystemInfo
```

## getTimeDataMX

### Syntax

```
int getTimeDataMX(DAQMX daqmx, MXDataNo * pMXDataNo,
MXDateTime * pMXDateTime, MXUserTime * pMXUserTime, int *
pFlag);
```

### Declaration

```
Public Declare Function getTimeDataMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXDataNo As MXDataNo, ByRef pMXDateTime As
MXDateTime, ByRef pMXUserTime As MXUserTime, ByRef pFlag As
Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXDataNo | Specify the destination where the data number is to be returned. |
| pMXDateTime | Specify the destination where the time information data is to be returned. |
| pMXUserTime | Specify the destination where the user count is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the time information data that was declared to be retrieved using a data retrieval start function (the talkChDataMX or talkFIFODataMX functions) one data number at a time.

- When the last set of data is retrieved, the flag status is set.
- Do not perform communications using other functions until the data retrieval is completed.Other functions may not operate properly.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::getTimeData`
`CDAQMXDateTime::getMXDateTime`

## getVersionAPIMX

### Syntax

```
const int getVersionAPIMX(void);
```

### Declaration

```
Public Declare Function getVersionAPIMX Lib "DAQMX"() As Long
```

### Description

Gets the version number of this API.

### Return value

Returns the version number of this API as an integer value.

### Reference

`CDAQMX::getVersionAPI`

## incrementDataNoMX

### Syntax

```
void incrementDataNoMX(MXDataNo * dataNo, int increment);
```

### Declaration

```
Public Declare Sub incrementDataNoMX Lib "DAQMX"(ByRef dataNo
As MXDataNo, ByVal increment As Long)
```

### Parameters

| | |
|---|---|
| dataNo | Specify the data number. |
| increment | Specify the value to increment by. |

### Description

Increments the specified data number by the specified amount. The field of the specified data number is changed.

## initSystemMX

### Syntax

```
int initSystemMX(DAQMX daqmx, int iCtrl);
```

### Declaration

```
Public Declare Function initSystemMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal iCtrl As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iCtrl | Specify the system control type. |

### Description

Executes the specified system control.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::initSystem`

# isDataNoMX [Visual C only]

## Syntax

```
int isDataNoMX(MXDataNo dataNo);
```

## Parameters

dataNo Specify the data number.

## Description

Checks whether the specified data number is a valid number.

- Returns “Valid” if the data number is 0 or greater.

## Return value

Returns a boolean value.

## Reference

`CDAQMXStatus::isDataNo`

## isDataNoVBMX

### Syntax

```
int isDataNoVBMX(MXDataNo * dataNo);
```

### Declaration

```
Public Declare Function isDataNoVBMX Lib "DAQMX"(ByRef dataNo
As MXDataNo) As Long
```

### Parameters

dataNo Specify the data number.

### Description

Checks whether the specified data number is a valid number.

- Except for reference specification, the data number specification is the same as the isDataNoMX function.
- In Visual C, if NULL is specified for a data number, Invalid is returned.

### Return value

Returns a boolean value.

### Reference

isDataNoMX

# openMX

## Syntax

```
DAQMX openMX(const char * strAddress, int * errorCode);
```

## Declaration

```
Public Declare Function openMX Lib "DAQMX"(ByVal strAddress As
String, ByRef errorCode As Long) As Long
```

## Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| errorCode | Specify the destination where the error number is to be returned. |

## Description

Connects to the device with the IP address specified by the parameters.

- Creates a device descriptor and returns the value as a return value.
- Stores the error number if the return destination is specified.
- If unsuccessful, returns NULL in Visual C or 0 in Visual Basic.

## Return value

Returns the device descriptor.

Error:

Creating descriptor is failure Failed to create the device descriptor.

## Reference

`CDAQMX::open`

## resetBalanceMX

### Syntax

```
int resetBalanceMX(DAQMX daqmx, MXBalanceData *
pMXBalanceData, MXBalanceResult * pMXBalanceResult);
```

### Declaration

```
Public Declare Function resetBalanceMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXBalanceData As MXBalanceData, ByRef
pMXBalanceResult As MXBalanceResult) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXBalanceData | Specify initial balance data. |
| pMXBalanceResult | Specify the destination where the initial balance result is to be returned. |

### Description

Initializes the initial balance value.

- Executed on channels whose initial balance data items are set to Valid.
- The initial balance value is returned to the initial balance data. Also, the channel-by-channel initial balance results are returned to the specified return destination. When this occurs, only the data from channels whose initial balance data items are set to Valid is overwritten.
- The response to this function may take five seconds or longer.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::restBalance
CDAQMXBalanceResult::getMXBalanceData
CDAQMXBalanceResult::getMXBalanceResult
```

## runBalanceMX

### Syntax

```
int runBalanceMX(DAQMX daqmx, MXBalanceData * pMXBalanceData,
MXBalanceResult * pMXBalanceResult);
```

### Declaration

```
Public Declare Function runBalanceMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXBalanceData As MXBalanceData, ByRef
pMXBalanceResult As MXBalanceResult) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXBalanceData | Specify initial balance data. |
| pMXBalanceResult | Specify the destination where the initial balance result is to be returned. |

### Description

Executes initial balancing.

- Executed on channels whose initial balance data items are set to Valid.
- The initial balance value is returned to the initial balance data. Also, the channel-by-channel initial balance results are returned to the specified return destination. When this occurs, only the data from channels whose initial balance data items are set to Valid is overwritten.
- The response to this function may take five seconds or longer.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::runBalance
CDAQMXBalanceResult::getMXBalanceData
CDAQMXBalanceResult::getMXBalanceResult
```

## setAlarmMX

### Syntax

```
int setAlarmMX(DAQMX daqmx, int levelNo, int startChNo, int
endChNo, int iAlarmType, int value, int histerisys);
```

### Declaration

```
Public Declare Function setAlarmMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal levelNo As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal iAlarmType As Long, ByVal value As
Long, ByVal histerisys As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| levelNo | Specify the alarm level. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| iAlarmType | Specify the alarm type. |
| value | Specify the alarm value. |
| histerisys | Specify the hysteresis. |

### Description

Sets the alarm to the specified channel range.

The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig CDAQMX::setMXConfig
CDAQMXChConfig::setAlarm
CDAQMXConfig::getClassMXChConfig
```

## setAOMX

### Syntax

```
int setAOMX(DAQMX daqmx, int iRangeAO, int startChNo, int
endChNo, int spanMin, int spanMax);
```

### Declaration

```
Public Declare Function setAOMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal iRangeAO As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal spanMin As Long, ByVal spanMax As Long)
As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRangeAO | Specify the AO range type from the range type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Set the specified channel range to the AO range.

- If the minimum and maximum values of the span are equal, the span is considered to be ommitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channels from unsupported modules are ignored.
- Output channel data is also changed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setAO
```

## setAOPWMDataMX

### Syntax

```
int setAOPWMDataMX(DAQMX daqmx, MXAOPWMData * pMXAOPWMData);
```

### Declaration

```
Public Declare Function setAOPWMDataMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXAOPWMData As MXAOPWMData) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXAOPWMData | Specify the AO/PWM data to output. |

### Description

Sends AO/PWM data collectively.

- Changes the output of command AO and command PWM channels.
- You can create data to send by changing the AO/PWM data of a data operation function.
- The values specified for channels whose AO/PWM data is set to Valid are output.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::setAOPWMData`

## setAOTypeMX

### Syntax

```
int setAOTypeMX(DAQMX daqmx, int aoNo, int iKind, int
refChNo);
```

### Declaration

```
Public Declare Function setAOTypeMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal aoNo As Long, ByVal iKind As Long, ByVal refChNo
As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| aoNo | Specify the AO data number. |
| iKind | Specify the type of AO channel using channel type. |
| refChNo | Specify the reference channel using a channel number. |

### Description

Sets the channel corresponding to the AO data number to the specified channel type.

- Channels must be on the AO module.
- The channel type that can be specified is either AO or command AO.
- The reference channel number must be an input channel.
- When specifying command AO, the reference channel number is ignored.
- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setAOType
```

## setBackupMX

### Syntax

```
int setBackupMX(DAQMX daqmx, int bBackup, int iCFWriteMode);
```

### Declaration

```
Public Declare Function setBackupMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal bBackup As Long, ByVal iCFWriteMode As Long) As
Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| bBackup | Specify the boolean value. |
| iCFWriteMode | Specify the CF write mode. |

### Description

Sets backup (saving of data to the CF card).

- Set the CF write mode only when different from the current setting.
- When the CF write mode is set, the FIFO stops.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setBackup
CDAQMX::setMXConfig
CDAQMXConfig::getClassMXStatus
CDAQMXStatus::getCFWriteMode
CDAQMXStatus::setCFWriteMode
```

## setBalanceMX

### Syntax

```
int setBalanceMX(DAQMX daqmx, MXBalanceData * pMXBalanceData);
```

### Declaration

```
Public Declare Function setBalanceMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXBalanceData As MXBalanceData) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXBalanceData | Specify initial balance data. |

### Description

Sets initial balance data.

- Writes the initial balance data of channels whose initial balance data items are set to Valid.
- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::setBalance`

## setBurnoutMX

### Syntax

```
int setBurnoutMX(DAQMX daqmx, int iBurnout, int startChNo, int
endChNo);
```

### Declaration

```
Public Declare Function setBurnoutMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal iBurnout As Long, ByVal startChNo As Long,
ByVal endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iBurnout | Specify the burnout type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the burnout type to the specified channel range.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXChConfig::setBurnout
CDAQMXConfig::getClassMXChConfig
```

## setChatFilterMX

### Syntax

```
int setChatFilterMX(DAQMX daqmx, int bChatFilter, int
startChNo, int endChNo);
```

### Declaration

```
Public Declare Function setChatFilterMX Lib "DAQMX" (ByVal
daqmx As Long, ByVal bChatFilter As Long, ByVal startChNo As
Long, ByVal endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| bChatFilter | Specify the Boolean value. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the chattering filter to the specified channel range.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXChConfig::setChatFilter
CDAQMXConfig::getClassMXChConfig
```

## setChConfigMX

### Syntax

```
int setChConfigMX(DAQMX daqmx, MXChConfig * pMXChConfig);
```

### Declaration

```
Public Declare Function setChConfigMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXChConfig As MXChConfig) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXChConfig | Specify the channel setup data. |

### Description

Sets the channel setup data.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXChConfigData::setMXChConfig
CDAQMXConfig::getClassMXChConfigData
```

## setChoiceMX

### Syntax

```
int setChoiceMX(DAQMX daqmx, int startChNo, int endChNo, int
idleChoice, int errorChoice, int presetValue);
```

### Declaration

```
Public Declare Function setChoiceMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
idleChoice As Long, ByVal errorChoice As Long, ByVal
presetValue As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| idleChoice | Specify the selected value when idling. |
| errorChoice | Specify the selected value when an error occurs. |
| presetValue | Specify the output value if the selected value is the “specified value.” |

### Description

Sets the output during idling and when errors occur on the output channel data.

- The user specified output values are specified with integers in the same manner as the data value and span.
- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXChConfig::setChoice
```

## setCommentMX

### Syntax

```
int setCommentMX(DAQMX daqmx, const char * strComment, int
startChNo, int endChNo);
```

### Declaration

```
Public Declare Function setCommentMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal strComment As String, ByVal startChNo As Long,
ByVal endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| strComment | Specify the comment. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the comment to the specified channel range.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXChConfig::setComment
CDAQMXConfig::getClassMXChConfig
```

## setCOMMX

### Syntax

```
int setCOMMX(DAQMX daqmx, int iRangeCOM, int startChNo, int
endChNo, int spanMin, int spanMax, int scaleMin, int scaleMax,
int scalePoint);
```

### Declaration

```
Public Declare Function setCOMMX Lib "DAQMX" (ByVal daqmx As
Long, ByVal iRangeCOM As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal spanMin As Long, ByVal spanMax As Long,
ByVal scaleMin As Long, ByVal scaleMax As Long, ByVal
scalePoint As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRangeCOM | Specify the communication range from the range type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified channel range to the communication range.

- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- If the minimum and maximum values of the scale are equal, the scale is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channels from unsupported modules are ignored.
- The alarm setting is initialized.

### Return value

Returns an error number.

Errors:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setCOM
CDAQMXConfig::setScalling
```

## setConfigDataMX

### Syntax

```
int setConfigDataMX(DAQMX daqmx, MXConfigData *
pMXConfigData);
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXConfigData | Specify the setup data. |

### Description

Sends the setup data collectively.

- In Visual Basic, set each data structure individually.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::setMXConfig`

## setDateTimeMX

### Syntax

```
int setDateTimeMX(DAQMX daqmx, MXDateTime * pMXDateTime);
```

### Declaration

```
Public Declare Function setDateTimeMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXDateTime As MXDateTime) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXDateTime | Specify the time information data. |

### Description

Sets time information data on the device.

- Milliseconds are discarded.
- In Visual C, if the parameter's time information data is set to NULL, the current date/time of the PC is used.
- The response to this function may take one second or longer.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::setDateTime`

## setDateTimeNowMX

### Syntax

```
int setDateTimeNowMX(DAQMX daqmx);
```

### Declaration

```
Public Declare Function setDateTimeNowMX Lib "DAQMX"(ByVal
daqmx As Long) As Long
```

### Parameters

daqmx Specify the device descriptor.

### Description

Sets the current date/time.

### Return value

Returns an error number.

### Reference

`setDateTimeMX`

## setDELTAMX

### Syntax

```
int setDELTAMX(DAQMX daqmx, int refChNo, int startChNo, int
endChNo, int spanMin, int spanMax, int scaleMin, int scaleMax,
int scalePoint, int iRange);
```

### Declaration

```
Public Declare Function setDELTAMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal refChNo As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal spanMin As Long, ByVal spanMax As Long,
ByVal scaleMin As Long, ByVal scaleMax As Long, ByVal
scalePoint As Long, ByVal iRange As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| refChNo | Specify the reference channel using a channel number. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |
| iRange | Specify the range type for the input of the target channel. |

### Description

- Sets the specified channel range to difference computation.
- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- If the minimum and maximum values of the scale are equal, the scale is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channels from unsupported modules are ignored.
- The alarm setting is initialized.
- If, when specifying the input range for the target channel, “Reference range” is specified for the range type, the same range as the reference channel is used for the measurement range of the target channel.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::getMXConfig`
`CDAQMX::setMXConfig`
`CDAQMXConfig::setDELTA`
`CDAQMXConfig::setScalling`

## setDIMX

### Syntax

```
int setDIMX(DAQMX daqmx, int iRangeDI, int startChNo, int
endChNo, int spanMin, int spanMax, int scaleMin, int scaleMax,
int scalePoint);
```

### Declaration

```
Public Declare Function setDIMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal iRangeDI As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal spanMin As Long, ByVal spanMax As Long,
ByVal scaleMin As Long, ByVal scaleMax As Long, ByVal
scalePoint As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRangeDI | Specify the range type of the digital input (DI). |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified channel range to digital input (DI).

- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- If the minimum and maximum values of the scale are equal, the scale is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channels from unsupported modules are ignored.
- The alarm setting is initialized.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setDI
CDAQMXConfig::setScalling
```

## setDODataMX

### Syntax

```
int setDODataMX(DAQMX daqmx, MXDOData * pMXDOData);
```

### Declaration

```
Public Declare Function setDODataMX Lib "DAQMX"(ByVal daqmx As
Long, ByRef pMXDOData As MXDOData) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXDOData | Specify the DO data. |

### Description

Sends the DO data collectively.

- Changes the output of command DO channels.
- You can create data to send by changing the DO data of a data operation function.
- The ON/OFF values specified as “Valid” within the DO data are output.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::setDOData`

## setDOTypeMX

### Syntax

```
int setDOTypeMX(DAQMX daqmx, int doNo, int iKind, int
bDeenergize, int bHold);
```

### Declaration

```
Public Declare Function setDOTypeMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal doNo As Long, ByVal iKind As Long, ByVal
bDeenergize As Long, ByVal bHold As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| doNo | Specify the data number. |
| iKind | Specify the DO channel type. |
| bDeenergize | Specify de-energize using a Boolean value. |
| bHold | Specify hold using a Boolean value. |

### Description

Sets the channel corresponding to the DO data number to the specified channel type.

- Channels are on the DO module, and the type must be set to DO (alarm output, command DO, system fail, or system error).
- Set the reference alarm using the setRefAlarmMX function.
- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setDOType
```

## setFilterMX

### Syntax

```
int setFilterMX(DAQMX daqmx, int iFilter, int startChNo, int
endChNo);
```

### Declaration

```
Public Declare Function setFilterMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal iFilter As Long, ByVal startChNo As Long, ByVal
endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iFilter | Specify the filter coefficient. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the filter coefficient to the specified channel range.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXChConfig::setFilter
CDAQMXConfig::getClassMXChConfig
```

## setIntervalMX

### Syntax

```
int setIntervalMX(DAQMX daqmx, int moduleNo, int iInterval,
int iHz);
```

### Declaration

```
Public Declare Function setIntervalMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal moduleNo As Long, ByVal iInterval As Long,
ByVal iHz As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| moduleNo | Specify the module number. |
| iInterval | Specify the interval type. |
| iHz | Specify the type of A/D integration time. |

### Description

Sets the module of the specified module number to the specified value.

- The setup data is retrieved collectively, changed, and sent collectively.
- If the constant for “Specify all module numbers” is specified for the module numbers, all modules are set.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setInterval
```

## setOutputMX

### Syntax

```
int setOutputMX(DAQMX daqmx, MXOutputData * pMXOutputData);
```

### Declaration

```
Public Declare Function setOutputMX Lib "DAQMX"(ByVal daqmx As
Long, ByRef pMXOutputData As MXOutputData) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXOutputData | Specify the output channel data. |

### Description

Sets the output channel data.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::getClassMXOutputData
CDAQMXOutputData::setMXOutputData
```

## setOutputTypeMX

### Syntax

```
int setOutputTypeMX(DAQMX daqmx, int iOutput, int startChNo,
int endChNo);
```

### Declaration

```
Public Declare Function setOutputTypeMX Lib "DAQMX"(ByVal
daqmx As Long, ByVal iOutput As Long, ByVal startChNo As Long,
ByVal endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iOutput | Specify the output type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the output type of the output channel data.

- Each item is set to the default value.
- The settings of the corresponding channels are also changed.
- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setAO
CDAQMXConfig::setPWM
```

## setPULSEMX

### Syntax

```
int setPULSEMX(DAQMX daqmx, int iRangePULSE, int startChNo,
int endChNo, int spanMin, int spanMax, int scaleMin, int
scaleMax, int scalePoint);
```

### Declaration

```
Public Declare Function setPULSEMX Lib "DAQMX" (ByVal daqmx As
Long, ByVal iRangePULSE As Long, ByVal startChNo As Long,
ByVal endChNo As Long, ByVal spanMin As Long, ByVal spanMax As
Long, ByVal scaleMin As Long, ByVal scaleMax As Long, ByVal
scalePoint As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRangePULSE | Specify the pulse range from the range type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified channel range to the pulse range.

- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- If the minimum and maximum values of the scale are equal, the scale is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channels from unsupported modules are ignored.
- The alarm setting is initialized.

### Return value

Returns an error number.

Errors:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setPULSE
CDAQMXConfig::setScalling
```

## setPulseTimeMX

### Syntax

```
int setPulseTimeMX(DAQMX daqmx, int pulseTime, int startChNo,
int endChNo);
```

### Declaration

```
Public Declare Function setPulseTimeMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal pulseTime As Long, ByVal startChNo As Long,
ByVal endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pulserTime | Specify the integer multiple of the pulse interval. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the integral multiple of the pulse interval of the output channel data.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXChConfig::setPulseTime
```

## setPWMMX

### Syntax

```
int setPWMMX(DAQMX daqmx, int iRangePWM, int startChNo, int
endChNo, int spanMin, int spanMax);
```

### Declaration

```
Public Declare Function setPWMMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal iRangePWM As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal spanMin As Long, ByVal spanMax As Long)
As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRangePWM | Specify the PWM range type from the range type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the specified channel range to the PWM range.

- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channels from unsupported modules are ignored.
- Output channel data is also changed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setPWM
```

## setPWMTypeMX

### Syntax

```
int setPWMTypeMX(DAQMX daqmx, int pwmNo, int iKind, int
refChNo);
```

### Declaration

```
Public Declare Function setPWMTypeMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal pwmNo As Long, ByVal iKind As Long, ByVal
refChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pwmNo | Specify the PWM data number. |
| iKind | Specify the type of PWM channel using a channel type. |
| refChNo | Specify the reference channel using a channel number. |

### Description

Sets the channel corresponding to the PWM data number to the specified channel type.

- Channels must be on the PWM module.
- The channel type that can be specified is either PWM or command PWM.
- The reference channel number must be an input channel.
- When specifying command PWM, the reference channel number is ignored.
- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setPWMType
```

## setRefAlarmMX

### Syntax

```
int setRefAlarmMX(DAQMX daqmx, int refChNo, int startChNo, int
endChNo, int levelNo, int bValid);
```

### Declaration

```
Public Declare Function setRefAlarmMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal refChNo As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal levelNo As Long, ByVal bValid As Long)
As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| refChNo | Specify the reference channel using a channel number. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| levelNo | Specify the alarm level. |
| bValid | Specify the boolean value. |

### Description

Sets the reference alarm to the specified channel range.

- The setup data is retrieved collectively, changed, and sent collectively.
- If the constant for “Specify all reference channel numbers” is specified for the reference channel, all channels are processed.
- If the constant for “Specify all alarm level numbers” is specified for the alarm level, all alarm levels of the reference channel are processed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXChConfig::setRefAlarm
CDAQMXConfig::getClassMXChConfig
```

## setRESMX

### Syntax

```
int setRESMX(DAQMX daqmx, int iRangeRES, int startChNo, int
endChNo, int spanMin, int spanMax, int scaleMin, int scaleMax,
int scalePoint);
```

### Declaration

```
Public Declare Function setRESMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal iRangeRES As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal spanMin As Long, ByVal spanMax As Long,
ByVal scaleMin As Long, ByVal scaleMax As Long, ByVal
scalePoint As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRangeRES | Specify the resistance range type from the range type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified channel range to the resistance range.

- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- If the minimum and maximum values of the scale are equal, the scale is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channels from unsupported modules are ignored.
- The alarm setting is initialized.

### Return value

Returns an error number.

Error

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setRES
CDAQMXConfig::setScalling
```

## setRJCTypeMX

### Syntax

```
int setRJCTypeMX(DAQMX daqmx, int iRJCType, int startChNo, int
endChNo, int volt);
```

### Declaration

```
Public Declare Function setRJCTypeMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal iRJCType As Long, ByVal startChNo As Long,
ByVal endChNo As Long, ByVal volt As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRJCType | Specify the RJC type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| volt | Specify the RJC voltage. |

### Description

Sets the RJC items to the specified channel range.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::getMXConfig CDAQMX::setMXConfig`
`CDAQMXChConfig::setRJCType`
`CDAQMXConfig::getClassMXChConfig`

## setRRJCMX

### Syntax

```
int setRRJCMX(DAQMX daqmx, int refChNo, int startChNo, int
endChNo, int spanMin, int spanMax);
```

### Declaration

```
Public Declare Function setRRJCMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal refChNo As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal spanMin As Long, ByVal spanMax As Long)
As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| refChNo | Specify the reference channel using a channel number. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets remote RJC to the specified channel range.

- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channels from unsupported modules are ignored.
- The alarm setting is initialized.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setRRJC
```

## setRTDMX

### Syntax

```
int setRTDMX(DAQMX daqmx, int iRangeRTD, int startChNo, int
endChNo, int spanMin, int spanMax, int scaleMin, int scaleMax,
int scalePoint);
```

### Declaration

```
Public Declare Function setRTDMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal iRangeRTD As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal spanMin As Long, ByVal spanMax As Long,
ByVal scaleMin As Long, ByVal scaleMax As Long, ByVal
scalePoint As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRangeRTD | Specify the range type of the RTD input. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified channel range to RTD input.

- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- If the minimum and maximum values of the scale are equal, the scale is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channels from unsupported modules are ignored.
- The alarm setting is initialized.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setRTD
CDAQMXConfig::setScalling
```

## setScallingUnitMX

### Syntax

```
int setScallingUnitMX(DAQMX daqmx, const char * strUnit, int
startChNo, int endChNo);
```

### Declaration

```
Public Declare Function setScallingUnitMX Lib "DAQMX"(ByVal
daqmx As Long, ByVal strUnit As String, ByVal startChNo As
Long, ByVal endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| strUnit | Specify the unit name. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the unit name to the specified channel range.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXChConfig::setUnit
CDAQMXConfig::getClassMXChConfig
```

## setSegmentMX

### Syntax

```
int setSegmentMX(DAQMX daqmx, int dispType, int dispTime,
MXSegment * newSegment, MXSegment * oldSegment);
```

### Declaration

```
Public Declare Function setSegmentMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal iDispType As Long, ByVal dispTime As Long,
ByRef newSegment As MXSegment, ByRef oldSegment As MXSegment)
As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iDispType | Specify the display type. |
| dispTime | Specify the display time. |
| newSegment | Specify the display pattern. |
| oldSegment | Specify the destination where the previous display pattern is to be returned. |

### Description

Sets the display of the 7-segment LED.

- Stores the 7-segment LED display pattern before the change if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::setSegment`
`CDAQMXSegment::getMXSegment`

## setSKIPMX

### Syntax

```
int setSKIPMX(DAQMX daqmx, int startChNo, int endChNo);
```

### Declaration

```
Public Declare Function setSKIPMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal startChNo As Long, ByVal endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the specified channel range to SKIP (not used).

- The setup data is retrieved collectively, changed, and sent collectively.
- When set to an unused channel, the channel settings on the main unit are lost.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setSKIP
```

## setSTRAINMX

### Syntax

```
int setSTRAINMX(DAQMX daqmx, int iRangeSTRAIN, int startChNo,
int endChNo, int spanMin, int spanMax, int scaleMin, int
scaleMax, int scalePoint);
```

### Declaration

```
Public Declare Function setSTRAINMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal iRangeSTRAIN As Long, ByVal startChNo As Long,
ByVal endChNo As Long, ByVal spanMin As Long, ByVal spanMax As
Long, ByVal scaleMin As Long, ByVal scaleMax As Long, ByVal
scalePoint As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRangeSTRAIN | Specify the strain range from the range type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified channel range to the strain range.

- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- If the minimum and maximum values of the scale are equal, the span is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channel from unsupported modules are ignored.
- The alarm setting is initialized.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setScalling
CDAQMXConfig::setSTRAIN
```

## setSystemConfigMX

### Syntax

```
int setSystemConfigMX(DAQMX daqmx, MXSystemInfo *
pMXSystemInfo);
```

### Declaration

```
Public Declare Function setSystemConfigMX Lib "DAQMX"(ByVal
daqmx As Long, ByRef pMXSystemInfo As MXSystemInfo) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXSystemInfo | Specify the system configuration data. |

### Description

Sets the system configuration data within the setup data.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::getClassMXSysInfo
CDAQMXSysInfo::setMXSystemInfo
```

## setSystemTimeoutMX

### Syntax

```
int setSystemTimeoutMX(DAQMX daqmx, int timeout);
```

### Declaration

```
Public Declare Function setSystemTimeoutMX Lib "DAQMX"(ByVal
daqmx As Long, ByVal timeout As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| timeout | Specify the timeout value in numbers of seconds. |

### Description

Sets the timeout value.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::getClassMXSysInfo
CDAQMXSysInfo::setCFTimeout
```

## setTagMX

### Syntax

```
int setTagMX(DAQMX daqmx, const char * strTag, int startChNo,
int endChNo);
```

### Declaration

```
Public Declare Function setTagMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal strTag As String, ByVal startChNo As Long, ByVal
endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| strTag | Specify the tag. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the tag to the specified channel range.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXChConfig::setTag
CDAQMXConfig::getClassMXChConfig
```

## setTCMX

### Syntax

```
int setTCMX(DAQMX daqmx, int iRangeTC, int startChNo, int
endChNo, int spanMin, int spanMax, int scaleMin, int scaleMax,
int scalePoint);
```

### Declaration

```
Public Declare Function setTCMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal iRangeTC As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal spanMin As Long, ByVal spanMax As Long,
ByVal scaleMin As Long, ByVal scaleMax As Long, ByVal
scalePoint As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRangeTC | Specify the range type of the thermocouple input. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified channel range to thermocouple input.

- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- If the minimum and maximum values of the scale are equal, the scale is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channels from unsupported modules are ignored.
- The alarm setting is initialized.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setScalling
CDAQMXConfig::setTC
```

## setTempUnitMX

### Syntax

```
int setTempUnitMX(DAQMX daqmx, int iTempUnit);
```

### Declaration

```
Public Declare Function setTempUnitMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal iTempUnit As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iTempUnit | Specify the temperature unit type. |

### Description

Sets the temperature unit type.

- The setup data is retrieved collectively, changed, and sent collectively.
- The channel settings of the thermocouple and RTD ranges are initialized.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setTempUnit
```

## setTimeOutMX

### Syntax

```
int setTimeOutMX(DAQMX daqmx, int seconds);
```

### Declaration

```
Public Declare Function setTimeOutMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal seconds As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| seconds | Specify the communication timeout value in units of seconds. |

### Description

Sets a timeout for the communication with the device.

- If a negative value is specified, the timeout is discarded.
- Use of this function is not recommended (see section 3.1 or 4.1).

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::setTimeOut`

## setTransmitMX

### Syntax

```
int setTransmitMX(DAQMX daqmx, MXTransmit ·    pMXTransmit);
```

### Declaration

```
Public Declare Function setTransmitMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXTransmit As MXTransmit) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXTransmit | Specify the transmission output data. |

### Description

Sends the transmission output data collectively.

- Changes to the condition in which transmission output (AO and PWM) channels are specified.
- You can create data to send by changing the transmission output data of a data operation function.
- Specifications other than for the transmission output channels are ignored.
- If channels specified for output start are already outputting, output continues.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::setTransmit`

## setUnitNoMX

### Syntax

```
int setUnitNoMX(DAQMX daqmx, int unitNo);
```

### Declaration

```
Public Declare Function setUnitNoMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal unitNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| unitNo | Specify the unit number. |

### Description

Sets the unit number.

- The setup data is retrieved collectively, changed, and sent collectively.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::getClassMXSysInfo
CDAQMXSysInfo::setUnitNo
```

## setUserTimeMX [Visual C Only]

### Syntax

```
int setUserTimeMX(DAQMX daqmx, MXUserTime userTime);
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| userTime | Specify the user count. |

### Description

Sets the user count.

- Inserts the specified user count in the next packet to be issued.
- In Visual Basic, use the setUserTimeVBMX function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::setUserTime`

## setUserTimeVBMX

### Syntax

```
int setUserTimeVBMX(DAQMX daqmx, MXUserTime * userTime);
```

### Declaration

```
Public Declare Function setUserTimeVBMX Lib "DAQMX"(ByVal
daqmx As Long, ByRef userTime As MXUserTime) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| userTime | Specify the user count. |

### Description

Sets the user count.

- Except for reference specification, the user count specification is the same as the setUserTimeMX function.
- In Visual C, if NULL is specified for user count, it is considered to be 0.

### Return value

Returns an error number.

### Reference

`setUserTimeMX`

## setVOLTMX

### Syntax

```
int setVOLTMX(DAQMX daqmx, int iRangeVOLT, int startChNo, int
endChNo, int spanMin, int spanMax, int scaleMin, int scaleMax,
int scalePoint);
```

### Declaration

```
Public Declare Function setVOLTMX Lib "DAQMX"(ByVal daqmx As
Long, ByVal iRangeVOLT As Long, ByVal startChNo As Long, ByVal
endChNo As Long, ByVal spanMin As Long, ByVal spanMax As Long,
ByVal scaleMin As Long, ByVal scaleMax As Long, ByVal
scalePoint As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| iRangeVOLT | Specify the range type of the DC voltage input. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified channel range to DC voltage input.

- If the minimum and maximum values of the span are equal, the span is considered to be omitted.
- If the minimum and maximum values of the scale are equal, the scale is considered to be omitted.
- The setup data is retrieved collectively, changed, and sent collectively.
- Channel from unsupported modules are ignored.
- The alarm setting is initialized.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::getMXConfig
CDAQMX::setMXConfig
CDAQMXConfig::setScalling
CDAQMXConfig::setVOLT
```

## startFIFOMX

### Syntax

```
int startFIFOMX(DAQMX daqmx);
```

### Declaration

```
Public Declare Function startFIFOMX Lib "DAQMX"(ByVal daqmx As
Long) As Long
```

### Parameters

daqmx Specify the device descriptor.

### Description

Starts the FIFO.

- If the FIFO is already started, it is continued.
- It may take time from the start of the FIFO until the measured data can be retrieved. The time required varies depending on the measurement interval.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX::startFIFO`

## stopFIFOMX

### Syntax

```
int stopFIFOMX(DAQMX daqmx);
```

### Declaration

```
Public Declare Function stopFIFOMX Lib "DAQMX"(ByVal daqmx As
Long) As Long
```

### Parameters

daqmx Specify the device descriptor.

### Description

Stops the FIFO.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX::stopFIFO
```

## talkChDataInstMX

### Syntax

```
int talkChDataInstMX(DAQMX daqmx, int chNo);
```

### Declaration

```
Public Declare Function talkChDataInstMX Lib "DAQMX"(ByVal
daqmx As Long, ByVal chNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Declares the retrieval of the measured data of instantaneous values of the specified channel number.

- For a description of the retrieval operation, see the talkChDataMX function.

### Return value

Returns an error number.

### Reference

```
talkChDataMX
```

## talkChDataMX [Visual C only]

### Syntax

```
int talkChDataMX(DAQMX daqmx, int chNo, MXDataNo startDataNo,
MXDataNo endDataNo);
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| chNo | Specify the channel number. |
| startDataNo | Specify the start data number. |
| endDataNo | Specify the end data number. |

### Description

Declares the retrieval of the measured data of the specified channel number.

- Specify the range to be retrieved using the start and end data numbers.
- When retrieving instantaneous values, specify the constant for “Data number for specifying instantaneous values” for the start/end data number. Or, use the talkChDataInstMX function.
- After executing this function, use the getTimeDataMX function to retrieve the data times for all the data points. Then, use the getChDataMX function to retrieve the measured data of all the data points.
- In Visual Basic, use the talkChDataVBMX function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::talkChData`

## talkChDataVBMX

### Syntax

```
int talkChDataVBMX(DAQMX daqmx, int chNo, MXDataNo *
startDataNo, MXDataNo * endDataNo);
```

### Declaration

```
Public Declare Function talkChDataVBMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal chNo As Long, ByRef startDataNo As MXDataNo,
ByRef endDataNo As MXDataNo) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| chNo | Specify the channel number. |
| startDataNo | Specify the start data number. |
| endDataNo | Specify the end data number. |

### Description

Declares the retrieval of the measured data of the specified channel number.

- Except for reference specification, the data number specification is the same as the talkChDataMX function.
- In Visual C, if NULL is specified for a data number, it is considered to be the constant for “Data number for specifying instantaneous values.”
- For a description of the retrieval operation, see the talkChDataMX function.

### Return value

Returns an error number.

### Reference

talkChDataMX

## talkChInfoMX

### Syntax

```
int talkChInfoMX(DAQMX daqmx, int startChNo, int endChNo);
```

### Declaration

```
Public Declare Function talkChInfoMX Lib "DAQMX"(ByVal daqmx
As Long, ByVal startChNo As Long, ByVal endChNo As Long) As
Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Declares the retrieval of the channel information data.

- After executing this function, use the getChInfoMX function to retrieve the data for each channel.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::talkChInfo`

## talkConfigMX

### Syntax

```
int talkConfigMX(DAQMX daqmx, MXSystemInfo * pMXSystemInfo,
MXStatus * pMXStatus, MXNetInfo * pMXNetInfo);
```

### Declaration

```
Public Declare Function talkConfigMX Lib "DAQMX"(ByVal daqmx
As Long, ByRef pMXSystemInfo As MXSystemInfo, ByRef pMXStatus
As MXStatus, ByRef pMXNetInfo As MXNetInfo) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| pMXSystemInfo | Specify the destination where the system configuration data is to be returned. |
| pMXStatus | Specify the destination where the status is to be returned. |
| pMXNetInfo | Specify the destination where the network information data is to be returned. |

### Description

Declares the retrieval of the setup data.

- Stores the system configuration data, status, and network information of the setup data in the specified return destination.
- After executing this function, use the getChConfigMX function to retrieve the channel setup data of all the channels.
- Within the setup data, initial balance data and output channel data is retrieved using a separately-named retrieval function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX::talkConfig
CDAQMXNetInfo::getMXNetInfo
CDAQMXStatus::getMXStatus
CDAQMXSysInfo::getMXSystemInfo
```

## talkFIFODataInstMX

### Syntax

```
int talkFIFODataInstMX(DAQMX daqmx, int fifoNo);
```

### Declaration

```
Public Declare Function talkFIFODataInstMX Lib "DAQMX"(ByVal
daqmx As Long, ByVal fifoNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |

### Description

Declares the retrieval of the measured data of instantaneous values of the specified FIFO number.

- For a description of the retrieval operation, see the talkChDataMX function.

### Return value

Returns an error number.

### Reference

`talkFIFODataMX`

## talkFIFODataMX [Visual C Only]

### Syntax

```
int talkFIFODataMX(DAQMX daqmx, int fifoNo, MXDataNo
startDataNo, MXDataNo endDataNo);
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |
| startDataNo | Specify the start data number. |
| endDataNo | Specify the end data number. |

### Description

Declares the retrieval of the measured data of the specified FIFO number.

- Specify the range to be retrieved using the start and end data numbers.
- When retrieving instantaneous values, specify the constant for “Data number for specifying instantaneous values” for the start/end data number. Or, use the talkFIFODataInstMX function.
- After executing this function, use the getTimeDataMX function to retrieve the data times for all the data points. Then, use the getChDataMX function to retrieve the measured data of all the data points.
- In Visual Basic, use the talkFIFODataVBMX function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX::talkFIFOData`

## talkFIFODataVBMX

### Syntax

```
int talkFIFODataVBMX(DAQMX daqmx, int fifoNo, MXDataNo *
startDataNo, MXDataNo * endDataNo);
```

### Declaration

```
Public Declare Function talkFIFODataVBMX Lib "DAQMX"(ByVal
daqmx As Long, ByVal fifoNo As Long, ByRef startDataNo As
MXDataNo, ByRef endDataNo As MXDataNo) As Long
```

### Parameters

| | |
|---|---|
| daqmx | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |
| startDataNo | Specify the start data number. |
| endDataNo | Specify the end data number. |

### Description

Declares the retrieval of the measured data of the specified FIFO number.

- Except for reference specification, the data number specification is the same as the talkFIFODataMX function.
- In Visual C, if NULL is specified for a data number, it is considered to be the constant for “Data number for specifying instantaneous values.”
- For a description of the retrieval operation, see the talkFIFODataMX function.

### Return value

Returns an error number.

### Reference

`talkFIFODataMX`

## toAlarmNameMX

### Syntax

```
int toAlarmNameMX(int iAlarmType, char * strAlarm, int
lenAlarm);
```

### Declaration

```
Public Declare Function toAlarmNameMX Lib "DAQMX"(ByVal
iAlarmType As Long, ByVal strAlarm As String, ByVal lenAlarm
As Long) As Long
```

### Parameters

| | |
|---|---|
| iAlarmType | Specify the alarm type. |
| strAlarm | Specify the field where the string is to be stored. |
| lenAlarm | Specify the byte size of the field where the string is to be stored. |

### Description

Stores the string corresponding to the specified alarm type to the specified field.

- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`CDAQMXDataInfo::getAlarmName`

## toAOPWMValueMX

### Syntax

```
int toAOPWMValueMX(double realValue, int iRangeAOPWM);
```

### Declaration

```
Public Declare Function toAOPWMValueMX Lib "DAQMX"(ByVal
realValue As Double, ByVal iRangeAOPWM As Long) As Long
```

### Parameters

| | |
|---|---|
| realValue | Specify the actual output value. |
| iRangeAOPWM | Specify the range type. |

### Description

Converts the actual output values to AO/PWM data output data values according to the specified range type.

- Valid range types are AO and PWM.
- Returns 0 if the value is unknown.

### Return value

Returns the output data value.

### Reference

`CDAQMXAOPWMData::toAOPWMValue`

## toDateTimeMX

### Syntax

```
void toDateTimeMX(MXDateTime * pMXDateTime, int * pYear, int *
pMonth, int * pDay, int * pHour, int * pMinute, int *
pSecond);
```

### Declaration

```
Public Declare Sub toDateTimeMX Lib "DAQMX"(ByRef pMXDateTime
As MXDateTime, ByRef pYear As Long, ByRef pMonth As Long,
ByRef pDay As Long, ByRef pHour As Long, ByRef pMinute As
Long, ByRef pSecond As Long)
```

### Parameters

| | |
|---|---|
| pMXDateTime | Specify the time information. |
| pYear | Specify the destination where the year value is returned. |
| pMonth | Specify the destination where the month value is returned. |
| pDay | Specify the destination where the day value is returned. |
| pHour | Specify the destination where the hour value is returned. |
| pMinute | Specify the destination where the minute value is returned. |
| pSecond | Specify the destination where the second value is returned. |

### Description

Converts the number of seconds with respect to Jan. 1, 1970 in the specified time information into year, month, day, hour, minute, and second values.

- A four digit value is returned for the year. A value between 1 and 12 is returned for the month. A value between 1 and 31 is returned for the day. A value between 0 and 23 is returned for the hour. A value between 0 and 59 is returned for the minute. A value between 0 and 59 is returned for the second.

### Reference

`CDAQDateTime::toLocalDateTime`

## toDoubleValueMX

### Syntax

```
double toDoubleValueMX(int dataValue, int point);
```

### Declaration

```
Public Declare Function toDoubleValueMX Lib "DAQMX"(ByVal
dataValue As Long, ByVal point As Long) As Double
```

### Parameters

| | |
|---|---|
| dataValue | Specify the data value. |
| point | Specify the decimal point position. |

### Description

Generates the measured value from the specified data value and decimal point position.

### Return value

Returns the measured value as a double-precision floating number.

### Reference

`CDAQDataInfo::toDoubleValue`

## toErrorMessageMX

### Syntax

```
int toErrorMessageMX(int errCode, char * errStr, int errLen);
```

### Declaration

```
Public Declare Function toErrorMessageMX Lib "DAQMX"(ByVal
errCode As Long, ByVal errStr As String, ByVal errLen As Long)
As Long
```

### Parameters

| | |
|---|---|
| errCode | Specify the error number. |
| errStr | Specify the field where the string is to be stored. |
| errLen | Specify the byte size of the field where the string is to be stored. |

### Description

Stores the error message string corresponding to the error number in the specified field.

- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`getErrorMessageMX`

## toRealValueMX

### Syntax

```
double toRealValueMX(int iAOPWMValue, int iRangeAOPWM);
```

### Declaration

```
Public Declare Function toRealValueMX Lib "DAQMX"(ByVal
iAOPWMValue As Long, ByVal iRangeAOPWM As Long) As Double
```

### Parameters

| | |
|---|---|
| iAOPWMValue | Specify the output data value. |
| iRangeAOPWM | Specify the range type. |

### Description

Converts the output data of AO/PWM data to actual output values according to the specified range type.

- Valid range types are AO and PWM.
- Returns 0 if the value is unknown.

### Return value

Returns the actual output value.

### Reference

`CDAQMXAOPWMData::toRealValue`

## toStringValueMX

### Syntax

```
int toStringValueMX(int dataValue, int point, char * strValue,
int lenValue);
```

### Declaration

```
Public Declare Function toStringValueMX Lib "DAQMX"(ByVal
dataValue As Long, ByVal point As Long, ByVal strValue As
String, ByVal lenValue As Long) As Long
```

### Parameters

| | |
|---|---|
| dataValue | Specify the data value. |
| point | Specify the decimal point position. |
| strValue | Specify the field where the string is to be stored. |
| lenValue | Specify the byte size of the field where the string is to be stored. |

### Description

Generates the measured value from the specified data value and decimal point position.

- Converts the generated measured value into a string and stores it in the specified field.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`CDAQDataInfo::toStringValue`

## toStyleVersionMX

### Syntax

```
int toStyleVersionMX(int style)
```

### Declaration

```
Public Declare Function toStyleVersionMX Lib "DAQMX"(ByVal
style As Long) As Long
```

### Parameters

style Specify the style.

### Description

Gets the version number from the system configuration style.

### Return value

Returns the style version.

### Reference

```
CDAQMXSysInfo::toStyleVersion
```

# 6.1 Overview of the MX100 Constants

The API provides the following types of constants. The constants are common to Visual C++, Visual C, and Visual Basic.

| Type | Description | Page |
|---|---|---|
| Communication constants | Communication port number of the MX100 | 6-3 |
| Enumeration constants | Number of modules, etc. | 6-3 |
| Maximum values | Maximum length of the tag string, etc. | 6-3 |
| Constants | Data numbers for specifying the instantaneous values, etc. | 6-4 |
| Boolean value | Valid (ON) setting or Invalid (OFF) setting | 6-4 |
| Flag statuses | Identifies the last data set when data is retrieved | 6-4 |
| Data status values | Status of the measured data | 6-4 |
| Alarm types | Upper-limit alarm, etc. | 6-5 |
| System control types | System control operation | 6-5 |
| Channel kinds | Universal input, digital input, etc. | 6-5 |
| Scale types | No scaling or linear scale | 6-6 |
| Module types | 4-CH Universal Input, etc. | 6-6 |
| Channel numbers | 4 or 10 | 6-7 |
| Interval types | 10 ms to 60000 ms | 6-7 |
| Filter time constants | Input filter time constant | 6-7 |
| RJC types | Internal RJC or external RJC | 6-7 |
| Burnout types | Off/Up/Down | 6-7 |
| Unit types | MX100 | 6-8 |
| Terminal types | Screw terminal or clamp terminal | 6-8 |
| A/D integration time types | Auto, 50 Hz or 60 Hz | 6-8 |
| Temperature unit types | Celsius or Fahrenheit | 6-8 |
| CF write modes | Data write mode to the CF card | 6-8 |
| CF status types | CF status | 6-8 |
| Unit status values | Unit status | 6-8 |
| FIFO status values | FIFO status | 6-9 |
| Display format values | Display format of the 7-segment LED | 6-9 |
| Output types | Output range types | 6-9 |
| Selection values | Output value selections | 6-9 |
| Transmission statuses | Transmission output statuses | 6-9 |
| Initial balance results | Result of execution of initial balancing | 6-9 |
| Options | Presence/absence of options | 6-9 |
| Reference ranges | See the measurement range of the channels undergoing difference between channels computation for the measurement range of the reference channel. | 6-10 |
| DC voltage range types | 20 mV, etc. | 6-10 |
| TC range types | Type R, etc. | 6-10 |

| Type | Description | Page |
|---|---|---|
| RTD (1 mA) range types | Pt100, etc. | 6-11 |
| RTD (2 mA) range types | Pt100, etc. | 6-13 |
| RTD (other ) range | Pt500, Pt1000 | 6-14 |
| Resistance ranges | 20 Ω, 200 Ω, or 2 kΩ (0.25 mA) | 6-14 |
| Digital Input (DI) ranges | Level or contact input | 6-14 |
| Digital input (DI) detailed ranges | Contact input of the 4-CH Universal Input Module, etc. | 6-15 |
| Strain ranges | 2000 μstrain, 20000 μstrain, or 200000 μstrain | 6-15 |
| AO ranges | V output or mA output | 6-15 |
| PWM ranges | PWM output resolution 1 ms or 10 ms | 6-15 |

# 6.2 MX100 Constants

This section describes the mnemonic for, and the meaning of the constants. For the details on the MX100 functions, see the relevant user's manual.

## Communication Constant

| Mnemonic | Description |
|---|---|
| DAQMX_COMMPORT | Communication port number of the MX100. |

## Enumeration Constants

| Mnemonic | Description |
|---|---|
| DAQMX_NUMMODULE | The number of modules. |
| DAQMX_NUMCHANNEL | The number of channels. |
| DAQMX_NUMDO | The number of DO data sets. |
| DAQMX_NUMFIFO | The number of FIFOs. |
| DAQMX_NUMALARM | The number of alarms. Since API R3.01, the number of alarms has changed to 4. |
| DAQMX_NUMSEGMENT | The number of 7-segment LEDs. |
| DAQMX_NUMMACADDR | The number of MAC address elements (byte count). |
| DAQMX_NUMAOPWM | The number of AO/PWM data. |
| DAQMX_NUMBALANCE | Number of initial balance data. |
| DAQMX_NUMOUTPUT | Number of output channel data. |

## Maximum Values

| Mnemonic | Description |
|---|---|
| DAQMX_MAXHOSTNAMELEN | Maximum length of the host name string. |
| DAQMX_MAXUNITLEN | Maximum length of the unit name string. |
| DAQMX_MAXTAGLEN | Maximum length of the tag string. |
| DAQMX_MAXCOMMENTLEN | Maximum length of the comment string. |
| DAQMX_MAXSERIALLEN | Maximum length of the MX100 serial number string. |
| DAQMX_MAXPARTNOLEN | Maximum length of the part number (firmware part number) string. |
| DAQMX_MAXDECIMALPOINT | Maximum value of the decimal point position. |
| DAQMX_MAXDISPTIME | Maximum value of the 7-segment LED display time. |
| DAQMX_MAXPULSETIME | Maximum value of the integer multiple of the pulse interval. |

The maximum length of the string does not include the terminator (NULL).

## Constants

| Mnemonic | Description |
|---|---|
| DAQMX_INSTANTANEOUS | Data number when specifying the retrieval of the instantaneous value. |
| DAQMX_REFCHNO_ALL | Designation of all reference channel numbers. |
| DAQMX_LEVELNO_ALL | Designation of all alarm level numbers. |
| DAQMX_DONO_ALL | Designation of all DO numbers. |
| DAQMX_SEGMENTNO_ALL | Designation of all segment numbers of the 7-segment LED. |
| DAQMX_CHNO_ALL | Designation of all channel numbers. |
| DAQMX_MODULENO_ALL | Designation of all module numbers. |
| DAQMX_FIFONO_ALL | Designation of all FIFO numbers. |
| DAQMX_AOPWMNO_ALL | Designation of all AO/PWM data numbers. |
| DAQMX_BALANCENO_ALL | Designation of all initial balance numbers. |
| DAQMX_OUTPUTNO_ALL | Designation of all output data numbers. |
| DAQMX_REFCHNO_NONE | Undefined reference channel numbers. |

## Boolean Value (Valid/Invalid Value)

| Mnemonic | Description |
|---|---|
| DAQMX_VALID_OFF | Invalid (OFF) value. |
| DAQMX_VALID_ON | Valid (ON) value. |

## Flag Statuses

Can be synthesized using logical OR operators.

| Mnemonic | Description |
|---|---|
| DAQMX_FLAG_OFF | All OFF. |
| DAQMX_FLAG_ENDDATA | The data retrieved in units of channels or data numbers is the last data set. |

## Data Status Values

| Mnemonic | Description |
|---|---|
| DAQMX_DATA_UNKNOWN | Unknown. |
| DAQMX_DATA_NORMAL | Normal. |
| DAQMX_DATA_PLUSOVER | Positive overrange. |
| DAQMX_DATA_MINUSOVER | Negative overrange. |
| DAQMX_DATA_SKIP | SKIP (not used). |
| DAQMX_DATA_ILLEGAL | Illegal data status. |
| DAQMX_DATA_NODATA | No data status. |
| DAQMX_DATA_LACK | Data dropout status |
| DAQMX_DATA_INVALID | Invalid status. |

## Alarm Types

◊ indicates a space.

| Mnemonic | Description | String |
|---|---|---|
| DAQMX_ALARM_NONE | Alarm OFF | ◊◊ |
| DAQMX_ALARM_UPPER | Upper limit alarm | H◊ |
| DAQMX_ALARM_LOWER | Lower limit alarm | L◊ |
| DAQMX_ALARM_UPDIFF | Difference upper limit alarm | dH |
| DAQMX_ALARM_LOWDIFF | Difference lower limit alarm | dL |

## System Control Types

| Mnemonic | Description |
|---|---|
| DAQMX_SYSTEM_RECONSTRUCT | System reconstruction |
| DAQMX_SYSTEM_INITOPE | System initialization |
| DAQMX_SYSTEM_RESETALARM | Alarm reset (alarm acknowledge) |

## Channel Types

| Mnemonic | Description |
|---|---|
| DAQMX_CHKIND_NONE | Not used |
| DAQMX_CHKIND_AI | AI* |
| DAQMX_CHKIND_AIDIFF | AI* (difference between channels computation designation) |
| DAQMX_CHKIND_AIRJC | AI* (remote RJC channel) |
| DAQMX_CHKIND_DI | DI* |
| DAQMX_CHKIND_DIDIFF | DI* (difference between channel computation designation) |
| DAQMX_CHKIND_DO | DO* (alarm output designation) |
| DAQMX_CHKIND_DOCOM | DO* (command DO designation) |
| DAQMX_CHKIND_DOFAIL | DO* (system failure output designation) |
| DAQMX_CHKIND_DOERR | DO* (system error output designation) |
| DAQMX_CHKIND_AO | AO* (transmission output) |
| DAQMX_CHKIND_AOCOM | AO*(command AO) |
| DAQMX_CHKIND_PWM | PWM* (transmission output) |
| DAQMX_CHKIND_PWMCOM | PWM* (command PWM) |
| DAQMX_CHKIND_PI | Pulse input |
| DAQMX_CHKIND_PIDIFF | Pulse input (difference between channels computation designation) |
| DAQMX_CHKIND_CI | CAN Bus input |
| DAQMX_CHKIND_CIDIFF | CAN Bus input (difference between channels computation designation) |

* AI: Analog input, DC voltage input, TC input, etc.
AO: Analog output, analog output
DI: Digital input, digital input
DO: Digital output, digital output
PWM: Pulse Width Modulation, PWM output

For input channels, the channel types of the input channel is set using the range setting function.
For output channels, the channel type is set using the channel setting function.

## Scale Types

| Mnemonic | Description |
|---|---|
| DAQMX_SCALE_NONE | No scale |
| DAQMX_SCALE_LINER | Linear scale |

## Module Types

| Mnemonic | Description |
|---|---|
| DAQMX_MODULE_NONE | None |
| DAQMX_MODULE_MX110UNVH04 | 4-CH, High-Speed Universal Input Module |
| DAQMX_MODULE_MX110UNVM10 | 10-CH, Medium-Speed Universal Input Module |
| DAQMX_MODULE_MX115D05H10 | 10-CH, High-Speed Digital Input Module |
| DAQMX_MODULE_MX125MKCM10 | 10-CH, Medium-Speed Digital Output Module |
| DAQMX_MODULE_MX110V4RM06 | Six-Channel, Medium-Speed Four-Wire RTD Resistance Input Module |
| DAQMX_MODULE_MX112NDIM04 | 4-CH Strain Input Module (NDIS) |
| DAQMX_MODULE_MX110V4RM06 | 4-CH Strain Input Module (350Ω) |
| DAQMX_MODULE_MX112B12M04 | 4-CH Strain Input Module (20Ω) |
| DAQMX_MODULE_MX115D24H10 | 10-CH, High-Speed Digital Input Module (DC24 V) |
| DAQMX_MODULE_MX120VAOM08 | 8-CH, Medium-Speed Analog Output Module |
| DAQMX_MODULE_MX120PWMM08 | 8-CH, Medium-Speed PWM Output Module |
| DAQMX_MODULE_HIDDEN | A slot in which no module is physically connected, but which is occupied by a module that uses multiple slots (virtual module portion) |
| DAQMX_MODULE_MX114PLSM10 | 10-CH, Pulse Input Module |
| DAQMX_MODULE_MX110VTDL30 | 30-CH, Medium-Speed DCV/TC/DI Input Module |
| DAQMX_MODULE_MX118CANM10 | CAN Bus Module, 10 channels* |
| DAQMX_MODULE_MX118CANM20 | CAN Bus Module, 20 channels* |
| DAQMX_MODULE_MX118CANM30 | CAN Bus Module, 30 channels* |
| DAQMX_MODULE_MX118CANSUB | A slot in which no module is physically connected, but which is occupied by a CAN Bus module that uses multiple slots (virtual CAN Bus module portion) |
| DAQMX_MODULE_MX118CANMERR | CAN Bus Module position error |
| DAQMX_MODULE_MX118CANSERR | An error in a slot in which no module is physically connected, but which is occupied by a CAN Bus module that uses multiple slots (virtual CAN Bus module portion) |

* The CAN Bus modules are differentiated by the number of used channels.

## Channel Numbers

| Mnemonic | Description |
|---|---|
| DAQMX_CHNUM_0 | 0 |
| DAQMX_CHNUM_4 | 4 |
| DAQMX_CHNUM_6 | 6 |
| DAQMX_CHNUM_8 | 8 |
| DAQMX_CHNUM_10 | 10 |
| DAQMX_CHNUM_30 | 30 |

## Interval Types

| Mnemonic | Description |
|---|---|
| DAQMX_INTERVAL_10 | 10 msec |
| DAQMX_INTERVAL_50 | 50 msec |
| DAQMX_INTERVAL_100 | 100 msec |
| DAQMX_INTERVAL_200 | 200 msec |
| DAQMX_INTERVAL_500 | 500 msec |
| DAQMX_INTERVAL_1000 | 1000 msec |
| DAQMX_INTERVAL_2000 | 2000 msec |
| DAQMX_INTERVAL_5000 | 5000 msec |
| DAQMX_INTERVAL_10000 | 10000 msec |
| DAQMX_INTERVAL_20000 | 20000 msec |
| DAQMX_INTERVAL_30000 | 30000 msec |
| DAQMX_INTERVAL_60000 | 60000 msec |

## Filter Coefficient

| Mnemonic | Description |
|---|---|
| DAQMX_FILTER_0 | Coefficient 0 |
| DAQMX_FILTER_5 | Coefficient 5 |
| DAQMX_FILTER_10 | Coefficient 10 |
| DAQMX_FILTER_20 | Coefficient 20 |
| DAQMX_FILTER_25 | Coefficient 25 |
| DAQMX_FILTER_40 | Coefficient 40 |
| DAQMX_FILTER_50 | Coefficient 50 |
| DAQMX_FILTER_100 | Coefficient 100 |

## RJC Types

| Mnemonic | Description |
|---|---|
| DAQMX_RJC_INTERNAL | RJC function of the MX100 |
| DAQMX_RJC_EXTERNAL | External RJC function |

## Burnout Types

| Mnemonic | Description |
|---|---|
| DAQMX_BURNOUT_OFF | No burnout detection function |
| DAQMX_BURNOUT_UP | Display +OVER when burnout is detected |
| DAQMX_BURNOUT_DOWN | Display .OVER when burnout is detected |

## Unit Type Logic

Can be synthesized using OR computations

| Mnemonic | Description |
|---|---|
| DAQMX_UNITTYPE_NONE | Unknown |
| DAQMX_UNITTYPE_MX100 | MX100 |

## Terminal Types

| Mnemonic | Description |
|---|---|
| DAQMX_TERMINAL_SCREW | Screw terminal |
| DAQMX_TERMINAL_CLAMP | Clamp terminal |
| DAQMX_TERMINAL_NDIS | NDIS |
| DAQMX_TERMINAL_DSUB | D-SUB 9-pin connector |

## A/D Integration Time Type

| Mnemonic | Description |
|---|---|
| DAQMX_INTEGRAL_AUTO | Auto (MX100 automatically sets 50 or 60 Hz) |
| DAQMX_INTEGRAL_50HZ | 50 Hz |
| DAQMX_INTEGRAL_60HZ | 60 Hz |

## Temperature Unit Types

| Mnemonic | Description |
|---|---|
| DAQMX_TEMPUNIT_C | °C |
| DAQMX_TEMPUNIT_F | °F |

## CF Write Modes

| Mnemonic | Description |
|---|---|
| DAQMX_CFWRITEMODE_ONCE | No overwriting (stops writing when there is no more free space) |
| DAQMX_CFWRITEMODE_FIFO | Repeat (overwrite from the oldest data) |

## CF Status Types

Can be synthesized using logical OR computations

| Mnemonic | Description |
|---|---|
| DAQMX_CFSTATUS_NONE | All OFF |
| DAQMX_CFSTATUS_EXIST | Presence or absence |
| DAQMX_CFSTATUS_USE | CF card is usable. |
| DAQMX_CFSTATUS_FORMAT | CF card is being formatted. |

## Unit Status Values

| Mnemonic | Description |
|---|---|
| DAQMX_UNITSTAT_NONE | Unknown |
| DAQMX_UNITSTAT_INIT | Initializing |
| DAQMX_UNITSTAT_STOP | Stopped |
| DAQMX_UNITSTAT_RUN | Measuring |
| DAQMX_UNITSTAT_BACKUP | Measuring (backing up) |

## FIFO Status Values

| Mnemonic | Description |
|---|---|
| DAQMX_FIFOSTAT_NONE | Unknown |
| DAQMX_FIFOSTAT_INIT | Initializing |
| DAQMX_FIFOSTAT_STOP | Stopped |
| DAQMX_FIFOSTAT_RUN | Measuring |
| DAQMX_FIFOSTAT_BACKUP | Measuring (backing up) |

## Display Format Values

| Mnemonic | Description |
|---|---|
| DAQMX_DISPTYPE_NONE | Undefined |
| DAQMX_DISPTYPE_ON | ON |
| DAQMX_DISPTYPE_BLINK | Blinking |

## Output Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_OUTPUT_NONE | No output | |
| DAQMX_OUTPUT_AO_10V | V output | -11.000 to 1.000 V |
| DAQMX_OUTPUT_AO_20MA | mA output | 0 to 2.000 mA |
| DAQMX_OUTPUT_PWM_1MS | PWM output resolution 1 ms | 0 to 00.000 % |
| DAQMX_OUTPUT_PWM_10MS | PWM output resolution 10 ms | 0 to 00.000 % |

Corresponds to the output range type.

## Selected Values

| Mnemonic | Description |
|---|---|
| DAQMX_CHOICE_PREV | Previous value |
| DAQMX_CHOICE_PRESET | Specified time |

## Transmission Statuses

| Mnemonic | Description |
|---|---|
| DAQMX_TRANSMIT_NONE | No specification (unknown) |
| DAQMX_TRANSMIT_RUN | Output start (outputting) |
| DAQMX_TRANSMIT_STOP | Output stop |

## Initial balance Results

| Mnemonic | Description |
|---|---|
| DAQMX_BALANCE_NONE | No specification |
| DAQMX_BALANCE_DONE | Concluded successfully |
| DAQMX_BALANCE_NG | Out of range |
| DAQMX_BALANCE_ERROR | Error |

## Options

| Mnemonic | Description |
|---|---|
| DAQMX_OPTION_NONE | No option |
| DAQMX_OPTION_DS | Dual Save (/DS option) |

## Range Type

### Reference range

| Mnemonic | Description |
|---|---|
| DAQMX_RANGE_REFERENCE | Measurement range of the reference channel. |

If this constant is specified as the measurement range of the difference computation channel, the measurement range of the difference computation channel is set to the same range as the measurement range of the reference channel.
The reference range is used for specification when you want to set the same range as the reference channels to be referenced in difference computation and other calculations.

### DC Voltage Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_VOLT_20MV | 20 mV | –20.000 to 20.000 mV |
| DAQMX_RANGE_VOLT_60MV | 60 mV | –60.00 to 60.00 mV |
| DAQMX_RANGE_VOLT_200MV | 200 mV | –200.00 to 200.00 mV |
| DAQMX_RANGE_VOLT_2V | 2 V | –2.0000-2.0000 V |
| DAQMX_RANGE_VOLT_6V | 6 V | –6.000-6.000 V |
| DAQMX_RANGE_VOLT_20V | 20 V | –20.000 to 20.000 V |
| DAQMX_RANGE_VOLT_100V | 100 V | –100.00 to 100.00 V |
| DAQMX_RANGE_VOLT_60MVH | 60 mV:High resolution | 0.000 to 60.000 mV |
| DAQMX_RANGE_VOLT_1V | 1 V | –10000 to 1.0000 V |
| DAQMX_RANGE_VOLT_6VH | 6 V:High resolution | 0.0000 to 6.0000 V |

### TC Range Types

| Mnemonic | | Description | Setting range |
|---|---|---|---|
| DAQMX_RANGE_TC_R | R | 0.0 to 1760.0°C | 32 to 3200°F |
| DAQMX_RANGE_TC_S | S | 0.0 to 1760.0°C | 32 to 3200°F |
| DAQMX_RANGE_TC_B | B | 0.0 to 1820.0°C | 32 to 3308°F |
| DAQMX_RANGE_TC_K | K | –200.0 to 1370.0°C | –328 to 2498°F |
| DAQMX_RANGE_TC_E | E | –200.0 to 800.0°C | –328.0 to 1472.0°F |
| DAQMX_RANGE_TC_J | J | –200.0 to 1100.0°C | –328.0 to 2012.0°F |
| DAQMX_RANGE_TC_T | T | –200.0 to 400.0°C | –328.0 to 752.0°F |
| DAQMX_RANGE_TC_N | N | 0.0 to 1300.0°C | 32 to 2372°F |
| DAQMX_RANGE_TC_W | W | 0.0 to 2315.0°C | 32 to 4199°F |
| DAQMX_RANGE_TC_L | L | –200.0 to 900.0°C | –328.0 to 1652.0°F |
| DAQMX_RANGE_TC_U | U | –200.0 to 400.0°C | –328.0 to 752.0°F |
| DAQMX_RANGE_TC_KP | KpAu7Fe | 0.0 to 300.0K | 0.0 to 300.0K |
| DAQMX_RANGE_TC_PL | PLATINEL | 0.0 to 1400.0°C | 32 to 2552°F |
| DAQMX_RANGE_TC_PR | PR40-20 | 0.0 to 1900.0°C | 32 to 3452°F |
| DAQMX_RANGE_TC_NNM | NiNiMo | 0.0 to 1310.0°C | 32 to 2390°F |
| DAQMX_RANGE_TC_WR | WRe3-25 | 0.0 to 2400.0°C | 32 to 4352°F |
| DAQMX_RANGE_TC_WWR | W/WRe26 | 0.0 to 2400.0°C | 32 to 4352°F |
| DAQMX_RANGE_TC_AWG | Type-N(AWG14) | 0.0 to 1300.0°C | 32 to 2372°F |
| DAQMX_RANGE_TC_XK | XK | –200.0 to 600.0°C | –328.0 to 1112.0°F |

## RTD (1 mA) Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_RTD_1MAPT | Pt100 | –200.0 to 600.0°C |
| | | –328.0 to 1112.0°F |
| DAQMX_RANGE_RTD_1MAJPT | JPt100 | –200.0 to 550.0°C |
| | | –328.0 to 1022.0°F |
| DAQMX_RANGE_RTD_1MAPTH | Pt100:high resolution | –140.00 to 150.00°C |
| | | –220.0 to 302.0°F |
| DAQMX_RANGE_RTD_1MAJPTH | JPt100:high resolution | –140.00 to 150.00°C |
| | | –220.0 to 302.0°F |
| DAQMX_RANGE_RTD_1MANIS | Ni100:SAMA | –200.0 to 250.0°C |
| | | –328.0 to 482.0°F |
| DAQMX_RANGE_RTD_1MANID | Ni100:DIN | –60.0 to 180.0°C |
| | | –76.0 to 356.0°F |
| DAQMX_RANGE_RTD_1MANI120 | Ni120 | –70.0 to 200.0°C |
| | | –94.0 to 392.0°F |
| DAQMX_RANGE_RTD_1MAPT50 | Pt50 | –200.0 to 550.0°C |
| | | –328.0 to 1022.0°F |
| DAQMX_RANGE_RTD_1MACU10GE | Cu10:GE | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MACU10LN | Cu10:L&N | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MACU10WEED | Cu10:WEED | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MACU10BAILEY | Cu10:BAILEY | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MAJ263B | J263*B | 0.0 to 300.0 K |
| | | 0.0 to 300.0 K |
| DAQMX_RANGE_RTD_1MACU10A392 | Cu10 at 20°C a=0.00392 | |
| | | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MACU10A393 | Cu10 at 20°C a=0.00393 | |
| | | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MACU25 | Cu25 at 0°C a=0.00425 | |
| | | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MACU53 | Cu53 at 0°C a=0.00426035 | |
| | | –50.0 to 150.0°C |
| | | 58.0 to 302.0°F |
| DAQMX_RANGE_RTD_1MACU100 | Cu100 at 0°C a=0.00425 | |
| | | –50.0 to 150.0°C |
| | | –58.0 to 302.0°F |

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_VOLT_200MV | Pt25 | –200.0 to 550.0°C |
| | | –328.0 to 1022.0°F |
| DAQMX_RANGE_RTD_1MACU10GEH | Cu10:GE: high resolution | |
| | | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MACU10LNH | Cu10:L&N: high resolution | |
| | | –500.0 to 500.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MACU10WEEDH | Cu10:WEED: high resolution | |
| | | –500.0 to 500.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MACU10BAILEYH | Cu10:BAILEY: high resolution | |
| | | –500.0 to 500.0°C |
| | | –328.0 to 572.0°F |
| DAQMX_RANGE_RTD_1MAPTN | Pt100: high noise resistance | |
| | | –800.0 to 800.0°C |
| | | –328.0 to 1112.0°F |
| DAQMX_RANGE_RTD_1MAJPTN | Jpt100: high noise resistance | |
| | | –750.0 to 750.0°C |
| | | –328.0 to 1022.0°F |
| DAQMX_RANGE_RTD_1MAPTG | Pt100G | –200.0 to 600.0°C |
| | | –328.0 to 1112.0°F |
| DAQMX_RANGE_RTD_1MACU100G | Cu100G | –200.0 to 200.0°C |
| | | –328.0 to 392.0°F |
| DAQMX_RANGE_RTD_1MACU50G | Cu50G | –200.0 to 200.0°C |
| | | –328.0 to 392.0°F |
| DAQMX_RANGE_RTD_1MACU10G | Cu10G | –200.0 to 200.0°C |
| | | –328.0 to 392.0°F |

## RTD (2 mA) Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_RTD_2MAPT | Pt100 | –200.0 to 250.0°C<br>–328.0 to 482.0°F |
| DAQMX_RANGE_RTD_2MAJPT | JPt100 | –200.0 to 250.0°C<br>–328.0 to 482.0°F |
| DAQMX_RANGE_RTD_2MAPTH | Pt100: high resolution | –140.00 to 150.00°C<br>–220.0 to 302.0°F |
| DAQMX_RANGE_RTD_2MAJPTH | JPt100: high resolution | –140.00 to 150.00°C<br>–220.0 to 302.0°F |
| DAQMX_RANGE_RTD_2MAPT50 | Pt50 | –200.0 to 550.0°C<br>–328.0 to 1022.0°F |
| DAQMX_RANGE_RTD_2MACU10GE | CU10:GE | –200.0 to 300.0°C<br>–328.0 to 572.0°F |
| DAQMX_RANGE_RTD_2MACU10LN | Cu10:L&N | –200.0 to 300.0°C<br>–328.0 to 572.0°F |
| DAQMX_RANGE_RTD_2MACU10WEED | Cu10:WEED | –200.0 to 300.0°C<br>–328.0 to 572.0°F |
| DAQMX_RANGE_RTD_2MACU10BAILEY | Cu10:BAILEY | –200.0 to 300.0°C<br>–328.0 to 572.0°F |
| DAQMX_RANGE_RTD_2MAJ263B | J263*B | 0.0-300.0K<br>0.0 to 300.0K |
| DAQMX_RANGE_RTD_2MACU10A392 | Cu10 at 20°C<br>a=0.00392 | –200.0 to 300.0°C<br>–328.0 to 572.0°F |
| DAQMX_RANGE_RTD_2MACU10A393 | Cu10 at 20°C<br>a=0.00393 | –200.0 to 300.0°C<br>–328.0 to 572.0°F |
| DAQMX_RANGE_RTD_2MACU25 | Cu25 at 0°C<br>a=0.00425 | –200.0 to 300.0°C<br>–328.0 to 572.0°F |
| DAQMX_RANGE_RTD_2MACU53 | Cu53 at 0°C<br>a=0.00426035 | –50.0 to 150.0°C<br>–58.0 to 302.0°F |
| DAQMX_RANGE_RTD_2MACU100 | Cu100 at 0°C<br>a=0.00425 | –50.0 to 150.0°C<br>–58.0 to 302.0°F |
| DAQMX_RANGE_RTD_2MAPT25 | Pt25 | –200.0 to 550.0°C<br>–328.0 to 1022.0°F |
| DAQMX_RANGE_RTD_2MACU10GEH | CU10:GE: high resolution | –200.0 to 300.0°C<br>–328.0 to 572.0°F |
| DAQMX_RANGE_RTD_2MACU10LNH | Cu10:L&N: high resolution | –200.0 to 300.0°C<br>–328.0 to 572.0°F |
| DAQMX_RANGE_RTD_2MACU10WEEDH | Cu10:WEED: high resolution | –200.0 to 300.0°C<br>–328.0 to 572.0°F |

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_RTD_2MACU10BAILEYH | Cu10:BAILEY: high resolution | –200.0 to 300.0°C<br>–328.0 to 572.0°F |
| DAQMX_RANGE_RTD_2MAPTN | Pt100: high noise resistance | –200.0 to 250.0°C<br>–328.0 to 482.0°F |
| DAQMX_RANGE_RTD_2MAJPTN | Jpt100: high noise resistance | –200.0 to 250.0°C<br>–328.0 to 482.0°F |
| DAQMX_RANGE_RTD_2MACU100G | Cu100G | –200.0 to 200.0°C<br>–328.0 to 392.0°F |
| DAQMX_RANGE_RTD_2MACU50G | Cu50G | –200.0 to 200.0°C<br>–328.0 to 392.0°F |
| DAQMX_RANGE_RTD_2MACU10G | Cu10G | –200.0 to 200.0°C<br>–328.0 to 392.0°F |

## RTD (Other ) Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_RTD_025MAPT500 | 0.25 mA Pt500 | –200.0 to 600.0 °C<br>–328.0 to 1112.0°F |
| DAQMX_RANGE_RTD_025MAPT1K | 0.25 mA Pt1000 | –200.0 to 600.0 °C<br>–328.0 to 1112.0°F |

## Resistance Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_RES_20 | 20 Ω | 0 to 20.000 |
| DAQMX_RANGE_RES_200 | 200 Ω | 0 to 200.00 |
| DAQMX_RANGE_RES_2K | 2kΩ (0.25mA) | 0 to 2000.0 |

## Digital Input (DI) Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_DI_LEVEL | Level | 0: Less than 2.4 V,<br>1: Greater than or equal to 2.4 V |
| DAQMX_RANGE_DI_CONTACT | Contact input | 0:open, 1:close |

### Digital Input (DI) Detailed Range Types

| Mnemonic | Description |
|---|---|
| DAQMX_RANGE_DI_LEVEL_AI | DI/Level of the universal input module |
| DAQMX_RANGE_DI_CONTACT_AI4 | DI/Contact input of the 4-CH, Universal Input Module |
| DAQMX_RANGE_DI_CONTACT_AI10 | DI/Contact input of the 10-CH, Universal Input Module |
| DAQMX_RANGE_DI_CONTACT_AI30 | DI/Contact input of the 30-CH, Universal Input Module |
| DAQMX_RANGE_DI_LEVEL_DI | DI/Level of the digital input module |
| DAQMX_RANGE_DI_CONTACT_DI | DI/Contact input of the digital input module |
| DAQMX_RANGE_DI_LEVEL_DI5V* | DI 5V<br>DI/contact input of the digital input module (5 V) |
| DAQMX_RANGE_DI_LEVEL_DI24V | DI 24V<br>DI/contact input of the digital input module (24 V) |

* Separate name for DAQMX_RANGE_DI_LEVEL_DI. Defined to differentiate from 24 V.

### Strain Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_STRAIN_2K | 2000 μSTR | –2000.0 to 2000.0<br>±563200000 |
| DAQMX_RANGE_STRAIN_20K | 20000 μSTR | –20000 to 20000<br>±56320000 |
| DAQMX_RANGE_STRAIN_200K | 200000 μSTR | –200000 to 200000<br>±5632000 |

### AO Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_AO_10V | V output | –10.000 to 10.000 V |
| DAQMX_RANGE_AO_20MA | mA output | 0.000 to 20.000 mA |

### PWM Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_PWM_1MS | PWM output resolution 1 ms | 0 to 100.000 % |
| DAQMX_RANGE_PWM_10MS | PWM output resolution 10 ms | 0 to 100.000 % |

### Communication Range

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_COM_CAN | CAN Bus | –30000 to 30000 |

### Pulse Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_PI_LEVEL | Pulse/Level input | 0 to 30000 |
| DAQMX_RANGE_PI_CONTACT | Pulse/Contact input | 0 to 30000 |

# 6.3 MX100 Setting Item Numbers

These numbers are added to each item of the setup data structure to unify them. When sending the setup data, the numbers show the detected location when an error occurs during a consistency check.
A definition file is available.

## List of Setting Items

Each item field of the MXConfigData structure is numbered.
Definitions are given in the files below. Load the definitions as needed.

- DAQMXItems.h
- DAQMXItems.bas
- DAQMXItems.txt
- DAQMXItems.cs
- DAQMXItems.vb

Fixed descriptions such as channel number items that have no particular meaning when read out are not numbered.
If an error occurs, check the values of settings.
The character string is used if the value of the setting item number is converted to an item name. It is for the extension API only.
In Visual C#, it is defined as a constant of the DAQMXItems class.

### Systems

| Mnemonic | Value | Location | Description | Error | String |
|---|---|---|---|---|---|
| DAQMX_ITEM_NONE | -1 | - | Unknown | - | - |
| DAQMX_ITEM_NETHOST | 0 | aNetInfo.<br>aHost | Host name | - | Host Name |
| DAQMX_ITEM_NETADDRESS | 1 | aNetInfo.<br>aAddress | IP Address | - | Address |
| DAQMX_ITEM_NETPORT | 2 | aNetInfo.<br>aPort | Port number | - | Port No |
| DAQMX_ITEM_NETSUBMASK | 3 | aNetInfo.<br>aSubMask | Subnet<br>mask | - | Submask |
| DAQMX_ITEM_NETGATEWAY | 4 | aNetInfo.<br>aGateway | GATEWAY<br>Address | - | Gateway |
| DAQMX_ITEM_UNITTYPE | 5 | aSystemInfo.<br>aUnit.aType | Unit type | - | Unit Type |
| DAQMX_ITEM_UNITSTYLE | 6 | aSystemInfo.<br>aUnit.aStyle | Style | - | Unit Style |
| DAQMX_ITEM_UNITNO | 7 | aSystemInfo.<br>aUnit.aNo | Unit Number | Value is<br>out-of-range | Unit No |
| DAQMX_ITEM_UNITTEMP | 8 | aSystemInfo.<br>aUnit.aTempUnit | Temperature unit type | Value is<br>out-of-range | Temperature<br>Unit |

| Mnemonic | Value | Location | Description | Error | String |
|---|---|---|---|---|---|
| DAQMX_ITEM_UNITCFTIMEOUT | 9 | aSystemInfo. aUnit.aCFTimeout | Timeout value | Value does not match equation. See “Timeout value calculation” | CF Timeout (s) |
| DAQMX_ITEM_UNITCFWRITEMODE | 10 | aSystemInfo. aUnit. aCFWriteMode | CF write mode | Value is out of range. | CF WriteMode |
| DAQMX_ITEM_UNITFREQUENCY | 11 | aSystemInfo. aUnit.aFrequency | Power supply frequency | - | Frequency |
| DAQMX_ITEM_UNITPARTNO | 12 | aSystemInfo. | Part number aUnit.aPartNo | - | Part No |
| DAQMX_ITEM_UNITOPTION | 13 | aSystemInfo. | Options aUnit.aProduct.aOption | - | Unit Option |
| DAQMX_ITEM_UNITSERIAL | 14 | aSystemInfo. aUnit.aProduct. aSerial | Serial number | - | Unit Serial |
| DAQMX_ITEM_UNITMAC | 15 | aSystemInfo. aUnit.aProduct. aMAC | MAC address | - | Mac Address |
| DAQMX_ITEM_UNITSTATUS | 16 | aStatus. aUnitStatus | Unit status value | - | Unit Status |
| DAQMX_ITEM_CNTCONFIG | 17 | aStatus. aConfigCnt | Setup number | - | Count Config |
| DAQMX_ITEM_CNTTIME | 18 | aStatus. aTimeCnt | Time number | - | Count Time |
| DAQMX_ITEM_FIFONUM | 19 | aStatus. aFIFONum | Valid number of FIFOs | - | FIFO Num |
| DAQMX_ITEM_BACKUP | 20 | aStatus. aBackup | Presence or absence of backup | - | Backup |
| DAQMX_ITEM_CFSTATUS | 21 | aStatus. aCFInfo.aStatus | CF status type | - | CF Status |
| DAQMX_ITEM_CFSIZE | 22 | aStatus. aCFInfo.aSize | Capacity | - | CF Size (KB) |
| DAQMX_ITEM_CFREMAIN | 23 | aStatus. aCFInfo.aRemain | Remaining capacity | - | CF Remain (KB) |
| DAQMX_ITEM_STATUSTIME | 2304 | aStatus. aDateTime.aTime | No. of seconds | - | Status Time |
| DAQMX_ITEM_STATUSMSEC | 2305 | aStatus. aDateTime. aMilliSecond | Milliseconds | - | Status Millisecond |

No string exists for Unknown items.

## FIFO

| Mnemonic | Value | Location | Description | String |
|---|---|---|---|---|
| DAQMX_ITEM_FIFOSTATUS | 24 | aStatus.aFIFOInfo[ ]. aStatus | FIFO status value | FIFO0 Status |
| DAQMX_ITEM_FIFOINTERVAL | 28 | aStatus.aFIFOInfo[ ]. aInterval | Interval types | FIFO0 Interval (msec) |
| DAQMX_ITEM_FIFOOLDNO | 32 | aStatus.aFIFOInfo[ ]. aOldNo | Oldest data number | FIFO0 Old No |
| DAQMX_ITEM_FIFONEWNO | 36 | aStatus.aFIFOInfo[ ]. aNewNo | Newest data number | FIFO0 New No |

The actual values are the values in the table with the FIFO number (index) added. In the string FIFO0, the FIFO number is included.

## Modules

| Mnemonic | Value | Location | Description | Error | String |
|---|---|---|---|---|---|
| DAQMX_ITEM_MODULETYPE | 40 | aSystemInfo. aModule[ ]. aType | Module type | Value is out of range. | Module0 Type |
| DAQMX_ITEM_MODULECHNUM | 48 | aSystemInfo. aModule[ ]. aChNum | Number of channels is out of range. | Value Channel Num | Module0 |
| DAQMX_ITEM_MODULEINTERVAL | 56 | aSystemInfo. aModule[ ]. aInterval | Interval types | Value is out of range. FIFO exceeded. | Module0 Interval (msec) |
| DAQMX_ITEM_MODULEINTEGRAL | 64 | aSystemInfo. aModule[ ]. aIntegralTime | AD integration time type | Value is out of range. | Module0 Integral |
| DAQMX_ITEM_MODULESTANDBY | 72 | aSystemInfo. aModule[ ]. aStandbyType | Module type at startup | - | Module0 Standby Type |
| DAQMX_ITEM_MODULEREALTYPE | 80 | aSystemInfo. aModule[ ]. aRealType | Actual module type | - | Module0 Real Type |
| DAQMX_ITEM_MODULESTATUS | 88 | aSystemInfo. aModule[ ]. aStatus | Module valid/invalid | - | Module0 Status |
| DAQMX_ITEM_MODULEVERSION | 96 | aSystemInfo. aModule[ ]. aVersion | Module version | - | Module0 Version |
| DAQMX_ITEM_MODULETERMINAL | 104 | aSystemInfox. aModule[ ]. aTerminalType | Terminal type | - | Module0 Terminal |
| DAQMX_ITEM_MODULEFIFONO | 112 | aSystemInfo. aModule[ ]. aFIFONo | FIFO number | - | Module0 FIFO No |
| DAQMX_ITEM_MODULESERIAL | 120 | aSystemInfo. aModule[ ]. aProduct.aSerial | Serial number | - | Module0 Serial |

The actual values are the values in the table with the module number (index) added. In the string Module0, the module number is included.

## Channels

| Mnemonic | Value | Location | Description | Error | String |
|---|---|---|---|---|---|
| DAQMX_ITEM_CHVALID | 128 | aChConfigData. aChConfig[ ]. aChID.aValid | Channel status | Does not exist, but valid. | Channel00 Valid |
| DAQMX_ITEM_CHPOINT | 192 | aChConfigData. aChConfig[ ]. aChID.aPoint | Decimal point position | Value is out of range. | Channel00 Point |
| DAQMX_ITEM_CHKIND | 256 | aChConfigData. aChConfig[ ]. aChID.aKind | Channel kind | Value is out of range. | Channel00 Kind |
| DAQMX_ITEM_CHRANGE | 320 | aChConfigData. aChConfig[ ]. aChID.aRange | Range type | Value is out of range. | Channel00 Range |
| DAQMX_ITEM_CHSCALE | 384 | aChConfigData. aChConfig[ ]. aChID.aScaleType | Scale type | Value is out of range. | Channel00 Scale |
| DAQMX_ITEM_CHUNIT | 338 | aChConfigData. aChConfig[ ]. aChID.aUnit | Unit name | - | Channel00 Unit |

| Mnemonic | Value | Location | Description | Error | String |
|---|---|---|---|---|---|
| DAQMX_ITEM_CHTAG | 512 | aChConfigData. aChConfig[ ]. aChID.aTag | Tag | - | Channel00 Tag |
| DAQMX_ITEM_CHCOMMENT | 576 | aChConfigData. aChConfig[ ]. aChID.aComment | Comment | - | Channel00 Comment |
| DAQMX_ITEM_ALARMTYPE | 640 | aChConfigData. aChConfig[ ]. aChID.aAlarm[ ]. aType | Alarm type of alarm level 1 or 2. | Value is out of range. | Channel00 Alarm0 Type |
| DAQMX_ITEM_ALARMON | 768 | aChConfigData. aChConfig[ ]. aChID.aAlarm[ ]. aON | On value of alarm level 1 or 2. | Value is out of range. | Channel00 Alarm0 On |
| DAQMX_ITEM_ALARMOFF | 896 | aChConfigData. aChConfig[ ]. aChID.aAlarm[ ]. aOFF | Off value of alarm level 1 or 2. | Value is out of range. | Channel00 Alarm0 Off |
| DAQMX_ITEM_CHSPANMIN | 1024 | aChConfigData. aChConfig[ ]. aAIDI.aSpanMin | Span minimum | Value is out of range. | Channel00 Span Min |
| DAQMX_ITEM_CHSPANMAX | 1088 | aChConfigData. aChConfig[ ]. aAIDI.aSpanMax | Span maximum | Value is out of range. | Channel00 Span Max |
| DAQMX_ITEM_CHSCALEMIN | 1152 | aChConfigData. aChConfig[ ]. aAIDI.aScaleMin | Scale minimum | Value is out of range. | Channel00 Scale Min |
| DAQMX_ITEM_CHSCALEMAX | 1216 | aChConfigData. aChConfig[ ]. aAIDI.aScaleMax | Scale maximum | Value is out of range. | Channel00 Scale Max |
| DAQMX_ITEM_CHREFCHNO | 1280 | aChConfigData. aChConfig[ ]. aAIDI.aRefChNo | Reference channel number | Value is out of range. Channels to be are not input channels | Channel00 Reference ChannelNo |
| DAQMX_ITEM_CHFILTER | 1344 | aChConfigData. aChConfig[ ]. aAI.aFilter | Filter coefficient | Value is out of range. | Channel00 Filter |
| DAQMX_ITEM_CHRJCTYPE | 1408 | aChConfigData. aChConfig[ ]. aAI.aRJCType | RJC type | Value is out of range. | Channel00 RJC Type |
| DAQMX_ITEM_CHRJCVOLT | 1472 | aChConfigData. aChConfig[ ]. aAI. aRJCVolt | RJC voltage | Value is out of range. | Channel00 RJC Volt |
| DAQMX_ITEM_CHBURNOUT | 1536 | aChConfigData. aChConfig[ ]. aAI. aBurnout | Burnout | Value is out of range. | Channel00 Burnout |
| DAQMX_ITEM_CHDEENERGIZE | 1600 | aChConfigData. aChConfig[ ]. aDO.aDeenergize | De-energize | - | Channel00 Deenergize |
| DAQMX_ITEM_CHREFALARM | 1664 | aChConfigData. aChConfig[ ]. aDO. aRefAlarm[*][ ] | The alarm level 1 or 2 of all reference channels. Expresses multiple reference channels together. | - | Channel00 Alarm0 Reference |
| DAQMX_ITEM_CHHOLD | 1792 | aChConfigData. aChConfig[ ]. aDO. aHold | Hold | - | Channel00 Hold |
| DAQMX_ITEM_CHOUTPUTTYPE | 1856 | aOutputData. aOutput[ ]. aType | Output types | Value is out of range. Range type does not match. | Channel00 Output Type |

| Mnemonic | Value | Location | Description | Error | String |
|---|---|---|---|---|---|
| DAQMX_ITEM_CHIDLECHOICE | 1920 | aOutputData. aOutput[ ]. aIdleChoice | Value selected when idle | Value is out of range. | Channel00 Idle Choice |
| DAQMX_ITEM_CHERRCHOICE | 1984 | aOutputData. aOutput[ ]. aErrorChoice | Value selected during error | Value is out of range. | Channel00 Error Choice |
| DAQMX_ITEM_CHPRESETVALUE | 2048 | aOutputData. aOutput[ ]. aPresetValue | Value when the selection value is the specified value. | Value is out of range. | Channel00 Preset Value |
| DAQMX_ITEM_CHPULSETIME | 2112 | aOutputData. aOutput[ ]. aPulseTime | Pulse interval integer multiple | Value is out of range. | Channel00 Pulse Time |
| DAQMX_ITEM_CHBALANCEVALID | 2176 | aBalanceData. aBalance[ ]. aValid | Valid/invalid | - | Channel00 Balance Valid |
| DAQMX_ITEM_CHBALANCEVALUE | 2240 | aBalanceData. aBalance[ ]. aValue | Initial balance value | Value is out of range. | Channel00 Balance Value |
| DAQMX_ITEM_CHCHATFILTER | 2368 | aChConfigData. aChConfig[ ]. aAIDI.aChatFilter | Chattering filter | - | Channel00 ChatFilter |
| DAQMX_ITEM_ALARMTYPE2 | 2432 | aChConfigData. aChConfig[ ]. aChID.aAlarm[ ]. aType | Alarm type of alarm level 3 or 4. Type | Value is out of range. | Channel00 Alarm0 Type |
| DAQMX_ITEM_ALARMON2 | 2560 | aChConfigData. aChConfig[ ]. aChID.aAlarm[ ]. aON | On value of alarm level 3 or 4. | Value is out of range. | Channel00 Alarm0 On |
| DAQMX_ITEM_ALARMOFF2 | 2688 | aChConfigData. aChConfig[ ]. aChID.aAlarm[ ]. aOFF | Off value of alarm level 3 or 4. | Value is out of range. | Channel00 Alarm0 Off |
| DAQMX_ITEM_CHREFALARM2 | 2816 | aChConfigData. aChConfig[ ]. aDO. aRefAlarm[*][ ] | The alarm level 3 or 4 of all reference channels. Expresses multiple reference channels together. | - | Channel00 Alarm0 Reference |

The relationship between the maximum and minimum values of span and scale are checked, so the value that expresses the minimum value is set as the detected position.
In the string Channel00, the channel number is included. The 0 in the string Alarm0 is the alarm level number.

The actual values are the values in the table with the channel number (index) added.
In the case of alarms, the alarm level number (index) is also added to the 7th bit to the left. It is the value in which the channel number (index) is added to the values in the table below.

## Alarm

| Mnemonic | Alarm Level | Value | Description |
|---|---|---|---|
| DAQMX_ITEM_ALARMTYPE | 1 | 640 | Alarm type of channel number 1, alarm level 1 |
| | 2 | 704 | Alarm type of channel number 1, alarm level 2 |
| DAQMX_ITEM_ALARMON | 1 | 768 | ON value of channel number 1, alarm level 1 |
| | 2 | 832 | ON value of channel number 1, alarm level 2 |
| DAQMX_ITEM_ALARMOFF | 1 | 896 | OFF value of channel number 1, alarm level 1 |
| | 2 | 960 | OFF value of channel number 1, alarm level 2 |
| DAQMX_ITEM_CHREFALARM | 1 | 1664 | The channel number is 1, and the alarm level of all reference channels is 1. Expresses multiple reference channels together. |
| | 2 | 1728 | The channel number is 1, and the alarm level of all reference channels is 2. Expresses multiple reference channels together. |
| DAQMX_ITEM_ALARMTYPE2 | 3 | 2432 | Alarm type of channel number 1, alarm level 3. |
| | 4 | 2496 | Alarm type of channel number 1, alarm level 4. |
| DAQMX_ITEM_ALARMON2 | 3 | 2560 | ON value of channel number 1, alarm level 3. |
| | 4 | 2624 | ON value of channel number 1, alarm level 4. |
| DAQMX_ITEM_ALARMOFF2 | 3 | 2688 | OFF value of channel number 1, alarm level 3. |
| | 4 | 2752 | OFF value of channel number 1, alarm level 4. |
| DAQMX_ITEM_CHREFALARM2 | 3 | 2816 | The channel number is 1, and the alarm level 3 of all reference channels. Expresses multiple reference channels together. |
| | 4 | 2880 | The channel number is 1, and the alarm level 4 of all reference channels. Expresses multiple reference channels together. |

## Character Strings

Notations for characters strings in item contents are as follows.

- The valid/invalid value (Boolean) is notated as OFF or ON.
- The string itself is shown as-is.
- Values are written as decimals. However, hexadecimal is used to notate significant bits when present.
- The alarm levels of reference channels are expressed as valid channel numbers (01, 02, etc.).
- The choices are given by the name of the string. They are expressed as character strings, abbreviated as much as possible while retaining their usefulness for identifying mnemonics for constants.

## Ranges

| Mnemonic | Description |
|---|---|
| DAQMX_ITEM_ALL_START | First number of all items |
| DAQMX_ITEM_ALL_END_R1 | End number of all items for style version 1 |
| DAQMX_ITEM_ALL_END_R2 | End number of all items for style version 2 |
| DAQMX_ITEM_ALL_END_R3 | End number of all items for style version 3 |
| DAQMX_ITEM_ALL_END | End number of all items for most recent style version |

## Masks

| Mnemonic | Description |
|---|---|
| DAQMX_MASK_BYMODULE | Module number mask |
| DAQMX_MASK_BYCHANNEL | Channel number mask |
| DAQMX_MASK_BYFIFO | FIFO number mask |
| DAQMX_MASK_BYALARM | Alarm level number mask |

Note that the alarm level number mask shows the position of the 7th bit from the end.

## Index

| Mnemonic | Description |
|---|---|
| DAQMX_MAX_INDEX_FIFO | FIFO maximum index value |
| DAQMX_MAX_INDEX_MODULE | Module maximum index value |
| DAQMX_MAX_INDEX_CHANNEL | Channel maximum index value |

# 6.4 Overview of the MX100 Types

The data types below are provided.

| Type | Description | Page |
|---|---|---|
| DAQMX | Device descriptor | 6-25 |
| DAQINT64 | 64-bit data type definition.<br>Can be used in Visual C/Visual C++. | 6-25 |
| MXINT64 | A union that can support 64 bit data<br>in Visual Basic and Visual C/Visual C++ | 6-25 |
| MXDataNo | An alias for DAQINT64.<br>This corresponds to MXINT64 of Visual Basic.<br>For data number of measured data. | 6-25 |
| MXUserTime | An alias for DAQINT64.<br>In Visual Basic, it is an alias of MXIN64.<br>For user count. | 6-25 |
| MXDateTime | Time information structure. | 6-25 |
| MXAlarm | Alarm setup information structure. | 6-26 |
| MXDataInfo | Measured data structure. | 6-26 |
| MXChConfigAIDI | Structure for information related to AI and DI channels. | 6-26 |
| MXChConfigAI | Structure for information related to AI channels. | 6-27 |
| MXChConfigDO | Structure for information related to DO channels. | 6-27 |
| MXChID | Channel structure. | 6-28 |
| MXChConfig | Channel setup information structure. | 6-28 |
| MXChConfigData | Channel setup information structure for every channel. | 6-29 |
| MXChInfo | Channel information data structure. | 6-29 |
| MXProductInfo | MX product information structure | 6-30 |
| MXUnitData | Unit information structure. | 6-30 |
| MXModuleData | Module information structure. | 6-31 |
| MXSystemInfo | System configuration data structure. | 6-32 |
| MXCFInfo | CF information structure. | 6-32 |
| MXFIFOInfo | FIFO structure. | 6-32 |
| MXStatus | Status structure. | 6-33 |
| MXNetInfo | Ethernet connection information structure. | 6-33 |
| MXBalance | Structure for the initial balance Boolean. | 6-34 |
| MXBalanceData | Structure for initial balance data. | 6-34 |
| MXBalanceResult | Structure for the initial balance execution result. | 6-34 |
| MXOutput | Structure for the output value. | 6-34 |
| MXOutputData | Structure for output channel data. | 6-34 |
| MXConfigData | Setup data structure. | 6-35 |
| MXDO | DO setup structure. | 6-35 |
| MXDOData | DO data structure. | 6-35 |
| MXSegment | Display pattern structure for each 7-segment LED. | 6-35 |
| MXAOPWM | Structure for pulse output. | 6-35 |

| Type | Description | Page |
|---|---|---|
| MXAOPWMData | Structure for the specified number of AO/PWM data. | 6-36 |
| MXTransmit | Structure for the specified number of transmission statuses. | 6-36 |

| Type | Description |
|---|---|
| Callback type | Add prefix “DLL” to the function name and write in uppercase.<br>Example: callback type of the openMX function: DLLOPENMX |

The callback type is used to link the executable module (.dll) when using Visual C.

# 6.5 MX100 Types

## Explanation on the Description

### Visual C/Visual C++, and Visual Basic Types

Indicates the type name in Visual C/Visual C++ and Visual Basic.
Types without signs in Visual C/Visual C++ become types with signs in Visual Basic.
Number of array elements for Visual C/Visual C++ types is omitted.

### Retrieval/Change

The markings below are used to indicate items that can be retrieved, those that the user can set, and so on.

**System**

Data retrieved using the “retrieval of system configuration data” function.
R: Item that can be retrieved.
F: Item that is set within the function.

**Basic Settings**

Data included in the basic settings within the setup data. Basic settings can be retrieved using the “collective retrieval of setup data” function.
AI represents analog input channels (such as the DC voltage input channels on the universal input module or the 4-wire RTD resistance input module). DI represents digital input channels (DI channel of the universal input module or 4-wire RTD resistance input module, or the DI channel of the digital input module). DO represents digital output (DO of the digital output module), AO represents analog output channels, and PWM represents PWM output channels. PI stands for the pulse input channels and CI stands for the CAN Bus input channels.
R: Item that can be retrieved.
C: Item that the user can change.
F: Item that is set within the function.

**Channel Information**

Data retrieved using the “retrieval of the channel information data” function.
R: Item that can be retrieved.

**Data Retrieval**

Data retrieved using the “retrieval of the measured data” function.
F: Item that is set within the function.

**Status**

Data retrieved using the “retrieval of the status” function.
R: Item that can be retrieved.

### Terminology

In the explanation of types, terminology representing MX100 functions is used.
Terminology related to the MX100 are explained in appendix 1.

# Detailed Explanation of Types

## DAQMX

Type for storing the device descriptor.
In Visual C/C++, it is an alias for the int type on the API before R3.01 and an alias for the viod* type on the API R3.01 or later. In Visual Basic, it is an alias for the Long type.

## DAQINT64

64-bit data type definition.
Can be used in C/C++.This type cannot be used in Visual Basic.

## MXINT64

MXINT64 structure

| Visual C/C++ Type | Name | | | Description | | VB Type |
|---|---|---|---|---|---|---|
| struct | unsigned int | aVB | aLow | Corresponds to VB | Lower | Long |
| | unsigned int | | aHigh | Corresponds to VB | Upper | Long |
| DAQINT64 | | aC | | Corresponds to C/C++ | All | - |

Structure for supporting 64 bit data in Visual C/Visual C++ and Visual Basic. The corresponding parts for Visual C/Visual C++ and for Visual Basic are the same. Cannot be used in Visual Basic. The following parts that correspond to Visual Basic are defined by data type.

Parts Corresponding to Visual Basic

| Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| unsigned int | aLow | Upper | Long |
| unsigned int | aHigh | Lower | Long |

## MXDataNo

For the data number.
In Visual C/Visual C++, it is an alias of DAQINT64.
In VB, it is the same as the part of MXINT64 that corresponds to Visual Basic.

## MXUserTime

For user count.
In Visual C/Visual C++, it is an alias of DAQINT64.
In VB, it is the same as the part of MXINT64 that corresponds to Visual Basic.

## MXDateTime

MXDateTime structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| time_t | aTime | The number of seconds from Jan. 1, 1970. | Long |
| int | aMilliSecond | Millisecond value. | Long |

Time information data structure.
Visual C++: The wrapper class is CDAQMXDateTime.

## MXAlarm

MXAlarm structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aType | Alarm Type | Long |
| int | aReserve | Not used | Long |
| int | aON | ON value (threshold level for alarm activation) | Long |
| int | aOFF | OFF value (threshold level for alarm termination) | Long |

Alarm setup information structure. The ON and OFF values must be converted to values corresponding to the measurement range by applying the decimal point position.

## MXDataInfo

MXDataInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aValue | Data Value | Long |
| int | aStatus | Data status values | Long |
| int [] | aAlarm | Alarms (presence or absence) | (1 To 4) As Long |

Measured data structure.

Visual C++: The wrapper class is CDAQMXDataInfo.

## MXChConfigAIDI

MXChConfigAIDI structure

| Visual CC++ / Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aSpanMin | Span minimum | Long |
| int | aSpanMax | Span maximum | Long |
| int | aScaleMin | Scale minimum | Long |
| int | aScaleMax | Scale maximum | Long |
| int | aRefChNo | Reference channel number | Long |
| int | aChatFilter | Chattering filter (presence/absence) | Long |

Retrieval/Change

| Name | Description | Basic Settings | | | | | |
|---|---|---|---|---|---|---|---|
| | | AI | DI | AO | PWM | PI | CI |
| aSpanMin | Span minimum | RC | RC | RC | RC | RC | RC |
| aSpanMax | Span maximum | RC | RC | RC | RC | RC | RC |
| aScaleMin | Scale minimum | RC | RC | | | RC | RC |
| aScaleMax | Scale maximum | RC | RC | | | RC | RC |
| aRefChNo | Reference channel number | RC | RC | RC | RC | RC | RC |
| aChatFilter | Chattering filter (presence/absence) | | | | | RC | |

Setup data structure for AI channels and DI channels.

## MXChConfigAI

MXChConfigAI structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aFilter | Filter time constant | Long |
| int | aRJCType | RJC type | Long |
| int | aRJCVolt | RJC Voltage | Long |
| int | aBurnout | Burnout | Long |

Retrieval/Change

| Name | Description | Basic Settings | | |
|---|---|---|---|---|
| | | AI | PI | CI |
| aFilter | Filter time constant | RC | RC | RC |
| aRJCType | RJC type | RC | | |
| aRJCVolt | RJC Voltage | RC | | |
| aBurnout | Burnout | RC | | |

Setup data structure for AI channels.

## MXChConfigDO

MXChConfigDO structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aDeenergize | De-energize (presence or absence) | Long |
| int | aHold | Hold (presence or absence) | Long |
| unsigned char [ ] [ ] | aRefAlarm | Reference alarms | (1 To 4, 1 (presence or absence) To 60) As Byte |

* The order of two-dimensional arrays are opposite between Visual C/Visual C++ and VB.

Retrieval/Change

| Name | Description | Basic Settings |
|---|---|---|
| | | DO |
| aDeenergize | De-energize (presence or absence) | RC |
| aHold | Hold (presence or absence) | RC |
| aRefAlarm | Reference alarms (presence or absence) | RC |

Setup data structure for DO channels.

## MXChID

MXChID structure

| Visual C/ C++ Type | Name | Description | Visual Basic Type | Visual |
|---|---|---|---|---|
| int | aChNo | Channel number | Long | |
| int | aPoint | Decimal point position | Long | |
| int | aValid | Channel status (presence/absence) | Long | |
| int | aKind | Channel kind | Long | |
| int | aRange | Range type | Long | |
| int | aScaleType | Scale type | Long | |
| char [] | aUnit | Unit name | String * DAQMX_MAXUNITLEN | |
| char | align1 | Not used | (0 To 1) As Byte | |
| char [] | aTag | Tag | String * DAQMX_MAXTAGLEN | |
| (None) | aNULL | Not used (terminator, for Visual Basic) | Byte | |
| char [] | aComment | Comment | String * DAQMX_MAXCOMMENTLEN | |
| char | align2 | Not used | (0 To 1) As Byte | |
| MXAlarm [ ] | aAlarm | Alarms | (1 To 4) As MXAlarm | |

Retrieval/Change

| Name | Description | Channel Information | Basic settings AI | DI | DO | AO | PWM | PI | CI | Data Retrieval |
|---|---|---|---|---|---|---|---|---|---|---|
| aChNo | Channel number | R | F | F | F | F | F | F | F | F |
| aPoint | Decimal Point Position | R | RC | RC | | RC | RC | RC | RC | F |
| aValid | Channel Status (presence/absence) | F | RC | RC | RC | RC | RC | RC | RC | F |
| aKind | Channel kind | R | RC | RC | RC | RC | RC | RC | RC | |
| aRange | Range type | R | RC | RC | RC | RC | RC | RC | RC | |
| aScaleType | Scale type | R | RC | RC | RC | RC | RC | RC | RC | |
| aUnit | Unit Name | R | RC | RC | RC | RC | RC | RC | RC | |
| aTag | Tag | R | RC | RC | RC | RC | RC | RC | RC | |
| aComment | Comment | R | RC | RC | RC | RC | RC | RC | RC | |
| aAlarm | Alarms | R | RC | RC | | | | RC | RC | |

Channel ID information structure.

## MXChConfig

MXChConfig structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| MXChID | aChID | Channel ID information | MXChID |
| MXChConfigAIDI | aAIDI | Setup data of the AI and DI | MXChConfigAIDI |
| MXChConfigAI | aAI | AI setup data | MXChConfigAI |
| MXChConfigDO | aDO | DO setup data | MXChConfigDO |

Retrieval/Change

| Name | Description | Basic Settings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | AI | DI | DO | AO | PWM | PI | CI |
| aChID | Channel ID information | RC | RC | RC | RC | RC | RC | RC |
| aAIDI | Setup data of the AI and DI | RC | RC | | RC | RC | RC | RC |
| aAI | AI setup data | RC | | | | | RC | RC |
| aDO | DO setup data | RC | | | | | | |

Channel setup information structure.

## MXChConfigData

MXChConfigData structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| MXChConfig [ ] | aChConfig | Channel setup information | (None) |

Structure for storing the setup information of all the channels.

Cannot be used in Visual Basic. Field for each channel must be allocated.

## MXChInfo

MXChInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| MXChID | aChID | Channel ID information | MXChID |
| int | aFIFONo | FIFO Number | Long |
| int | aFIFOIndex | Channel sequence number in the FIFO | Long |
| double | aOrigMin | Reference minimum value (not used) | Double |
| double | aOrigMax | Reference maximum value (not used) | Double |
| double | aDispMin | Display minimum value | Double |
| double | aDispMax | Display maximum value | Double |
| double | aRealMin | Measurable minimum value | Double |
| double | aRealMax | Measurable maximum value | Double |

Retrieval/Change

| Name | Description | Channel Information | Data Retrieval |
|---|---|---|---|
| aChID | Channel ID information | R | F |
| aFIFONo | FIFO Number | R | F |
| aFIFOIndex | Channel sequence number in the FIFO | R | F |
| aOrigMin | Reference minimum value (not used) | R | |
| aOrigMax | Reference maximum value (not used) | R | |
| aDispMin | Display minimum value | R | |
| aDispMax | Display maximum value | R | |
| aRealMin | Measurable minimum value | R | |
| aRealMax | Measurable maximum value | R | |

Channel information data structure.

Visual C++: The wrapper class is CDAQMXChInfo.

## MXProductInfo

MXProductInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aOption | Options (Unit information only)* | Long |
| int | aCheck | Not used | Long |
| char [] | aSerial | Serial number | String * DAQMX_MAXSERIALLEN |
| (None) | aNULL | Unused (serial number terminator, for Visual Basic) | Byte |
| unsigned char [ ] | aMAC | MAC Address (Unit information only)* | (0 To 5) As Byte |

* (Unit information only): Information only for the unit, not available for the module.

Retrieval/Change

| Name | Description | System | Basic Settings |
|---|---|---|---|
| aOption | Option (unit information only)* | R | R |
| aSerial | Serial number | R | R |
| aMAC | MAC address (unit information only)* | R | R |

MX product information structure

## MXUnitData

MXUnitData structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aType | Unit type | Long |
| int | aStyle | Style | Long |
| int | aNo | Unit number | Long |
| int | aTempUnit | Temperature unit type | Long |
| int | aCFTimeout | Timeout value | Long |
| int | aCFWriteMode | CF write mode | Long |
| int | aFrequency | Power supply frequency | Long |
| int | aReserve | Not used | Long |
| char [] | aPartNo | Part number | String * DAQMX_MAXPARTNOLEN |
| (None) | aNULL | Unused (part number terminator, for Visual Basic) | Byte |
| MXProductInfo | aProduct | Product information | MXProductInfo |

Retrieval/Change

| Name | Description | System | Basic Settings |
|---|---|---|---|
| aType | Unit type | R | R |
| aStyle | Style | R | R |
| aNo | Unit Number | R | RC |
| aTempUnit | Temperature unit type | | RC |
| aCFTimeout | Timeout Value | | RC |
| aCFWriteMode | CF write mode | | RC |
| aFrequency | Power supply frequency | R | |
| aPartNo | Part number | R | |
| aProduct | Product information | R | R |

Unit information structure.

## MXModuleData

MXModuleData structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aType | Module type | Long |
| int | aChNum | Number of channels | Long |
| int | aInterval | Scan interval (msec) | Long |
| int | aIntegralTime | A/D integration time type | Long |
| int | aStandbyType | Module type at startup | Long |
| int | aRealType | Actual module type | Long |
| int | aStatus | Module valid/invalid | Long |
| int | aVersion | Module version | Long |
| int | aTerminalType | Terminal type | Long |
| int | aFIFONo | FIFO Number | Long |
| MXProductInfo | aProduct | Product information | MXProductInfo |

Retrieval/Change

| Name | Description | System | Basic Settings |
|---|---|---|---|
| aType | Module type | R | RC |
| aChNum | Number of channels | R | RC |
| iaInterval | Scan interval (msec) | | RC |
| iaIntegralTime | A/D integration time type | | RC |
| aStandbyType | Module type at startup | R | |
| aRealType | Actual module type | R | |
| aStatus | Module valid/invalid | F | |
| aVersion | Module version | R | |
| aTerminalType | Terminal type | R | |
| aFIFONo | FIFO Number | R | |
| aProduct | Product information | R | |

Module information structure.

## MXSystemInfo

MXSystemInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| MXUnitData | aUnit | Unit information | MXUnitData |
| MXModuleData [ ] | aModule | Array for specificaiton of module information | (0 To 5) As MXModuleData |

Retrieval/Change

| Name | Description | System | Basic Settings |
|---|---|---|---|
| aUnit | Unit information | R | R |
| aModule | Array of module information | R | R |

System configuration data structure.
Visual C++: The wrapper class is CDAQMXSysInfo.

## MXCFInfo

MXCFInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aStatus | CF status type | Long |
| int | aSize | Size (KB) | Long |
| int | aRemain | Remaining size (KB) | Long |
| int | aReserve | Not used | Long |

CF information structure.

## MXFIFOInfo

MXFIFOInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aNo | FIFO number | Long |
| int | aStatus | FIFO status value | Long |
| int | aInterval | Scan interval (msec) | Long |
| int | aReserve | Not used | Long |
| MXDataNo | aOldNo | Oldest data number | MXDataNo |
| MXDataNo | aNewNo | Newest data number | MXDataNo |

FIFO information structure.

## MXStatus

MXStatus structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aUnitStatus | Unit status value | Long |
| int | aConfigCnt | Setup number | Long |
| int | aTimeCnt | Time number | Long |
| int | aFIFONum | Valid number of FIFOs | Long |
| int | aBackup | Presence/absence of backup | Long |
| int | aReserve | Not used | Long |
| MXCFInfo | aCFInfo | CF status information | MXCFInfo |
| MXFIFOInfo [ ] | aFIFOInfo | FIFO information | (0 To 2) As MXFIFOInfo |
| MXDateTime | aDateTime | Status return time | MXDateTime |

Retrieval/Change

| Name | Description | Status | Basic Settings |
|---|---|---|---|
| aUnitStatus | Unit status value | R | |
| aConfigCnt | Setup number | R | R |
| aTimeCnt | Time number | R | R |
| aFIFONum | Valid number of FIFOs | R | |
| aBackup | Presence/absence of backup | R | |
| aCFInfo | CF status information | R | |
| aFIFOInfo | FIFO information | R | |
| aDateTime | Status return time | R | |

Status structure.

Visual C++: The wrapper class is CDAQMXStatus.

## MXNetInfo

MXNetInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type | Visual |
|---|---|---|---|---|
| unsigned int | aAddress | IP Address | Long | |
| unsigned int | aPort | Port number | Long | |
| unsigned int | aSubMask | Subnet Mask | Long | |
| unsigned int | aGateway | GATEWAY address | Long | |
| char [] | aHost | Host name | String * DAQMX_MAXHOSTNAMELEN | |
| char [] | align | Not used | (0 To 7) As Byte | |

Retrieval/Change

| Name | Description | Basic Settings |
|---|---|---|
| aAddress | IP Address | R |
| aPort | Port number | R |
| aSubMask | Subnet Mask | R |
| aGateway | GATEWAY address | R |
| aHost | Host name | R |

Structure related to Ethernet communication settings.

## MXBalance

MXBalance structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aValid | Valid/invalid | Long |
| int | aValue | Initial balance value | Long |

Retrieval/Change

| Name | Description | Basic Settings |
|---|---|---|
| aValid | Valid/invalid | F |
| aValue | Initial balance value | RC |

## MXBalanceData

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| MXBalance [ ] | aBalance | Specified no. of initial balance data | (1 TO 60) As MXBalance |

## MXBalanceResult

MXBalanceResult structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int [ ] | aResult | Specified no. of initial balance results | (1 To 60) As Long |

## MXOutput

MXOutput structure

| Visual C/C++ Type | Name | Description | VB Type |
|---|---|---|---|
| int | aType | Output type | Long |
| int | aIdleChoice | Value selected when idle | Long |
| int | aErrorChoice | Value selected during error | Long |
| int | aPresetValue | Value if the selection value is the “specified value.” | Long |
| int | aPulseTime | Pulse interval integer multiple | Long |
| int | aReserve | Not used | Long |

Retrieval/Change

| Name | Description | Basic Settings AO | Basic SetPWM |
|---|---|---|---|
| aType | Output types | RC | RC |
| aIdleChoice | Value selected when idle | RC | RC |
| aErrorChoice | Value selected during error | RC | RC |
| aPresetValue | Value if the selection value is the “specified value.” | RC | RC |
| aPulseTime | Pulse interval integer multiple | | RC |

## MXOutputData

MXOutputData structure

| Visual C/ C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| MXOutput [ ] | aOutput | Specified no. of output | (1 TO 60) As channel data MXOutput |

## MXConfigData

MXConfigData structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| MXSystemInfo | aSystemInfo | System configuration data | (None) |
| MXStatus | aStatusInfo | Status | (None) |
| MXNetInfo | aNetInfo | Network information data | (None) |
| MXChConfigData | aChConfigData | Channel setup data | (None) |
| MXBalanceData | aBalanceData | Initial balance data | (None) |
| MXOutputData | aOutputData | Output channel data | (None) |

Setup data structure.

Cannot be used in Visual Basic. Field must be allocated individually.

Visual C++: The wrapper class is CDAQMXConfig.

## MXDO

MXDO structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aValid | Valid/invalid (presence/absence) | Long |
| int | aONOFF | ON/OFF (valid/invalid) | Long |

DO channel structure.

## MXDOData

MXDOData structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| MXDO [ ] | aDO | DO data | (1 To 60) As MXDO |

DO data structure.

## MXSegment

MXSegment structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int [] | aPattern | For each 7-segment LED display pattern | (0 To 1) As Long |

7-segment LED display structure.

## MXAOPWM

MXAOPWM structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aValid | Valid/invalid (presence/absence) | Long |
| int | aValue | Output data value | Long |

## MXAOPWMData

MXAOPWMData structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| MXAOPWM [ ] | aAOPWM | Number's worth of AO/PWM data | (1 To 60) As MXAOPWM |

## MXTransmit

MXTransmit structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int [ ] | aTrans | Number's worth of transmission status | (1 To 060) As Long |

# 7.1 DARWIN Class

The API consists of the MX100/DARWIN Common Class and the class dedicated to the DARWIN as shown in the figure below. For the details on the MX100/DARWIN Common Class, see section 2.4.

- ■ **CDAQChInfo**
  - • **CDAQDARWINChInfo**
- • **CDAQDARWINSysInfo**
- ■ **CDAQDataInfo**
  - • **CDAQDARWINDataInfo**
- ■ **CDAQDateTime**
  - • **CDAQDARWINDateTime**
- ■ **CDAQHandler**
  - • **CDAQDARWIN**

■ : Class common to the MX100 and the DARWIN.
• : Class dedicated to the MX100.

### CDAQChInfo Class

Base class for storing the channel information data.

### CDAQDARWINChInfo Class

Class derived from the CDAQChInfo class. Stores the channel information data in the DarwinChInfo structure.

### CDAQDARWINSysInfo Class

Class for storing the system configuration data in the DarwinSystemnfo structure.

### CDAQDataInfo Class

Base class for storing the measured data.

### CDAQDARWINDataInfo Class

Class derived from the CDAQDataInfo class. Stores the measured data.

### CDAQDateTime Class

Base class for storing time information.

### CDAQDARWINDateTime Class

Class derived from the CDAQDateTime class. Stores the time information.

### CDAQHandler Class

Handler base class for performing communications with the instrument (MX100/DARWIN).

### CDAQDARWIN Class

Class derived from the CDAQHandler class. Provides communication functions common to the DARWIN series.

***Note***

Data type and retrieval method
The retrieval of the DARWIN data is handled by a dedicated class. The setup data is not handled by a dedicated class, since the data is retrieved at the line level.

# 7.2 Correspondence between the Functions and Class/Member Functions - DARWIN -

This section indicates the correspondence between the functions that the API supports and the class.

***Note***

This API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not implemented. The functions can be added by using the commands of the DARWIN communication function.

The word “command” in the table signifies the command of the DARWIN communication function. For the details on the command, see the Communication Interface User’s Manual.

## Communication Functions

| Function | Class and Member Function |
|---|---|
| Connect to DARWIN. | CDAQDARWIN::open |
| Disconnect from DARWIN. | CDAQDARWIN::close |
| Send data line by line.<br>Used when controlling the data transmission in a special way. | CDAQDARWIN::sendLine |
| Receive data line by line.<br>Used when controlling the data reception in a special way. | CDAQDARWIN::receiveLine |
| Receive data in units of bytes.<br>Used when controlling the data reception in a special way. | CDAQDARWIN::receiveByte |
| Send the command and receive the response.<br>Used when implementing function commands. | CDAQDARWIN::runCommand |
| Get the status byte.<br>Send the status byte output command and receive the response. | CDAQDARWIN::getStatusByte |
| Send a trigger command (ESC T), and receive the response. Used when implementing a new talker function. | CDAQDARWIN::sendTrigger |
| Set the communication timeout. | CDAQDARWIN::setTimeOut |

***Note***

Setting of the communication timeout is not recommended because unexpected disconnection may occur due to the conflict with the timeout time when data is retrieved.

## Control Functions

| Function | Command | Class and Member Function |
|---|---|---|
| Switch the setting mode. | DS | CDAQDARWIN::transMode |
| System reconfiguration | RS | CDAQDARWIN::initSystem |
| RAM clear (Initialize the operation mode setup parameter.) | RC | |
| Alarm reset | AR | |
| Date/Time setting | SD | CDAQDARWIN::setDateTime |
| Calculation start/stop | EX | CDAQDARWIN::compute |
| Report start/stop | DR | CDAQDARWIN::reporting |
| Finalize setup mode | XE | CDAQDARWIN::establish |

## Setup Functions

| Function | Command | Class and Member Function |
|---|---|---|
| Range Settings | | |
| SKIP (not used) | SR | CDAQDARWIN::setSKIP |
| DC voltage input | SR | CDAQDARWIN::setVOLT |
| Thermocouple input | SR | CDAQDARWIN::setTC |
| RTD input | SR | CDAQDARWIN::setRTD |
| Contact input (DI) | SR | CDAQDARWIN::setDI |
| Difference computation between channels | SR | CDAQDARWIN::setDELTA |
| Remote RJC | SR | CDAQDARWIN::setRRJC |
| DC current | SR | CDAQDARWIN::setMA |
| Strain | SR | CDAQDARWIN::setSTRAIN |
| Pulse | SR | CDAQDARWIN::setPULSE |
| Power monitor | SR | CDAQDARWIN::setPOWER |
| Set the scale unit | SN | CDAQDARWIN::setScallingUnit |
| Set the alarm | SA | CDAQDARWIN::setAlarm |

## Data Retrieval Functions

| Function | Command | Class and Member Function |
|---|---|---|
| Get system configuration data. | TS, CF | DAQDARWIN::getSystemConfig |
| Declare the retrieval of the channel information data. | TS, LF | CDAQDARWIN::talkChInfo |
| Get channel information data. | | CDAQDARWIN::getChInfo |
| Declare the retrieval of the measured data (ASCII code). | TS, FM | CDAQDARWIN::talkDataByASCII |
| Get the measured data (ASCII code). | | CDAQDARWIN::getChDataByASCII |
| Declare the retrieval of the measured data (binary code). | TS, FM | CDAQDARWIN::talkDataByBinary |
| Get the measured data (binary code). | | CDAQDARWIN::getChDataByBinary |
| Declare the retrieval of the setup data (operation mode). | TS, LF | CDAQDARWIN::talkOperationData |

| Function | Command | Class and Member Function |
|---|---|---|
| Get the setup data (operation mode). | | CDAQDARWIN::getSetDataByLine |
| Declare the retrieval of the setup data (setup mode). | TS, LF | CDAQDARWIN::talkSetupData |
| Get the setup data (setup mode). | | CDAQDARWIN::getSetDataByLine |
| Declare the retrieval of the setup data (A/D calibration mode). | TS, LF | CDAQDARWIN::talkCalibrationData |
| Get the setup data (A/D calibration | | getSetDataByLineDARWIN |
| Retrieves the report status | TS, RF | CDAQDARWIN::getReportStatus |

## Utilities

| Function | | Class and Member Function |
|---|---|---|
| Convert the measured value into double-precision floating point number. | | CDAQDARWINDataInfo::toDoubleValue |
| Convert the measured value into string. | | CDAQDARWINDataInfo::toStringValue |
| Alarm | Get the alarm type string. | CDAQDARWINDataInfo::getAlarmName |
| | Get the maximum length of the alarm string. | CDAQDARWINDataInfo:: getMaxLenAlarmName |
| Get the version number of this API. | | CDAQDARWIN::getVersionAPI |
| Get the revision number of this API. | | CDAQDARWIN::getRevisionAPI |
| Get the error message string. | | CDAQDARWIN::getErrorMessage |
| Get the maximum length of the error message string. | | CDAQDARWIN::getMaxLenErrorMessage |

## Implementing Function Commands

Function commands can be implemented by using the DARWIN communication function commands. Below are the DARWIN communication function commands that can be used.

- All communication commands for the DA100 Data Acquisition Unit
- All communication commands for the DC100 Data Collector
- All communication commands for the DR130, DR231, DR232, DR241, and DR242 Hybrid Recorders.

# 7.3 Programming - DARWIN/Visual C ++ -

## Adding the Path to the Include File

Add the path of the include file (DAQDARWIN.h) to the project. The method of adding the include file varies depending on the environment used.

## Declaration in the Source File

Write the declaration in the source file.

```
#include "DAQDARWIN.h"
```

***Note***

The include file of the common section (DAQHandler.h) is referenced from the include file described above. Thus, declaration for it is not necessary.

## Library Designation

Add the library (DAQDARWIN.lib, DAQHandler.lib) to the project. The method of adding the include file varies depending on the environment used.
This enables the use of all classes. It also enables the use of all Visual C functions.

# Retrieval of the Measured Data

## Program Example 1

This program retrieves measured data.

```
////////////////////////////////////////////////////////////
// DARWIN sample for measurement
#include <stdio.h>
#include "DAQDARWIN.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  CDAQDARWIN daqdarwin; //class
  int flag;
  CDAQDARWINDateTime datetime;
  CDAQDARWINChInfo chinfo;
  CDAQDARWINDataInfo datainfo(NULL, &chinfo);
  //connect
  rc = daqdarwin.open("192.168.1.11");
  //get
  rc = daqdarwin.talkDataByBinary(0, 1, 0, 2, datetime);
  do { //meaasured data
    rc = daqdarwin.getChDataByBinary(datainfo, &flag);
  } while (! (flag & DAQDARWIN_FLAG_ENDDATA));
  //disconenct
  rc = daqdarwin.close();
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Overview

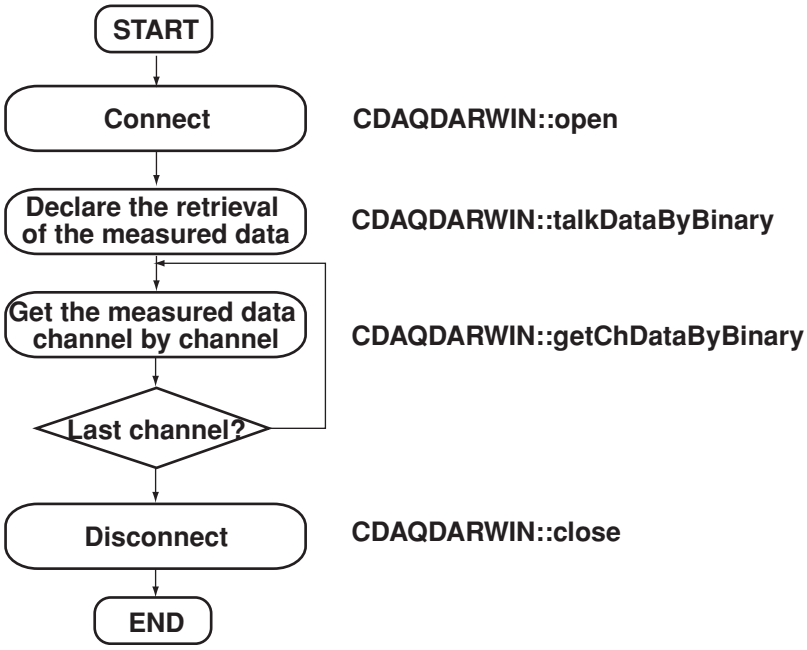
When retrieving data, the talker is executed first, and then data retrieval is executed in units of channels or lines. The end is determined by the flag.

### Include File Statement

```
#include "DAQDARWIN.h"
```

### Flow of the Process

The flow chart shown below omits the declaration section.




### Communication Process

First, make a connection. After making the connection, the member functions become available. As a termination procedure, disconnect the communication.

### Communication Connection

```
open("192.168.1.11")
```

The IP address of the DARWIN is specified. The communication report specifies the communication constant “DAQDARWIN report number.”

***Note***

Communication can also be made when constructing the class. Connection is dropped when the class is destructed.

### Talker

```
talkDataByBinary(0, 1, 0, 2, datetime)
```

Sends the retrieval request of the measured data of channels 1 and 2 of subunit number 0 and retrieves the time information (declares the retrieval of the measured data).

### Retrieval of the Measured Data

```
getChDataByBinary(datainfo, &flag)
```

Gets the measured data channel by channel. It is repeated up to the specified channel. The end is determined by the flag status of “end data.”.

### Communication Disconnection

```
close()
```

Drops the connection.

# Retrieval of Setup Data and Configuration

## Program Example 2

This program executes the following two items. This program contains both items, but each item can be written and executed separately.

- Retrieval of setup data
- Setting a DC voltage range to the channel

```
////////////////////////////////////////////////////////////
// DARWIN sample for configuration
#include <stdio.h>
#include "DAQDARWIN.h"//////////////////////////////////////
//////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  CDAQDARWIN daqdarwin; //class
  int flag;
  char line[BUFSIZ];
  int len;
  //connect
  rc = daqdarwin.open("192.168.1.11");
  //get
  rc = daqdarwin.talkOperationData(0, 1, 0, 2);
  do {
    rc = daqdarwin.getSetDataByLine(line, BUFSIZ, &len,
&flag);
  } while (! (flag & DAQDARWIN_FLAG_ENDDATA));
  //range
  rc = daqdarwin.setVOLT(DAQDARWIN_RANGE_VOLT_20MV, 0, 1, 2,
0, 0, 0, 0, 0);
  //disconnect
  rc = daqdarwin.close();
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Talker

```
talkOperationData(0, 1, 0, 2)
```

Specifies the type of setup data to be retrieved (setup data of the operation mode) and the channel range (channels 1 and 2 of subunit number 0).

### Retrieval of Setup Data

```
getSetDataByLine(line, BUFSIZ, &len, &flag)
```

Gets the output by the talker function line by line.
The end is determined by the flag status of “end data.”.

### Setting a DC voltage range to the channel

```
setVOLT(DAQDARWIN_RANGE_VOLT_20MV, 0, 1, 2, 0, 0, 0, 0, 0)
```

Sets the measurement range of channels 1 and 2 of subunit number 0 to 20 mV.
The scaling function is not used.
The constant 20mV is used to specify the range type.

# Implementing Function Commands

## Program Example 3

This program switches DARWIN to operation mode. The program executes the DS command of DARWIN communication function.

```
////////////////////////////////////////////////////////////
// DARWIN sample for command
#include <stdio.h>
#include "DAQDARWIN.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  CDAQDARWIN daqdarwin; //class
  char line[BUFSIZ];
  //connect
  rc = daqdarwin.open("192.168.1.11");
  //run
  sprintf(line, "DS%d" DAQDARWIN_MODE_OPE);
  rc = daqdarwin.runCommand(line);
  //disconnect
  rc = daqdarwin.close();
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Creating the Message

`sprintf(line, "DS%d" DAQDARWIN_MODE_OPE);`

Stores the DS0 (switch to operation mode) command message of the DARWIN communication function in the line array.

The constant “operation mode” is used to specify operation mode.

### Sending Messages

`runCommand(line)`

Sends the command message and receives the response. This member function adds a terminator to the message and sends it.

# Implementing the Talker Function

## Program Example 4

This program retrieves the system configuration data. The program executes the TS and CF commands of the DARWIN communication function.

```
////////////////////////////////////////////////////////////
// DARWIN sample for talker
#include <stdio.h>
#include "DAQDARWIN.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  CDAQDARWIN daqdarwin; //class
  char line[BUFSIZ];
  int len;
  //connect
  rc = daqdarwin.open("912.168.1.11");
  //talker
  sprintf(line, "TS%d" DAQDARWIN_TALK_SYSINFODATA);
  rc = daqdarwin.runCommand(line);
  rc = daqdarwin.sendTrigger();
  rc = daqdarwin.sendLine("CF0";
  do {
    rc = daqdarwin.receiveLine(line, BUFSIZ, &len);
  } while ((rc == 0) && (line[0] != ëE");
  //disconnect
  rc = daqdarwin.close();
  return rc;
}
////////////////////////////////////////////////////////////
```

### Description

#### Talker

```
sprintf(line, "TS%d" DAQDARWIN_TALK_SYSINFODATA);
```

Stores the TS5 (declares the retrieval of the system configuration data) command message of the DARWIN communication function to line.
The constant “system configuration data output” is used to specify the output of the system configuration data.

```
runCommand(line)
```

Sends the message and receives the response. The number of bytes of the message is not specified (omitted). This member function adds a terminator to the message and sends it.

```
sendTrigger()
```

Sends a trigger (device trigger).

#### Designation of System Configuration Output Format

```
sendLine("CF0"
```

Sends the CF0 communication function command (specifies the module information that has been configured for the system). This member function adds a terminator to the message and sends it.

#### Data Retrieval

```
receiveLine(line, BUFSIZ, &len)
```

Gets the system configuration data line by line. The program ends when an end mark (E) is returned.

***Note***

The receiveLine member function simply receives the data. The user must write statements for determining the end of the data.

## Error Processing

- Most member functions return the result of the function process using an error number.
- The member function getErrorMessage can be used to get the error message string corresponding to the error number. The member function getMaxLenErrorMessage can be used to get the maximum length of the error message string.

# 7.4 Details of the DARWIN Class

The classes are listed in alphabetical order by the class name.

## CDAQDARWIN Class

- **CDAQHandler**
  - **CDAQDARWIN**

This class is derived from the CDAQHandler class.It provides functions common to the DARWIN series such as communications, data retrieval, and measurement range setting.

### Public Members

#### Construct/Destruct

| | |
|---|---|
| CDAQDARWIN | Constructs an object. |
| ~CDAQDARWIN | Destructs an object. |

#### Communication Functions

| | |
|---|---|
| runCommand | Sends the message and receives the response. |
| getStatusByte | Gets the status byte. |
| sendTrigger | Sends a trigger. |
| receiveByte | Receives the binary data by lines. |

#### Control Functions

| | |
|---|---|
| setDateTime | Sets the date/time. |
| transMode | Switches the setting mode. |
| initSystem | Initializes the system. |
| establish | Establishes setup mode. |
| compute | Starts/stops computation. |
| reporting | Starts/stops reporting. |

#### Data Retrieval Functions

| | |
|---|---|
| getSystemConfig | Gets the system configuration data. |
| talkChInfo | Declares the retrieval of the channel information data. |
| getChInfo | Gets the channel information data. |
| talkDataByASCII | Declares the retrieval of the measured data in ASCII format. |
| getChDataByASCII | Gets the measured data in ASCII format. |
| talkDataByBinary | Declares the retrieval of the measured data in binary format. |

| | |
|---|---|
| getChDataByBinary | Gets the measured data in binary format. |
| talkOperationData | Declares the retrieval of the setup data of operation mode. |
| talkSetupData | Declares the retrieval of the setup data of setup mode. |
| talkCalibrationData | Declares the retrieval of the setup data of A/D calibration mode. |
| getSetDataByLine | Gets the setup data. |
| getReportStatus | Gets the report status. |

### Setup Functions

| | |
|---|---|
| setSKIP | Sets SKIP (not used). |
| setVOLT | Sets DC voltage input. |
| setTC | Sets thermocouple input. |
| setRTD | Sets RTD input. |
| setDI | Sets contact input (DI). |
| setDELTA | Sets difference computation between channels. |
| setRRJC | Sets remote RJC. |
| setScallingUnit | Sets the scaling unit. |
| setAlarm | Sets the alarm value. |
| setMA | Sets the DC current range. |
| setSTRAIN | Sets the strain input. |
| setPULSE | Sets the pulse input. |
| setPOWER | Sets the power monitor. |

## • Overridden Members

### Communication Functions

| | |
|---|---|
| open | Establishes connection. |

### Data Retrieval Functions

| | |
|---|---|
| getData | Gets the measured data. |
| getChannel | Gets the channel information data. |

### Utilities

| | |
|---|---|
| isObject | Checks an object |

## • Inherited Members

See CDAQHandler.

```
close getErrorMessage getMaxLenErrorMessage
getRevisionAPIgetVersionAPIreceiveLine sendLine setTimeOut
```

## Protected Members

### Communication Functions

| | |
|---|---|
| startTalker | Starts the talker function. |

### Utilities

| | |
|---|---|
| checkAck | Checks the response. |
| getVersionDLL | Gets the version number of the DLL. |
| getRevisionDLL | Gets the revision number of the DLL. |

### Inherited Members

See CDAQHandler.

```
m_comm m_nRemainSize receive receiveRemain send
```

## Private Members

None

## Member Functions (Alphabetical Order)

## CDAQDARWIN::CDAQDARWIN

### Syntax

```
CDAQDARWIN(void);
CDAQDARWIN(const char * strAddress, unsigned int uiPort =
DAQDARWIN_COMMPORT, int * errCode = NULL);
virtual ~CDAQDARWIN(void);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| uiPort | Specify the port number. |
| errCode | Specify the destination where the error number is to be returned. |

### Description

Constructs or destructs an object.

When constructing, the data member is initialized. When the parameters are specified, a connection is established (open) during construction. If the return destination is specified, the error number during connection is returned.

When destructing, the data member field is released. The connection is dropped (close) when the communication descriptor exists. The error number is not returned.

### Reference

```
CDAQHandler::CDAQHandler
```

## CDAQDARWIN::checkAck

### Syntax

```
int checkAck(const char * strAck, int lenAck);
```

### Parameters

| | |
|---|---|
| strAck | Specify the response using a string. |
| lenAck | Specify the byte size of the response. |

### Description

Checks the string specified by the parameter as a response and returns the result.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Success | Responds with “processing executed successfully.” |
| Commands are not processed successfully | Responds with “processing not executed successfully.” |
| Not acknowledge | No response. |

## CDAQDARWIN::compute

### Syntax

```
int compute(int iCompute);
```

### Parameters

| | |
|---|---|
| iCompute | Specify the computation. |

### Description

Executes the specified computation.

This function executes the EX command of the communication interface.

It creates and sends the command and receives the response.

It is only valid with the optional computation function, or when the pulse module is installed.

### Return value

Returns an error number.

### Reference

`runCommand`

## CDAQDARWIN::establish

### Syntax

```
int establish(int iSetup = DAQDARWIN_SETUP_ABORT);
```

### Parameters

iSetup Specifies establishment of setup.

### Description

Executes the specified setup establishment.

Executes the “Communication interface”EX command.

Creates and sends the command and receives the response.

It is valid in setup mode.

### Return value

Returns an error number.

### Reference

`runCommand`

## CDAQDARWIN::getChannel

### Syntax

```
virtual int getChannel(int chType, int chNo, CDAQChInfo &
cChInfo);
```

### Parameters

chType Specify the channel type.

chNo Specify the channel number.

cChInfo Specify the destination where the channel information data is to be returned.

### Description

This function gets the channel information data by channels.

Gets the channel information data of the specified channel.

### Return value

Returns an error number.

### Reference

`getChInfo talkChInfo`

## CDAQDARWIN::getChDataByASCII

### Syntax

```
int getChDataByASCII(CDAQDARWINDataInfo & cDARWINDataInfo, int
* pFlag);
```

### Parameters

| | |
|---|---|
| cDARWINDataInfo | Specify the destination where the measured data is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the output of each channel using the talker function declared by ttalkDataByASCII. Analyzes received information channel by channel and stores it in the return destination. When the last set of data is retrieved, the flag status is set. It is also set when the function ends in error. Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.

### Return value

Returns an error number.

### Reference

`checkAck receiveLine CDAQDARWINDataInfo::setLine`

## CDAQDARWIN::getChDataByBinary

### Syntax

```
int getChDataByBinary(CDAQDARWINDataInfo & cDARWINDataInfo,
int * pFlag);
```

### Parameters

| | |
|---|---|
| cDARWINDataInfo | Specify the destination where the measured data is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the output of each channel using the talker function declared by talkDataByBinary. 6 bytes are received for measurement channels, and 8 bytes for computation channels. Analyzes received information channel by channel and stores it in the return destination. Updates the remaining size of the data member. When the last set of data is retrieved, the flag status is set. It is also set when the function ends in error. Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not data | The output number of bytes did not satisfy the size requirement. |

### Reference

`receive CDAQDARWINDataInfo::setByte`

## CDAQDARWIN::getChInfo

### Syntax

```
int getChInfo(CDAQDARWINChInfo & cDARWINChInfo, int * pFlag);
```

### Parameters

cDARWINChInfo Specify the destination where the channel information data is to be returned.

pFlag Specify the destination where the flag is to be returned.

### Description

Gets the channel information data output by channel using the talker function declared by talkChInfo. Analyzes received information channel by channel and stores it in the return destination.

When the last set of data is retrieved, the flag status is set. It is also set when the function ends in error.

Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.

### Return value

Returns an error number.

### Reference

```
checkAck receiveLine
CDAQDARWINChInfo::setLine
```

## CDAQDARWIN::getData

### Syntax

```
virtual int getData(int chType, int chNo, CDAQDateTime &
cDateTime, CDAQDataInfo & cDataInfo);
```

### Parameters

chType Specify the channel type.

chNo Specify the channel number.

cDateTime Specify the destination where the time information data is to be returned.

cDataInfo Specify the destination where the measured data is to be returned.

### tDescription

This function gets the instantaneous values in units of channels.

Gets the measured data of the specified channel in binary code.

### Return value

Returns an error number.

### Reference

```
getChDataByBinary talkDataByBinary
```

## CDAQDARWIN::getReportStatus

### Syntax

```
int getReportStatus(int * pReportStatus);
```

### Parameters

pReportStatus  Specify the destination where the report status is to be returned.

### Description

Gets the report status.

The function executes the data retrieval declaration as a talker function and the data output in succession.

Stores the report status in the return destination.

This function executes the TS and RF commands of the DARWIN communication function.

It creates and sends the command and receives the data.

### Return value

Returns an error number.

### Reference

```
receive send startTalker
```

## CDAQDARWIN::getRevisionDLL

### Syntax

```
static const int getRevisionDLL(void);
```

### Description

Gets the revision number of this DLL.

### Return value

Returns the revision number of this DLL.

## CDAQDARWIN::getSetDataByLine

### Syntax

```
int getSetDataByLine(char * strLine, int maxLine, int *
lenLine, int * pFlag);
```

### Parameters

| | |
|---|---|
| strLine | Specify the field where the string received by lines is to be stored. |
| maxLine | Specify the byte size of the field where the string received by lines is to be stored. |
| lenLine | Specify the destination where the byte size of the actual string received is returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the output by line using the talker functions declared by talkOperationData, talkSetupData, and talkCalibrationData.

If the return destination is specified, the flag status is set when the last set of data is retrieved. It is also set when the function ends in error.

Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.

### Return value

Returns an error number.

### Reference

`receiveLine`

## CDAQDARWIN::getStatusByte

### Syntax

```
virtual int getStatusByte(int * pStatusByte);
```

### Parameters

| | |
|---|---|
| pStatusByte | Specify the destination where the status byte is to be returned. |

### Description

Gets the status byte.

Stores the status byte as an integer to the return destination if the return destination is specified.

Sends the status byte output command (ESC S) and receives the output.

### Return value

Returns an error number.

### Reference

`checkAck receiveLine send`

## CDAQDARWIN::getSystemConfig

### Syntax

```
int getSystemConfig(CDAQDARWINSysInfo & cDARWINSysInfo);
```

### Parameters

| | |
|---|---|
| cDARWINSysInfo | Specify the destination where the system configuration data is to be returned. |

### Description

Gets the system configuration data. The function executes the data retrieval declaration as a talker function and the data output.

Stores the scan interval and the system configuration data to the return destination.

This function executes the TS and CF commands of the DARWIN communication function.

It initializes the return destination, creates and sends the command, and receives the data.

### Return value

Returns an error number.

### Reference

```
checkAck receiveLine send startTalker
CDAQDARWINSysInfo::initialize CDAQDARWINSysInfo::setLine
```

## CDAQDARWIN::getVersionDLL

### Syntax

```
static const int getVersionDLL(void);
```

### Description

Gets the version number of this DLL.

### Return value

Returns the version number of this DLL.

## CDAQDARWIN::initSystem

### Syntax

```
int initSystem(int iCtrl);
```

### Parameters

| | |
|---|---|
| iCtrl | Specify the system control type. |

### Description

Executes the operation of the specified system control type.

This function executes the RS, RC, or AR command of the DARWIN communication function.

It creates and sends the command and receives the response.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not support | Specified value is out of range. |

### Reference

```
runCommand
```

## CDAQDARWIN::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQDARWIN";
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a boolean value.

### Reference

`CDAQHandler::isObject`

## CDAQDARWIN::open

### Syntax

```
virtual int open(const char * strAddress, unsigned int
uiPort);
```

### Parameters

strAddress Specify the IP address as a string.

uiPort Specify the port number.

### Description

Connects to the device with the IP address and port number specified by the parameters.

The port number can be omitted. If omitted, it is set to the DARWIN communication port number.

### Return value

Returns an error number.

### Reference

`CDAQHandler::open`

## CDAQDARWIN::receiveByte

### Syntax

```
virtual int receiveByte(unsigned char * byteData, int maxData
= 1, int * lenData = NULL);
```

### Parameters

| | |
|---|---|
| byteData | Specify the field where the received data is to be stored using a byte array. |
| maxData | Specify the byte size of the received data. |
| lenData | Specify the destination where the byte size of the actual data received is returned. |

### Description

Stores the received data to the field specified by the parameter up to the specified byte size.

Returns the byte size of the actual data received if the return destination is specified.

### Return value

Returns an error number.

### Reference

`receive`

## CDAQDARWIN::reporting

### Syntax

```
int reporting(int iReportRun);
```

### Parameters

| | |
|---|---|
| iReportRun | Specify the report execution type. |

### Description

Executes the specified report execution type.

This function executes the DR command of the DARWIN communication function..

It creates and sends the command and receives the response.

It is only valid with the optional computation function, or when the pulse module is installed.

### Return value

Returns an error number.

### Reference

`runCommand`

## CDAQDARWIN::runCommand

### Syntax

```
virtual int runCommand(const char * strCmd)
```

### Parameters

strCmd Specify the command message to be sent.

### Description

Sends the specified command message and receives the response.
This function adds a terminator to the command message at the time of transmission. Therefore, do not include the terminator in the command message.
This function does not support simultaneous transmission of multiple commands or command messages that include the terminator.
Like the data output request command of the talker function, does not support commands that do not send responses.
The terminator of the string is the NULL character.

### Return value

Returns an error number.

### Reference

`checkAck receiveLine sendLine`

## CDAQDARWIN::sendTrigger

### Syntax

```
virtual int sendTrigger(void);
```

### Description

Sends a trigger command (ESC T), and receives the response.

### Return value

Returns an error number.

### Reference

`runCommand`

## CDAQDARWIN::setAlarm

### Syntax

```
int setAlarm(int levelNo, int chType, int startChNo, int
endChNo = 0, int iAlarmType = DAQDARWIN_ALARM_NONE, int value
= 0,int relayType = 0, int relayNo = 0);
```

### Parameters

| | |
|---|---|
| levelNo | Specify the alarm level. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| iAlarmType | Specify the alarm type using the alarm type value. |
| value | Specify the alarm value. |
| relayType | Specify the relay type. |
| relayNo | Specify the relay number. |

### Description

Sets the specified alarm (alarm level and alarm type) and alarm value to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

When the relay number is less than or equal to 0, the relay is turned OFF.

This function executes the SA command of the DARWIN communication function. It creates and sends the command and receives the response.

### Return value

Returns an error number.

### Reference

```
runCommand
CDAQDARWINChInfo::toChRange
CDAQDARWINDataInfo::getAlarmName
CDAQDARWINSysInfo::toRelayName
```

## CDAQDARWIN::setDateTime

### Syntax

```
int setDateTime(CDAQDARWINDateTime * pcDARWINDateTime = NULL);
```

### Parameters

pcDARWINDateTime  Specify the time information data.

### Description

Sets time information data on the device.

If NULL is specified, the current date/time of the PC is used.

This function executes the SD command of the DARWIN communication function.

It creates and sends the command and receives the response.

### Return value

Returns an error number.

### Reference

```
runCommand
CDAQDARWINDateTime::setNow CDAQDARWINDateTime::toString
```

## CDAQDARWIN::setDELTA

### Syntax

```
int setDELTA(int refChNo, int chType, int startChNo, int
endChNo = 0, int spanMin = 0, int spanMax = 0);
```

### Parameters

| | |
|---|---|
| refChNo | Specify the channel number of the reference channel. |
| chType | Specify the channel type of the measurement channel. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |

### Description

Sets difference computation with respect to the specified reference channel to the measurement channels in the specified channel range (specified by channel type, start channel number, and end channel number).

This function executes the SR command of the DARWIN communication function.

It creates and sends the command and receives the response.

If the left and right values are the same, the span designation is considered omitted.

### Return value

Returns an error number.

### Reference

```
runCommand
CDAQDARWINChInfo::toChRange
```

## CDAQDARWIN::setDI

### Syntax

```
int setDI(int iRangeDI, int chType, int startChNo, int endChNo
= 0, int spanMin = 0, int spanMax = 0, int scaleMin = 0, int
scaleMax = 0, int scalePoint = 0);
```

### Parameters

| | |
|---|---|
| iRangeDI | Specify the range type of contact input (DI). |
| chType | Specify the channel type of the measurement channel. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified measurement range to the measurement channels in the specified channel range (specified by channel type, start channel number, and end channel number).

This function executes the SR command of the DARWIN communication function. It creates and sends the command and receives the response.

If the left and right values are the same, the span or scale designation is considered omitted.

### Return value

Returns an error number.

### Reference

`runCommand`
`CDAQDARWINChInfo::toChRange`

## CDAQDARWIN::setMA

### Syntax

```
int setMA(int iRangeMA, int chType, int startChNo, int endChNo
= 0, int spanMin = 0, int spanMax = 0, int scaleMin = 0, int
scaleMax = 0, int scalePoint = 0);
```

### Parameters

| | |
|---|---|
| iRangeMA | Specify the DC current range. |
| chType | Specify the channel type of the measurement channel. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified DC current range to the measurement channels in the specified channel range (specified by channel type, start channel number, and end channel number).

This function executes the SR command of the DARWIN communication function. It creates and sends the command and receives the response.

If the left and right values are the same, the span or scale designation is considered omitted.

### Return value

Returns an error number.

### Reference

`runCommand CDAQDARWINChInfo::toChRange`

# CDAQDARWIN::setPOWER

## Syntax

```
int setPOWER(int iRangePOWER, int chType, int chNo, int iItem
= DAQDARWIN_POWERITEM_P1, int iWire = DAQDARWIN_WIRE_1PH2W,
int spanMin = 0, int spanMax = 0, int scaleMin = 0, int
scaleMax = 0, int scalePoint = 0);
```

## Parameters

| | |
|---|---|
| iRangeVOLT | Specify the power monitor range. |
| chType | Specify the channel type of the measurement channel. |
| chNo | Specify the channel number. |
| iItem | Specify the power measurement parameter. |
| iWire | Specify the power connection method. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

## Description

Sets the specified power monitor range on the measurement channels of the specified channel (channel type, channel number).

This function executes the SR command of the DARWIN communication function.

It creates and sends the command and receives the response.

If the left and right values are the same, the span or scale designation is considered omitted.

## Return value

Returns an error number.

## Reference

`runCommand CDAQDARWINChInfo::toChRange`

## CDAQDARWIN::setPULSE

### Syntax

```
int setPULSE(int iRangePULSE, int chType, int startChNo, int
endChNo = 0, int spanMin = 0, int spanMax = 0, int scaleMin =
0, int scaleMax = 0, int scalePoint = 0, int bFilter =
DAQDARWIN_VALID_OFF);
```

### Parameters

| | |
|---|---|
| iRangePULSE | Specify the pulse range. |
| chType | Specify the channel type of the measurement channel. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |
| bFilter | Specify ON/OFF for the filter using a boolean value. |

### Description

Sets the specified pulse range to the measurement channels in the specified channel range (specified by channel type, start channel number, and end channel number).

This function executes the SR command of the DARWIN communication function. It creates and sends the command and receives the response.

If the left and right values are the same, the span or scale designation is considered omitted.

### Return value

Returns an error number.

### Reference

`runCommand CDAQDARWINChInfo::toChRange`

## CDAQDARWIN::setRRJC

### Syntax

```
int setRRJC(int refChNo, int chType, int startChNo, int
endChNo = 0, int spanMin = 0, int spanMax = 0);
```

### Parameters

| | |
|---|---|
| refChNo | Specify the channel number of the reference channel. |
| chType | Specify the channel type of the measurement channel. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |

### Description

Sets remote RJC with respect to the specified reference channel to the measurement channels in the specified channel range (specified by channel type, start channel number, and end channel number).

This function executes the SR command of the DARWIN communication function. It creates and sends the command and receives the response.

If the left and right values are the same, the span designation is considered omitted.

### Return value

Returns an error number.

### Reference

`runCommand`
`CDAQDARWINChInfo::toChRange`

## CDAQDARWIN::setRTD

### Syntax

```
int setRTD(int iRangeRTD, int chType, int startChNo, int
endChNo = 0, int spanMin = 0, int spanMax = 0, int scaleMin =
0, int scaleMax = 0, int scalePoint = 0);
```

### Parameters

| | |
|---|---|
| iRangeRTD | Specify the range type of the RTD input. |
| chType | Specify the channel type of the measurement channel. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified RTD range to the measurement channels in the specified channel range (specified by channel type, start channel number, and end channel number).
This function executes the SR command of the DARWIN communication function.
It creates and sends the command and receives the response.
If the left and right values are the same, the span or scale designation is considered omitted.

### Return value

Returns an error number.

### Reference

`runCommand`
`CDAQDARWINChInfo::toChRange`

## CDAQDARWIN::setScallingUnit

### Syntax

```
int setScallingUnit(const char * strUnit, int chType, int
startChNo, int endChNo = 0);
```

### Parameters

| | |
|---|---|
| strUnit | Specify the unit name using a string. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the specified unit to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).
This function executes the SN command of the DARWIN communication function. It creates and sends the command and receives the response.

### Return value

Returns an error number.
Error:

| | |
|---|---|
| Not support | The string is out of range. Not specified, or exceeds the maximum length. |

### Reference

`runCommand`
`CDAQDARWINChInfo::toChRange`

## CDAQDARWIN::setSKIP

### Syntax

```
int setSKIP(int chType, int startChNo, int endChNo = 0);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type of the measurement channel. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the measurement channels in the specified channel range (specified by channel type, start channel number, and end channel number) to SKIP (not used).
This function executes the SR command of the DARWIN communication function. It creates and sends the command and receives the response.

### Return value

Returns an error number.

### Reference

`runCommand`
`CDAQDARWINChInfo::toChRange`

## CDAQDARWIN::setSTRAIN

### Syntax

```
int setSTRAIN(int iRangeSTRAIN, int chType, int startChNo, int
endChNo = 0, int spanMin = 0, int spanMax = 0, int scaleMin =
0, int scaleMax = 0, int scalePoint = 0);
```

### Parameters

| | |
|---|---|
| iRangeSTRAIN | Specify the strain input range. |
| chType | Specify the channel type of the measurement channel. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified strain input range to the measurement channels in the specified channel range (specified by channel type, start channel number, and end channel number).

This function executes the SR command of the DARWIN communication function. It creates and sends the command and receives the response.

If the left and right values are the same, the span or scale designation is considered omitted.

### Return value

Returns an error number.

### Reference

`runCommand CDAQDARWINChInfo::toChRange`

## CDAQDARWIN::setTC

### Syntax

```
int setTC(int iRangeTC, int chType, int startChNo, int endChNo
= 0, int spanMin = 0, int spanMax = 0, int scaleMin = 0, int
scaleMax = 0, int scalePoint = 0);
```

### Parameters

| | |
|---|---|
| iRangeTC | Specify the range type of the thermocouple input. |
| chType | Specify the channel type of the measurement channel. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified thermocouple range to the measurement channels in the specified channel range (specified by channel type, start channel number, and end channel number).

This function executes the SR command of the DARWIN communication function. It creates and sends the command and receives the response.

If the left and right values are the same, the span or scale designation is considered omitted.

### Return value

Returns an error number.

### Reference

`runCommand`
`CDAQDARWINChInfo::toChRange`

## CDAQDARWIN::setVOLT

### Syntax

```
int setVOLT(int iRangeVOLT, int chType, int startChNo, int
endChNo = 0, int spanMin = 0, int spanMax = 0, int scaleMin =
0,int scaleMax = 0, int scalePoint = 0);
```

### Parameters

| | |
|---|---|
| iRangeVOLT | Specify the range type of the DC voltage input. |
| chType | Specify the channel type of the measurement channel. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified DC voltage range to the measurement channels in the specified channel range (specified by channel type, start channel number, and end channel number). This function executes the SR command of the DARWIN communication function. It creates and sends the command and receives the response.

If the left and right values are the same, the span or scale designation is considered omitted.

### Return value

Returns an error number.

### Reference

`runCommand CDAQDARWINChInfo::toChRange`

## CDAQDARWIN::startTalker

### Syntax

```
virtual int startTalker(int iTalk);
```

### Parameters

| | |
|---|---|
| iTalk | Specify the talker function type. |

### Description

Executes the start procedure for using the talker function.

This function executes the TS command of the DARWIN communication function and sends a trigger. After executing this function, carry out data retrieval corresponding to the specified talker function.

### Return value

Returns an error number.

### Reference

`runCommand sendTrigger`

## CDAQDARWIN::talkCalibrationData

### Syntax

```
int talkCalibrationData(int startChType, int startChNo, int
endChType, int endChNo);
```

### Parameters

| | |
|---|---|
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving setup data of the setup mode from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number). The setting mode must be switched to calibration in advance. This function executes the TS and LF commands of the DARWIN communication function. After executing this function, use the getSetDataByLine function to retrieve the data by lines.

### Return value

Returns an error number.

### Reference

```
send startTalker CDAQDARWINChInfo::toChName
```

## CDAQDARWIN::talkChInfo

### Syntax

```
int talkChInfo(int startChType, int startChNo, int endChType,
int endChNo);
```

### Parameters

| | |
|---|---|
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving channel information data from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number). This function executes the TS and LF commands of the DARWIN communication function. It creates and sends the command. After executing this function, use the getChInfo function to retrieve the data for each channel.

### Return value

Returns an error number.

### Reference

```
send startTalker CDAQDARWINChInfo::toChName
```

## CDAQDARWIN::talkDataByASCII

### Syntax

```
int talkDataByASCII(int startChType, int startChNo, int
endChType, int endChNo, CDAQDARWINDateTime & cDARWINDateTime);
```

### Parameters

| | |
|---|---|
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |
| cDARWINDateTime | Specify the destination where the time information data is to be returned. |

### Description

Executes the declaration for retrieving measured data in ASCII format from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

Stores the time information data of the measured data to the specified return destination.

Specify measurement channels and computation channels separately. The start channel type is used to distinguish measurement channels and computation channels.

This function executes the TS and FM commands of the DARWIN communication function.

After executing this function, use the getChDataByASCII function to retrieve the data for each channel.

### Return value

Returns an error number.

### Reference

```
checkAck receiveLine send startTalker
CDAQDARWINChInfo::toChName
CDAQDARWINDateTime::setLine
```

## CDAQDARWIN::talkDataByBinary

### Syntax

```
int talkDataByBinary(int startChType, int startChNo, int
endChType, int endChNo, CDAQDARWINDateTime & cDARWINDateTime);
```

### Parameters

| | |
|---|---|
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |
| cDARWINDateTime | Specify the destination where the time information data is to be returned. |

### Description

Executes the declaration for retrieving measured data in binary format from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

Stores the time information data of the measured data to the specified return destination.

Specify measurement channels and computation channels separately.The start channel type is used to distinguish measurement channels and computation channels.

Set the byte output order to MSB first.

Stores the remaining size (output byte size) in the remaining size field of the data member.

This function executes the BO, TS, and FM commands of the DARWIN communication function.

After executing this function, use the getChDataByBinary function to retrieve the data for each channel.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not data | The output number of bytes did not satisfy the size requirement. |

### Reference

```
checkAck receive runCommand send startTalker
CDAQDARWINChInfo::toChName
CDAQDARWINDateTime::setByte
```

## CDAQDARWIN::talkOperationData

### Syntax

```
int talkOperationData(int startChType, int startChNo, int
endChType, int endChNo);
```

### Parameters

| | |
|---|---|
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving setup data of the operation mode from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number). This function executes the TS and LF commands of the DARWIN communication function. After executing this function, use the getSetDataByLine function to retrieve the data line by line.

### Return value

Returns an error number.

### Reference

```
send startTalker
CDAQDARWINChInfo::toChName
```

## CDAQDARWIN::talkSetupData

### Syntax

```
int talkSetupData(int startChType, int startChNo, int
endChType, int endChNo);
```

### Parameters

| | |
|---|---|
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving setup data of the setup mode from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number). This function executes the TS and LF commands of the DARWIN communication function. After executing this function, use the getSetDataByLine function to retrieve the data line by line.

### Return value

Returns an error number.

### Reference

```
send startTalker
CDAQDARWINChInfo::toChName
```

## CDAQDARWIN::transMode

### Syntax

```
int transMode(int iMode);
```

### Parameters

iMode Specify the mode.

### Description

Switches to the specified mode.

This function executes the DS command of the DARWIN communication function.

It creates and sends the command and receives the response.

### Return value

Returns an error number.

### Reference

`runCommand`

# CDAQDARWINChInfo Class

■ **CDAQChInfo**
  • **CDAQDARWINChInfo**

This class is derived from the CDAQChInfo class.
It is a class for storing the channel information data of the DARWIN series.
It is a wrapper class of the DarwinChInfo structure.
It stores the following types of data that is retrieved when the channel information data of the talker function is retrieved.

- Channel type
- Channel number
- Decimal point position
- Channel status
- Unit name

Member functions are provided that analyze and store the output format strings below.

**S1S2CCCUUUUUU,P**

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQDARWINChInfo | Constructs an object. |
| ~CDAQDARWINChInfo | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getDarwinChInfo | Gets the data in a structure. |
| setDarwinChInfo | Sets the data in a structure. |
| initDarwinChInfo | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| getChStatus | Gets the channel status. |
| getUnit | Gets the unit name. |
| setChStatus | Sets the channel status. |
| setUnit | Sets the unit name. |

### Output Format Manipulation

| | |
|---|---|
| setLine | Analyzes the data in the output format (line format) of the channel information data and stores the information to the data member. |

### Utilities

| | |
|---|---|
| getChName | Gets the channel as a string. |
| toChName | Converts the channel into a string. |
| toChRange | Converts the channel range into a string. |
| getStatusName | Gets the status value as a string. |
| toStatus | Converts a string or data value into a data status value. |
| toFlag | Converts a character to a flag. |
| toChType | Converts a character to a channel type. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Overridden Members

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### Inherited Members

See CDAQChInfo.

```
getChNo getPoint getChType setChNo setChType setPoint
```

## Protected Members

### Data Members

| | |
|---|---|
| m_chStatus | Field for storing the channel status. |
| m_strUnit | Field for storing the unit name. |

### Inherited Members

See CDAQChInfo.

```
m_chNo m_chType m_point
```

## Private Members

None

## Member Functions (Alphabetical Order)

## CDAQDARWINChInfo::CDAQDARWINChInfo

### Syntax

```
CDAQDARWINChInfo(DarwinChInfo * pDarwinChInfo = NULL);
CDAQDARWINChInfo(int chType, int chNo, int point, const char *
strUnit, int iStatus = DAQDARWIN_DATA_UNKNOWN);
virtual ~CDAQDARWINChInfo(void);
```

### Parameters

| | |
|---|---|
| pDarwinChInfo | Specify the channel information data using a structure. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| point | Specify the decimal point position. |
| strUnit | Specify the unit name. |
| iStatus | Specify the channel status. |

### Description

Constructs or destructs an object.

When constructing, the specified data is stored in the data member.If not specified, the data member is initialized.

### Reference

```
setChStatus setDarwinChInfo setUnit
CDAQChInfo::CDAQChInfo
```

## CDAQDARWINChInfo::getChName

### Syntax

```
int getChName(char * strName, int lenName);
```

### Parameters

| | |
|---|---|
| strName | Specify the field where the string is to be stored. |
| lenName | Specify the byte size of the field where the string is to be stored. |

### Description

Creates a channel name from the value of the channel type field and channel number field of the data member as a string and stores the string in the specified field.

### Return value

Returns the length of the created string.

### Reference

```
getChNo getChType toChName
```

## CDAQDARWINChInfo::getChStatus

### Syntax

```
int getChStatus(void);
```

### Description

Gets the value of the channel status field from the data member.

### Return value

Returns the channel status.

## CDAQDARWINChInfo::getDarwinChInfo

### Syntax

```
void getDarwinChInfo(DarwinChInfo * pDarwinChInfo);
```

### Parameters

pDarwinChInfo Specify the destination where the channel information data is to be returned.

### Description

Gets the data in a structure.

Stores the contents of the data member in the specified structure.

### Reference

```
getChNo getChStatus getChType getPoint getUnit
```

## CDAQDARWINChInfo::getStatusName

### Syntax

```
static const char * getStatusName(int iStatus);
```

### Parameters

iStatus Specify the data status value.

### Description

Gets the string corresponding to the specified data status value.

If outside the range, the string is set to ìUnknown”

### Return value

Returns a pointer to the string.

## CDAQDARWINChInfo::getUnit

### Syntax

```
const char * getUnit(void);
```

### Description

Gets unit name of the unit name field from the data member.

### Return value

Returns a pointer to the string.

## CDAQDARWINChInfo::initDarwinChInfo

### Syntax

```
static void initDarwinChInfo(DarwinChInfo * pDarwinChInfo);
```

### Parameters

pDarwinChInfo Specify the channel information data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQDARWINChInfo::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value is 0.

### Reference

```
setChStatus CDAQChInfo::initialize
```

## CDAQDARWINChInfo::isObject

### Syntax

```
virtual int isObject(const char * classname =
"CDAQDARWINChInfo";
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a boolean value.

### Reference

```
CDAQChInfo::isObject
```

## CDAQDARWINChInfo::operator=

### Syntax

```
CDAQDARWINChInfo & operator=(CDAQDARWINChInfo &
cDARWINChInfo);
```

### Parameters

cDARWINChInfo  Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQDARWINChInfo::setChStatus

### Syntax

```
void setChStatus(int iStatus);
```

### Parameters

iStatus  Specify the channel status.

### Description

Stores the channel status field of the data member to the specified value.

## CDAQDARWINChInfo::setDarwinChInfo

### Syntax

```
void setDarwinChInfo(DarwinChInfo * pDarwinChInfo);
```

### Parameters

pDarwinChInfo  Specify the channel information data.

### Description

Sets the data in a structure.

Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

```
initialize setChNo setChStatus setChType setPoint setUnit
```

## CDAQDARWINChInfo::setLine

### Syntax

```
int setLine(const char * strLine, int lenLine, int * pFlag);
```

### Parameters

| | |
|---|---|
| strLine | Specify the line using a string. |
| lenLine | Specify the byte size of the line. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Analyzes the specified line and stores the information in the data member.

The line format is the output format of the channel information data.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not data | The input data is too short. Or, the string incorrect. |

### Reference

`setChNo setChStatus setChType setPoint setUnit toChType toFlag toStatus`

## CDAQDARWINChInfo::setUnit

### Syntax

```
void setUnit(const char * strUnit)
```

### Parameters

| | |
|---|---|
| strUnit | Specify the unit name. |

### Description

Stores the specified value in the unit name field of the data member.

## CDAQDARWINChInfo::toChName

### Syntax

```
static int toChName(int chType, int chNo, char * strName, int
lenName);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| strName | Specify the field where the string is to be stored. |
| lenName | Specify the byte size of the field where the string is to be stored. |

### Description

Creates a channel name from the specified channel type and channel number as a string and stores the string in the specified field.

For example, if the channel type is 0 and the channel number is 1, the string is set to “01”

In addition to the channel/relay types defined as constants, subunit numbers are also channel/relay types. The subunit number is an integer between 0 and 5.

### Return value

Returns the length of the created string.

## CDAQDARWINChInfo::toChRange

### Syntax

```
static int toChRange(int chType, int startChNo, int endChNo,
char * strName, int lenName);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| strName | Specify the field where the string is to be stored. |
| lenName | Specify the byte size of the field where the string is to be stored. |

### Description

Creates a name of the channel range (channel type, start channel number, and end channel number) as a string and stores the string in the specified field.

If the end channel number is less than or equal to the start channel number, it is considered a single channel specified by the start channel number.

For example, if the channel type is 0, the start channel number is 1, and the end channel number is 2, the string is set to “01-02”

In addition to the channel/relay types defined as constants, subunit numbers are also channel/relay types. The subunit number is an integer between 0 and 5.

### Return value

Returns the length of the created string.

### Reference

toChName

## CDAQDARWINChInfo::toChType

### Syntax

```
static int toChType(char cType);
```

### Parameters

cType Specify characters.

### Description

Converts the specified value into a channel type.

If outside the range, the value is set to 0.

One character of the channel/relay type is converted to the channel type value.

### Return value

Returns the channel type.

## CDAQDARWINChInfo::toFlag

### Syntax

```
static int toFlag(char cFlag);
```

### Parameters

cFlag Specify characters.

### Description

Converts the specified value into a flag value.

If the specified character is “E” the value is set to “end data.”

If outside the range, the string is set to “All OFF.” The specified string corresponds to the output format of S2.

### Return value

Returns the flag.

## CDAQDARWINChInfo::toStatus

### Syntax

```
static int toStatus(char cStatus);
static int toStatus(int value);
```

### Parameters

| | |
|---|---|
| cStatus | Specify characters. |
| value | Specify 2 bytes of the data value as an integer. |

### Description

Converts the specified value into a data status value.

If a string is specified and is outside the range, the data status value ìUnknown”is returned.

If a data value is specified and is outside the range, “Normal” is returned.

If a string is specified and an overrange is specified, the data status value “Positive overrange”is returned. The data value of the data status for computation channels has 4 bytes. This data consists of two same 2-byte data. Use this 2-byte data when specifying a data value.

The character specified corresponds to the output format of S1.

For characters (spaces) that are read in for instantaneous value data, returns the “instantaneous value data loading communication status.”

When specifying data values, values other than abnormal data values are set as out of range, and ìcompleted normally”is returned.

### Return value

Returns the data status value.

# CDAQDARWINDataInfo Class

- **CDAQDataInfo**
  - **CDAQDARWINDataInfo**

This class is derived from the CDAQDataInfo class. It stores the data in units of channels that is retrieved through the retrieval of the measured data by the talker function.
This class consists of the association with the channel information data and the measured data.
The stored information varies depending on the code (ASCII or binary) when the measured data of the talker function is retrieved. For details, see section 11.4.
If the reference to the channel information data is set, the retrieved channel information data is stored.

When storing the measured data through the talker function, the following member functions corresponding to the code are used.

| Code | Member Functions |
|---|---|
| ASCII code | setLine |
| Binary code | setByte |

In the case of ASCII codes, member functions are provided that analyze and store the output format strings below.

**S1S2A1A1A2A2A3A3A4A4UUUUUUCCC,±DDDDDE-E**

In the case of binary codes, member functions are provided that analyze and store 6 bytes (for measurement channels) or 8 bytes (cor computation channels) of data.
Data that does not include alarm data is not supported.
For channel information data, you can retrieve the CDAQDARWINChInfo class using the member access function member. This is the same as the channel information data class from the receiving of the channel information data by the talker function.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQDARWINDataInfo | Constructs an object. |
| ~CDAQDARWINDataInfo | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getDarwinDataInfo | Gets the data in a structure. |
| setDarwinDataInfo | Sets the data in a structure. |
| initDarwinDataInfo | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| getStatus | Gets the data status. |
| getAlarm | Gets the alarm value. |
| setStatus | Set the data status. |
| setAlarm | Sets the alarm value. |

### Output Format Manipulation

| | |
|---|---|
| setLine | Stores the measured data from the string. |
| setByte | Stores the measured data from the byte array. |

### Association

| | |
|---|---|
| getClassDARWINChInfo | Gets the association with the channel information data. |
| setClassDARWINChInfo | Sets the association with the channel information data. |

### Utilities

| | |
|---|---|
| getAlarmName | Gets the name of the alarm type. |
| toAlarmType | Converts the string into an alarm type. |
| getMaxLenAlarmName | Gets the maximum length of the alarm type name. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

- **Overridden Members**

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### Inherited Members

See CDAQDataInfo

```
getClassChInfo getDoubleValue getStringValue getValue
setClassChInfo setValue toDoubleValue toStringValue
```

## Protected Members

### Data Members

| | |
|---|---|
| m_dataStatus | Field for storing the data status. |
| m_alarm | Field for storing the presence or absence of the alarm. |

### Inherited Members

See CDAQDataInfo

```
m_pChInfo m_value
```

## Private Members

None

## Member Functions (Alphabetical Order)

## CDAQDARWINDataInfo::CDAQDARWINDataInfo

### Syntax

```
CDAQDARWINDataInfo(DarwinDataInfo * pDarwinDataInfo = NULL,
CDAQDARWINChInfo * pcDARWINChInfo = NULL);
virtual ~CDAQDARWINDataInfo(void);
```

### Parameters

| | |
|---|---|
| pDarwinDataInfo | Specify the measured data. |
| pcDARWINChInfo | Specify the association with the channel information data. |

### Description

Constructs or destructs an object.

When constructing, the specified data is stored in the data member. If not specified, the data member is initialized.

### Reference

```
setClassDARWINChInfo setDarwinDataInfo
CDAQDataInfo::CDAQDataInfo
```

## CDAQDARWINDataInfo::getAlarm

### Syntax

```
int getAlarm(int levelNo);
```

### Parameters

| | |
|---|---|
| levelNo | Specify the alarm level. |

### Description

Gets the value of the alarm presence/absence field of the data member.

Returns the value corresponding to the specified alarm level.

Returns ìNo alarm”if the alarm level is outside the range.

The alarm value is the value of the alarm type.

### Return value

Returns the presence or absence of the alarm.

## CDAQDARWINDataInfo::getAlarmName

### Syntax

```
static const char * getAlarmName(int iAlarmType);
```

### Parameters

iAlarmType Specify the alarm type.

### Description

Gets the string corresponding to the specified alarm type.

If outside the range, the string is set the same as no alarm.

The string is aligned to the left. The string is padded with spaces.

### Return value

Returns a pointer to the string.

## CDAQDARWINDataInfo::getClassDARWINChInfo

### Syntax

```
CDAQDARWINChInfo * getClassDARWINChInfo(void);
```

### Description

Gets the association with the channel information data from the data member.

### Return value

Returns the association with the channel information data.

### Reference

```
getClassChInfo
```

## CDAQDARWINDataInfo::getDarwinDataInfo

### Syntax

```
void getDarwinDataInfo(DarwinDataInfo * pDarwinDataInfo);
```

### Parameters

pDarwinDataInfo Specify the destination where the measured data is to be returned.

### Description

Gets the data in a structure. Stores the contents of the data member in the specified structure.

### Reference

```
getAlarm getStatus getValue
```

## CDAQDARWINDataInfo::getMaxLenAlarmName

### Syntax

```
static int getMaxLenAlarmName(void);
```

### Description

Gets the maximum length of the alarm type string.

The return value does not include the terminator.

### Return value

Returns the maximum length of the string in numbers of bytes.

## CDAQDARWINDataInfo::getStatus

### Syntax

```
int getStatus(void);
```

### Description

Gets the data status field from the data member.

### Return value

Returns the data status.

## CDAQDARWINDataInfo::initDarwinDataInfo

### Syntax

```
static void initDarwinDataInfo(DarwinDataInfo *
pDarwinDataInfo);
```

### Parameters

pDarwinDataInfo Specify the measured data field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQDARWINDataInfo::initialize

### Syntax

```
void initialize(void);
```

### Description

Initializes the data member. The default value as a general rule is 0.

Data status field is set to ìUnknown.”

Presence/absence of alarm field is set to ìNo alarm.”

### Reference

`CDAQDataInfo::initialize`

## CDAQDARWINDataInfo::isObject

### Syntax

```
virtual int isObject(const char * classname =
“CDAQDARWINDataInfo”;
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a boolean value.

### Reference

`CDAQDataInfo::isObject`

## CDAQDARWINDataInfo::operator=

### Syntax

```
CDAQDARWINDataInfo & operator=(CDAQDARWINDataInfo &
cDARWINDataInfo);
```

### Parameters

cDARWINDataInfo Specify an object for substitution.

### Description

Copies the data member of the specified object .

### Return value

Returns the reference to the object.

## CDAQDARWINDataInfo::setAlarm

### Syntax

```
void setAlarm(int levelNo, int iAlarmType);
```

### Parameters

level Specify the alarm level.

iAlarmType Specify the alarm type.

### Description

Stores the specified value in the alarm presence/absence field of the data member.

If the alarm level is outside the range, does nothing.

## CDAQDARWINDataInfo::setByte

### Syntax

```
int setByte(const unsigned char pByte[], int numByte);
```

### Parameters

| | |
|---|---|
| pByte | Specify the head pointer of the byte array. |
| numByte | Specify the byte size of the byte array. |

### Description

Analyzes the specified byte array and stores the information in the data member.
The byte array type is the output format of the measured data in binary code.
If an association with the channel information data exists, the information that can be retrieved from the specified byte array is stored in the channel information data field.

### Return value

Returns an error number.
Error:

| | |
|---|---|
| Not data | The input data is too short. |

### Reference

```
getClassDARWINChInfo setAlarm setStatus setValue
CDAQDARWINChInfo::setChNo CDAQDARWINChInfo::setChType
CDAQDARWINChInfo::toStatus
```

## CDAQDARWINDataInfo::setClassDARWINChInfo

### Syntax

```
void setClassDARWINChInfo(CDAQDARWINChInfo * pcDARWINChInfo);
```

### Description

Sets the association with the channel information data of the data member.

### Reference

```
setClassChInfo
```

## CDAQDARWINDataInfo::setDarwinDataInfo

### Syntax

```
void setDarwinDataInfo(DarwinDataInfo * pDarwinDataInfo);
```

### Parameters

pDarwinDataInfo Specify the measured data.

### Description

Sets the data in a structure. Stores the contents of the specified structure in the data member.
If not specified, the data member is initialized.

### Reference

```
initialize setAlarm setStatus setValue
```

## CDAQDARWINDataInfo::setLine

### Syntax

```
int setLine(const char * strLine, int lenLine, int * pFlag);
```

### Parameters

| | |
|---|---|
| strLine | Specify the line using a string. |
| lenLine | Specify the byte size of the line. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Analyzes the specified line and stores the information in the data member.

The line format is the output format of the measured data in ASCII code.

If an association with the channel information data exists, the information that can be retrieved from the specified line is stored in the channel information data field.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not data | The input data is too short. Or, the string incorrect. |

### Reference

```
getClassDARWINChInfo getStatus setAlarm setStatus setValue
toAlarmType CDAQDARWINChInfo::setChNo
CDAQDARWINChInfo::setChType CDAQDARWINChInfo::setPoint
CDAQDARWINChInfo::setUnit CDAQDARWINChInfo::toChType
CDAQDARWINChInfo::toFlag CDAQDARWINChInfo::toStatus
```

## CDAQDARWINDataInfo::setStatus

### Syntax

```
void setStatus(int iDataStatus);
```

### Parameters

| | |
|---|---|
| iDataStatus | Specify the data status. |

### Description

Stores the data status field of the data member to the specified value.

## CDAQDARWINDataInfo::toAlarmType

### Syntax

```
static int toAlarmType(const char * strAlarm);
```

### Parameters

| | |
|---|---|
| strAlarm | Specify the name of the alarm type. |

### Description

Converts the specified string into an alarm type.

Returns ìNo alarm”if the outside the range.

### Return value

Returns the alarm type.

# CDAQDARWINDateTime Class

- **CDAQDateTime**
  - **CDAQDARWINDateTime**

This class is derived from the CDAQDateTime class.
Class for storing time information data of the DARWIN series.
It is a wrapper class of the DarwinDateTime structure.
Stores the time information data that is retrieved when the measured data through the talker function is retrieved.
When storing the measured data through the talker function, the following member functions corresponding to the code are used.

| Code | Member Functions |
|---|---|
| ASCII code | setLine |
| Binary code | setByte |

In the case of ASCII codes, member functions are provided that analyze and store the output format strings below.

DATEYYMMDD
TIMEhhmmss

In the case of binary codes, member functions are provided that analyze and store 6 bytes or 8 bytes (loading instantaneous value data) of data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQDARWINDateTime | Constructs an object. |
| ~CDAQDARWINDateTime | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getDarwinDateTime | Gets the data in a structure. |
| setDarwinDateTime | Sets the data in a structure. |
| initDarwinDateTime | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| getYear | Gets the year. |
| getMonth | Gets the month. |
| getDay | Gets the day. |
| getHour | Gets the hours. |
| getMinute | Gets the minutes. |
| getSecond | Gets the seconds. |
| getFullYear | Gets the 4-digit year. |

### Output Format Manipulation

| | |
|---|---|
| setLine | Stores the time information data from the string. |
| setByte | Stores the time information data from the byte array. |

### Utilities

| | |
|---|---|
| toString | Converts the time information data into a string. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

### Overridden Members

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| setNow | Sets the current date/time. |

### Utilities

| | |
|---|---|
| iisObject | Checks an object. |

### Inherited Members

See CDAQDateTime

```
getMilliSecond getTime setMilliSecond setTime toLocalDateTime
```

## Protected Members

### Data Members

| | |
|---|---|
| m_DarwinDateTime | Field for storing the time information data. |

### Conversion

| | |
|---|---|
| toDateTime | Converts the data member. |

### Inherited Members

See CDAQDateTime

```
m_milliSecond m_time
```

## Private Members

None

## Member Functions (Alphabetical Order)

## CDAQDARWINDateTime::CDAQDARWINDateTime

### Syntax

```
CDAQDARWINDateTime(DarwinDateTime * pDarwinDateTime = NULL);
CDAQDARWINDateTime(int iYaer, int iMonth, int iDay, int iHour
= 0, int iMinute = 0, int iSecond = 0);
virtual ~CDAQDARWINDateTime(void);
```

### Parameters

| | |
|---|---|
| pDarwinDateTime | Specify the time information data. |
| iYaer | Specify the last two digits of the year. |
| iMonth | Specify the month. |
| iDay | Specify the day. |
| iHour | Specify the hours. |
| iMinute | Specify the minutes. |
| iSecond | Specify the seconds. |

### Description

Constructs or destructs an object. When constructing, the specified data is stored in the data member. If not specified, the data member is initialized.

### Reference

```
initialize setDarwinDateTime toDateTime
CDAQDateTime::CDAQDateTime
```

## CDAQDARWINDateTime::getDarwinDateTime

### Syntax

```
void getDarwinDateTime(DarwinDateTime * pDarwinDateTime);
```

### Parameters

| | |
|---|---|
| pDarwinDateTime | Specify the destination where the time information data is to be returned. |

### Description

Gets the data in a structure. Stores the contents of the data member in the specified structure.

## CDAQDARWINDateTime::getDay

### Syntax

```
int getDay(void);
```

### Description

Gets the day from the data member.

### Return value

Returns the day.

## CDAQDARWINDateTime::getFullYear

### Syntax

```
int getFullYear(void);
```

### Description

Gets the year from the data member.

Corrects the last 2 digits and returns a 4 digit value.

### Return value

Returns the year.

### Reference

`getYear`

## CDAQDARWINDateTime::getHour

### Syntax

```
int getHour(void);
```

### Description

Gets the hours from the data member.

### Return value

Returns the hours.

## CDAQDARWINDateTime::getMinute

### Syntax

```
int getMinute(void);
```

### Description

Gets the minutes from the data member.

### Return value

Returns the minutes.

## CDAQDARWINDateTime::getMonth

### Syntax

```
int getMonth(void);
```

### Description

Gets the month from the data member.

### Return value

Returns the month.

## CDAQDARWINDateTime::getSecond

### Syntax

```
int getSecond(void);
```

### Description

Gets the seconds from the data member.

### Return value

Returns the seconds.

## CDAQDARWINDateTime::getYear

### Syntax

```
int getYear(void);
```

### Description

Gets the year from the data member.

Returns the last two digits.

### Return value

Returns the year.

## CDAQDARWINDateTime::initDarwinDateTime

### Syntax

```
static void initDarwinDateTime(DarwinDateTime *
pDarwinDateTime);
```

### Parameters

pDarwinDateTime  Specify the time information field.

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQDARWINDateTime::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member. The default value as a general rule is 0.

### Reference

`initDarwinDateTime CDAQDateTime::initialize`

## CDAQDARWINDateTime::isObject

### Syntax

```
virtual int isObject(const char * classname =
“CDAQDARWINDateTime”;
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a boolean value.

### Reference

`CDAQDateTime::isObject`

## CDAQDARWINDateTime::operator=

### Syntax

```
CDAQDARWINDateTime & operator=(CDAQDARWINDateTime &
cDARWINDateTime);
```

### Parameters

cDARWINDateTime Specify an object for substitution.

### Description

Copies the data member of the specified object .

### Return value

Returns the reference to the object.

### Reference

`toDateTime`

## CDAQDARWINDateTime::setByte

### Syntax

```
int setByte(const unsigned char pByte[], int numByte);
```

### Parameters

| | |
|---|---|
| pByte | Specify the head pointer of the byte array. |
| numByte | Specify the byte size of the byte array. |

### Description

Analyzes the specified byte array and stores the information in the data member.
The format in byte array is the date/time section of the output format of the measured data in binary code.
If the specification is more than 6 bytes, the 7th byte is interpreted as milliseconds.
In this case, a value of 0.1 seconds is converted to milliseconds.

### Return value

Returns an error number.
Error:

| | |
|---|---|
| Not data | The input data is too short. |

### Reference

`toDateTime`

## CDAQDARWINDateTime::setDarwinDateTime

### Syntax

```
void setDarwinDateTime(DarwinDateTime * pDarwinDateTime);
```

### Parameters

| | |
|---|---|
| pDarwinDateTime | Specify the time information data. |

### Description

Sets the data in a structure. Stores the contents of the specified structure in the data member.
If not specified, the data member is initialized.

### Reference

`initialize toDateTime`

## CDAQDARWINDateTime::setLine

### Syntax

```
int setLine(const char * strLine, int lenLine);
```

### Parameters

| | |
|---|---|
| strLine | Specify the line using a string. |
| lenLine | Specify the byte size of the line. |

### Description

Analyzes the specified line and stores the information in the data member.

The line format is the first two lines of the output format of the measured data in ASCII code.

Specify the date and time in separate lines.

If the front of the line is D, it is interpreted as YYMMDD format.

If the front of the line is T, it is interpreted as HHMMSS format.

Otherwise, it is interpreted as YY-MM-DD hh:mm:ss.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not data | The input data is too short. Or, the string incorrect. |

### Reference

`toDateTime`

## CDAQDARWINDateTime::setNow

### Syntax

```
voidsetNow(void);
```

### Description

Gets the current data/time and stores it in the data member.

### Reference

`initialize`
`CDAQDateTime::setNow`

## CDAQDARWINDateTime::toDateTime

### Syntax

```
void toDateTime(void);
```

### Description

Converts the contents of the structure of the time information data field of the data member structure into seconds elapsed since Jan. 1, 1970, and stores the result in the seconds field.

Years less than 70 are corrected by adding 2000.

### Reference

`getDay getHour getMinute getMonth getSecond getYear setMilliSecond setTime`

## CDAQDARWINDateTime::toString

### Syntax

```
int toString(char * strDateTime, int lenDateTime);
```

### Parameters

| | |
|---|---|
| strDateTime | Specify the field where the string is to be stored. |
| lenDateTime | Specify the byte size of the field where the string is to be stored. |

### Description

Converts the time information data from the data member into a string and stores to the specified field.

The format is YY/MM/DD,hh:mm:ss. This is the parameter of the SD command of the DARWIN communication function..

### Return value

Returns the length of the created string.

# CDAQDARWINSysInfo Class

This class stores the system configuration data and the scan interval of the DARWIN series.
It is a wrapper class of the DarwinSystemInfo structure.
Stores the data that is retrieved when the system configuration data through the talker function is retrieved.
This class can be used as an interface for retrieving system configuration data when retrieving system configuration data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQDARWINSysInfo | Constructs an object. |
| ~CDAQDARWINSysInfo | Destructs an object. |

### Structure Manipulation

| | |
|---|---|
| getDarwinSystemInfo | Gets the data in a structure. |
| setDarwinSystemInfo | Sets the data in a structure. |
| initDarwinSystemInfo | Initializes the data in a structure. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getInterval | Gets the scan interval. |
| isExist | Checks the presence or absence of the unit. |
| getModuleName | Gets the module name. |
| setLine | Stores the system configuration data from the string. |
| getModuleCode | Gets the internal code of the module. |

### Utilities

| | |
|---|---|
| toRelayName | Converts the relay value into a string. |
| isObject | Checks an object. |

### Operator

| | |
|---|---|
| operator= | Executes substitution. |

## Protected Members

### Data Members

| | |
|---|---|
| m_nInterval | Field for storing the scan interval. |
| m_systemInfo | Field for storing the system configuration data. |

### Member Access

| | |
|---|---|
| getDarwinUnitInfo | Gets the unit information structure. |
| getDarwinModuleInfo | Gets the module information structure. |

## Private Members

None

## Member Functions (Alphabetical Order)

## CDAQDARWINSysInfo::CDAQDARWINSysInfo

### Syntax

```
CDAQDARWINSysInfo(double interval = 0.0, DarwinSystemInfo *
pDarwinSystemInfo = NULL);
virtual ~CDAQDARWINSysInfo(void);
```

### Parameters

| | |
|---|---|
| interval | Specify the scan interval. |
| pDarwinSystemInfo | Specify the system configuration data. |

### Description

Constructs or destructs an object.

When constructing, the specified data is stored in the data member. If not specified, the data member is initialized.

### Reference

`setDarwinSystemInfo`

## CDAQDARWINSysInfo::getDarwinModuleInfo

### Syntax

```
DarwinModuleInfo * getDarwinModuleInfo(int unitNo, int
slotNo);
```

### Parameters

| | |
|---|---|
| unitNo | Specify the unit number. |
| slotNo | Specify the slot number. |

### Description

Gets the module information field from the system data field of the data member corresponding to the specified unit number and slot number.

Returns NULL if the value is outside the range.

### Return value

Returns a pointer to the structure.

## CDAQDARWINSysInfo::getDarwinSystemInfo

### Syntax

```
void getDarwinSystemInfo(DarwinSystemInfo *
pDarwinSystemInfo);
```

### Parameters

pDarwinSystemInfo Specify the destination where the system configuration data is to be returned.

### Description

Gets the data in a structure. Stores the contents of the data member in the specified structure.

## CDAQDARWINSysInfo::getDarwinUnitInfo

### Syntax

```
DarwinUnitInfo * getDarwinUnitInfo(int unitNo);
```

### Parameters

unitNo Specify the unit number.

### Description

Gets the unit information field from the system data field of the data member corresponding to the specified unit number.

Returns NULL if the value is outside the range.

### Return value

Returns a pointer to the structure.

## CDAQDARWINSysInfo::getInterval

### Syntax

```
double getInterval(void);
```

### Description

Gets value of the measurement interval field from the data member.

### Return value

Returns the scan interval.

## CDAQDARWINSysInfo::getModuleCode

### Syntax

```
int getModuleCode(int unitNo, int slotNo);
```

### Parameters

| | |
|---|---|
| unitNo | Specify the unit number. |
| slotNo | Specify the slot number. |

### Description

Gets the structure of the specified module internal code structure from the System configuration data field of the data member. Returns 0 if it does not exist.

### Return value

Returns the internal code.

### Reference

`getDarwinModuleInfo`

## CDAQDARWINSysInfo::getModuleName

### Syntax

```
const char * getModuleName(int unitNo, int slotNo);
```

### Parameters

| | |
|---|---|
| unitNo | Specify the unit number. |
| slotNo | Specify the slot number. |

### Description

Gets the name of the specified module from the data member.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`getDarwinModuleInfo`

## CDAQDARWINSysInfo::initDarwinSystemInfo

### Syntax

```
static void initDarwinSystemInfo(DarwinSystemInfo *
pDarwinSystemInfo);
```

### Parameters

| | |
|---|---|
| pDarwinSystemInfo | Specify the system configuration data field. |

### Description

Initializes the specified field.

The default value as a general rule is 0.

## CDAQDARWINSysInfo::initialize

### Syntax

```
voidinitialize(void);
```

### Description

Initializes the data member. The default value as a general rule is 0.

The scan interval field is not initialized.

### Reference

```
initDarwinSystemInfo
```

## CDAQDARWINSysInfo::isExist

### Syntax

```
int isExist(int unitNo);
```

### Parameters

unitNo Specify the unit number.

### Description

Checks the validity of the specified unit.

If it does not exist, returns Invalid value.

### Return value

Returns a boolean value.

### Reference

```
getDarwinUnitInfo
```

## CDAQDARWINSysInfo::isObject

### Syntax

```
virtual int isObject(const char * classname =
“CDAQDARWINSysInfo”;
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

### Return value

Returns a boolean value.

## CDAQDARWINSysInfo::operator=

### Syntax

```
CDAQDARWINSysInfo & operator=(CDAQDARWINSysInfo &
cDARWINSysInfo);
```

### Parameters

cDARWINSysInfo  Specify an object for substitution.

### Description

Copies the data member of the specified object.

### Return value

Returns the reference to the object.

## CDAQDARWINSysInfo::setDarwinSystemInfo

### Syntax

```
void setDarwinSystemInfo(DarwinSystemInfo *
pDarwinSystemInfo);
```

### Parameters

pDarwinSystemInfo  Specify the system configuration data.

### Description

Sets the data in a structure. Stores the contents of the specified structure in the data member.

If not specified, the data member is initialized.

### Reference

`initialize`

## CDAQDARWINSysInfo::setLine

### Syntax

```
int setLine(const char * strLine, int lenLine, int * pFlag);
```

### Parameters

| | |
|---|---|
| strLine | Specify the line using a string. |
| lenLine | Specify the byte size of the line. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Analyzes the specified line and stores the information in the data member.

The line format is the output format of the system configuration data.

If the front of the line is M, it is interpreted as measurement interval format.

If the front of the line is E, it is interpreted as the last line.

If the front of the line is I, it is interpreted as the main unit.

Otherwise, it is interpreted as a subunit.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not data | The input data is too short. Or, the string incorrect. |

### Reference

`getDarwinUnitInfo`

## CDAQDARWINSysInfo::toRelayName

### Syntax

```
static int toRelayName(int relayType, int relayNo, char *
strName, int lenName);
```

### Parameters

| | |
|---|---|
| relayType | Specify the relay type. |
| relayNo | Specify the relay number. |
| strName | Specify the field where the string is to be stored. |
| lenName | Specify the byte size of the field where the string is to be stored. |

### Description

Creates a relay name from the specified relay type and relay number as a string and stores the string in the specified field.

If the relay number is 0, the string is set to ìOFF”

### Return value

Returns the length of the created string.

### Reference

`CDAQDARWINChInfo::toChName`

# 8.1 Functions and Their Functionalities - DARWIN/ Visual C -

This section indicates the correspondence between the functionalities that the API supports and the C functions.

***Note***

This API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not implemented. The functions can be added by using the commands of the DARWIN communication function.

The word “command”in the table signifies the command of the DARWIN communication function. For the details on the command, see the Communication Interface User’s Manual.

## Communication Functions

| Function | Function |
|---|---|
| Connect to DARWIN. | openDARWIN |
| Disconnect from DARWIN. | closeDARWIN |
| Send data line by line.<br>Used when controlling the data reception in a special way. | sendLineDARWIN |
| Receive data line by line.<br>Used when controlling the data reception in a special way. | receiveLineDARWIN |
| Receive data by bytes.<br>Used when controlling the data reception in a special way. | receiveByteDARWIN |
| Send the command and receive the response.<br>Used when implementing function commands. | runCommandDARWIN |
| Get the status byte.<br>Sends the status byte output command and receives the response. | getStatusByteDARWIN |
| Send a trigger command (ESC T), and receive the response.<br>Used when implementing a new talker function. | sendTriggerDARWIN |
| Set the communication timeout. | setTimeOutDARWIN |

***Note***

Setting of the communication timeout is not recommended because unexpected disconnection may occur due to the conflict with the timeout time when data is retrieved.

## Control Functions

| Functionality | Command | Function |
|---|---|---|
| Switch the setting mode. | DS | transModeDARWIN |
| System reconfiguration | RS | initSystemDARWIN |
| RAM clear (Initialize the operation mode setup parameter.) | RC | |
| Alarm reset | AR | |
| Date/Time setting | SD | setDateTimeDARWIN |
| | SD | setDateTimeNowDARWIN |
| Calculation start/stop | EX | computeDARWIN |
| Report start/stop | DR | reportingDARWIN |
| Establish setup mode | XE | establishDARWIN |

## Setup Functions

| Function | | Command | Function |
|---|---|---|---|
| Range Settings | SKIP (not used) | SR | setSKIPDARWIN |
| | DC voltage input | SR | setVOLTDARWIN |
| | Thermocouple input | SR | setTCDARWIN |
| | RTD input | SR | setRTDDARWIN |
| | Contact input (DI) | SR | setDIDARWIN |
| | Difference computation between channels | SR | setDELTADARWIN |
| | Remote RJC | SR | setRRJCDARWIN |
| | DC current | SR | setMADARWIN |
| | Strain | SR | setSTRAINDARWIN |
| | Pulse | SR | setPULSEDARWIN |
| | Power monitor | SR | setPOWERDARWIN |
| Set the scale unit. | | SN | setScallingUnitDARWIN |
| Set the alarm. | | SA | setAlarmDARWIN |

## Data Retrieval Functions

| Function | Command | Function |
|---|---|---|
| Get system configuration data. | TS, CF | getSystemConfigDARWIN |
| Declare the retrieval of the channel information data. | TS, LF | talkChInfoDARWIN |
| Get channel information data. | | getChInfoDARWIN |
| Declare the retrieval of the measured data (ASCII code). | TS, FM | talkDataByASCIIDARWIN |
| Get the measured data (ASCII code). | | getChDataByASCIIDARWIN |
| Declare the retrieval of the measured data (binary code). | TS, FM | talkDataByBinaryDARWIN |
| Get the measured data (binary code). | | getChDataByBinaryDARWIN |
| Declare the retrieval of the setup data (operation mode). | TS, LF | talkOperationDataDARWIN |
| Get the setup data (operation mode). | | getSetDataByLineDARWIN |
| Declare the retrieval of the setup data (setup mode). | TS, LF | talkSetupDataDARWIN |
| Get the setup data (setup mode). | | getSetDataByLineDARWIN |
| Declare the retrieval of the setup data(A/D calibration mode). | TS, LF | talkCalibrationDataDARWIN |
| Get the setup data (A/D calibration mode) | | getSetDataByLineDARWIN |
| Retrieve the report status | TS, RF | getReportStatusDARWIN |

## Utilities

| Function | | Function |
|---|---|---|
| Convert the measured value into double-precision floating point number. | | toDoubleValueDARWIN |
| Convert the measured value into string. | | toStringValueDARWIN |
| Alarm | Get the alarm type string. | toAlarmNameDARWIN |
| | | getAlarmNameDARWIN |
| | Get the maximum length of the alarm string. | getMaxLenAlarmNameDARWIN |
| Get the version number of this API. | | getVersionAPIDARWIN |
| Get the revision number of this API. | | getRevisionAPIDARWIN |
| Get the error message string. | | getErrorMessageDARWIN |
| Get the maximum length of the error message string. | | getMaxLenErrorMessageDARWIN |

## Implementing Function Commands

Function commands can be implemented by using the DARWIN communication function commands. Below are the DARWIN communication function commands that can be used.

- All communication commands for the DA100 Data Acquisition Unit
- All communication commands for the DC100 Data Collector
- All communication commands for the DR130, DR231, DR232, DR241, and DR242 Hybrid Recorders.

# 8.2 Programming - DARWIN/Visual C -

## Adding the Path to the Include File

Add the path of the include file (DAQDARWIN.h) to the project. The method of adding the include file varies depending on the environment used.

## Declaration in the Source File

Write the declaration in the source file.

```
#include "DAQDARWIN.h"
```

***Note***

The include file of the common section (DAQHandler.h) is referenced from the include file described above. Thus, declaration for it is not necessary.

## Load Library Statement

The statement below is added so that the executable module (.dll) of the API can link to the process.

The executable module (.dll) of the API is mapped within the address space (LoadLibrary). Next, the address of the export function in the executable module is retrieved (GetProcAddress).

The callback type of the function pointer is the function name with a prefix “DLL”added and converted to uppercase. It is defined in the include file of the API.

```
HMODULE pDll = LoadLibrary("DAQDARWIN");
DLLOPENDARWIN openDARWIN = (DLLOPENMX)GetProcAddress(pDll,
"openDARWIN");
```

# Retrieval of the Measured Data

## Program Example 1

This program retrieves measured data.

```
////////////////////////////////////////////////////////////
// DARWIN sample for measurement
#include <stdio.h>
#include "DAQDARWIN.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  DAQDARWIN comm; //discriptor
  int flag;
  DarwinDateTime datetime;
  DarwinChInfo chinfo;
  DarwinDataInfo datainfo;
#ifdef WIN32
  HMODULE pDll; //DLL handle
  //callback
  DLLOPENDARWIN openDARWIN;
  DLLCLOSEDARWIN closeDARWIN;
  DLLTALKDATABYBINARYDARWIN talkDataByBinaryDARWIN;
  DLLGETCHDATABYBINARYDARWIN getChDataByBinaryDARWIN;
  //laod
  pDll = LoadLibrary("DAQDARWIN");
   //get address
  openDARWIN = (DLLOPENDARWIN)GetProcAddress(pDll,
"openDARWIN");
  closeDARWIN = (DLLCLOSEDARWIN)GetProcAddress(pDll,
"closeDARWIN");
  talkDataByBinaryDARWIN =
(DLLTALKDATABYBINARYDARWIN)GetProcAddress(pDll,
"talkDataByBinaryDARWIN");
  getChDataByBinaryDARWIN =
(DLLGETCHDATABYBINARYDARWIN)GetProcAddress(pDll,
"getChDataByBinaryDARWIN");
#endif //WIN32
  //connect
  comm = openDARWIN("192.168.1.11", &rc);
  //get
  rc = talkDataByBinaryDARWIN(comm, 0, 1, 0, 2, &datetime);
  do { //meaasured data
    rc = getChDataByBinaryDARWIN(comm, &chinfo, &datainfo,
&flag);
  } while (! (flag & DAQDARWIN_FLAG_ENDDATA));
  //disconnect
  rc = closeDARWIN(comm);
#ifdef WIN32
  FreeLibrary(pDll);
#endif
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Overview

When retrieving data, the talker is executed first, and then data retrieval is executed in units of channels or lines. The end is determined by the flag.

### Include File Statement

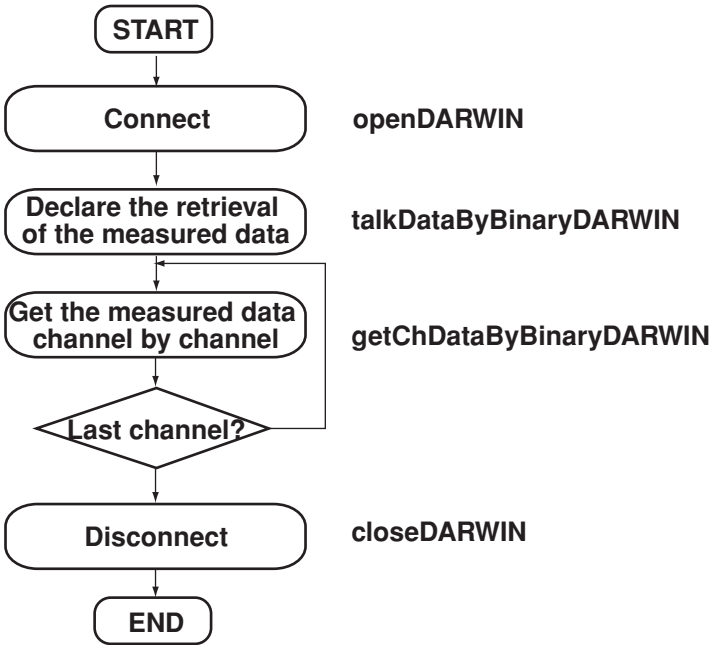
```
#include "DAQDARWIN.h"
```

### Load Library Statement

The load library statement is from #ifdef WIN32 to #endif //WIN32.A callback type (such as DLLOPENDARWIN) is used.

### Flow of the Process

The flow chart shown below omits the declaration section.




### Communication Process

First, make a connection. After making the connection, the functions become available. As a termination procedure, disconnect the communication.

**Communication Connection**

```
openDARWIN("192.168.1.11", &rc)
```

The IP address of the DARWIN is specified.

The communication report specifies the communication constant DAQDARWIN report number."

**Talker**

```
talkDataByBinaryDARWIN(comm, 0, 1, 0, 2, &datetime)
```

Sends the retrieval request of the measured data of channels 1 and 2 of subunit number 0 and retrieves the time information (declares the retrieval of the measured data).

**Retrieval of the Measured Data**

```
getChDataByBinaryDARWIN(comm, &chinfo, &datainfo, &flag)
```

Gets the measured data channel by channel. It is repeated up to the specified channel.

The end is determined by the flag status of "end data.".

**Comm. cut**

```
closeDARWIN(comm)
```

Drops the connection.

# Retrieval of Setup Data and Configuration

## Program Example 2

This program executes the following two items. This program contains both items, but each item can be written and executed separately.

- Retrieval of setup data
- Setting a DC voltage range to the channel

```
////////////////////////////////////////////////////////////
// DARWIN sample for configuration
#include <stdio.h>
#include "DAQDARWIN.h"//////////////////////////////////////
//////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  DAQDARWIN comm; //discriptor
  int flag;
  char line[BUFSIZ];
  int len;
#ifdef WIN32
  HMODULE pDll; //DLL handle
  //callback
  DLLOPENDARWIN openDARWIN;
  DLLCLOSEDARWIN closeDARWIN;
  DLLTALKOPERATIONDATADARWIN talkOperationDataDARWIN;
  DLLGETSETDATABYLINEDARWIN getSetDataByLineDARWIN;
  DLLSETVOLTDARWIN setVOLTDARWIN;
  //laod
  pDll = LoadLibrary("DAQDARWIN");
  //get address
  openDARWIN = (DLLOPENDARWIN)GetProcAddress(pDll,
"openDARWIN");
  closeDARWIN = (DLLCLOSEDARWIN)GetProcAddress(pDll,
"closeDARWIN");
  talkOperationDataDARWIN =
(DLLTALKOPERATIONDATADARWIN)GetProcAddress(pDll,
"talkOperationDataDARWIN";
  getSetDataByLineDARWIN =
(DLLGETSETDATABYLINEDARWIN)GetProcAddress(pDll,
"getSetDataByLineDARWIN";
  setVOLTDARWIN = (DLLSETVOLTDARWIN)GetProcAddress(pDll,
"setVOLTDARWIN");
#endif //WIN32
  //connect
  comm = openDARWIN("192.168.1.11", &rc);
```

```
  //get
  rc = talkOperationDataDARWIN(comm, 0, 1, 0, 2);
  do {
    rc = getSetDataByLineDARWIN(comm, line, BUFSIZ, &len,
&flag);
  } while (! (flag & DAQDARWIN_FLAG_ENDDATA));
  //range
  rc = setVOLTDARWIN(comm, DAQDARWIN_RANGE_VOLT_20MV, 0, 1, 2,
0, 0, 0, 0, 0);
  //disconnect
  rc = closeDARWIN(comm);
#ifdef WIN32
  FreeLibrary(pDll);
#endif
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Load Library Statement

The load library state is from #ifdef WIN32 to #endif //WIN32.A callback type (such as DLLOPENDARWIN) is used.

### Talker

`talkOperationDataDARWIN(comm, 0, 1, 0, 2)`

Specifies the type of setup data to be retrieved (setup data of the operation mode) and the channel range (channels 1 and 2 of subunit number 0).

### Retrieval of Setup Data

`getSetDataByLineDARWIN(comm, line, BUFSIZ, &len, &flag)`

Gets the output by the talker function line by line.

The end is determined by the flag status of “end data.”.

### Setting a DC Voltage Range to the Channel

`setVOLTDARWIN(comm, DAQDARWIN_RANGE_VOLT_20MV, 0, 1, 2, 0, 0, 0, 0, 0)`

Sets the measurement range of channels 1 and 2 of subunit number 0 to 20 mV.

The scaling function is not used.

The constant 20 mV is used to specify the range type.

# Implementing Function Commands

## Program Example 3

This program switches the DARWIN to the operation mode. The program uses the DS command of the DARWIN communication function.

```
////////////////////////////////////////////////////////////
// DARWIN sample for command
#include <stdio.h>
#include "DAQDARWIN.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  DAQDARWIN comm; //discriptor
  char line[BUFSIZ];
#ifdef WIN32
  HMODULE pDll; //DLL handle
  //callback
  DLLOPENDARWIN openDARWIN;
  DLLCLOSEDARWIN closeDARWIN;
  DLLRUNCOMMANDDARWIN runCommandDARWIN;
  //laod
  pDll = LoadLibrary("DAQDARWIN");
  //get address
  openDARWIN = (DLLOPENDARWIN)GetProcAddress(pDll,
"openDARWIN");
  closeDARWIN = (DLLCLOSEDARWIN)GetProcAddress(pDll,
"closeDARWIN");
  runCommandDARWIN = (DLLRUNCOMMANDDARWIN)GetProcAddress(pDll,
"runCommandDARWIN");
#endif //WIN32
  //connect
  comm = openDARWIN("192.168.1.11", &rc);
  //run
  sprintf(line, "DS%d" DAQDARWIN_MODE_OPE);
  rc = runCommandDARWIN(comm, line);
  //disconnect
  rc = closeDARWIN(comm);
#ifdef WIN32
  FreeLibrary(pDll);
#endif
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Creating the Message

```
sprintf(line, "DS%d" DAQDARWIN_MODE_OPE)
```

Stores the DS0 (switch to operation mode) command message of the DARWIN communication function in the line array.
The constant “operation mode”is used to specify operation mode.

### Sending Messages

```
runCommandDARWIN(comm, line)
```

Sends the command message and receives the response. The number of bytes of the message is not specified (omitted). This member adds a terminator to the message and sends it.

# Implementing the Talker Function

## Program Example 4

This program retrieves the system configuration data. The program executes the TS and CF commands of the DARWIN communication function.

```
////////////////////////////////////////////////////////////
// DARWIN sample for talker
#include <stdio.h>
#include "DAQDARWIN.h"//////////////////////////////////////
//////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  DAQDARWIN comm; //discriptor
  char line[BUFSIZ];
  int len;
#ifdef WIN32
  HMODULE pDll; //DLL handle
  //callback
  DLLOPENDARWIN openDARWIN;
  DLLCLOSEDARWIN closeDARWIN;
  DLLSENDLINEDARWIN sendLineDARWIN;
  DLLRECEIVELINEDARWIN receiveLineDARWIN;
  DLLSENDTRIGGERDARWIN sendTriggerDARWIN;
  DLLRUNCOMMANDDARWIN runCommandDARWIN;
  //laod
  pDll = LoadLibrary("DAQDARWIN");
  //get address
  openDARWIN = (DLLOPENDARWIN)GetProcAddress(pDll,
"openDARWIN");
  closeDARWIN = (DLLCLOSEDARWIN)GetProcAddress(pDll,
"closeDARWIN");
  sendLineDARWIN = (DLLSENDLINEDARWIN)GetProcAddress(pDll,
"sendLineDARWIN");
  receiveLineDARWIN =
(DLLRECEIVELINEDARWIN)GetProcAddress(pDll,
"receiveLineDARWIN");
  sendTriggerDARWIN =
(DLLSENDTRIGGERDARWIN)GetProcAddress(pDll,
"sendTriggerDARWIN");
  runCommandDARWIN = (DLLRUNCOMMANDDARWIN)GetProcAddress(pDll,
"runCommandDARWIN");
#endif //WIN32
  //connect
  comm = openDARWIN("192.168.1.11", &rc);
  //talker
  sprintf(line, ìTS%d” DAQDARWIN_TALK_SYSINFODATA);
  rc = runCommandDARWIN(comm, line);
  rc = sendTriggerDARWIN(comm);
  rc = sendLineDARWIN(comm, "CF0";

  do {
    rc = receiveLineDARWIN(comm, line, BUFSIZ, &len);
  } while ((rc == 0) && (line[0] != 'E');
```

```
  //disconnect
  rc = closeDARWIN(comm);
#ifdef WIN32
  FreeLibrary(pDll);
#endif
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Load Library Statement

The load library statement is from #ifdef WIN32 to #endif //WIN32.A callback type (such as DLLOPENDARWIN) is used.

### Talker

`sprintf(line, "TS%d" DAQDARWIN_TALK_SYSINFODATA)`

Stores the TS5 (declares the retrieval of the system configuration data) command message of the DARWIN communication function to line.

The constant “system configuration data output”is used to specify the output of the system configuration data.

`runCommandDARWIN(comm, line)`

Sends the message and receives the response. This member adds a terminator to the message and sends it.

`sendTriggerDARWIN(comm)`

Sends a trigger (device trigger).

### Designation of System Configuration Output Format

`sendLineDARWIN(comm, "CF0"`

Sends the CF0 communication function command (specify the module information that has been configured for the system). This member adds a terminator to the message and sends it.

### Data Retrieval

`receiveLineDARWIN(comm, line, BUFSIZ, &len)`

Gets the system configuration data line by line. The program ends when an end mark (E) is returned.

***Note***

The receiveLine function simply receives the data. The user must write statements for determining the end of the data.

## Error Processing

- Most functions return the result of the function process using an error number.
- The function getErrorMessageDARWIN can be used to get the error message string corresponding to the error number. A function for retrieving the maximum length of the error message string is also available.

# 9.1 Functions and Their Functionalities - DARWIN/ Visual Basic -

This section indicates the correspondence between the functionalities that the API supports and the Visual Basic functions.

***Note***

This API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not implemented. The functions can be added by using the commands of the DARWIN communication function.

The word “command”in the table signifies the command of the DARWIN communication function. For the details on the command, see the Communication Interface User’s Manual.

## Communication Functions

| Function | Function |
|---|---|
| Connect to DARWIN. | openDARWIN |
| Disconnect from DARWIN. | closeDARWIN |
| Send data line by line.<br>Used when controlling the data transmission in a special way. | sendLineDARWIN |
| Receive data line by line.<br>Used when controlling the data reception in a special way. | receiveLineDARWIN |
| Receives data in units of bytes.<br>Used when controlling the data reception in a special way. | receiveByteDARWIN |
| Sends the command and receive the response.<br>Used when implementing function commands. | runCommandDARWIN |
| Get the status byte.<br>Sends the status byte output command and receives the response. | getStatusByteDARWIN |
| Send a trigger command (ESC T), and receive the response.<br>Used when implementing a new talker function. | sendTriggerDARWIN |
| Set the communication timeout. | setTimeOutDARWIN |

***Note***

Setting of the communication timeout is not recommended because unexpected disconnection may occur due to the conflict with the timeout time when data is retrieved.

## Control Functions

| Function | Command | Function |
|---|---|---|
| Switch the setting mode. | DS | transModeDARWIN |
| System reconfiguration | RS | initSystemDARWIN |
| RAM clear (Initialize the operation mode setup parameter.) | RC | |
| Alarm reset | AR | |
| Date/time setting | SD | setDateTimeDARWIN |
| | SD | setDateTimeNowDARWIN |
| Calculation start/stop | EX | computeDARWIN |
| Report start/stop | DR | reportingDARWIN |
| Finalize setup mode | XE | establishDARWIN |

## Setup Functions

| Function | | Command | Function |
|---|---|---|---|
| Range Settings | SKIP (not used) | SR | setSKIPDARWIN |
| | DC voltage input | SR | setVOLTDARWIN |
| | Thermocouple input | SR | setTCDARWIN |
| | RTD input | SR | setRTDDARWIN |
| | Contact input (DI) | SR | setDIDARWIN |
| | Difference computation between channels | SR | setDELTADARWIN |
| | Remote RJC | SR | setRRJCDARWIN |
| | DC current | SR | setMADARWIN |
| | Strain | SR | setSTRAINDARWIN |
| | Pulse | SR | setPULSEDARWIN |
| | Power monitor | SR | setPOWERDARWIN |
| Set the scale unit. | | SN | setScallingUnitDARWIN |
| Set the alarm. | | SA | setAlarmDARWIN |

## Data Retrieval Functions

| Function | Command | Function |
|---|---|---|
| Get system configuration data. | TS, CF | getSystemConfigDARWIN |
| Declare the retrieval of the channel information data. | TS, LF | talkChInfoDARWIN |
| Get channel information data. | | getChInfoDARWIN |
| Declare the retrieval of the measured data (ASCII code). | TS, FM | talkDataByASCIIDARWIN |
| Get the measured data (ASCII code). | | getChDataByASCIIDARWIN |
| Declare the retrieval of the measured data (binary code). | TS, FM | talkDataByBinaryDARWIN |
| Get the measured data (binary code). | | getChDataByBinaryDARWIN |
| Declare the retrieval of the setup data (operation mode). | TS, LF | talkOperationDataDARWIN |
| Get the setup data (operation mode). | | getSetDataByLineDARWIN |
| Declare the retrieval of the setup data(setup mode). | TS, LF | talkSetupDataDARWIN |
| Get the setup data (setup mode). | | getSetDataByLineDARWIN |
| Declare the retrieval of the setup data (A/D calibration mode). | TS, LF | talkCalibrationDataDARWIN |
| Get the setup data (A/D calibration mode) | | getSetDataByLineDARWIN |
| Retrieve the report status | TS, RF | getReportStatusDARWIN |

## Utilities

| Function | | Function |
|---|---|---|
| Convert the measured value into double-precision floating point number. | | toDoubleValueDARWIN |
| Convert the measured value into string. | | toStringValueDARWIN |
| Alarm | Get the alarm type string. | toAlarmNameDARWIN |
| | Get the maximum length of the alarm string. | getMaxLenAlarmNameDARWIN |
| Get the version number of this API. | | getVersionAPIDARWIN |
| Get the revision number of this API. | | getRevisionAPIDARWIN |
| Get the error message string. | | toErrorMessageDARWIN |
| Get the maximum length of the error message string. | | getMaxLenErrorMessageDARWIN |

## Implementing Function Commands

Function commands can be implemented by using the DARWIN communication function commands. Below are the DARWIN communication function commands that can be used.

- All communication commands for the DA100 Data Acquisition Unit
- All communication commands for the DC100 Data Collector
- All communication commands for the DR130, DR231, DR232, DR241, and DR242 Hybrid Recorders.

# 9.2 Programming - DARWIN/Visual Basic -

## Declaration of Types, Functions, and Constants

To use types, functions, and constants for Visual Basic, they must be declared in advance. The following methods of declaration statements are available.

### Statement of All Declarations

Adding the standard module library file for Visual Basic (DAQDARWIN.bas) to the project is equivalent to declaring all types, functions, and constants.

### Statement of Selective Declarations

The API Viewer that comes with Visual Studio can be used to copy the declaration statements of arbitrary types, functions, and constants. Load the text file for the API Viewer (DAQDARWIN.txt) on the API Viewer to use this function.
For a description of how to use the API Viewer, read the operation manual for Visual Studio.

### Writing Declarations Directly

Below is an example of a declaration statement.

```
Public Declare Function openDARWIN Lib "DAQDARWIN"(ByVal
strAddress As String, ByRef errorCode As Long) As Long
```

# Retrieval of the Measured Data

## Program Example 1

This program retrieves measured data.

```
Public Function Main()
Dim datetime As DarwinDateTime
Dim chinfo As DarwinChInfo
Dim datainfo As DarwinDataInfo
'connect
host = "192.168.1.11"
comm = openDARWIN(host, rc)
'get
rc = talkDataByBinaryDARWIN(comm, 0, 1, 0, 2, datetime)
Do
    rc = getChDataByBinaryDARWIN(comm, chinfo, datainfo, flag)
Loop While (flag And DAQDARWIN_FLAG_ENDDATA) = 0
'disconnect
rc = closeDARWIN(comm)
End Function
```

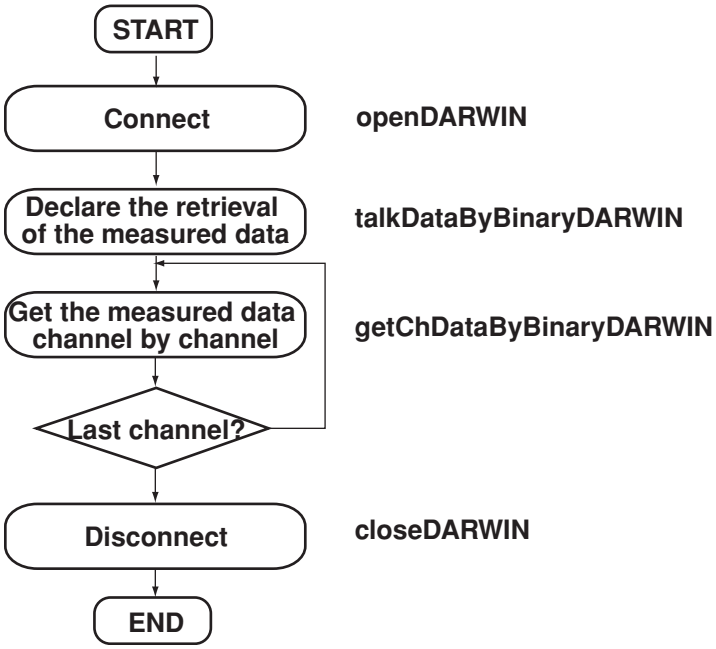
## Description

### Overview

When retrieving data, the talker is executed first, and then data retrieval is executed in units of channels or lines. The end is determined by the flag.

### Flow of the Process

The flow chart shown below omits the declaration section.



### Communication Process

First, make a connection. After making the connection, the functions become available. As a termination procedure, disconnect the communication.

### Communication Connection

```
openDARWIN(host, rc)
```

The IP address of the DARWIN is specified. The communication report specifies the communication constant “DAQDARWIN report number.”

### Talker

```
talkDataByBinaryDARWIN(comm, 0, 1, 0, 2, datetime)
```

Sends the retrieval request of the measured data of channels 1 and 2 of subunit number 0 and retrieves the time information (declares the retrieval of the measured data).

### Retrieval of the Measured Data

```
getChDataByBinaryDARWIN(comm, chinfo, datainfo, flag)
```

Gets the measured data channel by channel. It is repeated up to the specified channel.

The end is determined by the flag status of “end data.”.

### Comm. cut

```
closeDARWIN(comm)
```

Drops the connection.

# Retrieval of Setup Data and Configuration

## Program Example 2

This program executes the following two items. This program contains both items, but each item can be written and executed separately.

- Retrieval of setup data
- Setting a DC voltage range to the channel

```
Public Function Main()
Dim line As String * 256
'connect
host = "192.168.1.11"
comm = openDARWIN(host, rc)
'get
rc = talkOperationDataDARWIN(comm, 0, 1, 0, 2)
Do
    rc = getSetDataByLineDARWIN(comm, line, 256, lenLine,
flag)
Loop While (flag And DAQDARWIN_FLAG_ENDDATA) = 0
'range
rc = setVOLTDARWIN(comm, DAQDARWIN_RANGE_VOLT_20MV, 0, 1, 2,
0, 0, 0, 0, 0)
'disconnect
rc = closeDARWIN(comm)
End Function
```

## Description

### Talker

`talkOperationDataDARWIN(comm, 0, 1, 0, 2)`

Specifies the type of setup data to be retrieved (setup data of the operation mode) and the channel range (channels 1 and 2 of subunit number 0).

### Retrieval of Setup Data

`getSetDataByLineDARWIN(comm, line, 256, lenLine, flag)`

Gets the output by the talker function line by line in a 256-byte field.

The end is determined by the flag status of “end data.”.

### Setting a DC voltage range to the channel

`setVOLTDARWIN(comm, DAQDARWIN_RANGE_VOLT_20MV, 0, 1, 2, 0, 0, 0, 0, 0)`

Sets the measurement range of channels 1 and 2 of subunit number 0 to 20 mV.

The scaling function is not used.

The constant 20 mV is used to specify the range type.

# Implementing Function Commands

## Program Example 3

This program switches DARWIN to the operation mode. The program uses the DS command of DARWIN communication function.

```
Public Function Main()
'connect
host = "192.168.1.11"
comm = openDARWIN(host, rc)
'run
Line = "DS0"rc = runCommandDARWIN(comm, Line)
'disconnect
rc = closeDARWIN(comm)
End Function
```

## Description

### Sending Messages

`runCommandDARWIN(comm, line)`

Sends the command message and receives the response. This member adds a terminator to the message and sends it.

# Implementing the Talker Function

## Program Example 4

This program retrieves the system configuration data. The program executes the TS and CF commands of the DARWIN communication function.

```
Public Function Main()
Dim lenLine As Long
Dim line As String * 256
'connect
host = "192.168.1.11"
comm = openDARWIN(host, rc)
'talker
rc = runCommandDARWIN(comm, "TS5")
rc = sendTriggerDARWIN(comm)
rc = sendLineDARWIN(comm, "CF0")
Do
    rc = receiveLineDARWIN(comm, line, 256, lenLine)
Loop While ((rc = 0) And (Left(line, 1) <> "E")
'disconnect
rc = closeDARWIN(comm)
End Function
```

## Description

### Talker

`runCommandDARWIN(comm, "TS5")`

Sends the TS5 (declares the retrieval of the system configuration data) command message of the DARWIN communication function and receives the response. This member adds a terminator to the message and sends it.

`sendTriggerDARWIN(comm)`

Sends a trigger (device trigger).

### Designation of System Configuration Output Format

`sendLineDARWIN(comm, "CF0")`

Sends the CF0 communication function command (specify the module information that has been configured for the system). This member adds a terminator to the message and sends it.

### Data Retrieval

`receiveLineDARWIN(comm, line, 256, lenLine)`

Stores the system configuration data line by line to a 256-byte field. The program ends when an end mark (E) is returned.

***Note***

The receiveLine function simply receives the data. The user must write statements for determining the end of the data.

## Error Processing

- Most functions return the result of the function process using an error number.
- The function toErrorMessageDARWIN can be used to get the error message string corresponding to the error number. A function for retrieving the maximum length of the error message string is also available.

# 10.1 Details of Functions - DARWIN (Visual C/Visual Basic) -

This section describes the DARWIN functions that are used in C and Visual Basic. The functions are listed in alphabetical order by the function name.

For details on constants and types, see chapter 11.
For DARWIN terminology, see appendix 2.

Most functions return an error number as a return value. Error number 0 is returned if there is no error.

## closeDARWIN

### Syntax

```
int closeDARWIN(DAQDARWIN daqdarwin);
```

### Declaration

```
Public Declare Function closeDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long) As Long
```

### Parameters

daqdarwin Specify the device descriptor.

### Description

Disconnects the communication using the specified device descriptor.

- When the communication is disconnected, the value of the device descriptor is meaningless.
- After disconnection, do not use the value of the device descriptor.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQDARWIN::close`

## computeDARWIN

### Syntax

```
int computeDARWIN(DAQDARWIN daqdarwin, int iCompute);
```

### Declaration

```
Public Declare Function computeDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iCompute As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iCompute | Specify the computation. |

### Description

Starts/stops computation.

- Valid with the computation function.
- This function executes the EX command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::compute`

## establishDARWIN

### Syntax

```
int establishDARWIN(DAQDARWIN daqdarwin, int iSetup);
```

### Declaration

```
Public Declare Function establishDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iSetup As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iSetup | Specifies establishment of setup. |

### Description

Establishes setting contents for setup mode.

- It is only valid in setup mode.
- This function executes the EX command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::establish`

## getAlarmNameDARWIN [Visual C only]

### Syntax

```
const char * getAlarmNameDARWIN(int iAlarmType);
```

### Parameters

iAlarmType Specify the alarm type.

### Description

Gets the string corresponding to the specified alarm type.

- In Visual Basic, use the toAlarmNameDARWIN function.

### Return value

Returns a pointer to the alarm type string.

### Reference

`CDAQDARWINDataInfo::getAlarmName`

## getChDataByASCIIDARWIN

### Syntax

```
int getChDataByASCIIDARWIN(DAQDARWIN daqdarwin, DarwinChInfo *
pDarwinChInfo, DarwinDataInfo * pDarwinDataInfo, int * pFlag);
```

### Declaration

```
Public Declare Function getChDataByASCIIDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByRef pDarwinChInfo As
DarwinChInfo, ByRef pDarwinDataInfo As DarwinDataInfo, ByRef
pFlag As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| pDarwinChInfo | Specify the destination where the channel information data is to be returned. |
| pDarwinDataInfo | Specify the destination where the measured data is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the output of each channel using the talker function declared by the talkDataByASCIIDARWIN function.

- Analyzes received information channel by channel and stores it in the structure.
- Stores channel information data and measured data if the return destination is specified.
- When the last set of data is retrieved, the flag status is set. The flag status is also set when the function ends in error.
- Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDARWIN::getChDataByASCII
CDAQDARWINChInfo::getDarwinChInfo
CDAQDARWINDataInfo::getDarwinDataInfo
```

## getChDataByBinaryDARWIN

### Syntax

```
int getChDataByBinaryDARWIN(DAQDARWIN daqdarwin, DarwinChInfo
* pDarwinChInfo, DarwinDataInfo * pDarwinDataInfo, int *
pFlag);
```

### Declaration

```
Public Declare Function getChDataByBinaryDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByRef pDarwinChInfo As
DarwinChInfo, ByRef pDarwinDataInfo As DarwinDataInfo, ByRef
pFlag As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| pDarwinChInfo | Specify the destination where the channel information data is to be returned. |
| pDarwinDataInfo | Specify the destination where the measured data is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the output of each channel using talkDataByBinaryDARWIN.

- Analyzes received information channel by channel and stores it in the structure.
- Stores channel information data and measured data if the return destination is specified.
- When the last set of data is retrieved, the flag status is set. The flag status is also set when the function ends in error.
- Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDARWIN::getChDataByBinary
CDAQDARWINChInfo::getDarwinChInfo
CDAQDARWINDataInfo::getDarwinDataInfo
```

## getChInfoDARWIN

### Syntax

```
int getChInfoDARWIN(DAQDARWIN daqdarwin, DarwinChInfo *
pDarwinChInfo, int * pFlag);
```

### Declaration

```
Public Declare Function getChInfoDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByRef pDarwinChInfo As DarwinChInfo, ByRef
pFlag As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| pDarwinChInfo | Specify the destination where the channel information data is to be returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the channel information data output by channel using the talker function declared by the talkChInfoDARWIN function.

- Analyzes received information channel by channel and stores it in the structure.
- Stores channel information data if the return destination is specified.
- When the last set of data is retrieved, the flag status is set. The flag status is also set when the function ends in error.
- Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::getChInfo`
`CDAQDARWINChInfo::getDarwinChInfo`

## getErrorMessageDARWIN [Visual C only]

### Syntax

```
const char * getErrorMessageDARWIN(int errCode);
```

### Parameters

errCode Specify the error number.

### Description

Gets the error message string corresponding to the error number.

- In Visual Basic, use the function toErrorMessageDARWIN.

### Return value

Returns the pointer to the error message string corresponding to the error number.

### Reference

`CDAQDARWIN::getErrorMessage`

## getMaxLenAlarmNameDARWIN

### Syntax

```
int getMaxLenAlarmNameDARWIN(void);
```

### Declaration

```
Public Declare Function getMaxLenAlarmNameDARWIN Lib
"DAQDARWIN"() As Long
```

### Description

Gets the maximum length of the alarm type string.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`CDAQDARWINDataInfo::getMaxLenAlarmName`

## getMaxLenErrorMessageDARWIN

### Syntax

```
int getMaxLenErrorMessageDARWIN(void);
```

### Declaration

```
Public Declare Function getMaxLenErrorMessageDARWIN Lib
"DAQDARWIN"() As Long
```

### Description

Gets the maximum length of the error message string.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`CDAQDARWIN::getMaxLenErrorMessage`

## getReportStatusDARWIN

### Syntax

```
int getReportStatusDARWIN(DAQDARWIN daqdarwin, int *
pReportStatus);
```

### Declaration

```
Public Declare Function getReportStatusDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByRef pReportStatus As
Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| pReportStatus | Specify the destination where the report status is to be returned. |

### Description

Gets the report status.

- Receives the report status output using the talker function.
- Stores the report status in the specified location if the return destination is specified.
- This function executes the TS and RF commands of the DARWIN communication function.

### Return value

Returns an error number.

Error

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::getReportStatus`

## getRevisionAPIDARWIN

### Syntax

```
const int getRevisionAPIDARWIN(void);
```

### Declaration

```
Public Declare Function getRevisionAPIDARWIN Lib "DAQDARWIN"()
As Long
```

### Description

Gets the revision number of this API.

### Return value

Returns the revision number.

### Reference

`CDAQDARWIN::getRevisionAPI`

## getSetDataByLineDARWIN

### Syntax

```
int getSetDataByLineDARWIN(DAQDARWIN daqdarwin, char *
strLine, int maxLine, int * lenLine, int * pFlag);
```

### Declaration

```
Public Declare Function getSetDataByLineDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByVal strLine As String,
ByVal maxLine As Long, ByRef lenLine As Long, ByRef flag As
Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| strLine | Specify the field where the string received by lines is to be stored. |
| maxLine | Specify the byte size of the field where the string received by lines is to be stored. |
| lenLine | Specify the destination where the byte size of the actual string received is returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the output from the talker function in units of lines after execution of the declaration for the retrieval of setup data.

- Stores the received string excluding line feeds.
- When the last set of data is retrieved, the flag status is set. The flag status is also set when the function ends in error.
- Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::getSetDataByLine`

## getStatusByteDARWIN

### Syntax

```
int getStatusByteDARWIN(DAQDARWIN daqdarwin, int *
pStatusByte);
```

### Declaration

```
Public Declare Function getStatusByteDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByRef pStatusByte As
Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| pStatusByte | Specify the destination where the status byte is to be returned. |

### Description

Sends the status byte output command (ESC S) and receives the status bytes. Stores the status byte as an integer to the specified destination if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::getStatusByte`

## getSystemConfigDARWIN

### Syntax

```
int getSystemConfigDARWIN(DAQDARWIN daqdarwin, double *
interval, DarwinSystemInfo * pDarwinSystemInfo);
```

### Declaration

```
Public Declare Function getSystemConfigDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByRef interval As Double,
ByRef pDarwinSystemInfo As DarwinSystemInfo) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| interval | Specify the destination where the measurement interval is to be returned. |
| pDarwinSystemInfo | Specify the destination where the system configuration data is to be returned. |

### Description

Gets the system configuration data.

- Receives the system configuration data using the talker function.
- Stores the measurement interval and system configuration data if the return destination is specified.
- This function executes the TS and CF commands of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDARWIN::getSystemConfig
CDAQDARWINSysInfo::getDarwinSystemInfo
CDAQDARWINSysInfo::getInterval
```

## getVersionAPIDARWIN

### Syntax

```
const int getVersionAPIDARWIN(void);
```

### Declaration

```
Public Declare Function getVersionAPIDARWIN Lib "DAQDARWIN"()
As Long
```

### Description

Gets the version number of this API.

### Return value

Returns the version number.

### Reference

`CDAQDARWIN::getVersionAPI`

## initSystemDARWIN

### Syntax

```
int initSystemDARWIN(DAQDARWIN daqdarwin, int iCtrl);
```

### Declaration

```
Public Declare Function initSystemDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iCtrl As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iCtrl | Specify the system control type. |

### Description

Executes the operation of the specified system control type.

This function executes the RS, RC, or AR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::initSystem`

## openDARWIN

### Syntax

```
DAQDARWIN openDARWIN(const char * strAddress, int *
errorCode);
```

### Declaration

```
Public Declare Function openDARWIN Lib "DAQDARWIN"(ByVal
strAddress As String, ByRef errorCode As Long) As Long
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| errorCode | Specify the destination where the error number is to be returned. |

### Description

Connects to the device with the IP address specified by the parameters.

- Creates a device descriptor and returns the value as a return value.
- Stores the error number in the return specified destination if one is specified.
- The port number fixed, and set to the communication constant “communication port number.”
- If unsuccessful, returns NULL in Visual C or 0 in Visual Basic.

### Return value

Returns the device descriptor.

Error

| | |
|---|---|
| Creating descriptor is failure | Failed to create the device descriptor. |

### Reference

`CDAQDARWIN::open`

## receiveByteDARWIN

### Syntax

```
int receiveByteDARWIN(DAQDARWIN daqdarwin, unsigned char *
byteData, int maxData, int * lenData)
```

### Declaration

```
Public Declare Function receiveByteDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByRef byteData() As Byte,
ByVal maxData As Long, ByRef lenData As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| byteData | Specify the field where the received byte data is to be stored. |
| maxData | Specify the byte size of the received data. |
| lenData | Specify the destination where the byte size of the actual data received is returned. |

### Description

Stores the received data in the field specified by the parameter up to the specified byte size.

- Returns the byte size of the actual data received if the return destination is specified.
- If multiple bytes of data exist, repeat the function.
- Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.
- The user must carry out determination of the data end.
- Used for receiving binary output when implementing a model-specific talker function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::receiveByte`

## receiveLineDARWIN

### Syntax

```
int receiveLineDARWIN(DAQDARWIN daqdarwin, char * strLine, int
maxLine, int * lenLine);
```

### Declaration

```
Public Declare Function receiveLineDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByVal strLine As String,
ByVal maxLine As Long, ByRef lenLine As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| strLine | Specify the field where the received string is to be stored. |
| maxLine | Specify the byte size of the field where the received string is to be stored. |
| lenLine | Specify the destination where the byte size of the actual string received is returned. |

### Description

Receives data in the field specified for storing received strings by the parameter, until a line feed is detected or up to the specified byte size.

- Stores the received string excluding line feeds in the storage field.
- Stores in the specified destination the byte size of the actual data received and stored if the return destination is specified.
- If multiple lines of data exist, repeat the function.
- Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.
- The user must carry out determination of the data end.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::receiveLine`

## reportingDARWIN

### Syntax

```
int reportingDARWIN(DAQDARWIN daqdarwin, int iReportRun);
```

### Declaration

```
Public Declare Function reportingDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iReportRun As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iReportRun | Specify the report execution type. |

### Description

Starts/stops reporting.

- Valid with the report option.
- This function executes the DR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::reporting`

## runCommandDARWIN

### Syntax

```
int runCommandDARWIN(DAQDARWIN daqdarwin, const char *
strCmd);
```

### Declaration

```
Public Declare Function runCommandDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal strCmd As String) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| strCmd | Specify the command message to be sent. |

### Description

Sends the specified command message and terminator and receives the response.

- This function adds a terminator to the command message at the time of transmission. Therefore, do not include the terminator in the command message.
- This function does not support simultaneous transmission of multiple commands or command messages that include the terminator.
- Like the data output request command of the talker function, does not support commands that do not send responses.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::runCommand`

## sendLineDARWIN

### Syntax

```
int sendLineDARWIN(DAQDARWIN daqdarwin, const char * strLine);
```

### Declaration

```
Public Declare Function sendLineDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal strLine As String) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| strLine | Specify the string to be sent. |

### Description

Sends the string data specified by the parameter.

- When sending the command, the terminator is also part of the data.
- This function does not receive a response. Receive the returned data using another receive function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::sendLine`

## sendTriggerDARWIN

### Syntax

```
int sendTriggerDARWIN(DAQDARWIN daqdarwin);
```

### Declaration

```
Public Declare Function sendTriggerDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long) As Long
```

### Parameters

daqdarwin Specify the device descriptor.

### Description

Sends a trigger command (ESC T), and receives the response.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQDARWIN::sendTrigger`

## setAlarmDARWIN

### Syntax

```
int setAlarmDARWIN(DAQDARWIN daqdarwin, int levelNo, int
chType, int startChNo, int endChNo, int iAlarmType, int value,
int relayType, int relayNo);
```

### Declaration

```
Public Declare Function setAlarmDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal levelNo As Long, ByVal chType As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
iAlarmType As Long, ByVal value As Long, ByVal relayType As
Long, ByVal relayNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| levelNo | Specify the alarm level. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| iAlarmType | Specify the alarm type. |
| value | Specify the data value of the alarm. |
| relayType | Specify the relay type. |
| relayNo | Specify the relay number. |

### Description

Sets the specified alarm (alarm level and alarm type) and alarm value to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

- With relay specification, when the relay number is less than or equal to 0, the relay is not specified (turned OFF).
- This function executes the SA command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setAlarm`

## setDateTimeDARWIN

### Syntax

```
int setDateTimeDARWIN(DAQDARWIN daqdarwin, DarwinDateTime *
pDarwinDateTime);
```

### Declaration

```
Public Declare Function setDateTimeDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByRef pDarwinDateTime As
DarwinDateTime) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| pDarwinDateTime | Specify the time information data. |

### Description

Sets the date and time on the device.

- In Visual C, if the parameter's time information data is set to NULL, the current date/time of the PC is used.
- This function executes the SD command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setDateTime`

## setDateTimeNowDARWIN

### Syntax

```
int setDateTimeNowDARWIN(DAQDARWIN daqdarwin);
```

### Declaration

```
Public Declare Function setDateTimeNowDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long) As Long
```

### Parameters

daqdarwin Specify the device descriptor.

### Description

Sets the current date/time.

### Return value

Returns an error number.

### Reference

`setDateTimeDARWIN`

## setDELTADARWIN

### Syntax

```
int setDELTADARWIN(DAQDARWIN daqdarwin, int refChNo, int
chType, int startChNo, int endChNo, int spanMin, int spanMax);
```

### Declaration

```
Public Declare Function setDELTADARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal refChNo As Long, ByVal chType As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
spanMin As Long, ByVal spanMax As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| refChNo | Specify the channel number of the reference channel. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |

### Description

Sets difference computation with respect to the specified reference channel to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

- With the span specification, if the left and right values are the same, it is considered omitted.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setDELTA`

## setDIDARWIN

### Syntax

```
int setDIDARWIN(DAQDARWIN daqdarwin, int iRangeDI, int chType,
int startChNo, int endChNo, int spanMin, int spanMax, int
scaleMin, int scaleMax, int scalePoint);
```

### Declaration

```
Public Declare Function setDIDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iRangeDI As Long, ByVal chType As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
spanMin As Long, ByVal spanMax As Long, ByVal scaleMin As
Long, ByVal scaleMax As Long, ByVal scalePoint As Long) As
Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iRangeDI | Specify the contact range. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified contact range to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

- With the span and scale specification, if the left and right values are the same, they are considered omitted.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setDI`

## setMADARWIN

### Syntax

```
int setMADARWIN(DAQDARWIN daqdarwin, int iRangeMA, int chType,
int startChNo, int endChNo, int spanMin, int spanMax, int
scaleMin, int scaleMax, int scalePoint);
```

### Declaration

```
Public Declare Function setMADARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iRangeMA As Long, ByVal chType As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
spanMin As Long, ByVal spanMax As Long, ByVal scaleMin As
Long, ByVal scaleMax As Long, ByVal scalePoint As Long) As
Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iRangeMA | Specify the DC current range. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified DC current range to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

- With the span and scale specification, if the left and right values are the same, they are considered omitted.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setMA`

## setPOWERDARWIN

### Syntax

```
int setPOWERDARWIN(DAQDARWIN daqdarwin, int iRangePOWER, int
chType, int chNo, int iItem, int iWire, int spanMin, int
spanMax, int scaleMin, int scaleMax, int scalePoint);
```

### Declaration

```
Public Declare Function setPOWERDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iRangePOWER As Long, ByVal chType As
Long, ByVal chNo As Long, ByVal iItem As Long, ByVal iWire As
Long, ByVal spanMin As Long, ByVal spanMax As Long, ByVal
scaleMin As Long, ByVal scaleMax As Long, ByVal scalePoint As
Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iRangePOWER | Specify the power monitor range. |
| chType | Specify the channel type. |
| startChNo | Specify the channel number. |
| iItem | Specify the power measurement parameter. |
| iWire | Specify the power connection method. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified power range on the specified channel (specified under channel type and channel number).

- With the span and scale specification, if the left and right values are the same, they are considered omitted.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setPOWER`

## setPULSEDARWIN

### Syntax

```
int setPULSEDARWIN(DAQDARWIN daqdarwin, int iRangePULSE, int
chType, int startChNo, int endChNo, int spanMin, int spanMax,
int scaleMin, int scaleMax, int scalePoint, int bFilter);
```

### Declaration

```
Public Declare Function setPULSEDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iRangePULSE As Long, ByVal chType As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
spanMin As Long, ByVal spanMax As Long, ByVal scaleMin As
Long, ByVal scaleMax As Long, ByVal scalePoint As Long, ByVal
bFilter As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iRangePULSE | Specify the pulse range. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |
| bFilter | Specify a filter using a boolean value. |

### Description

Sets the specified pulse range to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

- With the span and scale specification, if the left and right values are the same, they are considered omitted.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setPULSE`

## setRRJCDARWIN

### Syntax

```
int setRRJCDARWIN(DAQDARWIN daqdarwin, int refChNo, int
chType, int startChNo, int endChNo, int spanMin, int spanMax);
```

### Declaration

```
Public Declare Function setRRJCDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal refChNo As Long, ByVal chType As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
spanMin As Long, ByVal spanMax As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| refChNo | Specify the channel number of the reference channel. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |

### Description

Sets the remote RJC with respect to the specified reference channel to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

- With the span specification, if the left and right values are the same, it is considered omitted.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setRRJC`

## setRTDDARWIN

### Syntax

```
int setRTDDARWIN(DAQDARWIN daqdarwin, int iRangeRTD, int
chType, int startChNo, int endChNo, int spanMin, int spanMax,
int scaleMin, int scaleMax, int scalePoint);
```

### Declaration

```
Public Declare Function setRTDDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iRangeRTD As Long, ByVal chType As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
spanMin As Long, ByVal spanMax As Long, ByVal scaleMin As
Long, ByVal scaleMax As Long, ByVal scalePoint As Long) As
Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iRangeRTD | Specify the range type of the RTD input. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified RTD range to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

- With the span and scale specification, if the left and right values are the same, they are considered omitted.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setRTD`

## setScallingUnitDARWIN

### Syntax

```
int setScallingUnitDARWIN(DAQDARWIN daqdarwin, const char *
strUnit, int chType, int startChNo, int endChNo);
```

### Declaration

```
Public Declare Function setScallingUnitDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByVal strUnit As String,
ByVal chType As Long, ByVal startChNo As Long, ByVal endChNo
As Long) As Long 111
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| strUnit | Specify the unit name using a string. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the specified unit to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

This function executes the SN command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setScallingUnit`

## setSKIPDARWIN

### Syntax

```
int setSKIPDARWIN(DAQDARWIN daqdarwin, int chType, int
startChNo, int endChNo);
```

### Declaration

```
Public Declare Function setSKIPDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal chType As Long, ByVal startChNo As
Long, ByVal endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |

### Description

Sets the channels in the specified channel range (specified by channel type, start channel number, and end channel number) to SKIP (not used).

This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setSKIP`

## setSTRAINDARWIN

### Syntax

```
int setSTRAINDARWIN(DAQDARWIN daqdarwin, int iRangeSTRAIN, int
chType, int startChNo, int endChNo, int spanMin, int spanMax,
int scaleMin, int scaleMax, int scalePoint);
```

### Declaration

```
Public Declare Function setSTRAINDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iRangeSTRAIN As Long, ByVal chType As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
spanMin As Long, ByVal spanMax As Long, ByVal scaleMin As
Long, ByVal scaleMax As Long, ByVal scalePoint As Long) As
Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iRangeSTRAIN | Specify the strain input range. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified strain range on the channels in the specified channel range (specified by channel type, start channel number, and end channel number).
With the span and scale specification, if the left and right values are the same, they are considered omitted.
This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.
Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

CDAQDARWIN::setSTRAIN

## setTCDARWIN

### Syntax

```
int setTCDARWIN(DAQDARWIN daqdarwin, int iRangeTC, int chType,
int startChNo, int endChNo, int spanMin, int spanMax, int
scaleMin, int scaleMax, int scalePoint);
```

### Declaration

```
Public Declare Function setTCDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iRangeTC As Long, ByVal chType As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
spanMin As Long, ByVal spanMax As Long, ByVal scaleMin As
Long, ByVal scaleMax As Long, ByVal scalePoint As Long) As
Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iRangeTC | Specify the range type of the thermocouple input. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified thermocouple range to the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

- With the span and scale specification, if the left and right values are the same, they are considered omitted.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setTC`

## setTimeOutDARWIN

### Syntax

```
int setTimeOutDARWIN(DAQDARWIN daqdarwin, int seconds);
```

### Declaration

```
Public Declare Function setTimeOutDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal seconds As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| seconds | Specify the communication timeout value in units of seconds. |

### Description

Sets a timeout for the communication with the device.

- If a negative value is specified, the timeout is discarded.
- Its use is not recommended.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setTimeOut`

## setVOLTDARWIN

### Syntax

```
int setVOLTDARWIN(DAQDARWIN daqdarwin, int iRangeVOLT, int
chType, int startChNo, int endChNo, int spanMin, int spanMax,
int scaleMin, int scaleMax, int scalePoint);
```

### Declaration

```
Public Declare Function setVOLTDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iRangeVOLT As Long, ByVal chType As
Long, ByVal startChNo As Long, ByVal endChNo As Long, ByVal
spanMin As Long, ByVal spanMax As Long, ByVal scaleMin As
Long, ByVal scaleMax As Long, ByVal scalePoint As Long) As
Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iRangeVOLT | Specify the range type of the DC voltage input. |
| chType | Specify the channel type. |
| startChNo | Specify the start channel number. |
| endChNo | Specify the end channel number. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the specified DC voltage range on the channels in the specified channel range (specified by channel type, start channel number, and end channel number).

- With the span and scale specification, if the left and right values are the same, they are considered omitted.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::setVOLT`

## talkCalibrationDataDARWIN

### Syntax

```
int talkCalibrationDataDARWIN(DAQDARWIN daqdarwin, int
startChType, int startChNo, int endChType, int endChNo);
```

### Declaration

```
Public Declare Function talkCalibrationDataDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByVal startChType As
Long, ByVal startChNo As Long, ByVal endChType As Long, ByVal
endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving setup data of A/D calibration mode from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

- The operation mode must be switched to A/D calibration mode in advance.
- This function executes the TS and LF commands of the DARWIN communication function.
- After executing this function, use the getSetDataByLineDARWIN function to retrieve the data by lines.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::talkCalibrationData`

## talkChInfoDARWIN

### Syntax

```
int talkChInfoDARWIN(DAQDARWIN daqdarwin, int startChType, int
startChNo, int endChType, int endChNo);
```

### Declaration

```
Public Declare Function talkChInfoDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal startChType As Long, ByVal startChNo
As Long, ByVal endChType As Long, ByVal endChNo As Long) As
Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving channel information data from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

- This function executes the TS and LF commands of the DARWIN communication function.
- After executing this function, use the getChInfoDARWIN function to retrieve the data for each channel.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::talkChInfo`

## talkDataByASCIIDARWIN

### Syntax

```
int talkDataByASCIIDARWIN(DAQDARWIN daqdarwin, int
startChType, int startChNo, int endChType, int endChNo,
DarwinDateTime * pDarwinDateTime);
```

### Declaration

```
Public Declare Function talkDataByASCIIDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByVal startChType As
Long, ByVal startChNo As Long, ByVal endChType As Long, ByVal
endChNo As Long, ByRef pDarwinDateTime As DarwinDateTime) As
Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |
| pDarwinDateTime | Specify the destination where the time information data is to be returned. |

### Description

Executes the declaration for retrieving measured data in ASCII format from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

- Stores time information of the measured data if the return destination is specified.
- Specify measurement channels and computation channels separately.
- This function executes the TS and FM commands of the DARWIN communication function.
- After executing this function, use the getChDataByASCIIDARWIN function to retrieve the data for each channel.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDARWIN::talkDataByASCII
CDAQDARWINDateTime::getDarwinDateTime
```

## talkDataByBinaryDARWIN

### Syntax

```
int talkDataByBinaryDARWIN(DAQDARWIN daqdarwin, int
startChType, int startChNo, int endChType, int endChNo,
DarwinDateTime * pDarwinDateTime);
```

### Declaration

```
Public Declare Function talkDataByBinaryDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByVal startChType As
Long, ByVal startChNo As Long, ByVal endChType As Long, ByVal
endChNo As Long, ByRef pDarwinDateTime As DarwinDateTime) As
Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |
| pDarwinDateTime | Specify the destination where the time information data is to be returned. |

### Description

Executes the declaration for retrieving measured data in binary format from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

- Stores time information data of the measured data if the return destination is specified.
- Specify measurement channels and computation channels separately.
- MSB is specified for the byte output order.
- This function executes the TS and FM commands of the DARWIN communication function.
- After executing this function, use the getChDataByBinaryDARWIN function to retrieve the data for each channel.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDARWIN::talkDataByBinary
CDAQDARWINDateTime::getDarwinDateTime
```

## talkOperationDataDARWIN

### Syntax

```
int talkOperationDataDARWIN(DAQDARWIN daqdarwin, int
startChType, int startChNo, int endChType, int endChNo);
```

### Declaration

```
Public Declare Function talkOperationDataDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByVal startChType As
Long, ByVal startChNo As Long, ByVal endChType As Long, ByVal
endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving setup data of the operation mode from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

- This function executes the TS and LF commands of the DARWIN communication function.
- After executing this function, use the getSetDataByLineDARWIN function to retrieve the data by lines.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::talkOperationData`

## talkSetupDataDARWIN

### Syntax

```
int talkSetupDataDARWIN(DAQDARWIN daqdarwin, int startChType,
int startChNo, int endChType, int endChNo);
```

### Declaration

```
Public Declare Function talkSetupDataDARWIN Lib
"DAQDARWIN"(ByVal daqdarwin As Long, ByVal startChType As
Long, ByVal startChNo As Long, ByVal endChType As Long, ByVal
endChNo As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving setup data of the setup mode from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

- This function executes the TS and LF commands of the DARWIN communication function.
- After executing this function, use the getSetDataByLineDARWIN function to retrieve the data by lines.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDARWIN::talkSetupData
```

## toAlarmNameDARWIN

### Syntax

```
int toAlarmNameDARWIN(int iAlarmType, char * strAlarm, int
lenAlarm);
```

### Declaration

```
Public Declare Function toAlarmNameDARWIN Lib
"DAQDARWIN"(ByVal iAlarmType As Long, ByVal strAlarm As
String, ByVal lenAlarm As Long) As Long
```

### Parameters

| | |
|---|---|
| iAlarmType | Specify the alarm type. |
| strAlarm | Specify the field where the string is to be stored. |
| lenAlarm | Specify the byte size of the field where the string is to be stored. |

### Description

Stores the string corresponding to the specified alarm type to the specified field.

- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`getAlarmNameDARWIN`

## toDoubleValueDARWIN

### Syntax

```
double toDoubleValueDARWIN(int dataValue, int point);
```

### Declaration

```
Public Declare Function toDoubleValueDARWIN Lib
"DAQDARWIN"(ByVal dataValue As Long, ByVal point As Long) As
Double
```

### Parameters

| | |
|---|---|
| dataValue | Specify the data value. |
| point | Specify the decimal point position. |

### Description

Generates the measured value from the specified data value and decimal point position.

### Return value

Returns the measured value as a double-precision floating number.

### Reference

`CDAQDARWINDataInfo::toDoubleValue`

## toErrorMessageDARWIN

### Syntax

```
int toErrorMessageDARWIN(int errCode, char * errStr, int
errLen);
```

### Declaration

```
Public Declare Function toErrorMessageDARWIN Lib
"DAQDARWIN"(ByVal errCode As Long, ByVal errStr As String,
ByVal errLen As Long) As Long
```

### Parameters

| | |
|---|---|
| errCode | Specify the error number. |
| errStr | Specify the field where the string is to be stored. |
| errLen | Specify the byte size of the field where the string is to be stored. |

### Description

Stores the error message string corresponding to the error number to the specified field.

- The string stored to the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`getErrorMessageDARWIN`

## toStringValueDARWIN

### Syntax

```
int toStringValueDARWIN(int dataValue, int point, char *
strValue, int lenValue);
```

### Declaration

```
Public Declare Function toStringValueDARWIN Lib
"DAQDARWIN"(ByVal dataValue As Long, ByVal point As Long,
ByVal strValue As String, ByVal lenValue As Long) As Long
```

### Parameters

| | |
|---|---|
| dataValue | Specify the data value. |
| point | Specify the decimal point position. |
| strValue | Specify the field where the string is to be stored. |
| lenValue | Specify the byte size of the field where the string is to be stored. |

### Description

Generates the measured value from the specified data value and decimal point position.

- Converts the generated measured value into a string and stores it in the specified field.
- The string stored to the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`CDAQDARWINDataInfo::toStringValue`

## transModeDARWIN

### Syntax

```
int transModeDARWIN(DAQDARWIN daqdarwin, int iMode);
```

### Declaration

```
Public Declare Function transModeDARWIN Lib "DAQDARWIN"(ByVal
daqdarwin As Long, ByVal iMode As Long) As Long
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iMode | Specify the mode. |

### Description

Switches to the specified mode.

- This function executes the DS command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDARWIN::transMode`

# 11.1 Overview of the DARWIN Constants

The types of constants provided are listed below. The constants are common to Visual C++, Visual C, and Visual Basic.

# 11.2 DARWIN Constants

This section describes the mnemonic and the meaning of the constants. For DARWIN terminology, see appendix 2.

## Communication Constants

| Mnemonic | Description |
|---|---|
| DAQDARWIN_COMMPORT | Communication port number of DARWIN. |

## Enumeration Constants

Sets the number of items such as the number of modules or units.

| Mnemonic | Description |
|---|---|
| DAQDARWIN_NUMCHANNEL | The number of channels. |
| DAQDARWIN_NUMALARM | The number of alarms. |
| DAQDARWIN_NUMUNIT | The number of subunits. |
| DAQDARWIN_NUMSLOT | The number of slots per subunit. |
| DAQDARWIN_NUMTERM | The number of terminals per slot (module). |

## Maximum Values

| Mnemonic | Description |
|---|---|
| DAQDARWIN_MAXCHNAMELEN | Maximum length of the channel name string. |
| DAQDARWIN_MAXCHRANGLEN | Maximum length of the channel range name string. |
| DAQDARWIN_MAXUNITLEN | Maximum length of the unit name string. |
| DAQDARWIN_MAXMODULELEN | Maximum length of the module name string. |
| DAQDARWIN_MAXRELAYLEN | Maximum length of the relay name string. Same as the maximum length of the channel name string. Relay refers to the output relay of the alarm output module or the DI/DO module. |
| DAQDARWIN_MAXALARMLEN | Maximum length of the alarm type string. |
| DAQDARWIN_MAXDECIMALPOINT | Maximum value of the decimal point position. |

The maximum length of the string does not include the terminator (NULL).

## String

| Mnemonic | Description |
|---|---|
| DAQDARWIN_TERMINATE | Terminator string. |

## Boolean Value (valid/invalid)

| Mnemonic | Description |
|---|---|
| DAQDARWIN_VALID_OFF | Invalid (OFF) value. |
| DAQDARWIN_VALID_ON | Valid (ON) value. |

## Flag Status

| Mnemonic | Description |
|---|---|
| DAQDARWIN_FLAG_OFF | All OFF. |
| DAQDARWIN_FLAG_ENDDATA | The data line retrieved using ASCII codes or in units of lines is at the last data set. |

Can be synthesized using logical OR operators.

## Data Status Values

| Mnemonic | Description |
|---|---|
| DAQDARWIN_UNKNWON | The data status is not set. |
| DAQDARWIN_DATA_NORMAL | Normal. |
| DAQDARWIN_DATA_DIFFINPUT | Difference computation between channels being performed. |
| DAQDARWIN_DATA_PLUSOVER | Positive overrange. |
| DAQDARWIN_DATA_MINUSOVER | Negative overrange. |
| DAQDARWIN_DATA_SKIP | SKIP (not used). |
| DAQDARWIN_DATA_ILLEGAL | Illegal data status. |
| DAQDARWIN_DATA_ABNORMAL | Abnormal data status. |
| DAQDARWIN_DATA_NODATA | No data status. |
| DAQDARWIN_DATA_READER | Status when loading instantaneous value data from the communication port and communicating. |

The status when using the communication port for loading instantaneous value data and communicating is the channel status in which channel information data is retrieved.

## Alarm Type

◊ indicates a space.

| Mnemonic | Description | String |
|---|---|---|
| DAQDARWIN_ALARM_NONE | No alarm (alarm OFF) | ◊◊ |
| DAQDARWIN_ALARM_UPPER | Upper limit alarm | H◊ |
| DAQDARWIN_ALARM_LOWER | Lower limit alarm | L◊ |
| DAQDARWIN_ALARM_UPDIFF | Difference upper limit alarm | dH |
| DAQDARWIN_ALARM_LOWDIFF | Difference lower limit alarm | dL |
| DAQDARWIN_ALARM_INCRATE | High limit on rate-of-change alarm | RH |
| DAQDARWIN_ALARM_DECRATE | Low limit on rate-of-change alarm | RL |

## System Control Types

Used when specifying the system control operation.

| Mnemonic | Description |
|---|---|
| DAQDARWIN_SYSTEM_RECONSTRUCT | System reconfiguration |
| DAQDARWIN_SYSTEM_INITOPE | RAM clear (Initialize the operation mode setup parameter) |
| DAQDARWIN_SYSTEM_RESETALARM | Alarm reset |

## Channel/Relay types

Type values for channels, relays, communication input, and computation constants. Can be used to specify the channel or relay. Definitions consisting of a single character are available also to simplify the statements.

| Mnemonic | Char | Description | Channel | Relay |
|---|---|---|---|---|
| DAQDARWIN_CHTYPE_MAINUNIT | I | Value representing the main unit expandable model | - | Yes |
| DAQDARWIN_CHTYPE_STANDALONE | | Value representing the model of the standalone unit. Same as subunit number of 0. | Yes | Yes |
| DAQDARWIN_CHTYPE_MATHTYPE | A | Value representing the computation channel. | Yes | - |
| DAQDARWIN_CHTYPE_SWITCH | S | Value representing the internal switch. | - | Yes |
| DAQDARWIN_CHTYPE_COMMDATA | C | Value representing the communication input. | - | - |
| DAQDARWIN_CHTYPE_CONSTANT | K | Value representing the computation constant. | - | - |
| DAQDARWIN_CHTYPE_REPORT | R | Value representing the report. | - | - |

Yes: Channel/Relay of the type exists.
- : Channel/Relay of the type does not exist.

***Note***

The subunit number used to identify the subunit that is connected to the expandable model is also a type number. The subunit number is an integer value between 0 and 5. See appendix 2.

## Operation Modes

| Mnemonic | Description |
|---|---|
| DAQDARWIN_MODE_OPE | Operation mode |
| DAQDARWIN_MODE_SETUP | Setup mode |
| DAQDARWIN_MODE_CALIB | A/D calibration mode |

## Talker Function Types

| Mnemonic | Description |
|---|---|
| DAQDARWIN_TALK_MEASUREDDATA | Outputs measured and computed data |
| DAQDARWIN_TALK_OPEDATA | Outputs the setup data of operation mode. |
| DAQDARWIN_TALK_CHINFODATA | Outputs the channel information data |
| DAQDARWIN_TALK_SYSINFODATA | Outputs the system configuration data |
| DAQDARWIN_TALK_CALIBDATA | Outputs the calibration data (setup data of calibration mode) |
| DAQDARWIN_TALK_SETUPDATA | Outputs the setup data of setup mode |
| DAQDARWIN_TALK_REPORTDATA | Outputs the report status |

### Status Byte Value

Can be synthesized using logical OR operators.

| Mnemonic | Description |
|---|---|
| DAQDARWIN_STATUS_OFF | Value when all status bytes are invalid |
| DAQDARWIN_STATUS_ADCONV | A/D conversion complete |
| DAQDARWIN_STATUS_SYNTAX | Command syntax error |
| DAQDARWIN_STATUS_TIMER | Internal timer start/report creation |
| DAQDARWIN_STATUS_MEDIA | Access to medium (DC100) |
| DAQDARWIN_STATUS_RELEASE | Measurement dropout during computation |
| DAQDARWIN_STATUS_ALL | Mask value that enables all status bytes |
| DAQDARWIN_STATUS_SRQ | SRQ |

For details on the meaning of the status byte value, see the communication interface user's manual for the DARWIN instrument.

### Establish setup mode

| Mnemonic | Description |
|---|---|
| DAQDARWIN_SETUP_ABORT | Abort |
| DAQDARWIN_SETUP_STORE | Establish |

### Unit Number

| Mnemonic | Description |
|---|---|
| DAQDARWIN_UNITNO_MAINUNIT | Main unit of the expandable model |
| DAQDARWIN_UNITNO_STANDALONE | Standalone model unit |

The subunit number is numerical. See Channel/Relay types.

### Computation

| Mnemonic | Description |
|---|---|
| DAQDARWIN_COMPUTE_START | Computation start |
| DAQDARWIN_COMPUTE_STOP | Computation stop |
| DAQDARWIN_COMPUTE_RESTART | After clearing computation data, restart |
| DAQDARWIN_COMPUTE_CLEAR | Clears computation data |
| DAQDARWIN_COMPUTE_RELEASE | Clears status display of measurement dropouts |

### Report execution type

| Mnemonic | Description |
|---|---|
| DAQDARWIN_REPORT_RUN_START | Report start |
| DAQDARWIN_REPORT_RUN_STOP | Report stop |

## Report type

| Mnemonic | Description |
|---|---|
| DAQDARWIN_REPORT_HOURLY | Hourly |
| DAQDARWIN_REPORT_DAILY | Daily |
| DAQDARWIN_REPORT_MONTHLY | Montly |
| DAQDARWIN_REPORT_STATUS | Status |

## Report status

Can be synthesized using logical OR operators.

| Mnemonic | Description |
|---|---|
| DAQDARWIN_REPSTATUS_NONE | All invalid |
| DAQDARWIN_REPSTATUS_HOURLY_NEW | Newest hourly |
| DAQDARWIN_REPSTATUS_HOURLY_VALID | Valid hourly |
| DAQDARWIN_REPSTATUS_DAILY_NEW | Newest daily |
| DAQDARWIN_REPSTATUS_DAILY_VALID | Valid daily |
| DAQDARWIN_REPSTATUS_MONTHLY_NEW | Newest monthly |
| DAQDARWIN_REPSTATUS_MONTHLY_VALID | Valid monthly |

## DC Voltage Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDARWIN_RANGE_VOLT_20MV | 20 mV | –20.000-20.000 mV |
| DAQDARWIN_RANGE_VOLT_60MV | 60 mV | –60.00-60.00 mV |
| DAQDARWIN_RANGE_VOLT_200MV | 200 mV | –200.00-200.00 mV |
| DAQDARWIN_RANGE_VOLT_2V | 2 V | –2.0000-2.0000 V |
| DAQDARWIN_RANGE_VOLT_6V | 6 V | –6.000-6.000 V |
| DAQDARWIN_RANGE_VOLT_20V | 20 V | –20.000-20.000 V |
| DAQDARWIN_RANGE_VOLT_50V | 50 V | –50.00-50.00 V |

## TC Range

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDARWIN_RANGE_TC_R | R | 0.0 to 1760.0°C |
| DAQDARWIN_RANGE_TC_S | S | 0.0 to 1760.0°C |
| DAQDARWIN_RANGE_TC_B | B | 0.0 to 1820.0°C |
| DAQDARWIN_RANGE_TC_K | K | –200.0 to 1370.0°C |
| DAQDARWIN_RANGE_TC_E | E | –200.0 to 800.0°C |
| DAQDARWIN_RANGE_TC_J | J | –200.0 to 1100.0°C |
| DAQDARWIN_RANGE_TC_T | T | –200.0 to 400.0°C |
| DAQDARWIN_RANGE_TC_N | N | 0.0 to 1300.0°C |
| DAQDARWIN_RANGE_TC_W | W | 0.0 to 2315.0°C |
| DAQDARWIN_RANGE_TC_L | L | –200.0 to 900.0°C |
| DAQDARWIN_RANGE_TC_U | U | –200.0 to 400.0°C |
| DAQDARWIN_RANGE_TC_KP | KpAu7Fe | 0.0 to 300.0 K |

## RTD Range

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDARWIN_RANGE_RTD_1MAPT | Pt100:1mA | –200.0 to 600.0°C |
| DAQDARWIN_RANGE_RTD_2MAPT | Pt100:2mA | –200.0 to 250.0°C |
| DAQDARWIN_RANGE_RTD_1MAJPT | JPt100:1mA | –200.0 to 550.0°C |
| DAQDARWIN_RANGE_RTD_2MAJPT | JPt100:2mA | –200.0 to 250.0°C |
| DAQDARWIN_RANGE_RTD_2MAPT50 | Pt50:2mA | –200.0 to 550.0°C |
| DAQDARWIN_RANGE_RTD_1MAPTH | Pt100:1mA-H | –140.00 to 150.00°C |
| DAQDARWIN_RANGE_RTD_2MAPTH | Pt100:2mA-H | –70.00 to 70.00°C |
| DAQDARWIN_RANGE_RTD_1MAJPTH | JPt100:1mA-H | –140.00 to 150.00°C |
| DAQDARWIN_RANGE_RTD_2MAJPTH | JPt100:2mA-H | –70.00 to 70.00°C |
| DAQDARWIN_RANGE_RTD_1MANIS | Ni100:1mA-S | –200.0 to 250.0°C |
| DAQDARWIN_RANGE_RTD_1MANID | Ni100:1mA-D | –60.0 to 180.0°C |
| DAQDARWIN_RANGE_RTD_1MANI120 | Ni120:1mA | –70.0 to 200.0°C |
| DAQDARWIN_RANGE_RTD_CU10GE | Cu10:GE | –200.0 to 300.0°C |
| DAQDARWIN_RANGE_RTD_CU10LN | Cu10:L&N | –200.0 to 300.0°C |
| DAQDARWIN_RANGE_RTD_CU10WEED | Cu10:WEED | –200.0 to 300.0°C |
| DAQDARWIN_RANGE_RTD_CU10BAILEY | Cu10:BAILEY | –200.0 to 300.0°C |
| DAQDARWIN_RANGE_RTD_J263B | J263*B | –0.0 to 300.0 K |

## Contact Input (DI) Range

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDARWIN_RANGE_DI_LEVEL | Voltage input | Less than 2.4 V, Greater than or equal to 2.4 V |
| DAQDARWIN_RANGE_DI_CONTACT | Contact input | 0:open, 1:close |

## Strain input range

| Mnemonic | Description<br>Setting range |
|---|---|
| DAQDARWIN_RANGE_STRAIN_2K | 2k<br>–2000 to 2000 μStrain (One-Gauge Method)<br>–1000 to 1000 μstrain (two-gauge method),<br>–500 to 500 μstrain (4-gauge method) |
| DAQDARWIN_RANGE_STRAIN_20K | 20k<br>–20000 to 20000 μstrain (1-gauge method)<br>–10000 to 10000 μstrain (2-gauge method)<br>–5000 to 5000 μstrain (4-gauge method) |
| DAQDARWIN_RANGE_STRAIN_200K | 200k<br>–200000 to 200000 μstrain (1-gauge method)<br>–100000 to 100000 μstrain (2-gauge method)<br>–50000 to 50000 μstrain (4-gauge method) |

## Pulse range

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDARWIN_RANGE_PULSE_RATE | RATE | 0 - 30000 |
| DAQDARWIN_RANGE_PULSE_GATE | GATE | 0 - 30000 |

## Power monitor range

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDARWIN_RANGE_POWER_25V05A | 25 V 0.5 A | Voltage 25 V, current 0.5 A |
| DAQDARWIN_RANGE_POWER_25V5A | 25 V 5 A | Voltage 25 V, current 5 A |
| DAQDARWIN_RANGE_POWER_250V05A | 250 V 0.5 A | Voltage 250 V, current 0.5 A |
| DAQDARWIN_RANGE_POWER_250V5A | 250 V 5 A | Voltage 250 V, current 5 A |

## DC current range

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDARWIN_RANGE_MA_20MA | 20 mA | –20.000-20.000mA |

## Power connection method

| Mnemonic | Description |
|---|---|
| DAQDARWIN_WIRE_1PH2W | Single-phase two-wire |
| DAQDARWIN_WIRE_1PH3W | Single phase, 3-wire (for 3-wire only) |
| DAQDARWIN_WIRE_3PH3W2I | 3-phase 3-wire (for 2 voltage 2 current 3-wire only) |
| DAQDARWIN_WIRE_3PH3W3I | 3-phase 3-wire (for 3 voltage 3 current 3-wire only) |
| DAQDARWIN_WIRE_3PH4W | 3-phase, 4-wire (for 3-wire only) |

## Power measurement parameters

| Mnemonic | Description |
|---|---|
| DAQDARWIN_POWERITEM_I0 | (I1+I2+I3)/3 |
| DAQDARWIN_POWERITEM_I1 | Effective current 1 |
| DAQDARWIN_POWERITEM_I2 | Effective current 2 |
| DAQDARWIN_POWERITEM_I3 | Effective current 3 |
| DAQDARWIN_POWERITEM_I13 | (I1+I3)/2 |
| DAQDARWIN_POWERITEM_P0 | P1+P2+P3 |
| DAQDARWIN_POWERITEM_P1 | Active power 1 |
| DAQDARWIN_POWERITEM_P2 | Active power 2 |
| DAQDARWIN_POWERITEM_P3 | Active power 3 |
| DAQDARWIN_POWERITEM_P13 | P1+P3 |
| DAQDARWIN_POWERITEM_PF0 | $P0/(P0^2+VAR0^2)^{1/2}=P0/VA0$ |
| DAQDARWIN_POWERITEM_PF1 | Power factor 1 |
| DAQDARWIN_POWERITEM_PF2 | Power factor 2 |
| DAQDARWIN_POWERITEM_PF3 | Power factor 3 |
| DAQDARWIN_POWERITEM_PF13 | $P13/(P13^2+VAR132)^{1/2}=P13/VA13$ |
| DAQDARWIN_POWERITEM_PH0 | $\tan^{-1}(VAR0/P0)$ |
| DAQDARWIN_POWERITEM_PH1 | Phase 1 |
| DAQDARWIN_POWERITEM_PH2 | Phase 2 |
| DAQDARWIN_POWERITEM_PH3 | Phase 3 |
| DAQDARWIN_POWERITEM_PH13 | $\tan^{-1}(VAR13/P13)$ |
| DAQDARWIN_POWERITEM_V0 | (V1+V2+V3)/3 |
| DAQDARWIN_POWERITEM_V1 | Effective power 1 |
| DAQDARWIN_POWERITEM_V2 | Effective power 2 |
| DAQDARWIN_POWERITEM_V3 | Effective power 3 |
| DAQDARWIN_POWERITEM_V13 | (V1+V3)/2 |
| DAQDARWIN_POWERITEM_VA0 | VA1+VA2+VA3 |
| DAQDARWIN_POWERITEM_VA1 | Apparent power 1 |
| DAQDARWIN_POWERITEM_VA2 | Apparent power 2 |
| DAQDARWIN_POWERITEM_VA3 | Apparent power 3 |
| DAQDARWIN_POWERITEM_VA13 | VA1+VA3 |
| DAQDARWIN_POWERITEM_VAR0 | VAR1+VAR2+VAR3 |
| DAQDARWIN_POWERITEM_VAR1 | Reactive power 1 |
| DAQDARWIN_POWERITEM_VAR2 | Reactive power 2 |
| DAQDARWIN_POWERITEM_VAR3 | Reactive power 3 |
| DAQDARWIN_POWERITEM_VAR13 | VAR1+VAR3 |
| DAQDARWIN_POWERITEM_FREQ | Frequency |

# 11.3 Overview of the DARWIN Types

The data types below are provided.

| Type | Description | Page |
|---|---|---|
| DAQDARWIN | Device descriptor type. | 11-13 |
| DarwinDateTime | Time information structure. | 11-13 |
| DarwinChInfo | Channel information data structure. | 11-14 |
| DarwinDataInfo | Measured data structure. | 11-14 |
| DarwinModuleInfo | Module information structure. | 11-14 |
| DarwinUnitInfo | Unit information structure. | 11-15 |
| DarwinSystemInfo | System configuration data structure. | 11-15 |

| Type | Description |
|---|---|
| Callback type | Add prefix “DLL” to the function name and write in uppercase.<br>Example: callback type of the openDARWIN function:<br>DLLOPENDARWIN |

The callback type is used to link the executable module (.dll) when using the Visual C.

# 11.4 DARWIN Types

## Explanation on the Description

### Visual C/Visual C++, and Visual Basic Types

Indicates the type in Visual C/Visual C++ and Visual Basic.
Types without signs in Visual C/Visual C++ become types with signs in Visual Basic.
Number of array elements for Visual C/Visual C++ types is omitted.

### Retrieval

The markings below are used to indicate items that can be retrieved, those that the user can set, and so on.

**Talker**

Data retrieved using the talker function related to “retrieval of the measured data.”
R: Item that can be retrieved.

**Channel Information**

Data retrieved using the “retrieval of the channel information data” function.
R: Item that can be retrieved.

**ASCII**

Data retrieved using the “retrieval of measured data in ASCII code” function.
R: Item that can be retrieved.

**Binary**

Data retrieved using the “retrieval of measured data in binary code” function.
R: Item that can be retrieved.

### Terminology

In the explanation of types, terminology representing DARWIN functions is used. For a description of the DARWIN terminology, see appendix 2.

## DAQDARWIN

Type for storing the device descriptor.

Handled as Long type in Visual Basic and int in Visual C.

## DarwinDateTime

DarwinDateTime structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| char | aYear | Last two digits of the year (0 to 99) | Byte |
| char | aMonth | Month (1 to 12) R | Byte |
| char | aDay | Day (1 to 31) | Byte |
| char | aHour | Hours (0 to 23) | Byte |
| char | aMinute | Minutes (0 to 59) | Byte |
| char | aSecond | Seconds (0 to 59) | Byte |
| short | aMilliSecond | Not used | Integer |

Retrieval

| Name | Description | Talker |
|---|---|---|
| aYear | Lower two digits of the year (0 to 99) | R |
| aMonth | Month (1 to 12) | R |
| aDay | Day (1 to 31) | R |
| aHour | Hours (0 to 23) | R |
| aMinute | Minutes (0 to 59) | R |
| aSecond | Seconds (0 to 59) | R |

Time information data structure.

Visual C++: The wrapper class is CDAQDARWINDateTime.

Milliseconds are not used with the command support port.

## DarwinChInfo

DarwinChInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aChNo | Channel number | Long |
| int | aPoint | Decimal point pos. | Long |
| int | aStatus | Channel status | Long |
| int | aChType | Channel type | Long |
| char [] | aUnit | Unit name | String * DAQDARWIN_MAXUNITLEN |
| char | align | Not used. | (0 To 1) As Byte |

Retrieval

| Name | Description | ASCII | Binary | Channel Information |
|---|---|---|---|---|
| aChNo | Channel number | R | R | R |
| aPoint | Decimal Point Position | R | - | R |
| aStatus | Channel Status | - | - | R |
| aChType | Channel Type | R | R | R |
| aUnit | Unit Name | R | - | R |

Channel information data structure.

Visual C++: The wrapper class is CDAQDARWINChInfo.

***Note***

For functions that retrieve measured data in binary code, the decimal point position and unit information is not retrieved. To convert the measured data into a value with an engineering unit, retrieve the decimal point position separately.

## DarwinDataInfo

DarwinDataInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aValue | Data Value | Long |
| int | aStatus | Data Status | Long |
| int [] | aAlarm | Array of alarms for the number of alarm levels | (1 To 4) As Long |

Retrieval

| Name | Description | ASCII | Binary |
|---|---|---|---|
| aValue | Data Value | R | R |
| aStatus | Data Status | R | R |
| aAlarm | Array of alarms for the number of alarm levels | R | R |

Measured data structure.

The wrapper class is CDAQDARWINDataInfo.

## DarwinModuleInfo

DarwinModuleInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aSlotNo | Slot number | Long |
| int | aInternalCode | Internal code | Long |
| char [] | aName | Module name | String * DAQDARWIN_MAXMODULELEN |
| char | align | Not used. | (0 To 1) As Byte |

Module information structure.

## DarwinUnitInfo

DarwinUnitInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| int | aExist | Valid/Invalid of Reports | Long |
| int | aUnitNo | Unit Number | Long |
| DarwinModuleInfo [ ] | aModule | Array of module information of the specified number of slots | (0 To 5) As DarwinModuleInfo |

Unit information structure.

## DarwinSystemInfo

DarwinSystemInfo structure

| Visual C/C++ Type | Name | Description | Visual Basic Type |
|---|---|---|---|
| DarwinUnitInfo | aMainUnit | Main unit's unit information | DarwinUnitInfo |
| DarwinUnitInfo [ ] | aSubUnit | Array of unit information of of the specified number of subunits | (0 To 5) As DarwinUnitInfo |

System configuration data structure.
Visual C++: The wrapper class is CDAQDARWINSysInfo.

# 12.1 MX100 Class

The Extended API consists of the MX100-dedicated classes below.

- **CDAQConfig**
  - **CDAQMXItemConfig**
- **CDAQHandler**
  - **CDAQMX**
    - **CDAQMX100**
- **CDAQMXDataBuffer**
- **CDAQMXList**
  - **CDAQMXAOPWMList**
  - **CDAQMXBalanceList**
  - **CDAQMXDOList**
  - **CDAQMXTransmitList**

■ : Class of API.

• : Class added by the extended API

### CDAQMX100 Class

A handler class for the main unit. Executes status transitions.

### CDAQMXAOPWMList Class

Class for managing command AO/PWM channel data.

### CDAQMXBalanceList Class

Class for managing initial balance data.

### CDAQMXDataBuffer Class

Class for storing the measured data by channel.

### CDAQMXDOList Class

Class for managing command DO channel data.

### CDAQMXItemConfig Class

Class for the setup data handled by setting items.

### CDAQMXList Class

Common class for managing user data in lists.

### CDAQMXTransmitList Class

Class for managing transmission output data.

## Notes

Memory usage is large since the various kinds of data are stored internally.
Performance may suffer since the status is retrieved during status transitions.
Also, if memory or disk space is insufficient, data may not be saved correctly.

Problems may occur when communications are performed for functions other than status transitions.
If access to the MX100 main unit is lost, communications are closed.
If you want to keep the connection open, run status data retrieval.

The following items are restricted, and not supported.

- Auto control of the FIFO cannot be used.
- User count cannot be used.
- Data numbers cannot be used.
- Status  of the 7-segment LED status cannot be retrieved.
- Timeout value of the CF card cannot be set.
- Communication timeout cannot be set arbitrarily. It is set automatically to 180 seconds after communications are opened.

# 12.2 Correspondence between the Functions and Class/Member Functions - MX100 -

This section indicates the correspondence between the functions that the Extended API supports and the class member functions.
There are two types, status transition functions and retrieval functions.
Status transition functions control the MX100. When measured data is retrieved with the data retrieval function, the measured data advances by only one measurement interval's worth of data (the status of the Extended API changes).
The retrieval function returns the parameter value. When data values are retrieved, the data value of the current status held by the Extended API is returned (the status of the Extended API does not change).

## Status Transition Functions

The FIFO column in the table indicates the FIFO operation when the function is executed while FIFO is running.
Stop: Stops the FIFO when the function is executed.
Continue: Continues the FIFO even when the function is executed.

### Communication Functions

| Function | FIFO | Class and Member Function |
|---|---|---|
| Connect to the MX100. | Continue | CDAQMX100:: open |
| Disconnect from the MX100. | Continue | CDAQMX100:: close |

### Starting/Stopping the FIFO

| Function | FIFO | Class and Member Function |
|---|---|---|
| Start the FIFO | Continue | CDAQMX100:: measStart |
| Stop the FIFO | Stop | CDAQMX100:: measStop |

## Control Functions

| Function | | FIFO | Class and Member Function |
|---|---|---|---|
| Set date/time Current time | | Stop | CDAQMX100:: setDateTime |
| Set backup valid/invalid | | Continue | CDAQMX100:: switchBackup |
| Format of the CF card | | Stop | CDAQMX100:: formatCF |
| Unit | Reconfigure | Stop | CDAQMX100:: reconstruct |
| | Initialize | Stop | CDAQMX100:: initSetValue |
| | Reset alarm (alarm ACK) | Stop | CDAQMX100:: ackAlarm |
| 7-segment LED display | | Continue | CDAQMX100:: displaySegment |
| Initialize stored data | Specify channel | Continue | CDAQMX100:: initDataCh |
| | Specify FIFO | Continue | CDAQMX100:: initDataFIFO |

At the end of communications, the control function updates the status.
See the data manipulation functions for more about the data transmission and setup functions.

## Setup Functions

| Function | | | FIFO | Class and Member Function |
|---|---|---|---|---|
| Setup data | Collectively (send collectively) | All setup data | Stop | CDAQMX100:: sendConfig |
| | | Basic setup data | Stop | CDAQMX100:: sendConfig |
| | Individually | System config data | Stop | CDAQMX100:: sendConfig |
| | | Channel setup data | Stop | CDAQMX100:: sendConfig |
| | | Initial balance data | Stop | CDAQMX100:: sendConfig |
| | | Output channel data | Stop | CDAQMX100:: sendConfig |
| Initial balnc data | Execute | | Stop | CDAQMX100:: initBalance |
| | Reset | | Stop | CDAQMX100:: clearBalance |

The setup data setup functions send the data being stored.
When setting arbitrary initial balance data, see the initial balance data sending function under data manipulation functions.

## Setup Change Functions

The setup functions send the settings then update the status.

These settings are for individual channels. If the settings could not be entered, an error is usually returned.

Specification is possible with data values or measured values (Double).

### Range Settings

| Function | FIFO | Class and Member Function |
|---|---|---|
| Skip | Stop | CDAQMX100:: setRange |
| DC voltage input | Stop | CDAQMX100:: setRange |
| Thermocouple input | Stop | CDAQMX100:: setRange |
| RTD | Stop | CDAQMX100:: setRange |
| Digital input | Stop | CDAQMX100:: setRange |
| Resistance | Stop | CDAQMX100:: setRange |
| Strain | Stop | CDAQMX100:: setRange |
| AO | Stop | CDAQMX100:: setRange |
| PWM | Stop | CDAQMX100:: setRange |
| Difference computation between channels | Stop | CDAQMX100:: setChDELTA |
| Remote RJC | Stop | CDAQMX100:: setChRRJC |
| Pulse | Stop | CDAQMX100:: setRange |
| Communication | Stop | CDAQMX100:: setRange |

### Channel Settings

| Function | | FIFO | Class and Member Function |
|---|---|---|---|
| Unit name | | Stop | CDAQMX100:: setChUnit |
| Tag | | Stop | CDAQMX100:: setChTag |
| Comment | | Stop | CDAQMX100:: setChComment |
| AI/DI/AO/PWM | Span | Stop | CDAQMX100:: setSpan |
| AI/DI | Scale | Stop | CDAQMX100:: setScale |
| | Alarm | Stop | CDAQMX100:: setAlarm |
| | Hysteresis | Stop | CDAQMX100:: setHisteresys |
| AI | Filter coefficient | Stop | CDAQMX100:: setFilter |
| | Ref. junction compensation (RJC) | Stop | CDAQMX100:: setRJCType |
| | Burnout | Stop | CDAQMX100:: setBurnout |
| DO | De-energize | Stop | CDAQMX100:: setDeenergize |
| | Hold | Stop | CDAQMX100:: setHold |
| | Reference alarm | Stop | CDAQMX100:: setRefAlarm |
| Channel kind | DO type | Stop | CDAQMX100:: setChKind |
| | AO type | Stop | CDAQMX100:: setChKind |
| | PWM type | Stop | CDAQMX100:: setChKind |
| PI | Chattering filter | Stop | CDAQMX100:: setChatFilter |

## Module Settings

| Function | FIFO | Class and Member Function |
|---|---|---|
| Interval type | Stop | CDAQMX100:: setInterval |
| A/D integration time type | Stop | CDAQMX100:: setIntegral |

## Unit Settings

| Function | FIFO | Class and Member Function |
|---|---|---|
| Unit number | Stop | CDAQMX100:: setUnitNo |
| Temperature unit type | Stop | CDAQMX100:: setUnitTemp |
| CF write mode | Stop | CDAQMX100:: setCFWriteMode |

## Output Channel Data

| Function | FIFO | Class and Member Function |
|---|---|---|
| Output type | Stop | CDAQMX100:: setOutputType |
| Selected value | Stop | CDAQMX100:: setChoice |
| Pulse interval integer multiple | Stop | CDAQMX100:: setPulseTime |

## Data Manipulation Functions

### DO Data

| Function | | FIFO | Class and Member Function |
|---|---|---|---|
| Create | | Continue | CDAQMXDOList:: create |
| Delete | | Continue | CDAQMXDOList:: del |
| Partial chng | User spec | Continue | CDAQMXDOList:: change |
| | Copy | Continue | CDAQMXDOList:: copy |
| Transmission | Existing spec | Continue | CDAQMX100:: commandDO |
| | Change spec | Continue | CDAQMX100:: switchDO |

### AO/PWM Data

| Function | | FIFO | Class and Member Function |
|---|---|---|---|
| Create | | Continue | CDAQMXAOPWMList:: create |
| Delete | | Continue | CDAQMXAOPWMList:: del |
| Partial change | Output data value | Continue | CDAQMXAOPWMList:: change |
| | Actual output value | Continue | CDAQMX100:: changeAOPWMValue |
| | Copy | Continue | CDAQMXAOPWMList:: copy |
| Transmit | | Continue | CDAQMX100:: commandAOPWM |

### Initial Balance Data

| Function | | FIFO | Class and Member Function |
|---|---|---|---|
| Create | | Continue | CDAQMXBalanceList:: create |
| Delete | | Continue | CDAQMXBalanceList:: del |
| Partial change | User spec | Continue | CDAQMXBalanceList:: change |
| | Copy | Continue | CDAQMXBalanceList:: copy |
| Transmit | | Stop | CDAQMX100::reloadBalance |

### Transmission Output Data

| Function | | FIFO | Class and Member Function |
|---|---|---|---|
| Create | | Continue | CDAQMXTransmitList:: create |
| Delete | | Continue | CDAQMXTransmitList:: del |
| Partial change | User specification | Continue | CDAQMXTransmitList:: change |
| | Copy | Continue | CDAQMXTransmitList:: copy |
| Transmit | Existing specification | Continue | CDAQMX100:: commandTransmit |
| | Change specification | Continue | CDAQMX100:: switchTransmit |

Manipulates each data by indentifier.

Follows the CDAQMX100 class.

For manipulation other than transmission, status is not updated (no communication).

## Retrieval Functions

| Function | | | FIFO | Class and Member Function |
|---|---|---|---|---|
| Status data | | | Continue | CDAQMX100:: updateStatus |
| System configuration data | | | Continue | CDAQMX100:: updateSystem |
| Setup data | | | Continue | CDAQMX100:: updateConfig |
| Output data | DO Data | | Continue | CDAQMX100:: updateDOData |
| | AO/PWM data Transmission Output Data | | Continue | CDAQMX100:: updateAOPWMData |
| Channel Information Data | | | Continue | CDAQMX100:: updateInfoCh |
| Measured Data | Specify channel | FIFO val | Continue | CDAQMX100:: measDataCh |
| | | Inst val | Continue | CDAQMX100:: measInstCh |
| | Specify FIFO | FIFO val | Continue | CDAQMX100:: measDataFIFO |
| | | Inst val | Continue | CDAQMX100:: measInstFIFO |
| Initial balance data | | | Continue | CDAQMX100:: updateBalance |
| Output channel data | | | Continue | CDAQMX100:: updateOutput |

Data retrieval is performed collectively and internally by this Extended API.
Depending on the acquisition, the status may also be updated.
Channel information data and setup data (including system configuration data, initial balance data, and output channel data) are stored internally, but the user can update stored data explicitly.

## Setup Item Functions

| Function | | FIFO | Class and Member Function |
|---|---|---|---|
| Setup data | Receive collectively | Continue | CDAQMX100:: getItemAll |
| | Send collectively | Stop | CDAQMX100:: setItemAll |
| Setup items | Read | Continue | CDAQMXItemConfig:: readItem |
| | Write | Continue | CDAQMXItemConfig:: writeItem |
| | Initialize | Continue | CDAQMXItemConfig:: initialize |

Loading, writing, and initializing of setting items is performed through access to the field where the item is stored, and validity checks are not performed on those fields. Also, status is not updated (no communication).

## Retrieval Functions

Each data is stored in its class according to type. They are retrieved from the CDAQMX100 class.

### Measured Data

| Data Name | | Class and Member Function |
|---|---|---|
| Data value | | CDAQMXDataInfo:: getValue |
| Data status values | | CDAQMXDataInfo:: getStatus |
| Alarm (presence/absence) | | CDAQMXDataInfo:: isAlarm |
| Measured value | Double integer | CDAQMXDataInfo:: getDoubleValue |
| | String | CDAQMXDataInfo:: getStringValue |
| Time | No. of seconds | CDAQMXDateTime:: getTime |
| | Milliseconds | CDAQMXDateTime:: getMilliSecond |
| Valid data (presence/absence) | | CDAQMXDataBuffer:: isCurrent |

The data is retrieved from DAQMX100::getClassMXDataBuffer through CDAQMXDataBuffer::currentDataInfo and CDAQMXDataBuffer::currentDateTime.

### Channel Information Data

| Data Name | Class and Member Function |
|---|---|
| FIFO number | CDAQMXChInfo:: getFIFONo |
| Channel sequence number in the FIFO | CDAQMXChInfo:: getFIFOIndex |
| Display minimum value | CDAQMXChInfo:: getDisplayMin |
| Display maximum value | CDAQMXChInfo:: getDisplayMax |
| Measurable minimum value | CDAQMXChInfo:: getRealMin |
| Measurable maximum value | CDAQMXChInfo:: getRealMax |

The data is retrieved from DAQMX100::getClassMXDataBuffer through CDAQMXDataBuffer::getClassMXChInfo.

## Channel Setup Data

| Data Name | | | Class and Member Function |
|---|---|---|---|
| Channel status (valid/invalid) | | | CDAQMXChConfig:: isValid |
| Decimal Point Position | | | CDAQMXChConfig:: getPoint |
| Channel kind | | | CDAQMXChConfig:: getKind |
| Range type | | | CDAQMXChConfig:: getRange |
| Scale type | | | CDAQMXChConfig:: getScale |
| Unit name | | | CDAQMXChConfig:: getUnit |
| Tag | | | CDAQMXChConfig:: getTag |
| Comment | | | CDAQMXChConfig:: getComment |
| AI/DI/ Span | Min value | Data value | CDAQMXChConfig:: getSpanMin |
| | | Meas values | CDAQMXItemConfig:: getDoubleSpanMin |
| | Max value | Data value | CDAQMXChConfig:: getSpanMax |
| | | Meas value | CDAQMXItemConfig:: getDoubleSpanMax |
| AI/DIAO/PWM | | | |
| Scale | Min value | Data value | CDAQMXChConfig:: getScaleMin |
| | | Meas value | CDAQMXItemConfig:: getDoubleScaleMin |
| | Max value | Data value | CDAQMXChConfig:: getScaleMax |
| | | Meas values | CDAQMXItemConfig:: getDoubleScaleMax |
| Alarm type | | | CDAQMXChConfig:: getAlarmType |
| Alarm value (ON) | | Data Value | CDAQMXChConfig:: getAlarmValueON |
| | | Meas values | CDAQMXItemConfig:: getDoubleAlarmON |
| Alarm value (OFF) | | Data Value | CDAQMXChConfig:: getAlarmValueOFF |
| | | Meas value | CDAQMXItemConfig:: getDoubleAlarmOFF |
| Hysteresis | | Data Value | CDAQMXItemConfig:: getHisterisys |
| | | Meas value | CDAQMXItemConfig:: getDoubleHisterisys |
| AI Filter | | | CDAQMXChConfig:: getFilter |
| RJC type | | | CDAQMXChConfig:: getRJCType |
| RJC voltage | | | CDAQMXChConfig:: getRJCVolt |
| Burnout | | | CDAQMXChConfig:: getBurnout |
| DO De-energize | | | CDAQMXChConfig:: isDeenergize |
| Hold | | | CDAQMXChConfig:: isHold |
| Reference alarm | | | CDAQMXChConfig:: isRefAlarm |
| Channels under going difference between channels computation/RRJC/AO/PWM | | | |
| | | Ref. channel number | CDAQMXChConfig:: getRefChNo |
| Initial bal data | Boolean value | | CDAQMXBalanceData:: getBalanceValid |
| | Initial balance value | | CDAQMXBalanceData:: getBalanceValue |
| Output channel data | Output type | | CDAQMXOutputData:: getOutputType |
| | Selection when idle | | CDAQMXOutputData:: getIdleChoice |
| | Selection during error | | CDAQMXOutputData:: getErrorChoice |
| | Value if the selected value is the “specified value.” | | |
| | | Data value | CDAQMXOutputData:: getPresetValue |
| | | Meas value | CDAQMXItemConfig:: getDoublePresetValue |
| | Pls intrvl integer mult. | | CDAQMXOutputData:: getPulseTime |
| PI | Chattering filter | | CDAQMXChConfig:: isChatFilter |

The data is retrieved from CDAQMX100::getClassMXItemConfig through CDAQMXItemConfig::getClassMXChConfig. The initial balance data is the same as the current data. It is retrieved from CDAQMX100::getClassMXItemConfig through CDAQMXItemConfig::getClassMXBalanceData.
The output channel data is retrieved from CDAQMX100::getClassMXItemConfig through CDAQMXItemConfig::getClassMXOutputData.

### Network Information Data

| Data Name | Class and Member Function |
|---|---|
| Host name | CDAQMXNetInfo:: getHost |
| IP address | CDAQMXNetInfo:: getAddress |
| Port number | CDAQMXNetInfo:: getPort |
| Subnet mask | CDAQMXNetInfo:: getSubMask |
| Gateway address | CDAQMXNetInfo:: getGateway |

The data is retrieved from CDAQMX100::getClassMXItemConfig through CDAQMXItemConfig::getClassMXNetInfo.

### System Configuration Data

| Data Name | | Class and Member Function |
|---|---|---|
| Modules | Module type | CDAQMXSysInfo: getModuleType |
| | Number of channels | CDAQMXSysInfo: getChNum |
| | Interval type | CDAQMXSysInfo: getInterval |
| | AD integration time type | CDAQMXSysInfo: getIntegral |
| | Valid/Invalid value | CDAQMXSysInfo: isModuleValid |
| | Module type at startup | CDAQMXSysInfo: getStandbyType |
| | Actual module type | CDAQMXSysInfo: getRealType |
| | Terminal type | CDAQMXSysInfo: getTerminalType |
| | Version | CDAQMXSysInfo: getModuleVersion |
| | FIFO number | CDAQMXSysInfo: getFIFONo |
| | Serial number | CDAQMXSysInfo: getModuleSerial |
| Unit | Unit type | CDAQMXSysInfo: getUnitType |
| | Style | CDAQMXSysInfo: getStyle |
| | Unit number | CDAQMXSysInfo: getUnitNo |
| | Temperature unit type | CDAQMXSysInfo: getTempUnit |
| | Power supply frequency | CDAQMXSysInfo: getFrequency |
| | Part number | CDAQMXSysInfo: getPartNo |
| | Option | CDAQMXSysInfo: getOption |
| | Serial number | CDAQMXSysInfo: getUnitSerial |
| | MAC address | CDAQMXSysInfo.getMAC |
| | CF write mode | CDAQMXSysInfo: getCFWriteMode |

The data is retrieved from CDAQMX100::getClassMXItemConfig through CDAQMXItemConfig::getClassMXSysInfo.

## Status Data

| Data Name | | Class and Member Function |
|---|---|---|
| Unit status value | | CDAQMXStatus:: getUnitStatus |
| Valid number of FIFOs | | CDAQMXStatus:: getFIFONum |
| Backup (presence or absence) | | CDAQMXStatus:: isBackup |
| FIFO | FIFO status value | CDAQMXStatus:: getFIFOStatus |
| | Interval type | CDAQMXStatus:: getInterval |
| CF | CF status type | CDAQMXStatus:: getCFStatus |
| | Size | CDAQMXStatus:: getCFSize |
| | Remaining capacity | CDAQMXStatus:: getCFRemain |
| Status return time | No. of seconds | CDAQMXStatus:: getTime |
| | Milliseconds | CDAQMXStatus:: getMilliSecond |

The data is retrieved from CDAQMX100::getClassMXItemConfig through CDAQMXItemConfig::getClassMXStatus.

## Current Data

| Data Name | | Class and Member Function |
|---|---|---|
| DO data | Valid/Invalid Value | CDAQMXDOData:: getDOValid |
| | ON/OFF status | CDAQMXDOData:: getDOONOFF |
| AO/PWM data | Valid/Invalid Value | CDAQMXAOPWMData:: getAOPWMValid |
| | Output data value | CDAQMXAOPWMData:: getAOPWMValue |
| | Output value | CDAQMX100:: currentDoubleAOPWMValue |
| Initial balance data | Valid/Invalid Value | CDAQMXBalanceResult:: getBalanceValid |
| | Initial balance value | CDAQMXBalanceResult:: getBalanceValue |
| | Initial balance result | CDAQMXBalanceResult:: getResult |
| Trans. outpt data | Transmission status | CDAQMXTransmit:: getTransmit |

This is the status of each data retrieved with the data retrieval functions.
The initial balance result of the initial balance data is the result executed by the setup function. DO data is retrieved from CDAQMX100::getClassMXDOList through CDAQMXDOList::getCurrent.
AO/PWM data is retrieved from CDAQMX100::getMXAOPWMList through CDAQMXAOPWMList::getCurrent.
Initial balance data is retrieved from CDAQMX100::getClassMXBalanceList through CDAQMXBalanceList::getCurrent.
Transmission output data is retrieved from CDAQMX100::getClassMXTransmitList through CDAQMXTransmitList::getCurrent.
Actually-output output statuses such as DO data and AO/PWM data can be retrieved as current data. However, immediately after sending data, the specified value is returned, and the actual output may occur at the next timing.
Held data are the values retrieved upon a status update. It is not data from the time the retrieval function was called.

## User Data

| Data Name | | Class and Member Function |
|---|---|---|
| DO data | Valid/Invalid value | CDAQMXDOData:: getDOValid |
| | ON/OFF status | CDAQMXDOData:: getDOONOFF |
| AO/PWM data | Valid/Invalid value | CDAQMXAOPWMData:: getAOPWMValid |
| | Output data value | CDAQMXAOPWMData:: getAOPWMValue |
| | Output value | CDAQMX100:: userDoubleAOPWMValue |
| Initial balance data | Valid/Invalid value | CDAQMXBalanceData:: getBalanceValid |
| | Initial balance value | CDAQMXBalanceData:: getBalanceValue |
| Trans.outpt data | Transmission status | CDAQMXTransmit:: getTransmit |

Gets the data values created by the user with data manipulation functions.
DO data is retrieved from CDAQMX100::getClassMXDOList through CDAQMXDOList::getClassMXDOData.
AO/PWM data is retrieved from CDAQMX100::getMXAOPWMList through CDAQMXAOPWMList::getClassMXAOPWM.
Initial balance data is retrieved from CDAQMX100::getClassMXBalanceList through CDAQMXBalanceList::getClassMXBalanceData.
Transmission output data is retrieved from CDAQMX100::getClassMXTransmitList through CDAQMXTransmitList::getClassMXTransmit.

## Utilities

| Function/Data Name | | Class and Member Function |
|---|---|---|
| No. of remaining data | | |
| | Retrieve by channel | CDAQMXDataBuffer:: getDataNum |
| | Retrieve by FIFO | CDAQMX100:: getDataNum |
| Error | Get MX-specific error | CDAQMX100:: getLastError |
| | Get the error message string. | CDAQMX100:: getErrorMessage |
| | Get the maximum length of the error message string. | CDAQMX100:: getMaxLenErrorMessage |
| | Get the number of the parameter on which an error was detected | CDAQMX100:: getItemError |
| Change from FIFO information to channel number | | CDAQMX100:: toChNo |
| Get the decimal point position by range type. | | CDAQMXConfig:: getRangePoint |
| Meas value | Change to double integer | CDAQMXDataInfo:: toDoubleValue |
| | Convert into string. | CDAQMXDataInfo:: toStringValue |
| Alarm | Get the alarm type string. | CDAQMXDataInfo:: getAlarmName |
| | Get the maximum length of the alarm string. | CDAQMXDataInfo:: getMaxLenAlarmName |
| Get the version number of this API. | | CDAQMX100:: getVersionAPI |
| Get the revision number of this API. | | CDAQMX100:: getRevisionAPI |
| Get a portion of the IP address. | | CDAQMXNetInfo:: getPart |
| AO/PWM | Convert the output values to output data values. | CDAQMXAOPWMData:: toAOPWMValue |
| | Convert the output data values to output values. | CDAQMXAOPWMData:: toRealValue |
| Setup items | Get setup itm strng from setup itm no. | CDAQMXItemConfig:: toItemName |
| | Gets the setup item number from the setup item string | CDAQMXItemConfig:: getItemNo |
| | Get the maximum length of the setup item string. | CDAQMXItemConfig:: getMaxLenItemName |
| Converts to style version. | | CDAQMXSysInfo: toStyleVersion |

# 12.3 Programming - MX100/Visual C++ -

## Adding the Path to the Include File

Add the path of the include file (DAQMX100.h) to the project. The method of adding the include file varies depending on the environment used.

## Declaration in the Source File

Write the declaration in the source file.

```
#include ìDAQMX100.h"
```

***Note***

The include file of the common section (DAQHandler.h) and the MX100 include file (DAQMX.h) is referenced from the include file described above. Thus, declaration for it is not necessary.

## Library Designation

Adds libraries (DAQMX100.lib, DAQMX.lib, and DAQHandler.lib) to the project. The method of adding the include file varies depending on the environment used.
This enables the use of all classes. It also enables the use of all Visual C functions.

# Retrieval of the Measured Data

## Program Example

```
////////////////////////////////////////////////////////////
// MX100 sample for measurement
#include <stdio.h>
#include "DAQMX100.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  CDAQMX100 daqmx100; //class
  int value;
  //connect
  rc = daqmx100.open("192.168.1.12");
  //get
  rc = daqmx100.measStart();
  rc = daqmx100.measDataCh(1);
  value = ((daqmx100.getClassMXDataBuffer(1))->
    currentDataInfo())->getValue();
  rc = daqmx100.measStop();
  //disconnect
  rc = daqmx100.close();
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Overview

Data retrieval is possible by starting the FIFO. The amount of retrievable data within the FIFO data of the MX100 channel 1 is retrieved and stored in the field. Gets the measured value data (one point) from the first measurement point of the current status and concludes the process.

### Communication Connection

`rc = daqmx100.open("192.168.1.12");`

The IP address of the MX100 is specified.

This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

### FIFO Start

`daqmx100.measStart()`

Starts the FIFO on the MX100.

### Retrieval of the Measured Data of Channel 1

`rc = daqmx100.measDataCh(1);`

The amount of retrievable measured data from channel 1 of the MX100 is retrieved and stored in the field. The first measurement point is set as the current status.

**Retrieval of Measured Values**

```
value = ((daqmx100.getClassMXDataBuffer(1))->
currentDataInfo())->getValue();
```

Retrieves the measured value of the current status of channel 1 from the field where the measured data by channels are stored through the measured data of the current status.

**FIFO Stop**

```
rc = daqmx100.measStop();
```

Stops the FIFO.

**Comm. cut**

```
rc = daqmx100.close();
```

Drops the connection.

**Reference**

The sample program is completed by executing measDaraCh only once.
Each time the measDataCh is executed, the measurement point advances by one, and the next data is set as the current status. When the last stored measurement point is reached, the next retrievable amount of data is retrieved again.

# Retrieval of Setup Data and Configuration

## Program Example

```
////////////////////////////////////////////////////////////
// MX100 sample for items
#include <stdio.h>
#include "DAQMX100.h"#include "DAQMXItems.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  CDAQMX100 daqmx100; //class
  int i; //counter
  char strItem[BUFSIZ];
  int realLen;
  //connect
  rc = daqmx100.open("192.168.1.12");
  //get
  rc = daqmx100.getItemAll();
  //loop by items
  for (i = DAQMX_ITEM_ALL_START; i <= DAQMX_ITEM_ALL_END; i++)
{
    //read
    realLen = (daqmx100.getClassMXItemConfig()).readItem(i,
strItem, BUFSIZ);
    //write
    rc = (daqmx100.getClassMXItemConfig()).writeItem(i,
strItem);
  }
  //set
  rc = daqmx100.setItemAll();
  //disconnect
  rc = daqmx100.close();
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Overview

The program is an example of reading and writing all setup items. The following four actions are executed.

- Gets the setup data from the MX100 collectively.
- Retrieves the setup data of the setup data field by item.
- Writes the setup data in the setup data field by item.
- Sends the setup data to the MX100 collectively.

Each item is retrieved and written from the first number to the end number.

Be sure to prepare string fields of sufficient size.

By saving and loading groups of item numbers and item strings, you can backup the setup data.

For setup item numbers, see section 6.3.

**Communication Connection**

```
rc = daqmx100.open("192.168.1.12");
```

The IP address of the MX100 is specified. This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

**Getting the Setup Data Collectively**

```
rc = daqmx100.getItemAll();
```

Gets all items of the MX100 setup data collectively and stores in the setup data field.

**Retrieval of the Setup Data by Item**

```
realLen = (daqmx100.getClassMXItemConfig()).readItem(i,
strItem, BUFSIZ);
```

Retrieves the contents of item number “i” from the setup data field.

**Writing the Setup Data by Item**

```
rc = (daqmx100.getClassMXItemConfig()).writeItem(i, strItem);
```

Writes the contents of strItem to item number “i” of the setup data field.

**Sending the Setup Data Collectively**

```
rc = daqmx100.setItemAll();
```

Sends all items of the setup data to the MX100 collectively.

**Comm. cut**

```
rc = daqmx100.close();
```

Drops the connection.

# 12.4 Details of the MX100 Class

Classes are listed in alphabetical order by the class name.

## CDAQMX100 Class

This class is a CDAQMX derived class.
This class communicates with the MX100, and stores the retrieved data.
It supports status transition functions. In general, after a function is executed, the status is updated and saved.
For setup functions, after each setting is executed the settings are received again and the status is updated. When collective transmission is carried out by a setup function or setting item function, the FIFO stops. The following data can be stored.

- Setup Data
- Channel Information Data
- Measured Data
- Time Information data

Data that is actively manipulated by the user such as command DO can be stored and managed.
By creating data to be sent in advance and assigning identifiers to it, the data can be easily transmitted. The following data can be stored.

- DO Data
- AO/PWM Data
- Transmission Output Data
- Initial Balance Data

### Public Members

#### Construct/Destruct

| | |
|---|---|
| CDAQMX100 | Constructs an object. |
| ~CDAQMX100 | Destructs an object. |

#### FIFO Functions

| | |
|---|---|
| measStart | Starts data acquisition. |
| measStop | Stops data acquisition. |

## Control Functions

| | |
|---|---|
| switchBackup | Switches backup. |
| reconstruct | Reconfigures the system. |
| initSetValue | Initializes the system. |
| ackAlarm | Resets alarms. |
| displaySegment | Displays the 7-segment LED. |
| sendConfig | Sends the setup data collectively. |
| initBalance | Executes initial balancing. |
| clearBalance | Initializes the initial balance value. |

## Setup Functions

| | |
|---|---|
| setRange | Sets the range. |
| setChDELTA | Sets difference computation between channels. |
| setChRRJC | Sets remote RJC. |
| setChUnit | Sets the unit name. |
| setChTag | Sets the tag. |
| setChComment | Sets the comment. |
| setSpan | Sets the span. |
| setScale | Sets the scale. |
| setAlarm | Sets the alarm value. |
| setHisterisys | Sets the hysteresis. |
| setFilter | Set the filter time constant. |
| setRJCType | Sets the RJC type. |
| setBurnout | Sets the burnout type. |
| setDeenergize | Sets de-energize. |
| setHold | Sets hold. |
| setRefAlarm | Sets the reference alarm. |
| setChKind | Sets the channel type. |
| setInterval | Sets the interval type. |
| setIntegral | Sets the type of A/D integration time. |
| setUnitNo | Sets the unit number. |
| setUnitTemp | Sets the temperature unit type. |
| setCFWriteMode | Sets the CF write mode. |
| setOutputType | Sets the output type. |
| setChoice | Sets the selected value. |
| setPulseTime | Sets the integer multiple of the pulse interval. |
| setChatFilter | Sets the chattering filter. |

### Data Update Functions

| | |
|---|---|
| updateStatus | Updates status data. |
| updateSystem | Updates the system configuration data. |
| updateConfig | Updates the setup data. |
| updateDOData | Updates the current DO data. |
| updateAOPWMData | Updates the current AO/PWM data. |
| updateBalance | Updates the current initial balance data. |
| updateOutput | Updates the current output channel data. |
| updateInfoCh | Updates the channel information data. |

### Data Retrieval Functions

| | |
|---|---|
| measDataCh | Gets FIFO values by channel. |
| measDataFIFO | Gets FIFO values by FIFO. |
| measInstCh | Gets instantaneous values by channel. |
| measInstFIFO | Gets instantaneous values by FIFO. |

### Data Manipulation Functions

| | |
|---|---|
| commandDO | Sends DO data. |
| switchDO | Switches DO data. |
| changeAOPWMValue | Changes AO/PWM data. |
| commandAOPWM | Sends AO/PWM data. |
| reloadBalance | Sends initial balance data. |
| commandTransmit | Sends transmission output data. |
| switchTransmit | Switches transmssion output data. |
| currentDoubleAOPWMValue | Gets the current output data value. |
| userDoubleAOPWMValue | Gets the user created output data value. |

### Setup Item Functions

| | |
|---|---|
| getItemAll | Gets the setup data collectively. |
| setItemAll | Sends the setup data collectively. |

### Member Data Manipulation

| | |
|---|---|
| getClassMXItemConfig | Gets the setup data. |
| getClassMXDataBuffer | Gets the type information for each channel. |
| getClassMXDOList | Gets the DO data management information. |
| getClassMXAOPWMList | Gets the AO/PWM data management information. |
| getClassMXTransmitList | Gets the transmission output data management information. |
| getClassMXBalanceList | Gets initial balance data management information. |

### Utilities

| | |
|---|---|
| initDataCh | Initializes the stored data of the specified channel. |
| initDataFIFO | Initializes the stored data of the specified FIFO. |
| getDataNum | Gets the remaining number of data. |
| toChNo | Gets the channel number. |

- **Overridden Members**

### Communication Functions

| | |
|---|---|
| open | Establishes connection. |

### Control Functions

| | |
|---|---|
| setDateTime | Sets the time information. |
| formatCF | Formats the CF card. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

- **Inherited Members**

See CDAQHandler.

```
closeget getErrorMessage getMaxLenErrorMessage getRevisionAPI
getVersionAPI receiveLine sendLine setTimeOut
```

See CDAQMX

```
autoFIFO getAOPWMData getBalance getChannel getChConfig
getChData getChDataNo getChInfo getConfig getData getDOData
getFIFOData getFIFODataNo getItemError getLastError
getMXConfig getOutput getStatusData getUserTime getTimeData
initSystem resetBalance runBalance setAOPWMData setBackup
setBalance setConfig setDOData setMXConfig setOutput
setSegment setTransmit setUserTime startFIFO stopFIFO
talkChData talkChInfo talkConfig
```

## Protected Members

### Data Members

| | |
|---|---|
| m_cMXItemConfig | Field for storing the setup data. |
| m_cMXDataBuffer | Field for storing various types of information on each measurement channel. |
| m_cMXDOList | Field for managing the DO data. |
| m_cMXAOPWMList | Field for managing the AO/PWM data. |
| m_cMXTransmitList | Field for managing the transmission output data. |
| m_cMXBalanceList | Field for managing the initial balance data. |

### Member Data Manipulation

| | |
|---|---|
| measClear | Initializes the data member for retrieval of the measured data. |
| userClear | Initializes the data member of the management field. |

### Data Update Functions

| | |
|---|---|
| updateAll | Updates all status and information data. |
| updateRenew | Updates the status. |

### Data Retrieval Functions

| | |
|---|---|
| getDataCh | Gets the FIFO values by channel. |
| getDataFIFO | Gets FIFO values by FIFO. |
| getInstCh | Gets instantaneous values by channel. |
| getInstFIFO | Gets instantaneous values by FIFO. |

### Utilities

| | |
|---|---|
| nextFIFO | Increments the current index number by FIFO. |
| getVersionMX100DLL | Gets the version number of the DLL. |
| getRevisionMX100DLL | Gets the revision number of the DLL. |

- **Inherited Members**

  See CDAQHandler.

  ```
  m_comm m_nRemainSize receive receiveRemain send
  ```

  See CDAQMX

  ```
  m_nNo m_nLastError m_bAutoFIFO m_llUserTime m_nSessionNo
  m_chFIFONo m_chFIFOIndex m_chDataType m_chDeciPos
  m_lastFIFODataNo m_lastChDataNo m_startChNo m_endChNo
  m_curChNo m_startFIFOIdx m_endFIFOIdx m_curFIFOIdx
  m_startDataNo m_endDataNo m_curDataNo m_nFIFONo m_nDataNum
  m_nChNum runCommand sendPacket receivePacket receiveBlock nop
  registry getNo incCurDataNo incCurFIFOIdx getDataNo searchChNo
  clearAttr clearData runPacket receiveBuffer m_nTimeNum
  m_packetVer m_nItemError m_bTalkConfig m_bTalkChInfo
  m_bTalkData getPacketVersion clearLastDataNoCh
  clearLastDataNoFIFO getVersionDLL getRevisionDLL
  ```

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMX100::ackAlarm

### Syntax

```
int ackAlarm(void);
```

### Description

Resets alarms.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
initSystem
updateRenew
```

## CDAQMX100::CDAQMX100

### Syntax

```
CDAQMX100(void);
CDAQMX100(const char * strAddress, unsigned int uiPort =
DAQMX_COMMPORT, int * errCode = NULL);
virtual ~CDAQMX100(void);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| uiPort | Specify the port number. |
| errCode | Specify the destination where the error number is to be returned. |

### Description

Constructs or destructs an object.

When constructing, the data member is initialized. The default value as a general rule is 0 (NULL). When the parameters are specified, a connection is established. If the return destination is specified, the error number during connection is returned.

When destructing, the data member field is released. The connection is dropped (close) when the communication descriptor exists. The error number is not returned.

### Reference

```
measClear open userClear
CDAQMX::CDAQMX
```

## CDAQMX100::changeAOPWMValue

### Syntax

```
void changeAOPWMValue(int idAOPWM, int aopwmNo, int bValid,
double realValue);
```

### Parameters

| | |
|---|---|
| idAOPWM | Specify the AO/PWM data identifier. |
| aopwmNo | Specify the AO/PWM data number. |
| bValid | Specify valid/invalid using a Boolean value. |
| realValue | Specify the actual output value. |

### Description

Changes the AO/PWM data of the specified AO/PWM data identifier.

Converts the specified actual output values to output data values and stores them.

### Reference

```
getClassMXAOPWMList getClassMXItemConfig
CDAQMXAOPWMData::toAOPWMValue
CDAQMXAOPWMList::change
CDAQMXItemConfig::getClassMXOutputData
CDAQMXItemConfig::getRangePoint
CDAQMXOutputData::getOutputType
```

## CDAQMX100::clearBalance

### Syntax

```
int clearBalance(void);
```

### Description

Resets initial balancing.

Stores the result in the current data of the initial balance data management field of the data member.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
getClassMXBalanceList resetBalance updateRenew
CDAQMXBalanceList::getCurrent
```

## CDAQMX100::commandAOPWM

### Syntax

```
int commandAOPWM(int idAOPWM);
int commandAOPWM(CDAQMXAOPWMData & cMXAOPWMData);
```

### Parameters

| | |
|---|---|
| idAOPWM | Specify the AO/PWM data identifier. |
| cMXAOPWMData | Specify AO/PWM data. |

### Description

Sends the specified AO/PWM data.

Updates the status if successful.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Data | There is no data. |

### Reference

`getClassMXAOPWMList setAOPWMData updateRenew CDAQMXAOPWMList::getClassMXAOPWMData`

## CDAQMX100::commandDO

### Syntax

```
int commandDO(int idDO);
int commandDO(CDAQMXDOData & cMXDOData);
```

### Parameters

| | |
|---|---|
| idDO | Specify the DO data identifier. |
| cMXDOData | Specify the DO data. |

### Description

Sends the specified DO data.

Updates the status if successful.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Data | There is no data. |

### Reference

`getClassMXDOList setDOData updateRenew CDAQMXDOList::getClassMXDOData`

## CDAQMX100::commandTransmit

### Syntax

```
int commandTransmit(int idTrans);
int commandTransmit(CDAQMXTransmit & cMXTransmit);
```

### Parameters

| | |
|---|---|
| idTrans | Specify the transmission output data identifier. |
| cMXTransmit | Specify the transmission output data. |

### Description

Sends the specified transmission output data.

Updates the status if successful.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Data | There is no data. |

### Reference

```
getClassMXTransmitList setTransmit updateRenew
CDAQMXTransmitList::getClassMXTransmit
```

## CDAQMX100::currentDoubleAOPWMValue

### Syntax

```
double currentDoubleAOPWMValue(int aopwmNo);
```

### Parameters

| | |
|---|---|
| aopwmNo | Specify the AO/PWM data number. |

### Description

Gets the output data value of the specified AO/PWM data number from the current data of the AO/PWM data management field of the data member.

Returns 0.0 if it does not exist.

### Return value

Returns the actual output value.

### Reference

```
getClassMXAOPWMList getClassMXItemConfig getOutputRange
CDAQMXAOPWMList::getCurrent
CDAQMXAOPWMData::getAOPWMValue
CDAQMXAOPWMData::toRealValue
```

## CDAQMX100::displaySegment

### Syntax

```
int displaySegment(int dispPattern0, int dispPattern1, int
dispType, int dispTime);
```

### Parameters

| | |
|---|---|
| dispPattern0 | Specify the display pattern of segment number 0. |
| dispPattern1 | Specify the display pattern of segment number 1. |
| dispType | Specify the display format. |
| dispTime | Specify the display time. |

### Description

Sets the display of the 7-segment LED.

Returns the display pattern prior to setting.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

`setSegment updateRenew`

## CDAQMX100::formatCF

### Syntax

```
virtual int formatCF(void);
```

### Description

Formats the CF card.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

`updateRenew`
`CDAQMX::formatCF`

## CDAQMX100::CDAQMXItemConfig

### Syntax

```
CDAQMXItemConfig & getClassMXItemConfig(void);
```

### Description

Gets the object of the setup data field from the data member.

### Return value

Returns a reference to the object.

## CDAQMX100::getClassMXAOPWMList

### Syntax

```
CDAQMXAOPWMList & getClassMXAOPWMList(void);
```

### Description

Gets the object of the AO/PWM data management field from the data member.

### Return value

Returns a reference to the object.

## CDAQMX100::getClassMXBalanceList

### Syntax

```
CDAQMXBalanceList & getClassMXBalanceList(void);
```

### Description

Gets the object of the initial balance data management field from the data member.

### Return value

Returns a reference to the object.

## CDAQMX100::getClassMXDataBuffer

### Syntax

```
CDAQMXDataBuffer * getClassMXDataBuffer(int chNo);
```

### Parameters

chNo Specify the channel number.

### Description

Gets the field for storing measured data by channel from the data member by object.

Returns the object of the specified specified channel number.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the object.

## CDAQMX100::getClassMXDOList

### Syntax

```
CDAQMXDOList & getClassMXDOList(void);
```

### Description

Gets the object of the DO data management field from the data member.

### Return value

Returns a reference to the object.

## CDAQMX100::getClassMXItemConfig

### Syntax

```
CDAQMXItemConfig & getClassMXItemConfig(void);
```

### Description

Gets the object of the setup data field from the data member.

### Return value

Returns a reference to the object.

## CDAQMX100::getClassMXTransmitList

### Syntax

```
CDAQMXTransmitList & getClassMXTransmitList(void);
```

### Description

Gets the object of the transmission output data management field from the data member.

### Return value

Returns a reference to the object.

## CDAQMX100::getDataCh

### Syntax

```
int getDataCh(int chNo, int * bComm);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| bComm | Specify the return destination where the communication will or will not occur. |

### Description

Gets the measured data of the specified channel number.

Increments the current index of various kinds of information for each channel of the data member.

When no stored data exists, communication is opened and new data is retrieved.

Gets FIFO values by channel, and stores them in the data member.

Returns the Boolean value indicating whether or not the communication was actually carried out if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Data | All kinds of information fields for each channel do not exist. |

### Reference

```
getChData getChDataNo getClassMXDataBuffer getTimeData
talkChData
CDAQMXDataBuffer::create CDAQMXDataBuffer::next
CDAQMXDataBuffer::setDataInfo CDAQMXDataBuffer::setDateTime
CDAQMXStatus::isDataNo
```

## CDAQMX100::getDataFIFO

### Syntax

```
int getDataFIFO(int fifoNo, int * bComm);
```

### Parameters

| | |
|---|---|
| fifoNo | Specify the FIFO number. |
| bComm | Specify the return destination where the communication will or will not occur. |

### Description

Retrieves the measured data of the specified FIFO number.

Increments the current index of various kinds of information for each channel of the data member.

When no stored data exists, communication is opened and new data is retrieved.

Gets FIFO values by FIFO, and stores them in the data member.

Returns the Boolean value indicating whether or not the communication was actually carried out if the return destination is specified.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Data | Various kinds of information fields for each channel do not exist. |

### Reference

```
getChData getClassMXDataBuffer getFIFODataNo getTimeData
nextFIFO searchChNo talkFIFOData
CDAQMXDataBuffer::create
CDAQMXDataBuffer::setDataInfo
CDAQMXDataBuffer::setDateTime
CDAQMXStatus::isDataNo
```

## CDAQMX100::getDataNum

### Syntax

```
int getDataNum(int fifoNo);
```

### Parameters

| | |
|---|---|
| fifoNo | Specify the FIFO number. |

### Description

Gets all types of information fields for each channel of the data member in the remaining number of data of the specified FIFO number.

Returns the minimum value of the channels in the FIFO.

Returns 0 if it does not exist.

### Return value

Returns the remaining number of data.

### Reference

```
getClassMXDataBuffer
CDAQMXDataBuffer::getDataNum
```

## CDAQMX100::getInstCh

### Syntax

```
int getInstCh(int chNo);
```

### Parameters

chNo Specify the channel number.

### Description

Receives the measured data of the specified channel number.

Gets instantaneous values by channel, and stores them in the data member.

### Return value

Returns an error number.

Error:

Not Data Various kinds of information fields for each channel do not exist.

### Reference

```
getChData getClassMXDataBuffer getTimeData talkChData
CDAQMXDataBuffer::create
CDAQMXDataBuffer::setDataInfo
CDAQMXDataBuffer::setDateTime
```

## CDAQMX100::getInstFIFO

### Syntax

```
int getInstFIFO(int fifoNo);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Receives the measured data of the specified FIFO number.

Gets instantaneous values by FIFO, and stores them in the data member.

### Return value

Returns an error number.

### Reference

```
getChData getClassMXDataBuffer getTimeData searchChNo
talkFIFOData
CDAQMXDataBuffer::create
CDAQMXDataBuffer::setDataInfo
CDAQMXDataBuffer::setDateTime
```

## CDAQMX100::getItemAll

### Syntax

```
int getItemAll(void);
```

### Description

Receives setup data and stores it in the data member.

Updates the status and all information data if successful.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig getConfig updateAll
```

## CDAQMX100::getRevisionMX100DLL

### Syntax

```
static const int getRevisionMX100DLL(void);
```

### Description

Gets the revision number of this DLL.

### Return value

Returns the revision number of this DLL.

## CDAQMX100::getVersionMX100DLL

### Syntax

```
static const int getVersionMX100DLL(void);
```

### Description

Gets the version number of this DLL.

### Return value

Returns the version number of this DLL.

## CDAQMX100::initBalance

### Syntax

```
int initBalance(void);
```

### Description

Executes initial balancing.

Stores the result in the current data of the initial balance data management field of the data member.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
getClassMXBalanceList runBalance updateRenew
CDAQMXBalanceList::getCurrent
```

## CDAQMX100::initDataCh

### Syntax

```
void initDataCh(int chNo = DAQMX_CHNO_ALL);
```

### Parameters

chNo Specify the channel number.

### Description

Initializes the various information of the specified channel.

If the constant for “Specify All Channel numbers” is specified for the channel number, all valid channels are processed.

Updates the status if successful.

### Reference

```
clearLastDataNoCh getClassMXDataBuffer updateRenew
CDAQMXDataBuffer::initialize
```

## CDAQMX100::initDataFIFO

### Syntax

```
void initDataFIFO(int fifoNo = DAQMX_FIFONO_ALL);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Initializes the various information of the channels in the specified FIFO.

If the constant for “Specify all FIFO numbers” is specified for the FIFO numbers, all valid FIFOs are processed.

Updates the status if successful.

### Reference

```
clearLastDataNoFIFO getClassMXDataBuffer updateRenew
CDAQMXDataBuffer::initialize
```

## CDAQMX100::initSetValue

### Syntax

```
int initSetValue(void);
```

### Description

Initializes the system.

Updates the status and all information data if successful.

### Return value

Returns an error number.

### Reference

```
initSystem updateAll
```

## CDAQMX100::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQMX100";
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQMX::isObject`

## CDAQMX100::measClear

### Syntax

```
void measClear(void);
```

### Description

Initializes the data members below for retrieval of the measured data.

- Setup data field
- Various information fields per channel.

### Reference

`getClassMXItemConfig`
`CDAQMXDataBuffer::initialize`
`CDAQMXItemConfig::initialize`

## CDAQMX100::measDataCh

### Syntax

```
int measDataCh(int chNo = DAQMX100_CHNO_ALL);
```

### Parameters

chNo Specify the channel number.

### Description

Increments the current measurement point of the measured data of the specified channel number just one point.

If the constant for “Specify All Channels” is specified for the channel numbers, all valid channels are processed.

Updates the status if communication executed.

### Return value

Returns an error number.

### Reference

```
getDataCh updateRenew
```

## CDAQMX100::measDataFIFO

### Syntax

```
int measDataFIFO(int fifoNo = DAQMX100_FIFONO_ALL);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Increments the current measurement point of the measured data of the channels of the specified FIFO number just one point.

If the constant for “Specify all FIFO numbers” is specified for the FIFO numbers, all valid FIFOs are processed.

Updates the status if communication executed.

### Return value

Returns an error number.

### Reference

```
getDataFIFO updateRenew
```

## CDAQMX100::measInstCh

### Syntax

```
int measInstCh(int chNo = DAQMX100_CHNO_ALL);
```

### Parameters

chNo Specify the channel number.

### Description

Receives the measured data of the specified channel number.

Gets instantaneous values by channel, and stores them in the data member.

If the constant for “Specify All Channels” is specified for the channel numbers, all valid channels are processed.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
getInstCh updateRenew
```

## CDAQMX100::measInstFIFO

### Syntax

```
int measInstFIFO(int fifoNo = DAQMX100_FIFONO_ALL);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Receives the measured data of the specified FIFO number.

Gets instantaneous values by FIFO, and stores them in the data member.

If the constant for “Specify all FIFO numbers” is specified for the FIFO numbers, all valid FIFOs are processed.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
getInstFIFO updateRenew
```

## CDAQMX100::measStart

### Syntax

```
int measStart(void);
```

### Description

Starts data acquisition.

Starts the FIFO.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
startFIFO updateRenew
```

## CDAQMX100::measStop

### Syntax

```
int measStop(void);
```

### Description

Stops data acquisition.

Stops the FIFO.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
stopFIFO updateRenew
```

## CDAQMX100::nextFIFO

### Syntax

```
int nextFIFO(int fifoNo);
```

### Parameters

fifoNo Specify the FIFO number.

### Description

Increments current index number of the channels of the specified FIFO number.

Returns the increment result as a Boolean value. If a channel is incremented and no data is present, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
getClassMXDataBuffer
CDAQMXDataBuffer::next
```

## CDAQMX100::open

### Syntax

```
virtual int open(const char * strAddress, unsigned int uiPort
= DAQMX_COMMPORT);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| uiPort | Specify the port number. |

### Description

Connects to the device with the IP address and port number specified by the parameters.

The port number can be omitted. If omitted, it is set to the communication constant, “MX100 communication port number.”

When initializing the data member for retrieval of the measured data and connection is successful, those items are retrieved and stored.

Sets the communication timeout to 3 minutes (the time after which the measuring instrument automatically closes the connection).

### Return value

Returns an error number.

### Reference

```
close measClear setTimeOut updateAll
CDAQMX::open
```

## CDAQMX100::reconstruct

### Syntax

```
int reconstruct(void);
```

### Description

Reconfigures the system.

Updates the status and all information data if successful.

### Return value

Returns an error number.

### Reference

```
initSystem updateAll
```

## CDAQMX100::reloadBalance

### Syntax

```
int reloadBalance(int idBalance);
int reloadBalance(CDAQMXBalanceData & cMXBalanceData);
```

### Parameters

| | |
|---|---|
| idBalance | Specify the initial balance data identifier. |
| cMXBalanceData | Specify initial balance data. |

### Description

Sends specified initial balance data.

Updates the status if successful.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Data | There is no data. |

### Reference

```
getClassMXBalanceList setBalance updateRenew
CDAQMXBalanceList::getClassMXBalanceData
```

## CDAQMX100::sendConfig

### Syntax

```
int sendConfig(void);
```

### Description

Sends the setup data field of the data member.

### Return value

Returns an error number.

### Reference

```
setItemAll
```

## CDAQMX100::setAlarm

### Syntax

```
int setAlarm(int chNo, int levelNo, int iAlarmType, double
valueON, double valueOFF);
int setAlarm(int chNo, int levelNo, int iAlarmType =
DAQMX_ALARM_NONE, int valueON = 0, int valueOFF = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |
| iAlarmType | Specify the alarm type. |
| valueON | Specify the threshold level (ON value) for alarm activation. |
| valueOFF | Specify the threshold level (OFF value) for alarm termination. |

### Description

Sets the alarm to the alarm level of the specified channel.
Changes the setup data fields of the data member and sends them collectively.
If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.
If the alarm level is set to the constant for “Specify all alarm level numbers,” all alarm levels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::getPoint
CDAQMXChConfig::setAlarmValue
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setBurnout

### Syntax

```
int setBurnout(int chNo, int iBurnout);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iBurnout | Specify the burnout type. |

### Description

Sets the burnout type to the channels of the specified channel numbers.
Changes the setup data fields of the data member and sends them collectively.
If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::setBurnout
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setCFWriteMode

### Syntax

```
int setCFWriteMode(int iCFWriteMode);
```

### Parameters

iCFWriteMode  Specify the CF write mode.

### Description

Sets the CF write mode.

Changes the setup data fields of the data member and sends them collectively.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::setCFWriteMode
```

## CDAQMX100::setChatFilter

### Syntax

```
int setChatFilter(int chNo, int bChatFilter);
```

### Parameters

chNo  Specify the channel number.

bChatFilter  Specify chattering filter using a Boolean value.

### Description

Sets the chattering filter on the channel of the specified channel number.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig
setItemAll
CDAQMXChConfig::setChatFilter
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setChComment

### Syntax

```
int setChComment(int chNo, const char * strComment);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| strComment | Specify the comment. |

### Description

Sets the comment on the channel of the specified channel number.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::setComment
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setChDELTA

### Syntax

```
int setChDELTA(int chNo, int refChNo, int iRange =
DAQMX_RANGE_REFERENCE);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| refChNo | Specify the channel number of the reference channel. |
| iRange | Specify the range type for the input of the target channel. |

### Description

Sets the difference computation for the specified reference channels.

Channel settings outside the range take default values.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

If the range type is set to “Reference Channel” the range of the channel number that references the target channel’s measurement range is applied.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXItemConfig::setDELTA
CDAQMXSysInfo::getModuleType
```

## CDAQMX100::setChKind

### Syntax

```
int setChKind(int chNo, int iKind, int refChNo =
DAQMX_REFCHNO_NONE);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iKind | Specify the channel type. |
| refChNo | Specify the reference channel number. |

### Description

Sets the channel type on the channel of the specified channel number.

The channel settings are set to the default values.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

The reference channel number is valid if the channel type is AI (difference between channels), DI (difference between channels), AI (remote RJC), AO (transmission output), or PWM (transmission output).

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::setAOType
CDAQMXItemConfig::setDELTA
CDAQMXItemConfig::setDI
CDAQMXItemConfig::setDOType
CDAQMXItemConfig::setPWMType
CDAQMXItemConfig::setRRJC
CDAQMXItemConfig::setSKIP
CDAQMXItemConfig::setVOLT
```

## CDAQMX100::setChoice

### Syntax

```
int setChoice(int outputNo, int idleChoice, int errorChoice,
int presetValue);
int setChoice(int outputNo, int idleChoice, int errorChoice,
double presetValue);
```

### Parameters

| | |
|---|---|
| outputNo | Specify the output channel data number. |
| idleChoice | Specify the selected value when idling. |
| errorChoice | Specify the selected value when an error occurs. |
| presetValue | Specify the value if the selected value is the “specified value.” |

### Description

Sets the selection on the output channel data of the specified output channel data number.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All output data numbers” is specified for the output data number, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::getClassMXOutputData
CDAQMXItemConfig::getRangePoint
CDAQMXOutputData::setChoice
```

## CDAQMX100::setChRRJC

### Syntax

```
int setChRRJC(int chNo, int refChNo);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| refChNo | Specify the reference channel number. |

### Description

Sets the remote RJC for the specified reference channel.

Channel settings outside the range take default values.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::setRRJC
```

## CDAQMX100::setChTag

### Syntax

```
int setChTag(int chNo, const char * strTag);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| strTag | Specify the tag. |

### Description

Sets the tag on the channel of the specified channel number.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::setTag
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setChUnit

### Syntax

```
int setChUnit(int chNo, const char * strUnit);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| strUnit | Specify the unit name. |

### Description

Sets the unit name on the channel of the specified channel number.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::setUnit
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setDateTime

### Syntax

```
virtual int setDateTime(CDAQMXDateTime * pcMXDateTime = NULL);
```

### Parameters

pcMXDateTime Specify the time information data.

### Description

Sets time information data on the device.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
updateRenew
CDAQMX::setDateTime
```

## CDAQMX100::setDeenergize

### Syntax

```
int setDeenergize(int doNo, int bDeenergize);
```

### Parameters

doNo Specify the data number.

bDeenergize Specify de-energize using a Boolean value.

### Description

Sets de-energize on the specified DO data number of the specified channel.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::setDeenergize
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setFilter

### Syntax

```
int setFilter(int chNo, int iFilter);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iFilter | Specify the filter coefficient. |

### Description

Sets the filter coefficient on the channel of the specified channel number.
Changes the setup data fields of the data member and sends them collectively.
If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::setFilter
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setHisterisys

### Syntax

int setHisterisys(int chNo, int levelNo, double histerisys);
int setHisterisys(int chNo, int levelNo, int histerisys = 0);

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |
| histerisys | Specify the hysteresis. |

### Description

Sets the hysteresis for the alarm level of the specified channel number.
Changes the setup data fields of the data member and sends them collectively.
If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.
If the alarm level is set to the constant for “Specify all alarm level numbers,” all alarm levels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::getAlarmType
CDAQMXChConfig::getAlarmValueON
CDAQMXChConfig::getPoint
CDAQMXChConfig::setAlarm
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setHold

### Syntax

```
int setHold(int doNo, int bHold);
```

### Parameters

| | |
|---|---|
| doNo | Specify the data number. |
| bHold | Specify hold using a Boolean value. |

### Description

Sets hold on the specified DO data number of the specified channel.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::setHold
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setIntegral

### Syntax

```
int setIntegral(int moduleNo, int iHz);
```

### Parameters

| | |
|---|---|
| moduleNo | Specify the module number. |
| iHz | Specify the type of A/D integration time. |

### Description

Sets the A/D integration time type on the module of the specified module number.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify all module numbers” is specified for the module numbers, all modules are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXItemConfig::setInterval
CDAQMXSysInfo::getInterval
```

## CDAQMX100::setInterval

### Syntax

```
int setInterval(int moduleNo, int iInterval);
```

### Parameters

| | |
|---|---|
| moduleNo | Specify the module number. |
| iInterval | Specify the interval type. |

### Description

Sets the interval type on the module of the specified module number.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify all module numbers” is specified for the module numbers, all modules are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXItemConfig::setInterval
CDAQMXSysInfo::getIntegral
```

## CDAQMX100::setItemAll

### Syntax

```
int setItemAll(void);
```

### Description

Sends the setup data field of the data member.

Updates the status and all information data if successful.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setConfig updateAll
```

## CDAQMX100::setOutputType

### Syntax

```
int setOutputType(int outputNo, int iOutput);
```

### Parameters

| | |
|---|---|
| outputNo | Specify the output channel data number. |
| iOutput | Specify the output type. |

### Description

Sets the output type on the output channel data of the specified output channel data number.

The settings other than the output type are set to the default values.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All output data numbers” is specified for the output data number, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::setAO
CDAQMXItemConfig::setPWM
```

## CDAQMX100::setPulseTime

### Syntax

```
int setPulseTime(int outputNo, int pulseTime);
```

### Parameters

| | |
|---|---|
| outputNo | Specify the output channel data number. |
| pulserTime | Specify the integer multiple of the pulse interval. |

### Description

Sets the pulse integer multiple on the output channel data of the specified output channel data number.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All output data numbers” is specified for the output data number, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::getClassMXOutputData
CDAQMXOutputData::setPulseTime
```

## CDAQMX100::setRange

### Syntax

```
int setRange(int chNo, int iRange);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRange | Specify the range type. |

### Description

Sets the range.

For the contact range and SKIP range types, see the definitions for the new constants.

Channel settings outside the range take default values.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::setAO
CDAQMXItemConfig::setDI
CDAQMXItemConfig::setPWM
CDAQMXItemConfig::setRES
CDAQMXItemConfig::setRTD
CDAQMXItemConfig::setSKIP
CDAQMXItemConfig::setSTRAIN
CDAQMXItemConfig::setTC
CDAQMXItemConfig::setVOLT
```

## CDAQMX100::setRefAlarm

### Syntax

```
int setRefAlarm(int doNo, int refChNo, int levelNo, int
bValid);
```

### Parameters

| | |
|---|---|
| doNo | Specify the data number. |
| refChNo | Specify the reference channel number. |
| levelNo | Specify the alarm level. |
| bValid | Specify the Boolean value. |

### Description

Sets the reference alarm on the specified DO data number of the specified channel.

The reference alarm is specified by reference channel number and alarm level.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

If the alarm level is set to the constant for “Specify all alarm level numbers,” all alarm levels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::setRefAlarm
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setRJCType

### Syntax

```
int setRJCType(int chNo, int iRJCType, int volt = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| iRJCType | Specify the RJC type. |
| volt | Specify the RJC voltage. |

### Description

Sets the RJC type on the channel of the specified channel number.

Changes the setup data fields of the data member and sends them collectively.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::setRJCType
CDAQMXItemConfig::getClassMXChConfig
```

## CDAQMX100::setScale

### Syntax

```
int setScale(int chNo, double scaleMin, double scaleMax, int
scalePoint);
int setScale(int chNo, int scaleMin = 0, int scaleMax = 0, int
scalePoint = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position. |

### Description

Sets the scale on the channel of the specified channel number.
Changes the setup data fields of the data member and sends them collectively.
If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::setScalling
```

## CDAQMX100::setSpan

### Syntax

```
int setSpan(int chNo, double spanMin, double spanMax);
int setSpan(int chNo, int spanMin = 0, int spanMax = 0);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the span on the channel of the specified channel number.
Changes the setup data fields of the data member and sends them collectively.
If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXChConfig::setSpan
CDAQMXItemConfig::getClassMXChConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXItemConfig::getSpanPoint
CDAQMXSysInfo::getTempUnit
```

## CDAQMX100::setUnitNo

### Syntax

```
int setUnitNo(int unitNo);
```

### Parameters

unitNo  Specify the unit number.

### Description

Sets the unit number.

Changes the setup data fields of the data member and sends them collectively.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::setUnitNo
```

## CDAQMX100::setUnitTemp

### Syntax

```
int setUnitTemp(int iTempUnit);
```

### Parameters

iTempUnit  Specify the temperature unit type.

### Description

Sets the temperature unit type.

Changes the setting values of the channels affected.

Changes the setup data fields of the data member and sends them collectively.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig setItemAll
CDAQMXItemConfig::setTempUnit
```

## CDAQMX100::switchBackup

### Syntax

```
int switchBackup(int bBackup);
```

### Parameters

bBackup Specify backup using a Boolean value.

### Description

Switches backup.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
setBackup updateRenew
```

## CDAQMX100::switchDO

### Syntax

```
int switchDO(int idDO, int bONOFF);
```

### Parameters

idDO Specify the DO data identifier.

bONOFF Specify ON/OFF using a Boolean value.

### Description

Sends the specified DO data.

Changes the valid channels of the DO data to the specified ON/OFF value and sends them.

Updates the status if successful.

### Return value

Returns an error number.

Error:

Not Data There is no data.

### Reference

```
commandDO getClassMXDOList
CDAQMXDOData::setDOONOFF
CDAQMXDOList::getClassMXDOData
```

## CDAQMX100::switchTransmit

### Syntax

```
int switchTransmit(int idTrans, int iTransmit);
```

### Parameters

| | |
|---|---|
| idTrans | Specify the transmission output data identifier. |
| iTransmit | Specify the transmission status. |

### Description

Sends the specified transmission output data.

Changes all channels of the transmission output data to the specified transmission status and sends them.

Updates the status if successful.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Data | There is no data. |

### Reference

```
commandTransmit getClassMXTransmitList
CDAQMXTransmit::setTransmit
CDAQMXTransmitList::getClassMXTransmit
```

## CDAQMX100::toChNo

### Syntax

```
int toChNo(int fifoNo, int fifoIndex);
```

### Parameters

| | |
|---|---|
| fifoNo | Specify the FIFO number. |
| fifoIndex | Returns the channel sequence number in the FIFO. |

### Description

Gets the channel number from the specified information.

Returns 0 if it does not exist.

### Return value

Returns the channel number.

### Reference

```
searchChNo
```

## CDAQMX100::updateAll

### Syntax

```
int updateAll(void);
```

### Description

Updates all status and information data.

Gets the following information and stores it in the data member.

- Setup data
- Channel information data
- Status of randomly changing instrument

### Return value

Returns an error number.

### Reference

```
updateConfig updateInfoCh updateRenew
```

## CDAQMX100::updateAOPWMData

### Syntax

```
int updateAOPWMData(void);
```

### Description

Gets the AO/PWM data and transmission output data and stores it in the data member.

Stores it in the current data fields of the AO/PWM data management field and the transmission output management field.

If the communication packet version is not supported by the instrument, the process concludes normally.

### Return value

Returns an error number.

### Reference

```
getAOPWMData getClassMXAOPWMList getClassMXTransmitList
getPacketVersion
CDAQMXAOPWMList::getCurrent
CDAQMXTransmitList::getCurrent
```

## CDAQMX100::updateBalance

### Syntax

```
int updateBalance(void);
```

### Description

Gets initial balance data and stores it in the data member.

Stores it in the current data of the initial balance data management field.

Also copies to the initial balance data of the setup data field.

If the communication packet version is not supported by the instrument, the process concludes normally.

### Return value

Returns an error number.

### Reference

```
getBalance getClassMXBalanceList getClassMXItemConfig
getPacketVersion
CDAQMXBalanceList::getCurrent
CDAQMXItemConfig::getClassMXBalanceData
```

## CDAQMX100::updateConfig

### Syntax

```
int updateConfig(void);
```

### Description

Receives setup data and stores it in the data member.

Copies initial balance data to the current data of the initial balance data management field.

### Return value

Returns an error number.

### Reference

```
getClassMXBalanceList getClassMXItemConfig getConfig
CDAQMXBalanceList::getCurrent
CDAQMXItemConfig::getClassMXBalanceData
```

## CDAQMX100::updateDOData

### Syntax

```
int updateDOData(void);
```

### Description

Gets DO data and stores it in the data member.

Stores it in the current data of the DO data management field.

### Return value

Returns an error number.

### Reference

```
getClassMXDOList getDOData
CDAQMXDOList::getCurrent
```

## CDAQMX100::updateInfoCh

### Syntax

```
int updateInfoCh(int chNo = DAQMX_CHNO_ALL);
```

### Parameters

chNo Specify the channel number.

### Description

Gets the channel information data of the specified channel number and stores it in the data member.

If the constant for “Specify All Channels” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

### Reference

```
getChInfo getClassMXDataBuffer talkChInfo
CDAQMXDataBuffer::setChInfo
```

## CDAQMX100::updateOutput

### Syntax

```
int updateOutput(void);
```

### Description

Gets the output channel data and stores it in the data member.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig getOutput
CDAQMXItemConfig::getClassMXOutputData
```

## CDAQMX100::updateRenew

### Syntax

```
int updateRenew(void);
```

### Description

Updates the status.

Gets the following status of the randomly changing instrument and stores it in the data member.

- Status data
- Current DO data
- Current AO/PWM data and transmission output data.

### Return value

Returns an error number.

### Reference

```
updateAOPWMData updateDOData updateStatus
```

## CDAQMX100::updateStatus

### Syntax

```
int updateStatus(void);
```

### Description

Gets status data and stores it in the data member.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig getStatusData
CDAQMXItemConfig::getClassMXStatus
```

## CDAQMX100::updateSystem

### Syntax

```
int updateSystem(void);
```

### Description

Gets system configuration data and stores it in the data member.

### Return value

Returns an error number.

### Reference

```
getClassMXItemConfig getSystemConfig
CDAQMXItemConfig::getClassMXSysInfo
```

## CDAQMX100::userClear

### Syntax

```
void userClear(void);
```

### Description

Initializes the current data from the following data of the management field.

- DO data management field
- AO/PWM data management field
- Transmission output data management field
- Initial balance data management field

### Reference

```
getClassMXAOPWMList getClassMXBalanceList getClassMXDOList
getClassMXTransmitList
CDAQMXAOPWMList::initCurrent
CDAQMXBalanceList::initCurrent
CDAQMXDOList::initCurrent
CDAQMXTransmitList::initCurrent
```

## CDAQMX100::userDoubleAOPWMValue

### Syntax

```
double userDoubleAOPWMValue(int idAOPWM, int aopwmNo);
```

### Parameters

| | |
|---|---|
| idAOPWM | Specify the AO/PWM data identifier. |
| aopwmNo | Specify the AO/PWM data number. |

### Description

Gets, as actual output values, the output data values of the specified AO/PWM data number from the AO/PWM data of the specified AO/PWM data identifier of the AO/PWM data management field of the data member.

Returns 0.0 if it does not exist.

### Return value

Returns the actual output value.

### Reference

```
getClassMXAOPWMList getClassMXItemConfig getOutputRange
CDAQMXAOPWMList::getClassMXAOPWMData
CDAQMXAOPWMData::getAOPWMValue
CDAQMXAOPWMData::toRealValue
```

# CDAQMXAOPWMList Class

**CDAQMXList**
**CDAQMXAOPWMList**

This class is for managing AO/PWM data from the output of command AO/PWM. You can create the AO/PWM data to output in advance and store it. The data is labeled with indentifiers.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXAOPWMList | Constructs an object. |
| ~CDAQMXAOPWMList | Destructs an object. |

### Member Data Manipulation

| | |
|---|---|
| add | Adds AO/PWM data. |
| change | Changes AO/PWM data. |
| copyData | Copies AO/PWM data. |
| getClassMXAOPWMData | Gets AO/PWM data. |
| initCurrent | Initializes the current AO/PWM data. |
| getCurrent | Gets the current AO/PWM data. |

- **Overridden Members**

### Member Data Manipulation

| | |
|---|---|
| create | Creates AO/PWM data. |
| copy | Copies AO/PWM data. |

- **Inherited Members**

See CDAQMXList.

```
del
getMaxNo
getNum
initialize
isData
```

## Protected Members

### Data Members

| | |
|---|---|
| m_cCurrent | Field for storing the current AO/PWM data. |

### Inherited Members

See CDAQMXList.

```
m_list
m_num
addData
DelData
getData
```

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXAOPWMList::add

### Syntax

```
int add(CDAQMXAOPWMData * pcMXAOPWMData);
```

### Parameters

pcMXAOPWMData Specify the data using a pointer.

### Description

Adds the specified data to the list and generates data identifiers.

Returns a negative value if not added.

### Return value

Returns the data identifier.

### Reference

addData

## CDAQMXAOPWMList::CDAQMXAOPWMList

### Syntax

```
CDAQMXAOPWMList(void);
virtual ~CDAQMXAOPWMList(void);
```

### Description

Constructs or destructs an object.

When constructing, the data member is initialized.

When destructing, the data in the list is deleted.

### Reference

`initCurrent`
`CDAQMXList::CDAQMXList`

## CDAQMXAOPWMList::change

### Syntax

```
void change(int idAOPWM, int aopwmNo, int bValid, int
iAOPWMValue = 0);
```

### Parameters

| | |
|---|---|
| idAOPWM | Specify the AO/PWM data identifier. |
| aopwmNo | Specify the AO/PWM data number. |
| bValid | Specify valid/invalid using a Boolean value. |
| iAOPWMValue | Specify the output data value. |

### Description

Changes the AO/PWM data of the specified AO/PWM data identifier.

If the data identifier is set to the constant for “Specify all data identifiers,” all data in the list is processed.

If AO/PWM data is set to the constant for “Specify all AO/PWM data numbers,” all numbers within the data are processed.

### Reference

`getClassMXAOPWMData`
`CDAQMXAOPWMData::setAOPWM`

## CDAQMXAOPWMList::copy

### Syntax

```
virtual void copy(int idxNo, int idxSrc);
```

### Parameters

| | |
|---|---|
| idxNo | Specify the data identifier of the copy destination. |
| idxSrc | Specify the data identifier of the copy source. |

### Description

Copies the contents of the data indicated by the data identifier from the copy source to the copy destination.

### Reference

`copyData`
`getClassMXAOPWMData`

## CDAQMXAOPWMList::copyData

### Syntax

```
void copyData(int idAOPWM, CDAQMXAOPWMData * pcMXAOPWMData);
```

### Parameters

| | |
|---|---|
| idAOPWM | Specify the AO/PWM data identifier. |
| pcMXAOPWMData | Specify the data using a pointer. |

### Description

Copies the data specified by the pointer to the data of the specified data identifier.
If the data identifier is set to the constant for “Specify all data identifiers,” all data in the list is processed.

### Reference

`getClassMXAOPWMData`

## CDAQMXAOPWMList::create

### Syntax

```
virtual int create(void);
```

### Description

Creates data and adds it to the list.

### Return value

Returns the data identifier.

### Reference

`add`
`CDAQMXAOPWMData::CDAQMXAOPWMData`

## CDAQMXAOPWMList::getClassMXAOPWMData

### Syntax

```
CDAQMXAOPWMData * getClassMXAOPWMData(int idAOPWM);
```

### Parameters

| | |
|---|---|
| idAOPWM | Specify the AO/PWM data identifier. |

### Description

Gets the data of the specified data identifier.
If the data identifier is set to the constant for “specify current data,” gets the current data field from the data member.
Returns NULL if it does not exist.

### Return value

Returns a pointer to the data.

### Reference

`getCurrent getData`

## CDAQMXAOPWMList::getCurrent

### Syntax

```
CDAQMXAOPWMData & getCurrent(void);
```

### Description

Gets the current data field from the data member.

### Return value

Returns a reference to the data.

## CDAQMXAOPWMList::initCurrent

### Syntax

```
void initCurrent(void);
```

### Description

Initializes the current data field of the data member.

### Reference

```
getCurrent
CDAQMXAOPWMData::initialize
```

# CDAQMXBalanceList Class

**CDAQMXList**
**CDAQMXBalanceList**

This class manages initial balance data.
You can create the initial balance data to send in advance and store it. The data is identified by an indentifier.
You can also store the results of the current data.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXBalanceList | Constructs an object. |
| ~CDAQMXBalanceList | Destructs an object. |

### Member Data Manipulation

| | |
|---|---|
| add | Adds initial balance data. |
| change | Changes initial balance data. |
| copyData | Copies initial balance data. |
| getClassMXBalanceData | Gets initial balance data. |
| initCurrent | Initializes the current initial balance data. |
| getCurrent | Gets the current initial balance data. |

- **Overridden Members**

### Member Data Manipulation

| | |
|---|---|
| create | Creates initial balance data. |
| copy | Copies initial balance data. |

- **Inherited Members**

See CDAQMXList.

```
del
getMaxNo
getNum
initialize
isData
```

## Protected Members

### Data Members

| | |
|---|---|
| m_cCurrent | Field for storing the current initial balance data. |

### Inherited Members

See CDAQMXList.

```
m_list
m_num
addData
delData
getData
```

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXBalanceList::add

### Syntax

```
int add(CDAQMXBalanceData * pcMXBalanceData);
```

### Parameters

pcMXBalanceData Specify the data using a pointer.

### Description

Adds the specified data to the list and generates data identifiers.

Returns a negative value if not added.

### Return value

Returns the data identifier.

### Reference

addData

## CDAQMXBalanceList::CDAQMXBalanceList

### Syntax

```
CDAQMXBalanceList(void);
virtual ~CDAQMXBalanceList(void);
```

### Description

Constructs or destructs an object.

When constructing, the data member is initialized.

When destructing, the data in the list is deleted.

### Reference

initCurrent
CDAQMXList::CDAQMXList

## CDAQMXBalanceList::change

### Syntax

```
void change(int idBalance, int balanceNo, int bValid, int
iValue = 0);
```

### Parameters

| | |
|---|---|
| idBalance | Specify the initial balance data identifier. |
| balanceNo | Specify the initial balance data number. |
| bValid | Specify valid/invalid using a Boolean value. |
| iValue | Specify the initial balance value. |

### Description

Changes the initial balance data of the specified initial balance data identifier.

If the data identifier is set to the constant for “Specify all data identifiers,” all data in the list is processed.

If the initial balance data number is set to the constant for “Specify all initial balance numbers,” all items within the data are changed.

### Reference

```
getClassMXBalanceData
CDAQMXBalanceData::setBalance
```

## CDAQMXBalanceList::copy

### Syntax

```
virtual void copy(int idxNo, int idxSrc);
```

### Parameters

| | |
|---|---|
| idxNo | Specify the data identifier of the copy destination. |
| idxSrc | Specify the data identifier of the copy source. |

### Description

Copies the contents of the data indicated by the data identifier from the copy source to the copy destination.

### Reference

```
copyData
getClassMXBalanceData
```

## CDAQMXBalanceList::copyData

### Syntax

```
void copyData(int idBalance, CDAQMXBalanceData *
pcMXBalanceData);
```

### Parameters

| | |
|---|---|
| idBalance | Specify the initial balance data identifier. |
| pcMXBalanceData | Specify the data using a pointer. |

### Description

Copies the data specified by the pointer to the data of the specified data identifier.
If the data identifier is set to the constant for “Specify all data identifiers,” all data in the list is processed.

### Reference

`getClassMXBalanceData`

## CDAQMXBalanceList::create

### Syntax

```
virtual int create(void);
```

### Description

Creates data and adds it to the list.

### Return value

Returns the data identifier.

### Reference

`add`
`CDAQMXBalanceData::CDAQMXBalanceData`

## CDAQMXBalanceList::getClassMXBalanceData

### Syntax

```
CDAQMXBalanceData * getClassMXBalanceData(int idBalance);
```

### Parameters

| | |
|---|---|
| idBalance | Specify the initial balance data identifier. |

### Description

Gets the data of the specified data identifier.
If the data identifier is set to the constant for “specify current data,” gets the current data field from the data member.
Returns NULL if it does not exist.

### Return value

Returns a pointer to the data.

### Reference

`getCurrent`
`getData`

## CDAQMXBalanceList::getCurrent

### Syntax

```
CDAQMXBalanceResult & getCurrent(void);
```

### Description

Gets the current data field from the data member.

### Return value

Returns a reference to the data.

## CDAQMXBalanceList::initCurrent

### Syntax

```
void initCurrent(void);
```

### Description

Initializes the current data field of the data member.

### Reference

```
getCurrent
CDAQMXBalanceResult::initialize
```

# CDAQMXDataBuffer Class

This class stores each type of information for each channel of the MX100 in a group. You can store multiple data with the FIFO. The data is managed in a list. It is specified with a storage location index number. You can indicate the current location using the current index number.
The following data can be stored.

- Channel Information Data
- Measured Data
- Time information data

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXDataBuffer | Constructs an object. |
| ~CDAQMXDataBuffer | Destructs an object. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getClassMXChInfo | Gets the channel information data. |
| create | Creates the storage field. |
| setChInfo | Stores the channel information data. |
| setDataInfo | Stores the measured data. |
| setDateTime | Stores the time information data. |
| currentDataInfo | Gets the current measured data. |
| currentDateTime | Gets the current time information data. |

### Utilities

| | |
|---|---|
| next | Increments the current index number. |
| getDataNum | Gets the remaining number of data. |
| isCurrent | Checks whether the current data exists. |

## Data Members

| | |
|---|---|
| m_cMXChInfo | Field for storing the channel information data. |
| m_pDataBuf | Field for the pointer to the top of the measured data list. |
| m_pTimeBuf | Field for the pointer to the top of the time information data list. |
| m_cur | Field for storing the current index number. |
| m_max | Field for storing the number of valid elements. |
| m_num | Field for storing the number of list elements. |

### Member Data Manipulation

| | |
|---|---|
| getDataInfo | Gets the measured data. |
| getDateTime | Gets the time information data. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXDataBuffer::CDAQMXDataBuffer

### Syntax

```
CDAQMXDataBuffer(void);
CDAQMXDataBuffer(CDAQMXChInfo & cMXChInfo);
virtual ~CDAQMXDataBuffer(void);
```

### Parameters

cMXChInfo  Specify the channel information data.

### Description

Constructs or destructs an object.

When constructing, the data member is initialized. If a channel information data is specified in the parameter, it is copied to the data member.

When destructing, each type of information in the data member is destructed.

### Reference

```
getClassMXChInfo initialize setChInfo
CDAQMXChInfo::initialize
```

## CDAQMXDataBuffer::create

### Syntax

```
int create(int num);
```

### Parameters

num  Specify the number of data.

### Description

Creates a list with the specified number of data.

When complete, the current index number is set to at the top of the list.

If a list has already been created, the old list is appended with the specified number of data. The specified number of data becomes the number of valid elements.

There is no data in the elements of a list that is created or appended to.

If the list could not be configured, it is initialized.

### Return value

Returns an error number.

Error:

Not Data  There is no data. Specified value is negative.

Exception  An exception occurred. The field could not be created.

### Reference

```
initialize
```

## CDAQMXDataBuffer::currentDataInfo

### Syntax

```
CDAQMXDataInfo * currentDataInfo(void);
```

### Description

Retrieves the measured data indicated by the current index number.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the object.

## CDAQMXDataBuffer::currentDateTime

### Syntax

```
CDAQMXDateTime * currentDateTime(void);
```

### Description

Retrieves the time information indicated by the current index number.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the object.

## CDAQMXDataBuffer::getClassMXChInfo

### Syntax

```
CDAQMXChInfo & getClassMXChInfo(void);
```

### Description

Gets the field for storing the channel information data from the data member.

### Return value

Returns the reference to the object.

## CDAQMXDataBuffer::getDataInfo

### Syntax

CDAQMXDataInfo * getDataInfo(int index);

### Parameters

| | |
|---|---|
| index | Specify the storage location index number. |

### Description

Gets the measured data of the specified location from the data member.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the measured data.

## CDAQMXDataBuffer::getDataNum

### Syntax

```
int getDataNum(void);
```

### Description

Gets the number of remaining data from the difference between the number of valid elements and the current index number.

### Return value

Returns the remaining number of data.

## CDAQMXDataBuffer::getDateTime

### Syntax

```
CDAQMXDateTime * getDateTime(int index);
```

### Parameters

| | |
|---|---|
| index | Specify the storage location index number. |
| cMXDateTime | Specify the time information data. |

### Description

Gets the time information data of the specified location from the data member.
Returns NULL if it does not exist.

### Return value

Returns a pointer to the time information data.

## CDAQMXDataBuffer::initialize

### Syntax

```
void initialize(void);
```

### Description

Initializes the data member.
Destructs the storage field for the measured data and time information data.
The field for storing the channel information data is not initialized.

## CDAQMXDataBuffer::isCurrent

### Syntax

```
int isCurrent(void);
```

### Description

Checks whether the data in the current location (of the current index number) is valid.

### Return value

Returns a Boolean value.

### Reference

`currentDataInfo`

## CDAQMXDataBuffer::next

### Syntax

```
int next(void);
```

### Description

Increments the current index number.

If the valid number of elements is exceeded, the storage location is considered to be nonexistent, and a negative number is set.

### Return value

Returns the current index number.

## CDAQMXDataBuffer::setChInfo

### Syntax

```
void setChInfo(CDAQMXChInfo & cMXChInfo);
```

### Parameters

| | |
|---|---|
| cMXChInfo | Specify the channel information data. |

### Description

Copies the specified channel information data to the data member.

## CDAQMXDataBuffer::setDataInfo

### Syntax

```
int setDataInfo(int index, CDAQMXDataInfo & cMXDataInfo);
```

### Parameters

| | |
|---|---|
| index | Specify the storage location index number. |
| cMXDataInfo | Specify the measured data. |

### Description

Copies the specified measured data to the specified location field of the data member.

If no data exists in the element of the specified location in the list, data is created.

References to the channel information data are not copied, and become the channel information data field of the data member.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Data | There is no data. The storage location index number is out of range. |
| Exception | An exception occurred. The field could not be configured. |

### Reference

```
getClassMXChInfo
CDAQMXDataInfo::CDAQMXDataInfo
CDAQMXDataInfo::setClassMXChInfo
```

## CDAQMXDataBuffer::setDateTime

### Syntax

```
int setDateTime(int index, CDAQMXDateTime & cMXDateTime);
```

### Parameters

| | |
|---|---|
| index | Specify the storage location index number. |
| cMXDateTime | Specify the time information data. |

### Description

Copies the specified time information data to the specified location of the data member.

If no data exists in the element of the specified location in the list, data is created.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Data | There is no data. The storage location index number is out of range. |
| Exception | An exception occurred. The field could not be configured. |

### Reference

`CDAQMXDateTime::CDAQMXDateTime`

# CDAQMXDOList Class

**CDAQMXList**
**CDAQMXDOList**

This class is for managing DO data from the output of command DO.
You can create the DO data to send in advance and store it. The data is identified by an indentifier.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXDOList | Constructs an object. |
| ~CDAQMXDOList | Destructs an object. |

### Member Data Manipulation

| | |
|---|---|
| add | Adds the DO data. |
| change | Changes the DO data. |
| copyData | Copies the DO data. |
| getClassMXDOData | Gets the DO data. |
| initCurrent | Initializes the DO data. |
| getCurrent | Gets the current DO data. |

### Overridden Members

### Member Data Manipulation

| | |
|---|---|
| create | Creates the DO data. |
| copy | Copies the DO data. |

### Inherited Members

See CDAQMXList.

```
del
getMaxNo
getNum
initialize
isData
```

## Protected Members

### Data Members

| | |
|---|---|
| m_list | Pointer to the top of the list. |
| m_num | Field for storing the number of elements in the list. |

### Member Data Manipulation

| | |
|---|---|
| addData | Adds data to the list. |
| delData | Deletes data from the list. |
| getData | Gets data from the list. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXDOList::add

### Syntax

```
int add(CDAQMXDOData * pcMXDOData);
```

### Parameters

pcMXDOData Specify the data using a pointer.

### Description

Adds the specified data to the list and generates data identifiers.

Returns a negative value if not added.

### Reference

addData

## CDAQMXDOList::CDAQMXDOList

### Syntax

```
CDAQMXDOList(void);
virtual ~CDAQMXDOList(void);
```

### Description

Constructs or destructs an object.

When constructing, the data member is initialized.

When destructing, the data in the list is deleted.

### Reference

initCurrent
CDAQMXList::CDAQMXList

## CDAQMXDOList::change

### Syntax

```
void change(int idDO,int doNo,int bValid,int bONOFF =
DAQMX_VALID_OFF);
```

### Parameters

| | |
|---|---|
| idDO | Specify the DO data identifier. |
| doNo | Specify the data number. |
| bValid | Specify valid/invalid using a Boolean value. |
| bONOFF | Specify ON/OFF using a Boolean value. |

### Description

Changes the DO data of the specified DO data identifier.

If the data identifier is set to the constant for “Specify all data identifiers,” all data in the list is processed.

If the DO data number is set to the constant for “Specify all DO numbers,” all items within the data are processed.

### Reference

`getClassMXDOData`
`CDAQMXDOData::setDO`

## CDAQMXList::copy

### Syntax

```
virtual void copy(int idxNo, int idxSrc);
```

### Parameters

| | |
|---|---|
| idxNo | Specify the data identifier of the copy destination. |
| idxSrc | Specify the data identifier of the copy source. |

### Description

Copies the contents of the data indicated by the data identifier from the copy source to the copy destination.

Does nothing if not overridden.

## CDAQMXDOList::copyData

### Syntax

```
void copyData(int idDO,CDAQMXDOData * pcMXDOData);
```

### Parameters

| | |
|---|---|
| idDO | Specify the DO data identifier. |
| pcMXDOData | Specify the data using a pointer. |

### Description

Copies the data specified by the pointer to the data of the specified data identifier.
If the data identifier is set to the constant for “Specify all data identifiers,” all data in the list is processed.

### Reference

`getClassMXDOData`

## CDAQMXDOList::create

### Syntax

```
virtual int create(void);
```

### Description

Creates data and adds it to the list.

### Return value

Returns the data identifier.

### Reference

`add`
`CDAQMXDOData::CDAQMXDOData`

## CDAQMXDOList::getClassMXDOData

### Syntax

```
CDAQMXDOData * getClassMXDOData(int idDO);
```

### Parameters

| | |
|---|---|
| idDO | Specify the DO data identifier. |

### Description

Gets the data of the specified data identifier.
If the data identifier is set to the constant for “specify current data,” gets the current data field from the data member.
Returns NULL if it does not exist.

### Return value

Returns a pointer to the data.

### Reference

`getCurrent getData`

## CDAQMXDOList::getCurrent

### Syntax

```
CDAQMXDOData & getCurrent(void);
```

### Description

Gets the current data field from the data member.

### Return value

Returns a reference to the data.

## CDAQMXDOList::initCurrent

### Syntax

```
void initCurrent(void);
```

### Description

Initializes the current data field of the data member.

### Reference

```
getCurrent
CDAQMXDOData::initialize
```

# CDAQMXItemConfig Class

**CDAQCongig**
**CDAQMXItemConfig**

This is a setup data class providing functions that access the setting contents using setup items.
Access using setup items involves the loading from or writing to the fields of the content. In principle, all contents are processed even they are unused, indefinite, or illegal. The contents are not checked for validity.
The class supports functions that indicate content fields using strings. If a type is defined with a constant, it is expressed with the string that indicates the type. If multiple notations are used such as with the CF status type and reference alarm, they are delimited with commas.
See the constants for the item name strings.
If it does not exist in the return value of the member function, it is usually the case that the field does not exist.
Functions are supported that retrieve the string as a floating point value from the item name and decimal point position.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXItemConfig | Constructs an object. |
| ~CDAQMXItemConfig | Destructs an object. |

### Setup Item Manipulation

| | |
|---|---|
| readItem | Loads setup items. |
| writeItem | Writes setup items. |

### Member Data Manipulation

| | |
|---|---|
| getHisterisys | Gets the hysteresis. |
| getDoubleHisterisys | Gets the hysteresis as a floating point number. |
| getDoubleAlarmON | Gets the alarm ON value as a floating point number. |
| getDoubleAlarmOFF | Gets the alarm OFF value as a floating point number. |
| getDoubleSpanMin | Gets the span minimum as a floating point number. |
| getDoubleSpanMax | Gets the span maximum as a floating point number. |
| getDoubleScaleMin | Gets the scale minimum as a floating point number. |
| getDoubleScaleMax | Gets the scale maximum as a floating point number. |
| getDoublePresetValue | Gets the value if the selected value is the “specified value”as a floating point number. |

### Utilities

| | |
|---|---|
| toItemName | Gets the setup item string. |
| getItemNo | Gets the setting item number. |
| getMaxLenItemName | Get the maximum length of the setup item string. |

### Overridden Members

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### Inherited Members

See CDAQMXConfig.

```
getChName getClassMXBalanceData getClassMXChConfig
getClassMXChConfigData getClassMXNetInfo getClassMXOutputData
getClassMXStatus getClassMXSysInfo getItemError
getMXConfigData getRangePoint getSpanPoint
initialize initMXConfigData isCorrect isObject reconstruct
setAO setAOType setChKind setDELTA setDI setDOType setInterval
setMXConfigData setPWM setPWMType setRES setRRJC setRTD
setScalling setSKIP setSTRAIN setTC setTempUnit setVOLT
```

## Protected Members

### Inherited Members

See CDAQMXConfig.

```
m_cMXSysInfo m_cMXStatus m_cMXNetInfo m_cMXChConfigData
```

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXItemConfig::CDAQMXItemConfig

### Syntax

```
CDAQMXItemConfig(MXConfigData * pMXConfigData = NULL);
virtual ~CDAQMXItemConfig(void);
```

### Parameters

pMXConfigData  Specify the setup data.

### Description

Constructs or destructs an object.

When constructing, the data member is set to the specified value. If not specified, the data member is initialized.

### Reference

`CDAQMXConfig::CDAQMXConfig`

## CDAQMXItemConfig::getDoubleAlarmOFF

### Syntax

```
double getDoubleAlarmOFF(int chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel number and threshold level for alarm termination (OFF value) as a floating point number.

Returns 0.0 if it does not exist.

### Return value

Returns the threshold level (OFF value) for alarm termination as a floating point number.

### Reference

`getClassMXChConfig`
`CDAQMXChConfig::getAlarmValueOFF`
`CDAQMXChConfig::getPoint`
`CDAQMXDataInfo::toDoubleValue`

## CDAQMXItemConfig::getDoubleAlarmON

### Syntax

```
double getDoubleAlarmON(int chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel number and threshold level for alarm generation (ON value) as a floating point number.

Returns 0.0 if it does not exist.

### Return value

Returns the threshold level (ON value) for alarm generation as a floating point number.

### Reference

```
getClassMXChConfig
CDAQMXChConfig::getAlarmValueON
CDAQMXChConfig::getPoint
CDAQMXDataInfo::toDoubleValue
```

## CDAQMXItemConfig::getDoubleHisterisys

### Syntax

```
double getDoubleHisterisys(int chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel number and hysteresis for the alarm level as a floating point number.

Returns 0.0 if it does not exist.

### Return value

Returns the hysteresis as a floating point number.

### Reference

```
getClassMXChConfig
getHisterisys
CDAQMXChConfig::getPoint
CDAQMXDataInfo::toDoubleValue
```

## CDAQMXItemConfig::getDoublePresetValue

### Syntax

```
double getDoublePresetValue(int outputNo);
```

### Parameters

outputNo  Specify the output channel data number.

### Description

Gets the value if the selected value of the specified output channel data number is the “specified value,” as a floating point number.

Returns 0.0 if it does not exist.

### Return value

Returns the value if the selected value is the “specified value” as a floating point number.

### Reference

```
getClassMXOutputData
getSpanPoint
CDAQMXOutputData::getPresetValue
CDAQMXDataInfo::toDoubleValue
```

## CDAQMXItemConfig::getDoubleScaleMax

### Syntax

```
double getDoubleScaleMax(int chNo);
```

### Parameters

chNo  Specify the channel number.

### Description

Gets the maximum scale value for the specified channel number as a floating point number.

Returns 0.0 if it does not exist.

### Return value

Gets the scale maximum value as a floating point number.

### Reference

```
getClassMXChConfig
CDAQMXChConfig::getPoint
CDAQMXChConfig::getScaleMax
CDAQMXDataInfo::toDoubleValue
```

## CDAQMXItemConfig::getDoubleScaleMin

### Syntax

```
double getDoubleScaleMin(int chNo);
```

### Parameters

chNo Specify the channel number.

### Description

Gets the minimum scale value for the specified channel number as a floating point number.

Returns 0.0 if it does not exist.

### Return value

Gets the scale minimum value as a floating point number.

### Reference

```
getClassMXChConfig
CDAQMXChConfig::getPoint
CDAQMXChConfig::getScaleMin
CDAQMXDataInfo::toDoubleValue
```

## CDAQMXItemConfig::getDoubleSpanMax

### Syntax

```
double getDoubleSpanMax(int chNo);
```

### Parameters

chNo Specify the channel number.

### Description

Gets the maximum span value for the specified channel number as a floating point number.

Returns 0.0 if it does not exist.

### Return value

Gets the span maximum value as a floating point number.

### Reference

```
getClassMXChConfig
getSpanPoint
CDAQMXChConfig::getSpanMax
CDAQMXDataInfo::toDoubleValue
```

## CDAQMXItemConfig::getDoubleSpanMin

### Syntax

```
double getDoubleSpanMin(int chNo);
```

### Parameters

chNo Specify the channel number.

### Description

Gets the minimum span value for the specified channel number as a floating point number.

Returns 0.0 if it does not exist.

### Return value

Gets the span minimum value as a floating point number.

### Reference

```
getClassMXChConfig
getSpanPoint
CDAQMXChConfig::getSpanMin
CDAQMXDataInfo::toDoubleValue
```

## CDAQMXItemConfig::getHisterisys

### Syntax

```
int getHisterisys(int chNo, int levelNo);
```

### Parameters

chNo Specify the channel number.

levelNo Specify the alarm level.

### Description

Gets the hysteresis of the specified channel number and alarm level.

Returns 0 if it does not exist.

### Return value

Returns the hysteresis.

### Reference

```
getClassMXChConfig
CDAQMXChConfig::getAlarmValueOFF
CDAQMXChConfig::getAlarmValueON
```

## CDAQMXItemConfig::getMaxLenItemName

### Syntax

```
static int getMaxLenItemName(void);
```

### Description

Gets the maximum length of string of the item name of the setup item.

The return value does not include the terminator.

### Return value

Returns the length of the string.

## CDAQMXConfig::isObject

### Syntax

```
virtual int isObject(const char * classname =
“CDAQMXItemConfig”;
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQMXConfig::isObject`

## CDAQMXItemConfig::readItem

### Syntax

```
int readItem(int itemNo,char * strItem, int lenItem);
```

### Parameters

| | |
|---|---|
| itemNo | Specify the setup item. |
| strItem | Specify the field where the string is to be stored. |
| lenItem | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the contents of the specified setup item as a string.

Stores the string in the specified storage destination.

The strings that can be stored are, in general, ASCII strings.

Returns 0 if it does not exist.

### Return value

Returns the length of the actual string.

### Reference

```
getClassMXBalanceData getClassMXChConfig getClassMXNetInfo
getClassMXOutputData getClassMXStatus getClassMXSysInfo
```

## CDAQMXItemConfig::toItemName

### Syntax

```
static int toItemName(int itemNo, char * strItem, int
lenItem);
```

### Parameters

| | |
|---|---|
| itemNo | Specify the setup item. |
| strItem | Specify the field where the string is to be stored. |
| lenItem | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the setup item name of the specified setup item as a string.

Stores the string in the specified storage destination.

The string stored to the field includes the terminator. The return value does not include the terminator.

Stores an empty string and returns 0 if it does not exist.

The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

## CDAQMXItemConfig::toItemName

### Syntax

```
static int toItemName(int itemNo, char * strItem, int
lenItem);
```

### Parameters

| | |
|---|---|
| itemNo | Specify the setup item. |
| strItem | Specify the field where the string is to be stored. |
| lenItem | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the setup item name of the specified setup item as a string.

Stores the string in the specified storage destination.

The string stored to the field includes the terminator. The return value does not include the terminator.

Stores an empty string and returns 0 if it does not exist.

The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

## CDAQMXItemConfig::toItemNo

### Syntax

```
static int toItemNo(const char * strItem);
```

### Parameters

| | |
|---|---|
| strItem | Specify the item name of the setup item using a string. |

### Description

Gets the setup item from the string.

If it does not exist, “Unknown” is returned.

The specified string is, in general, an ASCII string.

### Return value

Returns the setup item.

## CDAQMXItemConfig::writeItem

### Syntax

```
int writeItem(int itemNo, const char * strItem);
```

### Parameters

| | |
|---|---|
| itemNo | Specify the setup item. |
| strItem | Specify the contents using a string. |

### Description

Sets the specified contents to the specified setup item.

The format of the string should match the output of setup item loading function.

The specified string is, in general, an ASCII string.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not Support | Setup item or contents not supported. |

### Reference

```
getClassMXBalanceData getClassMXChConfig getClassMXNetInfo
getClassMXOutputData getClassMXStatus getClassMXSysInfo
```

# CDAQMXList Class

**CDAQMXList**

CDAQMXList

This class manages data created by the user.

The registered data is identified by a data indentifier. The data identifier corresponds to the index number of the list.

This class does not define data to be created. It overrides data member manipulation function members.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQMXList | Constructs an object. |
| ~CDAQMXList | Destructs an object. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| create | Creates the data. |
| del | Deletes the data. |
| copy | Copies the data. |

### Utilities

| | |
|---|---|
| getNum | Gets the specified number of data. |
| getMaxNo | Gets the maximum value of the data identifier. |
| isData | Checks for the existence of data. |

## Protected Members

### Data Members

| | |
|---|---|
| m_list | Pointer to the top of the list. |
| m_num | Field for storing the number of elements in the list. |

### Member Data Manipulation

| | |
|---|---|
| addData | Adds data to the list. |
| delData | Deletes the data from the list. |
| getData | Gets data from the list. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQMXList::addData

### Syntax

```
int addData(void * pData);
```

### Parameters

pData Specify the data using a pointer.

### Description

Adds the specified data to the list and generates data identifiers.

Returns a negative value if not added.

### Return value

Returns the data identifier.

## CDAQMXList::CDAQMXList

### Syntax

```
CDAQMXList(void);
virtual ~CDAQMXList(void);
```

### Description

Constructs or destructs an object.

When constructing, the data member is initialized.

When destructing, the data in the list is deleted.

### Reference

```
initialize
```

## CDAQMXList::copy

### Syntax

```
virtual void copy(int idxNo, int idxSrc);
```

### Parameters

idxNo Specify the data identifier of the copy destination.

idxSrc Specify the data identifier of the copy source.

### Description

Copies the contents of the data indicated by the data identifier from the copy source to the copy destination.

Does nothing if not overridden.

## CDAQMXList::create

### Syntax

```
virtual int create(void);
```

### Description

Creates data and adds it to the list.

Data not created if not overridden.

### Return value

Returns the data identifier.

### Reference

addData

## CDAQMXList::del

### Syntax

```
virtual void del(int idxNo);
```

### Parameters

| | |
|---|---|
| idxNo | Specify the data identifier. |

### Description

Deletes the data of the specified data identifier from the list and destructs.

If set to the constant for “Specify all data identifiers,” all data in the list is processed.

### Reference

delData

## CDAQMXList::delData

### Syntax

```
void delData(int idxNo);
```

### Parameters

| | |
|---|---|
| idxNo | Specify the data identifier. |

### Description

Deletes the data of the specified data identifier from the list and destructs.

If set to the constant for “Specify all data identifiers,” all data in the list is processed.

### Reference

getData

## CDAQMXList::getData

### Syntax

```
void * getData(int idxNo);
```

### Parameters

idxNo Specify the data identifier.

### Description

Gets the data of the specified data identifier.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the data.

## CDAQMXList::getMaxNo

### Syntax

```
int getMaxNo(void);
```

### Description

Gets the maximum value of the data identifier of the data that exists in the list.

### Return value

Returns the data identifier.

## CDAQMXList::getNum

### Syntax

```
int getNum(void);
```

### Description

Gets the specified number of data.

Gets the number of data that exists in the list.

### Return value

Returns the number of data.

## CDAQMXList::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member.

Destructs all data in the list.

### Reference

`delData`

## CDAQMXList::isData

### Syntax

```
int isData(int idxNo);
```

### Parameters

idxNo Specify the data identifier.

### Description

Checks whether the data of the specified data identifier exists in the list.

If it exists, Valid is returned. Otherwise, returns Invalid.

### Return value

Returns a Boolean value.

# CDAQMXTransmitList Class

**CDAQMXList**
**CDAQMXTransmitList**

This class is for managing transmission output data specified under transmission output.
You can create the transmission output data to send in advance and store it. The data is identified by an indentifier.

## Public Members

Construct/Destruct

| | |
|---|---|
| CDAQMXTransmitList | Constructs an object. |
| ~CDAQMXTransmitList | Destructs an object. |

### Member Data Manipulation

| | |
|---|---|
| add | Adds transmission output data. |
| change | Changes transmission output data. |
| copyData | Copies transmission output data. |
| getClassMXTransmit | Gets transmission output data. |
| initCurrent | Initializes the current transmission output data. |
| getCurrent | Gets the current transmission output data. |

- **Overridden Members**

Member Data Manipulation

| | |
|---|---|
| create | Creates transmission output data. |
| copy | Copies transmission output data. |

- **Inherited Members**

See CDAQMXList.

```
del
getMaxNo
getNum
initialize
isData
```

## Protected Members

### Data Members

| | |
|---|---|
| m_cCurrent | Field for storing the current transmission output data. |

### Inherited Members

See CDAQMXList.

```
m_list
m_num
addData
delData
getData
```

## Private Members

None.

# Member Functions (Alphabetical Order)

## CDAQMXTransmitList::add

### Syntax

```
int add(CDAQMXTransmit * pcMXTransmit);
```

### Parameters

pcMXTransmit  Specify the data using a pointer.

### Description

Adds the specified data to the list and generates data identifiers.

Returns a negative value if not added.

### Return value

Returns the data identifier.

### Reference

addData

## CDAQMXTransmitList::CDAQMXTransmitList

### Syntax

```
CDAQMXTransmitList(void);
virtual ~CDAQMXTransmitList(void);
```

### Description

Constructs or destructs an object.

When constructing, the data member is initialized.

When destructing, the data in the list is deleted.

### Reference

initCurrent
CDAQMXList::CDAQMXList

## CDAQMXTransmitList::change

### Syntax

```
void change(int idTransmit, int aopwmNo, int iTransmit);
```

### Parameters

| | |
|---|---|
| idTransmit | Specify the transmission output data identifier. |
| aopwmNo | Specify the AO/PWM data number. |
| iTransmit | Specify the transmission status. |

### Description

Changes the transmission output data of the specified transmission output data identifier.

If the data identifier is set to the constant for “Specify all data identifiers,” all data in the list is processed.

If the transmission output data number is set to the constant for “Specify all transmission output data numbers,” all items within the data are processed.

### Reference

```
getClassMXTransmit
CDAQMXTransmit::setTransmit
```

## CDAQMXTransmitList::copy

### Syntax

```
virtual void copy(int idxNo, int idxSrc);
```

### Parameters

| | |
|---|---|
| idxNo | Specify the data identifier of the copy destination. |
| idxSrc | Specify the data identifier of the copy source. |

### Description

Copies the contents of the data indicated by the data identifier from the copy source to the copy destination.

### Reference

```
copyData
getClassMXTransmit
```

## CDAQMXTransmitList::copyData

### Syntax

```
void copyData(int idTransmit, CDAQMXTransmit * pcMXTransmit);
```

### Parameters

idTransmit Specify the transmission output data identifier.

pcMXTransmit Specify the data using a pointer.

### Description

Copies the data specified by the pointer to the data of the specified data identifier.

If the data identifier is set to the constant for “Specify all data identifiers,” all data in the list is processed.

### Reference

`getClassMXTransmit`

## CDAQMXTransmitList::create

### Syntax

```
virtual int create(void);
```

### Description

Creates data and adds it to the list.

### Return value

Returns the data identifier.

### Reference

`add`
`CDAQMXTransmit::CDAQMXTransmit`

## CDAQMXTransmitList::getClassMXTransmit

### Syntax

```
CDAQMXTransmit * getClassMXTransmit(int idTransmit);
```

### Parameters

idTransmit Specify the transmission output data identifier.

### Description

Gets the data of the specified data identifier.

If the data identifier is set to the constant for “specify current data,” gets the current data field from the data member.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the data.

### Reference

`getCurrent`
`getData`

## CDAQMXTransmitList::getCurrent

### Syntax

```
CDAQMXTransmit & getCurrent(void);
```

### Description

Gets the current data field from the data member.

### Return value

Returns a reference to the data.

## CDAQMXTransmitList::initCurrent

### Syntax

```
void initCurrent(void);
```

### Description

Initializes the current data field of the data member.

### Reference

```
getCurrent
CDAQMXTransmit::initialize
```

# 13.1 Functions and Their Functionalities - MX100/ Visual C -

This section indicates the correspondence between the functionalities that the extension API supports and the Visual C functions.
There are two types, status transition functions and retrieval functions.
Status retrieval functions control the MX100. When measured data is retrieved with the data transition function, the measured data advances by only one interval's worth of data (the status of the extension API changes).
The retrieval function returns the parameter value. When data is retrieved, the data value of the current status is returned (the status of the extension API does not change).

## Status Transition Functions

The FIFO column in the table indicates the FIFO operation when the function is executed while FIFO is running.
Stop: Stops the FIFO when the function is executed.
Continue: Continues the FIFO even when the function is executed.

### Communication Functions

| Function | FIFO | Function |
|---|---|---|
| Connect to the MX100 | Continue | openMX100 |
| Disconnect from the MX100 | Continue | closeMX100 |

### Starting/Stopping the FIFO

| Function | FIFO | Function |
|---|---|---|
| Start the FIFO | Continue | measStartMX100 |
| Stop the FIFO | Continue | measStopMX100 |

## Control Functions

| Function | | | FIFO | Class and Member Function |
|---|---|---|---|---|
| Set date/time | Current time | | Stop | setDateTimeNowMX100 |
| Set backup | valid/invalid | | Continue | switchBackupMX100 |
| Format of the CF card | | | Stop | formatCFMX100 |
| Unit | | Reconfigure | Stop | reconstructMX100 |
| | | Initialize | Stop | initSetValueMX100 |
| | | Reset alarm (alarm ACK) | Stop | ackAlarmMX100 |
| 7-segment LED display | | | Continue | displaySegmentMX100 |
| Initialize stored data | | Specify channel | Continue | initDataChMX100 |
| | | Specify FIFO | Continue | initDataFIFOMX100 |

At the end of communications, the control function updates the status.
See the data manipulation functions for more about the data transmission and setup functions. Time cannot be set arbitrarily.

## Setup Functions

| Function | | FIFO | Function |
|---|---|---|---|
| Set all setup data | All setup data | Stop | sendConfigMX100 |
| (send collectively) | Basic setup data | Stop | sendConfigMX100 |
| Set setup data individually | System configuration data | Stop | sendConfigMX100 |
| | Channel setup data | Stop | sendConfigMX100 |
| | Initial balance data | Stop | sendConfigMX100 |
| | Output channel data | Stop | sendConfigMX100 |
| Initial balance data | Execute | Stop | initBalanceMX100 |
| | Reset | Stop | clearBalanceMX100 |

The setup data setup functions send the stored data.
When setting arbitrary initial balance data, see the initial balance data sending function under data manipulation functions.

## Setup Change Functions

### Range Settings

| Function | FIFO | Function |
|---|---|---|
| Skip | Stop | setRangeMX100 |
| DC voltage input | Stop | setRangeMX 100 |
| Thermocouple input | Stop | setRangeMX100 |
| RTD | Stop | setRangeMX100 |
| Digital input | Stop | setRangeMX100 |
| Resistance | Stop | setRangeMX100 |
| Strain | Stop | setRangeMX100 |
| AO | Stop | setRangeMX100 |
| PWM | Stop | setRangeMX100 |
| Difference computation between channels | Stop | setChDELTAMX100 |
| Remote RJC | Stop | setChRRJCMX100 |
| Pulse | Stop | setRangeMX100 |
| Communication | Stop | setRangeMX100 |

### Channel Settings

| Function | | FIFO | Function |
|---|---|---|---|
| Unit name | | Stop | setChUnitMX100 |
| Tag | | Stop | setChTagMX100 |
| Comment | | Stop | setChCommentMX100 |
| AI/DI/AO/PWM Span | | Stop | setSpanMX100 |
| | | | setDoubleSpanMX100 |
| AI/DI | Scale | Stop | setScaleMX100 |
| | | | setDoubleScaleMX100 |
| | Alarm | Stop | setAlarmMX100 |
| | | | setDoubleAlarmMX100 |
| | | | setAlarmValueMX100 |
| | | | setDoubleAlarmValueMX100 |
| | Hysteresis | Stop | setHisterisysMX100 |
| | | | setDoubleHisterisysMX100 |
| AI | Filter coefficient | Stop | setFilterMX100 |
| | Ref. junction compensation (RJC) | Stop | setRJCTypeMX100 |
| | Burnout | Stop | setBurnoutMX100 |
| DO | De-energize | Stop | setDeenergizeMX100 |
| | Hold | Stop | setHoldMX100 |
| | Reference alarm | Stop | setRefAlarmMX100 |
| Channel kind | DO type | Stop | setChKindMX100 |
| | AO type | Stop | setChKindMX100 |
| | PWM type | Stop | setChKindMX100 |
| PI | Chattering filter | Stop | channelChatFilterMX100 |

## Module Settings

| Function | FIFO | Function |
|---|---|---|
| Interval type | Stop | setIntervalMX100 |
| A/D integral time type | Stop | setIntegralMX100 |

## Unit Settings

| Function | FIFO | Function |
|---|---|---|
| Unit number | Stop | setUnitNoMX100 |
| Temperature unit type | Stop | setUnitTempMX100 |
| CF write mode | Stop | setCFWriteModeMX100 |

## Output Channel Data

| Function | FIFO | Function |
|---|---|---|
| Output type | Stop | setOutputTypeMX100 |
| Selected value | Stop | setChoiceMX100<br>setDoubleChoiceMX100 |
| Pulse interval integer multiple | Stop | setPulseTimeMX100 |

The setup functions send the settings then update the status.
These settings are for individual channels. If the settings could not be entered, an error is usually returned.
Specification is possible with data values or measured values (Double).

## Data Manipulation Functions

### DO Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createDOMX100 |
| Delete | | Continue | deleteDOMX100 |
| Partial chng | User specification | Continue | changeDOMX100 |
| | Copy | Continue | copyDOMX100 |
| Transmit | Existing specification | Continue | commandDOMX100 |
| | Change specification | Continue | switchDOMX100 |

### AO/PWM data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createAOPWMMX100 |
| Delete | | Continue | deleteAOPWMMX100 |
| Partial chng | Output data value | Continue | changeAOPWMMX100 |
| | Actual output value | Continue | hangeAOPWMValueMX100 |
| | Copy | Continue | copyAOPWMMX100 |
| Transmit | | Continue | commandAOPWMMX100 |

### Initial Balance Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createBalanceMX100 |
| Delete | | Continue | deleteBalanceMX100 |
| Partial chng | User specification | Continue | changeBalanceMX100 |
| | Copy | Continue | copyBalanceMX100 |
| Transmit | | Stop | commandBalanceMX100 |

### Transmission Output Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createTransmitMX100 |
| Delete | | Continue | deleteTransmitMX100 |
| Partial change | User specification | Continue | changeTransmitMX100 |
| | Copy | Continue | copyTransmitMX100 |
| Transmit | Existing specification | Continue | commandTransmitMX100 |
| | Change specification | Continue | switchTransmitMX100 |

Manipulates each data by indentifier.

For manipulation other than transmission, status is not updated (no communication).

## Retrieval Functions

| Function | | | FIFO | Function |
|---|---|---|---|---|
| Status data | | | Continue | updateStatusMX100 |
| System configuration data | | | Continue | updateSystemMX100 |
| Setup data | | | Continue | updateConfigMX100 |
| Output data | DO data | | Continue | updateDODataMX100 |
| | AO/PWM data<br>Transmission output data | | Continue | dateAOPWMDataMX100 |
| Channel information data | | | Continue | updateInfoChMX100 |
| Measured data | Specify ch. | FIFO value | Continue | measDataChMX100 |
| | | Inst value | Continue | measInstChMX100 |
| | Specify FIFO | FIFO value | Continue | measDataFIFOMX100 |
| | | Inst value | Continue | measInstFIFOMX100 |
| Initial balance data | | | Continue | updateBalanceMX100 |
| Output channel data | | | Continue | updateOutputMX100 |

Data retrieval is performed collectively and internally by this API.
Depending on the acquisition, the status may also be updated.
Channel information data and setup data (including system configuration data, initial balance data, and output channel data) are stored internally, but the user can update stored data explicitly.

## Setup Items

| Function | | FIFO | Function |
|---|---|---|---|
| Setup data | Receive collectively | Continue | getItemAllMX100 |
| | Send collectively | Stop | setItemAllMX100 |
| Setup items | Read | Continue | readItemMX100 |
| | Write | Continue | writeItemMX100 |
| | Initialize | Continue | initItemMX100 |

Loading, writing, and initializing of setting items is performed through access to the field where the item is stored, and validity checks are not performed on those fields. Also, status is not updated (no communication).

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | dataValueMX100 |
| Data status Values | | dataStatusMX100 |
| Alarm (presence/absence) | | dataAlarmMX100 |
| Measured values | Double integer | dataDoubleValueMX100 |
| | String | dataStringValueMX100 |
| Time | No. of seconds | dataTimeMX100 |
| | Milliseconds | dataMilliSecMX100 |
| | Year | dataYearMX100 |
| | Month | dataMonthMX100 |
| | Day | dataDayMX100 |
| | Hour | dataHourMX100 |
| | Minute | dataMinuteMX100 |
| | Second | dataSecondMX100 |
| Valid data (presence/absence) | | dataValidMX100 |

## Channel Information Data

| Data Name | Function |
|---|---|
| FIFO number | channelFIFONoMX100 |
| Channel sequence number in the FIFO | channelFIFOIndexMX100 |
| Display minimum value | channelDisplayMinMX100 |
| Display maximum value | channelDisplayMaxMX100 |
| Measurable minimum value | channelRealMinMX100 |
| Measurable maximum value | channelRealMaxMX100 |

## Channel Setup Data

| Data Name | | | | Function |
|---|---|---|---|---|
| Channel status (valid/invalid) | | | | channelValidMX100 |
| Decimal Point Position | | | | channelPointMX100 |
| Channel kind | | | | channelKindMX100 |
| Range type | | | | channelRangeMX100 |
| Scale type | | | | channelScaleTypeMX100 |
| Unit name | | | | toChannelUnitMX100<br>getChannelUnitMX100 |
| Tag | | | | toChannelTagMX100<br>getChannelTagMX100 |
| Comment | | | | toChannelCommentMX100<br>getChannelCommentMX100 |
| AI/DI/AO/ PWM | Span | Min val | Data Value | channelSpanMinMX100 |
| | | | Meas val | channelDoubleSpanMinMX100 |
| | | Max val | Data Value | channelSpanMaxMX100 |
| | | | Meas value | channelDoubleSpanMaxMX100 |
| AI/DI | Scale | Min val | Data Value | channelScaleMinMX100 |
| | | | Meas value | channelDoubleScaleMinMX100 |
| | | Max value | Data Value | channelScaleMaxMX100 |
| | | | Meas value | channelDoubleScaleMaxMX100 |
| | Alarm type | | | alarmTypeMX100 |
| | Alarm value (ON) | | Data Value | alarmValueONMX100 |
| | | | Meas value | alarmDoubleValueONMX100 |
| | Alarm value (OFF) | | Data Value | alarmValueOFFMX100 |
| | | | Meas value | alarmDoubleValueOFFMX100 |
| | Hysteresis | | Data Value | alarmHisterisysMX100 |
| | | | Meas value | alarmDoubleHisterisysMX100 |
| AI | Filter coefficient | | | channelFilterMX100 |
| | RJC type | | | channelRJCTypeMX100 |
| | RJC voltage | | | channelRJCVoltMX100 |
| | Burnout | | | channelBurnoutMX100 |
| DO | De-energize | | | channelDeenergizeMX100 |
| | Hold | | | channelHoldMX100 |
| | Reference alarm | | | channelRefAlarmMX100 |
| Channels undergoing difference between channels computation/Remote RJC/AO/PWM | | | | |
| | | channelRefChNoMX100 | | Reference channel number |
| Initial balance data | | Boolean value | | channelBalanceValidMX100 |
| | | Initial balance value | | channelBalanceValueMX100 |
| Output channel data | | Output type | | channelOutputTypeMX100 |
| | | Value selected when idle | | channelIdleChoiceMX100 |
| | | Value selected during error | | channelErrorChoiceMX100 |
| | | Value if the selected value is the “specified value.” | | |
| | | | Data value | channelPresetValueMX100 |
| | | | Meas value | channelDoublePresetValueMX100 |
| | | Pulse interval integer multiple | | channelPulseTimeMX100 |
| PI | | Chattering filter | | channelChatFilterMX100 |

## Network Information Data

| Data Name | Function |
|---|---|
| Host name | toNetHostMX100 |
| | getNetHostMX100 |
| IP address | netAddressMX100 |
| Port number | netPortMX100 |
| Subnet mask | netSubmaskMX100 |
| Gateway address | netGatewayMX100 |

## System Configuration Data

| Data Name | | Function |
|---|---|---|
| Module | Module type | moduleTypeMX100 |
| | Number of channels | moduleChNumMX100 |
| | Interval type | moduleIntervalMX100 |
| | AD integral time type | moduleIntegralMX100 |
| | Valid/Invalid value | moduleValidMX100 |
| | Module type at startup | moduleStandbyTypeMX100 |
| | Actual module type | moduleRealTypeMX100 |
| | Terminal type | moduleTerminalMX100 |
| | Version | moduleVersionMX100 |
| | FIFO Number | moduleFIFONoMX100 |
| | Serial number | toModuleSerialMX100 |
| | | getModuleSerialMX100 |
| Unit | Unit type | unitTypeMX100 |
| | Style | unitStyleMX100 |
| | Unit number | unitNoMX100 |
| | Temperature unit type | unitTempMX100 |
| | Power supply frequency | unitFrequencyMX100 |
| | Part number | toUnitPartNoMX100 |
| | | getUnitPartNoMX100 |
| | Option | unitOptionMX100 |
| | Serial number | toUnitSerialMX100 |
| | | getUnitSreialMX100 |
| | MAC address | unitMACMX100 |
| | CF write mode | unitCFWriteModeMX100 |

## Status Data

| Data Name | | Function |
|---|---|---|
| Unit status value | | statusUnitMX100 |
| Valid number of FIFOs | | statusFIFONumMX100 |
| Backup (presence or absence) | | statusBackupMX100 |
| FIFO | FIFO status value | statusFIFOMX100 |
| | Interval type | statusFIFOIntervalMX100 |
| CF | CF status type | statusCFMX100 |
| | Size | statusCFSizeMX100 |
| | Remaining capacity | statusCFRemainMX100 |
| Status return time | No. of seconds | statusTimeMX100 |
| | Milliseconds | statusMilliSecMX100 |
| | Year | statusYearMX100 |
| | Month | statusMonthMX100 |
| | Day | statusDayMX100 |
| | Hour | statusHourMX100 |
| | Minute | statusMinuteMX100 |
| | Second | statusSecondMX100 |

## Current Data

| Data Name | | Function |
|---|---|---|
| DO Data | Valid/Invalid value | currentDOValidMX100 |
| | ON/OFF status | currentDOValueMX100 |
| AO/PWM data | Valid/Invalid value | currentAOPWMValidMX100 |
| | Output data value | currentAOPWMValueMX100 |
| | Output value | currentDoubleAOPWMValueMX100 |
| Initial balance data | Valid/Invalid value | currentBalanceValidMX100 |
| | Initial balance value | currentBalanceValueMX100 |
| | Initial balance result | currentBalanceResultMX100 |
| Trans output data | Transmission status | currentTransmitMX100 |

This is the status of each data retrieved with the data retrieval functions.
The initial balance result of the initial balance data is the result executed by the setup function.
Acutally-output output statuses such as DO data and AO/PWM data can be retrieved as current data. However, immediately after sending data, the specified value is returned, and the actual output may occur at the next timing.
Held data are the values retrieved upon a status update. It is not data from the time the retrieval function was called.

## User Data

| Data Name | | Function |
|---|---|---|
| DO data | Valid/Invalid Value | userDOValidMX100 |
| | ON/OFF status | userDOValueMX100 |
| AO/PWM data | Valid/Invalid value | userAOPWMValidMX100 |
| | Output data value | userAOPWMValueMX100 |
| | Output value | userDoubleAOPWMValueMX100 |
| Initial balance data | Valid/Invalid value | userBalanceValidMX100 |
| | Initial balance value | userBalanceValueMX100 |
| Trans output data | Transmission status | userTransmitMX100 |

Gets the data values created by the user with data manipulation functions.

## Utilities

| Function/Data Name | | Function |
|---|---|---|
| No. of remaining data | Retrieve by channel | dataNumChMX100 |
| | Retrieve by FIFO | dataNumFIFOMX100 |
| Error | Get MX-specific error | lastErrorMX100 |
| | Get the error message string | toErrorMessageMX100<br>getErrorMessageMX100 |
| | Get max length of the error message string | errorMaxLengthMX100 |
| | Get no. of parameter on which error detected | itemErrorMX100 |
| Change from FIFO information to channel number | | channelNumberMX100 |
| Get the decimal point position by range type | | rangePointMX100 |
| Meas value | Change to double integer | toDoubleValueMX100 |
| | Convert into string. | toStringValueMX100 |
| Alarm | Get the alarm type string. | toAlarmNameMX100<br>getAlarmNameMX100 |
| | Get the maximum length of the alarm string | alarmMaxLengthMX100 |
| Get the version number of this API | | versionAPIMX100 |
| Get the revision number of this API | | revisionAPIMX100 |
| Get a portion of the IP address | | addressPartMX100 |
| AO/PWM | Convert the output values to output data values | toAOPWMValueMX100 |
| | Convert the output data values to output values | toRealValueMX100 |
| Setup items | Gets the setup item string from the setup item number | toItemNameMX100 |
| | Gets the setup item number from the setup item string | toItemNoMX100 |
| | Get max. length of the setup item string | itemMaxLengthMX100 |
| Convert to style version. | | toStyleVersionMX100 |

# 13.2 Programming - MX100/Visual C -

## Adding the Path to the Include File

Add the path of the include file (DAQMX100.h) to the project. The method of adding the include file varies depending on the environment used.

## Declaration in the Source File

Write the declaration in the source file.

```
#include "DAQMX100.h"
```

***Note***

The include file of the common section (DAQHandler.h) and the MX100 include file (DAQMX.h) is referenced from the include file described above. Thus, declaration for it is not necessary.

## Load Library Statement

The statement below is added so that the executable module (.dll) of the API can link to the process.

The executable module (.dll) of the API is mapped within the address space (LoadLibrary). Next, the address of the export function in the executable module is retrieved (GetProcAddress).

The callback type of the function pointer is the function name with a prefix “DLL” added and converted to uppercase. It is defined in the include file of the API.

```
HMODULE pDll = LoadLibrary("DAQMX100");
DLLOPENMX100 openMX100 = (DLLOPENMX100)GetProcAddress(pDll,
"openMX100");
```

## Retrieval of the Measured Data

### Program Example

```
////////////////////////////////////////////////////////////
// MX100 sample for measurement
#include <stdio.h>
#include "DAQMX100.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  DAQMX100 comm; //discriptor
  int value;
#ifdef WIN32
  HMODULE pDll; //DLL handle
  //callback
  DLLOPENMX100 openMX100;
  DLLCLOSEMX100 closeMX100;
  DLLMEASSTARTMX100 measStartMX100;
  DLLMEASSTOPMX100 measStopMX100;
  DLLMEASDATACHMX100 measDataChMX100;
  DLLDATAVALUEMX100 dataValueMX100;
  //laod
  pDll = LoadLibrary("DAQMX100");
  //get address
  openMX100 = (DLLOPENMX100)GetProcAddress(pDll, "openMX100");
  closeMX100 = (DLLCLOSEMX100)GetProcAddress(pDll,
"closeMX100");
  measStartMX100 = (DLLMEASSTARTMX100)GetProcAddress(pDll,
"measStartMX100");
  measStopMX100 = (DLLMEASSTOPMX100)GetProcAddress(pDll,
"measStopMX100");
  measDataChMX100 = (DLLMEASDATACHMX100)GetProcAddress(pDll,
"measDataChMX100");
  dataValueMX100 = (DLLDATAVALUEMX100)GetProcAddress(pDll,
"dataValueMX100");
#endif //WIN32
  //connect
  comm = openMX100("192.168.1.12", &rc);
  //get
  rc = measStartMX100(comm);
  rc = measDataChMX100(comm, 1);
  value = dataValueMX100(comm, 1);
  rc = measStopMX100(comm);
  //disconnect
  rc = closeMX100(comm);
#ifdef WIN32
  FreeLibrary(pDll);
#endif
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Overview

Data retrieval is possible by starting the FIFO. The amount of retrievable data within the FIFO data on channel 1 of the MX100 is retrieved and stored in the field. Gets the measured value data (one point) of the current status (first measurement point) and concludes the process.

### Communication Connection

```
comm = openMX100("192.168.1.12", &rc);
```

The IP address of the MX100 is specified. This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

### FIFO Start

```
rc = measStartMX100(comm);
```

Starts the FIFO on the MX100.

### Retrieval of the Measured Data of Channel 1

rc = measDataChMX100(comm, 1);

The amount of retrievable measured data from channel 1 of the MX100 is retrieved and stored in the field. The first measurement point is set as the current status.

### Retrieval of Measured Values

```
value = dataValueMX100(comm, 1);
```

Retrieves the measured values of the current status of channel 1 from the field where the measured data is stored.

### FIFO Stop

```
rc = measStopMX100(comm);
```

Stops the FIFO.

### Comm. cut

```
rc = closeMX100(comm);
```

Drops the connection.

### Reference

The sample program is completed by executing measDaraChMX100 only once. Each time the measDataChMX100 is executed, the measurement point advances by one, and the next data is set as the current status. When the last stored measurement point is reached, the next retrievable amount of data is retrieved.

## Retrieval of Setup Data and Configuration

### Program Example

```
////////////////////////////////////////////////////////////
// MX100 sample for items
#include <stdio.h>
#include "DAQMX100.h"
#include "DAQMXItems.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  DAQMX100 comm; //discriptor
  int i; //counter
  char strItem[BUFSIZ];
  int realLen;
#ifdef WIN32
  HMODULE pDll; //DLL handle
  //callback
  DLLOPENMX100 openMX100;
  DLLCLOSEMX100 closeMX100;
  DLLGETITEMALLMX100 getItemAllMX100;
  DLLSETITEMALLMX100 setItemAllMX100;
  DLLREADITEMMX100 readItemMX100;
  DLLWRITEITEMMX100 writeItemMX100;
  //laod
  pDll = LoadLibrary("DAQMX100");
  //get address
  openMX100 = (DLLOPENMX100)GetProcAddress(pDll, "openMX100");
  closeMX100 = (DLLCLOSEMX100)GetProcAddress(pDll,
"closeMX100");
  getItemAllMX100 = (DLLGETITEMALLMX100)GetProcAddress(pDll,
"getItemAllMX100");
  setItemAllMX100 = (DLLSETITEMALLMX100)GetProcAddress(pDll,
"setItemAllMX100");
  readItemMX100 = (DLLREADITEMMX100)GetProcAddress(pDll,
"readItemMX100");
  writeItemMX100 = (DLLWRITEITEMMX100)GetProcAddress(pDll,
"writeItemMX100");
#endif //WIN32
```

```
  //connect
  comm = openMX100("192.168.1.12", &rc);
  //get
  rc = getItemAllMX100(comm);
  //loop by items
  for (i = DAQMX_ITEM_ALL_START; i <= DAQMX_ITEM_ALL_END; i++)
{
    //read
    rc = readItemMX100(comm, i, strItem, BUFSIZ, &realLen);
    //write
    rc = writeItemMX100(comm, i, strItem);
  }
  //set
  rc = setItemAllMX100(comm);
  //disconnect
  rc = closeMX100(comm);
#ifdef WIN32
  FreeLibrary(pDll);
#endif
  return rc;
}
////////////////////////////////////////////////////////////////
```

## Description

### Overview

The program is an example of reading and writing all setup items. The following four actions are executed.

- Gets the setup data from the MX100 collectively.
- Retrieves the setup data of the setup data field by item.
- Writes the setup data in the setup data field by item.
- Sends the setup data to the MX100 collectively.

Each item is retrieved and written from the first number to the end number.

Be sure to prepare string fields of sufficient size.

By saving and loading groups of item numbers and item strings, you can backup the setup data.

For setup item numbers, see section 6.3.

### Communication Connection

```
comm = openMX100("192.168.1.12", &rc);
```

The IP address of the MX100 is specified. This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

**Getting the Setup Data Collectively**

```
rc = daqmx100.getItemAll();
```

Gets all items of the MX100 setup data collectively and stores in the setup data field.

**Retrieval of the Setup Data by Item**

```
rc = readItemMX100(comm, i, strItem, BUFSIZ, &realLen);
```

Retrieves the contents of item number “i” from the setup data field.

**Writing the Setup Data by Item**

```
rc = writeItemMX100(comm, i, strItem);
```

Writes the contents of strItem to item number “i” of the setup data field.

**Sending the Setup Data Collectively**

```
rc = setItemAllMX100(comm);
```

Sends all items of the setup data to the MX100 collectively.

**Comm. cut**

```
rc = closeMX100(comm);
```

Drops the connection.

# 14.1 Functions and Their Functionalities - MX100/ Visual Basic -

This section indicates the correspondence between the functionalities that the extension API supports and the Visual Basic functions.
There are two types, status transition functions and retrieval functions.
Status transition functions control the MX100. When using status transition functions, if measured data is retrieved with a data retrieval function, the measured data increments by only 1 (the status of the extension API changes).
The retrieval function returns the parameter value. When data is retrieved, the data value of the current status is returned (the status of the extension API does not change).

## Status Transition Functions

The FIFO column in the table indicates the FIFO operation when the function is executed while FIFO is running.
Stop: Stops the FIFO when the function is executed.
Continue: Continues the FIFO even when the function is executed.

### Communication Functions

| Function | FIFO | Function |
|---|---|---|
| Connect to the MX100 | Continue | openMX100 |
| Disconnect from the MX100 | Continue | closeMX100 |

### Starting/Stopping the FIFO

| Function | FIFO | Function |
|---|---|---|
| Start the FIFO | Continue | measStartMX100 |
| Stop the FIFO | Stop | measStopMX100 |

## Control Functions

| Function | | FIFO | Function |
|---|---|---|---|
| Set date/time | Current time | Stop | setDateTimeNowMX100 |
| Set backup | valid/invalid | Continue | switchBackupMX100 |
| Format of the CF card. | | Stop | formatCFMX100 |
| Unit | Reconfigure | Stop | reconstructMX100 |
| | Initialize | Stop | initSetValueMX100 |
| | Reset alarm (alarm ACK) | Stop | ackAlarmMX100 |
| 7-segment LED display | | Continue | displaySegmentMX100 |
| Initialize stored data | Specify channel | Continue | initDataChMX100 |
| | Specify FIFO | Continue | initDataFIFOMX100 |

At the end of communications, the control function updates the status.
See the data manipulation functions for more about the data transmission and setup functions. Time cannot be set arbitrarily.

## Setup Functions

| Function | | FIFO | Function |
|---|---|---|---|
| Set setup data (send collectively) | All setup data | Stop | sendConfigMX100 |
| | Basic setup data | Stop | sendConfigMX100 |
| Set setup data individually | System configuration data | Stop | sendConfigMX100 |
| | Channel setup data | Stop | sendConfigMX100 |
| | Initial balance data | Stop | sendConfigMX100 |
| | Output channel data | Stop | sendConfigMX100 |
| Initial balance data | Execute | Stop | initBalanceMX100 |
| | Reset | Stop | clearBalanceMX100 |

The setup data setting function sends the data being stored.
When setting arbitrary initial balance data, see the initial balance data sending function under data manipulation functions.

## Setup Change Functions

The setup functions send the settings then update the status. These settings are for individual channels. If the settings could not be entered, an error is usually returned. Specification is possible with data values or measured values (Double).

### Range Settings

| Function | FIFO | Function |
|---|---|---|
| Skip | Stop | setRangeMX |
| DC voltage input | Stop | setRangeMX |
| Thermocouple input | Stop | setRangeMX |
| RTD | Stop | setRangeMX |
| Digital input | Stop | setRangeMX |
| Resistance | Stop | setRangeMX |
| Strain | Stop | setRangeMX |
| AO | Stop | setRangeMX |
| PWM | Stop | setRangeMX |
| Difference computation between channels | Stop | setChDELTAMX100 |
| Remote RRJC | Stop | setChRRJCMX100 |
| Pulse | Stop | setRangeMX100 |
| Communication | Stop | setRangeMX100 |

### Channel Settings

| Function | | FIFO | Function |
|---|---|---|---|
| Unit name | | Stop | setChUnitMX100 |
| Tag | | Stop | setChTagMX100 |
| Comment | | Stop | setChCommentMX100 |
| AI/DI/AO/PWM | Span | Stop | setSpanMX100<br>setDoubleSpanMX100 |
| AI/DI | Scale | Stop | setScaleMX100<br>setDoubleScaleMX100 |
| | Alarm | Stop | setAlarmMX100<br>setDoubleAlarmMX100<br>setAlarmValueMX100<br>setDoubleAlarmValueMX100 |
| | Hysteresis | Stop | setHisterisysMX100<br>setDoubleHisterisysMX100 |
| AI | Filter coefficient | Stop | setFilterMX100 |
| | Ref. junction compensation (RJC) | Stop | setRJCTypeMX100 |
| | Burnout types | Stop | setBurnoutMX100 |
| DO | De-energize | Stop | setDeenergizeMX100 |
| | Hold | Stop | setHoldMX100 |
| | Reference Alarm | Stop | setRefAlarmMX100 |
| Channel kind | DO type | Stop | setChKindMX100 |
| | AO type | Stop | setChKindMX100 |
| | PWM type | Stop | setChKindMX100 |
| PI | Chattering filter | Stop | channelChatFilterMX100 |

## Module Settings

| Function | FIFO | Function |
|---|---|---|
| Interval type | Stop | setIntervalMX100 |
| A/D integral time type | Stop | setIntegralMX100 |

## Unit Settings

| Function | FIFO | Function |
|---|---|---|
| Unit number | Stop | setUnitNoMX100 |
| Temperature unit type | Stop | setUnitTempMX100 |
| CF write mode | Stop | setCFWriteModeMX100 |

## Output Channel Data

| Function | FIFO | Function |
|---|---|---|
| Output type | Stop | setOutputTypeMX100 |
| Selected value | Stop | setChoiceMX100<br>setDoubleChoiceMX100 |
| Pulse interval integer multiple | Stop | setPulseTimeMX100 |

## Data Manipulation Functions

### DO Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createDOMX100 |
| Delete | | Continue | deleteDOMX100 |
| Partial chng | User specification | Continue | changeDOMX100 |
| | Copy | Continue | copyDOMX100 |
| Transmit | Existing specification | Continue | commandDOMX100 |
| | Change specification | Continue | switchDOMX100 |

### AO/PWM Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createAOPWMMX100 |
| Delete | | Continue | deleteAOPWMMX100 |
| Partial chng | Output data value | Continue | changeAOPWMMX100 |
| | Actual output value | Continue | hangeAOPWMValueMX100 |
| | Copy | Continue | copyAOPWMMX100 |
| Transmit | | Continue | commandAOPWMMX100 |

### Initial Balance Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createBalanceMX100 |
| Delete | | Continue | deleteBalanceMX100 |
| Partial chng | User specification | Continue | changeBalanceMX100 |
| | Copy | Continue | copyBalanceMX100 |
| Transmit | | Stop | commandBalanceMX100 |

### Transmission Output Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createTransmitMX100 |
| Delete | | Continue | deleteTransmitMX100 |
| Partial chng | User specification | Continue | changeTransmitMX100 |
| | Copy | Continue | copyTransmitMX100 |
| Transmit | Existing specification | Continue | commandTransmitMX100 |
| | Change specification | Continue | switchTransmitMX100 |

Manipulates each data by indentifier.

For manipulation other than transmission, status is not updated (no communication).

## Retrieval Functions

| Function | | | FIFO | Function |
|---|---|---|---|---|
| Status data | | | Continue | updateStatusMX100 |
| System configuration data | | | Continue | updateSystemMX100 |
| Setup data | | | Continue | updateConfigMX100 |
| Output data | DO Data | | Continue | updateDODataMX100 |
| | AO/PWM data<br>Transmission output data | | Continue | updateAOPWMDataMX100 |
| Channel Information Data | | | Continue | updateInfoChMX100 |
| Measured Data | Specify ch | FIFO val | Continue | measDataChMX100 |
| | | Inst val | Continue | measInstChMX100 |
| | Specify FIFO | FIFO val | Continue | measDataFIFOMX100 |
| | | Inst val | Continue | measInstFIFOMX100 |
| Initial balance data | | | Continue | updateBalanceMX100 |
| Output channel data | | | Continue | updateOutputMX100 |

Data retrieval is performed collectively and internally by this API. Depending on the acquisition, the status may also be updated. Channel information data and setup data (including system configuration data, initial balance data, and output channel data) are stored internally, but the user can update stored data explicitly.

## Setup Items

| Function | | FIFO | Function |
|---|---|---|---|
| Setup data | Receive collectively | Continue | getItemAllMX100 |
| | Send collectively | Stop | setItemAllMX100 |
| Setup items | Read | Continue | readItemMX100 |
| | Write | Continue | writeItemMX100 |
| | Initialize | Continue | initItemMX100 |

Loading, writing, and initializing of setting items is performed through access to the field where the item is stored, and validity checks are not performed on those fields. Also, status is not updated (no communication).

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | dataValueMX100 |
| Data status values | | dataStatusMX100 |
| Alarm (presence/absence) | | dataAlarmMX100 |
| Measured values | Double integer | dataDoubleValueMX100 |
| | String | dataStringValueMX100 |
| Time | No. of seconds | dataTimeMX100 |
| | Milliseconds | dataMilliSecMX100 |
| | Year | dataYearMX100 |
| | Month | dataMonthMX100 |
| | Day | dataDayMX100 |
| | Hour | dataHourMX100 |
| | Minute | dataMinuteMX100 |
| | Second | dataSecondMX100 |
| Valid data (presence/absence) | | dataValidMX100 |

## Channel Information Data

| Data Name | Function |
|---|---|
| FIFO number | channelFIFONoMX100 |
| Channel sequence number in the FIFO | channelFIFOIndexMX100 |
| Display minimum value | channelDisplayMinMX100 |
| Display maximum value | channelDisplayMaxMX100 |
| Measurable minimum value | channelRealMinMX100 |
| Measurable maximum value | channelRealMaxMX100 |

## Channel Setup Data

| Data Name | | | | Function |
|---|---|---|---|---|
| Channel status (valid/invalid) | | | | channelValidMX100 |
| Decimal point position | | | | channelPointMX100 |
| Channel kind | | | | channelKindMX100 |
| Range type | | | | channelRangeMX100 |
| Scale type | | | | channelScaleTypeMX100 |
| Unit name | | | | toChannelUnitMX100<br>getChannelUnitMX100 |
| Tag | | | | toChannelTagMX100<br>getChannelTagMX100 |
| Comment | | | | toChannelCommentMX100<br>getChannelCommentMX100 |
| AI/DI/AO/ PWM | Span | Min value | Data Value | channelSpanMinMX100 |
| | | | Meas value | channelDoubleSpanMinMX100 |
| | | Max value | Data Value | channelSpanMaxMX100 |
| | | | Meas value | channelDoubleSpanMaxMX100 |
| AI/DI | Scale | Min value | Data Value | channelScaleMinMX100 |
| | | | Meas value | channelDoubleScaleMinMX100 |
| | | Max value | Data Value | channelScaleMaxMX100 |
| | | | Meas value | channelDoubleScaleMaxMX100 |
| | Alarm type | | | alarmTypeMX100 |
| | Alarm value (ON) | | Data Value | alarmValueONMX100 |
| | | | Meas value | alarmDoubleValueONMX100 |
| | Alarm value (OFF) | | Data Value | alarmValueOFFMX100 |
| | | | Meas value | alarmDoubleValueOFFMX100 |
| | Hysteresis | | Data Value | alarmHisterisysMX100 |
| | | | Meas value | alarmDoubleHisterisysMX100 |
| AI | Filter | | | channelFilterMX100 |
| | RJC type | | | channelRJCTypeMX100 |
| | RJC voltage | | | channelRJCVoltMX100 |
| | Burnout | | | channelBurnoutMX100 |
| DO | De-energize | | | channelDeenergizeMX100 |
| | Hold | | | channelHoldMX100 |
| | Reference alarm | | | channelRefAlarmMX100 |
| Channels undergoing difference between channels computation/Remote RJC/AO/PWM | | | | |
| | | Reference channel number | | channelRefChNoMX100 |
| Initial balance data | | Boolean value | | channelBalanceValidMX100 |
| | | Initial balance value | | channelBalanceValueMX100 |
| Output channel data | | Output type | | channelOutputTypeMX100 |
| | | Value selected when idle | | channelIdleChoiceMX100 |
| | | Value selected during error | | channelErrorChoiceMX100 |
| | | Value if the selected value is the “specified value.” | | |
| | | | Data Value | channelPresetValueMX100 |
| | | | Meas value | channelDoublePresetValueMX100 |
| | | Pulse interval integer multiple | | channelPulseTimeMX100 |
| PI | | Chattering filter | | channelChatFilterMX100 |

## Network Information Data

| Data Name | Function |
|---|---|
| Host name | toNetHostMX100 |
| IP address | netAddressMX100 |
| Port number | netPortMX100 |
| Subnet mask | netSubmaskMX100 |
| Gateway address | netGatewayMX100 |

## System Configuration Data

| Data Name | | Function |
|---|---|---|
| Module | Module type | moduleTypeMX100 |
| | Number of channels | moduleChNumMX100 |
| | Interval type | moduleIntervalMX100 |
| | AD integral time type | moduleIntegralMX100 |
| | Valid/Invalid value | moduleValidMX100 |
| | Module type at startup | moduleStandbyTypeMX100 |
| | Actual module type | moduleRealTypeMX100 |
| | Terminal type | moduleTerminalMX100 |
| | Version | moduleVersionMX100 |
| | FIFO number | moduleFIFONoMX100 |
| | Serial number | toModuleSerialMX100 |
| Unit | Unit type | unitTypeMX100 |
| | Style | unitStyleMX100 |
| | Unit number | unitNoMX100 |
| | Temperature unit type | unitTempMX100 |
| | Power supply frequency | unitFrequencyMX100 |
| | Part number | toUnitPartNoMX100 |
| | Options | unitOptionMX100 |
| | Serial number | toUnitSerialMX100 |
| | MAC address | unitMACMX100 |
| | CF write mode | unitCFWriteModeMX100 |

## Status Data

| Data Name | | Function |
|---|---|---|
| Unit status value | | statusUnitMX100 |
| Valid number of FIFOs | | statusFIFONumMX100 |
| Backup (presence or absence) | | statusBackupMX100 |
| FIFO | FIFO status value | statusFIFOMX100 |
| | Interval type | statusFIFOIntervalMX100 |
| CF | CF status type | statusCFMX100 |
| | Size | statusCFSizeMX100 |
| | Remaining capacity | statusCFRemainMX100 |
| Status return time | No. of seconds | statusTimeMX100 |
| | Milliseconds | statusMilliSecMX100 |
| | Year | statusYearMX100 |
| | Month | statusMonthMX100 |
| | Day | statusDayMX100 |
| | Hour | statusHourMX100 |
| | Minute | statusMinuteMX100 |
| | Second | statusSecondMX100 |

## Current Data

| Data Name | | Function |
|---|---|---|
| DO data | Valid/Invalid value | currentDOValidMX100 |
| | ON/OFF status | currentDOValueMX100 |
| AO/PWM data | Valid/Invalid value | currentAOPWMValidMX100 |
| | Output data value | currentAOPWMValueMX100 |
| | Output value | currentDoubleAOPWMValueMX100 |
| Initial balance data | Valid/Invalid value | currentBalanceValidMX100 |
| | Initial balance value | currentBalanceValueMX100 |
| | Initial balance result | currentBalanceResultMX100 |
| Trans output data | Transmission status | currentTransmitMX100 |

This is the status of each data retrieved with the data retrieval functions.
The initial balance result of the initial balance data is the result executed by the setup function.
Actually output output statuses such as DO data and AO/PWM data can be retrieved as current data. However, immediately after sending data, the specified value is returned, and the actual output may occur at the next timing.
Held data are the values retrieved upon a status update. It is not data from the time the retrieval function was called.

## User Data

| Data Name | | Function |
|---|---|---|
| DO data | Valid/Invalid value | userDOValidMX100 |
| | ON/OFF status | userDOValueMX100 |
| AO/PWM data | Valid/Invalid value | userAOPWMValidMX100 |
| | Output data value | userAOPWMValueMX100 |
| | Output value | userDoubleAOPWMValueMX100 |
| Initial balance data | Valid/Invalid value | userBalanceValidMX100 |
| | Initial balance value | userBalanceValueMX100 |
| Trans output data | Transmission status | userTransmitMX100 |

Gets the data values created by the user with data manipulation functions.

## Utilities

| Function/Data Name | | Function |
|---|---|---|
| No. of remaining data | Retrieve by channel | dataNumChMX100 |
| | Retrieve by FIFO | dataNumFIFOMX100 |
| Error | Get MX-specific error | lastErrorMX100 |
| | Get the error message string. | toErrorMessageMX100 |
| | Get max length of the error message string | errorMaxLengthMX100 |
| | Get no. of parameter on which err detected | itemErrorMX100 |
| Change from FIFO information to channel number | | channelNumberMX100 |
| Get the decimal point position by range type | | rangePointMX100 |
| Meas val | Change to double integer | toDoubleValueMX100 |
| | Convert into string. | toStringValueMX100 |
| Alarm | Get the alarm type string | toAlarmNameMX100 |
| | Get maximum length of the alarm string | alarmMaxLengthMX100 |
| Get the version number of this API | | versionAPIMX100 |
| Get the revision number of this API | | revisionAPIMX100 |
| Get a portion of the IP address | | addressPartMX100 |
| AO/PWM | Convert output val to output data val | toAOPWMValueMX100 |
| | Convert output data val to output val | toRealValueMX100 |
| Setup items | Get setup item string from setup item no | toItemNameMX100 |
| | Get setup item no from setup item string | toItemNoMX100 |
| | Get max length of the setup item string | itemMaxLengthMX100 |
| Convert to style version | | toStyleVersionMX100 |

# 14.2 Programming - MX100/Visual Basic -

## Declaration of Types, Functions, and Constants

To use types, functions, and constants for Visual Basic, they must be declared in advance. The following methods of declaration statements are available.

### Statement of All Declarations

Adding the standard module file for Visual Basic (DAQMX100.bas) to the project is equivalent to declaring all types, functions, and constants.

### Statement of Selective Declarations

The API Viewer that comes with Visual Studio can be used to copy the declaration statements of arbitrary types, functions, and constants. Load the text file for the API Viewer (DAQMX100.txt) on the API Viewer to use this function.
For a description of how to use the API Viewer, read the operation manual for Visual Studio.

### Writing Declarations Directly

Below is an example of a declaration statement.

```
Public Declare Function openMX100 Lib "DAQMX100"(ByVal
strAddress As String, ByRef errorCode As Long) As Long
```

# Retrieval of the Measured Data

## Program Example

```
Attribute VB_Name = "Module1"
Public Sub Main()
    'connect
    comm = openMX100("192.168.1.12", rc)
    'get
    rc = measStartMX100(comm)
    rc = measDataChMX100(comm, 1)
    value = dataValueMX100(comm, 1)
    rc = measStopMX100(comm)
    'disconnect
    rc = closeMX100(comm)
End Sub
```

## Description

### Overview

Data retrieval is possible by starting the FIFO. The amount of retrievable data within the FIFO data on channel 1 of the MX100 is retrieved and stored in the field. Gets the measured value data (one point) of the current status (first measurement point) and concludes the process.

### Communication Connection

`comm = openMX100("192.168.1.12", rc)`

The IP address of the MX100 is specified. This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

### FIFO Start

`rc = measStartMX100(comm)`

Starts the FIFO on the MX100.

### Retrieval of the Measured Data of Channel 1

`rc = measDataChMX100(comm, 1)`

The amount of retrievable measured data from channel 1 of the MX100 is retrieved and stored in the field. The first measurement point is set as the current status.

### Retrieval of Measured Values

`value = dataValueMX100(comm, 1)`

Retrieves the measured values of the current status of channel 1 from the field where the measured data is stored.

### FIFO Stop

```
rc = measStopMX100(comm)
```

Stops the FIFO.

### Comm. cut

```
rc = closeMX100(comm)
```

Drops the connection.

### Reference

The sample program is completed by executing measDaraChMX100 only once. Each time measDataChMX100 is executed, the measurement point advances by one, and the next data is set as the current status. When the last stored measurement point is reached, the next retrievable amount of data is retrieved.

# Retrieval of Setup Data and Configuration

## Program Example

```
Attribute VB_Name = "Module1"
Public Sub Main()
    Dim comm As Long                '/descriptor
    Dim rc As Long                  '/return (error) code
    Dim i As Long                   '/counter
    Dim strItem As String * 512     '/string buffer
    Dim lenItem As Long             '/size of buffer
    Dim realLen As Long             '/real size of string by
function returned
    '/set size
    lenItem = 512
    '/open
    comm = openMX100("192.168.1.12", rc)
    '/get
    rc = getItemAllMX100(comm)
    '/loop by items
    For i = DAQMX_ITEM_ALL_START To DAQMX_ITEM_ALL_END
        '/read
        rc = readItemMX100(comm, i, strItem, lenItem, realLen)
        '/write
        rc = writeItemMX100(comm, i, strItem)
    Next i
    '/set
    rc = setItemAllMX100(comm)
    '/close
    rc = closeMX100(comm)
End Sub
```

## Description

### Overview

The program is an example of reading and writing all setup items. The following four actions are executed.

- Gets the setup data from the MX100 collectively.
- Retrieves the setup data of the setup data field by item.
- Writes the setup data in the setup data field by item.
- Sends the setup data to the MX100 collectively.

Each item is retrieved and written from the first number to the end number.

Be sure to prepare string fields of sufficient size.

By saving and loading groups of item numbers and item strings, you can backup the setup data.

For setup item numbers, see section 6.3.

**Communication Connection**

```
comm = openMX100("192.168.1.12", rc)
```

The IP address of the MX100 is specified. This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

**Getting the Setup Data Collectively**

```
rc = getItemAllMX100(comm)
```

Gets all items of the MX100 setup data collectively and stores in the setup data field.

**Retrieval of the Setup Data by Item**

```
rc = readItemMX100(comm, i, strItem, lenItem, realLen)
```

Retrieves the contents of item number “i” from the setup data field.

**Writing the Setup Data by Item**

```
rc = writeItemMX100(comm, i, strItem)
```

Writes the contents of strItem to item number “i” of the setup data field.

**Sending the Setup Data Collectively**

```
rc = setItemAllMX100(comm)
```

Sends all items of the setup data to the MX100 collectively.

**Comm. cut**

```
rc = closeMX100(comm)
```

Drops the connection.

# 15.1 Functions and Their Functionalities - MX100/ Visual Basic.NET -

This section indicates the correspondence between the functionalities that the extension API supports and the Visual C functions.
There are two types, status transition functions and retrieval functions.
Status retrieval functions control the MX100. When measured data is retrieved with the data transition function, the measured data advances by only one interval's worth of data (the status of the extension API changes).
The retrieval function returns the parameter value. When data is retrieved, the data value of the current status is returned (the status of the extension API does not change).

## Status Transition Functions

The FIFO column in the table indicates the FIFO operation when the function is executed while FIFO is running.
Stop: Stops the FIFO when the function is executed.
Continue: Continues the FIFO even when the function is executed.

### Communication Functions

| Function | FIFO | Function |
|---|---|---|
| Connect to the MX100 | Continue | openMX100 |
| Disconnect from the MX100 | Continue | closeMX100 |

### Starting/Stopping the FIFO

| Function | FIFO | Function |
|---|---|---|
| Start the FIFO | Continue | measStartMX100 |
| Stop the FIFO | Stop | measStopMX100 |

## Control Functions

| Function | | FIFO | Class and Member Function |
|---|---|---|---|
| Set date/time | Current time | Stop | setDateTimeNowMX100 |
| Set backup | valid/invalid | Continue | switchBackupMX100 |
| Format of the CF card | | Stop | formatCFMX100 |
| Unit | Reconfigure | Stop | reconstructMX100 |
| | Initialize | Stop | initSetValueMX100 |
| | Reset alarm (alarm ACK) | Stop | ackAlarmMX100 |
| 7-segment LED display | | Continue | displaySegmentMX100 |
| Initialize stored data | Specify channel | Continue | initDataChMX100 |
| | Specify FIFO | Continue | initDataFIFOMX100 |

At the end of communications, the control function updates the status.
See the data manipulation functions for more about the data transmission and setup functions. Time cannot be set arbitrarily.

## Setup Functions

| Function | | FIFO | Function |
|---|---|---|---|
| Set setup data (send collectively) | All setup data | Stop | sendConfigMX100 |
| | Basic setup data | Stop | sendConfigMX100 |
| Set setup data individually | Sys configuration data | Stop | sendConfigMX100 |
| | Channel setup data | Stop | sendConfigMX100 |
| | Initial balance data | Stop | sendConfigMX100 |
| | Output channel data | Stop | sendConfigMX100 |
| Initial balance data | Execute | Stop | initBalanceMX100 |
| | Reset | Stop | clearBalanceMX100 |

The setup data setup functions send the stored data.
When setting arbitrary initial balance data, see the initial balance data sending function under data manipulation functions.

## Setup Change Functions

The setup functions send the settings then update the status.
These settings are for individual channels. If the settings could not be entered, an error is usually returned.
Specification is possible with data values or measured values (Double).

### Range Settings

| Function | FIFO | Function |
|---|---|---|
| Skip | Stop | setRangeMX |
| DC voltage input | Stop | setRangeMX |
| Thermocouple input | Stop | setRangeMX |
| RTD | Stop | setRangeMX |
| Digital input | Stop | setRangeMX |
| Resistance | Stop | setRangeMX |
| Strain | Stop | setRangeMX |
| AO | Stop | setRangeMX |
| PWM | Stop | setRangeMX |
| Difference computation between channels | Stop | setChDELTAMX100 |
| Remote RJC | Stop | setChRRJCMX100 |
| Pulse | Stop | setRangeMX100 |
| Communication | Stop | setRangeMX100 |

### Channel Settings

| Function | | FIFO | Function |
|---|---|---|---|
| Unit name | | Stop | setChUnitMX100 |
| Tag | | Stop | setChTagMX100 |
| Comment | | Stop | setChCommentMX100 |
| AI/DI/AO/ PWM | Span | Stop | setSpanMX100<br>setDoubleSpanMX100 |
| AI/DI | Scale | Stop | setScaleMX100<br>setDoubleScaleMX100 |
| | Alarm | Stop | setAlarmMX100<br>setDoubleAlarmMX100<br>setAlarmValueMX100<br>setDoubleAlarmValueMX100 |
| | Hysteresis | Stop | setHisterisysMX100<br>setDoubleHisterisysMX100 |
| AI | Filter coefficient | Stop | setFilterMX100 |
| | Ref. junction compensation (RJC) | Stop | setRJCTypeMX100 |
| | Burnout | Stop | setBurnoutMX100 |
| DO | De-energize | Stop | setDeenergizeMX100 |
| | Hold | Stop | setHoldMX100 |
| | Reference alarm | Stop | setRefAlarmMX100 |
| Channel kind | DO type | Stop | setChKindMX100 |
| | AO type | Stop | setChKindMX100 |
| | PWM type | Stop | setChKindMX100 |
| PI | Chattering filter | Stop | channelChatFilterMX100 |

## Module Settings

| Function | FIFO | Function |
|---|---|---|
| Interval type | Stop | setIntervalMX100 |
| A/D integral time type | Stop | setIntegralMX100 |

## Unit Settings

| Function | FIFO | Function |
|---|---|---|
| Unit number | Stop | setUnitNoMX100 |
| Temperature unit type | Stop | setUnitTempMX100 |
| CF write mode | Stop | setCFWriteModeMX100 |

## Output Channel Data

| Function | FIFO | Function |
|---|---|---|
| Output type | Stop | setOutputTypeMX100 |
| Selected value | Stop | setChoiceMX100<br>setDoubleChoiceMX100 |
| Pulse interval integer multiple | Stop | setPulseTimeMX100 |

## Data Manipulation Functions

### DO Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createDOMX100 |
| Delete | | Continue | deleteDOMX100 |
| Partial chng | User specification | Continue | changeDOMX100 |
| | Copy | Continue | copyDOMX100 |
| Transmit | Existing specification | Continue | commandDOMX100 |
| | Change specification | Continue | switchDOMX100 |

### AO/PWM Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createAOPWMMX100 |
| Delete | | Continue | deleteAOPWMMX100 |
| Partial chng | Output data value | Continue | changeAOPWMMX100 |
| | Actual output value | Continue | changeAOPWMValueMX100 |
| | Copy | Continue | copyAOPWMMX100 |
| Transmit | | Continue | commandAOPWMMX100 |

### Initial Balance Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createBalanceMX100 |
| Delete | | Continue | deleteBalanceMX100 |
| Partial chng | User specification | Continue | changeBalanceMX100 |
| | Copy | Continue | copyBalanceMX100 |
| Transmit | | Stop | commandBalanceMX100 |

### Transmission Output Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | createTransmitMX100 |
| Delete | | Continue | deleteTransmitMX100 |
| Partial chng | User specification | Continue | changeTransmitMX100 |
| | Copy | Continue | copyTransmitMX100 |
| Transmit | Existing specification | Continue | commandTransmitMX100 |
| | Change specification | Continue | switchTransmitMX100 |

Manipulates each data by indentifier.

For manipulation other than transmission, status is not updated (no communication).

## Retrieval Functions

| Function | | | FIFO | Function |
|---|---|---|---|---|
| Status data | | | Continue | updateStatusMX100 |
| System configuration data | | | Continue | updateSystemMX100 |
| Setup data | | | Continue | updateConfigMX100 |
| Output data | DO Data | | Continue | updateDODataMX100 |
| | AO/PWM data<br>Transmission output data | | Continue | updateAOPWMDataMX100 |
| Channel information data | | | Continue | updateInfoChMX100 |
| Measured data | Specify ch | FIFO value | Continue | measDataChMX100 |
| | | Inst value | Continue | measInstChMX100 |
| | Specify FIFO | FIFO value | Continue | measDataFIFOMX100 |
| | | Inst value | Continue | measInstFIFOMX100 |
| Initial balance data | | | Continue | updateBalanceMX100 |
| Output channel data | | | Continue | updateOutputMX100 |

Data retrieval is performed collectively and internally by this API.
Depending on the acquisition, the status may also be updated.
Channel information data and setup data (including system configuration data, initial balance data, and output channel data) are stored internally, but the user can update stored data explicitly.

## Setup Items

| Function | | FIFO | Function |
|---|---|---|---|
| Setup data | Receive collectively | Continue | getItemAllMX100 |
| | Send collectively | Stop | setItemAllMX100 |
| Setup items | Read | Continue | readItemMX100 |
| | Write | Continue | writeItemMX100 |
| | Initialize | Continue | initItemMX100 |

Loading, writing, and initializing of setting items is performed through access to the field where the item is stored, and validity checks are not performed on those fields. Also, status is not updated (no communication).

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | dataValueMX100 |
| Data status values | | dataStatusMX100 |
| Alarm (presence/absence) | | dataAlarmMX100 |
| Measured val | Double integer | dataDoubleValueMX100 |
| | String | dataStringValueMX100 |
| Time | No. of seconds | dataTimeMX100 |
| | Milliseconds | dataMilliSecMX100 |
| | Year | dataYearMX100 |
| | Month | dataMonthMX100 |
| | Day | dataDayMX100 |
| | Hour | dataHourMX100 |
| | Minute | dataMinuteMX100 |
| | Second | dataSecondMX100 |
| Valid data (presence/absence) | | dataValidMX100 |

## Channel Information Data

| Data Name | Function |
|---|---|
| FIFO number | channelFIFONoMX100 |
| Channel sequence number in the FIFO | channelFIFOIndexMX100 |
| Display minimum value | channelDisplayMinMX100 |
| Display maximum value | channelDisplayMaxMX100 |
| Measurable minimum value | channelRealMinMX100 |
| Measurable maximum value | channelRealMaxMX100 |

## Channel Setup Data

| Data Name | | | | Function |
|---|---|---|---|---|
| Channel status (valid/invalid) | | | | channelValidMX100 |
| Decimal point position | | | | channelPointMX100 |
| Channel kind | | | | channelKindMX100 |
| Range type | | | | channelRangeMX100 |
| Scale type | | | | channelScaleTypeMX100 |
| Unit name | | | | toChannelUnitMX100<br>getChannelUnitMX100 |
| Tag | | | | toChannelTagMX100<br>getChannelTagMX100 |
| Comment | | | | toChannelCommentMX100<br>getChannelCommentMX100 |
| AI/DI/AO/ PWM | Span | Min value | Data Value | channelSpanMinMX100 |
| | | | Meas value | channelDoubleSpanMinMX100 |
| | | Max value | Data Value | channelSpanMaxMX100 |
| | | | Meas value | channelDoubleSpanMaxMX100 |
| AI/DI | Scale | Min value | Data value | channelScaleMinMX100 |
| | | | Meas value | channelDoubleScaleMinMX100 |
| | | Max value | Data value | channelScaleMaxMX100 |
| | | | Meas value | channelDoubleScaleMaxMX100 |
| | Alarm type | | | alarmTypeMX100 |
| | Alarm value (ON) | | Data value | alarmValueONMX100 |
| | | | Meas value | alarmDoubleValueONMX100 |
| | Alarm value (OFF) | | Data value | alarmValueOFFMX100 |
| | | | Meas value | alarmDoubleValueOFFMX100 |
| | Hysteresis | | Data value | alarmHisterisysMX100 |
| | | | Meas value | alarmDoubleHisterisysMX100 |
| AI | Filter | | | channelFilterMX100 |
| | RJC type | | | channelRJCTypeMX100 |
| | RJC voltage | | | channelRJCVoltMX100 |
| | Burnout | | | channelBurnoutMX100 |
| DO | De-energize | | | channelDeenergizeMX100 |
| | Hold | | | channelHoldMX100 |
| | Reference alarm | | | channelRefAlarmMX100 |
| Channels undergoing difference between channels computation/Remote RJC/AO/PWM | | | | |
| | | Ref. channel number | | channelRefChNoMX100 |
| Initial balance data | | Valid/Invalid value | | channelBalanceValidMX100 |
| | | Initial balance value | | channelBalanceValueMX100 |
| Output channel data | | Output type | | channelOutputTypeMX100 |
| | | Value selected when idling | | channelIdleChoiceMX100 |
| | | Value selected during error | | channelErrorChoiceMX100 |
| | | Value if the selected value is the “specified value.” | | |
| | | | Data value | channelPresetValueMX100 |
| | | | Meas value | channelDoublePresetValueMX100 |
| | | Pulse interval integer multiple | | channelPulseTimeMX100 |
| PI | | Chattering filter | | channelChatFilterMX100 |

## Network Information Data

| Data Name | Function |
|---|---|
| Host name | toNetHostMX100 |
| IP address | netAddressMX100 |
| Port number | netPortMX100 |
| Subnet mask | netSubmaskMX100 |
| Gateway address | netGatewayMX100 |

## System Configuration Data

| Data Name | | Function |
|---|---|---|
| Module | Module type | moduleTypeMX100 |
| | Number of channels | moduleChNumMX100 |
| | Interval type | moduleIntervalMX100 |
| | AD integral time type | moduleIntegralMX100 |
| | Valid/Invalid value | moduleValidMX100 |
| | Module type at startup | moduleStandbyTypeMX100 |
| | Actual module type | moduleRealTypeMX100 |
| | Terminal type | moduleTerminalMX100 |
| | Version | moduleVersionMX100 |
| | FIFO number | moduleFIFONoMX100 |
| | Serial number | toModuleSerialMX100 |
| Unit | Unit type | unitTypeMX100 |
| | Style | unitStyleMX100 |
| | Unit number | unitNoMX100 |
| | Temperature unit type | unitTempMX100 |
| | Power supply frequency | unitFrequencyMX100 |
| | Part number | toUnitPartNoMX100 |
| | Options | unitOptionMX100 |
| | Serial number | toUnitSerialMX100 |
| | MAC address | unitMACMX100 |
| | CF write mode | unitCFWriteModeMX100 |

## Status Data

| Data Name | | Function |
|---|---|---|
| Unit status value | | statusUnitMX100 |
| Valid number of FIFOs | | statusFIFONumMX100 |
| Backup (presence or absence) | | statusBackupMX100 |
| FIFO | FIFO status value | statusFIFOMX100 |
| | Interval type | statusFIFOIntervalMX100 |
| CF | CF status type | statusCFMX100 |
| | Size | statusCFSizeMX100 |
| | Remaining capacity | statusCFRemainMX100 |
| Status return time | No. of seconds | statusTimeMX100 |
| | Milliseconds | statusMilliSecMX100 |
| | Year | statusYearMX100 |
| | Month | statusMonthMX100 |
| | Day | statusDayMX100 |
| | Hour | statusHourMX100 |
| | Minute | statusMinuteMX100 |
| | Second | statusSecondMX100 |

## Current Data

| Data Name | | Function |
|---|---|---|
| DO Data | Valid/Invalid value | currentDOValidMX100 |
| | ON/OFF status | currentDOValueMX100 |
| AO/PWM data | Valid/Invalid value | currentAOPWMValidMX100 |
| | Output data value | currentAOPWMValueMX100 |
| | Output value | currentDoubleAOPWMValueMX100 |
| Initial balance data | Valid/Invalid value | currentBalanceValidMX100 |
| | Initial balance value | currentBalanceValueMX100 |
| | Initial balance result | currentBalanceResultMX100 |
| Trans output data | Transmission status | currentTransmitMX100 |

This is the status of each data retrieved with the data retrieval functions.
The initial balance result of the initial balance data is the result executed by the setup function.
Actually output output statuses such as DO data and AO/PWM data can be retrieved as current data. However, immediately after sending data, the specified value is returned, and the actual output may occur at the next timing.
Held data are the values retrieved upon a status update. It is not data from the time the retrieval function was called.

## User Data

| Data Name | | Function |
|---|---|---|
| DO data | Valid/Invalid value | userDOValidMX100 |
| | ON/OFF status | userDOValueMX100 |
| AO/PWM data | Valid/Invalid Value | userAOPWMValidMX100 |
| | Output data value | userAOPWMValueMX100 |
| | Output value | userDoubleAOPWMValueMX100 |
| Initial balance data | Valid/Invalid value | userBalanceValidMX100 |
| | Initial balance value | userBalanceValueMX100 |
| Transmission output data | Transmission status | userTransmitMX100 |

Gets the data values created by the user with data manipulation functions.

## Utilities

| Data Name | | Function |
|---|---|---|
| No. of remaining data | Retrieve by channel | dataNumChMX100 |
| | Retrieve by FIFO | dataNumFIFOMX100 |
| Error | Get MX-specific error | lastErrorMX100 |
| | Get the error message string | toErrorMessageMX100 |
| | Get max length of the error message string | errorMaxLengthMX100 |
| | Get no of parameter on which err detected | itemErrorMX100 |
| Change from FIFO information to channel number | | channelNumberMX100 |
| Get the decimal point position by range type | | rangePointMX100 |
| Meas value | Change to double integer | toDoubleValueMX100 |
| | Convert into string | toStringValueMX100 |
| Alarm | Get the alarm type string | toAlarmNameMX100 |
| | Get the maximum length of the alarm string | alarmMaxLengthMX100 |
| Get the version number of this API | | versionAPIMX100 |
| Get the revision number of this API | | revisionAPIMX100 |
| Get a portion of the IP address | | addressPartMX100 |
| AO/PWM | Convert output val to output data val | toAOPWMValueMX100 |
| | Convert output data val to output val | toRealValueMX100 |
| Setup items | Get setup item string from setup item no | toItemNameMX100 |
| | Get setup item no from setup item string | toItemNoMX100 |
| | Get max length of setup item string | itemMaxLengthMX100 |
| Convert to style version | | toStyleVersionMX100 |

# 15.2 Programming - MX100/Visual Basic.NET -

## Declaration of Functions and Constants

To use functions, and constants for Visual Basic.NET, they must be declared in advance. The following methods of declaration statements are available.

### Declaration Statements

Adding the module file for Visual Basic.NET (DAQMX100.vb) to the project is equivalent to declaring all functions and constants.

# Retrieval of the Measured Data

## Program Example 1

```
Module Module1
    Public Sub Meas()
        Dim comm As Integer
        Dim rc As Integer
        Dim value As Integer
        'connect
        comm = openMX100("192.168.1.12" rc)
        'get
        rc = measStartMX100(comm)
        rc = measDataChMX100(comm, 1)
        value = dataValueMX100(comm, 1)
        rc = measStopMX100(comm)
        'disconnect
        rc = closeMX100(comm)
    End Sub
End Module
```

## Description

### Overview

Data retrieval is possible by starting the FIFO. The amount of retrievable data within the FIFO data on channel 1 of the MX100 is retrieved and stored in the field. Gets the measured value data (one point) of the current status (first measurement point) and concludes the process.

### Communication Connection

`comm = openMX100("192.168.1.12", rc)`

The IP address of the MX100 is specified. This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

### FIFO Start

`rc = measStartMX100(comm)`

Starts the FIFO on the MX100.

### Retrieval of the Measured Data of Channel 1

`rc = measDataChMX100(comm, 1)`

The amount of retrievable measured data from channel 1 of the MX100 is retrieved and stored in the field. The first measurement point is set as the current status.

#### Retrieval of Measured Values

`value = dataValueMX100(comm, 1)`

Retrieves the measured values of the current status of channel 1 from the field where the measured data is stored.

**FIFO Stop**

```
rc = measStopMX100(comm)
```

Stops the FIFO.

**Comm. cut**

```
rc = closeMX100(comm)
```

Drops the connection.

**Reference**

The sample program is completed by executing measDaraChMX100 only once. Each time measDataChMX100 is executed, the measurement point advances by one, and the next data is set as the current status. When the last stored measurement point is reached, the next retrievable amount of data is retrieved.

# Retrieval of Setup Data and Configuration

## Program Example 2

```
Module Module1
    Public Sub Item()
        Dim rc As Integer
        Dim comm As Integer
        Dim i As Integer
        Dim strItem As String
        Dim lenItem As Integer
        Dim realLen As Integer
        lenItem = 512
        strItem = Space(lenItem)
        'connect
        comm = openMX100("192.168.1.12", rc)
        'get
        rc = getItemAllMX100(comm)
        'loop by item
        For i = DAQMX_ITEM_ALL_START To DAQMX_ITEM_ALL_END
            'read
            rc = readItemMX100(comm, i, strItem, lenItem,
realLen)
            'write
           rc = writeItemMX100(comm, i, strItem)
        Next i
        'set
        rc = setItemAllMX100(comm)
        'disconnect
        rc = closeMX100(comm)

    End Sub
End Module
```

## Description

### Overview

The program is an example of reading and writing all setup items. The following four actions are executed.

- Gets the setup data from the MX100 collectively.
- Retrieves the setup data of the setup data field by item.
- Writes the setup data in the setup data field by item.
- Sends the setup data to the MX100 collectively.

Each item is retrieved and written from the first number to the end number.

Be sure to prepare string fields of sufficient size.

By saving and loading groups of item numbers and item strings, you can backup the setup data.

For setup item numbers, see section 6.3.

**Communication Connection**

```
comm = openMX100("192.168.1.12", rc)
```

The IP address of the MX100 is specified. This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

**Getting the Setup Data Collectively**

```
rc = getItemAllMX100(comm)
```

Gets all items of the MX100 setup data collectively and stores in the setup data field.

**Retrieval of the Setup Data by Item**

```
rc = readItemMX100(comm, i, strItem, lenItem, realLen)
```

Retrieves the contents of item number “i” from the setup data field.

**Writing the Setup Data by Item**

```
rc = writeItemMX100(comm, i, strItem)
```

Writes the contents of strItem to item number “i” of the setup data field.

**Sending the Setup Data Collectively**

```
rc = setItemAllMX100(comm)
```

Sends all items of the setup data to the MX100 collectively.

**Comm. cut**

```
rc = closeMX100(comm)
```

Drops the connection.

# 16.1 Functions and Their Functionalities - MX100/C# -



This section indicates the correspondence between the functionalities that the extension API supports and the Visual C functions.
There are two types, status transition functions and retrieval functions.
Status retrieval functions control the MX100. When measured data is retrieved with the data transition function, the measured data advances by only one interval's worth of data (the status of the extension API changes).
The retrieval function returns the parameter value. When data is retrieved, the data value of the current status is returned (the status of the extension API does not change).

## Status Transition Functions

The FIFO column in the table indicates the FIFO operation when the function is executed while FIFO is running.
Stop: Stops the FIFO when the function is executed.
Continue: Continues the FIFO even when the function is executed.

### Communication Functions

| Function | FIFO | Function |
|---|---|---|
| Connect to the MX100 | Continue | DAQMX100:: open |
| Disconnect from the MX100 | Continue | DAQMX100:: close |

### Starting/Stopping the FIFO

| Function | FIFO | Function |
|---|---|---|
| Start FIFO | Continue | DAQMX100. measStartMX100 |
| Stop FIFO | Stop | DAQMX100. measStopMX100 |

## Control Functions

| Function | | FIFO | Function |
|---|---|---|---|
| Set date/time | Current time | Stop | DAQMX100. setDateTimeNowMX100 |
| Set backup | valid/invalid | Continue | DAQMX100. switchBackupMX100 |
| Format of the CF card | | Stop | DAQMX100. formatCFMX100 |
| Unit | Reconfigure | Stop | DAQMX100. reconstructMX100 |
| | Initialize | Stop | DAQMX100. initSetValueMX100 |
| | Reset alarm (alarm ACK) | Stop | DAQMX100. ackAlarmMX100 |
| 7-segment LED display | | Continue | DAQMX100. displaySegmentMX100 |
| Initialize stored data | Specify channel | Continue | DAQMX100. initDataChMX100 |
| | Specify FIFO | Continue | DAQMX100. initDataFIFOMX100 |

At the end of communications, the control function updates the status.
See the data manipulation functions for more about the data transmission and setup functions.

## Setup Functions

| Function | | FIFO | Function |
|---|---|---|---|
| Set setup data (send collectively) | All setup data | Stop | DAQMX100. sendConfigMX100 |
| | Basic setup data | Stop | DAQMX100. sendConfigMX100 |
| Set setup data individually | Sys configuration data | Stop | DAQMX100. sendConfigMX100 |
| | Channel setup data | Stop | DAQMX100. sendConfigMX100 |
| | Initial balance data | Stop | DAQMX100. sendConfigMX100 |
| | Output channel data | Stop | DAQMX100. sendConfigMX100 |
| Initial balance data | Execute | Stop | DAQMX100. initBalanceMX100 |
| | Reset | Stop | DAQMX100. clearBalanceMX100 |

The setup data setup functions send the stroed data.
When setting arbitrary initial balance data, see the initial balance data sending function under data manipulation functions.

## Setup Change Functions

The setup functions send the settings then update the status.
These settings are for individual channels. If the settings could not be entered, an error is usually returned.
Specification is possible with data values or measured values (Double).

### Range Settings

| Function | FIFO | Function |
|---|---|---|
| Skip | Stop | DAQMX100. setRangMX100 |
| DC voltage input | Stop | DAQMX100. setRangMX100 |
| Thermocouple input | Stop | DAQMX100. setRangMX100 |
| RTD | Stop | DAQMX100. setRangMX100 |
| Digital input | Stop | DAQMX100. setRangMX100 |
| Resistance | Stop | DAQMX100. setRangMX100 |
| Strain | Stop | DAQMX100. setRangMX100 |
| AO | Stop | DAQMX100. setRangMX100 |
| PWM | Stop | DAQMX100. setRangMX100 |
| Difference computation between channels | Stop | DAQMX100. setChDELTAMX100 |
| Remote RRJC | Stop | DAQMX100. setChRRJCMX100 |
| Pulse | Stop | DAQMX100. setRangeMX100 |
| Communication | Stop | DAQMX100. setRangeMX100 |

### Channel Settings

| Function | | FIFO | Function |
|---|---|---|---|
| Unit name | | Stop | DAQMX100. setChUnitMX100 |
| Tag | | Stop | DAQMX100. setChTagMX100 |
| Comment | | Stop | DAQMX100. setChCommentMX100 |
| AI/DI/AO/ PWM | Span | Stop | DAQMX100. setSpanMX100<br>DAQMX100. setDoubleSpanMX100 |
| AI/DI | Scale | Stop | DAQMX100. setScaleMX100<br>DAQMX100. setDoubleScaleMX100 |
| | Alarm | Stop | DAQMX100. setAlarmMX100<br>DAQMX100. setDoubleAlarmMX100<br>DAQMX100. setAlarmValueMX100<br>DAQMX100. setDoubleAlarmValueMX100 |
| | Hysteresis | Stop | DAQMX100. setHisterisysMX100<br>DAQMX100. setDoubleHisterisysMX100 |
| AI | Filter coefficient | Stop | DAQMX100. setFilterMX100 |
| | Ref. junction compensation (RJC) | Stop | DAQMX100. setRJCTypeMX100 |
| | Burnout | Stop | DAQMX100. setBurnoutMX100 |
| DO | De-energize | Stop | DAQMX100. setDeenergizeMX100 |
| | Hold | Stop | DAQMX100. setHoldMX100 |
| | Reference alarm | Stop | DAQMX100. setRefAlarmMX100 |
| Channel kind | DO type | Stop | DAQMX100. setChKindMX100 |
| | AO type | Stop | DAQMX100. setChKindMX100 |
| | PWM type | Stop | DAQMX100. setChKindMX100 |
| PI | Chattering filter | Stop | DAQMX100. setChatFilterMX100 |

## Module Settings

| Function | FIFO | Function |
|---|---|---|
| Interval type | Stop | DAQMX100. setIntervalMX100 |
| A/D integral time type | Stop | DAQMX100. setIntegralMX100 |

## Unit Settings

| Function | FIFO | Function |
|---|---|---|
| Unit number | Stop | DAQMX100. setUnitNoMX100 |
| Temperature unit type | Stop | DAQMX100. setUnitTempMX100 |
| CF write mode | Stop | DAQMX100. setCFWriteModeMX100 |

## Output Channel Data

| Function | FIFO | Class and Member Function |
|---|---|---|
| Output type | Stop | DAQMX100. setOutputTypeMX100 |
| Selected value | Stop | DAQMX100. setChoiceMX100<br>DAQMX100. setDoubleChoiceMX100 |
| Pulse interval integer multiple | Stop | DAQMX100. setPulseTimeMX100 |

## Data Manipulation Functions

### DO Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | DAQMX100. createDOMX100 |
| Delete | | Continue | DAQMX100. deleteDOMX100 |
| Partial chng | User specification | Continue | DAQMX100. changeDOMX100 |
| | Copy | Continue | DAQMX100. copyDOMX100 |
| Transmit | Existing specification | Continue | DAQMX100. commandDOMX100 |
| | Change specification | Continue | DAQMX100. switchDOMX100 |

### AO/PWM Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | DAQMX100. createAOPWMMX100 |
| Delete | | Continue | DAQMX100. deleteAOPWMMX100 |
| Partial chng | Output data value | Continue | DAQMX100. changeAOPWMMX100 |
| | Actual output value | Continue | DAQMX100. changeAOPWMValueMX100 |
| | Copy | Continue | DAQMX100. copyAOPWMMX100 |
| Transmit | | Continue | DAQMX100. commandAOPWMMX100 |

### Initial Balance Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | DAQMX100. createBalanceMX100 |
| Delete | | Continue | DAQMX100. deleteBalanceMX100 |
| Partial chng | User specification | Continue | DAQMX100. changeBalanceMX100 |
| | Copy | Continue | DAQMX100. copyBalanceMX100 |
| Transmit | | Stop | DAQMX100. commandBalanceMX100 |

### Transmission Output Data

| Function | | FIFO | Function |
|---|---|---|---|
| Create | | Continue | DAQMX100. createTransmitMX100 |
| Delete | | Continue | DAQMX100. deleteTransmitMX100 |
| Partial chng | User specification | Continue | DAQMX100. changeTransmitMX100 |
| | Copy | Continue | DAQMX100. copyTransmitMX100 |
| Transmit | Existing specification | Continue | DAQMX100. commandTransmitMX100 |
| | Change specification | Continue | DAQMX100. switchTransmitMX100 |

Manipulates each data by indentifier.

For manipulation other than transmission, status is not updated (no communication).

## Retrieval Functions

| Function | | FIFO | Function |
|---|---|---|---|
| Status | | Continue | DAQMX100. updateStatusMX100 |
| System configuration data | | Continue | DAQMX100. updateSystemMX100 |
| Setup data | | Continue | DAQMX100. updateConfigMX100 |
| Output data | DO data | Continue | DAQMX100. updateDODataMX100 |
| | AO/PWM data Trans output data | Continue | DAQMX100. updateAOPWMDataMX100 |
| Channel information data | | Continue | DAQMX100. updateInfoChMX100 |
| Measured data (Specify channel) | FIFO value | Continue | DAQMX100. measDataChMX100 |
| | Instantaneous value | Continue | DAQMX100. measInstChMX100 |
| Measured data (specify FIFO) | FIFO value | Continue | DAQMX100. measDataFIFOMX100 |
| | Instantaneous value | Continue | DAQMX100. measInstFIFOMX100 |
| Initial balance data | | Continue | DAQMX100. updateBalanceMX100 |
| Output channel data | | Continue | DAQMX100. updateOutputMX100 |

Data retrieval is performed collectively and internally by this API.
Depending on the acquisition, the status may also be updated.
Channel information data and setup data (including system configuration data, initial balance data, and output channel data) are stored internally, but the user can update stored data explicitly.

## Setup Items

| Function | | FIFO | Function |
|---|---|---|---|
| Set setup data | Receive collectively | Continue | DAQMX100. getItemAllMX100 |
| | Send collectively | Stop | DAQMX100. setItemAllMX100 |
| Setup items | Read | Continue | DAQMX100. readItemMX100 |
| | Write | Continue | DAQMX100. writeItemMX100 |
| | Initialize | Continue | DAQMX100. initItemMX100 |

Loading, writing, and initializing of setting items is performed through access to the field where the item is stored, and validity checks are not performed on those fields. Also, status is not updated (no communication).

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | DAQMX100. dataValueMX100 |
| Data status values | | DAQMX100. dataStatusMX100 |
| Alarm (presence/absence) | | DAQMX100. dataAlarmMX100 |
| Meas values | Double integer | DAQMX100. dataDoubleValueMX100 |
| | String | DAQMX100. dataStringValueMX100 |
| Time | No. of seconds | DAQMX100. dataTimeMX100 |
| | Milliseconds | DAQMX100. dataMilliSecMX100 |
| | Year | DAQMX100. dataYearMX100 |
| | Month | DAQMX100. dataMonthMX100 |
| | Day | DAQMX100. dataDayMX100 |
| | Hour | DAQMX100. dataHourMX100 |
| | Minute | DAQMX100. dataMinuteMX100 |
| | Second | DAQMX100. dataSecondMX100 |
| Valid data (presence/absence) | | DAQMX100. dataValidMX100 |

## Channel Information Data

| Data Name | Function |
|---|---|
| FIFO number | DAQMX100. channelFIFONoMX100 |
| Channel sequence number in the FIFO | DAQMX100. channelFIFOIndexMX100 |
| Display minimum value | DAQMX100. channelDisplayMinMX100 |
| Display maximum value | DAQMX100. channelDisplayMaxMX100 |
| Measurable minimum value | DAQMX100. channelRealMinMX100 |
| Measurable maximum value | DAQMX100. channelRealMaxMX100 |

## Channel Setup Data

| Data Name | | | | Function |
|---|---|---|---|---|
| Channel status (valid/invalid) | | | | DAQMX100. channelValidMX100 |
| Decimal point position | | | | DAQMX100. channelPointMX100 |
| Channel kind | | | | DAQMX100. channelKindMX100 |
| Range type | | | | DAQMX100. channelRangeMX100 |
| Scale type | | | | DAQMX100. channelScaleTypeMX100 |
| Unit name | | | | DAQMX100. toChannelUnitMX100 |
| Tag | | | | DAQMX100. toChannelTagMX100 |
| Comment | | | | DAQMX100. toChannelCommentMX100 |
| AI/DI/AO/ PWM | Span | Min value | Data val | DAQMX100. channelSpanMinMX100 |
| | | | Measval | DAQMX100. channelDoubleSpanMinMX100 |
| | | Max value | Data val | DAQMX100. channelSpanMaxMX100 |
| | | | Meas val | DAQMX100. channelDoubleSpanMaxMX100 |
| AI/DI | Scale | Min value | Data val | DAQMX100. channelScaleMinMX100 |
| | | | Meas val | DAQMX100. channelDoubleScaleMinMX100 |
| | | Max val | Data val | DAQMX100. channelScaleMaxMX100 |
| | | | Meas val | DAQMX100. channelDoubleScaleMaxMX100 |
| | Alarm type | | | DAQMX100. alarmTypeMX100 |
| | Alarm value (ON) | | Data val | DAQMX100. alarmValueONMX100 |
| | | | Meas val | DAQMX100. alarmDoubleValueONMX100 |
| | Alarm value (OFF) | | Data val | DAQMX100. alarmValueOFFMX100 |
| | | | Meas val | DAQMX100. alarmDoubleValueOFFMX100 |
| | Hysteresis | | Data val | DAQMX100. alarmHisterisysMX100 |
| | | | Meas val | DAQMX100. alarmDoubleHisterisysMX100 |
| AI | Filter | | | DAQMX100. channelFilterMX100 |
| | RJC type | | | DAQMX100. channelRJCTypeMX100 |
| | RJC voltage | | | DAQMX100. channelRJCVoltMX100 |
| | Burnout | | | DAQMX100. channelBurnoutMX100 |
| DO | De-energize | | | DAQMX100. channelDeenergizeMX100 |
| | Hold | | | DAQMX100. channelHoldMX100 |
| | Reference alarm | | | DAQMX100. channelRefAlarmMX100 |
| Channels undergoing difference between channels computation/Remote RJC/AO/PWM | | | | |
| | Reference channel number | | | DAQMX100. channelRefChNoMX100 |
| Initial balance data | | Valid/Invalid value | | DAQMX100. channelBalanceValidMX100 |
| | | Initial balance value | | DAQMX100. channelBalanceValueMX100 |
| Output channel data | | Output type | | DAQMX100. channelOutputTypeMX100 |
| | | Selection when idle | | DAQMX100. channelIdleChoiceMX100 |
| | | Selection during err | | DAQMX100. channelErrorChoiceMX100 |
| | | Value if the selected value is the “specified value.” | | |
| | | | Data val | DAQMX100. channelPresetValueMX100 |
| | | | Meas val | DAQMX100. channelDoublePresetValueMX100 |
| | | Pulse interval integer multiple | | DAQMX100. channelPulseTimeMX100 |
| PI | | Chattering filter | | DAQMX100. channelChatFilterMX100 |

## Network Information Data

| Data Name | Function |
|---|---|
| Host name | DAQMX100. toNetHostMX100 |
| IP address | DAQMX100. netAddressMX100 |
| Port number | DAQMX100. netPortMX100 |
| Subnet mask | DAQMX100. netSubmaskMX100 |
| Gateway address | DAQMX100. netGatewayMX100 |

## System Configuration Data

| Data Name | | Function |
|---|---|---|
| Module | Module type | DAQMX100. moduleTypeMX100 |
| | Number of channels | DAQMX100. moduleChNumMX100 |
| | Interval type | DAQMX100. moduleIntervalMX100 |
| | AD integral time type | DAQMX100. moduleIntegralMX100 |
| | Valid/Invalid value | DAQMX100. moduleValidMX100 |
| | Module type at startup | DAQMX100. moduleStandbyTypeMX100 |
| | Actual module type | DAQMX100. moduleRealTypeMX100 |
| | Terminal type | DAQMX100. moduleTerminalMX100 |
| | Version | DAQMX100. moduleVersionMX100 |
| | FIFO number | DAQMX100. moduleFIFONoMX100 |
| | Serial number | DAQMX100. toModuleSerialMX100 |
| Unit | Unit type | DAQMX100. unitTypeMX100 |
| | Style | DAQMX100. unitStyleMX100 |
| | Unit number | DAQMX100. unitNoMX100 |
| | Temperature unit type | DAQMX100. unitTempMX100 |
| | Power supply frequency | DAQMX100. unitFrequencyMX100 |
| | Part number | DAQMX100. toUnitPartNoMX100 |
| | Options | DAQMX100. unitOptionMX100 |
| | Serial number | DAQMX100. toUnitSerialMX100 |
| | MAC address | DAQMX100. unitMACMX100 |
| | CF write mode | DAQMX100. unitCFWriteModeMX100 |

## Status Data

| Data Name | | Function |
|---|---|---|
| Unit status value | | DAQMX100. statusUnitMX100 |
| Valid number of FIFOs | | DAQMX100. statusFIFONumMX100 |
| Backup (presence or absence) | | DAQMX100. statusBackupMX100 |
| FIFO | FIFO status value | DAQMX100. statusFIFOMX100 |
| | Interval type | DAQMX100. statusFIFOIntervalMX100 |
| CF | CF status type | DAQMX100. statusCFMX100 |
| | Size | DAQMX100. statusCFSizeMX100 |
| | Remaining capacity | DAQMX100. statusCFRemainMX100 |
| Status return time | No. of seconds | DAQMX100. statusTimeMX100 |
| | Milliseconds | DAQMX100. statusMilliSecMX100 |
| | Year | DAQMX100. statusYearMX100 |
| | Month | DAQMX100. statusMonthMX100 |
| | Day | DAQMX100. statusDayMX100 |
| | Hour | DAQMX100. statusHourMX100 |
| | Minute | DAQMX100. statusMinuteMX100 |
| | Second | DAQMX100. statusSecondMX100 |

## Current Data

| Data Name | | Function |
|---|---|---|
| DO data | Valid/Invalid value | DAQMX100. currentDOValidMX100 |
| | ON/OFF status | DAQMX100. currentDOValueMX100 |
| AO/PWM data | Valid/Invalid value | DAQMX100. currentAOPWMValidMX100 |
| | Output data value | DAQMX100. currentAOPWMValueMX100 |
| | Output value | DAQMX100. currentDoubleAOPWMValueMX100 |
| Initial balance data | Valid/Invalid value | DAQMX100. currentBalanceValidMX100 |
| | Initial balance value | DAQMX100. currentBalanceValueMX100 |
| | Initial balance result | DAQMX100. currentBalanceResultMX100 |
| Trans output data | Transmission status | DAQMX100. currentTransmitMX100 |

This is the status of each data retrieved with the data retrieval functions.
The initial balance result of the initial balance data is the result executed by the setup function.
Actually output output statuses such as DO data and AO/PWM data can be retrieved as current data. However, immediately after sending data, the specified value is returned, and the actual output may occur at the next timing.
Held data are the values retrieved upon a status update. It is not data from the time the retrieval function was called.

## User Data

| Data Name | | Function |
|---|---|---|
| DO data | Valid/Invalid value | DAQMX100. userDOValidMX100 |
| | ON/OFF status | DAQMX100. userDOValueMX100 |
| AO/PWM data | Valid/Invalid value | DAQMX100. userAOPWMValidMX100 |
| | Output data value | DAQMX100. userAOPWMValueMX100 |
| | Output value | DAQMX100. userDoubleAOPWMValueMX100 |
| Initial balance data | Valid/Invalid value | DAQMX100. userBalanceValidMX100 |
| | Initial balance value | DAQMX100. userBalanceValueMX100 |
| Transmission output data | Transmission status | DAQMX100. userTransmitMX100 |

Gets the data values created by the user with data manipulation functions.

## Utilities

| Function/Data Name | | Function |
|---|---|---|
| Remaining data number | Retrieve by channel | DAQMX100. dataNumChMX100 |
| | Retrieve by FIFO | DAQMX100. dataNumFIFOMX100 |
| Error | Get MX-specific error | DAQMX100. lastErrorMX100 |
| | Get the error message string | DAQMX100. toErrorMessageMX100 |
| | Get the error message string maximum length | DAQMX100. errorMaxLengthMX100 |
| | Get no. of setup items on which errors were detected | DAQMX100. itemErrorMX100 |
| Change from FIFO information to channel number | | DAQMX100. channelNumberMX100 |
| Get the decimal point position by range type | | DAQMX100. rangePointMX100 |
| Meas val | Change to double integer | DAQMX100. toDoubleValueMX100 |
| | Convert into string | DAQMX100. toStringValueMX100 |
| Alarm | Get the alarm type string | DAQMX100. toAlarmNameMX100 |
| | Get the max length of the alarm string | DAQMX100. alarmMaxLengthMX100 |
| Get the version number of this API | | DAQMX100. versionAPIMX100 |
| Get the revision number of this API | | DAQMX100. revisionAPIMX100 |
| Get a portion of the IP address | | DAQMX100. addressPartMX100 |
| AO/PWM | Convert output val to output data values | DAQMX100. toAOPWMValueMX100 |
| | Convert output data val to output values | DAQMX100. toRealValueMX100 |
| Setup items | Get setup item number from the setup item string | DAQMX100. toItemNameMX100 |
| | Get the setup item string from the setup item number | DAQMX100. toItemNoMX100 |
| | Get the maximum length of the setup item string | DAQMX100. itemMaxLengthMX100 |
| Convert to style version | | DAQMX100.toStyleVersionMX100 |

# 16.2 Programming - MX100/C# -

## Declaration of Functions and Constants

To use functions and constants for C#, they must be declared in advance. The following methods of declaration statements are available.

### Declaration Statements

Adding the module file for C# (DAQMX100.cs) to the project is equivalent to declaring all functions and constants.

# Retrieval of the Measured Data

## Program Example 1

```
using System;
using System.Text;
using System.Runtime.InteropServices;

namespace MeasCS
{
  class Class1
  {
          [STAThread]
          static void Main(string[] args)
          {
             int rc;
             Encoding enc = Encoding.GetEncoding ("ascii";
             String address = "192.168.1.12";
             //connect
             int comm =
DAQMX100.openMX100(enc.GetBytes(address), out rc);
             //get
             rc = DAQMX100.measStartMX100(comm);
             rc = DAQMX100.measDataChMX100(comm, 1);
             int val = DAQMX100.dataValueMX100(comm, 1);
             rc = DAQMX100.measStopMX100(comm);
             //disconnect
             rc = DAQMX100.closeMX100(comm);
          }
  }
}
```

## Description

### Overview

Data retrieval is possible by starting the FIFO. The amount of retrievable data within the FIFO data on channel 1 of the MX100 is retrieved and stored in the field. Gets the measured value data (one point) of the current status (first measurement point) and concludes the process.

### Communication Connection

`int comm = DAQMX100.openMX100(enc.GetBytes(address), out rc);`
The IP address of the MX100 is specified. This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

### FIFO Start

`rc = DAQMX100.measStartMX100(comm);`
Starts the FIFO on the MX100.

**Retrieval of the Measured Data of Channel 1**

```
rc = DAQMX100.measDataChMX100(comm, 1);
```

The amount of retrievable measured data from channel 1 of the MX100 is retrieved and stored in the field. The first measurement point is set as the current status.

**Retrieval of Measured Values**

```
int val = DAQMX100.dataValueMX100(comm, 1);
```

Retrieves the measured values of the current status of channel 1 from the field where the measured data is stored.

**FIFO Stop**

```
rc = DAQMX100.measStopMX100(comm);
```

Stops the FIFO.

**Comm. cut**

```
rc = DAQMX100.closeMX100(comm);
```

Drops the connection.

**Reference**

The sample program is completed by executing measDaraChMX100 only once. Each time measDataChMX100 is executed, the measurement point advances by one, and the next data is set as the current status. When the last stored measurement point is reached, the next retrievable amount of data is retrieved.

## Retrieval of Setup Data and Configuration

### Program Example 2

```
using System;
using System.Text;
using System.Runtime.InteropServices;

namespace ItemCS
{
  class Class1
  {
          [STAThread]
          static void Main(string[] args)
          {
             int rc;
             int lenItem = 512;
             byte[] strItem = new byte[lenItem];
             int realLen;
             Encoding enc = Encoding.GetEncoding ("ascii";
             String address = "192.168.1.12";
             //connect
             int comm =
DAQMX100.openMX100(enc.GetBytes(address), out rc);
             //get
             rc = DAQMX100.getItemAllMX100(comm);
             //loop by items
             for (int i = DAQMXItems.DAQMX_ITEM_ALL_START; i
<= DAQMXItems.DAQMX_ITEM_ALL_END; i++)
             {
                 //read
                 rc = DAQMX100.readItemMX100(comm, i, strItem,
lenItem, out realLen);
                 //write
                 rc = DAQMX100.writeItemMX100(comm, i,
strItem);
             }
             //set
             rc = DAQMX100.setItemAllMX100(comm);
             //disconnect
             rc = DAQMX100.closeMX100(comm);
          }
  }
}
```

## Description

### Overview

The program is an example of reading and writing all setup items. The following four actions are executed.

- Gets the setup data from the MX100 collectively.
- Retrieves the setup data of the setup data field by item.
- Writes the setup data in the setup data field by item.
- Sends the setup data to the MX100 collectively.

Each item is retrieved and written from the first number to the end number.

Setup data can be processed collectively by using setup items.

Be sure to prepare string fields of sufficient size.

By saving and loading groups of item numbers and item strings, you can backup the setup data.

For setup item numbers, see section 6.3.

#### Communication Connection

```
int comm = DAQMX100.openMX100(enc.GetBytes(address), out rc);
```

The IP address of the MX100 is specified. This statement implicitly specifies the communication constant DAQMX_COMMPORT (communication port number of the MX100).

#### Getting the Setup Data Collectively

```
rc = DAQMX100.getItemAllMX100(comm);
```

Gets all items of the MX100 setup data collectively and stores in the setup data field.

#### Retrieval of the Setup Data by Item

```
rc = DAQMX100.readItemMX100(comm, i, strItem, lenItem, out
realLen);
```

Retrieves the contents of item number “i” from the setup data field.

#### Writing the Setup Data by Item

```
rc = DAQMX100.writeItemMX100(comm, i, strItem);
```

Writes the contents of strItem to item number “i” of the setup data field.

#### Sending the Setup Data Collectively

```
rc = DAQMX100.setItemAllMX100(comm);
```

Sends all items of the setup data to the MX100 collectively.

#### Comm. cut

```
rc = DAQMX100.closeMX100(comm);
```

Drops the connection.

# 17.1 Details of Function - MX00 (Visual C/Visual Basic/ Visual Basic.NET/C#) - Status Transition Functions

This section describes the MX100 functions that are used in C and Visual Basic. The functions are listed in alphabetical order by the function name.

For details on constants and types, see chapter 18.
For information about the MX100, see appendix 1.

Most functions return an error number as a return value. Error number 0 is returned if there is no error.

In C#, the class (DAQMX100) member contains the declarations.

## ackAlarmMX100

### Syntax

```
int ackAlarmMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function ackAlarmMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function ackAlarmMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="ackAlarmMX100")]
public static extern int ackAlarmMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Resets alarms.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX100::ackAlarm`

## changeAOPWMMX100

### Syntax

```
int changeAOPWMMX100(DAQMX100 daqmx100, int idAOPWM, int
aopwmNo, int bValid, int iAOPWMValue);
```

### Declaration

Visual Basic

```
Public Declare Function changeAOPWMMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idAOPWM As Long, ByVal aopwmNo As
Long, ByVal bValid As Long, ByVal iAOPWMValue As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function changeAOPWMMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idAOPWM As
Integer, ByVal aopwmNo As Integer, ByVal bValid As Integer,
ByVal iAOPWMValue As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="changeAOPWMMX100")]
public static extern int changeAOPWMMX100(int daqmx100, int
idAOPWM, int aopwmNo, int bValid, int iAOPWMValue);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idAOPWM | Specify the AO/PWM data identifier. |
| aopwmNo | Specify the AO/PWM data number. |
| bValid | Specify valid/invalid using a Boolean value. |
| iAOPWMValue | Specify the output data value. |

### Description

Changes the AO/PWM data of the specified AO/PWM data identifier.

- The output data specifies the changed value of the actually output value.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::getClassMXAOPWMList
CDAQMXAOPWMList::change
```

## changeAOPWMValueMX100

### Syntax

```
int changeAOPWMValueMX100(DAQMX100 daqmx100, int idAOPWM, int
aopwmNo, int bValid, double realValue);
```

### Declaration

Visual Basic

```
Public Declare Function changeAOPWMValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idAOPWM As Double,
ByVal aopwmNo As Long, ByVal bValid As Long, ByVal realValue
As Doouble) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function changeAOPWMValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idAOPWM As
Integer, ByVal aopwmNo As Integer, ByVal bValid As Integer,
ByVal realValue As Double) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="changeAOPWMValueMX100")]
public static extern int changeAOPWMValueMX100(int daqmx100,
int idAOPWM, int aopwmNo, int bValid, Double realValue);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idAOPWM | Specify the AO/PWM data identifier. |
| aopwmNo | Specify the AO/PWM data number. |
| bValid | Specify valid/invalid using a Boolean value. |
| realValue | Specify the actual output value. |

### Description

Changes the AO/PWM data of the specified AO/PWM data identifier.

- If the differences from the user specified output value are excluded, it is the same as the changeAOPWMMX100 function.
- The user-specified output value specifies a floating point value including the decimal point position.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::changeAOPWMValue`

## changeBalanceMX100

### Syntax

```
int changeBalanceMX100(DAQMX100 daqmx100, int idBalance, int
balanceNo, int bValid, int iValue);
```

### Declaration

Visual Basic

```
Public Declare Function changeBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idBalance As Long,
ByVal balanceNo As Long, ByVal bValid As Long, ByVal iValue As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function changeBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idBalance As
Integer, ByVal balanceNo As Integer, ByVal bValid As Integer,
ByVal iValue As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="changeBalanceMX100")]
public static extern int changeBalanceMX100(int daqmx100, int
idBalance, int balanceNo, int bValid, int iValue);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idBalance | Specify the initial balance data identifier. |
| balanceNo | Specify the initial balance data number. |
| bValid | Specify valid/invalid using a Boolean value. |
| iValue | Specify the initial balance value. |

### Description

Changes the initial balance data of the specified initial balance data identifier.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::getClassMXBalanceList
CDAQMXBalanceList::change
```

# changeDOMX100

## Syntax

```
int changeDOMX100(DAQMX100 daqmx100, int idDO, int doNo, int
bValid, int bONOFF);
```

## Declaration

Visual Basic

```
Public Declare Function changeDOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idDO As Long, ByVal doNo As Long,
ByVal bValid As Long, ByVal bONOFF As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function changeDOMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idDO As Integer,
ByVal doNo As Integer, ByVal bValid As Integer, ByVal bONOFF
As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="changeDOMX100")]
public static extern int changeDOMX100(int daqmx100, int idDO,
int doNo, int bValid, int bONOFF);
```

## Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idDO | Specify the DO data identifier. |
| doNo | Specify the data number. |
| bValid | Specify valid/invalid using a Boolean value. |
| bONOFF | Specify ON/OFF using a Boolean value. |

## Description

Changes the DO data of the specified DO data identifier.

## Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

## Reference

```
CDAQMX100::getClassMXDOList
CDAQMXDOList::change
```

## changeTransmitMX100

### Syntax

```
int changeTransmitMX100(DAQMX100 daqmx100, int idTrans, int
aopwmNo, int iTransmit);
```

### Declaration

Visual Basic

```
Public Declare Function changeTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idTrans As Long,
ByVal aopwmNo As Long, ByVal iTransmit As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function changeTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idTrans As
Integer, ByVal aopwmNo As Integer, ByVal iTransmit As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="changeTransmitMX100")]
public static extern int changeTransmitMX100(int daqmx100, int
idTrans, int aopwmNo, int iTransmit);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idTrans | Specify the transmission output data identifier. |
| aopwmNo | Specify the AO/PWM data number. |
| iTransmit | Specify the transmission status. |

### Description

Changes the transmission output data of the specified transmission output data identifier.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::getClassMXTransmitList
CDAQMXTransmitList::change
```

## clearBalanceMX100

### Syntax

```
int clearBalanceMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function clearBalanceMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function clearBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="clearBalanceMX100")]
public static extern int clearBalanceMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Initializes the initial balance value.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::clearBalance
```

## closeMX100

### Syntax

```
int closeMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function closeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function closeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="closeMX100")]
public static extern int closeMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Disconnects the communication using the specified device descriptor.

- When the communication is disconnected, the value of the device descriptor is meaningless.
- After disconnection, do not use the value of the device descriptor.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::close
```

## commandAOPWMMX100

### Syntax

```
int commandAOPWMMX100(DAQMX100 daqmx100, int idAOPWM);
```

### Declaration

Visual Basic

```
Public Declare Function commandAOPWMMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idAOPWM As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function commandAOPWMMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idAOPWM As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="commandAOPWMMX100")]
public static extern int commandAOPWMMX100(int daqmx100, int
idAOPWM);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idAOPWM | Specify the AO/PWM data identifier. |

### Description

Sends the AO/PWM data of the specified AO/PWM data identifier.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::commandAOPWM`

## commandBalanceMX100

### Syntax

```
int commandBalanceMX100(DAQMX100 daqmx100, int idBalance);
```

### Declaration

Visual Basic

```
Public Declare Function commandBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idBalance As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function commandBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idBalance As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="commandBalanceMX100")]
public static extern int commandBalanceMX100(int daqmx100, int
idBalance);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idBalance | Specify the initial balance data identifier. |

### Description

Sends the initial balance data of the specified initial balance data identifier.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::reloadBalance`

## commandDOMX100

### Syntax

```
int commandDOMX100(DAQMX100 daqmx100, int idDO);
```

### Declaration

Visual Basic

```
Public Declare Function commandDOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idDO As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function commandDOMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idDO As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="commandDOMX100")]
public static extern int commandDOMX100(int daqmx100, int
idDO);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idDO | Specify the DO data identifier. |

### Description

Sends the DO data of the specified DO data identifier.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::commandDO`

## commandTransmitMX100

### Syntax

```
int commandTransmitMX100(DAQMX100 daqmx100, int idTrans);
```

### Declaration

Visual Basic

```
Public Declare Function commandTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idTrans As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function commandTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idTrans As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="commandTransmitMX100")]
public static extern int commandTransmitMX100(int daqmx100,
int idTrans);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idTrans | Specify the transmission output data identifier. |

### Description

Sends the transmission output data of the specified transmission output data identifier.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::commandTransmit
```

# copyAOPWMMX100

## Syntax

```
int copyAOPWMMX100(DAQMX100 daqmx100, int idAOPWM, int
idAOPWMSrc);
```

## Declaration

Visual Basic

```
Public Declare Function copyAOPWMMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idAOPWM As Long, ByVal idAOPWMSrc As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function copyAOPWMMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idAOPWM As
Integer, ByVal idAOPWMSrc As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="copyAOPWMMX100")]
public static extern int copyAOPWMMX100(int daqmx100, int
idAOPWM, int idAOPWMSrc);
```

## Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idAOPWM | Specify the copy destination for the AO/PWM data identifier. |
| idAOPWMSrc | Specify the copy source for the AO/PWM data identifier. |

## Description

Copies the AO/PWM data from the copy source of the specified AO/PWM data identifier to the copy destination.

- If the copy source is set to the constant for “specify current data,” gets the current data field from the data member.

## Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

## Reference

```
CDAQMX100::getClassMXAOPWMList
CDAQMXAOPWMList::copy
```

## copyBalanceMX100

### Syntax

```
int copyBalanceMX100(DAQMX100 daqmx100, int idBalance, int
idBalanceSrc);
```

### Declaration

Visual Basic

```
Public Declare Function copyBalanceMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idBalance As Long, ByVal idBalanceSrc
As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function copyBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idBalance As
Integer, ByVal idBalanceSrc As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="copyBalanceMX100")]
public static extern int copyBalanceMX100(int daqmx100, int
idBalance, int idBalanceSrc);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idBalance | Specify the initial balance data identifier of the copy destination. |
| idBalanceSrc | Specify the initial balance data identifier of the copy source. |

### Description

Copies the initial balance data from the copy source of the specified initial balance data identifier to the copy destination.

- If the copy source is set to the constant for “specify current data,” gets the current data field from the data member.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::getClassMXBalanceList
CDAQMXBalanceList::copy
```

## copyDOMX100

### Syntax

```
int copyDOMX100(DAQMX100 daqmx100, int idDO, int idDOSrc);
```

### Declaration

Visual Basic

```
Public Declare Function copyDOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idDO As Long, ByVal idDOSrc As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function copyDOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Integer, ByVal idDO As Integer, ByVal idDOSrc As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="copyDOMX100")]
public static extern int copyDOMX100(int daqmx100, int idDO,
int idDOSrc);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idDO | Specify the DO data identifier of the copy destination. |
| idDOSrc | Specify the DO data identifier of the copy source. |

### Description

Copies the DO data from the copy source of the specified DO data identifier to the copy destination.

- If the copy source is set to the constant for “specify current data,” gets the current data field from the data member.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::getClassMXDOList
CDAQMXDOList::copy
```

## copyTransmitMX100

### Syntax

```
int copyTransmitMX100(DAQMX100 daqmx100, int idTrans, int
idTransSrc);
```

### Declaration

Visual Basic

```
Public Declare Function copyTransmitMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idTrans As Long, ByVal idTransSrc As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function copyTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idTrans As
Integer, ByVal idTransSrc As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="copyTransmitMX100")]
public static extern int copyTransmitMX100(int daqmx100, int
idTrans, int idTransSrc);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idTrans | Specify the transmission output data identifier of the copy destination. |
| idTransSrc | Specify the transmission output data identifier of the copy source. |

### Description

Copies the transmission output data from the copy source of the specified transmission output data identifier to the copy destination.

- If the copy source is set to the constant for “specify current data,” gets the current data field from the data member.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::getClassMXTransmitList
CDAQMXTransmitList::copy
```

## createAOPWMMX100

### Syntax

```
int createAOPWMMX100(DAQMX100 daqmx100, int * errCode);
```

### Declaration

Visual Basic

```
Public Declare Function createAOPWMMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByRef errCode As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function createAOPWMMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByRef errCode As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="createAOPWMMX100")]
public static extern int createAOPWMMX100(int daqmx100, out
int errCode);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| errorCode | Specify the destination where the error number is to be returned. |

### Description

Creates new AO/PWM data.

- Returns the AOPWM data identifier as a return value.
- Returns a negative number if unsuccessful.
- Stores the error number if the return destination is specified.

### Return value

Returns the data identifier.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |
| Not data | Data creation failed. |

### Reference

```
CDAQMX100::getClassMXAOPWMList
CDAQMXAOPWMList::create
```

## createBalanceMX100

### Syntax

```
int createBalanceMX100(DAQMX100 daqmx100, int * errCode);
```

### Declaration

Visual Basic

```
Public Declare Function createBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByRef errCode As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function createBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByRef errCode As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="createBalanceMX100")]
public static extern int createBalanceMX100(int daqmx100, out
int errCode);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| errorCode | Specify the destination where the error number is to be returned. |

### Description

Creates new initial balance data.

- Returns the initial balance data identifier as a return value.
- Returns a negative number if unsuccessful.
- Stores the error number if the return destination is specified.

### Return value

Returns the data identifier.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |
| Not data | Data creation failed. |

### Reference

```
CDAQMX100::getClassMXBalanceList
CDAQMXBalanceList::create
```

## createDOMX100

### Syntax

```
int createDOMX100(DAQMX100 daqmx100, int * errorCode);
```

### Declaration

Visual Basic

```
Public Declare Function createDOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByRef errorCode As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function createDOMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByRef errorCode As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="createDOMX100")]
public static extern int createDOMX100(int daqmx100, out int
errorCode);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| errorCode | Specify the destination where the error number is to be returned. |

### Description

Creates new DO data.

- Returns the DO data identifier as a return value.
- Returns a negative number if unsuccessful.
- Stores the error number if the return destination is specified.

### Return value

Returns the data identifier.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |
| Not data | Data creation failed. |

### Reference

```
CDAQMX100::getClassMXDOList
CDAQMXDOList::create
```

## createTransmitMX100

### Syntax

```
int createTransmitMX100(DAQMX100 daqmx100, int * errCode);
```

### Declaration

Visual Basic

```
Public Declare Function createTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByRef errCode As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function createTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByRef errCode As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="createTransmitMX100")]
public static extern int createTransmitMX100(int daqmx100, out
int errCode);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| errorCode | Specify the destination where the error number is to be returned. |

### Description

Creates new transmission output data.

- Returns the transmission output data identifier as a return value.
- Returns a negative number if unsuccessful.
- Stores the error number if the return destination is specified.

### Return value

Returns the data identifier.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |
| Not data | Data creation failed. |

### Reference

```
CDAQMX100::getClassMXTransmitList
CDAQMXTransmitList::create
```

# deleteAOPWMMX100

## Syntax

```
int deleteAOPWMMX100(DAQMX100 daqmx100, int idAOPWM);
```

## Declaration

Visual Basic

```
Public Declare Function deleteAOPWMMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idAOPWM As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function deleteAOPWMMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idAOPWM As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="deleteAOPWMMX100")]
public static extern int deleteAOPWMMX100(int daqmx100, int
idAOPWM);
```

## Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idAOPWM | Specify the AO/PWM data identifier. |

## Description

Delete the AO/PWM data of the specified AO/PWM data identifier.

- If the data identifier is set to the constant for “Specify all data identifiers,” the entire list is initialized.

## Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

## Reference

```
CDAQMX100::getClassMXAOPWMList
CDAQMXAOPWMList::del
CDAQMXAOPWMList::initialize
```

## deleteBalanceMX100

### Syntax

```
int deleteBalanceMX100(DAQMX100 daqmx100, int idBalance);
```

### Declaration

Visual Basic

```
Public Declare Function deleteBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idBalance As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function deleteBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idBalance As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="deleteBalanceMX100")]
public static extern int deleteBalanceMX100(int daqmx100, int
idBalance);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idBalance | Specify the initial balance data identifier. |

### Description

Deletes the initial balance data of the specified initial balance data identifier.

- If the data identifier is set to the constant for “Specify all data identifiers,” the entire list is initialized.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::getClassMXBalanceList
CDAQMXBalanceList::del
CDAQMXBalanceList::initialize
```

# deleteDOMX100

## Syntax

```
int deleteDOMX100(DAQMX100 daqmx100, int idDO);
```

## Declaration

Visual Basic

```
Public Declare Function deleteDOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idDO As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function deleteDOMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idDO As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="deleteDOMX100")]
public static extern int deleteDOMX100(int daqmx100, int
idDO);
```

## Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idDO | Specify the DO data identifier. |

## Description

Deletes the DO data of the specified DO data identifier.

- If the data identifier is set to the constant for “Specify all data identifiers,” the entire list is initialized.

## Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

## Reference

```
CDAQMX100::getClassMXDOList
CDAQMXDOList::del
CDAQMXDOList::initialize
```

## deleteTransmitMX100

### Syntax

```
int deleteTransmitMX100(DAQMX100 daqmx100, int idTrans);
```

### Declaration

Visual Basic

```
Public Declare Function deleteTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idTrans As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function deleteTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idTrans As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="deleteTransmitMX100")]
public static extern int deleteTransmitMX100(int daqmx100, int
idTrans);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idTrans | Specify the transmission output data identifier. |

### Description

Deletes the transmission output data of the specified transmission output data identifier.

- If the data identifier is set to the constant for “Specify all data identifiers,” the entire list is initialized.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::getClassMXTransmitList
CDAQMXTransmitList::del
CDAQMXTransmitList::initialize
```

## displaySegmentMX100

### Syntax

```
int displaySegmentMX100(DAQMX100 daqmx100, int dispPattern0,
int dispPattern1, int dispType, int dispTime);
```

### Declaration

Visual Basic

```
Public Declare Function displaySegmentMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, dispPattern0 As Long,
dispPattern1 As Long, dispType As Long, dispTime As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function displaySegmentMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal dispPattern0 As
Integer, ByVal dispPattern1 As Integer, ByVal dispType As
Integer, ByVal dispTime As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="displaySegmentMX100")]
public static extern int displaySegmentMX100(int daqmx100, int
dispPattern0, int dispPattern1, int dispType, int dispTime);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| dispPattern0 | Specify the display pattern of segment number 0. |
| dispPattern1 | Specify the display pattern of segment number 1. |
| dispType | Specify the display format. |
| dispTime | Specify the display time. |

### Description

Sets the display of the 7-segment LED.

- Returns the display pattern prior to changes.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::displaySegmentMX100`

## formatCFMX100

### Syntax

```
int formatCFMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function formatCFMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function formatCFMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="formatCFMX100")]
public static extern int formatCFMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Formats the CF (Compact Flash) card.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::formatCF
```

## getItemAllMX100

### Syntax

```
int getItemAllMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function getItemAllMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function getItemAllMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="getItemAllMX100")]
public static extern int getItemAllMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the setup data collectively.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::getItemAll
```

## initBalanceMX100

### Syntax

```
int initBalanceMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function initBalanceMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function initBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="initBalanceMX100")]
public static extern int initBalanceMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Executes initial balancing.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::initBalance
```

## initDataChMX100

### Syntax

```
int initDataChMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function initDataChMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function initDataChMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="initDataChMX100")]
public static extern int initDataChMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Initializes the measured data of the specified channel number.

- Retrieval of measured data starts from the top of the FIFO.
- If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::initDataCh`

## initDataFIFOMX100

### Syntax

```
int initDataFIFOMX100(DAQMX100 daqmx100, int fifoNo);
```

### Declaration

Visual Basic

```
Public Declare Function initDataFIFOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal fifoNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function initDataFIFOMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal fifoNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="initDataFIFOMX100")]
public static extern int initDataFIFOMX100(int daqmx100, int
fifoNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |

### Description

Initializes the measured data of the specified FIFO number.

- Retrieval of measured data starts from the top of the FIFO.
- If the constant for “Specify all FIFO numbers” is specified for the FIFO numbers, all FIFOs are processed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::initDataFIFO
```

## initItemMX100

### Syntax

```
int initItemMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function initItemMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function initItemMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="initItemMX100")]
public static extern int initItemMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Initializes the stored setup data.

- Overwrites the stored field. Validity checks are not performed.
- The results of each retrieval function are not necessarily correct.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::initialize
```

## initSetValueMX100

### Syntax

```
int initSetValueMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function initSetValueMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function initSetValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="initSetValueMX100")]
public static extern int initSetValueMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Initializes settings.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX100::initSetValue`

## measDataChMX100

### Syntax

```
int measDataChMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function measDataChMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function measDataChMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="measDataChMX100")]
public static extern int measDataChMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the measured data of the specified channel number.

- If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.
- Advances one measurement point only.
- When combining FIFO specification and instantaneous value specification, the data order changes.
- First, the amount of retrievable data is retrieved and stored, and the first data is set as the current status data . Then, each time the function is called, the measurement point of the stored data advances by one, and the next data is set as the current status. When the last stored data is reached, the next retrievable amount of data is retrieved again.
- When retrieving data by communications, other status changes are performed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::measDataCh
```

## measDataFIFOMX100

### Syntax

```
int measDataFIFOMX100(DAQMX100 daqmx100, int fifoNo);
```

### Declaration

Visual Basic

```
Public Declare Function measDataFIFOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal fifoNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function measDataFIFOMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal fifoNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="measDataFIFOMX100")]
public static extern int measDataFIFOMX100(int daqmx100, int
fifoNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |

### Description

Retrieves the measured data of the specified FIFO number.

- If the constant for “Specify all FIFO numbers” is specified for the FIFO numbers, all FIFOs are processed.
- Advances one measurement point only.
- The channels in the FIFO get the same measurement point data.
- When combining channel specification and instantaneous value specification, the data order changes.
- First, the amount of retrievable data is retrieved and stored, and the first data is set as the current status data . Then, each time the function is called, the measurement point of the stored data advances by one, and the next data is set as the current status. When the last stored data is reached, the next retrievable amount of data is retrieved again.
- When retrieving data by communications, other status changes are performed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::measDataFIFO
```

## measInstChMX100

### Syntax

```
int measInstChMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function measInstChMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function measInstChMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="measInstChMX100")]
public static extern int measInstChMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Retrieve the instantaneous value of the specified channel number.

- If the constant for “Specify all channel numbers” is specified for the channel numbers, all channels are processed.
- Performs other status changes.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::measInstCh
```

## measInstFIFOMX100

### Syntax

```
int measInstFIFOMX100(DAQMX100 daqmx100, int fifoNo);
```

### Declaration

Visual Basic

```
Public Declare Function measInstFIFOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal fifoNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function measInstFIFOMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal fifoNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="measInstFIFOMX100")]
public static extern int measInstFIFOMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |

### Description

Retrieve the instantaneous value of the specified FIFO number.

- If the constant for “Specify all FIFO numbers” is specified for the FIFO numbers, all FIFOs are processed.
- Performs other status changes.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::measInstFIFO
```

## measStartMX100

### Syntax

```
int measStartMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function measStartMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Auto Function measStartMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="measStartMX100")]
public static extern int measStartMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Starts data acquisition.

- Starts the FIFO.
- If the FIFO is already started, it is continued.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::measStart
```

## measStopMX100

### Syntax

```
int measStopMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function measStopMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function measStopMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="measStopMX100")]
public static extern int measStopMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Stops data acquisition.

- Stops the FIFO and discards the acquired data.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::measStop
```

## openMX100

### Syntax

```
DAQMX100 openMX100(const char * strAddress, int * errorCode);
```

### Declaration

Visual Basic

```
Public Declare Function openMX100 Lib "DAQMX100"(ByVal
strAddress As String, ByRef errorCode As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function openMX100 Lib "DAQMX100"(ByVal
strAddress As String, ByRef errorCode As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="openMX100")]
public static extern int openMX100(byte[] strAddress, out int
errorCode);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| errorCode | Specify the destination where the error number is to be returned. |

### Description

Connects to the device with the address specified by the parameters.

- Creates a device descriptor and returns the value as a return value.
- Stores the error number if the return destination is specified.
- Initializes the stored data. Retrieves information about the status of the instrument such as setup data, channel information data, and stores the information.
- The specified string is, in general, an ASCII string.
- If unsuccessful, returns NULL in Visual C or 0 in Visual Basic, Visual Basic.NET/C#.

### Return value

Returns the device descriptor.

Error:

Creating descriptor is failure Failed to create the device descriptor.

### Reference

`CDAQMX100::open`

## readItemMX100

### Syntax

```
int readItemMX100(DAQMX100 daqmx100, int itemNo, char *
strItem, int lenItem, int * realLen);
```

### Declaration

Visual Basic

```
Public Declare Function readItemMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal itemNo As Long, ByVal strItem As
String, ByVal lenItem As Long, realLen As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function readItemMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal itemNo As Integer,
ByVal strItem As String, ByVal lenItem As Integer, ByRef
realLen As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="readItemMX100")]
public static extern int readItemMX100(int daqmx100, int
itemNo, byte[] strItem, int lenItem, out int realLen);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| itemNo | Specify the setup item number. |
| strItem | Specify the field where the string is to be stored. |
| lenItem | Specify the byte size of the field where the string is to be stored. |
| realLen | Specify the return destination for the length of the actual string. |

### Description

Stores the contents of the specified setup item as a string in the specified field.

- The string stored to the field includes the terminator (NULL).
- If the return destination is specified, returns the length of the actual string. The terminator is not included.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |
| Not Support | Unsupported setup item. |
| Not Data | The string storage field is insufficient. |

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::readItem
```

## reconstructMX100

### Syntax

```
int reconstructMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function reconstructMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function reconstructMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="reconstructMX100")]
public static extern int reconstructMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Reconfigures the system.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX100::reconstruct`

## sendConfigMX100

### Syntax

```
int sendConfigMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function sendConfigMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function sendConfigMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="sendConfigMX100")]
public static extern int sendConfigMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Sends the stored setup data.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX100::sendConfig`

## setAlarmMX100

### Syntax

```
int setAlarmMX100(DAQMX100 daqmx100, int chNo, int levelNo,
int iAlarmType, int value);
```

### Declaration

Visual Basic

```
Public Declare Function setAlarmMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal levelNo As Long,
ByVal iAlarmType As Long, ByVal value As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setAlarmMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer, ByVal iAlarmType As Integer, ByVal
value As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setAlarmMX100")]
public static extern int setAlarmMX100(int daqmx100, int chNo,
int levelNo, int iAlarmType, int value);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |
| iAlarmType | Specify the alarm type. |
| value | Specify the alarm value. |

### Description

Sets the alarm to the alarm level of the specified channel.

- Set according to the specified range type.
- The hysteresis is 0.
- The alarm value is specified with an integer excluding the decimal point.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setAlarm`

## setAlarmValueMX100

### Syntax

```
int setAlarmValueMX100(DAQMX100 daqmx100, int chNo, int
levelNo, int iAlarmType, int valueON, int valueOFF);
```

### Declaration

Visual Basic

```
Public Declare Function setAlarmValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
levelNo As Long, ByVal iAlarmType As Long, ByVal valueON As
Long, ByVal valueOFF As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setAlarmValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer, ByVal iAlarmType As Integer, ByVal
valueON As Integer, ByVal valueOFF As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setAlarmValueMX100")]
public static extern int setAlarmValueMX100(int daqmx100, int
chNo, int levelNo, int iAlarmType, int valueON, int valueOFF);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |
| iAlarmType | Specify the alarm type. |
| valueON | Specify the threshold level (ON value) for alarm activation. |
| valueOFF | Specify the threshold level (OFF value) for alarm termination. |

### Description

Sets the alarm to the alarm level of the specified channel.

- Set according to the specified range type.
- Hysteresis is specified by the threshold of alarm activation and release.
- The alarm value is specified with an integer excluding the decimal point.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setAlarm`

## setBurnoutMX100

### Syntax

```
int setBurnoutMX100(DAQMX100 daqmx100, int chNo, int
iBurnout);
```

### Declaration

Visual Basic

```
Public Declare Function setBurnoutMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal iBurnout As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setBurnoutMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal iBurnout As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setBurnoutMX100")]
public static extern int setBurnoutMX100(int daqmx100, int
chNo, int iBurnout);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| iBurnout | Specify the burnout type. |

### Description

Sets the burnout type to the specified channel numbers.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setBurnout`

## setCFWriteModeMX100

### Syntax

```
int setCFWriteModeMX100(DAQMX100 daqmx100, int iCFWriteMode);
```

### Declaration

Visual Basic

```
Public Declare Function setCFWriteModeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal iCFWriteMode As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setCFWriteModeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal iCFWriteMode As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setCFWriteModeMX100")]
public static extern int setCFWriteModeMX100(int daqmx100, int
iCFWriteMode);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| iCFWriteMode | Specify the CF write mode. |

### Description

Sets the CF write mode.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setCFWriteMode`

## setChatFilterMX100

### Syntax

```
int setChatFilterMX100(DAQMX100 daqmx100, int chNo, int
bChatFilter);
```

### Declaration

Visual Basic

```
Public Declare Function setChatFilterMX100 Lib "DAQMX100"
(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal bChatFilter
As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChatFilterMX100 Lib "DAQMX100"
(ByVal daqmx100 As Integer, ByVal chNo As Integer, ByVal
bChatFilter As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll", CharSet=CharSet.Auto,
EntryPoint="setChatFilterMX100")]
public static extern int setChatFilterMX100(int daqmx100, int
chNo, int iFilter);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| bChatFilter | Specify chattering filter using a Boolean value. |

### Description

Sets the chattering filter on the channel of the specified channel number.

### Return value

Returns an error number.

Errors:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setChatFilter`

## setChCommentMX100

### Syntax

```
int setChCommentMX100(DAQMX100 daqmx100, int chNo, const char
* strComment);
```

### Declaration

Visual Basic

```
Public Declare Function setChCommentMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal strComment As
String) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChCommentMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal strComment As String) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setChCommentMX100")]
public static extern int setChCommentMX100(int daqmx100, int
chNo, byte[] strComment);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| strTag | Specify the comment. |

### Description

Sets the comment to the specified channel number.

- The specified string is, in general, an ASCII string.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::setChComment
```

## setChDELTAMX100

### Syntax

```
int setChDELTAMX100(DAQMX100 daqmx100, int chNo, int refChNo,
int iRange);
```

### Declaration

Visual Basic

```
Public Declare Function setChDELTAMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal refChNo As Long,
ByVal iRange As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChDELTAMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal refChNo As Integer, ByVal iRange As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setChDELTAMX100")]
public static extern int setChDELTAMX100(int daqmx100, int
chNo, int refChNo, int iRange);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| refChNo | Specify the reference channel using a channel number. |
| iRange | Specify the range type for the input of the target channel. |

### Description

Sets the specified channel number to difference computation.

- If the range type is set to the reference range, the measurement range of the target channel is set to the same range as the reference channel.
- The span, scale, and alarm are set to the default values.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setChDELTA`

## setChKindMX100

### Syntax

```
int setChKindMX100(DAQMX100 daqmx100, int chNo, int iKind, int
refChNo);
```

### Declaration

Visual Basic

```
Public Declare Function setChKindMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal iKind As Long,
ByVal refChNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChKindMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal iKind As Integer, ByVal refChNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setChKindMX100")]
public static extern int setChKindMX100(int daqmx100, int
chNo, int iKind, int refChNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| iKind | Specify the channel type. |
| refChNo | Specify the reference channel using a channel number. |

### Description

Sets the channel type to the specified channel numbers.

- The range, span, scale, alarm and other setup items are set to the default values.
- The reference channel specification is valid when the channel type is difference between channels, remote RJC, AO, or PWM.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setChKind`

## setChoiceMX100

### Syntax

```
int setChoiceMX100(DAQMX100 daqmx100, int outputNo, int
idleChoice, int errorChoice, int presetValue);
```

### Declaration

Visual Basic

```
Public Declare Function setChoiceMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal outputNo As Long, ByVal idleChoice As
Long, ByVal errorChoice As Long, ByVal presetValue As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChoiceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal outputNo As
Integer, ByVal idleChoice As Integer, ByVal errorChoice As
Integer, ByVal presetValue As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setChoiceMX100")]
public static extern int setChoiceMX100(int daqmx100, int
outputNo, int idleChoice, int errorChoice, int presetValue);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| outputNo | Specify the output channel (AO/PWM data number). |
| idleChoice | Specify the selected value when idle. |
| errorChoice | Specify the selected value when an error occurs. |
| presetValue | Specify the output value if the selected value is the “specified value.” |

### Description

Sets the output during idling and when errors occur for the specified output channel.

- The user-specified output value specifies an integer excluding the decimal point positon.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setChoice`

## setChRRJCMX100

### Syntax

```
int setChRRJCMX100(DAQMX100 daqmx100, int chNo, int refChNo);
```

### Declaration

Visual Basic

```
Public Declare Function setChRRJCMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal refChNo As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChRRJCMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal refChNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setChRRJCMX100")]
public static extern int setChRRJCMX100(int daqmx100, int
chNo, int refChNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| refChNo | Specify the reference channel using a channel number. |

### Description

Sets the remote RJC on the specified channel number.

- The span and alarm are set to the default values.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::setChRRJC
```

## setChTagMX100

### Syntax

```
int setChTagMX100(DAQMX100 daqmx100, int chNo, const char *
strTag);
```

### Declaration

Visual Basic

```
Public Declare Function setChTagMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal strTag As String)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChTagMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal strTag As String) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setChTagMX100")]
public static extern int setChTagMX100(int daqmx100, int chNo,
int byte[] strTag);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| strTag | Specify the tag. |

### Description

Sets the tag to the specified channel number.

- The specified string is, in general, an ASCII string.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setChTag`

## setChUnitMX100

### Syntax

```
int setChUnitMX100(DAQMX100 daqmx100, int chNo, const char *
strUnit);
```

### Declaration

Visual Basic

```
Public Declare Function setChUnitMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal strUnit As String)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChUnitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal strUnit As String) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setChUnitMX100")]
public static extern int setChUnitMX100(int daqmx100, int
chNo, byte[] strUnit);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| strUnit | Specify the unit name. |

### Description

Sets the unit name to the specified channel number.

- The specified string is, in general, an ASCII string.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setChUnit`

## setDateTimeNowMX100

### Syntax

```
int setDateTimeNowMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function setDateTimeNowMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setDateTimeNowMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setDateTimeNowMX100")]
public static extern int setDateTimeNowMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Sets the current date/time of the PC.

- Milliseconds are discarded.
- The response to this function may take one second or longer.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX100::setDateTime`

## setDeenergizeMX100

### Syntax

```
int setDeenergizeMX100(DAQMX100 daqmx100, int doNo, int
bDeenergize);
```

### Declaration

Visual Basic

```
Public Declare Function setDeenergizeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal doNo As Long, ByVal
bDeenergize As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setDeenergizeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal doNo As Integer,
ByVal bDeenergize As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setDeenergizeMX100")]
public static extern int setDeenergizeMX100(int daqmx100, int
doNo, int bDeenergize);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| doNo | Specify the data number. |
| bDeenergize | Specify de-energize using a valid/invalid value. |

### Description

Sets de-energize on the specified DO data number of the specified DO channel.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setDeenergize`

## setDoubleAlarmMX100

### Syntax

```
int setDoubleAlarmMX100(DAQMX100 daqmx100, int chNo, int
levelNo, int iAlarmType, double value);
```

### Declaration

Visual Basic

```
Public Declare Function setDoubleAlarmMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
levelNo As Long, ByVal iAlarmType As Long, ByVal value As
Double) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setDoubleAlarmMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer, ByVal iAlarmType As Integer, ByVal
value As Double) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setDoubleAlarmMX100")]
public static extern int setDoubleAlarmMX100(int daqmx100, int
chNo, int levelNo, int iAlarmType, double value);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |
| iAlarmType | Specify the alarm type. |
| value | Specify the alarm value. |

### Description

Sets the alarm to the alarm level of the specified channel.

- If the differences from the specified alarm value are excluded, it is the same as the setAlarmMX100 function.
- The alarm value is specified with a floating point number including the decimal point position.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::setAlarm
```

## setDoubleAlarmValueMX100

### Syntax

```
int setDoubleAlarmValueMX100(DAQMX100 daqmx100, int chNo, int
levelNo, int iAlarmType, double valueON, double valueOFF)
```

### Declaration

Visual Basic

```
Public Declare Function setDoubleAlarmValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
levelNo As Long, ByVal iAlarmType As Long, ByVal valueON As
Double, ByVal valueOFF As Double) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setDoubleAlarmValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer, ByVal iAlarmType As Integer, ByVal
valueON As Double, ByVal valueOFF As Double) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setDoubleAlarmValueMX100")]
public static extern int setDoubleAlarmValueMX100(int
daqmx100, int chNo, int levelNo, int iAlarmType, double
valueON, double valueOFF);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |
| iAlarmType | Specify the alarm type. |
| valueON | Specify the threshold level (ON value) for alarm activation. |
| valueOFF | Specify the threshold level (OFF value) for alarm termination. |

### Description

Sets the alarm to the alarm level of the specified channel.

- If the differences from the specified threshold value are excluded, it is the same as the setAlarmValueMX100 function.
- The threshold value is specified with a floating point number including the decimal point position.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setAlarm`

## setDoubleChoiceMX100

### Syntax

```
int setDoubleChoiceMX100(DAQMX100 daqmx100, int outputNo, int
idleChoice, int errorChoice, double presetValue);
```

### Declaration

Visual Basic

```
Public Declare Function setDoubleChoiceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal outputNo As Long,
ByVal idleChoice As Long, ByVal errorChoice As Long, ByVal
presetValue As Double) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setDoubleChoiceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal outputNo As
Integer, ByVal idleChoice As Integer, ByVal errorChoice As
Integer, ByVal presetValue As Double) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setDoubleChoiceMX100")]
public static extern int setDoubleChoiceMX100(int daqmx100,
int outputNo, int idleChoice, int errorChoice, double
presetValue);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| outputNo | Specify the output channel (AO/PWM data number). |
| idleChoice | Specify the selected value when idling. |
| errorChoice | Specify the selected value when an error occurs. |
| presetValue | Specify the output value if the selected value is the “specified value.” |

### Description

Sets the output during idling and when errors occur for the specified output channel.

- If the differences from the user specified output value are excluded, it is the same as the setChoiceMX100 function.
- The user-specified output value specifies a floating point value including the decimal point position.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::setChoice
```

## setDoubleHisterisysMX100

### Syntax

```
int setDoubleHisterisysMX100(DAQMX100 daqmx100, int chNo, int
levelNo, double histerisys);
```

### Declaration

Visual Basic

```
Public Declare Function setDoubleHisterisysMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
levelNo As Long, ByVal histerisys As Double) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setDoubleHisterisysMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer, ByVal histerisys As Double) As
Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setDoubleHisterisysMX100")]
public static extern int setDoubleHisterisysMX100(int
daqmx100, int chNo, int levelNo, double histerisys);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |
| histerisys | Specify the hysteresis. |

### Description

Sets the hysteresis for the alarm level of the specified channel number.

- If the differences from the specified hysteresis value are excluded, it is the same as the setHysterisisMX100 function.
- The hysteresis value is specified with a floating point number including the decimal point position.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::setHisterisys
```

## setDoubleScaleMX100

### Syntax

```
int setDoubleScaleMX100(DAQMX100 daqmx100, int chNo, double
scaleMin, double scaleMax, int scalePoint);
```

### Declaration

Visual Basic

```
Public Declare Function setDoubleScaleMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
scaleMin As Double, ByVal scaleMax As Double, ByVal scalePoint
As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setDoubleScaleMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal scaleMin As Double, ByVal scaleMax As Double, ByVal
scalePoint As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setDoubleScaleMX100")]
public static extern int setDoubleScaleMX100(int daqmx100, int
chNo, double scaleMin, double scaleMax, int scalePoint);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the scale to the specified channel number.

- If the differences from the specified scale value are excluded, it is the same as the setScaleMX100 function.
- The scale value is specified with a floating point number including the decimal point position.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setScale`

## setDoubleSpanMX100

### Syntax

```
int setDoubleSpanMX100(DAQMX100 daqmx100, int chNo, double
spanMin, double spanMax);
```

### Declaration

Visual Basic

```
Public Declare Function setDoubleSpanMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
spanMin As Double, ByVal spanMax As Double) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setDoubleSpanMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal spanMin As Double, ByVal spanMax As Double) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setDoubleSpanMX100")]
public static extern int setDoubleSpanMX100(int daqmx100, int
chNo, double spanMin, double spanMax);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the span to the specified channel number.

- If the differences from the specified span value are excluded, it is the same as the setSpanMX100 function.
- The span value is specified with a floating point number including the decimal point position.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setSpan`

## setFilterMX100

### Syntax

```
int setFilterMX100(DAQMX100 daqmx100, int chNo, int iFilter);
```

### Declaration

Visual Basic

```
Public Declare Function setFilterMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal iFilter As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setFilterMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal iFilter As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setFilterMX100")]
public static extern int setFilterMX100(int daqmx100, int
chNo, int iFilter);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| iFilter | Specify the filter coefficient. |

### Description

Sets the filter coefficient to the specified channel number.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::setFilter
```

## setHisterisysMX100

### Syntax

```
int setHisterisysMX100(DAQMX100 daqmx100, int chNo, int
levelNo, int histerisys);
```

### Declaration

Visual Basic

```
Public Declare Function setHisterisysMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
levelNo As Long, ByVal histerisys As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setHisterisysMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer, ByVal histerisys As Integer) As
Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setHisterisysMX100")]
public static extern int setHisterisysMX100(int daqmx100, int
chNo, int levelNo, int histerisys);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |
| histerisys | Specify the hysteresis. |

### Description

Sets the hysteresis for the alarm level of the specified channel number.

- The hysteresis is specified with an integer excluding the decimal point.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setHisterisys`

## setHoldMX100

### Syntax

```
int setHoldMX100(DAQMX100 daqmx100, int doNo, int bHold);
```

### Declaration

Visual Basic

```
Public Declare Function setHoldMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal doNo As Long, ByVal bHold As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function setHoldMX100 Lib "DAQMX100"(ByVal
daqmx100 As Integer, ByVal doNo As Integer, ByVal bHold As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setHoldMX100")]
public static extern int setHoldMX100(int daqmx100, int doNo,
int bHold);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| doNo | Specify the data number. |
| bHold | Specify hold using a valid/invalid value. |

### Description

Sets hold on the specified DO data number of the specified DO channel.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::setHold
```

## setIntegralMX100

### Syntax

```
int setIntegralMX100(DAQMX100 daqmx100, int moduleNo, int
iIntegral);
```

### Declaration

Visual Basic

```
Public Declare Function setIntegralMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal moduleNo As Long, ByVal iIntegral As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setIntegralMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer, ByVal iIntegral As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setIntegralMX100")]
public static extern int setIntegralMX100(int daqmx100, int
moduleNo, int iIntegral);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |
| iIntegral | Specify the type of A/D integral time. |

### Description

Sets the A/D integral time type on the module of the specified module number.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setIntegral`

## setIntervalMX100

### Syntax

```
int setIntervalMX100(DAQMX100 daqmx100, int moduleNo, int
iInterval);
```

### Declaration

Visual Basic

```
Public Declare Function setIntervalMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal moduleNo As Long, ByVal iInterval As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setIntervalMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer, ByVal iInterval As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setIntervalMX100")]
public static extern int setIntervalMX100(int daqmx100, int
moduleNo, int iInterval);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |
| iInterval | Specify the interval type. |

### Description

Sets the interval type on the module of the specified module number.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setInterval`

## setItemAllMX100

### Syntax

```
int setItemAllMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function setItemAllMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setItemAllMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setItemAllMX100")]
public static extern int setItemAllMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Sends the setup data collectively.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX100::setItemAll`

## setOutputTypeMX100

### Syntax

```
int setOutputTypeMX100(DAQMX100 daqmx100, int outputNo, int
iOutput);
```

### Declaration

Visual Basic

```
Public Declare Function setOutputTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal outputNo As Long,
ByVal iOutput As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setOutputTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal outputNo As
Integer, ByVal iOutput As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setOutputTypeMX100")]
public static extern int setOutputTypeMX100(int daqmx100, int
outputNo, int iOutput);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| outputNo | Specify the output channel (AO/PWM data number). |
| iOutput | Specify the output type. |

### Description

Sets the output type on the specified channel number.

- The specified channel name setting item is initialized to the default value.
- Data created with data manipulation is not changed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setOutputType`

## setPulseTimeMX100

### Syntax

```
int setPulseTimeMX100(DAQMX100 daqmx100, int outputNo, int
pulseTime);
```

### Declaration

Visual Basic

```
Public Declare Function setPulseTimeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal outputNo As Long, ByVal pulseTime As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setPulseTimeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal outputNo As
Integer, ByVal pulseTime As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setPulseTimeMX100")]
public static extern int setPulseTimeMX100(int daqmx100, int
outputNo, int pulseTime);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| outputNo | Specify the output channel (PWM data number). |
| pulserTime | Specify the integer multiple of the pulse interval. |

### Description

Sets the integer multiple of the pulse interval on the specified channel number.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setPulseTime`

## setRangeMX100

### Syntax

```
int setRangeMX100(DAQMX100 daqmx100, int chNo, int iRange);
```

### Declaration

Visual Basic

```
Public Declare Function setRangeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal iRange As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function setRangeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal iRange As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setRangeMX100")]
public static extern int setRangeMX100(int daqmx100, int chNo,
int iRange);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| iRange | Specify the range type. |

### Description

Sets the range on the specified channel number.

- The specified channel name setting item is initialized to the default value.
- Data created with data manipulation is not changed.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setRange`

## setRefAlarmMX100

### Syntax

```
int setRefAlarmMX100(DAQMX100 daqmx100, int doNo, int refChNo,
int levelNo, int bValid);
```

### Declaration

Visual Basic

```
Public Declare Function setRefAlarmMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal doNo As Long, ByVal refChNo As Long,
ByVal levelNo As Long, ByVal bValid As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setRefAlarmMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal doNo As Integer,
ByVal refChNo As Integer, ByVal levelNo As Integer, ByVal
bValid As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setRefAlarmMX100")]
public static extern int setRefAlarmMX100(int daqmx100, int
doNo, int refChNo, int levelNo, int bValid);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| doNo | Specify the data number. |
| refChNo | Specify the reference channel using a channel number. |
| levelNo | Specify the alarm level. |
| bValid | Specify the Boolean value. |

### Description

Sets the reference alarm on the specified DO data number of the specified DO channel.

- The reference alarm is specified by channel number and alarm level.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setRefAlarm`

## setRJCTypeMX100

### Syntax

```
int setRJCTypeMX100(DAQMX100 daqmx100, int chNo, int iRJCType,
int volt);
```

### Declaration

Visual Basic

```
Public Declare Function setRJCTypeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal iRJCType As Long,
ByVal volt As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setRJCTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal iRJCType As Integer, ByVal volt As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setRJCTypeMX100")]
public static extern int setRJCTypeMX100(int daqmx100, int
chNo, int iRJCType, int volt);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| iRJCType | Specify the RJC type. |
| volt | Specify the RJC voltage. |

### Description

Sets the RJC association on the specified channel number.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setRJCType`

## setScaleMX100

### Syntax

```
int setScaleMX100(DAQMX100 daqmx100, int chNo, int scaleMin,
int scaleMax, int scalePoint);
```

### Declaration

Visual Basic

```
Public Declare Function setScaleMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal scaleMin As Long,
ByVal scaleMax As Long, ByVal scalePoint As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setScaleMX100 Lib
"DAQMX100"(ByVal daqmx100 As Intger, ByVal chNo As Intger,
ByVal scaleMin As Intger, ByVal scaleMax As Intger, ByVal
scalePoint As Intger) As Intger
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setScaleMX100")]
public static extern int setScaleMX100(int daqmx100, int chNo,
int scaleMin, int scaleMax, int scalePoint);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| scaleMin | Specify the scale minimum. |
| scaleMax | Specify the scale maximum. |
| scalePoint | Specify the decimal point position for scaling. |

### Description

Sets the scale to the specified channel number.

- Set according to the specified range type.
- If the scale value is outside the range, it is rounded to a possible value.
- If the minimum and maximum values are equal, the scale is “No scale.”
- The scale value is specified with an integer excluding the decimal point.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::setScale
```

## setSpanMX100

### Syntax

```
int setSpanMX100(DAQMX100 daqmx100, int chNo, int spanMin, int
spanMax);
```

### Declaration

Visual Basic

```
Public Declare Function setSpanMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal spanMin As Long,
ByVal spanMax As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setSpanMX100 Lib "DAQMX100"(ByVal
daqmx100 As Integer, ByVal chNo As Integer, ByVal spanMin As
Integer, ByVal spanMax As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setSpanMX100")]
public static extern int setSpanMX100(int daqmx100, int chNo,
int spanMin, int spanMax);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| spanMin | Specify the span minimum. |
| spanMax | Specify the span maximum. |

### Description

Sets the span to the specified channel number.

- Set according to the specified range type.
- If the span value is outside the range, it is rounded to a possible value.
- If the minimum and maximum values are equal, the default value is set.
- The span value is specified with an integer excluding the decimal point.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setSpan`

## setUnitNoMX100

### Syntax

```
int setUnitNoMX100(DAQMX100 daqmx100, int unitNo);
```

### Declaration

Visual Basic

```
Public Declare Function setUnitNoMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal unitNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setUnitNoMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal unitNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setUnitNoMX100")]
public static extern int setUnitNoMX100(int daqmx100, int
unitNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| unitNo | Specify the unit number. |

### Description

Sets the unit number.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::setUnitNo
```

## setUnitTempMX100

### Syntax

```
int setUnitTempMX100(DAQMX100 daqmx100, int iTempUnit);
```

### Declaration

Visual Basic

```
Public Declare Function setUnitTempMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal iTempUnit As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setUnitTempMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal iTempUnit As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="setUnitTempMX100")]
public static extern int setUnitTempMX100(int daqmx100, int
iTempUnit);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| iTempUnit | Specify the temperature unit type. |

### Description

Sets the temperature unit type.

### Return value

Returns an error number.

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::setUnitTemp`

## switchBackupMX100

### Syntax

```
int switchBackupMX100(DAQMX100 daqmx100, int bBackup);
```

### Declaration

Visual Basic

```
Public Declare Function switchBackupMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal bBackup As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function switchBackupMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal bBackup As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="switchBackupMX100")]
public static extern int switchBackupMX100(int daqmx100, int
bBackup);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| bBackup | Specify the Boolean value. |

### Description

Sets backup.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::switchBackup
```

## switchDOMX100

### Syntax

```
int switchDOMX100(DAQMX100 daqmx100, int idDO, int bONOFF);
```

### Declaration

Visual Basic

```
Public Declare Function switchDOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idDO As Long, ByVal bONOFF As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function switchDOMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idDO As Integer,
ByVal bONOFF As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="switchDOMX100")]
public static extern int switchDOMX100(int daqmx100, int idDO,
int bONOFF);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idDO | Specify the DO data identifier. |
| bONOFF | Specify ON/OFF using a Boolean value. |

### Description

Sends the DO data of the specified DO data identifier.

- Changes the valid channels of the DO data to the specified ON/OFF value and sends it.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::switchDO`

## switchTransmitMX100

### Syntax

```
int switchTransmitMX100(DAQMX100 daqmx100, int idTrans, int
iTransmit);
```

### Declaration

Visual Basic

```
Public Declare Function switchTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idTrans As Long,
ByVal iTransmit As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function switchTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idTrans As
Integer, ByVal iTransmit As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="switchTransmitMX100")]
public static extern int switchTransmitMX100(int daqmx100, int
idTrans, int iTransmit);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idTrans | Specify the transmission output data identifier. |
| iTransmit | Specify the transmission status. |

### Description

Sends the transmission output data of the specified transmission output data identifier.

- Changes all channels of the transmission output data to the specified transmission status and sends it.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::switchTransmit`

## updateAOPWMDataMX100

### Syntax

```
int updateAOPWMDataMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function updateAOPWMDataMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateAOPWMDataMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="updateAOPWMDataMX100")]
public static extern int updateAOPWMDataMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Updates the stored AO/PWM data and transmission output data.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX100::updateAOPWMData`

## updateBalanceMX100

### Syntax

```
int updateBalanceMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function updateBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateBalanceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="updateBalanceMX100")]
public static extern int updateBalanceMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Updates the stored initial balance data.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::updateBalance
```

## updateConfigMX100

### Syntax

```
int updateConfigMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function updateConfigMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateConfigMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="updateConfigMX100")]
public static extern int updateConfigMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Updates the stored setup data.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::updateConfig
```

## updateDODataMX100

### Syntax

```
int updateDODataMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function updateDODataMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateDODataMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="updateDODataMX100")]
public static extern int updateDODataMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Updates the stored DO data.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX100::updateDOData`

## updateInfoChMX100

### Syntax

```
int updateInfoChMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function updateInfoChMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateInfoChMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="updateInfoChMX100")]
public static extern int updateInfoChMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Changes the channel information data of the specified channel number.

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQMX100::updateInfoCh`

## updateOutputMX100

### Syntax

```
int updateOutputMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function updateOutputMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateOutputMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="updateOutputMX100")]
public static extern int updateOutputMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Updates the stored output channel data.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::updateOutput
```

## updateStatusMX100

### Syntax

```
int updateStatusMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function updateStatusMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateStatusMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="updateStatusMX100")]
public static extern int updateStatusMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Updates the stored status data.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQMX100::updateStatus
```

## updateSystemMX100

### Syntax

```
int updateSystemMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function updateSystemMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateSystemMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="updateSystemMX100")]
public static extern int updateSystemMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Updates the stored system configuration data.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQMX100::updateSystem`

## writeItemMX100

### Syntax

```
int writeItemMX100(DAQMX100 daqmx100, int itemNo, const char *
strItem);
```

### Declaration

Visual Basic

```
Public Declare Function writeItemMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal itemNo As Long, ByVal strItem As
String, ByVal) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function writeItemMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal itemNo As Integer,
ByVal strItem As String, ByVal) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="writeItemMX100")]
public static extern int writeItemMX100(int daqmx100, int
itemNo, byte[] strItem);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| itemNo | Specify the setup item number. |
| strItem | Specify the item contents using strings. |

### Description

Writes the specified string contents to the specified setting item.

- Overwrites the stored field. Validity checks are not performed.
- The results of each retrieval function are not necessarily correct.
- The specified string is, in general, an ASCII string.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::writeItem
```

# 17.2 Details of Function - MX00 (Visual C/Visual Basic/ Visual Basic.NET/C#) - Retrieval Functions

This section describes the MX100 functions that are used in C and Visual Basic. The functions are listed in alphabetical order by the function name.

For details on constants and types, see chapter 18.
For MX100 terminology, see appendix 1.

Most functions return an error number as a return value. Error number 0 is returned if there is no error.
See page v “Conventions Used in This Manual” for more information about return values.

“The value does not exist” means the specification of the function is different, the range is different, the field does not exist, or retrieval failed.

In C#, the class (DAQMX100) member contains the declarations.

## addressPartMX100

### Syntax

```
int addressPartMX100(unsigned int address, int index);
```

### Declaration

Visual Basic

```
Public Declare Function addressPartMX100 Lib "DAQMX100"(ByVal
address As Long, ByVal index As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function addressPartMX100 Lib
"DAQMX100"(ByVal address As Integer, ByVal index As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="addressPartMX100")]
public static extern int addressPartMX100(int address, int
index);
```

### Parameters

| | |
|---|---|
| address | Specify the IP address. |
| index | Specify the position of the part. |

### Description

Gets the byte value of the portion of the specified IP address.

- Returns the byte value of the specified part position.
- The part position is specified with the index value (starting from 0) in units of bytes. The range is from 0 to 3.
- Returns 0 if it does not exist.

### Return value

Returns the byte value.

### Reference

`CDAQMXNetInfo::getPart`

## alarmDoubleHisterisysMX100

### Syntax

```
double alarmDoubleHisterisysMX100(DAQMX100 daqmx100, int chNo,
int levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function alarmDoubleHisterisysMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
levelNo As Long) As Double
```

Visual Basic.NET

```
Public Declare Ansi Function alarmDoubleHisterisysMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer) As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmDoubleHisterisysMX100")]
public static extern double alarmDoubleHisterisysMX100(int
daqmx100, int chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel number and alarm level hysteresis from the stored current channel setting data.

- The return value is a floating point number including the decimal point position.
- Returns 0.0 if it does not exist.

### Return value

Returns the hysteresis.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getDoubleHisterisys
```

## alarmDoubleValueOFFMX100

### Syntax

```
double alarmDoubleValueOFFMX100(DAQMX100 daqmx100, int chNo,
int levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function alarmDoubleValueOFFMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
levelNo As Long) As Double
```

Visual Basic.NET

```
Public Declare Ansi Function alarmDoubleValueOFFMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer) As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmDoubleValueOFFMX100")]
public static extern double alarmDoubleValueOFFMX100(int
daqmx100, int chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel number and alarm level alarm value (OFF) from the stored current channel setting data.

- The return value is a floating point number including the decimal point position.
- Returns 0.0 if it does not exist.

### Return value

Returns the alarm value (OFF value).

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getDoubleAlarmOFF
```

## alarmDoubleValueONMX100

### Syntax

```
double alarmDoubleValueONMX100(DAQMX100DAQMX100 daqmx100, int
chNo, int levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function alarmDoubleValueONMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
levelNo As Long) As Double
```

Visual Basic.NET

```
Public Declare Ansi Function alarmDoubleValueONMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer) As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmDoubleValueONMX100")]
public static extern double alarmDoubleValueONMX100(int
daqmx100, int chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel number and alarm level alarm value (ON) from the stored current channel setting data.

- The return value is a floating point number including the decimal point position.
- Returns 0.0 if it does not exist.

### Return value

Returns the alarm value (ON value).

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getDoubleAlarmON
```

## alarmHisterisysMX100

### Syntax

```
int alarmHisterisysMX100(DAQMX100 daqmx100, int chNo, int
levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function alarmHisterisysMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
levelNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function alarmHisterisysMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmHisterisysMX100")]
public static extern int alarmHisterisysMX100(int daqmx100,
int chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel number and alarm level hysteresis from the stored current channel setting data.

- The return value is an integer excluding the decimal point position.
- Returns 0 if it does not exist.

### Return value

Returns the hysteresis.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getHisterisys
```

## alarmMaxLengthMX100

### Syntax

```
int alarmMaxLengthMX100(void);
```

### Declaration

Visual Basic

```
Public Declare Function alarmMaxLengthMX100 Lib "DAQMX100"()
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function alarmMaxLengthMX100 Lib
"DAQMX100"() As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmMaxLengthMX100")]
public static extern int alarmMaxLengthMX100();
```

### Description

Gets the maximum length of the alarm type.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

```
CDAQMXDataInfo::getMaxLenAlarmName
```

## alarmTypeMX100

### Syntax

```
int alarmTypeMX100(DAQMX100 daqmx100, int chNo, int levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function alarmTypeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal levelNo As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function alarmTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmTypeMX100")]
public static extern int alarmTypeMX100(int daqmx100, int
chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel number and alarm level alarm type from the stored current channel setting data.

- If it does not exist, “No alarm” is returned.

### Return value

Returns the alarm type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getAlarmType
CDAQMXItemConfig::getClassMXChConfig
```

## alarmValueOFFMX100

### Syntax

```
int alarmValueOFFMX100(DAQMX100 daqmx100, int chNo, int
levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function alarmValueOFFMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
levelNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function alarmValueOFFMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmValueOFFMX100")]
public static extern int alarmValueOFFMX100(int daqmx100, int
chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel number and alarm level alarm value (OFF) from the stored current channel setting data.

- The return value is an integer excluding the decimal point position.
- Returns 0 if it does not exist.

### Return value

Returns the alarm value (OFF value).

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getAlarmValueOFF
CDAQMXItemConfig::getClassMXChConfig
```

## alarmValueONMX100

### Syntax

```
int alarmValueONMX100(DAQMX100 daqmx100, int chNo, int
levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function alarmValueONMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal levelNo As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function alarmValueONMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmValueONMX100")]
public static extern int alarmValueONMX100(int daqmx100, int
chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel number and alarm level alarm value (ON) from the stored current channel setting data.

- The return value is an integer excluding the decimal point position.
- Returns 0 if it does not exist.

### Return value

Returns the alarm value (ON value).

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getAlarmValueON
CDAQMXItemConfig::getClassMXChConfig
```

## channelBalanceValidMX100

### Syntax

```
int channelBalanceValidMX100(DAQMX100 daqmx100, int
balanceNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelBalanceValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal balanceNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelBalanceValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal balanceNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelBalanceValidMX100")]
public static extern int channelBalanceValidMX100(int
daqmx100, int balanceNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| balanceNo | Specify the initial balance data number. |

### Description

Gets valid/invalid for the specified initial balance data number from the stored current channel setting data.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXBalanceData::getBalanceValid
CDAQMXItemConfig::getClassMXBalanceData
```

## channelBalanceValueMX100

### Syntax

```
int channelBalanceValueMX100(DAQMX100 daqmx100, int
balanceNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelBalanceValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal balanceNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelBalanceValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal balanceNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelBalanceValueMX100")]
public static extern int channelBalanceValueMX100(int
daqmx100, int balanceNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| balanceNo | Specify the initial balance data number. |

### Description

Gets the initial balance value for the specified initial balance data number from the stored current channel setting data.

- Returns 0 if it does not exist.

### Return value

Returns the initial balance value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXBalanceData::getBalanceValue
CDAQMXItemConfig::getClassMXBalanceData
```

## channelBurnoutMX100

### Syntax

```
int channelBurnoutMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelBurnoutMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelBurnoutMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelBurnoutMX100")]
public static extern int channelBurnoutMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified channel number and burnout type from the stored current channel setting data.

- If it does not exist, Undetected is returned.

### Return value

Returns the burnout type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getBurnout
CDAQMXItemConfig::getClassMXChConfig
```

## channelChatFilterMX100

### Syntax

```
int channelChatFilterMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelChatFilterMX100 Lib "DAQMX100"
(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelChatFilterMX100 Lib
"DAQMX100" (ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll", CharSet=CharSet.Auto,
EntryPoint="channelChatFilterMX100")]
public static extern int channelChatFilterMX100(int daqmx100,
int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the chattering filter value of the specified channel from the stored current channel setting data.

### Return value

Returns a Boolean value.

If it does not exist, Invalid is returned.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::isChatFilter
CDAQMXItemConfig::getClassMXChConfig
```

## channelDeenergizeMX100

### Syntax

```
int channelDeenergizeMX100(DAQMX100 daqmx100, int doNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelDeenergizeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal doNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelDeenergizeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal doNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelDeenergizeMX100")]
public static extern int channelDeenergizeMX100(int daqmx100,
int doNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| doNo | Specify the data number. |

### Description

Gets the de-energize Boolean for the specified DO data number from the stored current channel setting data.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::isDeenergize
CDAQMXItemConfig::getClassMXChConfig
```

## channelDisplayMaxMX100

### Syntax

```
double channelDisplayMaxMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelDisplayMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function channelDisplayMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelDisplayMaxMX100")]
public static extern double channelDisplayMaxMX100(int
daqmx100, int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified channel number and display maximum value from the stored current channel information data.

- Returns 0.0 if it does not exist.

### Return value

Returns the display maximum value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXChInfo::getDisplayMax
CDAQMXDataBuffer::getClassMXChInfo
```

## channelDisplayMinMX100

### Syntax

```
double channelDisplayMinMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelDisplayMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function channelDisplayMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelDisplayMinMX100")]
public static extern double channelDisplayMinMX100(int
daqmx100, int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified channel number and display minimum value from the stored current channel information data.

- Returns 0.0 if it does not exist.

### Return value

Returns the display minimum value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXChInfo::getDisplayMin
CDAQMXDataBuffer::getClassMXChInfo
```

## channelDoublePresetValueMX100

### Syntax

```
double channelDoublePresetValueMX100(DAQMX100 daqmx100, int
outputNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelDoublePresetValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal outputNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function channelDoublePresetValueMX100 Lib
""DAQMX100"(ByVal daqmx100 As Integer, ByVal outputNo As
Integer) As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelDoublePresetValueMX100")]
public static extern double channelDoublePresetValueMX100(int
daqmx100, int outputNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| outputNo | Specify the output channel data number. |

### Description

Gets user specified output value for the specified output channel data number from the stored current channel setting data.

- The return value is a floating point number including the decimal point position.
- Returns 0.0 if it does not exist.

### Return value

Returns the user specified output value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getDoublePresetValue
```

## channelDoubleScaleMaxMX100

### Syntax

```
double channelDoubleScaleMaxMX100(DAQMX100 daqmx100, int
chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelDoubleScaleMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function channelDoubleScaleMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelDoubleScaleMaxMX100")]
public static extern double channelDoubleScaleMaxMX100(int
daqmx100, int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified channel number and scale maximum value from the stored current channel setting data.

- The return value is a floating point number including the decimal point position.
- Returns 0.0 if it does not exist.

### Return value

Returns the scale maximum.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getDoubleScaleMax
```

## channelDoubleScaleMinMX100

### Syntax

```
double channelDoubleScaleMinMX100(DAQMX100 daqmx100, int
chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelDoubleScaleMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function channelDoubleScaleMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelDoubleScaleMinMX100")]
public static extern double channelDoubleScaleMinMX100(int
daqmx100, int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified channel number and scale minimum value from the stored current channel setting data.

- The return value is a floating point number including the decimal point position.
- Returns 0.0 if it does not exist.

### Return value

Returns the scale minimum.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getDoubleScaleMin
```

## channelDoubleSpanMaxMX100

### Syntax

```
double channelDoubleSpanMaxMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelDoubleSpanMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function channelDoubleSpanMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelDoubleSpanMaxMX100")]
public static extern double channelDoubleSpanMaxMX100(int
daqmx100, int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified channel number and span maximum value from the stored current channel setting data.

- The return value is a floating point number including the decimal point position.
- Returns 0.0 if it does not exist.

### Return value

Returns the span maximum.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getDoubleSpanMax
```

## channelDoubleSpanMinMX100

### Syntax

```
double channelDoubleSpanMinMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelDoubleSpanMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function channelDoubleSpanMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelDoubleSpanMinMX100")]
public static extern double channelDoubleSpanMinMX100(int
daqmx100, int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified channel number and span minimum value from the stored current channel setting.

- The return value is a floating point number including the decimal point position.
- Returns 0.0 if it does not exist.

### Return value

Returns the span minimum.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getDoubleSpanMin
```

## channelErrorChoiceMX100

### Syntax

```
int channelErrorChoiceMX100(DAQMX100 daqmx100, int outputNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelErrorChoiceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal outputNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelErrorChoiceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal outputNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelErrorChoiceMX100")]
public static extern int channelErrorChoiceMX100(int daqmx100,
int outputNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| outputNo | Specify the output channel data number. |

### Description

Gets selection value during error for the specified output channel data number from the stored current channel setting data.

- If it does not exist, “Previous value” is returned.

### Return value

Returns the selected value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXOutputData
CDAQMXOutputData::getErrorChoice
```

## channelFIFOIndexMX100

### Syntax

```
int channelFIFOIndexMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelFIFOIndexMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelFIFOIndexMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelFIFOIndexMX100")]
public static extern int channelFIFOIndexMX100(int daqmx100,
int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the FIFO channel sequence number of the specified channel number from the stored current channel information data.

- Returns a negative value if it does not exist.

### Return value

Returns the channel sequence number in the FIFO.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXChInfo::getFIFOIndex
CDAQMXDataBuffer::getClassMXChInfo
```

## channelFIFONoMX100

### Syntax

```
int channelFIFONoMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelFIFONoMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelFIFONoMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelFIFONoMX100")]
public static extern int channelFIFONoMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the FIFO number of the specified channel number from the stored current channel information data.

- Returns a negative value if it does not exist.

### Return value

Returns the FIFO number.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXChInfo::getFIFONo
CDAQMXDataBuffer::getClassMXChInfo
```

## channelFilterMX100

### Syntax

```
int channelFilterMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelFilterMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelFilterMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelFilterMX100")]
public static extern int channelFilterMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the filter constant of the specified channel number from the stored current channel setting data.

- Returns “Time constant 0"if it does not exist.

### Return value

Returns the filter time constant.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getFilter
CDAQMXItemConfig::getClassMXChConfig
```

## channelHoldMX100

### Syntax

```
int channelHoldMX100(DAQMX100 daqmx100, int doNo);
```

### Declaration

Visual Basic

```
q Public Declare Function channelHoldMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal doNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelHoldMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal doNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelHoldMX100")]
public static extern int channelHoldMX100(int daqmx100, int
doNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| doNo | Specify the data number. |

### Description

Gets the hold Boolean for the specified DO data number from the stored current channel setting data.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::isHold
CDAQMXItemConfig::getClassMXChConfig
```

## channelIdleChoiceMX100

### Syntax

```
int channelIdleChoiceMX100(DAQMX100 daqmx100, int outputNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelIdleChoiceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal outputNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelIdleChoiceMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal outputNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelIdleChoiceMX100")]
public static extern int channelIdleChoiceMX100(int daqmx100,
int outputNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| outputNo | Specify the output channel data number. |

### Description

Gets the selection value when idle for the specified output channel data number from the stored current channel setting data.

- If it does not exist, “Previous value” is returned.

### Return value

Returns the selected value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXOutputData
CDAQMXOutputData::getIdleChoice
```

## channelKindMX100

### Syntax

```
int channelKindMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelKindMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelKindMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelKindMX100")]
public static extern int channelKindMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the channel type of the specified channel number from the stored current channel setting.

- If it does not exist, “Unused” is returned.

### Return value

Returns the channel type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getKind
CDAQMXItemConfig::getClassMXChConfig
```

## channelNumberMX100

### Syntax

```
int channelNumberMX100(DAQMX100 daqmx100, int fifoNo, int
fifoIndex);
```

### Declaration

Visual Basic

```
Public Declare Function channelNumberMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal fifoNo As Long, ByVal
fifioIndex As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelNumberMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal fifoNo As Integer,
ByVal fifioIndex As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelNumberMX100")]
public static extern int channelNumberMX100(int daqmx100, int
fifoNo, int fifioIndex);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |
| fifoIndex | Specify the channel sequence number in the FIFO. |

### Description

Gets the channel number from the specified FIFO number and FIFO channel sequence number.

- Returns 0 if it does not exist.

### Return value

Returns the channel number.

### Reference

`CDAQMX100::toChNo`

## channelOutputTypeMX100

### Syntax

```
int channelOutputTypeMX100(DAQMX100 daqmx100, int outputNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelOutputTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal outputNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelOutputTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal outputNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelOutputTypeMX100")]
public static extern int channelOutputTypeMX100(int daqmx100,
int outputNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| outputNo | Specify the output channel data number. |

### Description

Gets output type for the specified output channel data number from the stored current channel setting data.

- If it does not exist, “No output” is returned.

### Return value

Returns the output type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXOutputData
CDAQMXOutputData::getOutputType
```

## channelPointMX100

### Syntax

```
int channelPointMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelPointMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelPointMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelPointMX100")]
public static extern int channelPointMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the decimal point position of the specified channel number from the stored current channel setting data.

- Returns 0 if it does not exist.

### Return value

Returns the decimal point position.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getPoint
CDAQMXItemConfig::getClassMXChConfig
```

## channelPresetValueMX100

### Syntax

```
int channelPresetValueMX100(DAQMX100 daqmx100, int outputNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelPresetValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal outputNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelPresetValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal outputNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelPresetValueMX100")]
public static extern int channelPresetValueMX100(int daqmx100,
int outputNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| outputNo | Specify the output channel data number. |

### Description

Gets the user specified output value for the specified output channel data number from the stored current channel setting data.

- The return value is an integer excluding the decimal point position.
- Returns 0 if it does not exist.

### Return value

Returns the user specified output value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXOutputData
CDAQMXOutputData::getPresetValue
```

## channelPulseTimeMX100

### Syntax

```
int channelPulseTimeMX100(DAQMX100 daqmx100, int outputNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelPulseTimeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal outputNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelPulseTimeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal outputNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelPulseTimeMX100")]
public static extern int channelPulseTimeMX100(int daqmx100,
int outputNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| outputNo | Specify the output channel data number. |

### Description

Gets pulse interval integer multiple for the specified output channel data number from the stored current channel setting data.

- Returns 1 (minimum value) if it does not exist.

### Return value

Returns the integer multiple of the pulse interval.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXOutputData
CDAQMXOutputData::getPulseTime
```

## channelRangeMX100

### Syntax

```
int channelRangeMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelRangeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelRangeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelRangeMX100")]
public static extern int channelRangeMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the range type of the specified channel number from the stored current channel setting.

- If it does not exist, the SKIP (unused) range type gets the same handling. See the channel status.
- Returns 0 (20 mV) if it does not exist.

### Return value

Returns the range type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getRange
CDAQMXItemConfig::getClassMXChConfig
```

## channelRealMaxMX100

### Syntax

```
double channelRealMaxMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelRealMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function channelRealMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelRealMaxMX100")]
public static extern double channelRealMaxMX100(int daqmx100,
int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the actual range maximum value of the specified channel number from the stored current channel information data.

- Returns 0.0 if it does not exist.

### Return value

Returns the acutal range maximum value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXChInfo::getRealMax
CDAQMXDataBuffer::getClassMXChInfo
```

## channelRealMinMX100

### Syntax

```
double channelRealMinMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelRealMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function channelRealMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelRealMinMX100")]
public static extern double channelRealMinMX100(int daqmx100,
int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the actual range minimum value of the specified channel number from the stored current channel information data.

- Returns 0.0 if it does not exist.

### Return value

Returns the actual range minimum value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXChInfo::getRealMin
CDAQMXDataBuffer::getClassMXChInfo
```

## channelRefAlarmMX100

### Syntax

```
int channelRefAlarmMX100(DAQMX100 daqmx100, int doNo, int
refChNo, int levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelRefAlarmMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal doNo As Long, ByVal
refChNo As Long, ByVal levelNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelRefAlarmMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal doNo As Integer,
ByVal refChNo As Integer, ByVal levelNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelRefAlarmMX100")]
public static extern int channelRefAlarmMX100(int daqmx100,
int doNo, int refChNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| doNo | Specify the DO data number. |
| refChNo | Specify the reference channel using a channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the reference alarm for the specified DO data number from the stored current channel setting data.

- The reference alarm is specified by channel number and alarm level.
- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::isRefAlarm
CDAQMXItemConfig::getClassMXChConfig
```

## channelRefChNoMX100

### Syntax

```
int channelRefChNoMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelRefChNoMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelRefChNoMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelRefChNoMX100")]
public static extern int channelRefChNoMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the reference channel number of the specified channel number from the stored current channel setting data.

- Returns the constant for “undefined reference channel number” if it does not exist.

### Return value

Returns the reference channel number.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getRefChNo
CDAQMXItemConfig::getClassMXChConfig
```

## channelRJCTypeMX100

### Syntax

```
int channelRJCTypeMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelRJCTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelRJCTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelRJCTypeMX100")]
public static extern int channelRJCTypeMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the RJC type of the specified channel number from the stored current channel setting data.

- If it does not exist, Internal is returned.

### Return value

Returns the RJC type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getRJCType
CDAQMXItemConfig::getClassMXChConfig
```

## channelRJCVoltMX100

### Syntax

```
int channelRJCVoltMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelRJCVoltMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelRJCVoltMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelRJCVoltMX100")]
public static extern int channelRJCVoltMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the RJC voltage value of the specified channel number from the stored current channel setting data.

- Returns 0 if it does not exist.

### Return value

Returns the RJC voltage.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getRJCVolt
CDAQMXItemConfig::getClassMXChConfig
```

## channelScaleMaxMX100

### Syntax

```
int channelScaleMaxMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelScaleMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelScaleMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelScaleMaxMX100")]
public static extern int channelScaleMaxMX100(int daqmx100,
int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the scale maximum value of the specified channel number from the stored current channel setting data.

- The return value is an integer excluding the decimal point position.
- Returns 0 if it does not exist.

### Return value

Returns the scale maximum.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getScaleMax
CDAQMXItemConfig::getClassMXChConfig
```

## channelScaleMinMX100

### Syntax

```
int channelScaleMinMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelScaleMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelScaleMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelScaleMinMX100")]
public static extern int channelScaleMinMX100(int daqmx100,
int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the scale minimum value of the specified channel number from the stored current channel setting data.

- The return value is an integer excluding the decimal point position.
- Returns 0 if it does not exist.

### Return value

Returns the scale minimum.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getScaleMin
CDAQMXItemConfig::getClassMXChConfig
```

## channelScaleTypeMX100

### Syntax

```
int channelScaleTypeMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelScaleTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelScaleTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelScaleTypeMX100")]
public static extern int channelScaleTypeMX100(int daqmx100,
int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the scale type of the specified channel number from the stored current channel setting data.

- If it does not exist, “No scale” is returned.

### Return value

Returns the scale type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getScale
CDAQMXItemConfig::getClassMXChConfig
```

## channelSpanMaxMX100

### Syntax

```
int channelSpanMaxMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelSpanMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelSpanMaxMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelSpanMaxMX100")]
public static extern int channelSpanMaxMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the span maximum value of the specified channel number from the stored current channel setting data.

- The return value is an integer excluding the decimal point position.
- Returns 0 if it does not exist.

### Return value

Returns the span maximum.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getSpanMax
CDAQMXItemConfig::getClassMXChConfig
```

## channelSpanMinMX100

### Syntax

```
int channelSpanMinMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelSpanMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelSpanMinMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelSpanMinMX100")]
public static extern int channelSpanMinMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the span maximum value of the specified channel number from the stored current channel setting data.

- The return value is an integer excluding the decimal point position.
- Returns 0 if it does not exist.

### Return value

Returns the span minimum.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::getSpanMin
CDAQMXItemConfig::getClassMXChConfig
```

## channelValidMX100

### Syntax

```
int channelValidMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelValidMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="channelValidMX100")]
public static extern int channelValidMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the channel status of the specified channel number from the stored current channel setting data as a Boolean.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXChConfig::isValid
CDAQMXItemConfig::getClassMXChConfig
```

## currentAOPWMValidMX100

### Syntax

```
int currentAOPWMValidMX100(DAQMX100 daqmx100, int aopwmNo);
```

### Declaration

Visual Basic

```
Public Declare Function currentAOPWMValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal aopwmNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function currentAOPWMValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal aopwmNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="currentAOPWMValidMX100")]
public static extern int currentAOPWMValidMX100(int daqmx100,
int aopwmNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| aopwmNo | Specify the AO/PWM data number. |

### Description

Gets valid/invalid for the specified AO/PWM data number from the stored current AO/PWM data as a Boolean value.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXAOPWMList
CDAQMXAOPWMData::getAOPWMValid
CDAQMXAOPWMList::getCurrent
```

## currentAOPWMValueMX100

### Syntax

```
int currentAOPWMValueMX100(DAQMX100 daqmx100, int aopwmNo);
```

### Declaration

Visual Basic

```
Public Declare Function currentAOPWMValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal aopwmNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function currentAOPWMValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal aopwmNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="currentAOPWMValidMX100")]
public static extern int currentAOPWMValueMX100(int daqmx100,
int aopwmNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| aopwmNo | Specify the AO/PWM data number. |

### Description

Gets the output data value of the specified AO/PWM data number from the stored current AO/PWM data.

- Returns 0 if it does not exist.

### Return value

Returns the output data value.

### Reference

```
CDAQMX100::getClassMXAOPWMList
CDAQMXAOPWMData::getAOPWMValue
CDAQMXAOPWMList::getCurrent
```

## currentBalanceResultMX100

### Syntax

```
int currentBalanceResultMX100(DAQMX100 daqmx100, int
balanceNo);
```

### Declaration

Visual Basic

```
Public Declare Function currentBalanceResultMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal balanceNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function currentBalanceResultMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal balanceNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="currentBalanceResultMX100")]
public static extern int currentBalanceResultMX100(int
daqmx100, int balanceNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| balanceNo | Specify the initial balance data number. |

### Description

Gets the initial balance value for the specified initial balance data number from the stored current initial balance data.

- Returns the result from the last-executed initial balance setting function.
- If it does not exist, Unspecified is returned.

### Return value

Returns the initial balance result.

### Reference

```
CDAQMX100::getClassMXBalanceList
CDAQMXBalanceList::getCurrent
CDAQMXBalanceResult::getResult
```

## currentBalanceValidMX100

### Syntax

```
int currentBalanceValidMX100(DAQMX100 daqmx100, int
balanceNo);
```

### Declaration

Visual Basic

```
Public Declare Function currentBalanceValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal balanceNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function currentBalanceValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal balanceNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="currentBalanceValidMX100")]
public static extern int currentBalanceValidMX100(int
daqmx100, int balanceNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| balanceNo | Specify the initial balance data number. |

### Description

Gets the Invalid/Valid Boolean value for the specified initial balance data number from the stored current initial balance data.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXBalanceList
CDAQMXBalanceList::getCurrent
CDAQMXBalanceResult::getBalanceValid
```

## currentBalanceValueMX100

### Syntax

```
int currentBalanceValueMX100(DAQMX100 daqmx100, int
balanceNo);
```

### Declaration

Visual Basic

```
Public Declare Function currentBalanceValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal balanceNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function currentBalanceValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal balanceNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="currentBalanceValueMX100")]
public static extern int currentBalanceValueMX100(int
daqmx100, int balanceNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| balanceNo | Specify the initial balance data number. |

### Description

Gets the initial balance value for the specified initial balance data number from the stored current initial balance data.

- Returns 0 if it does not exist.

### Return value

Returns the initial balance value.

### Reference

```
CDAQMX100::getClassMXBalanceList
CDAQMXBalanceList::getCurrent
CDAQMXBalanceResult::getBalanceValue
```

## currentDoubleAOPWMValueMX100

### Syntax

```
double currentDoubleAOPWMValueMX100(DAQMX100 daqmx100, int
aopwmNo);
```

### Declaration

Visual Basic

```
Public Declare Function currentDoubleAOPWMValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal aopwmNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function currentDoubleAOPWMValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal aopwmNo As
Integer) As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="currentDoubleAOPWMValueMX100")]
public static extern double currentDoubleAOPWMValueMX100(int
daqmx100, int aopwmNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| aopwmNo | Specify the AO/PWM data number. |

### Description

Gets the actual output value of the output data value of the specified AO/PWM data number from the stored current AO/PWM data.

- Returns 0.0 if it does not exist.

### Return value

Returns the actual output value.

### Reference

```
CDAQMX100::currentDoubleAOPWMValue
```

## currentDOValidMX100

### Syntax

```
int currentDOValidMX100(DAQMX100 daqmx100, int doNo);
```

### Declaration

Visual Basic

```
Public Declare Function currentDOValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal doNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function currentDOValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal doNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="currentDOValidMX100")]
public static extern int currentDOValidMX100(int daqmx100, int
doNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| doNo | Specify the data number. |

### Description

Gets the Invalid/Valid Boolean value for the specified DO data number from the stored current DO data.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXDOList
CDAQMXDOData::getDOValid
CDAQMXDOList::getCurrent
```

## currentDOValueMX100

### Syntax

```
int currentDOValueMX100(DAQMX100 daqmx100, int doNo);
```

### Declaration

Visual Basic

```
Public Declare Function currentDOValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal doNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function currentDOValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal doNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="currentDOValueMX100")]
public static extern int currentDOValueMX100(int daqmx100, int
doNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| doNo | Specify the data number. |

### Description

Gets ON/OFF for the specified DO data number from the stored current DO data as a Boolean value.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXDOList
CDAQMXDOData::getDOONOFF
CDAQMXDOList::getCurrent
```

## currentTransmitMX100

### Syntax

```
int currentTransmitMX100(DAQMX100 daqmx100, int aopwmNo);
```

### Declaration

Visual Basic

```
Public Declare Function currentTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal aopwmNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function currentTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal aopwmNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="currentTransmitMX100")]
public static extern int currentTransmitMX100(int daqmx100,
int aopwmNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| aopwmNo | Specify the AO/PWM data number. |

### Description

Gets the transfer status of the specified AO/PWM data number from the stored current transmission output data.

- If it does not exist, “Unspecified (Unknown)” is returned.

### Return value

Returns the transmission status.

### Reference

```
CDAQMX100::getClassMXTransmitList
CDAQMXTransmit::getTransmit
CDAQMXTransmitList::getCurrent
```

## dataAlarmMX100

### Syntax

```
int dataAlarmMX100(DAQMX100 daqmx100, int chNo, int levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataAlarmMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal levelNo As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataAlarmMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal levelNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataAlarmMX100")]
public static extern int dataAlarmMX100(int daqmx100, int
chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the valid/invalid value of the alarm corresponding to the alarm level for the specified channel number from the stored current measured data.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDataInfo
CDAQMXDataInfo::isAlarm
```

## dataDayMX100

### Syntax

```
int dataDayMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataDayMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataDayMX100 Lib "DAQMX100"(ByVal
daqmx100 As Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataDayMX100")]
public static extern int dataDayMX100(int daqmx100, int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the day of the specified channel number from the stored current time information data.

- The day is a number from 1 to 31.
- Returns 0 if it does not exist.

### Return value

Returns the day value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDateTime
CDAQMXDateTime::toLocalDateTime
```

## dataDoubleValueMX100

### Syntax

```
double dataDoubleValueMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataDoubleValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function dataDoubleValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataDoubleValueMX100")]
public static extern double dataDoubleValueMX100(int daqmx100,
int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the measured value of the specified channel number from the stored current measured data.

- Returns 0.0 if it does not exist.

### Return value

Returns the measured value as a double-precision floating point number.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDataInfo
CDAQMXDataInfo::getDoubleValue
```

## dataHourMX100

### Syntax

```
int dataHourMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataHourMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataHourMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataHourMX100")]
public static extern int dataHourMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the hour of the specified channel number from the stored current time information data.

- The hour is a number from 0 to 23.
- Returns 0 if it does not exist.

### Return value

Returns the hour value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDateTime
CDAQMXDateTime::toLocalDateTime
```

## dataMilliSecMX100

### Syntax

```
int dataMilliSecMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataMilliSecMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataMilliSecMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataMilliSecMX100")]
public static extern int dataMilliSecMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the milliseconds of the specified channel number from the stored current time information data.

- Returns 0 if it does not exist.

### Return value

Returns the milliseconds value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDateTime
CDAQMXDateTime::getMilliSecond
```

## dataMinuteMX100

### Syntax

```
int dataMinuteMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataMinuteMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataMinuteMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataMinuteMX100")]
public static extern int dataMinuteMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the minutes of the specified channel number from the stored current time information data.

- The minute is a number from 0 to 59.
- Returns 0 if it does not exist.

### Return value

Returns the minute value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDateTime
CDAQMXDateTime::toLocalDateTime
```

## dataMonthMX100

### Syntax

```
int dataMonthMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataMonthMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataMonthMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataMonthMX100")]
public static extern int dataMonthMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the month of the specified channel number from the stored current time information data.

- The month is a number from 1 to 12.
- Returns 0 if it does not exist.

### Return value

Returns the month value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDateTime
CDAQMXDateTime::toLocalDateTime
```

## dataNumChMX100

### Syntax

```
int dataNumChMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataNumChMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataNumChMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataNumChMX100")]
public static extern int dataNumChMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified number of remaining data from the current status data of the specified channel number from among the data that is acquired and stored by a data retrieval function.

- Returns 0 if it does not exist.

### Return value

Returns the remaining number of data.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::getDataNum
```

## dataNumFIFOMX100

### Syntax

```
int dataNumFIFOMX100(DAQMX100 daqmx100, int fifoNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataNumFIFOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal fifoNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataNumFIFOMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal fifoNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataNumFIFOMX100")]
public static extern int dataNumFIFOMX100(int daqmx100, int
fifoNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |

### Description

Gets the specified number of remaining data from the current status data of the specified FIFO number from among the data that is acquired and stored by a data retrieval function.

- Returns the minimum value of the channels in the FIFO.
- Returns 0 if it does not exist.

### Return value

Returns the remaining number of data.

### Reference

```
CDAQMX100::getDataNum
```

## dataSecondMX100

### Syntax

```
int dataSecondMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataSecondMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataSecondMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataSecondMX100")]
public static extern int dataSecondMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the seconds of the specified channel number from the stored current time information data.

- The second is a number from 0 to 59.
- Returns 0 if it does not exist.

### Return value

Returns the seconds value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDateTime
CDAQMXDateTime::toLocalDateTime
```

## dataStatusMX100

### Syntax

```
int dataStatusMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataStatusMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataStatusMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataStatusMX100")]
public static extern int dataStatusMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the data status value of the specified channel number from the stored current measured data.

- If it does not exist, “Unknown status” is returned.

### Return value

Returns the data status value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDataInfo
CDAQMXDataInfo::getStatus
```

## dataStringValueMX100

### Syntax

```
int dataStringValueMX100(DAQMX100 daqmx100, int chNo, char *
strValue, int lenValue);
```

### Declaration

Visual Basic

```
Public Declare Function dataStringValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
strValue As String, ByVal lenValue As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataStringValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal strValue As String, ByVal lenValue As Integer) As
Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataStringValueMX100")]
public static extern int dataStringValueMX100(int daqmx100,
int chNo, byte[] strValue, int lenValue);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| strValue | Specify the field where the string is to be stored. |
| lenValue | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the measured value of the specified channel number from the stored current measured data.

- Converts into a string and stores it in the specified field.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDataInfo
CDAQMXDataInfo::getStringValue
```

## dataTimeMX100

### Syntax

```
int dataTimeMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataTimeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataTimeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataTimeMX100")]
public static extern int dataTimeMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the seconds of the specified channel number from the stored current time information data.

- This is the number of seconds from the reference date/time (Jan. 1, 1970).
- Returns 0 if it does not exist.

### Return value

Returns seconds.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDateTime
CDAQMXDateTime::getTime
```

## dataValidMX100

### Syntax

```
int dataValidMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataValidMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataValidMX100")]
public static extern int dataValidMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets valid/invalid for the measured data of the specified channel number from the stored current measured data as a Boolean.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::isCurrent
```

## dataValueMX100

### Syntax

```
int dataValueMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataValueMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataValueMX100")]
public static extern int dataValueMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the data value of the specified channel number from the stored current measured data.

- Returns 0 if it does not exist.

### Return value

Returns the data value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDataInfo
CDAQMXDataInfo::getValue
```

## dataYearMX100

### Syntax

```
int dataYearMX100(DAQMX100 daqmx100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataYearMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataYearMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="dataYearMX100")]
public static extern int dataYearMX100(int daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the year of the specified channel number from the stored current time information data.

- The year is a 4-digit number.
- Returns 0 if it does not exist.

### Return value

Returns the year value.

### Reference

```
CDAQMX100::getClassMXDataBuffer
CDAQMXDataBuffer::currentDateTime
CDAQMXDateTime::toLocalDateTime
```

## errorMaxLengthMX100

### Syntax

```
int errorMaxLengthMX100(void);
```

### Declaration

Visual Basic

```
Public Declare Function errorMaxLengthMX100 Lib "DAQMX100"()
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function errorMaxLengthMX100 Lib
"DAQMX100"() As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="errorMaxLengthMX100")]
public static extern int errorMaxLengthMX100();
```

### Description

Gets the maximum length of the error message string.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

```
CDAQMX100::getMaxLenErrorMessage
```

## getAlarmNameMX100 [Visual C only]

### Syntax

```
const char * getAlarmNameMX100(int iAlarmType);
```

### Parameters

iAlarmType Specify the alarm type.

### Description

Gets the string corresponding to the specified alarm type.

- If it does not exist, returns the pointer to the string corresponding to “No alarm.”

### Return value

Returns a pointer to the string.

### Reference

`CDAQMXDataInfo::getAlarmName`

## getChannelCommentMX100 [Visual C only]

### Syntax

```
const char * getChannelCommentMX100(DAQMX100 daqmx100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified channel number and comment from the stored current channel setting data.

- Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`CDAQMX100::getClassMXItemConfig`
`CDAQMXChConfig::getComment`
`CDAQMXItemConfig::getClassMXChConfig`

## getChannelTagMX100 [Visual C only]

### Syntax

```
const char * getChannelTagMX100(DAQMX100 daqmx100, int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified channel number and tag from the stored current channel setting data.

- Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`CDAQMX100::getClassMXItemConfig`
`CDAQMXChConfig::getTag`
`CDAQMXItemConfig::getClassMXChConfig`

## getChannelUnitMX100 [Visual C only]

### Syntax

```
const char * getChannelUnitMX100(DAQMX100 daqmx100, int chNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the specified channel number and unit name from the stored current channel setting data.

- Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`CDAQMX100::getClassMXItemConfig`
`CDAQMXChConfig::getUnit`
`CDAQMXItemConfig::getClassMXChConfig`

## getErrorMessageMX100 [Visual C only]

### Syntax

```
const char * getErrorMessageMX100(int errorCode);
```

### Parameters

errorCode Specify the error number.

### Description

Gets the error message string corresponding to the specified error number.

- Returns a pointer to the string [Unknown] if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`CDAQMX100::getErrorMessage`

## getModuleSerialMX100 [Visual C only]

### Syntax

```
const char * getModuleSerialMX100(DAQMX100 daqmx100, int
moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets the serial number of the specified module number from the stored current system configuration data.

- Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getModuleSerial
```

## getNetHostMX100 [Visual C only]

### Syntax

```
const char * getNetHostMX100(DAQMX100 daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the host name from the stored current network information data.

- Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXNetInfo
CDAQMXNetInfo::getHost
```

## getUnitPartNoMX100 [Visual C only]

### Syntax

```
const char * getUnitPartNoMX100(DAQMX100 daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the part number from the stored current system configuration data.

- Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getPartNo
```

## getUnitSerialMX100 [Visual C only]

### Syntax

```
const char * getUnitSerialMX100(DAQMX100 daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the unit's serial number from the stored current system configuration data.

- Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getUnitSerial
```

## itemErrorMX100

### Syntax

```
int itemErrorMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function itemErrorMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function itemErrorMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="itemErrorMX100")]
public static extern int itemErrorMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the setup item number on which an error was last detected.

- If it does not exist, “Unknown” is returned.

### Return value

Returns the setting item number.

### Reference

```
CDAQMX100::getItemError
```

## itemMaxLengthMX100

### Syntax

```
int itemMaxLengthMX100(void);
```

### Declaration

Visual Basic

```
Public Declare Function itemMaxLengthMX100 Lib "DAQMX100"() As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function itemMaxLengthMX100 Lib
"DAQMX100"() As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="itemMaxLengthMX100")]
public static extern int itemMaxLengthMX100();
```

### Description

Gets the maximum length of the name string corresponding to the setup item.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

```
CDAQMXItemConfig::getMaxLenItemName
```

## lastErrorMX100

### Syntax

```
int lastErrorMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function lastErrorMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function lastErrorMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="lastErrorMX100")]
public static extern int lastErrorMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the MX-specific error received in the last communication.

- Returns 0 if it does not exist.

### Return value

Returns the MX-specific error.

### Reference

```
CDAQMX100::getLastError
```

## moduleChNumMX100

### Syntax

```
int moduleChNumMX100(DAQMX100 daqmx100, int moduleNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleChNumMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal moduleNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleChNumMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleChNumMX100")]
public static extern int moduleChNumMX100(int daqmx100, int
moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets the number of channels of the specified module number from the stored current system configuration data.

- Returns 0 if it does not exist.

### Return value

Returns the number of channels.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getChNum
```

## moduleFIFONoMX100

### Syntax

```
int moduleFIFONoMX100(DAQMX100 daqmx100, int moduleNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleFIFONoMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal moduleNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleFIFONoMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleFIFONoMX100")]
public static extern int moduleFIFONoMX100(int daqmx100, int
moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets the FIFO number of the specified module number from the stored current system configuration data.

- Returns a negative number if it does not exist.

### Return value

Returns the FIFO number.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getFIFONo
```

## moduleIntegralMX100

### Syntax

```
int moduleIntegralMX100(DAQMX100 daqmx100, int moduleNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleIntegralMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal moduleNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleIntegralMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleIntegralMX100")]
public static extern int moduleIntegralMX100(int daqmx100, int
moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets the A/D integral time type of the specified module number from the stored current system configuration data.

- If it does not exist, “Automatic” is returned.

### Return value

Returns the type of AD integral time.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getIntegral
```

## moduleIntervalMX100

### Syntax

```
int moduleIntervalMX100(DAQMX100 daqmx100, int moduleNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleIntervalMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal moduleNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleIntervalMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleIntervalMX100")]
public static extern int moduleIntervalMX100(int daqmx100, int
moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets the interval type of the specified module number from the stored current system configuration data.

- Returns 0 if it does not exist.

### Return value

Returns the interval type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getInterval
```

## moduleRealTypeMX100

### Syntax

```
int moduleRealTypeMX100(DAQMX100 daqmx100, int moduleNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleRealTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal moduleNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleRealTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleRealTypeMX100")]
public static extern int moduleRealTypeMX100(int daqmx100, int
moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets the actual module type of the specified module number from the stored current system configuration data.

- If it does not exist, “No module” is returned.

### Return value

Returns the module type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getRealType
```

## moduleStandbyTypeMX100

### Syntax

```
int moduleStandbyTypeMX100(DAQMX100 daqmx100, int moduleNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleStandbyTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal moduleNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleStandbyTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleStandbyTypeMX100")]
public static extern int moduleStandbyTypeMX100(int daqmx100,
int moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets the startup module type of the specified module number from the stored current system configuration data.

- If it does not exist, “No module” is returned.

### Return value

Returns the module type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getStandbyType
```

## moduleTerminalMX100

### Syntax

```
int moduleTerminalMX100(DAQMX100 daqmx100, int moduleNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleTerminalMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal moduleNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleTerminalMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleTerminalMX100")]
public static extern int moduleTerminalMX100(int daqmx100, int
moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets the terminal type of the specified module number from the stored current system configuration data.

- If it does not exist, “Screw” is returned.

### Return value

Returns the terminal type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getTerminalType
```

## moduleTypeMX100

### Syntax

```
int moduleTypeMX100(DAQMX100 daqmx100, int moduleNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleTypeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal moduleNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleTypeMX100")]
public static extern int moduleTypeMX100(int daqmx100, int
moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets the module type of the specified module number from the stored current system configuration data.

- If it does not exist, “No module” is returned.

### Return value

Returns the module type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getModuleType
```

## moduleValidMX100

### Syntax

```
int moduleValidMX100(DAQMX100 daqmx100, int moduleNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleValidMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal moduleNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleValidMX100")]
public static extern int moduleValidMX100(int daqmx100, int
moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets valid/invalid of the specified module number from the stored current system configuration data as a Boolean value.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::isModuleValid
```

## moduleVersionMX100

### Syntax

```
int moduleVersionMX100(DAQMX100 daqmx100, int moduleNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleVersionMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal moduleNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleVersionMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleVersionMX100")]
public static extern int moduleVersionMX100(int daqmx100, int
moduleNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |

### Description

Gets the module version of the specified module number from the stored current system configuration data.

- Returns 0 if it does not exist.

### Return value

Returns the version.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getModuleVersion
```

## netAddressMX100

### Syntax

```
unsigned int netAddressMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function netAddressMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function netAddressMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="netAddressMX100")]
public static extern int netAddressMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the IP address from the stored current network information data.

- Returns 0 if it does not exist.

### Return value

Returns the IP address

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXNetInfo
CDAQMXNetInfo::getAddress
```

## netGatewayMX100

### Syntax

```
unsigned int netGatewayMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function netGatewayMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function netGatewayMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="netGatewayMX100")]
public static extern int netGatewayMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the Gateway address from the stored current network information data.

- Returns 0 if it does not exist.

### Return value

Returns the Gateway address.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXNetInfo
CDAQMXNetInfo::getGateway
```

## netPortMX100

### Syntax

```
unsigned int netPortMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function netPortMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function netPortMX100 Lib "DAQMX100"(ByVal
daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="netPortMX100")]
public static extern int netPortMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the port number from the stored current network information data.

- Returns 0 if it does not exist.

### Return value

Returns the port number.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXNetInfo
CDAQMXNetInfo::getPort
```

## netSubmaskMX100

### Syntax

```
unsigned int netSubmaskMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function netSubmaskMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function netSubmaskMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="netSubmaskMX100")]
public static extern int netSubmaskMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the subnet mask from the stored current network information data.

- Returns 0 if it does not exist.

### Return value

Returns the subnet mask.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXNetInfo
CDAQMXNetInfo::getSubMask
```

## rangePointMX100

### Syntax

```
int rangePointMX100(DAQMX100 daqmx100, int iRange);
```

### Declaration

Visual Basic

```
Public Declare Function rangePointMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal iRange As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function rangePointMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal iRange As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="rangePointMX100")]
public static extern int rangePointMX100(int daqmx100, int
iRange);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| iRange | Specify the range type. |

### Description

Gets the decimal point position of the specified range type.

- For a range type of digital input (DI), specify the detailed range of the digital input. Specification cannot be made without the module type.
- Returns 0 if it does not exist.

### Return value

Returns the decimal point position.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getRangePoint
```

## revisionAPIMX100

### Syntax

```
const int revisionAPIMX100(void);
```

### Declaration

Visual Basic

```
Public Declare Function revisionAPIMX100 Lib "DAQMX100"() As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function revisionAPIMX100 Lib "DAQMX100"()
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="revisionAPIMX100")]
public static extern int revisionAPIMX100();
```

### Description

Gets the revision number of this API.

### Return value

Returns the revision number.

### Reference

CDAQMX100::getRevisionAPIMX

## statusBackupMX100

### Syntax

```
int statusBackupMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusBackupMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusBackupMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusBackupMX100")]
public static extern int statusBackupMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the Boolean value for the backup specification from the stored current status data.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXStatus
CDAQMXStatus::isBackup
```

## statusCFMX100

### Syntax

```
int statusCFMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusCFMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusCFMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusCFMX100")]
public static extern int statusCFMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the CF status type from the stored current status data.

- Returns “All Off” if it does not exist.

### Return value

Returns the CF status type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXStatus
CDAQMXStatus::getCFStatus
```

## statusCFRemainMX100

### Syntax

```
int statusCFRemainMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusCFRemainMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusCFRemainMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusCFRemainMX100")]
public static extern int statusCFRemainMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the remaining capacity of the CF from the stored current status data.

- The unit is KB.
- Returns 0 if it does not exist.

### Return value

Returns the remaining size.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXStatus
CDAQMXStatus::getCFRemain
```

## statusCFSizeMX100

### Syntax

```
int statusCFSizeMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusCFSizeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusCFSizeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusCFSizeMX100")]
public static extern int statusCFSizeMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the size of the CF from the stored current status data.

- The unit is KB.
- Returns 0 if it does not exist.

### Return value

Returns the size.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXStatus
CDAQMXStatus::getCFSize
```

## statusDayMX100

### Syntax

```
int statusDayMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusDayMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusDayMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusDayMX100")]
public static extern int statusDayMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Returns the day from the stored current status data.

- Converts the number of seconds from the reference date/time and returns the result.
- The day is a number from 1 to 31.
- Returns 0 if it does not exist.

### Return value

Returns the day value.

### Reference

```
statusTimeMX100
CDAQMXDateTime::toLocalDateTime
```

## statusFIFOIntervalMX100

### Syntax

```
int statusFIFOIntervalMX100(DAQMX100 daqmx100, int fifoNo);
```

### Declaration

Visual Basic

```
Public Declare Function statusFIFOIntervalMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal fifoNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusFIFOIntervalMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal fifoNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusFIFOIntervalMX100")]
public static extern int statusFIFOIntervalMX100(int daqmx100,
int fifoNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |

### Description

Gets the interval type of the specified FIFO number from the stored current status data.

- Returns 0 if it does not exist.

### Return value

Returns the interval type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXStatus
CDAQMXStatus::getInterval
```

## statusFIFOMX100

### Syntax

```
int statusFIFOMX100(DAQMX100 daqmx100, int fifoNo);
```

### Declaration

Visual Basic

```
Public Declare Function statusFIFOMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal fifoNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusFIFOMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal fifoNo As Integer)
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusFIFOMX100")]
public static extern int statusFIFOMX100(int daqmx100, int
fifoNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| fifoNo | Specify the FIFO number. |

### Description

Gets the FIFO status value of the specified FIFO number from the stored current status data.

- If it does not exist, “Unknown” is returned.

### Return value

Returns the FIFO status value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXStatus
CDAQMXStatus::getFIFOStatus
```

## statusFIFONumMX100

### Syntax

```
int statusFIFONumMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusFIFONumMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusFIFONumMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusFIFONumMX100")]
public static extern int statusFIFONumMX100(int daqmx100);
```

### Parameters

daqmx100 Specifies the device descriptor.

### Description

Gets the number of valid FIFOs from the stored current status data.

- Returns 0 if it does not exist.

### Return value

Returns the valid number of FIFOs.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXStatus
CDAQMXStatus::getFIFONum
```

## statusHourMX100

### Syntax

```
int statusHourMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusHourMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusHourMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusHourMX100")]
public static extern int statusHourMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the hour from the stored current status data.

- Converts the number of seconds from the reference date/time and returns the result.
- The hour is a number from 0 to 23.
- Returns 0 if it does not exist.

### Return value

Returns the hour value.

### Reference

```
statusTimeMX100
CDAQMXDateTime::toLocalDateTime
```

## statusMilliSecMX100

### Syntax

```
int statusMilliSecMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusMilliSecMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusMilliSecMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusMilliSecMX100")]
public static extern int statusMilliSecMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the milliseconds from the stored current status data.

- Returns 0 if it does not exist.

### Return value

Returns the milliseconds value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXStatus
CDAQMXStatus::getMilliSecond
```

## statusMinuteMX100

### Syntax

```
int statusMinuteMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusMinuteMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusMinuteMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusMinuteMX100")]
public static extern int statusMinuteMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the minutes from the stored current status data.

- Converts the number of seconds from the reference date/time and returns the result.
- The minute is a number from 0 to 59.
- Returns 0 if it does not exist.

### Return value

Returns the minute value.

### Reference

`statusTimeMX100`
`CDAQMXDateTime::toLocalDateTime`

## statusMonthMX100

### Syntax

```
int statusMonthMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusMonthMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusMonthMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusMonthMX100")]
public static extern int statusMonthMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the month from the stored current status data.

- Converts the number of seconds from the reference date/time and returns the result.
- The month is a number from 1 to 12.
- Returns 0 if it does not exist.

### Return value

Returns the month value.

### Reference

```
statusTimeMX100
CDAQMXDateTime::toLocalDateTime
```

## statusSecondMX100

### Syntax

```
int statusSecondMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusSecondMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusSecondMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusSecondMX100")]
public static extern int statusSecondMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the seconds from the stored current status data.

- Converts the number of seconds from the reference date/time and returns the result.
- The second is a number from 0 to 59.
- Returns 0 if it does not exist.

### Return value

Returns the seconds value.

### Reference

```
statusTimeMX100
CDAQMXDateTime::toLocalDateTime
```

## statusTimeMX100

### Syntax

```
int statusTimeMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusTimeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusTimeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusTimeMX100")]
public static extern int statusTimeMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the seconds from the stored current status data.

- This is the number of seconds from the reference date/time (Jan. 1, 1970).
- Returns 0 if it does not exist.

### Return value

Returns seconds.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXStatus
CDAQMXStatus::getTime
```

## statusUnitMX100

### Syntax

```
int statusUnitMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusUnitMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusUnitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusUnitMX100")]
public static extern int statusUnitMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the unit status value from the stored current status data.

- If it does not exist, “Unknown” is returned.

### Return value

Returns the unit status value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXStatus
CDAQMXStatus::getUnitStatus
```

## statusYearMX100

### Syntax

```
int statusYearMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function statusYearMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusYearMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="statusYearMX100")]
public static extern int statusYearMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the year from the stored current status data.

- Converts the number of seconds from the reference date/time and returns the result.
- The year is a 4-digit number.
- Returns 0 if it does not exist.

### Return value

Returns the year value.

### Reference

```
statusTimeMX100
CDAQMXDateTime::toLocalDateTime
```

## toAlarmNameMX100

### Syntax

```
int toAlarmNameMX100(int iAlarmType, char * strAlarm, int
lenAlarm);
```

### Declaration

Visual Basic

```
Public Declare Function toAlarmNameMX100 Lib "DAQMX100"(ByVal
iAlarmType As Long, ByVal strAlarm As String, ByVal lenAlarm
As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toAlarmNameMX100 Lib
"DAQMX100"(ByVal iAlarmType As Integer, ByVal strAlarm As
String, ByVal lenAlarm As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toAlarmNameMX100")]
public static extern int toAlarmNameMX100(int iAlarmType,
byte[] strAlarm, int lenAlarm);
```

### Parameters

| | |
|---|---|
| iAlarmType | Specify the alarm type. |
| strAlarm | Specify the field where the string is to be stored. |
| lenAlarm | Specify the byte size of the field where the string is to be stored. |

### Description

Stores the string corresponding to the specified alarm type to the specified field.

- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`getAlarmNameMX100`

## toAOPWMValueMX100

### Syntax

```
int toAOPWMValueMX100(double realValue, int iRangeAOPWM);
```

### Declaration

Visual Basic

```
Public Declare Function toAOPWMValueMX100 Lib "DAQMX100"(ByVal
realValue As Double, ByVal iRangeAOPWM As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toAOPWMValueMX100 Lib
"DAQMX100"(ByVal realValue As Double, ByVal iRangeAOPWM As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toAOPWMValueMX100")]
public static extern int toAOPWMValueMX100(double realValue,
int iRangeAOPWM);
```

### Parameters

| | |
|---|---|
| realValue | Specify the actual output value. |
| iRangeAOPWM | Specify the range type. |

### Description

Converts the actual output values to AO/PWM data output data values according to the specified range type.

- Valid range types are AO and PWM.
- Returns 0 if it does not exist.

### Return value

Returns the output data value.

### Reference

```
CDAQMXAOPWMData::toAOPWMValue
```

## toChannelCommentMX100

### Syntax

```
int toChannelCommentMX100(DAQMX100 daqmx100, int chNo, char *
strComment, int lenComment);
```

### Declaration

Visual Basic

```
Public Declare Function toChannelCommentMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
strComment As String, ByVal lenComment As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toChannelCommentMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal strComment As String, ByVal lenComment As Integer) As
Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toChannelCommentMX100")]
public static extern int toChannelCommentMX100(int daqmx100,
int chNo, byte[] strComment, int lenComment);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| strComment | Specify the field where the string is to be stored. |
| lenComment | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the specified channel number and comment from the stored current channel setting data.

- Stores the string in the specified storage destination.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the actual string.

### Reference

`getChannelCommentMX100`

## toChannelTagMX100

### Syntax

```
int toChannelTagMX100(DAQMX100 daqmx100, int chNo, char *
strTag, int lenTag);
```

### Declaration

Visual Basic

```
Public Declare Function toChannelTagMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal chNo As Long, ByVal strTag As String,
ByVal lenTag As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toChannelTagMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal strTag As String, ByVal lenTag As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toChannelTagMX100")]
public static extern int toChannelTagMX100(int daqmx100, int
chNo, byte[] strTag, int lenTag);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| strTag | Specify the field where the string is to be stored. |
| lenTag | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the specified channel number and tag from the stored current channel setting data.

- Stores the string in the specified storage destination.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the actual string.

### Reference

`getChannelTagMX100`

## toChannelUnitMX100

### Syntax

```
int toChannelUnitMX100(DAQMX100 daqmx100, int chNo, char *
strUnit, int lenUnit);
```

### Declaration

Visual Basic

```
Public Declare Function toChannelUnitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal chNo As Long, ByVal
strUnit As String, ByVal lenUnit As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toChannelUnitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal chNo As Integer,
ByVal strUnit As String, ByVal lenUnit As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toChannelUnitMX100")]
public static extern int toChannelUnitMX100(int daqmx100, int
chNo, byte[] strUnit, int lenUnit);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| chNo | Specify the channel number. |
| strUnit | Specify the field where the string is to be stored. |
| lenUnit | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the specified channel number and unit name from the stored current channel setting data.

- Stores the string in the specified storage destination.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the actual string.

### Reference

`getChannelUnitMX100`

## toDoubleValueMX100

### Syntax

```
double toDoubleValueMX100(int dataValue, int point);
```

### Declaration

Visual Basic

```
Public Declare Function toDoubleValueMX100 Lib
"DAQMX100"(ByVal dataValue As Long, ByVal point As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function toDoubleValueMX100 Lib
"DAQMX100"(ByVal dataValue As Integer, ByVal point As Integer)
As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toDoubleValueMX100")]
public static extern double toDoubleValueMX100(int dataValue,
int point);
```

### Parameters

| | |
|---|---|
| dataValue | Specify the data value. |
| point | Specify the decimal point position. |

### Description

Generates the measured value from the specified data value and decimal point position.

### Return value

Returns the measured value as a double-precision floating number.

### Reference

`CDAQMXDataInfo::toDoubleValue`

# toErrorMessageMX100

## Syntax

```
int toErrorMessageMX100(int errorCode, char * errStr, int
errLen);
```

## Declaration

Visual Basic

```
Public Declare Function toErrorMessageMX100 Lib
"DAQMX100"(ByVal errorCode As Long, ByVal errStr As String,
ByVal errLen As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toErrorMessageMX100 Lib
"DAQMX100"(ByVal errorCode As Integer, ByVal errStr As String,
ByVal errLen As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toErrorMessageMX100")]
public static extern int toErrorMessageMX100(int errorCode,
byte[] errStr, int errLen);
```

## Parameters

| | |
|---|---|
| errorCode | Specify the error number. |
| errStr | Specify the field where the string is to be stored. |
| errLen | Specify the byte size of the field where the string is to be stored. |

## Description

Stores the error message string corresponding to the error number to the specified field.

- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- The strings that can be stored are, in general, ASCII strings.

## Return value

Returns the length of the string.

## Reference

`getErrorMessageMX100`

## toItemNameMX100

### Syntax

```
int toItemNameMX100(int itemNo, char * strItem, int lenItem);
```

### Declaration

Visual Basic

```
Public Declare Function toItemNameMX100 Lib "DAQMX100"(ByVal
itemNo As Long, ByVal strItem As String, ByVal lenItem As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toItemNameMX100 Lib
"DAQMX100"(ByVal itemNo As Integer, ByVal strItem As String,
ByVal lenItem As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toItemNameMX100")]
public static extern int toItemNameMX100(int itemNo, byte[]
strItem, int lenItem);
```

### Parameters

| | |
|---|---|
| itemNo | Specify the setup item number. |
| strItem | Specify the field where the string is to be stored. |
| lenItem | Specify the byte size of the field where the string is to be stored. |

### Description

Stores the name string corresponding to the specified setup item number to the specified field.

- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

```
CDAQMXItemConfig::toItemName
```

## toItemNoMX100

### Syntax

```
int toItemNoMX100(const char * strItem);
```

### Declaration

Visual Basic

```
Public Declare Function toItemNoMX100 Lib "DAQMX100"(ByVal
strItem As String) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toItemNoMX100 Lib
"DAQMX100"(ByVal strItem As String) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toItemNoMX100")]
public static extern int toItemNoMX100(byte[] strItem);
```

### Parameters

strItem Gets the name string corresponding to the setup item number.

### Description

Gets the setup item number corresponding to the specified string.

- It is case-sensitive.
- The specified string is, in general, an ASCII string.
- If it does not exist, “Unknown” is returned.

### Return value

Returns the setting item number.

### Reference

`CDAQMXItemConfig::toItemNo`

## toModuleSerialMX100

### Syntax

```
int toModuleSerialMX100(DAQMX100 daqmx100, int moduleNo, char
* strSerial, int lenSerial);
```

### Declaration

Visual Basic

```
Public Declare Function toModuleSerialMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal moduleNo As Long,
ByVal strSerial As String, ByVal lenSerial As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toModuleSerialMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal moduleNo As
Integer, ByVal strSerial As String, ByVal lenSerial As
Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toModuleSerialMX100")]
public static extern int toModuleSerialMX100(int daqmx100, int
moduleNo, byte[] strSerial, int lenSerial);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| moduleNo | Specify the module number. |
| strSerial | Specify the field where the string is to be stored. |
| lenSerial | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the serial number of the specified module number from the stored current system configuration data.

- Stores the string in the specified storage destination.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`getModuleSerialMX100`

## toNetHostMX100

### Syntax

```
int toNetHostMX100(DAQMX100 daqmx100, char * strHost, int
lenHost);
```

### Declaration

Visual Basic

```
Public Declare Function toNetHostMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal strHost As String, ByVal lenHost As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toNetHostMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal strHost As String,
ByVal lenHost As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toNetHostMX100")]
public static extern int toNetHostMX100(int daqmx100, byte[]
strHost, int lenHost);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| strHost | Specify the field where the string is to be stored. |
| lenHost | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the host name from the stored current network information data.

- Stores the string in the specified storage destination.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`getNetHostMX100`

## toRealValueMX100

### Syntax

```
double toRealValueMX100(int iAOPWMValue, int iRangeAOPWM);
```

### Declaration

Visual Basic

```
Public Declare Function toRealValueMX100 Lib "DAQMX100"(ByVal
iAOPWMValue As Long, ByVal iRangeAOPWM As Long) As Double
```

Visual Basic.NET

```
Public Declare Ansi Function toRealValueMX100 Lib
"DAQMX100"(ByVal iAOPWMValue As Integer, ByVal iRangeAOPWM As
Integer) As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toRealValueMX100")]
public static extern double toRealValueMX100(int iAOPWMValue,
int iRangeAOPWM);
```

### Parameters

| | |
|---|---|
| iAOPWMValue | Specify the output data value. |
| iRangeAOPWM | Specify the range type. |

### Description

Converts the output data of AO/PWM data to actual output values according to the specified range type.

- Valid range types are AO and PWM.
- Returns 0.0 if it does not exist.

### Return value

Returns the actual output value.

### Reference

```
CDAQMXAOPWMData::toRealValue
```

## toStringValueMX100

### Syntax

```
int toStringValueMX100(int dataValue, int point, char *
strValue, int lenValue);
```

### Declaration

Visual Basic

```
Public Declare Function toStringValueMX100 Lib
"DAQMX100"(ByVal dataValue As Long, ByVal point As Long, ByVal
strValue As String, ByVal lenValue As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toStringValueMX100 Lib
"DAQMX100"(ByVal dataValue As Integer, ByVal point As Integer,
ByVal strValue As String, ByVal lenValue As Integer) As
Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toStringValueMX100")]
public static extern int toStringValueMX100(int dataValue, int
point, byte[] strValue, int lenValue);
```

### Parameters

| | |
|---|---|
| dataValue | Specify the data value. |
| point | Specify the decimal point position. |
| strValue | Specify the field where the string is to be stored. |
| lenValue | Specify the byte size of the field where the string is to be stored. |

### Description

Generates the measured value from the specified data value and decimal point position.

- Converts the generated measured value into a string and stores to the specified field.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`CDAQMXDataInfo::toStringValue`

## toStyleVersionMX100

### Syntax

```
int toStyleVersionMX100(int style)
```

### Declaration

Visual Basic

```
Public Declare Function toStyleVersionMX100 Lib
"DAQMX100"(ByVal style As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toStyleVersionMX100 Lib
"DAQMX100"(ByVal style As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toStyleVersionMX100")]
public static extern int toStyleVersionMX100(int style);
```

### Parameters

| | |
|---|---|
| style | Specifies the style. |

### Description

Gets the style version from the specified style.

### Return value

Returns the style version.

### Reference

```
CDAQMXSysInfo::toStyleVersion
```

## toUnitPartNoMX100

### Syntax

```
int toUnitPartNoMX100(DAQMX100 daqmx100, char * strPartNo, int
lenPartNo);
```

### Declaration

Visual Basic

```
Public Declare Function toUnitPartNoMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal strPartNo As String, ByVal lenPartNo
As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toUnitPartNoMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal strPartNo As
String, ByVal lenPartNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toUnitPartNoMX100")]
public static extern int toUnitPartNoMX100(int daqmx100,
byte[] strPartNo, int lenPartNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| strPartNo | Specify the field where the string is to be stored. |
| lenPartNo | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the part number from the stored current system configuration data.

- Stores the string in the specified storage destination.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`getUnitPartNoMX100`

## toUnitSerialMX100

### Syntax

```
int toUnitSerialMX100(DAQMX100 daqmx100, char * strSerial, int
lenSerial);
```

### Declaration

Visual Basic

```
Public Declare Function toUnitSerialMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal strSerial As String, ByVal lenSerial
As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toUnitSerialMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal strSerial As
String, ByVal lenSerial As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="toUnitSerialMX100")]
public static extern int toUnitSerialMX100(int daqmx100,
byte[] strSerial, int lenSerial);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| strSerial | Specify the field where the string is to be stored. |
| lenSerial | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the unit's serial number from the stored current system configuration data.

- Stores the string in the specified storage destination.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`getUnitSerialMX100`

## unitCFWriteModeMX100

### Syntax

```
int unitCFWriteModeMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function unitCFWriteModeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function unitCFWriteModeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="unitCFWriteModeMX100")]
public static extern int unitCFWriteModeMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the CF write mode from the stored current system configuration data.

- Returns “No overwrite” if it does not exist.

### Return value

Returns the CF write mode.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getCFWriteMode
```

## unitFrequencyMX100

### Syntax

```
int unitFrequencyMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function unitFrequencyMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function unitFrequencyMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="unitFrequencyMX100")]
public static extern int unitFrequencyMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the power supply frequency from the stored current system configuration data.

- Returns 0 if it does not exist.

### Return value

Returns the power supply frequency.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getFrequency
```

## unitMACMX100

### Syntax

```
int unitMACMX100(DAQMX100 daqmx100, int index);
```

### Declaration

Visual Basic

```
Public Declare Function unitMACMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal index As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function unitMACMX100 Lib "DAQMX100"(ByVal
daqmx100 As Integer, ByVal index As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="unitMACMX100")]
public static extern int unitMACMX100(int daqmx100, int
index);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| index | Specify the byte position. |

### Description

Gets the byte position of the MAC address from the stored current system configuration data.

- Returns the number of bytes of the specified byte position.
- The byte position is specified with the index value (from 0) of the specified number of “MAC address elements.”
- Returns 0 if it does not exist.

### Return value

Returns the byte value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getMAC
```

## unitNoMX100

### Syntax

```
int unitNoMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function unitNoMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function unitNoMX100 Lib "DAQMX100"(ByVal
daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="unitNoMX100")]
public static extern int unitNoMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the unit number from the stored current system configuration data.

- Returns 0 if it does not exist.

### Return value

Returns the unit number.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getUnitNo
```

## unitOptionMX100

### Syntax

```
int unitOptionMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function unitOptionMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function unitOptionMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="unitOptionMX100")]
public static extern int unitOptionMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the option from the stored curent system configuration.

- If it does not exist, “No option” is returned.

### Return value

Returns the option.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getOption
```

## unitStyleMX100

### Syntax

```
int unitStyleMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function unitStyleMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function unitStyleMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="unitStyleMX100")]
public static extern int unitStyleMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the style from the stored current system configuration data.

- Returns 0 if it does not exist.

### Return value

Returns the style value.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getStyle
```

## unitTempMX100

### Syntax

```
int unitTempMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function unitTempMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function unitTempMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="unitTempMX100")]
public static extern int unitTempMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the temperature unit type from the stored current system configuration data.

- If it does not exist, "°C" is returned.

### Return value

Returns the temperature unit type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getTempUnit
```

## unitTypeMX100

### Syntax

```
int unitTypeMX100(DAQMX100 daqmx100);
```

### Declaration

Visual Basic

```
Public Declare Function unitTypeMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function unitTypeMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="unitTypeMX100")]
public static extern int unitTypeMX100(int daqmx100);
```

### Parameters

daqmx100 Specify the device descriptor.

### Description

Gets the unit type from the stored current system configuration data.

- If it does not exist, “Unknown” is returned.

### Return value

Returns the unit type.

### Reference

```
CDAQMX100::getClassMXItemConfig
CDAQMXItemConfig::getClassMXSysInfo
CDAQMXSysInfo::getUnitType
```

## userAOPWMValidMX100

### Syntax

```
int userAOPWMValidMX100(DAQMX100 daqmx100, int idAOPWM, int
aopwmNo);
```

### Declaration

Visual Basic

```
Public Declare Function userAOPWMValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idAOPWM As Long,
ByVal aopwmNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function userAOPWMValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idAOPWM As
Integer, ByVal aopwmNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="userAOPWMValidMX100")]
public static extern int userAOPWMValidMX100(int daqmx100, int
idAOPWM, int aopwmNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idAOPWM | Specify the AO/PWM data identifier. |
| aopwmNo | Specify the AO/PWM data number. |

### Description

Gets valid/invalid for the specified AO/PWM data number from the AO/PWM data of the specified AO/PWM data identifier as a Boolean value.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXAOPWMList
CDAQMXAOPWMData::getAOPWMValid
CDAQMXAOPWMList::getClassMXAOPWMData
```

## userAOPWMValueMX100

### Syntax

```
int userAOPWMValueMX100(DAQMX100 daqmx100, int idAOPWM, int
aopwmNo);
```

### Declaration

Visual Basic

```
Public Declare Function userAOPWMValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idAOPWM As Long,
ByVal aopwmNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function userAOPWMValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idAOPWM As
Integer, ByVal aopwmNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="userAOPWMValueMX100")]
public static extern int userAOPWMValueMX100(int daqmx100, int
idAOPWM, int aopwmNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idAOPWM | Specify the AO/PWM data identifier. |
| aopwmNo | Specify the AO/PWM data number. |

### Description

Gets the output data value of the specified AO/PWM data number from the AO/PWM data of the specified AO/PWM data identifier.

- Returns 0 if it does not exist.

### Return value

Returns the output data value.

### Reference

```
CDAQMX100::getClassMXAOPWMList
CDAQMXAOPWMData::getAOPWMValue
CDAQMXAOPWMList::getClassMXAOPWMData
```

## userBalanceValidMX100

### Syntax

```
int userBalanceValidMX100(DAQMX100 daqmx100, int idBalance,
int balanceNo);
```

### Declaration

Visual Basic

```
Public Declare Function userBalanceValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idBalance As Long,
ByVal balanceNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function userBalanceValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idBalance As
Integer, ByVal balanceNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="userBalanceValidMX100")]
public static extern int userBalanceValidMX100(int daqmx100,
int idBalance, int balanceNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idBalance | Specify the initial balance data identifier. |
| balanceNo | Specify the initial balance data number. |

### Description

Gets valid/invalid of the specified initial balance data number from the initial balance data of the specified initial balance data identifier as a Boolean value.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXBalanceList
CDAQMXBalanceData::getBalanceValid
CDAQMXBalanceList::getClassMXBalanceData
```

## userBalanceValueMX100

### Syntax

```
int userBalanceValueMX100(DAQMX100 daqmx100, int idBalance,
int balanceNo);
```

### Declaration

Visual Basic

```
Public Declare Function userBalanceValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idBalance As Long,
ByVal balanceNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function userBalanceValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idBalance As
Integer, ByVal balanceNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="userBalanceValueMX100")]
public static extern int userBalanceValueMX100(int daqmx100,
int idBalance, int balanceNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idBalance | Specify the initial balance data identifier. |
| balanceNo | Specify the initial balance data number. |

### Description

Gets initial balance value of the specified initial balance data number from the initial balance data of the specified initial balance data identifier.

- Returns 0 if it does not exist.

### Return value

Returns the initial balance value.

### Reference

```
CDAQMX100::getClassMXBalanceList
CDAQMXBalanceData::getBalanceValue
CDAQMXBalanceList::getClassMXBalanceData
```

## userDoubleAOPWMValueMX100

### Syntax

```
double userDoubleAOPWMValueMX100(DAQMX100 daqmx100, int
idAOPWM, int aopwmNo);
```

### Declaration

Visual Basic

```
Public Declare Function userDoubleAOPWMValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Long, ByVal idAOPWM As Long,
ByVal aopwmNo As Long) As Double
```

Visual Basic.NET

```
Public Declare Ansi Function userDoubleAOPWMValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idAOPWM As
Integer, ByVal aopwmNo As Integer) As Double
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="userDoubleAOPWMValueMX100")]
public static extern double userDoubleAOPWMValueMX100(int
daqmx100, int idAOPWM, int aopwmNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idAOPWM | Specify the AO/PWM data identifier. |
| aopwmNo | Specify the AO/PWM data number. |

### Description

Retrieves the output data value of the specified AO/PWM data number from the AO/PWM data of the specified AO/PWM data identifier as the actual output value.

- Returns 0.0 if it does not exist.

### Return value

Returns the actual output value.

### Reference

`CDAQMX100::userDoubleAOPWMValue`

## userDOValidMX100

### Syntax

```
int userDOValidMX100(DAQMX100a daqmx100, int idDO, int doNo);
```

### Declaration

Visual Basic

```
Public Declare Function userDOValidMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idDO As Long, ByVal doNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function userDOValidMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idDO As Integer,
ByVal doNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="userDOValidMX100")]
public static extern int userDOValidMX100(int daqmx100, int
idDO, int doNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idDO | Specify the DO data identifier. |
| doNo | Specify the DO data number. |

### Description

Gets valid/invalid of the specified DO data number from the DO data of the specified DO data identifier as a Boolean value.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXDOList
CDAQMXDOData::getDOValid
CDAQMXDOList::getClassMXDOData
```

## userDOValueMX100

### Syntax

```
int userDOValueMX100(DAQMX100 daqmx100, int idDO, int doNo);
```

### Declaration

Visual Basic

```
Public Declare Function userDOValueMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idDO As Long, ByVal doNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function userDOValueMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idDO As Integer,
ByVal doNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="userDOValueMX100")]
public static extern int userDOValueMX100(int daqmx100, int
idDO, int doNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idDO | Specify the DO data identifier. |
| doNo | Specify the DO data number. |

### Description

Gets ON/OFF for the specified DO data number from the DO data of the specified DO data identifier as a Boolean value.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQMX100::getClassMXDOList
CDAQMXDOData::getDOONOFF
CDAQMXDOList::getClassMXDOData
```

## userTransmitMX100

### Syntax

```
int userTransmitMX100(DAQMX100 daqmx100, int idTrans, int
aopwmNo);
```

### Declaration

Visual Basic

```
Public Declare Function userTransmitMX100 Lib "DAQMX100"(ByVal
daqmx100 As Long, ByVal idTrans As Long, ByVal aopwmNo As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function userTransmitMX100 Lib
"DAQMX100"(ByVal daqmx100 As Integer, ByVal idTrans As
Integer, ByVal aopwmNo As Integer) As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="userTransmitMX100")]
public static extern int userTransmitMX100(int daqmx100, int
idTrans, int aopwmNo);
```

### Parameters

| | |
|---|---|
| daqmx100 | Specify the device descriptor. |
| idTrans | Specify the transmission output data identifier. |
| aopwmNo | Specify the AO/PWM data number. |

### Description

Gets the transmission status of the specified AO/PWM data number from the output transmission output data of the specified transmission output data identifier.

- If it does not exist, “Unspecified (Unknown)” is returned.

### Return value

Returns the transmission status.

### Reference

```
CDAQMX100::getClassMXTransmitList
CDAQMXTransmit::getTransmit
CDAQMXTransmitList::getClassMXTransmit
```

## versionAPIMX100

### Syntax

```
const int versionAPIMX100(void);
```

### Declaration

Visual Basic

```
Public Declare Function versionAPIMX100 Lib "DAQMX100"() As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function versionAPIMX100 Lib "DAQMX100"()
As Integer
```

C#

```
[DllImport("DAQMX100.dll" CharSet=CharSet.Auto,
EntryPoint="versionAPIMX100")]
public static extern int versionAPIMX100();
```

### Description

Gets the version number of this API.

### Return value

Returns the version number.

### Reference

`CDAQMX100::getVersionAPI`

# 18.1 Overview of the MX100 Constants

This Extended API provides the following types of constants.

The data types below are provided. In Visual C/Visual C++, the constants from chapter 6 are inherited. Also, constants and range type constants have been added for the Extended API. See section 18.2. The constants for Visual Basic and Visual Basic.NET/C# are listed in section 18.2.

| Type | Description | Page |
|---|---|---|
| Number of items | Number of modules, etc. | 6-3, 18-4 |
| Maximum values | Maximum length of the tag string, etc. | 6-3, 18-4 |
| Constants | Data numbers for specifying the instantaneous value, etc. | 6-4, 18-3, 18-5 |
| Boolean value | Valid (ON) setting or Invalid (OFF) setting | 6-4, 18-5 |
| Data status values | Status of the measured data | 6-4, 18-5 |
| Alarm types | Upper-limit alarm, etc. | 6-5, 18-6 |
| Channel kinds | Universal input, digital input, etc. | 6-5, 18-6 |
| Scale types | No scaling or linear scale | 6-6, 18-7 |
| Module types | 4-CH universal input, etc. | 6-6, 18-7 |
| Numbers of channels | 4 or 10 | 6-7, 18-8 |
| Interval types | 10 ms to 60000 ms | 6-7, 18-8 |
| Filter coefficient | Input filter coefficient | 6-7, 18-8 |
| RJC types | Internal RJC or external RJC | 6-7, 18-8 |
| Burnout types | Off/Up/Down | 6-7, 18-9 |
| Unit types | MX100 | 6-8, 18-9 |
| Terminal types | Screw terminal or clamp terminal | 6-8, 18-9 |
| A/D integral time types | Auto, 50 Hz or 60 Hz | 6-8, 18-9 |
| Temperature unit types | Celsius or Fahrenheit | 6-8, 18-9 |
| CF write modes | Data write mode to the CF card | 6-8, 18-9 |
| CF status types | CF status | 6-8, 18-10 |
| Unit status values | Unit status | 6-8, 18-10 |
| FIFO status values | FIFO status | 6-9, 18-10 |
| Display format values | Display format of the 7-segment LED | 6-9, 18-10 |
| Output types | Output range type | 6-9, 18-10 |
| Selected values | Output value selection | 6-9, 18-11 |
| Transmission statuses | Transmission output status | 6-9, 18-11 |
| Initial balance results | Result of execution of initial balancing | 6-9, 18-11 |
| Options | Presence/absence of options | 6-9, 18-11 |

| Type | Description | Page |
|---|---|---|
| Range types | | |
| Reference range | See the measurement range of the channels undergoing difference between channels computation for the measurement range of the reference channel. | 6-10, 18-11 |
| Skip | Not used | 18-3, 18-12 |
| DC voltage range types | 20 mV, etc. | 6-10, 18-12 |
| TC range types | Type R, etc. | 6-10, 18-13 |
| RTD (1 mA) range | Pt100, etc. | 6-11, 18-13 |
| RTD (2 mA) range | Pt100, etc. | 6-13, 18-15 |
| RTD (other ) range | Pt500,Pt1000 | 6-14, 18-16 |
| Resistance range | 20 Ω, 200 Ω, or 2 kΩ (0.25 mA) | 6-14, 18-16 |
| Digital input (DI) range | Level or contact input | 18-3, 18-12 |
| Digital input (DI) detailed ranges | Contact input of the 4-CH Universal Input Module and others: detailed range | 6-14, 18-17 |
| Strain range | 2000 μstrain, 20000 μstrain, or 200000 μstrain | 6-15, 18-17 |
| AO range | V output or mA output | 6-15, 18-17 |
| PWM range | PWM output resolution 1 ms or 10 ms | 6-15, 18-17 |

# 18.2 MX100 Constants

This section describes the mnemonic and the meaning of the constants. For the details on the MX100 functions, see the relevant user's manual.

## Visual C/Visual C++ Constants

In Visual C/Visual C++, the constants from chapter 6 are inherited. The following constants have been added.

### Constant

| Mnemonic | Description |
|---|---|
| DAQMX_LIST_ALL | Specifies all data identifiers. |
| DAQMX_LIST_CURRENT | Specifies the current data when copying. |

See also "Constants" in section 6.2.

### Range Types

This Extended API defines bits that differentiate between the specially-defined ranges and the existing ranges. Differentiations can be made using logical operations.

| Mnemonic | Description |
|---|---|
| DAQMX_RANGETYPE_DI | Special range type for digital input |
| DAQMX_RANGETYPE_SKIP | Other special range type |

See also "Range Types" in section 6.2.

### Digital Input (DI) Range Types

The detailed range of digital input is used for the digital input range. If specification is made regardless of the module range, the following is used.

| Mnemonic | Description |
|---|---|
| DAQMX_RANGE_DI_LEVEL | Less than 2.4 V, Greater than or equal to 2.4 V |
| DAQMX_RANGE_DI_CONTACT | 0:open, 1:close |

### Skip

You can specify the following definition for the special range setting.

| Mnemonic | Description |
|---|---|
| DAQMX_RANGE_SKIP | SKIP (not used) |

# Constants for Visual Basic and Visual Basic.NET/C#

This section describes the mnemonics for and meanings of the constants. For the details on the MX100 functions, see the relevant user's manual.
In C#, it is the constant data for the DAQMX100 class. Prefix each constant with CDAQMX100. (Ex.: CDAQMX100.DAQMX_COMMPORT).

## Numbers

| Mnemonic | Description |
|---|---|
| DAQMX100_NUMMODULE | The number of modules. |
| DAQMX100_NUMCHANNEL | The number of channels. |
| DAQMX100_NUMDO | The number of DO data sets. |
| DAQMX100_NUMFIFO | The number of FIFOs. |
| DAQMX100_NUMALARM | The number of alarms. Since API R3.01, the number of alarms has changed to 4. |
| DAQMX100_NUMSEGMENT | The number of 7-segment LEDs. |
| DAQMX100_NUMMACADDR | The number of MAC address elements (byte count). |
| DAQMX100_NUMAOPWM | The number of AO/PWM data. |
| DAQMX100_NUMBALANCE | Number of initial balance data. |
| DAQMX100_NUMOUTPUT | Number of output channel data. |

## Maximum Values

| Mnemonic | Description |
|---|---|
| DAQMX100_MAXHOSTNAMELEN | Maximum length of the host name string. |
| DAQMX100_MAXUNITLEN | Maximum length of the unit name string. |
| DAQMX100_MAXTAGLEN | Maximum length of the tag string. |
| DAQMX100_MAXCOMMENTLEN | Maximum length of the comment string. |
| DAQMX100_MAXSERIALLEN | Maximum length of the MX100 serial number string. |
| DAQMX100_MAXPARTNOLEN | Maximum length of the part number (firmware part number) string. |
| DAQMX100_MAXDECIMALPOINT | Maximum value of the decimal point position. |
| DAQMX100_MAXDISPTIME | Maximum value of the 7-segment LED display time. |
| DAQMX100_MAXPULSETIME | Maximum value of the integer multiple of the pulse interval. |

The maximum length of the string does not include the terminator (NULL).

## Constants

| Mnemonic | Description |
|---|---|
| DAQMX100_INSTANTANEOUS | Data number when specifying the retrieval of the instantaneous value. |
| DAQMX100_REFCHNO_ALL | Specification of all reference channel numbers. |
| DAQMX100_LEVELNO_ALL | Specification of all alarm level numbers. |
| DAQMX100_DONO_ALL | Specification of all DO numbers. |
| DAQMX100_SEGMENTNO_ALL | Specification of all segment numbers of the 7-segment LED. |
| DAQMX100_CHNO_ALL | Specification of all channel numbers. |
| DAQMX100_MODULENO_ALL | Specification of all module numbers. |
| DAQMX100_FIFONO_ALL | Specification of all FIFO numbers. |
| DAQMX100_AOPWMNO_ALL | Specification of all AO/PWM data numbers. |
| DAQMX100_BALANCENO_ALL | Specification of all initial balance numbers. |
| DAQMX100_OUTPUTNO_ALL | Specification of all output data numbers. |
| DAQMX100_REFCHNO_NONE | Undefined reference channel numbers. |
| DAQMX100_LIST_ALL | Specifies all data identifiers. |
| DAQMX100_LIST_CURRENT | Specifies the current data when copying. |

## Boolean Value (valid/invalid)

| Mnemonic | Description |
|---|---|
| DAQMX100_VALID_OFF | Invalid (OFF) value. |
| DAQMX100_VALID_ON | Valid (ON) value. |

## Data Status Values

| Mnemonic | Description |
|---|---|
| DAQMX100_DATA_UNKNOWN | Unknown. |
| DAQMX100_DATA_NORMAL | Normal. |
| DAQMX100_DATA_PLUSOVER | Positive overrange. |
| DAQMX100_DATA_MINUSOVER | Negative overrange. |
| DAQMX100_DATA_SKIP | SKIP (not used). |
| DAQMX100_DATA_ILLEGAL | Illegal data status. |
| DAQMX100_DATA_NODATA | No data status. |
| DAQMX100_DATA_LACK | Data dropout status. |
| DAQMX100_DATA_INVALID | Invalid status. |

## Alarm Types

◊ indicates a space.

| Mnemonic | Description | String |
|---|---|---|
| DAQMX100_ALARM_NONE | Alarm OFF | ◊◊ |
| DAQMX100_ALARM_UPPER | Upper limit alarm | H◊ |
| DAQMX100_ALARM_LOWER | Lower limit alarm | L◊ |
| DAQMX100_ALARM_UPDIFF | Difference upper limit alarm | dH |
| DAQMX100_ALARM_LOWDIFF | Difference lower limit alarm | dL |

## Channel Kinds

| Mnemonic | Description |
|---|---|
| DAQMX100_CHKIND_NONE | Not used |
| DAQMX100_CHKIND_AI | AI* |
| DAQMX100_CHKIND_AIDIFF | AI* (difference computation between channels specification) |
| DAQMX100_CHKIND_AIRJC | AI* (remote RJC channel) |
| DAQMX100_CHKIND_DI | DI* |
| DAQMX100_CHKIND_DIDIFF | DI* (difference between channel computation designation) |
| DAQMX100_CHKIND_DO | DO* (alarm output designation) |
| DAQMX100_CHKIND_DOCOM | DO* (command DO designation) |
| DAQMX100_CHKIND_DOFAIL | DO* (system failure output designation) |
| DAQMX100_CHKIND_DOERR | DO* (system error output designation) |
| DAQMX100_CHKIND_AO | AO* (transmission output) |
| DAQMX100_CHKIND_AOCOM | AO* (command AO) |
| DAQMX100_CHKIND_PWM | PWM* (transmission output) |
| DAQMX100_CHKIND_PWMCOM | PWM* (command PWM) |
| DAQMX100_CHKIND_PI | Pulse input |
| DAQMX100_CHKIND_PIDIFF | Pulse input (difference between channels computation designation) |
| DAQMX100_CHKIND_CI | CAN Bus input |
| DAQM100_CHKIND_CIDIFF | CAN Bus input (difference between channels computation designation) |

* AI: Analog input, DC voltage input, TC input, etc.
AO: Analog output, analog output
DI: Digital input, digital input
DO: Digital output, digital output
PWM: Pulse Width Modulation, PWM output

For input channels, establish the channel types according to the range type in the range settings.

For output channels, set the channel type in the channel settings.

## Scale Types

| Mnemonic | Description |
|---|---|
| DAQMX100_SCALE_NONE | No scale |
| DAQMX100_SCALE_LINER | Linear scale |

## Module Types

| Mnemonic | Description |
|---|---|
| DAQMX100_MODULE_NONE | None |
| DAQMX100_MODULE_MX110UNVH04 | 4-CH, High-Speed Universal Input Module |
| DAQMX100_MODULE_MX110UNVM10 | 10-CH, Medium-Speed Universal Input Module |
| DAQMX100_MODULE_MX115D05H10 | 10-CH, High-Speed Digital Input Module |
| DAQMX100_MODULE_MX125MKCM10 | 10-CH, Medium-Speed Digital Output Module |
| DAQMX100_MODULE_MX110V4RM06 | 6-CH, Medium-Speed 4-wire RTD Resistance Input Module |
| DAQMX100_MODULE_MX112NDIM04 | 4-CH Strain Input Module (NDIS) |
| DAQMX100_MODULE_MX112B35M04 | 4-CH Strain Input Module (350 OHM) |
| DAQMX100_MODULE_MX112B12M04 | 4-CH Strain Input Module (20 OHM) |
| DAQMX100_MODULE_MX115D24H10 | 10-CH, High-Speed Digital Input Module (DC24 V) |
| DAQMX100_MODULE_MX120VAOM08 | 8-CH, Medium-Speed Analog Output Module |
| DAQMX100_MODULE_MX120PWMM08 | 8-CH, Medium-Speed PWM Output Module |
| DAQMX100_MODULE_HIDDEN | A slot in which no module is physically connected, but which is occupied by a module that uses multiple slots (virtual module portion) |
| DAQMX100_MODULE_MX114PLSM10 | 10-CH, Pulse Input Module |
| DAQMX100_MODULE_MX110VTDL30 | 30-CH, Medium-Speed DCV/TC/DI Input Module |
| DAQMX100_MODULE_MX118CANM10 | CAN Bus Module, 10 channels* |
| DAQMX100_MODULE_MX118CANM20 | CAN Bus Module, 20 channels* |
| DAQMX100_MODULE_MX118CANM30 | CAN Bus Module, 30 channels* |
| DAQMX100_MODULE_MX118CANSUB | A slot in which no module is physically connected, but which is occupied by a CAN Bus module that uses multiple slots (virtual CAN Bus module portion) |
| DAQMX100_MODULE_MX118CANMERR | CAN Bus Module position error |
| DAQMX100_MODULE_MX118CANSERR | An error in a slot in which no module is physically connected, but which is occupied by a CAN Bus module that uses multiple slots (virtual CAN Bus module portion) |

* The CAN Bus modules are differentiated by the number of used channels.

## Number of Channels

| Mnemonic | Description |
|---|---|
| DAQMX100_CHNUM_0 | 0 |
| DAQMX100_CHNUM_4 | 4 |
| DAQMX100_CHNUM_6 | 6 |
| DAQMX100_CHNUM_8 | 8 |
| DAQMX100_CHNUM_10 | 10 |
| DAQMX100_CHNUM_30 | 30 |

## Interval Types

| Mnemonic | Description |
|---|---|
| DAQMX100_INTERVAL_10 | 10 msec |
| DAQMX100_INTERVAL_50 | 50 msec |
| DAQMX100_INTERVAL_100 | 100 msec |
| DAQMX100_INTERVAL_200 | 200 msec |
| DAQMX100_INTERVAL_500 | 500 msec |
| DAQMX100_INTERVAL_1000 | 1000 msec |
| DAQMX100_INTERVAL_2000 | 2000 msec |
| DAQMX100_INTERVAL_5000 | 5000 msec |
| DAQMX100_INTERVAL_10000 | 10000 msec |
| DAQMX100_INTERVAL_20000 | 20000 msec |
| DAQMX100_INTERVAL_30000 | 30000 msec |
| DAQMX100_INTERVAL_60000 | 60000msec |

## Filter Coefficient

| Mnemonic | Description |
|---|---|
| DAQMX100_FILTER_0 | Coefficient 0 |
| DAQMX100_FILTER_5 | Coefficient 5 |
| DAQMX100_FILTER_10 | Coefficient 10 |
| DAQMX100_FILTER_20 | Coefficient 20 |
| DAQMX100_FILTER_25 | Coefficient 25 |
| DAQMX100_FILTER_40 | Coefficient 40 |
| DAQMX100_FILTER_50 | Coefficient 50 |
| DAQMX100_FILTER_100 | Coefficient 100 |

## RJC Types

| Mnemonic | Description |
|---|---|
| DAQMX100_RJC_INTERNAL | RJC function of the MX100 |
| DAQMX100_RJC_EXTERNAL | External RJC function |

## Burnout Types

| Mnemonic | Description |
|---|---|
| DAQMX100_BURNOUT_OFF | No burnout detection function |
| DAQMX100_BURNOUT_UP | Display +OVER when burnout is detected |
| DAQMX100_BURNOUT_DOWN | Display -OVER when burnout is detected |

## Unit Type Logic

Can be synthesized using OR computations

| Mnemonic | Description |
|---|---|
| DAQMX100_UNITTYPE_NONE | Unknown |
| DAQMX100_UNITTYPE_MX100 | MX100 |

## Terminal Types

| Mnemonic | Description |
|---|---|
| DAQMX100_TERMINAL_SCREW | Screw terminal |
| DAQMX100_TERMINAL_CLAMP | Clamp terminal |
| DAQMX100_TERMINAL_NDIS | NDIS |
| DAQMX100_TERMINAL_DSUB | D-SUB 9-pin connector |

## A/D Integral Time Types

| Mnemonic | Description |
|---|---|
| DAQMX100_INTEGRAL_AUTO | Auto<br>(The MX100 automatically sets 50 or 60 Hz) |
| DAQMX100_INTEGRAL_50HZ | 50 Hz |
| DAQMX100_INTEGRAL_60HZ | 60 Hz |

## Temperature Unit Types

| Mnemonic | Description |
|---|---|
| DAQMX100_TEMPUNIT_C | °C |
| DAQMX100_TEMPUNIT_F | °F |

## CF Write Modes

| Mnemonic | Description |
|---|---|
| DAQMX100_CFWRITEMODE_ONCE | No overwriting (stops writing when there is no more free space) |
| DAQMX100_CFWRITEMODE_FIFO | Repeat (overwrite from the oldest data) |

## CF Status Types

Can be synthesized using logical OR computations

| Mnemonic | Description |
|---|---|
| DAQMX100_CFSTATUS_NONE | All OFF |
| DAQMX100_CFSTATUS_EXIST | Presence or absence |
| DAQMX100_CFSTATUS_USE | CF card is usable |
| DAQMX100_CFSTATUS_FORMAT | CF card is being formatted |

## Unit Status Values

| Mnemonic | Description |
|---|---|
| DAQMX100_UNITSTAT_NONE | Unknown |
| DAQMX100_UNITSTAT_INIT | Initializing |
| DAQMX100_UNITSTAT_STOP | Stopped |
| DAQMX100_UNITSTAT_RUN | Measuring |
| DAQMX100_UNITSTAT_BACKUP | Measuring (backing up) |

## FIFO Status Values

| Mnemonic | Description |
|---|---|
| DAQMX100_FIFOSTAT_NONE | Unknown |
| DAQMX100_FIFOSTAT_INIT | Initializing |
| DAQMX100_FIFOSTAT_STOP | Stopped |
| DAQMX100_FIFOSTAT_RUN | Measuring |
| DAQMX100_FIFOSTAT_BACKUP | Measuring (backing up) |

## Display Format Values

| Mnemonic | Description |
|---|---|
| DAQMX100_DISPTYPE_NONE | Undefined |
| DAQMX100_DISPTYPE_ON | ON |
| DAQMX100_DISPTYPE_BLINK | Blinking |

## Output Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_OUTPUT_NONE | No output | |
| DAQMX100_OUTPUT_AO_10V | V output | -11.000 to 11.000 V |
| DAQMX100_OUTPUT_AO_20MA | mA output | 0 to 22.000 mA |
| DAQMX100_OUTPUT_PWM_1MS | PWM output resolution 1 ms | 0 to 100.000 % |
| DAQMX100_OUTPUT_PWM_10MS | PWM output resolution 10 ms | 0 to 100.000 % |

Corresponds to the output range type.

### Selected Values

| Mnemonic | Description |
|---|---|
| DAQMX100_CHOICE_PREV | Previous value |
| DAQMX100_CHOICE_PRESET | Specified value |

### Transmission Statuses

| Mnemonic | Description |
|---|---|
| DAQMX100_TRANSMIT_NONE | No specification (unknown) |
| DAQMX100_TRANSMIT_RUN | Output start (outputting) |
| DAQMX100_TRANSMIT_STOP | Output stop |

### Initial Balance Results

| Mnemonic | Description |
|---|---|
| DAQMX100_BALANCE_NONE | No specification |
| DAQMX100_BALANCE_DONE | Concluded successfully |
| DAQMX100_BALANCE_NG | Out of range |
| DAQMX100_BALANCE_ERROR | Error |

### Options

| Mnemonic | Description |
|---|---|
| DAQMX100_OPTION_NONE | No option |
| DAQMX100_OPTION_DS | Dual Save (/DS option) |

### Range Types

This Extended API defines bits that differentiate between the specially-defined ranges and the existing ranges. Differentiations can be made using logical operations.

| Mnemonic | Description |
|---|---|
| DAQMX100_RANGETYPE_DI | Special range type for digital input |
| DAQMX100_RANGETYPE_SKIP | Other special range type |

### Reference Ranges

If this constant is specified as the measurement range of the difference computation channel, the measurement range of the difference computation channel is set to the same range as the measurement range of the reference channel.
The reference range is used for specification when you want to set the same range as the reference channels to be referenced in difference computation and other calculations.

| Mnemonic | Description |
|---|---|
| DAQMX100_RANGE_REFERENCE | Measurement range of the reference channel. |

## Digital Input (DI) Range Types

The detailed range of digital input is used for the digital input range. If specification is made regardless of the module range, the following is used.

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX_RANGE_DI_LEVEL | Level | 0: Less than 2.4 V,<br>1: Greater than or equal to 2.4 V |
| DAQMX_RANGE_DI_CONTACT | Contact input | 0: open, 1: close |

## Skip

You can specify the following definition for the special range setting.

| Mnemonic | Description |
|---|---|
| DAQMX100_RANGE_SKIP | SKIP (not used) |

## DC Voltage Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_RANGE_VOLT_20MV | 20 mV | –20.000 to 20.000 mV |
| DAQMX100_RANGE_VOLT_60MV | 60 mV | –60.00 to 60.00 mV |
| DAQMX100_RANGE_VOLT_200MV | 200 mV | –200.00 to 200.00 mV |
| DAQMX100_RANGE_VOLT_2V | 2 V | –2.0000 to 2.0000 V |
| DAQMX100_RANGE_VOLT_6V | 6 V | –6.000 to 6.000 V |
| DAQMX100_RANGE_VOLT_20V | 20 V | –20.000 to 20.000 V |
| DAQMX100_RANGE_VOLT_100V | 100 V | –100.00 to 100.00 V |
| DAQMX100_RANGE_VOLT_60MVH | 60mV:High resolution | 0.000 to 60.000 mV |
| DAQMX100_RANGE_VOLT_1V | 1V | –10000 to 1.0000 V |
| DAQMX100_RANGE_VOLT_6VH | 6V:High resolution | 0.0000 to 6.0000 V |

## TC Ranges

| Mnemonic | Description | Setting range | |
|---|---|---|---|
| DAQMX100_RANGE_TC_R | R | 0.0 to 1760.0°C | 32 to 3200°F |
| DAQMX100_RANGE_TC_S | S | 0.0 to 1760.0°C | 32 to 3200°F |
| DAQMX100_RANGE_TC_B | B | 0.0 to 1820.0°C | 32 to 3308°F |
| DAQMX100_RANGE_TC_K | K | –200.0 to 1370.0°C | –328 to 2498°F |
| DAQMX100_RANGE_TC_E | E | –200.0 to 800.0°C | –328.0 to 1472.0°F |
| DAQMX100_RANGE_TC_J | J | –200.0 to 1100.0°C | –328.0 to 2012.0°F |
| DAQMX100_RANGE_TC_T | T | –200.0 to 400.0°C | –328.0 to 752.0°F |
| DAQMX100_RANGE_TC_N | N | 0.0 to 1300.0°C | 32 to 237°F |
| DAQMX100_RANGE_TC_W | W | 0.0 to 2315.0°C | 32 to 4199°F |
| DAQMX100_RANGE_TC_L | L | –200.0 to 900.0°C | –328.0 to 1652.0°F |
| DAQMX100_RANGE_TC_U | U | –200.0 to 400.0°C | –328.0 to 752.0°F |
| DAQMX100_RANGE_TC_KP | KpAu7Fe | 0.0 to 300.0K | 0.0 to 300.0K |
| DAQMX100_RANGE_TC_PL | PLATINEL | 0.0 to 1400.0°C | 32 to 2552°F |
| DAQMX100_RANGE_TC_PR | PR40-20 | 0.0 to 1900.0°C | 32 to 3452°F |
| DAQMX100_RANGE_TC_NNM | NiNiMo | 0.0 to 1310.0°C | 32 to 2390°F |
| DAQMX100_RANGE_TC_WR | WRe3-25 | 0.0 to 2400.0°C | 32 to 4352°F |
| DAQMX100_RANGE_TC_WWR | W/WRe26 | 0.0 to 2400.0°C | 32 to 4352°F |
| DAQMX100_RANGE_TC_AWG | Type-N(AWG14) | | |
| | | 0.0 to 1300.0°C | 32 to 2372°F |
| DAQMX100_RANGE_TC_XK | XK | –200.0 to 600.0°C | –328.0 to 1112.0°F |

## RTD (1 mA) Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_RANGE_RTD_1MAPT | Pt100 | –200.0 to 600.0°C |
| | | –328.0 to 1112.0°F |
| DAQMX100_RANGE_RTD_1MAJPT | JPt100 | –200.0 to 550.0°C |
| | | –328.0 to 1022.0°F |
| DAQMX100_RANGE_RTD_1MAPTH | Pt100: high resolution | –140.00 to 150.00°C |
| | | –220.0 to 302.0°F |
| DAQMX100_RANGE_RTD_1MAJPTH | JPt100: high resolution | –140.00 to 150.00°C |
| | | –220.0 to 302.0°F |
| DAQMX100_RANGE_RTD_1MANIS | Ni100:SAMA | –200.0 to 250.0°C |
| | | –328.0 to 482.0°F |
| DAQMX100_RANGE_RTD_1MANID | Ni100:DIN | –60.0 to 180.0°C |
| | | –76.0 to 356.0°F |
| DAQMX100_RANGE_RTD_1MANI120 | Ni120 | –70.0 to 200.0°C |
| | | –94.0 to 392.0°F |
| DAQMX100_RANGE_RTD_1MAPT50 | Pt50 | –200.0 to 550.0°C |
| | | –328.0 to 1022.0°F |
| DAQMX100_RANGE_RTD_1MACU10GE | Cu10:GE | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_RANGE_RTD_1MACU10LN | Cu10:L&N | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_1MACU10WEED | Cu10:WEED | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_1MACU10BAILEY | Cu10:BAILEY | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_1MAJ263B | J263*B | 0.0 to 300.0K |
| | | 0.0 to 300.0K |
| DAQMX100_RANGE_RTD_1MACU10A392 | Cu10 at 20°C | –200.0 to 300.0°C |
| | a=0.00392 | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_1MACU10A393 | Cu10 at 20°C | –200.0 to 300.0°C |
| | a=0.00393 | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_1MACU25 | Cu25 at 0°C | –200.0 to 300.0°C |
| | a=0.00425 | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_1MACU53 | Cu53 at 0°C | –50.0 to 150.0°C |
| | a=0.00426035 | 58.0 to 302.0°F |
| DAQMX100_RANGE_RTD_1MACU100 | Cu100 at 0°C | –50.0 to 150.0°C |
| | a=0.00425 | –58.0 to 302.0°F |
| DAQMX100_RANGE_RTD_1MAPT25 | Pt25 | –200.0 to 550.0°C |
| | | –328.0 to 1022.0°F |
| DAQMX100_RANGE_RTD_1MACU10GEH | Cu10:GE | –200.0 to 300.0°C |
| | :High resolution | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_1MACU10LNH | Cu10:L&N | –500.0 to 500.0°C |
| | :High resolution | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_1MACU10WEEDH | Cu10:WEED | –500.0 to 500.0°C |
| | :High resolution | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_1MACU10BAILEYH | Cu10:BAILEY | –500.0 to 500.0°C |
| | :High resolution | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_1MAPTN | Pt100 | –800.0 to 800.0°C |
| | :high noise resistance | –328.0 to 1112.0°F |
| DAQMX100_RANGE_RTD_1MAJPTN | Jpt100 | –750.0 to 750.°C |
| | :high noise resistance | –328.0 to 1022.0°F |
| DAQMX100_RANGE_RTD_1MAPTG | Pt100G | –200.0 to 600.0°C |
| | | –328.0 to 1112.0°F |
| DAQMX100_RANGE_RTD_1MACU100G | Cu100G | –200.0 to 200.0°C |
| | | –328.0 to 392.0°F |
| DAQMX100_RANGE_RTD_1MACU50G | Cu50G | –200.0 to 200.0°C |
| | | –328.0 to 392.0°F |
| DAQMX100_RANGE_RTD_1MACU10G | Cu10G | –200.0 to 200.0°C |
| | | –328.0 to 392.0°F |

## RTD (2 mA) Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_RANGE_RTD_2MAPT | Pt100 | –200.0 to 250.0°C |
| | | –328.0 to 482.0°F |
| DAQMX100_RANGE_RTD_2MAJPT | JPt100 | –200.0 to 250.0°C |
| | | –328.0 to 482.0°F |
| DAQMX100_RANGE_RTD_2MAPTH | Pt100 | –140.00 to 150.00°C |
| | :High resolution | –220.0 to 302.0°F |
| DAQMX100_RANGE_RTD_2MAJPTH | JPt100 | –140.00 to 150.00°C |
| | :High resolution | –220.0 to 302.0°F |
| DAQMX100_RANGE_RTD_2MAPT50 | Pt50 | –200.0 to 550.0°C |
| | | –328.0 to 1022.0°F |
| DAQMX100_RANGE_RTD_2MACU10GE | CU10:GE | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_2MACU10LN | Cu10:L&N | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_2MACU10WEED | Cu10:WEED | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_2MACU10BAILEY | Cu10:BAILEY | –200.0 to 300.0°C |
| | | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_2MAJ263B | J263*B | 0.0 to 300.0K |
| | | 0.0 to 300.0K |
| DAQMX100_RANGE_RTD_2MACU10A392 | Cu10 at 20°C | –200.0 to 300.0°C |
| | a=0.00392 | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_2MACU10A393 | Cu10 at 20°C | –200.0 to 300.0°C |
| | a=0.00393 | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_2MACU25 | Cu25 at 0°C | –200.0 to 300.0°C |
| | a=0.00425 | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_2MACU53 | Cu53 at 0°C | –50.0 to 150.0°C |
| | a=0.00426035 | –58.0 to 302.0°F |
| DAQMX100_RANGE_RTD_2MACU100 | Cu100 at 0°C | –50.0 to 150.0°C |
| | a=0.00425 | –58.0 to 302.0°F |
| DAQMX100_RANGE_RTD_2MAPT25 | Pt25 | –200.0 to 550.0°C |
| | | –328.0 to 1022.0°F |
| DAQMX100_RANGE_RTD_2MACU10GEH | CU10:GE | –200.0 to 300.0°C |
| | :High resolution | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_2MACU10LNH | Cu10:L&N | –200.0 to 300.0°C |
| | :High resolution | –328.0 to 572.0°F |

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_RANGE_RTD_2MACU10WEEDH | Cu10:WEED | –200.0 to 300.0°C |
| | :High resolution | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_2MACU10BAILEYH | Cu10:BAILEY | –200.0 to 300.0°C |
| | :High resolution | –328.0 to 572.0°F |
| DAQMX100_RANGE_RTD_2MAPTN | Pt100 | –200.0 to 250.0°C |
| | :high noise resistance | –328.0 to 482.0°F |
| DAQMX100_RANGE_RTD_2MAJPTN | Jpt100 | –200.0 to 250.0°C |
| | :high noise resistance | –328.0 to 482.0°F |
| DAQMX100_RANGE_RTD_2MACU100G | Cu100G | –200.0 to 200.0°C |
| | | –328.0 to 392.0°F |
| DAQMX100_RANGE_RTD_2MACU50G | Cu50G | –200.0 to 200.0°C |
| | | –328.0 to 392.0°F |
| DAQMX100_RANGE_RTD_2MACU10G | Cu10G | –200.0 to 200.0°C |
| | | –328.0 to 392.0°F |

## RTD (other ) Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_RANGE_RTD_025MAPT500 | 0.25 mA Pt500 | –200.0 to 600.0°C |
| | | –328.0 to 1112.0°F |
| DAQMX100_RANGE_RTD_025MAPT1K | 0.25 mA Pt1000 | –200.0 to 600.0°C |
| | | –328.0 to 1112.0°F |

## Resistance Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_RANGE_RES_20 | 20 Ω | 0 to 20.000 |
| DAQMX100_RANGE_RES_200 | 200 Ω | 0 to 200.00 |
| DAQMX100_RANGE_RES_2K | 2 kΩ (0.25mA) | 0 to 2000.0 |

## Digital Input (DI) Detailed Range Types

| Mnemonic | Description |
|---|---|
| DAQMX100_RANGE_DI_LEVEL_AI | DI/Level of the universal input module |
| DAQMX100_RANGE_DI_CONTACT_AI4 | DI/Contact input of the 4-CH, Universal Input Module |
| DAQMX100_RANGE_DI_CONTACT_AI10 | DI/Contact input of the 10-CH, Universal Input Module |
| DAQMX100_RANGE_DI_CONTACT_AI30 | DI/Contact input of the 30-CH, Universal Input Module |
| DAQMX100_RANGE_DI_LEVEL_DI | DI/Level of the digital input module |
| DAQMX100_RANGE_DI_CONTACT_DI | DI/Contact input of the digital input module |
| DAQMX100_RANGE_DI_LEVEL_DI5V* | DI 5V<br>DI/contact input of the digital input module (5 V) |
| DAQMX100_RANGE_DI_LEVEL_DI24V | DI 24V<br>DI/contact input of the digital input module (24 V) |

* Separate name for DAQMX100_RANGE_DI_LEVEL_DI. Defined to differentiate from 24 V.

## Strain Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_RANGE_STRAIN_2K | 2000 μSTR | –2000.0 to 2000.0<br>±563200000 |
| DAQMX100_RANGE_STRAIN_20K | 20000 μSTR | –20000 to 20000<br>±56320000 |
| DAQMX100_RANGE_STRAIN_200K | 200000 μSTR | –200000 to 200000<br>±5632000 |

## AO Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_RANGE_AO_10V | V output | –10.000 to 10.000 V |
| DAQMX100_RANGE_AO_20MA | mA output | 4.000 to 20.000 mA |

## PWM Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQMX100_RANGE_PWM_1MS | PWM output resolution 1 ms | 0 to 100.000 % |
| DAQMX100_RANGE_PWM_10MS | PWM output resolution 10 ms | 0 to 100.000 % |

## Communication Range

| Mnemonic | Description | Setting Range |
|---|---|---|
| DAQMX100_RANGE_COM_CAN | CAN Bus | –30000 to 30000 |

## Pulse Ranges

| Mnemonic | Description | Setting Range |
|---|---|---|
| DAQMX100_RANGE_PI_LEVEL | Pulse/Level input | 0 to 30000 |
| DAQMX100_RANGE_PI_CONTACT | Pulse/Contact input | 0 to 30000 |

# 18.3 MX100 Setting Item Numbers

See section 6.3.

# 18.4 MX100 Types

## Detailed Explanation of Types

### DAQMX100

Handled as a Long type in Visual Basic. Handled as an int type on the API before R3.01 and a void* type on the API R3.01 or later in Visual C++/Visual C. Handled as an integer type in Visual Basic.NET. Handled as the int type in C#.

### Callback

| Type | Description |
|---|---|
| Callback type | Add prefix “DLL” to the function name and write in uppercase.<br>Example: callback type of the openMX100 function: DLLOPENMX100 |

The callback type is used to link the executable module (.dll) when using Visual C.

# 19.1 DARWIN Class

The extended API consists of the following additional API classes.

- ■ **CDAQHandler**
  - • **CDAQDARWIN**
    - ▲ **CDAQDA100**
      - ♦ **CDAQDA100Reader**
- ▲ **CDAQDARWINDataBuffer**

■ : Class common to the MX100 and the DARWIN.
• : Class dedicated to the MX100.
▲ : Class added for the DA100 (extended API)
♦ : Class added for the DA100 for reader (loading istantaneous value data)

### CDAQDA100

The extension API handler class.

### CDAQDA100Reader

The handler class for loading instantaneous value data.

### CDAQDARWINDataBuffer

The channel data class.

***Note***

Data types and retrieval method
The retrieval of the DARWIN data is handled by a dedicated class. The setup data is not handled by a dedicated class, since the data is retrieved at the line level.

# 19.2 Correspondence between the Functions and Class/Member Functions - DARWIN -

This section indicates functions and classes that this extension API supports.

***Note***

This extension API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not given. The functions can be added by using the commands of the DARWIN communication function.

The word “command” in the table signifies the command of the DARWIN communication function. For the details on the command, see the Communication Interface User’s Manual.

There are two types of functions, status transition functions and retrieval functions.
Status transition functions control DARWIN.
With retrieval functions, the parameter values of the current status are retrieved.
When using retrieval functions, the data value of the stored current status is returned (the status of the extension API does not change).

## Status Transition Functions

### Communication Functions

| Function | Command | Class and Member Function |
|---|---|---|
| Communication connection | - | CDAQDA100:: open |
| Comm. cut | - | CDAQDA100:: close |
| Send in units of lines | - | CDAQDA100:: sendLine |
| Receive in units of lines | - | CDAQDA100:: receiveLine |
| Receive in units of bytes | - | CDAQDA100:: receiveByte |
| Send trigger | (ESC T) | CDAQDA100:: sendTrigger |
| Update status | (ESC S) | CDAQDA100:: updateStatus |
| Execute command | - | CDAQDA100:: runCommand |

Except during connection or status updates, communciation functions do not perform status updates of stored data.

## Control Functions

| Function | Command | Class and Member Function |
|---|---|---|
| Switch operation mode | DS | CDAQDA100:: switchMode |
| Retrieve code type Switch (binary/ASCII code) | - | CDAQDA100:: switchCode |
| Reconfigure | RS | CDAQDA100:: reconstruct |
| Initialize settings | RC | CDAQDA100:: initSetValue |
| Reset alarms | AR | CDAQDA100:: ackAlarm |
| Set the date/time | SD | CDAQDA100:: setDateTime |
| Calculation start/stop | EX | CDAQDA100:: switchCompute |
| Report start/stop | DR | CDAQDA100:: switchReport |
| Establish setup mode | XE | CDAQDA100:: establish |

Generally, the status is updated at the end of the process.
Status is not updated when establishing the setup mode.

## Setting (Operation Mode) Functions

| Function | | Command | Class and Member Function |
|---|---|---|---|
| Range | SKIP (not used) | SR | CDAQDA100:: setRange |
| | DC voltage input | SR | CDAQDA100:: setRange |
| | Thermocouple input | SR | CDAQDA100:: setRange |
| | RTD input | SR | CDAQDA100:: setRange |
| | Contact input (DI) | SR | CDAQDA100:: setRange |
| | DC Current | SR | CDAQDA100:: setRange |
| | Strain | SR | CDAQDA100:: setRange |
| | Pulse | SR | CDAQDA100:: setRange |
| | Power monitor | SR | CDAQDA100:: setRange |
| | Difference computation between channels | SR | CDAQDA100:: setChDELTA |
| | Remote RJC | SR | CDAQDA100:: setChRRJC |
| Scaling unit | | SN | CDAQDA100:: setChUnit |
| Alarm | | SA | CDAQDA100:: setChAlarm |

Becomes the channel unit setting.
The status is updated after the setting is entered.

## Data Retrieval Functions

| Function | | | Command | Class and Member Function |
|---|---|---|---|---|
| Meas data | | Meas ch | TS, FM | CDAQDA100:: measInstCh |
| (inst value) | | Comp ch | TS, FM | CDAQDA100:: mathInstCh |
| Ch info | | Meas ch | TS, LF | CDAQDA100:: measInfoCh |
| data | | Comp ch | TS, LF | CDAQDA100:: mathInfoCh |
| System configuration data | | | TS, CF | CDAQDA100:: updateSystemConfig |
| Report status | | | TS,RF | CDAQDA100:: updateReportStatus |
| Setup data | | | | |
| Declare | Op. | Sngl spec | TS, LF | CDAQDA100:: talkOperationChData |
| | mode | Specify rng | TS, LF | CDAQDA100:: talkOperationData |
| | Setup | Sngl spec | TS, LF | CDAQDA100:: talkSetupChData |
| | mode | Specify range | TS, LF | CDAQDA100:: talkSetupData |
| | Cal | Sngl spec | TS, LF | CDAQDA100:: talkCalibrationChData |
| | mode | Specify range | TS, LF | CDAQDA100:: talkCalibrationData |
| Get data in units of lines | | | - | CDAQDA100:: getSetDataByLine |

Setup data is not stored, so it is retrieved in the same order as mentioned in sections 7.2 and 7.3. In this case, status is not updated.
Channel information data and system configuration data are stored internally, but the user can explicitly perform acquisition.
The report status is stored internally, but is not updated unless the user explicitly acquires it.

# Retrieval Functions

## Measured Data

| Data Name | | Class and Member Function |
|---|---|---|
| Data value | | CDAQDARWINDataInfo:: getValue |
| Data status values | | CDAQDARWINDataInfo:: getStatus |
| Alarm (presence/absence) | | CDAQDARWINDataBuffer:: isDataAlarm |
| Meas val | Dbl. integer | CDAQDARWINDataInfo:: getDoubleValue |
| | String | CDAQDARWINDataInfo:: getStringValue |
| Time | Year | CDAQDARWINDateTime:: getFullYear |
| | Month | CDAQDARWINDateTime:: getMonth |
| | Day | CDAQDARWINDateTime:: getDay |
| | Hour | CDAQDARWINDateTime:: getHour |
| | Minute | CDAQDARWINDateTime:: getMinute |
| | Second | CDAQDARWINDateTime:: getSecond |
| Alarm type | | CDAQDARWINDataInfo:: getAlarm |

The data is retrieved from CDAQDA100::getClassDataBuffer through CDAQDARWINDataBuffer::getClassDARWINDataInfo and CDAQDARWINDataBuffer::getClassDARWINDateTime.

## Channel Information

| Data Name | Class and Member Function |
|---|---|
| Decimal point position | CDAQDARWINChInfo:: getPoint |
| Channel status | CDAQDARWINChInfo:: getChStatus |
| Unit name | CDAQDARWINChInfo:: getUnit |

The data is retrieved from CDAQDA100::getClassDataBuffer through CDAQDARWINDataBuffer::getClassDARWINChInfo.

## System Configuration Data

| Data Name | | Class and Member Function |
|---|---|---|
| Measurement interval | | CDAQDARWINSysInfo:: getInterval |
| Unit | Presence or absence | CDAQDARWINSysInfo:: isExist |
| Module | Internal code | CDAQDA100:: getModuleCode |
| | Module name | CDAQDARWINSysInfo:: getModuleName |

The data is retrieved from CDAQDA100::getClassSysInfo.

## Status Data

| Data Name | Class and Member Function |
|---|---|
| Status byte | CDAQDA100:: getByte |
| Retrieve code type (binary/ASCII code) | CDAQDA100:: getCode |
| Report status | CDAQDA100:: getReport |

## Utilities

| Function/Data Name | | Class and Member Function |
|---|---|---|
| Meas val | Chng to double integer | CDAQDARWINDataInfo:: toDoubleValue |
| | Convert into string. | CDAQDARWINDataInfo:: toStringValue |
| Alarm | Alarm type string | CDAQDARWINDataInfo:: getAlarmName |
| | Get the maximum length of the string | CDAQDARWINDataInfo::getMaxLenAlarmName |
| The version number of this API | | CDAQDA100:: getVersionAPI |
| The revision number of this API | | CDAQDA100:: getRevisionAPI |
| Error | Error message string | CDAQDA100:: getErrorMessage |
| | Error message string maximum length | CDAQDA100:: getMaxLenErrorMessage |

# 19.3 Programming - DARWIN/Visual C++ -

## Adding the Path to the Include File

Add the path of the include file (DAQDA100.h) to the project. The method of adding the include file varies depending on the environment used.

## Declaration in the Source File

Write the declaration in the source file.

```
#include "DAQDA100.h"
```

***Note***

The include file of the common section (DAQHandler.h, DARWIN.h) and that for DARWIN (DAQDARWIN.h) is referenced from the include file described above. Thus, declaration for it is not necessary.

## Library Designation

Adds libraries (DAQDA100.lib, DAQDARWIN.lib, and DAQHandler.lib) to the project. The method of adding the include file varies depending on the environment used. This enables the use of all classes. It also enables the use of all Visual C functions.

# Retrieval of the Measured Data

## Program Example

```
////////////////////////////////////////////////////////////
// DA100 sample for measurement
#include <stdio.h>
#include "DAQDA100.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  CDAQDA100 daqda100; //class
  int value;
  //connect
  rc = daqda100.open("192.168.1.11");
  //get
  rc = daqda100.measInstCh(0, 1);
  value = ((daqda100.getClassDataBuffer(0, 1))
  ->getClassDARWINDataInfo()).getValue();
  //disconnect
  rc = daqda100.close();
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Overview

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field. Reads the measured values and concludes the process.

### Communication Connection

```
rc = daqda100.open("192.168.1.11");
```

The IP address of the DARWIN is specified. This statement specifies the communication constant for the DARWIN communication port number.

### Retrieval of the Measured Data of Channel 1

```
rc = daqda100.measInstCh(0, 1);
```

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field.

### Reading the Measured Value

```
value = ((daqda100.getClassDataBuffer(0, 1))-
>getClassDARWINDataInfo()).getValue();
```

Reads the measured values of channel 1 retrieved from various types of information on channel 1 through the measured data.

**Comm. cut**

```
rc = daqda100.close();
```

Drops the connection.

# 19.4 Functions and Class Members for Loading Instantaneous Value Data

This section indicates the correspondence between the functions that are supported by the instantaneous value loading functions and the class.

There are two types of functions, status transition functions and retrieval functions. Status transition functions control DARWIN. When using status transition functions, if measured data is retrieved with a data retrieval function, the measured data increments by only interval's worth of data (the status of the extension API changes).
The retrieval function returns the parameter value. When data is retrieved, the data value of the current status is returned (the status of the extension API does not change).

## Status Transition Functions

### Communication Functions

| Function | Command | Class and Member Function |
|---|---|---|
| Comm. open | - | CDAQDA100Reader:: open |
| Comm. cut | - | CDAQDA100Reader:: close |

### Data Retrieval Functions

| Function | | Command | Class and Member Function |
|---|---|---|---|
| Meas data | Meas channels | EF | CDAQDA100Reader:: measInstCh |
| (inst val) | Comp channels | EF | CDAQDA100Reader:: mathInstCh |
| Channel information data | | | |
| | Meas channels | EL | CDAQDA100Reader:: measInfoCh |
| | Comp channels | EL | CDAQDA100Reader:: mathInfoCh |

Channel information data is stored internally, but the user can explicitly perform acquisition.

# Retrieval Functions

## Measured Data

| Data Name | | Class and Member Function |
|---|---|---|
| Data value | | CDAQDARWINDataInfo:: getValue |
| Data status values | | CDAQDARWINDataInfo:: getStatus |
| Alarm (presence/absence) | | CDAQDARWINDataBuffer:: isAlarm |
| Meas val | Double integer | CDAQDARWINDataInfo:: getDoubleValue |
| | String | CDAQDARWINDataInfo:: getStringValue |
| Time | Year | CDAQDARWINDateTime:: getFollYear |
| | Month | CDAQDARWINDateTime:: getMonth |
| | Day | CDAQDARWINDateTime:: getDay |
| | Hour | CDAQDARWINDateTime:: getHour |
| | Minute | CDAQDARWINDateTime:: getMinute |
| | Second | CDAQDARWINDateTime:: getSecond |
| | Milliseconds | CDAQDARWINDateTime:: getMilliSecond |
| Alarm type | | CDAQDARWINDataInfo:: getAlarm |

The data is retrieved from CDAQDA100Reader::getClassDataBuffer through CDAQDARWINDataBuffer::getClassDARWINDataInfo and CDAQDARWINDataBuffer::getClassDARWINDateTime.

## Channel Information Data

| Data Name | Class and Member Function |
|---|---|
| Decimal point position | CDAQDARWINChInfo:: getPoint |
| Channel status | CDAQDARWINChInfo::getChStatus |
| Unit name | CDAQDARWINChInfo:: getUnit |

The data is retrieved from CDAQDA100Reader::getClassDataBuffer through CDAQDARWINDataBuffer::getClassDARWINChInfo.

## Utilities

| Function/Data Name | | Class and Member Function |
|---|---|---|
| Measured values | Chng to dbl integer | CDAQDARWINDataInfo:: toDoubleValue |
| | Convert into string | CDAQDARWINDataInfo:: toStringValue |
| Alarm | Gets the alarm type string | CDAQDARWINDataInfo:: getAlarmName |
| | Get max lngth of alarm strg | CDAQDARWINDataInfo:: getMaxLenAlarmName |
| Get the version number of this API | | CDAQDA100Reader:: getVersionAPI |
| Get the revision number of this API | | CDAQDA100Reader:: getRevisionAPI |
| Error | Get error message string | CDAQDA100Reader:: getErrorMessage |
| | Get max lngth error message string | CDAQDA100Reader:: getMaxLenErrorMessage |

# 19.5 Program for Loading Instantaneous Value Data - DARWIN/Visual C++ -

## Adding the Path to the Include File

Add the path of the include file (DAQDA100Reader.h) to the project. The method of adding the include file varies depending on the environment used.

## Declaration in the Source File

Write the declaration in the source file.

```
#include "DAQDA100Reader.h"
```

***Note***

The include files of the common section and for DARWIN (DAQHandler.h, DAQDARWIN.h, and DAQDA100.h) is referenced from the include file described above. Thus, declaration for it is not necessary.

## Library Designation

Adds libraries (DAQDA100.lib, DAQDARWIN.lib, and DAQHandler.lib) to the project. The method of adding the include file varies depending on the environment used. This enables the use of all classes. It also enables the use of all Visual C functions.

# Retrieval of the Measured Data

## Program Example

```
////////////////////////////////////////////////////////////
// DA100 sample for measurement
#include <stdio.h>
#include "DAQDA100Reader.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  CDAQDA100 daqda100; //class
  int value;
  //connect
  rc = daqda100.open("192.168.1.11");
  //get
  rc = daqda100.measInstCh(0, 1);
  value = ((daqda100.getClassDataBuffer(0, 1))
  ->getClassDARWINDataInfo()).getValue();
  //disconnect
  rc = daqda100.close();
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Overview

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field. Reads the measured values and concludes the process.

### Communication Connection

```
rc = daqda100.open("192.168.1.11");
```

The IP address of the DARWIN is specified. This statement specifies the communication constant for the port number for loading the instantaneous value data.

### Retrieval of the Measured Data of Channel 1

```
rc = daqda100.measInstCh(0, 1);
```

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field.

### Reading Measured Values

```
value = ((daqda100.getClassDataBuffer(0, 1))-
>getClassDARWINDataInfo()).getValue();
```

Reads the measured values of channel 1 retrieved from various types of information on channel 1 through the measured data.

**Comm. cut**

```
rc = daqda100.close();
```

Drops the connection.

# 19.6 Details of the DARWIN Class

The classes are listed in alphabetical order by the class name.

## CDAQDA100 Class

- **CDAQHandler**
  - **CDAQDARWIN**
    - **CDAQDA100**

This class communicates with DARWIN, and stores the retrieved data.
The following data can be stored.

- Status bytes
- System configuration data
- Channel information data
- Time information data
- Measured data

When each function is executed, the data is updated as necessary. Also, the user can update the data explicitly.

### Public Members

#### Construct/Destruct

| | |
|---|---|
| CDAQDA100 | Constructs an object. |
| ~CDAQDA100 | Destructs an object. |

#### Communication Functions

| | |
|---|---|
| updateStatus | Updates the status byte. |

#### Control Functions

| | |
|---|---|
| switchMode | Switches the configuration mode. |
| switchCode | Switches the retrieve code type. |
| reconstruct | Executes reconfiguration. |
| initSetValue | Initializes operation mode settings. |
| ackAlarm | Resets alarms. |
| switchCompute | Switches computation. |
| switchReport | Switches the report execution type. |

### Setup Functions

| | |
|---|---|
| setRange | Sets the range. |
| setChDELTA | Sets difference computation between channels. |
| setChRRJC | Sets remote RJC. |
| setChUnit | Sets the unit name. |
| setChAlarm | Sets the alarm value. |

### Data Retrieval Functions

| | |
|---|---|
| measInstCh | Gets the measured data of the measurement channel. |
| mathInstCh | Gets the measured data of the computation channel. |
| measInfoCh | Gets the channel information data of the measurement channel. |
| mathInfoCh | Gets the channel information data of the computation channel. |
| updateSystemConfig | Updates the system configuration data. |
| updateReportStatus | Updates the report status. |
| talkOperationChData | Declares the retrieval of the setup data of operation mode on independent channels. |
| talkSetupChData | Declares the retrieval of the setup data of basic setting mode on independent channels. |
| talkCalibrationChData | Declares the retrieval of the setup data of calibration mode on independent channels. |

### Member Data Manipulation

| | |
|---|---|
| getClassSysInfo | Gets the system configuration data. |
| getClassDataBuffer | Gets the type information for each channel. |
| getCode | Gets the retrieve code type. |
| getByte | Gets the status byte. |
| getReport | Gets the report status. |

- **Overridden Members**

### Communication Functions

| | |
|---|---|
| open | Establishes connection. |

### Data Retrieval Functions

| | |
|---|---|
| getData | Gets the measured data. |
| getChannel | Gets the channel information data. |

### Control Functions

| | |
|---|---|
| setDateTime | Sets the date/time. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

- **Inherited Members**

  See CDAQHandler.

  ```
  close getErrorMessage getMaxLenErrorMessage getRevisionAPI
  getVersionAPI receiveLine sendLine setTimeOut
  ```

  See CDAQDARWIN

  ```
  compute establish getChDataByASCII getChDataByBinary getChInfo
  getReportStatus getSetDataByLine getStatusByte getSystemConfig
  initSystem receiveByte reporting runCommand sendTrigger
  setAlarm setDELTA setDI setRRJC setRTD setPOWER setPULSE
  setScallingUnit setSKIP setSTRAIN setTC setVOLT
  talkCalibrationData talkChInfo talkDataByASCII
  talkDataByBinary talkOperationData talkSetupData transMode
  ```

## Protected Members

### Data Members

| | |
|---|---|
| m_code | Field for storing the retrieve code type. |
| m_statusByte | Field for storing the status byte. |
| m_reportStatus | Field for storing the report status. |
| m_cSysInfo | Field for storing the system configuration data. |
| m_cMeasData | Field for storing various types of information on measurement channels. |
| m_cMathData | Field for storing various types of information on computation channels. |

### Communication Functions

| | |
|---|---|
| updateAll | Updates all status and information data. |
| updateRenew | Updates the status. |
| updateChInfo | Updates all channel information data. |

### Data Retrieval

| | |
|---|---|
| getInstChBINARY | Gets the measured data in binary mode. |
| getInstChASCII | Gets the measured data in ASCII mode. |
| getInfoCh | Gets the channel information data. |

### Member Data Manipulation

| | |
|---|---|
| measClear | Initializes the data member for retrieval of the measured data. |

### Utilities

| | |
|---|---|
| chNumMax | Gets the number of channels. |
| chNumMaxReport | Gets the number of report channels. |
| getVersionDA100DLL | Gets the version number of the DLL. |
| getRevisionDA100DLL | Gets the revision number of the DLL. |

- **Inherited Members**

  See CDAQHandler.

  `m_comm m_nRemainSize receive receiveRemain send`

  See CDAQDARWIN.

  `checkAck getVersionDLL getRevisionDLL startTalker`

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQDA100::ackAlarm

### Syntax

```
int ackAlarm(void);
```

### Description

Executes the Alarm set system control type.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

`initSystem updateRenew`

## CDAQDA100::CDAQDA100

### Syntax

```
CDAQDA100(void);
CDAQDA100(const char * strAddress, unsigned int uiPort =
DAQDARWIN_COMMPORT, nt * errCode = NULL);
virtual ~CDAQDA100(void);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| uiPort | Specify the port number. |
| errCode | Specify the destination where the error number is to be returned. |

### Description

Constructs or destructs an object.

When constructing, the data member is initialized. When the parameters are specified, a connection is established during construction. If the return destination is specified, the error number during connection is returned.

When destructing, the data member field is released. The connection is dropped when the communication descriptor exists. The error number is not returned.

### Reference

`measClear open CDAQDARWIN::CDAQDARWIN`

## CDAQDA100::chNumMax

### Syntax

```
int chNumMax(int chType);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |

### Description

Retrieves the maximum number of channels within the specified channel type.

Identifies the model (standalone or expandable) with system configuration data and returns the value.

### Return value

Returns the maximum number of channels.

### Reference

`chNumMaxReport getClassSysInfo CDAQDARWINSysInfo::isExist`

## CDAQDA100::chNumMaxReport

### Syntax

```
virtual int chNumMaxReport(void);
```

### Description

Retrieves the maximum number of channels when the channel type is report.

For the DR130, the value is not correct because identification cannot be made.

Override if necessary.

### Return value

Returns the maximum number of channels.

## CDAQDA100::getByte

### Syntax

```
int getByte(void);
```

### Description

Gets the value of the status byte field from the data member.

### Return value

Returns the status byte.

## CDAQDA100::getChannel

### Syntax

```
virtual int getChannel(int chType, int chNo, CDAQChInfo &
cChInfo);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| cChInfo | Specify the destination where the channel information data is to be returned. |

### Description

This function gets the channel information data by channels.

Gets the channel information data of the specified channel.

### Return value

Returns an error number.

### Reference

```
getClassDataBuffer measInstCh
CDAQDARWINDataBuffer::getClassDARWINChInfo
```

## CDAQDA100::getClassDataBuffer

### Syntax

```
CDAQDARWINDataBuffer * getClassDataBuffer(int chType, int
chNo);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets various kinds of information data of the specified channel from the data member.

Returns NULL if it does not exist.

### Return value

Returns a pointer to the object.

## CDAQDA100::getClassSysInfo

### Syntax

```
CDAQDARWINSysInfo & getClassSysInfo(void);
```

### Description

Returns the object of the system configuration data from the data member.

### Return value

Returns a reference to the object.

## CDAQDA100::getCode

### Syntax

```
int getCode(void);
```

### Description

Gets the value of the retrieve code type field from the data member.

### Return value

Returns the retrieve code type.

## CDAQDA100::getData

### Syntax

```
virtual int getData(int chType, int chNo, CDAQDateTime &
cDateTime, CDAQDataInfo & cDataInfo);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| cDateTime | Specify the destination where the time information data is to be returned. |
| cDataInfo | Specify the destination where the measured data is to be returned. |

### Description

This function gets the instantaneous values in units of channels.

Gets the measured data of the specified channel in binary code.

### Return value

Returns an error number.

### Reference

`getClassDataBuffer measInstCh CDAQDARWINDataBuffer::getClassDARWINDateTime CDAQDARWINDataBuffer::getClassDARWINDataInfo`

## CDAQDA100::getInfoCh

### Syntax

```
virtual int getInfoCh(int sChType, int sChNo, int eChType, int
eChNo);
```

### Parameters

| | |
|---|---|
| sChType | Specify the start channel type. |
| sChNo | Specify the start channel number. |
| eChType | Specify the end channel type. |
| eChNo | Specify the end channel number. |

### Description

Gets the channel information data of the specified channel range.

The specified data is stored in the data member.

### Return value

Returns an error number.

### Reference

`talkChInfo getChInfo getClassDataBuffer CDAQDARWINDataBuffer::setChInfo`

## CDAQDA100::getInstChASCII

### Syntax

```
int getInstChASCII(int sChType, int sChNo, int eChType, int
eChNo);
```

### Parameters

| | |
|---|---|
| sChType | Specify the start channel type. |
| sChNo | Specify the start channel number. |
| eChType | Specify the end channel type. |
| eChNo | Specify the end channel number. |

### Description

Gets the measured data in ASCII mode.

The specified data is stored in the data member.

### Return value

Returns an error number.

### Reference

```
getChDataByASCII getClassDataBuffer talkDataByASCII
CDAQDARWINDataBuffer::setDataInfo
CDAQDARWINDataBuffer::setDateTime
```

## CDAQDA100::getInstChBINARY

### Syntax

```
int getInstChBINARY(int sChType, int sChNo, int eChType, int
eChNo);
```

### Parameters

| | |
|---|---|
| sChType | Specify the start channel type. |
| sChNo | Specify the start channel number. |
| eChType | Specify the end channel type. |
| eChNo | Specify the end channel number. |

### Description

Gets the measured data in binary mode.

The specified data is stored in the data member.

### Return value

Returns an error number.

### Reference

```
getChDataByBinary getClassDataBuffer talkDataByBinary
CDAQDARWINDataBuffer::setDataInfo
CDAQDARWINDataBuffer::setDateTime
```

## CDAQDA100::getReport

### Syntax

```
int getReport(void);
```

### Description

Gets the report status field from the data member.

### Return value

Returns the report status.

## CDAQDA100::getRevisionDA100DLL

### Syntax

```
static const int getRevisionDA100DLL(void);
```

### Description

Gets the revision number of this DLL.

### Return value

Returns the revision number of this DLL.

## CDAQDA100::getVersionDA100DLL

### Syntax

```
static const int getVersionDA100DLL(void);
```

### Description

Gets the version number of this DLL.

### Return value

Returns the version number of this DLL.

## CDAQDA100::initSetValue

### Syntax

```
int initSetValue(void);
```

### Description

Executes the “Initialize operation mode settings” system control type.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
initSystem updateAll
```

## CDAQDA100::isObject

### Syntax

```
virtual int isObject(const char * classname = "CDAQDA100";
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQDARWIN::isObject`

## CDAQDA100::mathInfoCh

### Syntax

```
virtual int mathInfoCh(int chNo = DAQDA100_CHNO_ALL);
```

### Description

Gets the channel information data of the specified computation channel range.

If channel numbers is set to the constant for “specify all channel numbers,” all computation channels are processed.

### Return value

Returns an error number.

### Reference

`measInfoCh`

## CDAQDA100::mathInstCh

### Syntax

```
virtual int mathInstCh(int chNo = DAQDA100_CHNO_ALL);
```

### Parameters

chNo Specify the channel number.

### Description

Gets the measured data of the specified computation channel.

If the channel number is set to the constant for “specify all channel numbers,” all computation channels are processed.

### Return value

Returns an error number.

### Reference

```
measInstCh
```

## CDAQDA100::measClear

### Syntax

```
void measClear(void);
```

### Description

Initializes the data member for retrieval of the measured data.

Sets various types of channel information to the default values.

### Reference

```
getClassSysInfo
CDAQDARWINChInfo::setChType
CDAQDARWINChInfo::setChNo
CDAQDARWINDataBuffer::initialize
CDAQDARWINDataBuffer::getClassDARWINChInfo
CDAQDARWINSysInfo::initialize
```

## CDAQDA100::measInfoCh

### Syntax

```
virtual int measInfoCh(int chType = DAQDA100_CHTYPE_MEASALL,
int chNo = DAQDA100_CHNO_ALL);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the channel information data of the specified channel.

The specified data is stored in the various channel information fields of the data member. If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.

If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
chNumMax getClassSysInfo getInfoCh updateRenew
CDAQDARWINSysInfo::isExist
```

## CDAQDA100::measInstCh

### Syntax

```
virtual int measInstCh(int chType = DAQDA100_CHTYPE_MEASALL,
int chNo = DAQDA100_CHNO_ALL);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the measured data of the specified channel. The specified data is stored in the various channel information fields of the data member. If the channel type is set to the constant for "Specify all measurement channel types," all subunits are processed. If the channel number is set to the constant for "Specify all channel numbers," all channels within the channel type are processed.

Updates the status if successful.

### Return value

Returns an error number.

Error

| | |
|---|---|
| Not support | Unsupported retrieve code type. |

### Reference

```
chNumMax getClassSysInfo getCode getInstChASCII
getInstChBINARY updateRenew CDAQDARWINSysInfo::isExist
```

## CDAQDA100::open

### Syntax

```
virtual int open(const char * strAddress, unsigned int
uiPort);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| uiPort | Specify the port number. |

### Description

Connects to the device with the IP address and port number specified by the parameters. The port number can be omitted. If omitted, it is set to the communication constant, "DARWIN communication port number."

When initializing the data member for retrieval of the measured data and connection is successful, those items are retrieved and stored.

The communication timeout is set to 3 minutes.

### Return value

Returns an error number.

### Reference

```
close measClear setTimeOut updateAll CDAQDARWIN::open
```

## CDAQDA100::reconstruct

### Syntax

```
int reconstruct(void);
```

### Description

Executes the “System reconfiguration” system control type.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
initSystem updateAll
```

## CDAQDA100::setChAlarm

### Syntax

```
int setChAlarm(int chType, int chNo, int levelNo, int
iAlarmType = DAQDARWIN_ALARM_NONE, int value = 0, int
relayType = 0, int relayNo = 0);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |
| iAlarmType | Specify the alarm type. |
| value | Specify the alarm value. |
| relayType | Specify the relay type. |
| relayNo | Specify the relay number. |

### Description

Sets the alarm.

If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.

If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.

If the alarm level is set to the constant for “Specify all alarm level numbers,” all alarm levels within the  channels are processed.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
chNumMax getClassSysInfo measInfoCh setAlarm
CDAQDARWINSysInfo::isExist
```

## CDAQDA100::setChDELTA

### Syntax

```
int setChDELTA(int chType, int chNo, int refChNo, int spanMin
= 0, int spanMax = 0);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| refChNo | Specify the channel number of the reference channel. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |

### Description

Sets the difference computation for the specified reference channels.
If the left and right values are the same, the span designation is considered omitted.

If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.
If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.
Updates the status if successful.

### Return value

Returns an error number.

### Reference

`chNumMax getClassSysInfo measInfoCh setDELTA CDAQDARWINSysInfo::isExist`

## CDAQDA100::setChRRJC

### Syntax

```
int setChRRJC(int chType, int chNo, int refChNo, int spanMin =
0, int spanMax = 0);
```

### Parameters

| | |
|---|---|
| chType | pecify the channel type. |
| chNo | Specify the channel number. |
| refChNo | Specify the channel number of the reference channel. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |

### Description

Sets the remote RJC for the specified reference channel.

If the left and right values are the same, the span designation is considered omitted.

If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.

If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

`chNumMax getClassSysInfo measInfoCh setRRJC CDAQDARWINSysInfo::isExist`

## CDAQDA100::setChUnit

### Syntax

```
int setChUnit(int chType, int chNo, const char * strUnit);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| strUnit | Specify the unit name using a string. |

### Description

Sets the specified unit name.

If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.

If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
chNumMax getClassSysInfo measInfoCh setScallingUnit
CDAQDARWINSysInfo::isExist
```

## CDAQDA100::setDateTime

### Syntax

```
virtual int setDateTime(CDAQDARWINDateTime * pcDARWINDateTime
= NULL);
```

### Parameters

| | |
|---|---|
| pcDARWINDateTime | Specify the time information data. |

### Description

Sets time information data on the device.

If NULL is specified, the current date/time of the PC is used.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

```
updateRenew CDAQDARWIN::setDateTime
```

## CDAQDA100::setRange

### Syntax

```
int setRange(int chType, int chNo, int iRange, int spanMin =
0, int spanMax = 0, int scaleMin = 0, int scaleMax = 0, int
scalePoint = 0, int bFilter = DAQDARWIN_VALID_OFF, int iItem =
DAQDARWIN_POWERITEM_P1, int iWire = DAQDARWIN_WIRE_1PH2W);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| iRange | Specify the range type. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |
| bFilter | Specify ON/OFF for the filter using a Boolean value. |
| iItem | Specify the power measurement parameter. |
| iWire | Specify the power connection method. |

### Description

Sets the range.

If the left and right values are the same, the span or scale designation is considered omitted. The ON/OFF specification for the filter parameter is only valid for the pulse range. The power measurement item and power connection method parameters are only valid for the power monitoring range. If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed. If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed. Updates the status if successful.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not support | Unsupported range type. |

### Reference

```
chNumMax getClassSysInfo measInfoCh setDI setMA setPOWER
setPULSE setRTD setSKIP setSTRAIN setTC setVOLT
CDAQDARWINSysInfo::isExist
```

## CDAQDA100::switchCode

### Syntax

```
int switchCode(int iCode);
```

### Parameters

iCode Gets the retrieve code type.

### Description

Stores the specified value in the retrieve code type field of the data member.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

`updateRenew`

## CDAQDA100::switchCompute

### Syntax

```
int switchCompute(int iCompute);
```

### Parameters

iCompute Specify the computation.

### Description

Executes the specified computation.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

`compute updateRenew`

## CDAQDA100::switchMode

### Syntax

```
int switchMode(int iMode);
```

### Parameters

iMode Specify the mode.

### Description

Switches to the specified mode.

Updates the channel information data when switching to the operation mode.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

`transMode updateChInfo updateRenew`

## CDAQDA100::switchReport

### Syntax

```
int switchReport(int iReportRun);
```

### Parameters

iReportRun  Specify the report execution type.

### Description

Executes the specified report execution type.

Updates the status if successful.

### Return value

Returns an error number.

### Reference

`reporting updateRenew`

## CDAQDA100::talkCalibrationChData

### Syntax

```
int talkCalibrationChData(int chType =
DAQDA100_CHTYPE_MEASALL, int chNo = DAQDA100_CHNO_ALL);
```

### Parameters

chType  Specify the channel type.

chNo  Specify the channel number.

### Description

Executes declaration of the retrieval of the setup data of calibration mode on the specified channels.

If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.

If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.

### Return value

Returns an error number.

### Reference

`talkCalibrationData`

## CDAQDA100::talkOperationChData

### Syntax

```
int talkOperationChData(int chType = DAQDA100_CHTYPE_MEASALL,
int chNo = DAQDA100_CHNO_ALL);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Executes declaration of the retrieval of the setup data of operation mode on the specified channels.

If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.

If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.

### Return value

Returns an error number.

### Reference

`talkOperationData`

## CDAQDA100::talkSetupChData

### Syntax

```
int talkSetupChData(int chType = DAQDA100_CHTYPE_MEASALL, int
chNo = DAQDA100_CHNO_ALL);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Executes declaration of the retrieval of the setup data of basic setting mode on the specified channels.

If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.

If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.

### Return value

Returns an error number.

### Reference

`talkSetupData`

## CDAQDA100::updateAll

### Syntax

```
int updateAll(void);
```

### Description

Updates all information data of the data member.

Gets the System configuration data, channel information data, and status byte and stores it.

### Return value

Returns an error number.

### Reference

```
updateChInfo
updateRenew
updateSystemConfig
```

## CDAQDA100::updateChInfo

### Syntax

```
int updateChInfo(void);
```

### Description

Updates all channel information data.

### Return value

Returns an error number.

### Reference

```
mathInfoCh
measInfoCh
```

## CDAQDA100::updateRenew

### Syntax

```
int updateRenew(void);
```

### Description

Updates the data member status.

Gets the status byte and stores it.

### Return value

Returns an error number.

### Reference

```
updateStatus
```

## CDAQDA100::updateReportStatus

### Syntax

```
int updateReportStatus(void);
```

### Description

Gets the report status.

Stores the retrieved data in the report status field of the data member.

### Return value

Returns an error number.

### Reference

`getReportStatus`

## CDAQDA100::updateStatus

### Syntax

```
int updateStatus(void);
```

### Description

Gets the status byte.

Stores the retrieved status byte in the data status field of the data member.

### Return value

Returns an error number.

### Reference

`getStatusByte`

## CDAQDA100::updateSystemConfig

### Syntax

```
int updateSystemConfig(void);
```

### Description

Gets the system configuration data.

Stores the retrieved data in the system configuration field of the data member.

### Return value

Returns an error number.

### Reference

`getClassSysInfo`
`getSystemConfig`

# CDAQDA100 Reader Class

■ **CDAQHandler**
- **CDAQDARWIN**
  - **CDAQDA100**
    - **CDAQDA100Reader**

This class communicates with DARWIN to load instantaneous value data and stores the retrieved data.
This class uses instantaneous value data loading commands to override the channel information data and measured data retrieval functions.
The following data can be stored.
• Channel Information Data
• Time Information Data
• Measured Data
Functions other than those for retrieval may not operate properly.
Retrieval of measured data is only supported if alarm data exists.

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQDA100 Reader | Constructs an object. |
| CDAQDA100Reader | Destructs an object. |

### • Overridden Members

### Communication Functions

| | |
|---|---|
| open | Establishes connection. |

### Data Retrieval Functions

| | |
|---|---|
| measInstCh | Gets the measured data. |
| measInfoCh | Gets the channel information data. |

### Utilities

| | |
|---|---|
| isObject | Checks an object. |

### • Inherited Members

See CDAQHandler.

```
close getErrorMessage getMaxLenErrorMessage getRevisionAPI
getVersionAPI receiveLine sendLine setTimeOut
```

See CDAQDARWIN

```
compute establish getChDataByASCII getChDataByBinary getChInfo
getReportStatus getSetDataByLine getStatusByte getSystemConfig
initSystem receiveByte reporting runCommand sendTrigger
setAlarm setDELTA setDI setRRJC setRTD setPOWER setPULSE
setScallingUnit setSKIP setSTRAIN setTC setVOLT
talkCalibrationData talkChInfo talkDataByASCII
talkDataByBinary talkOperationData talkSetupData transMode
```

See CDAQDA100

```
ackAlarm getByte getClassDataBuffer getClassSysInfo getCode
getReport initSetValue mathInstCh mathInfoCh reconstruct
setChAlarm setChDELTA setChRRJC setChUnit setRange switchCode
switchCompute switchMode switchReport talkCalibrationChData
talkOperationChData talkSetupChData updateReportStatus
updateStatus updateSystemConfig
```



## Protected Members

### Data Retrieval

getInstCh Gets the measured data.

- **Overridden Members**

### Data Retrieval

getInfoCh Gets the channel information data.

- **Inherited Members**

See CDAQHandler.

```
m_comm m_nRemainSize receive receiveRemain send
```

See CDAQDARWIN

```
checkAck
getVersionDLL getRevisionDLL startTalker
```

See CDAQDA100.

```
chNumMax chNumMaxReport getInfoCh getInstChASCII
getInstChBINARY getRevisionDA100DLL
getVersionDA100DLL m_cMathData m_cMeasData
m_code m_cSysInfo m_reportStatus m_statusByte measClear
updateAll updateChInfo updateRenew
```

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQDA100Reader::CDAQDA100Reader

### Syntax

```
CDAQDA100Reader(void);
CDAQDA100Reader(const char * strAddress, unsigned int uiPort =
DAQDA100READER_DATAPORT, int * errCode = NULL);
virtual ~CDAQDA100Reader(void);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| uiPort | Specify the port number. |
| errCode | Specify the destination where the error number is to be returned. |

### Description

Constructs or destructs an object.

When constructing, the data member is initialized. When the parameters are specified, a connection is established during construction. If the return destination is specified, the error number during connection is returned. When destructing, the data member field is released. The connection is dropped when the communication descriptor exists. The error number is not returned.

### Reference

`open CDAQDA100::CDAQDA100`

## CDAQDA100Reader::getInfoCh

### Syntax

```
virtual int getInfoCh(int sChType, int sChNo, int eChType, int
eChNo);
```

### Parameters

| | |
|---|---|
| sChType | Specify the start channel type. |
| sChNo | Specify the start channel number. |
| eChType | Specify the end channel type. |
| eChNo | Specify the end channel number. |

### Description

Gets the channel information data of the specified channel range.

The specified data is stored in the data member.

This function executes the EL command of the communication interface.

### Return value

Returns an error number.

### Reference

`getChInfo getClassDataBuffer send CDAQDARWINChInfo::toChName CDAQDARWINDataBuffer::setChInfo`

## CDAQDA100Reader::getInstCh

### Syntax

```
int getInstCh(int sChType, int sChNo, int eChType, int eChNo);
```

### Parameters

| | |
|---|---|
| sChType | Specify the start channel type. |
| sChNo | Specify the start channel number. |
| eChType | Specify the end channel type. |
| eChNo | Specify the end channel number. |

### Description

Gets the measured data of the measured channel range.

The specified data is stored in the data member.

This function executes the EB and EF commands of the communication interface.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not data | Received data insufficient. |

### Reference

`getChDataByBinary getClassDataBuffer receive runCommand send CDAQDARWINChInfo::toChName CDAQDARWINDataBuffer::setDataInfo CDAQDARWINDataBuffer::setDateTime CDAQDARWINDateTime::setByte`

## CDAQDA100Reader::isObject

### Syntax

```
virtual int isObject(const char * classname =
"CDAQDA100Reader";
```

### Parameters

classname Specify the class name using a string.

### Description

Checks whether the specified class name was inherited.

If parameters are omitted, checks whether it is this class.

Classes that inherit this class must be overridden in order to check their own classes.

Returns true (valid) if the class was inherited. Otherwise, returns false (invalid).

If different from this class, checks the parent class.

### Return value

Returns a Boolean value.

### Reference

`CDAQDA100::isObject`

## CDAQDA100Reader::measInfoCh

### Syntax

```
virtual int measInfoCh(int chType = DAQDA100_CHTYPE_MEASALL,
int chNo = DAQDA100_CHNO_ALL);
```

### Parameters

chType Specify the channel type.

chNo Specify the channel number.

### Description

Gets the channel information data of the specified channel.

The specified data is stored in the various channel information fields of the data member.

If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.

If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.

### Return value

Returns an error number.

### Reference

`getInfoCh`

## CDAQDA100Reader::measInstCh

### Syntax

```
virtual int measInstCh(int chType = DAQDA100_CHTYPE_MEASALL,
int chNo = DAQDA100_CHNO_ALL);
```

### Parameters

| | |
|---|---|
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the measured data of the specified channel.

The specified data is stored in the various channel information fields of the data member. If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.

If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.

### Return value

Returns an error number.

### Reference

`getInstCh`

## CDAQDA100Reader::open

### Syntax

```
virtual int open(const char * strAddress, unsigned int uiPort
= DAQDA100READER_DATAPORT);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| uiPort | Specify the port number. |

### Description

Connects to the device with the IP address and port number specified by the parameters.

The port number can be omitted. If omitted, it is set to the communication constant, “DARWIN instantaneous value loading port number.”

When initializing the data member for retrieval of the measured data and connection is successful, channel information data is retrieved and stored.

The communication timeout is set to 3 minutes.

### Return value

Returns an error number.

### Reference

`close measClear setTimeOut updateChInfo CDAQDARWIN::open`

# CDAQDARWINDataBuffer Class

This class stores each type of information for each channel of the DARWIN in a group.
The following data can be stored.

- Channel information data
- Time information data
- Setup data

## Public Members

### Construct/Destruct

| | |
|---|---|
| CDAQDARWINDataBuffer | Constructs an object. |
| ~CDAQDARWINDataBuffer | Destructs an object. |

### Member Data Manipulation

| | |
|---|---|
| initialize | Initializes the data member. |
| getClassDARWINChInfo | Gets the channel information data. |
| getClassDARWINDateTime | Gets the time information data. |
| getClassDARWINDataInfo | Gets the measured data. |
| setChInfo | Set the channel information data. |
| setDateTime | Sets the time information data. |
| setDataInfo | Sets the measured data. |
| isAlarm | Gets the presence or absence of alarms. |

## Protected Members

### Data Members

| | |
|---|---|
| m_cChInfo | Field for storing the channel information data. |
| m_cTimeBuf | Field for storing the time information data. |
| m_cDataBuf | Field for storing the measured data. |

## Private Members

None.

## Member Functions (Alphabetical Order)

## CDAQDARWINDataBuffer::CDAQDARWINDataBuffer

### Syntax

```
CDAQDARWINDataBuffer(void);
virtual ~CDAQDARWINDataBuffer(void);
```

### Description

Constructs or destructs an object.

When constructing, the data member is initialized.

### Reference

```
initialize
```

## CDAQDARWINDataBuffer::getClassDARWINChInfo

### Syntax

```
CDAQDARWINChInfo & getClassDARWINChInfo(void);
```

### Description

Gets the object of the channel information data from the data member.

### Return value

Returns a reference to the object.

## CDAQDARWINDataBuffer::getClassDARWINDataInfo

### Syntax

```
CDAQDARWINDataInfo & getClassDARWINDataInfo(void);
```

### Description

Returns the object of the measured data from the data member.

### Return value

Returns a reference to the object.

## CDAQDARWINDataBuffer::getClassDARWINDateTime

### Syntax

```
CDAQDARWINDateTime & getClassDARWINDateTime(void);
```

### Description

Returns the object of the time information data from the data member.

### Return value

Returns a reference to the object.

## CDAQDARWINDataBuffer::initialize

### Syntax

```
virtual void initialize(void);
```

### Description

Initializes the data member.

The default value as a general rule is 0.

Sets the association with the channel information data of the measured data.

### Reference

```
getClassDARWINChInfo getClassDARWINDataInfo
getClassDARWINDateTime CDAQDARWINChInfo::initialize
CDAQDARWINDataInfo::initialize
CDAQDARWINDataInfo::setClassDARWINChInfo
CDAQDARWINDateTime::initialize
```

## CDAQDARWINDataBuffer::isAlarm

### Syntax

```
int isAlarm(int levelNo);
```

### Parameters

levelNo Specify the alarm level.

### Description

Gets the presence/absence of alarms of the specified alarm level.

Returns “Invalid” if the alarm type is “No alarm.”

### Return value

Returns a Boolean value.

### Reference

```
getClassDARWINDataInfo
CDAQDARWINDataInfo::getAlarm
```

## CDAQDARWINDataBuffer::setChInfo

### Syntax

```
void setChInfo(CDAQDARWINChInfo & cDARWINChInfo);
```

### Parameters

cDARWINChInfo Specify the channel information data.

### Description

Copies the specified data to the data member.

## CDAQDARWINDataBuffer::setDataInfo

### Syntax

```
void setDataInfo(CDAQDARWINDataInfo & cDARWINDataInfo);
```

### Parameters

cDARWINDataInfo  Specify the measured data.

### Description

Copies the specified data to the data member.

The association with the channel information data becomes the data member of this class.

### Reference

```
getClassDARWINChInfo getClassDARWINDataInfo
CDAQDARWINDataInfo::setClassDARWINChInfo
```

## CDAQDARWINDataBuffer::setDateTime

### Syntax

```
void setDateTime(CDAQDARWINDateTime & cDARWINDateTime);
```

### Parameters

cDARWINDateTime  Specify the time information data.

### Description

Copies the specified data to the data member.

# 20.1 Functions and Their Functionalities - DARWIN/ Visual C -

This section indicates the correspondence between the functionalities that the extension API supports and the Visual C functions.

***Note***

This extension API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not given. The functions can be added by using the commands of the DARWIN communication function.

The word “command” in the table signifies the command of the DARWIN communication function. For the details on the commands, see the Communication Interface User’s Manual.

There are two types of functions, status transition functions and retrieval functions.
Status transition functions control DARWIN.
With retrieval functions, the parameter values of the current status are retrieved.
When using retrieval functions, the data value of the stored current status is returned (the status of the extension API does not change).



## Status Transition Functions

### Communication Functions

| Function | Command | Function |
|---|---|---|
| Connect to the DARWIN. | - | openDA100 |
| Disconnect from the DARWIN. | - | closeDA100 |
| Send data by line.<br>Used when controlling the data reception in a special way. | - | sendLineDA100 |
| Receive data by line.<br>Used when controlling the data reception in a special way. | - | receiveLineDA100 |
| Receives data by bytes.<br>Used when controlling the data reception in a special way. | - | receiveByteDA100 |
| Send the command and receive the response.<br>Used when implementing function commands. | - | runCommandDA100 |
| Get the status byte.<br>Sends the status byte output command and receives the response. | (ESC S) | updateStatusDA100 |
| Send a trigger command (ESC T), and receive the response.<br>Used when implementing a new talker function. | (ESC T) | sendTriggerDA100 |

Except during connection or status updates, communication functions do not perform status updates of stored data.

## Control Functions

| Function | Command | Function |
|---|---|---|
| Switch operation mode | DS | switchModeDA100 |
| Retrieve code type switch (binary/ASCII code) | - | switchCodeDA100 |
| Reconfigure | RS | reconstructDA100 |
| Initialize settings | RC | initSetValueDA100 |
| Reset alarms | AR | ackAlarmDA100 |
| Set date/time (current time) | SD | setDateTimeNowDA100 |
| Calculation start/stop | EX | switchComputeDA100 |
| Report start/stop | DR | switchReportDA100 |
| Establish setup mode | XE | establishDA100 |

Generally, the status is updated at the end of the process.
Status is not updated when establishing the setup mode.

## Setting (Operation Mode) Functions

| Function | | Command | Function |
|---|---|---|---|
| Range | SKIP (not used) | SR | setRangeDA100 |
| | DC voltage input | SR | setRangeDA100 |
| | Thermocouple input | SR | SetRangeDA100 |
| | RTD input | SR | SetRangeDA100 |
| | Contact input (DI) | SR | SetRangeDA100 |
| | DC current | SR | SetRangeDA100 |
| | Strain | SR | SetRangeDA100 |
| | Pulse | SR | SetRangeDA100 |
| | Power monitor | SR | SetRangeDA100 |
| | Difference computation between channels | SR | setChDELTADA100 |
| | Remote RJC | SR | setChRRJCDA100 |
| Unit name | | SN | setChUnitDA100 |
| Alarm | | SA | setChAlarmDA100 |

Becomes the channel unit setting.
The status is updated after the setting is entered.

## Data Retrieval Functions

| Function | | | Command | Function |
|---|---|---|---|---|
| Measured data | | Meas ch | TS, FM | measInstChDA100 |
| (instantaneous value) | | Comp ch | TS, FM | mathInstChDA100 |
| Channel | | Meas ch | TS, LF | measInfoChDA100 |
| information data | | Comp ch | TS, LF | mathInfoChDA100 |
| System configuration data | | | TS, CF | updateSystemConfigDA100 |
| Report status | | | TS,RF | updateReportStatusDA100 |
| Setup data | | | | |
| Declar. | Op | Sngl spec | TS, LF | talkOperationChDataDA100 |
| | mode | Specify range | TS, LF | talkOperationDataDA100 |
| | Setup | Sngl spec | TS, LF | talkSetupChDataDA100 |
| | mode | Specify range | TS, LF | talkSetupDataDA100 |
| | Cal | Sngl spec | TS, LF | talkCalibrationChDataDA100 |
| | mode | Specify range | TS, LF | talkCalibrationDataDA100 |
| Get data in units of lines | | | - | getSetDataByLineDA100 |

Setup data is not stored, so it is retrieved in the same order as mentioned in sections 7.2 and 7.3. In this case, status is not updated.
Channel information data and system configuration data are stored internally, but the user can explicitly perform acquisition.
The report status is stored internally, but is not updated unless the user explicitly acquires it.

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | dataValueDA100 |
| Data status values | | dataStatusDA100 |
| Alarm (presence/absence) | | dataAlarmDA100 |
| Measured value | Double integer | dataDoubleValueDA100 |
| | String | dataStringValueDA100 |
| Time | Year | dataYearDA100 |
| | Month | dataMonthDA100 |
| | Day | dataDayDA100 |
| | Hour | dataHourDA100 |
| | Minute | dataMinuteDA100 |
| | Second | dataSecondDA100 |
| Alarm type | | alarmTypeDA100 |

## Channel Information

| Data Name | Function |
|---|---|
| Decimal point position | channelPointDA100 |
| Channel status | channelStatusDA100 |
| Unit name | toChannelUnitDA100<br>getChannelUnitDA100 |

## System Configuration Data

| Data Name | | Function |
|---|---|---|
| Measurement interval | | unitIntervalDA100 |
| Unit | Presence or absence | unitValidDA100 |
| Module | Internal code | moduleCodeDA100 |
| | Module name | toModuleNameDA100<br>getModuleNameDA100 |

## Status Data

| Data Name | Function |
|---|---|
| Status byte | statusByteDA100 |
| Retrieve code type (binary/ASCII code) | statusCodeDA100 |
| Report status | statusReportDA100 |

## Utilities

| Function/Data Name | | Function |
|---|---|---|
| Meas val | Change to double integer | toDoubleValueDA100 |
| | Convert into string | toStringValueDA100 |
| Alarm | Get the alarm type string | toAlarmNameDA100 |
| | | getAlarmNameDA100 |
| | Get max length of string | alarmMaxLengthMX100 |
| Get version number of this API | | versionAPIDA100 |
| Get revision number of this API | | revisionAPIDA100 |
| Error | Get error message string | toErrorMessageDA100 |
| | | getErrorMessageDA100 |
| | Get error message string maximum length | errorMaxLengthDA100 |

# 20.2 Programming - DARWIN/Visual C -

## Adding the Path to the Include File

Add the path of the include file (DAQDA100.h) to the project. The method of adding the include file varies depending on the environment used.

## Declaration in the Source File

Write the declaration in the source file.

```
#include "DAQDA100.h"
```

***Note***

The include file of the common section (DAQHandler.h, DAQDARWIN.h) is referenced from the include file described above. Thus, declaration for it is not necessary.

## Load Library Statement

The statement below is added so that the executable module (.dll) of the extension API can link to the process.

The executable module (.dll) of the extension API is mapped within the address space (LoadLibrary). Next, the address of the export function in the executable module is retrieved (GetProcAddress).

The callback type of the function pointer is the function name with a prefix “DLL” added and converted to uppercase. It is defined in the include file of the extension API.

```
HMODULE pDll = LoadLibrary("DAQDA100";
DLLOPENDA100 openDA100 = (DLLOPENDA100)GetProcAddress(pDll,
"openDA100";
```

## Retrieval of the Measured Data

### Program Example

```
////////////////////////////////////////////////////////////
// DA100 sample for measurement
#include <stdio.h>
#include "DAQDA100.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  DAQDA100 comm; //discriptor
  int value;
#ifdef WIN32
  HMODULE pDll; //DLL handle
  //callback
  DLLOPENDA100 openDA100;
  DLLCLOSEDA100 closeDA100;
  DLLMEASINSTCHDA100 measInstChDA100;
  DLLDATAVALUEDA100 dataValueDA100;
  //laod
  pDll = LoadLibrary("DAQDA100");
  //get address
  openDA100 = (DLLOPENDA100)GetProcAddress(pDll, "openDA100");
  closeDA100 = (DLLCLOSEDA100)GetProcAddress(pDll,
"closeDA100");
  measInstChDA100 = (DLLMEASINSTCHDA100)GetProcAddress(pDll,
"measInstChDA100");
  dataValueDA100 = (DLLDATAVALUEDA100)GetProcAddress(pDll,
"dataValueDA100");
#endif //WIN32
  //connect
  comm = openDA100("192.168.1.11", &rc);
  //get
  rc = measInstChDA100(comm, 0, 1);
  value = dataValueDA100(comm, 0, 1);
  //disconnect
  rc = closeDA100(comm);
#ifdef WIN32
  FreeLibrary(pDll);
#endif
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Overview

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field. Reads the measured values and concludes the process.

### Communication Connection

```
comm = openDA100("192.168.1.11", &rc);
```

The IP address of the DARWIN is specified. This statement specifies the communication constant for the DARWIN communication port number.

### Retrieval of the Measured Data of Channel 1

```
rc = measInstChDA100(comm, 0, 1);
```

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field.

### Reading Measured Values

```
value = dataValueDA100(comm, 0, 1);
```

Reads the measured value of channel 1 of subunit number 0 from the field where the measured data is stored.

### Comm. cut

```
rc = closeDA100(comm);
```

Drops the connection.

# 20.3 Correspondence between Functions for Instantaneouce Value Data Loading and Functions - DARWIN/Visual C -

This section indicates the correspondence between the functionalities that the extension API supports and the Visual C functions.

***Note***

This extension API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not given. The functions can be added by using the commands of the DARWIN communication function.

The word “command” in the table signifies the command of the DARWIN communication function. For the details on the commands, see the Communication Interface User’s Manual.

There are two types of functions, status transition functions and retrieval functions.
Status transition functions control DARWIN.
With retrieval functions, the parameter values of the current status are retrieved.
When using retrieval functions, the data value of the stored current status is returned (the status of the extension API does not change).

## Status Transition Functions

### Communication Functions

| Function | Command | Function |
|---|---|---|
| Comm. open | - | openDA100Reader |
| Comm. cut | - | closeDA100Reader |

### Data Retrieval Functions

| Function | | Command | Function |
|---|---|---|---|
| Meas data | Measurement channels | EF | measInstChDA100Reader |
| (inst val) | Computation channels | EF | mathInstChDA100Reader |
| Channel | Measurement Channel | EL | measInfoChDA100Reader |
| info data | Computation channels | EL | mathInfoChDA100Reader |

Channel information data is stored internally, but the user can explicitly perform acquisition.

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | dataValueDA100Reader |
| Data status values | | dataStatusDA100Reader |
| Alarm (presence/absence) | | dataAlarmDA100Reader |
| Measured values | Double integer | dataDoubleValueDA100Reader |
| | String | dataStringValueDA100Reader |
| Time | Year | dataYearDA100Reader |
| | Month | dataMonthDA100Reader |
| | Day | dataDayDA100Reader |
| | Hour | dataHourDA100Reader |
| | Minute | dataMinuteDA100Reader |
| | Second | dataSecondDA100Reader |
| | Milliseconds | dataMilliSecDA100Reader |
| Alarm type | | alarmTypeDA100Reader |

## Channel Information Data

| Data Name | Function |
|---|---|
| Decimal point position | channelPointDA100Reader |
| Channel status | channelStatusDA100Reader |
| Unit name | toChannelUnitDA100Reader<br>getChannelUnitDA100Reader |

## Utilities

| Function/Data Name | | Function |
|---|---|---|
| Meas val | Change to dbl integer | toDoubleValueDA100Reader |
| | Convert into string | toStringValueDA100Reader |
| Alarm | Get the alarm type string | toAlarmNameDA100Reader<br>getAlarmNameDA100Reader |
| | Get max length of the alarm string | alarmMaxLengthDA100Reader |
| Get the version number of this API | | versionAPIDA100Reader |
| Get the revision number of this API | | revisionAPIDA100Reader |
| Error | Get the error message string | toErrorMessageDA100Reader<br>getErrorMessageDA100Reader |
| | Get the error message string maximum length | errorMaxLengthDA100Reader |

# 20.4 Program for Loading Instantaneous Value Data - DARWIN/Visual C -

## Adding the Path to the Include File

Add the path of the include file (DAQDA100.h) to the project. The method of adding the include file varies depending on the environment used.

## Declaration in the Source File

Write the declaration in the source file.

```
#include "DAQDA100Reader.h"
```

***Note***

The include files of the common section (DAQHandler.h, DAQDARWIN, and DAQDA100) are referenced from the include file described above. Thus, declaration for it is not necessary.

## Load Library Statement

The statement below is added so that the executable module (.dll) of the extension API can link to the process.

The executable module (.dll) of the extension API is mapped within the address space (LoadLibrary). Next, the address of the export function in the executable module is retrieved (GetProcAddress).

The callback type of the function pointer is the function name with a prefix “DLL” added and converted to uppercase. It is defined in the include file of the extension API.

```
HMODULE pDll = LoadLibrary("DAQDA100");
DLLOPENDA100READER openDA100Reader =
(DLLOPENDA100READER)GetProcAddress(pDll, "openDA100Reader";
```

# Retrieval of the Measured Data

## Program Example

```
////////////////////////////////////////////////////////////
// DA100Reaer sample for measurement
#include <stdio.h>
#include "DAQDA100Reader.h"
////////////////////////////////////////////////////////////
int main(int argc, char* argv[])
{
  int rc; //return code
  DAQDA100READER comm; //discriptor
  int value;
#ifdef WIN32
  HMODULE pDll; //DLL handle
  //callback
  DLLOPENDA100READER openDA100Reader;
  DLLCLOSEDA100READER closeDA100Reader;
  DLLMEASINSTCHDA100READER measInstChDA100Reader;
  DLLDATAVALUEDA100READER dataValueDA100Reader;
  //laod
  pDll = LoadLibrary("DAQDA100");
  //get address
  openDA100Reader = (DLLOPENDA100READER)GetProcAddress(pDll,
"openDA100Reader");
  closeDA100Reader = (DLLCLOSEDA100READER)GetProcAddress(pDll,
"closeDA100Reader");
  measInstChDA100Reader =
(DLLMEASINSTCHDA100READER)GetProcAddress(pDll,
"measInstChDA100Reader");
  dataValueDA100Reader =
(DLLDATAVALUEDA100READER)GetProcAddress(pDll,
"dataValueDA100Reader");
#endif //WIN32
  //connect
  comm = openDA100Reader("192.168.1.11" &rc);
  //get
  rc = measInstChDA100Reader(comm, 0, 1);
  value = dataValueDA100Reader(comm, 0, 1);
  //disconnect
  rc = closeDA100Reader(comm);
#ifdef WIN32
  FreeLibrary(pDll);
#endif
  return rc;
}
////////////////////////////////////////////////////////////
```

## Description

### Overview

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field. Reads the measured values and concludes the process.

### Communication Connection

```
comm = openDA100Reader("192.168.1.11", &rc);
```

The IP address of the DARWIN is specified. This statement specifies the communication constant for the port number for loading the instantaneous value data.

### Retrieval of the Measured Data of Channel 1

```
rc = measInstChDA100Reader(comm, 0, 1);
```

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field.

### Reading Measured Values

```
value = dataValueDA100Reader(comm, 0, 1);
```

Reads the measured value of channel 1 of subunit number 0 from the field where the measured data is stored.

### Comm. cut

```
rc = closeDA100Reader(comm);
```

Drops the connection.

# 21.1 Correspondence between the Functions and Class/Member Functions - DARWIN/Visual Basic -

This section indicates the correspondence between the functionalities that the extension API supports and the Visual Basic functions.

***Note***

This extension API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not given. The functions can be added by using the commands of the DARWIN communication function.

The word “command” in the table signifies the command of the DARWIN communication function. For the details on the commands, see the Communication Interface User’s Manual.

There are two types of functions, status transition functions and retrieval functions.
Status transition functions control DARWIN.
With retrieval functions, the parameter values of the current status are retrieved.
When using retrieval functions, the data value of the stored current status is returned (the status of the extension API does not change).

## Status Transition Functions

### Communication Functions

| Function | Command | Function |
|---|---|---|
| Connect to DARWIN. | - | openDA100 |
| Disconnect from DARWIN. | - | closeDA100 |
| Send data by line.<br>Used when controlling the data reception in a special way. | - | sendLineDA100 |
| Receive data line by line.<br>Used when controlling the data reception in a special way. | - | receiveLineDA100 |
| Receive data by bytes.<br>Used when controlling the data reception in a special way. | - | receiveByteDA100 |
| Send the command and receive the response.<br>Used when implementing function commands. | - | runCommandDA100 |
| Get the status byte.<br>Sends the status byte output command and receives the response. | (ESC S) | updateStatusDA100 |
| Send trigger command (ESC T), and recv response<br>Used when implementing a new talker function. | (ESC T) | sendTriggerDA100 |

Except during connection or status updates, communication functions do not perform status updates of stored data.

## Control Functions

| Function | Command | Function |
|---|---|---|
| Switch operation mode | DS | switchModeDA100 |
| Retrieve code type switch (binary/ASCII code) | - | switchCodeDA100 |
| Reconfigure | RS | reconstructDA100 |
| Initialize settings | RC | initSetValueDA100 |
| Reset alarms | AR | ackAlarmDA100 |
| Set date/time (current time) | SD | setDateTimeNowDA100 |
| Calculation start/stop | EX | switchComputeDA100 |
| Report start/stop | DR | switchReportDA100 |
| Establish setup mode | XE | establishDA100 |

Generally, the status is updated at the end of the process.
Status is not updated when establishing the setup mode.

## Setting (Operation Mode) Functions

| Function | | Command | Function |
|---|---|---|---|
| Range | SKIP (not used) | SR | setRangeDA100 |
| | DC voltage input | SR | setRangeDA100 |
| | Thermocouple input | SR | SetRangeDA100 |
| | RTD input | SR | SetRangeDA100 |
| | Contact input (DI) | SR | SetRangeDA100 |
| | DC current | SR | SetRangeDA100 |
| | Strain | SR | SetRangeDA100 |
| | Pulse | SR | SetRangeDA100 |
| | Power monitor | SR | SetRangeDA100 |
| | Difference computation between channels | SR | setChDELTADA100 |
| | Remote RJC | SR | setChRRJCDA100 |
| Unit name | | SN | setChUnitDA100 |
| Alarm | | SA | setChAlarmDA100 |

Becomes the channel unit setting.
The status is updated after the setting is entered.

## Data Retrieval Functions

| Function | | Command | Function |
|---|---|---|---|
| Measured data | Meas ch | TS, FM | measInstChDA100 |
| (instantaneous value) | Comp ch | TS, FM | mathInstChDA100 |
| Channel | Meas ch | TS, LF | measInfoChDA100 |
| information data | Comp ch | TS, LF | mathInfoChDA100 |
| System configuration data | | TS, CF | updateSystemConfigDA100 |
| Report status | | TS, RF | updateReportStatusDA100 |
| Setup data | | | |
| Declaration Op e | Sngl spec | TS, LF | talkOperationChDataDA100 |
| mod | Specify range | TS, LF | talkOperationDataDA100 |
| Setup | Sngl spec | TS, LF | talkSetupChDataDA100 |
| mode | Specify range | TS, LF | talkSetupDataDA100 |
| Cal | Single spec | TS, LF | talkCalibrationChDataDA100 |
| mode | Specify range | TS, LF | talkCalibrationDataDA100 |
| Get data in units of lines | | - | getSetDataByLineDA100 |

Setup data is not stored, so it is retrieved in the same order as mentioned in sections 7.2 and 7.3. In this case, status is not updated.
Channel information data and system configuration data are stored internally, but the user can explicitly perform acquisition.
The report status is stored internally, but is not updated unless the user explicitly acquires it.

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | dataValueDA100 |
| Data status values | | dataStatusDA100 |
| Alarm (presence/absence) | | dataAlarmDA100 |
| Measured value | Double integer | dataDoubleValueDA100 |
| | String | dataStringValueDA100 |
| Time | Year | dataYearDA100 |
| | Month | dataMonthDA100 |
| | Day | dataDayDA100 |
| | Hour | dataHourDA100 |
| | Minute | dataMinuteDA100 |
| | Second | dataSecondDA100 |
| Alarm type | | alarmTypeDA100 |

## Channel Information

| Data Name | Function |
|---|---|
| Decimal point position | channelPointDA100 |
| Channel status | channelStatusDA100 |
| Unit name | toChannelUnitDA100 |

## System Configuration Data

| Data Name | | Function |
|---|---|---|
| Measurement interval | | unitIntervalDA100 |
| Unit | Presence or absence | unitValidDA100 |
| Module | Internal code | moduleCodeDA100 |
| | Module name | toModuleNameDA100 |

## Status Data

| Data Name | Function |
|---|---|
| Status byte | statusByteDA100 |
| Retrieve code type (binary/ASCII code) | statusCodeDA100 |
| Report status | statusReportDA100 |

## Utilities

| Function/Data Name | | Function |
|---|---|---|
| Measured value | Chng to dble integ | toDoubleValueDA100 |
| | Convert into string | toStringValueDA100 |
| Alarm | Get the alarm type string | toAlarmNameDA100 |
| | Get max length of the string | alarmMaxLengthDA100 |
| Get the version number of this API | | versionAPIDA100 |
| Get the revision number of this API | | revisionAPIDA100 |
| Error | Error message string Get | toErrorMessageDA100 |
| | Error message string maximum length | errorMaxLengthDA100 |

# 21.2 Programming - DARWIN/Visual Basic -

## Declaration of Types, Functions, and Constants

To use types, functions, and constants for Visual Basic, they must be declared in advance. The following methods of declaration statements are available.

### Statement of All Declarations

Adding the standard module library file for Visual Basic (DAQDA100.bas) to the project is equivalent to declaring all types, functions, and constants.

### Statement of Selective Declarations

The API Viewer that comes with Visual Studio can be used to copy the declaration statements of arbitrary types, functions, and constants. Load the text file for the API Viewer (DAQDA100.txt) on the API Viewer to use this function.
For a description of how to use the API Viewer, read the operation manual for Visual Studio.

### Writing Declarations Directly

Below is an example of a declaration statement.

```
Public Declare Function openDA100 Lib "DAQDA100"(ByVal
strAddress As String, ByRef errorCode As Long) As Long
```

# Retrieval of the Measured Data

## Program Example

```
Attribute VB_Name = "Module1"
Public Sub Main()
    'connect
    comm = openDA100("192.168.1.11", rc)
    'get
    rc = measInstChDA100(comm, 0, 1)
    value = dataValueDA100(comm, 0, 1)
    'disconnect
    rc = closeDA100(comm)
End Sub
```

## Description

### Overview

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field. Reads the measured values and concludes the process.

### Communication Connection

`comm = openDA100("192.168.1.11", rc)`

The IP address of the DARWIN is specified. This statement specifies the communication constant for the DARWIN communication port number.

### Retrieval of the Measured Data of Channel 1

`rc = measInstChDA100(comm, 0, 1)`

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field.

### Reading Measured Values

`value = dataValueDA100(comm, 0, 1)`

Reads the measured value of channel 1 of subunit number 0 from the field where the measured data is stored.

### Comm. cut

`rc = closeDA100(comm)`

Drops the connection.

# 21.3 Correspondence between Functions for Instantaneous Value Data Loading and Member Functions - DARWIN/Visual Basic -

This section indicates the correspondence between the functionalities that the extension API supports and the Visual Basic functions.

***Note***

This extension API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not given. The functions can be added by using the commands of the DARWIN communication function.

The word ìcommand” in the table signifies the command of the DARWIN communication function. For the details on the commands, see the Communication Interface User’s Manual.

There are two types of functions, status transition functions and retrieval functions. Status transition functions control DARWIN.
With retrieval functions, the parameter values of the current status are retrieved. When using retrieval functions, the data value of the stored current status is returned (the status of the extension API does not change).

## Status Transition Function

### Communication Functions

| Function | Command | Function |
|---|---|---|
| Comm. open | - | CDAQDA100Reader:: open |
| Comm. cut | - | CDAQDA100Reader:: close |

### Data Retrieval Functions

| Function | | Command | Function |
|---|---|---|---|
| Meas data | Measurement channel | EF | measInstChDA100Reader |
| (inst value) | Computation channels | EF | mathInstChDA100Reader |
| Channel | Measurement channel | EL | measInfoChDA100Reader |
| info data | Computation channels | EL | mathInfoChDA100Reader |

Channel information data is stored internally, but the user can explicitly perform acquisition.

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | dataValueDA100Reader |
| Data status values | | dataStatusDA100Reader |
| Alarm (presence/absence) | | dataAlarmDA100Reader |
| Meas value | Double integer | dataDoubleValueDA100Reader |
| | String | dataStringValueDA100Reade |
| Time | Year | dataYearDA100Reader |
| | Month | dataMonthDA100Reader |
| | Day | dataDayDA100Reader |
| | Hour | dataHourDA100Reader |
| | Minute | dataMinuteDA100Reader |
| | Second | dataSecondDA100Reader |
| | Milliseconds | dataMilliSecDA100Reader |
| Alarm type | | alarmTypeDA100Reader |

## Channel Information Data

| Data Name | Function |
|---|---|
| Decimal point position | channelPointDA100Reader |
| Channel status | channelStatusDA100Reader |
| Unit name | toChannelUnitDA100Reader |

## Utilities

| Function/Data Name | | Function |
|---|---|---|
| Measured | Chng to double integer | toDoubleValueDA100Reader |
| value | Convert into string | toStringValueDA100Reader |
| Alarm | Get the alarm type string | toAlarmNameDA100Reader |
| | Get max length of the alarm string | alarmMaxLengthDA100Reader |
| Get the version number of this API | | versionAPIDA100Reader |
| Get the revision number of this API | | revisionAPIDA100Reader |
| Error | Get the error message string. | toErrorMessageDA100Reader |
| | Get max length of error message string | errorMaxLengthDA100Reader |

# 21.4 Program for Loading Instantaneous Value Data - DARWIN/Visual Basic -

To use types, functions, and constants for Visual Basic, they must be declared in advance. The following methods of declaration statements are available.

### Statement of All Declarations

Adding the standard module library file for Visual Basic (DAQDA100Reader.bas) to the project is equivalent to declaring all types, functions, and constants.

### Statement of Selective Declarations

The API Viewer that comes with Visual Studio can be used to copy the declaration statements of arbitrary types, functions, and constants. Load the text file for the API Viewer (DAQDA100Reader.txt) on the API Viewer to use this function.
For a description of how to use the API Viewer, read the operation manual for Visual Studio.

### Writing Declarations Directly

Below is an example of a declaration statement.

```
Public Declare Function openDA100Reader Lib "DAQDA100" (ByVal
strAddress As String, ByRef errorCode As Long) As Long
```

# Retrieval of the Measured Data

## Program Example

```
Attribute VB_Name = "Module1"
Public Sub Main()
    'connect
    comm = openDA100Reader("192.168.1.11", rc)
    'get
    rc = measInstChDA100Reader(comm, 0, 1)
    Value = dataValueDA100Reader(comm, 0, 1)
    'disconnect
    rc = closeDA100Reader(comm)
End Sub
```

## Description

### Overview

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field. Reads the measured values and concludes the process.

### Communication Connection

`comm = openDA100Reader("192.168.1.11", rc)`

The IP address of the DARWIN is specified. This statement specifies the communication constant for the port number for loading the instantaneous value data.

### Retrieval of the Measured Data of Channel 1

`rc = measInstChDA100Reader(comm, 0, 1)`

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field.

### Reading Measured Values

`Value = dataValueDA100Reader(comm, 0, 1)`

Reads the measured value of channel 1 of subunit number 0 from the field where the measured data is stored.

### Comm. cut

`rc = closeDA100Reader(comm)`

Drops the connection.

# 22.1 Functions and Their Functionalities - DARWIN/ Visual Basic.NET -

This section indicates functions and classes that this extension API supports.

***Note***

This extension API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not given. The functions can be added by using the commands of the DARWIN communication function.

The word “command” in the table signifies the command of the DARWIN communication function. For the details on the commands, see the Communication Interface User’s Manual.

There are two types of functions, status transition functions and retrieval functions. Status transition functions control DARWIN.
With retrieval functions, the parameter values of the current status are retrieved. When using retrieval functions, the data value of the stored current status is returned (the status of the extension API does not change).

## Status Transition Functions

### Communication Functions

| Function | Command | Function |
|---|---|---|
| Connect to DARWIN. | - | openDA100 |
| Disconnect from DARWIN. | - | closeDA100 |
| Send data by line.<br>Used when controlling the data reception in a special way. | - | sendLineDA100 |
| Receive data line by line.<br>Used when controlling the data reception in a special way. | - | receiveLineDA100 |
| Receive data by bytes.<br>Used when controlling the data reception in a special way. | - | receiveByteDA100 |
| Send the command and receive the response.<br>Used when implementing function commands. | - | runCommandDA100 |
| Get the status byte.<br>Sends the status byte output command and receives the response. | (ESC S) | updateStatusDA100 |
| Send a trigger command (ESC T),<br>and receive the response.<br>Used when implementing a new talker function. | (ESC T) | sendTriggerDA100 |

Except during connection or status updates, communication functions do not perform status updates of stored data.

## Control Functions

| Function | Command | Function |
|---|---|---|
| Switch operation mode | DS | switchModeDA100 |
| Retrieve code type switch (binary/ASCII code) | - | switchCodeDA100 |
| Reconfigure | RS | reconstructDA100 |
| Initialize settings | RC | initSetValueDA100 |
| Reset alarms | AR | ackAlarmDA100 |
| Set date/time (current time) | SD | setDateTimeNowDA100 |
| Calculation start/stop | EX | switchComputeDA100 |
| Report start/stop | DR | switchReportDA100 |
| Establish setup mode | XE | establishDA100 |

Generally, the status is updated at the end of the process.
Status is not updated when establishing the setup mode.

## Setting (Operation Mode) Functions

| Function | | Command | Function |
|---|---|---|---|
| range | SKIP (not used) | SR | setRangeDA100 |
| | DC voltage input | SR | setRangeDA100 |
| | Thermocouple input | SR | SetRangeDA100 |
| | RTD input | SR | SetRangeDA100 |
| | Contact input (DI) | SR | SetRangeDA100 |
| | DC current | SR | SetRangeDA100 |
| | Strain | SR | SetRangeDA100 |
| | Pulse | SR | SetRangeDA100 |
| | Power monitor | SR | SetRangeDA100 |
| | Difference computation between channels | SR | setChDELTADA100 |
| | Remote RJC | SR | setChRRJCDA100 |
| Unit name | | SN | setChUnitDA100 |
| Alarm | | SA | setChAlarmDA100 |

Becomes the channel unit setting.
The status is updated after the setting is entered.

## Data Retrieval Functions

| Function | | | Command | Function |
|---|---|---|---|---|
| Meas data | | Measurement channel | TS, FM | measInstChDA100 |
| (inst value) | | Computation channels | TS, FM | mathInstChDA100 |
| Channel | | Measurement channel | TS, LF | measInfoChDA100 |
| info data | | Computation channels | TS, LF | mathInfoChDA100 |
| System configuration data | | | TS, CF | updateSystemConfigDA100 |
| Report status | | | TS,RF | updateReportStatusDA100 |
| Setup data | | | | |
| Declare | Op | Sngl spec | TS, LF | talkOperationChDataDA100 |
| | mode | Specify range | TS, LF | talkOperationDataDA100 |
| | Setup | Sngl spec | TS, LF | talkSetupChDataDA100 |
| | mode | Specify range | TS, LF | talkSetupDataDA100 |
| | Cal | Sngl spec | TS, LF | talkCalibrationChDataDA100 |
| | mode | Specify range | TS, LF | talkCalibrationDataDA100 |
| Get data in units of lines | | | - | getSetDataByLineDA100 |

Setup data is not stored, so it is retrieved in the same order as mentioned in sections 7.2 and 7.3. In this case, status is not updated.
Channel information data and system configuration data are stored internally, but the user can explicitly perform acquisition.
The report status is stored internally, but is not updated unless the user explicitly acquires it.

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | dataValueDA100 |
| Data status values | | dataStatusDA100 |
| Alarm (presence/absence) | | dataAlarmDA100 |
| Measured value | Double integer | dataDoubleValueDA100 |
| | String | dataStringValueDA100 |
| Time | Year | dataYearDA100 |
| | Month | dataMonthDA100 |
| | Day | dataDayDA100 |
| | Hour | dataHourDA100 |
| | Minute | dataMinuteDA100 |
| | Second | dataSecondDA100 |
| Alarm type | | alarmTypeDA100 |

## Channel Information

| Data Name | Function |
|---|---|
| Decimal point position | channelPointDA100 |
| Channel status | channelStatusDA100 |
| Unit name | toChannelUnitDA100 |
| | getChannelUnitDA100 |

## System Configuration Data

| Data Name | | Function |
|---|---|---|
| Measurement interval | | unitIntervalDA100 |
| Unit | Presence or absence | unitValidDA100 |
| Module | Internal code | moduleCodeDA100 |
| | Module name | toModuleNameDA100 |

## Status Data

| Data Name | Function |
|---|---|
| Status byte | statusByteDA100 |
| Retrieve code type (binary/ASCII code) | statusCodeDA100 |
| Report status | statusReportDA100 |

## Utilities

| Function/Data Name | | Function |
|---|---|---|
| Meas val | Change to double integer | toDoubleValueDA100 |
| | Convert into string | toStringValueDA100 |
| Alarm | Get the alarm type string | toAlarmNameDA100<br>getAlarmNameDA100 |
| | Get max length of string | alarmMaxLengthDA100 |
| Get the version number of this API | | versionAPIDA100 |
| Get the revision number of this API | | revisionAPIDA100 |
| Error | Error message string Get | toErrorMessageDA100<br>getErrorMessageDA100 |
| | Error message string maximum length | errorMaxLengthDA100 |

# 22.2 Programming - DARWIN/Visual Basic.NET -

## Statement of Declarations

Adding the module for Visual Basic.NET to the project is equivalent to declaring all functions and constants.

# Retrieval of the Measured Data

## Program Example

```
Module Module1
    Public Sub Meas()
        Dim comm As Integer
        Dim rc As Integer
        Dim value As Integer
        'connect
        comm = openDA100("192.168.1.11", rc)
        'get
        rc = measInstChDA100(comm, 0, 1)
        value = dataValueDA100(comm, 0, 1)
        'disconnect
        rc = closeDA100(comm)
    End sub
End Module
```

## Description

### Overview

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field. Reads the measured values and concludes the process.

### Communication Connection

`comm = openDA100("192.168.1.11", rc)`

The IP address of the DARWIN is specified. This statement specifies the communication constant for the DARWIN communication port number.

### Retrieval of the Measured Data of Channel 1

`rc = measInstChDA100(comm, 0, 1)`

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field.

### Retrieval of Measured Values

`value = dataValueDA100(comm, 0, 1)`

Reads the measured value of channel 1 of subunit number 0 from the field where the measured data is stored.

### Comm. cut

`rc = closeDA100(comm)`

Drops the connection.

# 22.3 Correspondence between Functions for Instantaneous Value Data Loading and Functions - DARWIN/Visual Basic.NET -

This section indicates the correspondence between the functionalities that the extension API supports and the Visual C functions.

***Note***

This extension API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not given.The functions can be added by using the commands of the DARWIN communication function.

The word “command” in the table signifies the command of the DARWIN communication function. For the details on the commands, see the Communication Interface User’s Manual.

There are two types of functions, status transition functions and retrieval functions. Status transition functions control DARWIN.
With retrieval functions, the parameter values of the current status are retrieved. When using retrieval functions, the data value of the stored current status is returned (the status of the extension API does not change).

## Status Retrieval Function

### Communication Functions

| Function | Command | Function |
|---|---|---|
| Comm. open | - | openDA100Reader |
| Comm. cut | - | closeDA100Reader |

### Data Retrieval Functions

| Function | | Command | Function |
|---|---|---|---|
| Meas data | Measurement channel | EF | measInstChDA100Reader |
| (inst value) | Computation channel | EF | mathInstChDA100Reader |
| Channel | Measurement channel | EL | measInfoChDA100Reader |
| info data | Computation channels | EL | mathInfoChDA100Reader |

Channel information data is stored internally, but the user can explicitly perform acquisition.

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | dataValueDA100Reader |
| Data status values | | dataStatusDA100Reader |
| Alarm (presence/absence) | | dataAlarmDA100Reader |
| Measured value | Double integer | dataDoubleValueDA100Reader |
| | String | dataStringValueDA100Reade |
| Time | Year | dataYearDA100Reader |
| | Month | dataMonthDA100Reader |
| | Day | dataDayDA100Reader |
| | Hour | dataHourDA100Reader |
| | Minute | dataMinuteDA100Reader |
| | Second | dataSecondDA100Reader |
| | Milliseconds | dataMilliSecDA100Reader |
| Alarm type | | alarmTypeDA100Reader |

## Channel Information Data

| Data Name | Function |
|---|---|
| Decimal point position | channelPointDA100Reader |
| Channel status | channelStatusDA100Reader |
| Unit name | toChannelUnitDA100Reader |

## Utilities

| Function/Data Name | | Function |
|---|---|---|
| Measured value | Change to double integer | toDoubleValueDA100Reader |
| | Convert into string | toStringValueDA100Reader |
| Alarm | Get the alarm type string | toAlarmNameDA100Reader |
| | Get max length of the alarm string | alarmMaxLengthDA100Reader |
| Get the version number of this API | | versionAPIDA100Reader |
| Get the revision number of this API | | revisionAPIDA100Reader |
| Error | Get the error message string | toErrorMessageDA100Reader |
| | Get max length of error message string | errorMaxLengthDA100Reader |

# 22.4 Program for Loading Instantaneous Value Data -DARWIN/Visual Basic.NET-

## Declaration Statements

Adding the module for Visual Basic.NET to the project is equivalent to declaring all functions and constants.

# Retrieval of the Measured Data

## Program Example

```
Module Module1
    Public Sub Meas()
        Dim comm As Integer
        Dim rc As Integer
        Dim value As Integer
        'connect
        comm = openDA100Reader("192.168.1.11", rc)
        'get
        rc = measInstChDA100Reader(comm, 0, 1)
        value = dataValueDA100Reader(comm, 0, 1)
        'disconnect
        rc = closeDA100Reader(comm)
    End Sub
End Module
```

## Description

### Overview

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field. Reads the measured values and concludes the process.

### Communication Connection

`comm = openDA100Reader("192.168.1.11", rc)`

The IP address of the DARWIN is specified. This statement specifies the communication constant for the port number for loading the instantaneous value data.

### Retrieval of the Measured Data of Channel 1

`rc = measInstChDA100Reader(comm, 0, 1)`

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field.

### Retrieval of Measured Values

`value = dataValueDA100Reader(comm, 0, 1)`

Reads the measured value of channel 1 of subunit number 0 from the field where the measured data is stored.

### Comm. cut

`rc = closeDA100Reader(comm)`

Drops the connection.

# 23.1 Functions and Their Functionalities - DARWIN/C# -

This section indicates functions that this extension API supports.

***Note***

This extension API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not given. The functions can be added by using the commands of the DARWIN communication function.

The word command in the table signifies the command of the DARWIN communication function. For the details on the commands, see the Communication Interface User's Manual.

There are two types of functions, status transition functions and retrieval functions. Status transition functions control DARWIN.
With retrieval functions, the parameter values of the current status are retrieved. When using retrieval functions, the data value of the stored current status is returned (the status of the extension API does not change).

## Status Transition Functions

### Communication Functions

| Function | Command | Function |
|---|---|---|
| Connect to DARWIN. | - | DAQDA100. openDA100 |
| Disconnect from DARWIN. | - | DAQDA100. closeDA100 |
| Send data by line. | - | DAQDA100. sendLineDA100 |
| Used when controlling the data reception in a special way. | | |
| Receive data by line. | - | DAQDA100. receiveLineDA100 |
| Used when controlling the data reception in a special way. | | |
| Receives data by bytes. | - | DAQDA100. receiveByteDA100 |
| Used when controlling the data reception in a special way. | | |
| Send command and receive the response. | - | DAQDA100. runCommandDA100 |
| Used when implementing function commands. | | |
| Get the status byte. | (ESC S) | DAQDA100. updateStatusDA100 |
| Sends the status byte output command and receives the response. | | |
| Send a trigger command (ESC T), and receive the response. | (ESC T) | DAQDA100. sendTriggerDA100 |
| Used when implementing a new talker function. | | |

Except during connection or status updates, communication functions do not perform status updates of stored data.

## Control Functions

| Function | Command | Function |
|---|---|---|
| Switch operation mode | DS | DAQDA100. switchModeDA100 |
| Retrieve code type<br>Switch (binary/ASCII code) | - | DAQDA100. switchCodeDA100 |
| Reconfigure | RS | DAQDA100. reconstructDA100 |
| Initialize settings | RC | DAQDA100. initSetValueDA100 |
| Reset alarms | AR | DAQDA100. ackAlarmDA100 |
| Set date/time (current) | SD | DAQDA100. setDateTimeNowDA100 |
| Calculation start/stop | EX | DAQDA100. switchComputeDA100 |
| Report start/stop | DR | DAQDA100. switchReportDA100 |
| Establish setup mode | XE | DAQDA100. establishDA100 |

Generally, the status is updated at the end of the process.
Status is not updated when establishing the setup mode.

## Setting (Operation Mode) Functions

| Function | | Command | Function |
|---|---|---|---|
| Range | SKIP (not used) | SR | DAQDA100. setRangeDA100 |
| | DC voltage input | SR | DAQDA100. setRangeDA100 |
| | Thermocouple input | SR | DAQDA100. setRangeDA100 |
| | RTD input | SR | DAQDA100. setRangeDA100 |
| | Contact input (DI) | SR | DAQDA100. setRangeDA100 |
| | DC current | SR | DAQDA100. setRangeDA100 |
| | Strain | SR | DAQDA100. setRangeDA100 |
| | Pulse | SR | DAQDA100. setRangeDA100 |
| | Power monitor | SR | DAQDA100. setRangeDA100 |
| | Diff comp between ch | SR | DAQDA100. setChDELTADA100 |
| | Remote RJC | SR | DAQDA100. setChRRJCDA100 |
| Unit name | | SN | DAQDA100. setChUnitDA100 |
| Alarm | | SA | DAQDA100. setChAlarmDA100 |

Becomes the channel unit setting.
The status is updated after the setting is entered.

## List of Data Retrieval Functions

| Function | | | Command | Function |
|---|---|---|---|---|
| Measured | | Meas ch | TS, FM | DAQDA100. measInstChDA100 |
| Data (Inst val) | | Comp ch | TS, FM | DAQDA100. mathInstChDA100 |
| Channel info data | | Meas ch | TS, LF | DAQDA100. measInfoChDA100 |
| | | Comp ch | TS, LF | DAQDA100. mathInfoChDA100 |
| System configuration data | | | TS,CF | CDAQDA100. updateSystemConfigDA100 |
| Report status | | | TS,RF | CDAQDA100. updateReportStatusDA100 |
| Setup data | | | | |
| Declare | Op | Sngl spec | TS, LF | CDAQDA100. talkOperationChDataDA100 |
| | mode | Specify rng | TS, LF | CDAQDA100. talkOperationDataDA100 |
| | Setup | Sngl spec | TS, LF | CDAQDA100. talkSetupChDataDA100 |
| | Mode | Specify rng | TS, LF | CDAQDA100. talkSetupDataDA100 |
| | Calibrate | Sngl spec | TS, LF | CDAQDA100. talkCalibrationChDataDA100 |
| | Mode | Specify rng | TS, LF | CDAQDA100. talkCalibrationDataDA100 |
| Get data by lines | | | - | CDAQDA100. getSetDataByLineDA100 |

Setup data is not stored, so it is retrieved in the same order as mentioned in sections 7.2 and 7.3. In this case, status is not updated.
Channel information data and system configuration data are stored internally, but the user can explicitly perform acquisition.
The report status is stored internally, but is not updated unless the user explicitly acquires it.

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | DAQDA100. dataValueDA100 |
| Data status values | | DAQDA100. dataStatusDA100 |
| Alarm (presence/absence) | | DAQDA100. dataAlarmDA100 |
| Measured values | Dbl intg | DAQDA100. dataDoubleValueDA100 |
| | String | DAQDA100. dataStringValueDA100 |
| Time | Year | DAQDA100. dataYearDA100 |
| | Month | DAQDA100. dataMonthDA100 |
| | Day | DAQDA100. dataDayDA100 |
| | Hour | DAQDA100. dataHourDA100 |
| | Minute | DAQDA100. dataMinuteDA100 |
| | Second | DAQDA100. dataSecondDA100 |
| Alarm type | | DAQDA100. alarmTypeDA100 |

## Channel Information Data

| Data Name | Function |
|---|---|
| Decimal point position | DAQDA100. channelPointDA100 |
| Channel status | DAQDA100. channelStatusDA100 |
| Unit name | DAQDA100. toChannelUnitDA100 |

## System Configuration Data

| Data Name | | Function |
|---|---|---|
| Measurement interval | | DAQDA100. unitIntervalDA100 |
| Unit | Presence or absence | DAQDA100. unitValidDA100 |
| Module | Internal code | DAQDA100. moduleCodeDA100 |
| | Module name | DAQDA100. toModuleNameDA100 |

## Status Data

| Data Name | Function |
|---|---|
| Status byte | DAQDA100. statusByteDA100 |
| Retrieve code type (binary/ASCII code) | DAQDA100. statusCodeDA100 |
| Report status | DAQDA100. statusReportDA100 |

## Utilities

| Function/Data Name | | Class and Member Function |
|---|---|---|
| Meas val | Chnge to dbl intg | DAQDA100. toDoubleValueDA100 |
| | Convert into string | DAQDA100.toStringValueDA100 |
| Alarm | Alarm type string | DAQDA100. toAlarmNameDA100 |
| | Get max length of alarm string | DAQDA100. alarmMaxLengthDA100 |
| The version number of this API | | DAQDA100. versionAPIDA100 |
| The revision number of this API | | DAQDA100. revisionAPIDA100 |
| Error | Error message string | DAQDA100. toErrorMessageDA100 |
| | Get the length of the error message string | DAQDA100. errorMaxLengthDA100 |

## 23.2 Programming - DARWIN/C# -

### Declaration Statements

Adding the class file C# to the project is equivalent to declaring all functions and constants.

# Retrieval of the Measured Data

## Program Example

```
using System;
using System.Text;
using System.Runtime.InteropServices;

namespace MeasCS
{
  class Class1
  {
          [STAThread]
          static void Main(string[] args)
          {
             int rc;
             Encoding enc = Encoding.GetEncoding ("ascii");
             String address = "192.168.1.11";
             //connect
             int comm =
DAQDA100.openDA100(enc.GetBytes(address), out rc);
             //get
             rc = DAQDA100.measInstChDA100(comm, 0, 1);
             int val = DAQDA100.dataValueDA100(comm, 0, 1);
             //disconnect
             DAQDA100.closeDA100(comm);
          }
  }
}
```

## Description

### Overview

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field. Reads the measured values and concludes the process.

### Communication Connection

`int comm = DAQDA100.openDA100(enc.GetBytes(address), out rc);`

The IP address of the DARWIN is specified. This statement specifies the communication constant for the DARWIN communication port number.

### Retrieval of the Measured Data of Channel 1

`rc = DAQDA100.measInstChDA100(comm, 0, 1);`

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field.

### Reading Measured Values

```
int val = DAQDA100.dataValueDA100(comm, 0, 1);
```

Reads the measured value of channel 1 of subunit number 0 from the field where the measured data is stored.

### Comm. cut

```
DAQDA100.closeDA100(comm);
```

Drops the connection.

# 23.3 Correspondence between Functions and Instantaneous Value Data Loading Functions - DARWIN/VIsual C# -

This section indicates functions that this extension API supports.

***Note***

This extension API provides a portion of the functions common to the DARWIN series instruments. Model-specific functions, setup functions of the setup mode, and A/D calibration functions are not given. The functions can be added by using the commands of the DARWIN communication function.

The word command in the table signifies the command of the DARWIN communication function. For the details on the commands, see the Communication Interface User's Manual.

There are two types of functions, status transition functions and retrieval functions. Status transition functions control DARWIN.
With retrieval functions, the parameter values of the current status are retrieved. When using retrieval functions, the data value of the stored current status is returned (the status of the extension API does not change).

## Status Transition Functions

### Communication Functions

| Function | Command | Function |
|---|---|---|
| Comm connection | - | DAQDA100Reader. openDA100Reader |
| Comm disconnection | - | DAQDA100Reader. closeDA100Reader |

### Data Retrieval Functions

| Function | | Command | Function |
|---|---|---|---|
| Meas data | Meas ch | EF | DAQDA100Reader. measInstChDA100Reader |
| (inst val) | Comp ch | EF | DAQDA100Reader. mathInstChDA100Reader |
| Channel | Meas ch | EL | DAQDA100Reader. measInfoChDA100Reader |
| info data | Comp ch | EL | DAQDA100Reader. mathInfoChDA100Reader |

Channel information data is stored internally, but the user can explicitly perform acquisition.

# Retrieval Functions

## Measured Data

| Data Name | | Function |
|---|---|---|
| Data value | | DAQDA100Reader. dataValueDA100Reader |
| Data status values | | DAQDA100Reader. dataStatusDA100Reader |
| Alarm (presence/absence) | | DAQDA100Reader. dataAlarmDA100Reader |
| Measured value | Double integer | DAQDA100Reader. dataDoubleValueDA100Reader |
| | String | DAQDA100Reader. dataStringValueDA100Reader |
| Time | Year | DAQDA100Reader. dataYearDA100Reader |
| | Month | DAQDA100Reader. dataMonthDA100Reader |
| | Day | DAQDA100Reader. dataDayDA100Reader |
| | Hour | DAQDA100Reader. dataHourDA100Reader |
| | Minute | DAQDA100Reader. dataMinuteDA100Reader |
| | Second | DAQDA100Reader. dataSecondDA100Reader |
| | Milliseconds | DAQDA100Reader. dataMilliSecDA100Reader |
| Alarm type | | DAQDA100Reader. alarmTypeDA100Reader |

## Channel Information Data

| Data Name | Function |
|---|---|
| Decimal Point Position | DAQDA100Reader. channelPointDA100Reader |
| Channel Status | DAQDA100Reader. channelStatusDA100Reader |
| Unit name | DAQDA100Reader. toChannelUnitDA100Reader |

## Utilities

| Function/Data Name | | Function |
|---|---|---|
| Measured values | Chng to dbl integ | DAQDA100Reader. toDoubleValueDA100Reader |
| | Convert into string | DAQDA100Reader. toStringValueDA100Reader |
| Alarm | Get alarm type strg | DAQDA100Reader. toAlarmNameDA100Reader |
| | Get max lngth alrm strng Retrieval | DAQDA100Reader. alarmMaxLengthDA100Reader |
| Get the version number of this API | | DAQDA100Reader. versionAPIDA100Reader |
| Get the revision number of this API | | DAQDA100Reader. revisionAPIDA100Reader |
| Error | Get err msg string | DAQDA100Reader. toErrorMessageDA100Reader |
| | Get max length of err msg string | DAQDA100Reader. errorMaxLengthDA100Reader |

# 23.4 Program for Loading Instantaneous Value Data -DARWIN/C#-

## Declaration Statements

Adding the class file (DAQDA100Reader.cs) C# to the project is equivalent to declaring all functions and constants.

# Retrieval of the Measured Data

## Program Example

```
using System;
using System.Text;
using System.Runtime.InteropServices;

namespace MeasCS
{
  class Class1
  {
          [STAThread]
          static void Main(string[] args)
          {
             int rc;
             Encoding enc = Encoding.GetEncoding ("ascii");
             String address = "192.168.1.11";
             //connect
             int comm =
DAQDA100Reader.openDA100Reader(enc.GetBytes(address), out rc);
             //get
             rc = DAQDA100Reader.measInstChDA100Reader(comm,
0, 1);
             int val =
DAQDA100Reader.dataValueDA100Reader(comm, 0, 1);
             //disconnect
             DAQDA100Reader.closeDA100Reader(comm);
          }
  }
}
```

## Description

### Overview

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field. Reads the measured values and concludes the process.

### Communication Connection

```
int comm =
DAQDA100Reader.openDA100Reader(enc.GetBytes(address), out rc);
```

The IP address of the DARWIN is specified. This statement specifies the communication constant for the port number for loading the instantaneous value data.

### Retrieval of the Measured Data of Channel 1

```
rc = DAQDA100Reader.measInstChDA100Reader(comm, 0, 1);
```

Retrieves instantaneous values of the measured data from channel 1 of DARWIN subunit number 0 and stores them in the field.

### Reading Measured Values

```
int val = DAQDA100Reader.dataValueDA100Reader(comm, 0, 1);
```

Reads the measured value of channel 1 of subunit number 0 from the field where the measured data is stored.

### Comm. cut

```
DAQDA100Reader.closeDA100Reader(comm);
```

Drops the connection.

# 24.1 Details of Functions - DARWIN (Visual C/Visual Basic/Visual Basic.NET/C#) - Status Transition Functions

This section describes the DARWIN functions that are used in Visual C, Visual Basic, Visual Basic.NET, and C#. The functions are listed in alphabetical order by the function name.

For details on constants and types, see chapter 25.
For DARWIN terminology, see appendix 2.

Most functions return an error number as a return value. Error number 0 is returned if there is no error.

## ackAlarmDA100

### Syntax

```
int ackAlarmDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function ackAlarmDA100 Lib "DAQDA100"(ByVal
daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function ackAlarmDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="ackAlarmDA100")]
public static extern int ackAlarmDA100(int daqda100);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |

### Description

Resets alarms.

- The status is updated at the end of the process.
- This function executes the AR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::ackAlarm`

## closeDA100

### Syntax

```
int closeDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function closeDA100 Lib "DAQDA100"(ByVal
daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function closeDA100 Lib "DAQDA100"(ByVal
daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="closeDA100")]
public static extern int closeDA100(int daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Disconnects the communication using the specified device descriptor.

- When the communication is disconnected, the value of the device descriptor is meaningless.
- After disconnection, do not use the value of the device descriptor.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQDA100::close
```

## establishDA100

### Syntax

```
int establishDA100(DAQDA100 daqda100, int iSetup);
```

### Declaration

Visual Basic

```
Public Declare Function establishDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal iSetup As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function establishDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal iSetup As Integer)
As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="establishDA100")]
public static extern int establishDA100(int daqda100, int
iSetup);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| iSetup | Specify establishment of setup. |

### Description

Establishes setting contents for setup mode.

- It is only valid in setup mode.
- This function executes the EX command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::establish`

## getSetDataByLineDA100

### Syntax

```
int getSetDataByLineDA100(DAQDA100 daqda100, char * strLine,
int maxLine, int * lenLine, int * pFlag);
```

### Declaration

Visual Basic

```
Public Declare Function getSetDataByLineDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal strLine As String,
ByVal maxLine As Long, ByRef lenLine As Long, ByRef pFlag As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function getSetDataByLineDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal strLine As String,
ByVal maxLine As Integer, ByRef lenLine As Integer, ByRef
pFlag As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="getSetDataByLineDA100")]
public static extern int getSetDataByLineDA100(int daqda100,
byte[] strLine, int maxLine, out int lenLine, out int pFlag);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| strLine | Specify the field where the string received by lines is to be stored. |
| maxLine | Specify the byte size of the field where the string received by lines is to be stored. |
| lenLine | Specify the destination where the byte size of the actual string received is returned. |
| pFlag | Specify the destination where the flag is to be returned. |

### Description

Gets the output from the talker function in units of lines after execution of the declaration for the retrieval of setup data.

- Stores the received string excluding line feeds.
- When the last set of data is retrieved, the flag status is set. The flag status is also set when the function ends in error.
- Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::getSetDataByLine`

## initSetValueDA100

### Syntax

```
int initSetValueDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function initSetValueDA100 Lib "DAQDA100"(ByVal
daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function initSetValueDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="initSetValueDA100")]
public static extern int initSetValueDA100(int daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Executes initial balancing of settings.

- The status is updated at the end of the process.
- This function executes the RC command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQDA100::initSetValue
```

## mathInfoChDA100

### Syntax

```
int mathInfoChDA100(DAQDA100 daqda100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function mathInfoChDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function mathInfoChDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="mathInfoChDA100")]
public static extern int mathInfoChDA100(int daqda100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the channel information data of the specified computation channel range.

- If the constant for “Specify all channel numbers”is specified for the channel numbers, all computatino channels are processed.
- Specify measurement channels and computation channels separately.
- The status is updated at the end of the process.
- This function executes the TS,LF command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDA100::mathInfoCh
```

## mathInstChDA100

### Syntax

```
int mathInstChDA100(DAQDA100 daqda100, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function mathInstChDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function mathInstChDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chNo As Integer)
As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="mathInstChDA100")]
public static extern int mathInstChDA100(int daqda100, int
chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the measured data of the specified computation channel.

- If the constant for “Specify all channel numbers”is specified for the channel numbers, all computation channels are processed.
- Specify measurement channels and computation channels separately.
- The status is updated at the end of the process.
- This function executes the TS,FM command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::mathInstCh`

## measInfoChDA100

### Syntax

```
int measInfoChDA100(DAQDA100 daqda100, int chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function measInfoChDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function measInfoChDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="measInfoChDA100")]
public static extern int measInfoChDA100(int daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the channel information data of the specified measurement channel (specified with the channel type and channel number).

- If the channel type is set to the constant for “Specify all measurement channel types,”all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,”all channels within the channel type are processed.
- Specify measurement channels and computation channels separately.
- The status is updated at the end of the process.
- This function executes the TS,LF command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDA100::measInfoCh
```

## measInstChDA100

### Syntax

```
int measInstChDA100(DAQDA100 daqda100, int chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function measInstChDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function measInstChDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="measInstChDA100")]
public static extern int measInstChDA100(int daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the measured data of the specified measurement channel (specified with the channel type and channel number).

- If the channel type is set to the constant for “Specify all measurement channel types,”all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,”all channels within the channel type are processed.
- Specify measurement channels and computation channels separately.
- The status is updated at the end of the process.
- This function executes the TS,FM command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::measInstCh`

## openDA100

### Syntax

```
DAQDA100 openDA100(const char * strAddress, int * errorCode);
```

### Declaration

Visual Basic

```
Public Declare Function openDA100 Lib "DAQDA100"(ByVal
strAddress As String, ByRef errorCode As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function openDA100 Lib "DAQDA100"(ByVal
strAddress As String, ByRef errorCode As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="openDA100")]
public static extern int openDA100(byte[] strAddress, out int
errorCode);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| errorCode | Specify the destination where the error number is to be returned. |

### Description

Connects to the device with the address specified by the parameters.

- Creates a device descriptor and returns the value as a return value.
- Stores the error number if the return destination is specified.
- The port number is fixed, and set to the communication constant “communication. port number.”
- Initializes the stored data. Gets the system configuration data, channel information data, and status byte and stores it.
- The specified string is, in general, an ASCII string.
- If unsuccessful, returns NULL in Visual C, or otherwise 0.

### Return value

Returns the device descriptor.

Error:

| | |
|---|---|
| Creating descriptor is failure | Failed to create the device descriptor. |

### Reference

```
CDAQDA100::open
```

## receiveByteDA100

### Syntax

```
int receiveByteDA100(DAQDA100 daqda100, unsigned char *
byteData, int maxData, int * lenData) );
```

### Declaration

Visual Basic

```
Public Declare Function receiveByteDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByRef byteData As Byte, ByVal maxData As
Long, ByRef lenData As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function receiveByteDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByRef byteData As Byte,
ByVal maxData As Integer, ByRef lenData As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="receiveByteDA100")]
public static extern int receiveByteDA100(int daqda100, byte[]
byteData, int maxData, out int lenData);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| byteData | Specify the field where the received byte data is to be stored. |
| maxData | Specify the byte size of the received data. |
| lenData | Specify the destination where the byte size of the actual data received is returned. |

### Description

Stores the received data to the field specified by the parameter up to the specified byte size.

- Returns the byte size of the actual data received if the return destination is specified.
- If multiple bytes of data exist, repeat the function.
- Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.
- The user must carry out determination of the data end.
- Used for recieving binary output when implementing a model-specific talker function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::receiveByte`

## receiveLineDA100

### Syntax

```
int receiveLineDA100(DAQDA100 daqda100, char * strLine, int
maxLine, int * lenLine);
```

### Declaration

Visual Basic

```
Public Declare Function receiveLineDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal strLine As String, ByVal maxLine As
Long, ByRef lenLine As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function receiveLineDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal strLine As String,
ByVal maxLine As Integer, ByRef lenLine As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="receiveLineDA100")]
public static extern int receiveLineDA100(int daqda100, byte[]
strLine, int maxLine, out int lenLine);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| strLine | Specify the field where the received string is to be stored. |
| maxLine | Specify the byte size of the field where the received string is to be stored. |
| lenLine | Specify the destination where the byte size of the actual string received is returned. |

### Description

Receives data in the field specified for storing received strings by the parameter, until a carriage return is detected or up to the specified byte size.

- Stores the received string excluding line feeds in the storage field.
- Stores in the specified destination the byte size of the actual data received and stored if the return destination is specified.
- If multiple lines of data exist, repeat the function.
- Do not perform communications using other functions until the data retrieval is completed. Other functions may not operate properly.
- The user must carry out determination of the data end.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDA100::receiveLine
```

## reconstructDA100

### Syntax

```
int reconstructDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function reconstructDA100 Lib "DAQDA100"(ByVal
daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function reconstructDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="reconstructDA100")]
public static extern int reconstructDA100(int daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Executes system reconfiguration.

- The status is updated at the end of the process.
- This function executes the RS command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQDA100::reconstruct`

## runCommandDA100

### Syntax

```
int runCommandDA100(DAQDA100 daqda100, const char * strCmd);
```

### Declaration

Visual Basic

```
Public Declare Function runCommandDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal strCmd As String) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function runCommandDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal strCmd As String)
As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="runCommandDA100")]
public static extern int runCommandDA100(int daqda100, byte[]
strCmd);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| strCmd | Specify the command message to be sent. |

### Description

Sends the specified command message and terminator and receives the response.

- This function adds a terminator to the command message at the time of transmission. Therefore, do not include the terminator in the command message.
- This function does not support simultaneous transmission of multiple commands or command messages that include the terminator.
- Like the data output request command of the talker function, does not support commands that do not send responses.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::runCommand`

## sendLineDA100

### Syntax

```
int sendLineDA100(DAQDA100 daqda100, const char * strLine);
```

### Declaration

Visual Basic

```
Public Declare Function sendLineDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal strLine As String) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function sendLineDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal strLine As String)
As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="sendLineDA100")]
public static extern int sendLineDA100(int daqda100, byte[]
strLine);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| strLine | Specify the string to be sent. |

### Description

Sends the string data specified by the parameter.

- When sending the command, the terminator is also part of the data.
- This function does not receive a response. Receive the returned data using another receive function.
- The specified string is, in general, an ASCII string.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::sendLine`

## sendTriggerDA100

### Syntax

```
int sendTriggerDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function sendTriggerDA100 Lib "DAQDA100"(ByVal
daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function sendTriggerDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="sendTriggerDA100")]
public static extern int sendTriggerDA100(int daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Sends a trigger command (ESC T), and receives the response.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

```
CDAQDA100::sendTrigger
```

## setChAlarmDA100

### Syntax

```
int setChAlarmDA100(DAQDA100 daqda100, int chType, int chNo,
int levelNo, int iAlarmType, int value, int relayType, int
relayNo);
```

### Declaration

Visual Basic

```
Public Declare Function setChAlarmDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long,
ByVal levelNo As Long, ByVal iAlarmType As Long, ByVal value
As Long, ByVal relayType As Long, ByVal relayNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChAlarmDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer, ByVal levelNo As Integer, ByVal
iAlarmType As Integer, ByVal value As Integer, ByVal relayType
As Integer, ByVal relayNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="setChAlarmDA100")]
public static extern int setChAlarmDA100(int daqda100, int
chType, int chNo, int levelNo, int iAlarmType, int value, int
relayType, int relayNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |
| iAlarmType | Specify the alarm type. |
| value | Specify the alarm value. |
| relayType | Specify the relay type. |
| relayNo | Specify the relay number. |

## Description

Sets the specified alarm (alarm level and alarm type) and alarm value to the specified channel (specified by channel type and channel number).

- If the channel type is set to the constant for “Specify all measurement channel types,”all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,”all channels within the channel type are processed.
- If the alarm level is set to the constant for ìSpecify all alarm level numbers,”all alarm levels within the  channels are processed.
- With relay specification, when the relay number is less than or equal to 0, the relay is not specified (turned OFF).
- Updates the stored channel information data after the setting.
- This function executes the SA command of the DARWIN communication function.

## Return value

Returns an error number.

Error:

Not descriptor  No device descriptor.

## Reference

`CDAQDA100::setChAlarm`

## setChDELTADA100

### Syntax

```
int setChDELTADA100(DAQDA100 daqda100, int chType, int chNo,
int refChNo, int spanMin, int spanMax);
```

### Declaration

Visual Basic

```
Public Declare Function setChDELTADA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long,
ByVal refChNo As Long, ByVal spanMin As Long, ByVal spanMax As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChDELTADA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer, ByVal refChNo As Integer, ByVal spanMin
As Integer, ByVal spanMax As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="setChDELTADA100")]
public static extern int setChDELTADA100(int daqda100, int
chType, int chNo, int refChNo, int spanMin, int spanMax);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| refChNo | Specify the channel number of the reference channel. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |

### Description

Sets the specified reference channel difference computation on the specified channel (specified under channel type and channel number).

- If the channel type is set to the constant for “Specify all measurement channel types,”all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,”all channels within the channel type are processed.
- With the span specification, if the left and right values are the same, it is considered omitted.
- Updates the stored channel information data after the setting.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::setChDELTA`

## setChRRJCDA100

### Syntax

```
int setChRRJCDA100(DAQDA100 daqda100, int chType, int chNo,
int refChNo, int spanMin, int spanMax);
```

### Declaration

Visual Basic

```
Public Declare Function setChRRJCDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long,
ByVal refChNo As Long, ByVal spanMin As Long, ByVal spanMax As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChRRJCDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer, ByVal refChNo As Integer, ByVal spanMin
As Integer, ByVal spanMax As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="setChRRJCDA100")]
public static extern int setChRRJCDA100(int daqda100, int
chType, int chNo, int refChNo, int spanMin, int spanMax);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| refChNo | Specify the channel number of the reference channel. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |

### Description

Sets the remote RJC specified for the reference channel on the specified channel (specified under channel type and channel number).

- If the channel type is set to the constant for “Specify all measurement channel types,”all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,”all channels within the channel type are processed.
- With the span specification, if the left and right values are the same, it is considered omitted.
- Updates the stored channel information data after the setting.
- This function executes the SR command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::setChRRJC`

## setChUnitDA100

### Syntax

```
int setChUnitDA100(DAQDA100 daqda100, int chType, int chNo,
const char * strUnit);
```

### Declaration

Visual Basic

```
Public Declare Function setChUnitDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long,
ByVal strUnit As String) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setChUnitDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer, ByVal strUnit As String) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="setChUnitDA100")]
public static extern int setChUnitDA100(int daqda100, int
chType, int chNo, byte[] strUnit);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| strUnit | Specify the unit name. |

### Description

Sets the specified unit name on the specified channel (specified under channel type and channel number).

- If the channel type is set to the constant for “Specify all measurement channel types,”all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,”all channels within the channel type are processed.
- Updates the stored channel information data after the setting.
- This function executes the SN command of the DARWIN communication function.
- The specified string is, in general, an ASCII string.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDA100::setChUnit
```

## setDateTimeNowDA100

### Syntax

```
int setDateTimeNowDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function setDateTimeNowDA100 Lib
"DAQDA100"(ByVal daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setDateTimeNowDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="setDateTimeNowDA100")]
public static extern int setDateTimeNowDA100(int daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Sets the current date/time of the PC.

- The status is updated at the end of the process.
- This function executes the SD command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQDA100::setDateTime`

# setRangeDA100

## Syntax

```
int setRangeDA100(DAQDA100 daqda100, int chType, int chNo, int
iRange, int spanMin, int spanMax, int scaleMin, int scaleMax,
int scalePoint, int bFilter, int iItem, int iWire);
```

## Declaration

Visual Basic

```
Public Declare Function setRangeDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long,
ByVal iRange As Long, ByVal spanMin As Long, ByVal spanMax As
Long, ByVal scaleMin As Long, ByVal scaleMax As Long, ByVal
scalePoint As Long, ByVal bFilter As Long, ByVal iItem As
Long, ByVal iWire As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function setRangeDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer, ByVal iRange As Integer, ByVal spanMin
As Integer, ByVal spanMax As Integer, ByVal scaleMin As
Integer, ByVal scaleMax As Integer, ByVal scalePoint As
Integer, ByVal bFilter As Integer, ByVal iItem As Integer,
ByVal iWire As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="setRangeDA100")]
public static extern int setRangeDA100(int daqda100, int
chType, int chNo, int iRange, int spanMin, int spanMax, int
scaleMin, int scaleMax, int scalePoint, int bFilter, int
iItem, int iWire);
```

## Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| iRange | Specify the range type. |
| spanMin | Specify the left value of the span. |
| spanMax | Specify the right value of the span. |
| scaleMin | Specify the left value of the scale. |
| scaleMax | Specify the right value of the scale. |
| scalePoint | Specify the decimal point position for scaling. |
| bFilter | Specify a filter using a Boolean value. |
| iItem | Specify the power measurement parameter. |
| iWire | Specify the power connection method. |

## Description

Sets the specified range type on the specified channel (specified under channel type and channel number).

- If the channel type is set to the constant for “Specify all measurement channel types,”all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,”all channels within the channel type are processed.
- With the span and scale specification, if the left and right values are the same, they are considered omitted.
- The filter specification is only valid for the pulse range.
- The power measurement item and power connection method are only valid for the power monitoring range.
- Updates the stored channel information data after the setting.
- This function executes the SR command of the DARWIN communication function.

## Return value

Returns an error number.

Error:

Not descriptor  No device descriptor.

## Reference

`CDAQDA100::setRange`

## switchCodeDA100

### Syntax

```
int switchCodeDA100(DAQDA100 daqda100, int iCode);
```

### Declaration

Visual Basic

```
Public Declare Function switchCodeDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal iCode As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function switchCodeDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal iCode As Integer)
As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="switchCodeDA100")]
public static extern int switchCodeDA100(int daqda100, int
iCode);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| iCode | Gets the retrieve code type. |

### Description

Switches to the specified retrieval code type.

- The status is updated at the end of the process.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::switchCode`

## switchComputeDA100

### Syntax

```
int switchComputeDA100(DAQDA100 daqda100, int iCompute);
```

### Declaration

Visual Basic

```
Public Declare Function switchComputeDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal iReportRun As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function switchComputeDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal iReportRun As
Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="switchComputeDA100")]
public static extern int switchComputeDA100(int daqda100, int
iReportRun);
```

### Parameters

| | |
|---|---|
| daqdarwin | Specify the device descriptor. |
| iCompute | Specify the computation. |

### Description

Starts/stops computation.

- Valid with the computation function.
- The status is updated at the end of the process.
- This function executes the EX command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::switchCompute`

## switchModeDA100

### Syntax

```
int switchModeDA100(DAQDA100 daqda100, int iMode);
```

### Declaration

Visual Basic

```
Public Declare Function switchModeDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal iMode As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function switchModeDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal iMode As Integer)
As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="switchModeDA100")]
public static extern int switchModeDA100(int daqda100, int
iMode);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| iMode | Specify the mode. |

### Description

Switches to the specified mode.

- Updates the stored channel information data when switching to the operation mode.
- The status is updated at the end of the process.
- This function executes the DS command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDA100::switchMode
```

## talkCalibrationChDataDA100

### Syntax

```
int talkCalibrationChDataDA100(DAQDA100 daqda100, int chType,
int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function talkCalibrationChDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal chType As Long, ByVal
chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function talkCalibrationChDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="talkCalibrationChDataDA100")]
public static extern int talkCalibrationChDataDA100(int
daqda100, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Executes declaration of the retrieval of the setup data of A/D calibration mode on the specified channel (specified by channel type and number).

- The operation mode must be switched to A/D calibration mode in advance.
- If the channel type is set to the constant for “Specify all measurement channel types,”all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,”all channels within the channel type are processed.
- This function executes the TS,LF command of the DARWIN communication function.
- After executing this function, use the getSetDataByLineDA100 function to retrieve the data by line.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDA100::talkCalibrationChData
```

## talkCalibrationDataDA100

### Syntax

```
int talkCalibrationDataDA100(DAQDA100 daqda100, int
startChType, int startChNo, int endChType, int endChNo);
```

### Declaration

Visual Basic

```
Public Declare Function talkCalibrationDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal startChType As Long,
ByVal startChNo As Long, ByVal endChType As Long, ByVal
endChNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function talkCalibrationDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal startChType As
Integer, ByVal startChNo As Integer, ByVal endChType As
Integer, ByVal endChNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="talkCalibrationDataDA100")]
public static extern int talkCalibrationDataDA100(int
daqda100, int startChType, int startChNo, int endChType, int
endChNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving setup data of A/D calibration mode from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

- The operation mode must be switched to A/D calibration mode in advance.
- This function executes the TS,LF command of the DARWIN communication function.
- After executing this function, use the getSetDataByLineDA100 function to retrieve the data by line.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::talkCalibrationData`

## talkOperationChDataDA100

### Syntax

```
int talkOperationChDataDA100(DAQDA100 daqda100, int chType,
int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function talkOperationChDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal chType As Long, ByVal
chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function talkOperationChDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="talkOperationChDataDA100")]
public static extern int talkOperationChDataDA100(int
daqda100, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Executes declaration of the retrieval of the setup data of operation mode on the specified channel (specified by channel type and number).

- If the channel type is set to the constant for “Specify all measurement channel types,”all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,”all channels within the channel type are processed.
- This function executes the TS and LF commands of the DARWIN communication function.
- After executing this function, use the getSetDataByLineDA100 function to retrieve the data by line.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDA100::talkOperationChData
```

## talkOperationDataDA100

### Syntax

```
int talkOperationDataDA100(DAQDA100 daqda100, int startChType,
int startChNo, int endChType, int endChNo);
```

### Declaration

Visual Basic

```
Public Declare Function talkOperationDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal startChType As Long,
ByVal startChNo As Long, ByVal endChType As Long, ByVal
endChNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function talkOperationDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal startChType As
Integer, ByVal startChNo As Integer, ByVal endChType As
Integer, ByVal endChNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="talkOperationDataDA100")]
public static extern int talkOperationDataDA100(int daqda100,
int startChType, int startChNo, int endChType, int endChNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving setup data of the operation mode from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

- This function executes the TS,LF command of the DARWIN communication function.
- After executing this function, use the getSetDataByLineDA100 function to retrieve the data by line.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::talkOperationData`

## talkSetupChDataDA100

### Syntax

```
int talkSetupChDataDA100(DAQDA100 daqda100, int chType, int
chNo);
```

### Declaration

Visual Basic

```
Public Declare Function talkSetupChDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal chType As Long, ByVal
chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function talkSetupChDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="talkSetupChDataDA100")]
public static extern int talkSetupChDataDA100(int daqda100,
int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Executes declaration of the retrieval of the setup data of the setup mode of the specified channel (specified by channel type and number).

- If the channel type is set to the constant for “Specify all measurement channel types,”all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,”all channels within the channel type are processed.
- This function executes the TS,LF command of the DARWIN communication function.
- After executing this function, use the getSetDataByLineDA100 function to retrieve the data by line.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDA100::talkSetupChData
```

## talkSetupDataDA100

### Syntax

```
int talkSetupDataDA100(DAQDA100 daqda100, int startChType, int
startChNo, int endChType, int endChNo);
```

### Declaration

Visual Basic

```
Public Declare Function talkSetupDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal startChType As Long,
ByVal startChNo As Long, ByVal endChType As Long, ByVal
endChNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function talkSetupDataDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal startChType As
Integer, ByVal startChNo As Integer, ByVal endChType As
Integer, ByVal endChNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="talkSetupDataDA100")]
public static extern int talkSetupDataDA100(int daqda100, int
startChType, int startChNo, int endChType, int endChNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| startChType | Specify the start channel type. |
| startChNo | Specify the start channel number. |
| endChType | Specify the end channel type. |
| endChNo | Specify the end channel number. |

### Description

Executes the declaration for retrieving setup data of the setup mode from the start channel (start channel type and start channel number) to the end channel (end channel type and end channel number).

- This function executes the TS,LF command of the DARWIN communication function.
- After executing this function, use the getSetDataByLineDA100 function to retrieve the data by line.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100::talkSetupData`

## updateReportStatusDA100

### Syntax

```
int updateReportStatusDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function updateReportStatusDA100 Lib
"DAQDA100"(ByVal daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateReportStatusDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="updateReportStatusDA100")]
public static extern int updateReportStatusDA100(int
daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Gets the report status.

- Valid with the report option.
- This function executes the TS,RF command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQDA100::updateReportStatus`

## updateStatusDA100

### Syntax

```
int updateStatusDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function updateStatusDA100 Lib "DAQDA100"(ByVal
daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateStatusDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="updateStatusDA100")]
public static extern int updateStatusDA100(int daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Sends the status byte output command (ESC S) and receives the status bytes.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQDA100::updateStatus`

## updateSystemConfigDA100

### Syntax

```
int updateSystemConfigDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function updateSystemConfigDA100 Lib
"DAQDA100"(ByVal daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function updateSystemConfigDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="updateSystemConfigDA100")]
public static extern int updateSystemConfigDA100(int
daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Gets the system configuration data.

- This function executes the TS,CF command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

Not descriptor No device descriptor.

### Reference

`CDAQDA100::updateSystemConfig`

# 24.2 Details of Functions - DARWIN (Visual C/Visual Basic/Visual Basic.NET/C#) - Retrieval Functions

This section describes the DARWIN functions that are used in Visual C, Visual Basic, Visual Basic.NET, and C#. The functions are listed in alphabetical order by the function name.

For details on constants and types, see chapter 25.
For DARWIN terminology, see appendix 2.

## alarmMaxLengthDA100

### Syntax

```
int alarmMaxLengthDA100(void);
```

### Declaration

Visual Basic

```
Public Declare Function alarmMaxLengthDA100 Lib "DAQDA100"()
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function alarmMaxLengthDA100 Lib
"DAQDA100"() As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmMaxLengthDA100")]
public static extern int alarmMaxLengthDA100();
```

### Description

Gets the maximum length of the alarm type.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`CDAQDARWINDataInfo::getMaxLenAlarmName`

# alarmTypeDA100

## Syntax

```
int alarmTypeDA100(DAQDA100 daqda100, int chType, int chNo,
int levelNo);
```

## Declaration

Visual Basic

```
Public Declare Function alarmTypeDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long,
ByVal levelNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function alarmTypeDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer, ByVal levelNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmTypeDA100")]
public static extern int alarmTypeDA100(int daqda100, int
chType, int chNo, int levelNo);
```

## Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

## Description

Gets the specified channel (channel type and number) and alarm level alarm type from the stored measured data.

- If it does not exist, “No alarm” is returned.

## Return value

Returns the alarm type.

## Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDataInfo
CDAQDARWINDataInfo::getAlarm
```

## channelPointDA100

### Syntax

```
int channelPointDA100(DAQDA100 daqda100, int chType, int
chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelPointDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelPointDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="channelPointDA100")]
public static extern int channelPointDA100(int daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the decimal point position of the specified channel (channel type and number) from the stored channel information data.

- Returns 0 if it does not exist.

### Return value

Returns the decimal point position.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINChInfo::getPoint
CDAQDARWINDataBuffer::getClassDARWINChInfo
```

## channelStatusDA100

### Syntax

```
int channelStatusDA100(DAQDA100 daqda100, int chType, int
chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelStatusDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal chType As Long, ByVal
chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelStatusDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="channelStatusDA100")]
public static extern int channelStatusDA100(int daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the channel status of the specified channel (channel type and number) from the stored channel information data.

- If it does not exist, “Unknown” is returned.

### Return value

Returns the channel status.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINChInfo::getChStatus
CDAQDARWINDataBuffer::getClassDARWINChInfo
```

## dataAlarmDA100

### Syntax

```
int dataAlarmDA100(DAQDA100 daqda100, int chType, int chNo,
int levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataAlarmDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long,
ByVal levelNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataAlarmDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer, ByVal levelNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataAlarmDA100")]
public static extern int dataAlarmDA100(int daqda100, int
chType, int chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the Boolean for the valid/invalid value of the alarm corresponding to the alarm level of the specified channel (channel type and number) from the stored measured data.

- If it does not exist, returns Invalid Value.

### Return value

Returns a Boolean value.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::isAlarm
```

## dataDayDA100

### Syntax

```
int dataDayDA100(DAQDA100 daqda100, int chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataDayDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataDayDA100 Lib "DAQDA100"(ByVal
daqda100 As Integer, ByVal chType As Integer, ByVal chNo As
Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataDayDA100")]
public static extern int dataDayDA100(int daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the day of the specified channel (channel type and number) from the stored time information data.

- The day is a number from 1 to 31.
- Returns 0 if it does not exist.

### Return value

Returns the day value.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDateTime
CDAQDARWINDateTime::getDay
```

## dataDoubleValueDA100

### Syntax

```
double dataDoubleValueDA100(DAQDA100 daqda100, int chType, int
chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataDoubleValueDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal chType As Long, ByVal
chNo As Long) As Double
```

Visual Basic.NET

```
Public Declare Ansi Function dataDoubleValueDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Double
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataDoubleValueDA100")]
public static extern double dataDoubleValueDA100(int daqda100,
int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the measured value of the specified channel (channel type and number) from the stored measured data.

- Returns 0.0 if it does not exist.

### Return value

Returns the measured value as a double-precision floating number.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDataInfo
CDAQDARWINDataInfo::getDoubleValue
```

# dataHourDA100

## Syntax

```
int dataHourDA100(DAQDA100 daqda100, int chType, int chNo);
```

## Declaration

Visual Basic

```
Public Declare Function dataHourDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataHourDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataHourDA100")]
public static extern int dataHourDA100(int daqda100, int
chType, int chNo);
```

## Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

## Description

Gets the hour of the specified channel (channel type and number) from the stored time information data.

- The hour is a number from 0 to 23.
- Returns 0 if it does not exist.

## Return value

Returns the hour value.

## Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDateTime
CDAQDARWINDateTime::getHour
```

## dataMinuteDA100

### Syntax

```
int dataMinuteDA100(DAQDA100 daqda100,int chType,int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataMinuteDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataMinuteDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataMinuteDA100")]
public static extern int dataMinuteDA100(int daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the minutes of the specified channel (channel type and number) from the stored time information data.

- The minute is a number from 0 to 59.
- Returns 0 if it does not exist.

### Return value

Returns the minute value.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDateTime
CDAQDARWINDateTime::getMinute
```

# dataMonthDA100

## Syntax

```
int dataMonthDA100(DAQDA100 daqda100, int chType, int chNo);
```

## Declaration

Visual Basic

```
Public Declare Function dataMonthDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataMonthDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataMonthDA100")]
public static extern int dataMonthDA100(int daqda100, int
chType, int chNo);
```

## Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

## Description

Gets the month of the specified channel (channel type and number) from the stored time information data.

- The month is a number from 1 to 12.
- Returns 0 if it does not exist.

## Return value

Returns the month value.

## Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDateTime
CDAQDARWINDateTime::getMonth
```

## dataSecondDA100

### Syntax

```
int dataSecondDA100(DAQDA100 daqda100, int chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataSecondDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataSecondDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataSecondDA100")]
public static extern int dataSecondDA100(int daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the seconds of the specified channel (channel type and number) from the stored time information data.

- The second is a number from 0 to 59.
- Returns 0 if it does not exist.

### Return value

Returns the seconds value.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDateTime
CDAQDARWINDateTime::getSecond
```

## dataStatusDA100

### Syntax

```
int dataStatusDA100(DAQDA100 daqda100, int chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataStatusDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataStatusDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataStatusDA100")]
public static extern int dataStatusDA100(int daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the data status value of the specified channel (channel type and number) from the stored measured data.

- If it does not exist, “Unknown” is returned.

### Return value

Returns the data status value.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDataInfo
CDAQDARWINDataInfo::getStatus
```

## dataStringValueDA100

### Syntax

```
int dataStringValueDA100(DAQDA100 daqda100, int chType, int
chNo, char * strValue, int lenValue);
```

### Declaration

Visual Basic

```
Public Declare Function dataStringValueDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal chType As Long, ByVal
chNo As Long, ByVal strValue As String, ByVal lenValue As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataStringValueDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer, ByVal strValue As String, ByVal
lenValue As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataStringValueDA100")]
public static extern int dataStringValueDA100(int daqda100,
int chType, int chNo, byte[] strValue, int lenValue);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| strValue | Specify the field where the string is to be stored. |
| lenValue | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the measured value of the specified channel (channel type and number) from the stored measured data.

- Converts into a string and stores it in the specified field.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDataInfo
CDAQDARWINDataInfo::getStringValue
```

## dataValueDA100

### Syntax

```
int dataValueDA100(DAQDA100 daqda100, int chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataValueDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataValueDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataValueDA100")]
public static extern int dataValueDA100(int daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the data value of the specified channel (channel type and number) from the stored measured data.

- Returns 0 if it does not exist.

### Return value

Returns the data value.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDataInfo
CDAQDARWINDataInfo::getValue
```

## dataYearDA100

### Syntax

```
int dataYearDA100(DAQDA100 daqda100, int chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataYearDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal chType As Long, ByVal chNo As Long) As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataYearDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataYearDA100")]
public static extern int dataYearDA100(int daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the year of the specified channel (channel type and number) from the stored time information data.

- The year is a 4-digit number.
- Returns 0 if it does not exist.

### Return value

Returns the year value.

### Reference

```
CDAQDA100::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDateTime
CDAQDARWINDateTime::getFullYear
```

## errorMaxLengthDA100

### Syntax

```
int errorMaxLengthDA100(void);
```

### Declaration

Visual Basic

```
Public Declare Function errorMaxLengthDA100 Lib "DAQDA100"()
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function errorMaxLengthDA100 Lib
"DAQDA100"() As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="errorMaxLengthDA100")]
public static extern int errorMaxLengthDA100();
```

### Description

Gets the maximum length of the error message string.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

```
CDAQDA100::getMaxLenErrorMessage
```

## getAlarmNameDA100 [Visual C only]

### Syntax

```
const char * getAlarmNameDA100(int iAlarmType);
```

### Parameters

iAlarmType Specify the alarm type.

### Description

Gets the string corresponding to the specified alarm type.

- If it does not exist, returns the pointer to the string corresponding to “No alarm.”

### Return value

Returns a pointer to the string.

### Reference

`CDAQDARWINDataInfo::getAlarmName`

## getChannelUnitDA100 [Visual C only]

### Syntax

```
const char * getChannelUnitDA100(DAQDA100 daqda100, int
chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the unit name of the specified channel (channel type and number) from the stored channel information data.

- Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`CDAQDA100::getClassDataBuffer`
`CDAQDARWINChInfo::getUnit`
`CDAQDARWINDataBuffer::getClassDARWINChInfo`

## getErrorMessageDA100 [Visual C only]

### Syntax

```
const char * getErrorMessageDA100(int errCode);
```

### Parameters

errCode Specify the error number.

### Description

Gets the error message string corresponding to the specified error number.

- Returns a pointer to the string [Unknown] if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`CDAQDA100::getErrorMessage`

## getModuleNameDA100 [Visual C only]

### Syntax

```
const char * getModuleNameDA100(DAQDA100 daqda100, int unitNo,
int slotNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| unitNo | Specify the unit number. |
| slotNo | Specify the slot number. |

### Description

Gets the module name in the position indicated by the specified unit number and slot number from the stored system configuration data.

- Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`CDAQDA100::getClassSysInfo`
`CDAQDARWINSysInfo::getModuleName`

## moduleCodeDA100

### Syntax

```
int moduleCodeDA100(DAQDA100 daqda100, int unitNo, int
slotNo);
```

### Declaration

Visual Basic

```
Public Declare Function moduleCodeDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal unitNo As Long, ByVal slotNo As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function moduleCodeDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal unitNo As Integer,
ByVal slotNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="moduleCodeDA100")]
public static extern int moduleCodeDA100(int daqda100, int
unitNo, int slotNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| unitNo | Specify the unit number. |
| slotNo | Specify the slot number. |

### Description

Gets the internal code in the position indicated by the specified unit number and slot number from the stored system configuration data.

- Returns 0 if it does not exist.

### Return value

Returns the internal code.

### Reference

```
CDAQDA100::getClassSysInfo
CDAQDARWINSysInfo::getModuleCode
```

## revisionAPIDA100

### Syntax

```
const int revisionAPIDA100(void);
```

### Declaration

Visual Basic

```
Public Declare Function revisionAPIDA100 Lib "DAQDA100"() As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function revisionAPIDA100 Lib "DAQDA100"()
As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="revisionAPIDA100")]
public static extern int revisionAPIDA100();
```

### Description

Gets the revision number of this API.

### Return value

Returns the revision number.

### Reference

`CDAQDA100::getRevisionAPI`

## statusByteDA100

### Syntax

```
int statusByteDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function statusByteDA100 Lib "DAQDA100"(ByVal
daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusByteDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="statusByteDA100")]
public static extern int statusByteDA100(int daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Gets the stored status byte.

- If it does not exist, returns “the value when all status bytes are invalid.”

### Return value

Returns the status byte.

### Reference

```
CDAQDA100::getByte
```

## statusCodeDA100

### Syntax

```
int statusCodeDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function statusCodeDA100 Lib "DAQDA100"(ByVal
daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusCodeDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="statusCodeDA100")]
public static extern int statusCodeDA100(int daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Gets the stored retrieve code type.

- If it does not exist, “Binary code” is returned.

### Return value

Returns the retrieve code type.

### Reference

`CDAQDA100::getCode`

## statusReportDA100

### Syntax

```
int statusReportDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function statusReportDA100 Lib "DAQDA100"(ByVal
daqda100 As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function statusReportDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="statusReportDA100")]
public static extern int statusReportDA100(int daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Gets the stored report status.

- If it does not exist, returns “All Invalid.”

### Return value

Returns the report status.

### Reference

```
CDAQDA100::getReport
```

## toAlarmNameDA100

### Syntax

```
int toAlarmNameDA100(int iAlarmType,char * strAlarm,int
lenAlarm);
```

### Declaration

Visual Basic

```
Public Declare Function toAlarmNameDA100 Lib "DAQDA100"(ByVal
iAlarmType As Long, ByVal strAlarm As String, ByVal lenAlarm
As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toAlarmNameDA100 Lib
"DAQDA100"(ByVal iAlarmType As Integer, ByVal strAlarm As
String, ByVal lenAlarm As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toAlarmNameDA100")]
public static extern int toAlarmNameDA100(int iAlarmType,
byte[] strAlarm, int lenAlarm);
```

### Parameters

| | |
|---|---|
| iAlarmType | Specify the alarm type. |
| strAlarm | Specify the field where the string is to be stored. |
| lenAlarm | Specify the byte size of the field where the string is to be stored. |

### Description

Stores the string corresponding to the specified alarm type to the specified field.

- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`getAlarmNameDA100`

## toChannelUnitDA100

### Syntax

```
int toChannelUnitDA100(DAQDA100 daqda100, int chType, int
chNo, char * strUnit, int lenUnit);
```

### Declaration

Visual Basic

```
Public Declare Function toChannelUnitDA100 Lib
"DAQDA100"(ByVal daqda100 As Long, ByVal chType As Long, ByVal
chNo As Long, ByVal strUnit As String, ByVal lenUnit As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toChannelUnitDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal chType As Integer,
ByVal chNo As Integer, ByVal strUnit As String, ByVal lenUnit
As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toChannelUnitDA100")]
public static extern int toChannelUnitDA100(int daqda100, int
chType, int chNo, byte[] strUnit, int lenUnit);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| strUnit | Specify the field where the string is to be stored. |
| lenUnit | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the unit name of the specified channel (channel type and number) from the stored channel information data.

- Stores the string in the specified storage destination.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- The strings that can be stored are, in general, ASCII strings.
- Returns 0 if it does not exist.

### Return value

Returns the length of the actual string.

### Reference

`getChannelUnitDA100`

## toDoubleValueDA100

### Syntax

```
double toDoubleValueDA100(int dataValue, int point);
```

### Declaration

Visual Basic

```
Public Declare Function toDoubleValueDA100 Lib
"DAQDA100"(ByVal dataValue As Long, ByVal point As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function toDoubleValueDA100 Lib
"DAQDA100"(ByVal dataValue As Integer, ByVal point As Integer)
As Double
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toDoubleValueDA100")]
public static extern double toDoubleValueDA100(int dataValue,
int point);
```

### Parameters

| | |
|---|---|
| dataValue | Specify the data value. |
| point | Specify the decimal point position. |

### Description

Generates the measured value from the specified data value and decimal point position.

### Return value

Returns the measured value as a double-precision floating number.

### Reference

`CDAQDARWINDataInfo::toDoubleValue`

## toErrorMessageDA100

### Syntax

```
int toErrorMessageDA100(int errCode, char * errStr, int
errLen);
```

### Declaration

Visual Basic

```
Public Declare Function toErrorMessageDA100 Lib
"DAQDA100"(ByVal errCode As Long, ByVal errStr As String,
ByVal errLen As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toErrorMessageDA100 Lib
"DAQDA100"(ByVal errCode As Integer, ByVal errStr As String,
ByVal errLen As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toErrorMessageDA100")]
public static extern int toErrorMessageDA100(int errCode,
byte[] errStr, int errLen);
```

### Parameters

| | |
|---|---|
| errorCode | Specify the error number. |
| errStr | Specify the field where the string is to be stored. |
| errLen | Specify the byte size of the field where the string is to be stored. |

### Description

Stores the error message string corresponding to the error number to the specified field.

- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`getErrorMessageDA100`

## toModuleNameDA100

### Syntax

```
int toModuleNameDA100(DAQDA100 daqda100, int unitNo, int
slotNo, char * strName, int lenName);
```

### Declaration

Visual Basic

```
Public Declare Function toModuleNameDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal unitNo As Long, ByVal slotNo As Long,
ByVal strName As String, ByVal lenName As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toModuleNameDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal unitNo As Integer,
ByVal slotNo As Integer, ByVal strName As String, ByVal
lenName As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toModuleNameDA100")]
public static extern int toModuleNameDA100(int daqda100, int
unitNo, int slotNo, byte[] strName, int lenName);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| unitNo | Specify the unit number. |
| slotNo | Specify the slot number. |
| strName | Specify the field where the string is to be stored. |
| lenName | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the module name in the position indicated by the specified unit number and slot number from the stored system configuration data.

- Stores the string in the specified storage destination.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the actual string.

### Reference

`getModuleNameDA100`

## toStringValueDA100

### Syntax

```
int toStringValueDA100(int dataValue, int point, char *
strValue, int lenValue);
```

### Declaration

Visual Basic

```
Public Declare Function toStringValueDA100 Lib
"DAQDA100"(ByVal dataValue As Long, ByVal point As Long, ByVal
strValue As String, ByVal lenValue As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toStringValueDA100 Lib
"DAQDA100"(ByVal dataValue As Integer, ByVal point As Integer,
ByVal strValue As String, ByVal lenValue As Integer) As
Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toStringValueDA100")]
public static extern int toStringValueDA100(int dataValue, int
point, byte[] strValue, int lenValue);
```

### Parameters

| | |
|---|---|
| dataValue | Specify the data value. |
| point | Specify the decimal point position. |
| strValue | Specify the field where the string is to be stored. |
| lenValue | Specify the byte size of the field where the string is to be stored. |

### Description

Generates the measured value from the specified data value and decimal point position.

- Converts the generated measured value into a string and stores to the specified field.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`CDAQDARWINDataInfo::toStringValue`

## unitIntervalDA100

### Syntax

```
double unitIntervalDA100(DAQDA100 daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function unitIntervalDA100 Lib "DAQDA100"(ByVal
daqda100 As Long) As Double
```

Visual Basic.NET

```
Public Declare Ansi Function unitIntervalDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer) As Double
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="unitIntervalDA100")]
public static extern double unitIntervalDA100(int daqda100);
```

### Parameters

daqda100 Specify the device descriptor.

### Description

Gets the measurement interval from the stored current system configuration data.

- Returns 0.0 if it does not exist.

### Return value

Returns the scan interval.

### Reference

```
CDAQDA100::getClassSysInfo
CDAQDARWINSysInfo::getInterval
```

## unitValidDA100

### Syntax

```
int unitValidDA100(DAQDA100 daqda100, int unitNo);
```

### Declaration

Visual Basic

```
Public Declare Function unitValidDA100 Lib "DAQDA100"(ByVal
daqda100 As Long, ByVal unitNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function unitValidDA100 Lib
"DAQDA100"(ByVal daqda100 As Integer, ByVal unitNo As Integer)
As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="unitValidDA100")]
public static extern int unitValidDA100(int daqda100, int
unitNo);
```

### Parameters

| | |
|---|---|
| daqda100 | Specify the device descriptor. |
| unitNo | Specify the unit number. |

### Description

Gets valid/invalid of the specified unit number from the stored system configuration data as a Boolean value.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

```
CDAQDA100::getClassSysInfo
CDAQDARWINSysInfo::isExist
```

## versionAPIDA100

### Syntax

```
const int versionAPIDA100(void);
```

### Declaration

Visual Basic

```
Public Declare Function versionAPIDA100 Lib "DAQDA100"() As
Long
```

Visual Basic.NET

```
Public Declare Ansi Function versionAPIDA100 Lib "DAQDA100"()
As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="versionAPIDA100")]
public static extern int versionAPIDA100();
```

### Description

Gets the version number of this API.

### Return value

Returns the version number.

### Reference

`CDAQDA100::getVersionAPI`

# 24.3 Details of Functions for Instantaneous Value Loading - DARWIN (Visual C/Visual Basic/ Visual Basic.NET/C#) - Status Transition Functions

This section describes the DARWIN functions that are used in Visual C, Visual Basic, Visual Basic.NET, and C# when using the instantaneous value data loading port.

Most functions return an error number as a return value. Error number 0 is returned if there is no error.

## closeDA100Reader

### Syntax

```
int closeDA100Reader(DAQDA100READER daqda100);
```

### Declaration

Visual Basic

```
Public Declare Function closeDA100Reader Lib "DAQDA100"(ByVal
daqda100Reader As Long) As Long
Visual Basic.NET
Public Declare Ansi Function closeDA100Reader Lib
"DAQDA100"(ByVal daqda100Reader As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="closeDA100Reader"]
public static extern int closeDA100Reader(int daqda100Reader);
```

### Parameters

daqda100Reader Specify the device descriptor.

### Description

Disconnects the communication using the specified device descriptor.

- When the communication is disconnected, the value of the device descriptor is meaningless.
- After disconnection, do not use the value of the device descriptor.

### Return value

Returns an error number.

Error:

Not descriptor  No device descriptor.

### Reference

`CDAQDA100Reader::closes`

## mathInfoChDA100Reader

### Syntax

```
int mathInfoChDA100Reader(DAQDA100READER daqda100reader, int
chNo);
```

### Declaration

Visual Basic

```
Public Declare Function mathInfoChDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chNo As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function mathInfoChDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chNo As
Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="mathInfoChDA100Reader"]
public static extern int mathInfoChDA100Reader(int
daqda100reader, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the channel information data of the specified computation channel range.

- If the constant for “Specify all channel numbers” is specified for the channel numbers, all computation channels are processed.
- Specify measurement channels and computation channels separately.
- This function executes the EL command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100Reader::mathInfoCh`

## mathInstChDA100Reader

### Syntax

```
int mathInstChDA100Reader(DAQDA100READER daqda100reader, int
chNo);
```

### Declaration

Visual Basic

```
Public Declare Function mathInstChDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chNo As Long)
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function mathInstChDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chNo As
Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="mathInstChDA100Reader"]
public static extern int mathInstChDA100Reader(int
daqda100reader, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chNo | Specify the channel number. |

### Description

Gets the measured data of the specified computation channel.

- If the constant for “Specify all channel numbers” is specified for the channel numbers, all computation channels are processed.
- Gets the measured data and alarm data.
- Specify measurement channels and computation channels separately.
- This function executes the EF command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100Reader::mathInstCh`

## measInfoChDA100Reader

### Syntax

```
int measInfoChDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function measInfoChDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function measInfoChDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="measInfoChDA100Reader"]
public static extern int measInfoChDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the channel information data of the specified measurement channel (specified with the channel type and channel number).

- If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.
- Specify measurement channels and computation channels separately.
- This function executes the EL command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

`CDAQDA100Reader::measInfoCh`

## measInstChDA100Reader

### Syntax

```
int measInstChDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function measInstChDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function measInstChDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="measInstChDA100Reader"]
public static extern int measInstChDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the measured data of the specified measurement channel (specified with the channel type and channel number).

- If the channel type is set to the constant for “Specify all measurement channel types,” all subunits are processed.
- If the channel number is set to the constant for “Specify all channel numbers,” all channels within the channel type are processed.
- Gets the measured data and alarm data.
- Specify measurement channels and computation channels separately.
- This function executes the EF command of the DARWIN communication function.

### Return value

Returns an error number.

Error:

| | |
|---|---|
| Not descriptor | No device descriptor. |

### Reference

```
CDAQDA100Reader::measInstCh
```

## openDA100Reader

### Syntax

```
DAQDA100READER openDA100Reader(const char * strAddress, int *
errorCode);
```

### Declaration

Visual Basic

```
Public Declare Function openDA100Reader Lib "DAQDA100"(ByVal
strAddress As String, ByRef errorCode As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function openDA100Reader Lib
"DAQDA100"(ByVal strAddress As String, ByRef errorCode As
Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="openDA100Reader"]
public static extern int openDA100Reader(byte[] strAddress,
out int errorCode);
```

### Parameters

| | |
|---|---|
| strAddress | Specify the IP address as a string. |
| errorCode | Specify the destination where the error number is to be returned. |

### Description

Connects to the device with the address specified by the parameters.

- Creates a device descriptor and returns the value as a return value.
- Stores the error number if the return destination is specified.
- The port number is fixed, and it is set to the communication constant, “instantaneous value loading port number.”
- Initializes the stored data. Retrieves information about the status of the instrument such as channel information data, and stores the information.
- The specified string is, in general, an ASCII string.
- If unsuccessful, returns NULL in Visual C or 0 in Visual Basic, Visual Basic.NET/ C#.

### Return value

Returns the device descriptor.

Error:

| | |
|---|---|
| Creating descriptor is failure | Failed to create the device descriptor. |

### Reference

`CDAQDA100Reader::open`

# 24.4 Details of Instantaneous Value Loading Functions - DARWIN (Visual C/Visual Basic/ Visual Basic.NET/C#) - Status Transition Functions

This section describes the DARWIN functions that are used in Visual C, Visual Basic, Visual Basic.NET, and C# when using the instantaneous value data loading port.

## alarmMaxLengthDA100Reader

### Syntax

```
int alarmMaxLengthDA100Reader(void);
```

### Declaration

Visual Basic

```
Public Declare Function alarmMaxLengthDA100Reader Lib
"DAQDA100"() As Long
```

Visual Basic.NET

```
Public Declare Ansi Function alarmMaxLengthDA100Reader Lib
"DAQDA100"() As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmMaxLengthDA100Reader"]
public static extern int alarmMaxLengthDA100Reader();
```

### Description

Gets the maximum length of the alarm type.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`CDAQDARWINDataInfo::getMaxLenAlarmName`

## alarmTypeDA100Reader

### Syntax

```
int alarmTypeDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo, int levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function alarmTypeDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long, ByVal levelNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function alarmTypeDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer, ByVal levelNo As Integer) As
Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="alarmTypeDA100Reader"]
public static extern int alarmTypeDA100Reader(int
daqda100reader, int chType, int chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the specified channel (channel type and number) and alarm level alarm type from the stored measured data.

- If it does not exist, “No alarm” is returned.

### Return value

Returns the alarm type.

### Reference

`alarmTypeDA100`

## channelPointDA100Reader

### Syntax

```
int channelPointDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelPointDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelPointDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="channelPointDA100Reader"]
public static extern int channelPointDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the decimal point position of the specified channel (channel type and number) from the stored channel information data.

- Returns 0 if it does not exist.

### Return value

Returns the decimal point position.

### Reference

`channelPointDA100`

## channelStatusDA100Reader

### Syntax

```
int channelStatusDA100Reader(DAQDA100READER daqda100reader,
int chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function channelStatusDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function channelStatusDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="channelStatusDA100Reader"]
public static extern int channelStatusDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the channel status of the specified channel (channel type and number) from the stored channel information data.

- If it does not exist, “Unknown” is returned.

### Return value

Returns the channel status.

### Reference

`channelStatusDA100`

## dataAlarmDA100Reader

### Syntax

```
int dataAlarmDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo, int levelNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataAlarmDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long, ByVal levelNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataAlarmDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer, ByVal levelNo As Integer) As
Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataAlarmDA100Reader"]
public static extern int dataAlarmDA100Reader(int
daqda100reader, int chType, int chNo, int levelNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| levelNo | Specify the alarm level. |

### Description

Gets the Boolean for the valid/invalid value of the alarm corresponding to the alarm level of the specified channel (channel type and number) from the stored measured data.

- If it does not exist, Invalid is returned.

### Return value

Returns a Boolean value.

### Reference

dataAlarmDA100

## dataDayDA100Reader

### Syntax

```
int dataDayDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataDayDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataDayDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataDayDA100Reader"]
public static extern int dataDayDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the day of the specified channel (channel type and number) from the stored time information data.

- The day is a number from 1 to 31.
- Returns 0 if it does not exist.

### Return value

Returns the day value.

### Reference

`dataDayDA100`

## dataDoubleValueDA100Reader

### Syntax

```
double dataDoubleValueDA100Reader(DAQDA100READER
daqda100reader, int chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataDoubleValueDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Double
```

Visual Basic.NET

```
Public Declare Ansi Function dataDoubleValueDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Double
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataDoubleValueDA100Reader"]
public static extern double dataDoubleValueDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the measured value of the specified channel (channel type and number) from the stored measured data.

- Returns 0.0 if it does not exist.

### Return value

Returns the measured value as a double-precision floating number.

### Reference

`dataDoubleValueDA100`

## dataHourDA100Reader

### Syntax

```
int dataHourDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataHourDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataHourDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataHourDA100Reader"]
public static extern int dataHourDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the hour of the specified channel (channel type and number) from the stored time information data.

- The hour is a number from 0 to 23.
- Returns 0 if it does not exist.

### Return value

Returns the hour value.

### Reference

dataHourDA100

## dataMilliSecDA100Reader

### Syntax

```
int dataMilliSecDA100Reader(DAQDA100READER daqda100redaer, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataMilliSecDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataMilliSecDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataMilliSecDA100Reader"]
public static extern int dataMilliSecDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the milliseconds of the specified channel (channel type and number) from the stored time information data.

- Returns 0 if it does not exist.

### Return value

Returns the milliseconds value.

### Reference

```
CDAQDA100Reader::getClassDataBuffer
CDAQDARWINDataBuffer::getClassDARWINDateTime
CDAQDARWINDateTime::getMilliSecond
```

## dataMinuteDA100Reader

### Syntax

```
int dataMinuteDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataMinuteDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataMinuteDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataMinuteDA100Reader"]
public static extern int dataMinuteDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the minutes of the specified channel (channel type and number) from the stored time information data.

- The minute is a number from 0 to 59.
- Returns 0 if it does not exist.

### Return value

Returns the minute value.

### Reference

`dataMinuteDA100`

## dataMonthDA100Reader

### Syntax

```
int dataMonthDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataMonthDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataMonthDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataMonthDA100Reader"]
public static extern int dataMonthDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the month of the specified channel (channel type and number) from the stored time information data.

- The month is a number from 1 to 12.
- Returns 0 if it does not exist.

### Return value

Returns the month value.

### Reference

`dataMonthDA100`

## dataSecondDA100Reader

### Syntax

```
int dataSecondDA100Reader(DAQDA100READER daqda100redaer, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataSecondDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataSecondDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataSecondDA100Reader"]
public static extern int dataSecondDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the seconds of the specified channel (channel type and number) from the stored time information data.

- The second is a number from 0 to 59.
- Returns 0 if it does not exist.

### Return value

Returns the seconds value.

### Reference

dataSecondDA100

## dataStatusDA100Reader

### Syntax

```
int dataStatusDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataStatusDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataStatusDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataStatusDA100Reader"]
public static extern int dataStatusDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the data status value of the specified channel (channel type and number) from the stored measured data.

- If it does not exist, “Unknown” is returned.

### Return value

Returns the data status value.

### Reference

`dataStatusDA100`

## dataStringValueDA100Reader

### Syntax

```
int dataStringValueDA100Reader(DAQDA100READER daqda100reader,
int chType, int chNo, char * strValue, int lenValue);
```

### Declaration

Visual Basic

```
Public Declare Function dataStringValueDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long, ByVal strValue As String, ByVal lenValue
As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataStringValueDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer, ByVal strValue As String,
ByVal lenValue As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataStringValueDA100Reader"]
public static extern int dataStringValueDA100Reader(int
daqda100reader, int chType, int chNo, byte[] strValue, int
lenValue);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| strValue | Specify the field where the string is to be stored. |
| lenValue | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the measured value of the specified channel (channel type and number) from the stored measured data.

- Converts into a string and stores it in the specified field.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`dataStringValueDA100`

## dataValueDA100Reader

### Syntax

```
int dataValueDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataValueDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataValueDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataValueDA100Reader"]
public static extern int dataValueDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the data value of the specified channel (channel type and number) from the stored measured data.

- Returns 0 if it does not exist.

### Return value

Returns the data value.

### Reference

`dataValueDA100`

## dataYearDA100Reader

### Syntax

```
int dataYearDA100Reader(DAQDA100READER daqda100reader, int
chType, int chNo);
```

### Declaration

Visual Basic

```
Public Declare Function dataYearDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function dataYearDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="dataYearDA100Reader"]
public static extern int dataYearDA100Reader(int
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the year of the specified channel (channel type and number) from the stored time information data.

- The year is a 4-digit number.
- Returns 0 if it does not exist.

### Return value

Returns the year value.

### Reference

`dataYearDA100`

## errorMaxLengthDA100Reader

### Syntax

```
int errorMaxLengthDA100Reader(void);
```

### Declaration

Visual Basic

```
Public Declare Function errorMaxLengthDA100Reader Lib
"DAQDA100"() As Long
```

Visual Basic.NET

```
Public Declare Ansi Function errorMaxLengthDA100Reader Lib
"DAQDA100"() As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="errorMaxLengthDA100Reader"]
public static extern int errorMaxLengthDA100Reader();
```

### Description

Gets the maximum length of the error message string.

- The return value does not include the terminator.

### Return value

Returns the length of the string.

### Reference

`CDAQDA100Reader::getMaxLenErrorMessage`

## getAlarmNameDA100Reader [Visual C only]

### Syntax

```
const char * getAlarmNameDA100Reader(int iAlarmType);
```

### Parameters

iAlarmType Specify the alarm type.

### Description

Gets the string corresponding to the specified alarm type.

- If it does not exist, returns the pointer to the string corresponding to ìNo alarm.”

### Return value

Returns a pointer to the string.

### Reference

`CDAQDARWINDataInfo::getAlarmName`

## getChannelUnitDA100Reader [Visual C only]

### Syntax

```
const char * getChannelUnitDA100Reader(DAQDA100READER
daqda100reader, int chType, int chNo);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |

### Description

Gets the unit name of the specified channel (channel type and number) from the stored channel information data.

- Returns NULL if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`getChannelUnitDA100`

## getErrorMessageDA100Reader [Visual C only]

### Syntax

```
const char * getErrorMessageDA100Reader(int errCode);
```

### Parameters

errCode Specify the error number.

### Description

Gets the error message string corresponding to the specified error number.

- Returns a pointer to the string [Unknown] if it does not exist.

### Return value

Returns a pointer to the string.

### Reference

`CDAQDA100Reader::getErrorMessage`

## revisionAPIDA100Reader

### Syntax

```
const int revisionAPIDA100Reader(void);
```

### Declaration

Visual Basic

```
Public Declare Function revisionAPIDA100Reader Lib
"DAQDA100"() As Long
```

Visual Basic.NET

```
Public Declare Ansi Function revisionAPIDA100Reader Lib
"DAQDA100"() As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="revisionAPIDA100Reader"]
public static extern int revisionAPIDA100Reader();
```

### Description

Gets the revision number of this API.

### Return value

Returns the revision number.

### Reference

`CDAQDA100Reader::getRevisionAPI`

## toAlarmNameDA100Reader

### Syntax

```
int toAlarmNameDA100Reader(int iAlarmType, char * strAlarm,
int lenAlarm);
```

### Declaration

Visual Basic

```
Public Declare Function toAlarmNameDA100Reader Lib
"DAQDA100"(ByVal iAlarmType As Long, ByVal strAlarm As String,
ByVal lenAlarm As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toAlarmNameDA100Reader Lib
"DAQDA100"(ByVal iAlarmType As Integer, ByVal strAlarm As
String, ByVal lenAlarm As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toAlarmNameDA100Reader"]
public static extern int toAlarmNameDA100Reader(int
iAlarmType, byte[] strAlarm, int lenAlarm);
```

### Parameters

| | |
|---|---|
| iAlarmType | Specify the alarm type. |
| strAlarm | Specify the field where the string is to be stored. |
| lenAlarm | Specify the byte size of the field where the string is to be stored. |

### Description

Stores the string corresponding to the specified alarm type to the specified field.

- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`getAlarmNameDA100Reader`

## toChannelUnitDA100Reader

### Syntax

```
int toChannelUnitDA100Reader(DAQDA100READER daqda100reader,
int chType, int chNo, char * strUnit, int lenUnit);
```

### Declaration

Visual Basic

```
Public Declare Function toChannelUnitDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Long, ByVal chType As Long,
ByVal chNo As Long, ByVal strUnit As String, ByVal lenUnit As
Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toChannelUnitDA100Reader Lib
"DAQDA100"(ByVal daqda100reader As Integer, ByVal chType As
Integer, ByVal chNo As Integer, ByVal strUnit As String, ByVal
lenUnit As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toChannelUnitDA100Reader"]
public static extern int toChannelUnitDA100Reader(int
daqda100reader, int chType, int chNo, byte[] strUnit, int
lenUnit);
```

### Parameters

| | |
|---|---|
| daqda100Reader | Specify the device descriptor. |
| chType | Specify the channel type. |
| chNo | Specify the channel number. |
| strUnit | Specify the field where the string is to be stored. |
| lenUnit | Specify the byte size of the field where the string is to be stored. |

### Description

Gets the unit name of the specified channel (channel type and number) from the stored channel information data.

- Stores the string in the specified storage destination.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- Returns 0 if it does not exist.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`getChannelUnitDA100Reader`

## toDoubleValueDA100Reader

### Syntax

```
double toDoubleValueDA100Reader(int dataValue, int point);
```

### Declaration

Visual Basic

```
Public Declare Function toDoubleValueDA100Reader Lib
"DAQDA100"(ByVal dataValue As Long, ByVal point As Long) As
Double
```

Visual Basic.NET

```
Public Declare Ansi Function toDoubleValueDA100Reader Lib
"DAQDA100"(ByVal dataValue As Integer, ByVal point As Integer)
As Double
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toDoubleValueDA100Reader"]
public static extern double toDoubleValueDA100Reader(int
dataValue, int point);
```

### Parameters

| | |
|---|---|
| dataValue | Specify the data value. |
| point | Specify the decimal point position. |

### Description

Generates the measured value from the specified data value and decimal point position.

### Return value

Returns the measured value as a double-precision floating point number.

### Reference

`CDAQDARWINDataInfo::toDoubleValue`

## toErrorMessageDA100Reader

### Syntax

```
int toErrorMessageDA100Reader(int errCode, char * errStr, int
errLen);
```

### Declaration

Visual Basic

```
Public Declare Function toErrorMessageDA100Reader Lib
"DAQDA100"(ByVal errCode As Long, ByVal errStr As String,
ByVal errLen As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toErrorMessageDA100Reader Lib
"DAQDA100"(ByVal errCode As Integer, ByVal errStr As String,
ByVal errLen As Integer) As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toErrorMessageDA100Reader"]
public static extern int toErrorMessageDA100Reader(int
errCode, byte[] errStr, int errLen);
```

### Parameters

| | |
|---|---|
| errorCode | Specify the error number. |
| errStr | Specify the field where the string is to be stored. |
| errLen | Specify the byte size of the field where the string is to be stored. |

### Description

Stores the error message string corresponding to the error number to the specified field.

- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`getErrorMessageDA100Reader`

## toStringValueDA100Reader

### Syntax

```
int toStringValueDA100Reader(int dataValue, int point, char *
strValue, int lenValue);
```

### Declaration

Visual Basic

```
Public Declare Function toStringValueDA100Reader Lib
"DAQDA100"(ByVal dataValue As Long, ByVal point As Long, ByVal
strValue As String, ByVal lenValue As Long) As Long
```

Visual Basic.NET

```
Public Declare Ansi Function toStringValueDA100Reader Lib
"DAQDA100"(ByVal dataValue As Integer, ByVal point As Integer,
ByVal strValue As String, ByVal lenValue As Integer) As
Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="toStringValueDA100Reader"]
public static extern int toStringValueDA100Reader(int
dataValue, int point, byte[] strValue, int lenValue);
```

### Parameters

| | |
|---|---|
| dataValue | Specify the data value. |
| point | Specify the decimal point position. |
| strValue | Specify the field where the string is to be stored. |
| lenValue | Specify the byte size of the field where the string is to be stored. |

### Description

Generates the measured value from the specified data value and decimal point position.

- Converts the generated measured value into a string and stores to the specified field.
- The string stored in the field includes the terminator (NULL).
- The return value is the length of the actual string. The return value does not include the terminator.
- The strings that can be stored are, in general, ASCII strings.

### Return value

Returns the length of the string.

### Reference

`CDAQDARWINDataInfo::toStringValue`

## versionAPIDA100Reader

### Syntax

```
const int versionAPIDA100Reader(void);
```

### Declaration

Visual Basic

```
Public Declare Function versionAPIDA100Reader Lib "DAQDA100"()
As Long
```

Visual Basic.NET

```
Public Declare Ansi Function versionAPIDA100Reader Lib
"DAQDA100"() As Integer
```

C#

```
[DllImport("DAQDA100.dll" CharSet=CharSet.Auto,
EntryPoint="versionAPIDA100Reader"]
public static extern int versionAPIDA100Reader();
```

### Description

Gets the version number of this API.

### Return value

Returns the version number.

### Reference

`CDAQDA100Reader::getVersionAPI`

# 25.1 Overview of the DARWIN Constants

This Extended API provides the following types of constants.

In Visual C/Visual C++, the constants from chapter 11.1 are inherited. Also, constants, retrieval code types, range types, and skip range constants have been added for the Extended API. See section 25.2.
The constants for Visual Basic and Visual Basic.NET/C# are listed in section 25.2.

| Type | Description | Page |
|---|---|---|
| Constants | Channel numbers in the unit, etc. | 25-2, 25-5 |
| Retrieve code types | Binary code, ASCII code | 25-2, 25-5 |
| Comm constants | Communication port number of DARWIN | 11-2, 25-5 |
| Numbers of items | Number of subunits, etc. | 11-2, 25-5 |
| Maximum values | Maximum length of the channel name string, etc. | 11-2, 25-6 |
| Boolean values | Valid (ON) setting or Invalid (OFF) setting | 11-2, 25-6 |
| Flag statuses | Detects the last data set when data is retrieved | 11-3, 25-6 |
| Data status values | Status of the measured data | 11-3, 25-6 |
| Alarm types | Upper-limit alarm, etc. | 11-3, 25-7 |
| Channel/relay types | Channel or relay types | 11-4, 25-7 |
| Operation modes | Operation, setup, and A/D calibration mode | 11-4, 25-7 |
| Talker function types | Talker supporting output data | 11-4, 25-8 |
| Status byte values | Various statuses | 11-5, 25-8 |
| Establish setup modes | Destroy, establish | 11-5, 25-8 |
| Unit numbers | Expandable model, standalone model | 11-5, 25-8 |
| Computations | Calculation start, stop, clear, etc. | 11-5, 25-9 |
| Report execution types | Report start/stop | 11-5, 25-9 |
| Report types | Hourly, daily, monthly, status | 11-6, 25-9 |
| Report statuses | Invalidate all report types, latest info, valid | 11-6, 25-9 |
| Range types | | |
| DC voltage range types | 20 mV, etc. | 11-6, 25-3, 25-10 |
| TC range types | Type R, etc. | 11-6, 25-3, 25-10 |
| RTD range types | Pt100: 1 mA, etc. | 11-7, 25-3, 25-11 |
| Contact input rng types | Voltage level or contact input | 11-7,25-4, 25-11 |
| Strain input ranges | 2 k, 20 k, 200 k | 11-7, 25-4, 25-11 |
| Pulse ranges | GATE, RATE | 11-7,25-4, 25-11 |
| Power monitor ranges | 25 V 0.5 A, 25 V 5 A, 250 V 0.5 A, 250 V 5 A | 11-8,25-4, 25-12 |
| Power connection methods | Single-phase two-wire, etc. | 11-8, 25-12 |
| DC current ranges | 20 mA | 11-8, 25-4, 25-12 |
| SKIP ranges | Skip | 25-4, 25-12 |
| Power connection methods | Single-phase two-wire, etc. | 11-8, 25-12 |
| Power meas parameters | Effective current, etc. | 11-9, 25-13 |

# 25.2 DARWIN Constants

This section describes the mnemonics for and the meanings of the constants. For DARWIN terminology, see appendix 2.

## Visual C/Visual C++ Constants

In Visual C/Visual C++, the constants from chapter 11.2 are inherited. The following constants have been added.

### Constants

| Mnemonic | Description |
|---|---|
| DAQDA100_NUMCH_BYUNIT | Channel numbers in the unit |
| DAQDA100_CHTYPE_MEASALL | Specifies all measurement channels (computation channels not included) |
| DAQDA100_CHNO_ALL | Specification of all channel numbers |
| DAQDA100_LEVELNO_ALL | Specification of all alarm levels |

### Retrieve Code Types

| Mnemonic | Description |
|---|---|
| DAQDA100_CODE_BINARY | Binary code |
| DAQDA100_CODE_ASCII | ASCII code |

The retrieval code type is the output format type when retrieving measured data.

### Range Types

The Extended API provides definitions for identifying unique ranges.
It is synthesized with logical operations.

| Mnemonic | Description |
|---|---|
| DAQDA100_RANGETYPE_VOLT | DC voltage range types |
| DAQDA100_RANGETYPE_DI | Contact range |
| DAQDA100_RANGETYPE_TC | TC range |
| DAQDA100_RANGETYPE_RTD | RTD range |
| DAQDA100_RANGETYPE_SKIP | SKIP range |
| DAQDA100_RANGETYPE_MA | DC current range |
| DAQDA100_RANGETYPE_POWER | Power monitor range |
| DAQDA100_RANGETYPE_STRAIN | Strain input range |
| DAQDA100_RANGETYPE_PULSE | Pulse range |

When specifying the range, specify the above types and the synthesized unique range types shown below.

## DC Voltage Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_VOLT_20MV | 20 mV | –20.000 to 20.000 mV |
| DAQDA100_RANGE_VOLT_60MV | 60 mV | –60.00 to 60.00 mV |
| DAQDA100_RANGE_VOLT_200MV | 200 mV | –200.00 to 200.00 mV |
| DAQDA100_RANGE_VOLT_2V | 2 V | –2.0000 to 2.0000 V |
| DAQDA100_RANGE_VOLT_6V | 6 V | –6.000 to 6.000 V |
| DAQDA100_RANGE_VOLT_20V | 20 V | –20.000 to 20.000 V |
| DAQDA100_RANGE_VOLT_50V | 50 V | –50.00 to 50.00 V |

## TC Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_TC_R | R | 0.0 to 1760.0°C |
| DAQDA100_RANGE_TC_S | S | 0.0 to 1760.0°C |
| DAQDA100_RANGE_TC_B | B | 0.0 to 1820.0°C |
| DAQDA100_RANGE_TC_K | K | –200.0 to 1370.0°C |
| DAQDA100_RANGE_TC_E | E | –200.0 to 800.0°C |
| DAQDA100_RANGE_TC_J | J | –200.0 to 1100.0°C |
| DAQDA100_RANGE_TC_T | T | –200.0 to 400.0°C |
| DAQDA100_RANGE_TC_N | N | 0.0 to 1300.0°C |
| DAQDA100_RANGE_TC_W | W | 0.0 to 2315.0°C |
| DAQDA100_RANGE_TC_L | L | –200.0 to 900.0°C |
| DAQDA100_RANGE_TC_U | U | –200.0 to 400.0°C |
| DAQDA100_RANGE_TC_KP | KpAu7Fe | 0.0 to 300.0 K |

## RTD Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_RTD_1MAPT | Pt100:1mA | –200.0 to 600.0°C |
| DAQDA100_RANGE_RTD_2MAPT | Pt100:2mA | –200.0 to 250.0°C |
| DAQDA100_RANGE_RTD_1MAJPT | JPt100:1mA | –200.0 to 550.0°C |
| DAQDA100_RANGE_RTD_2MAJPT | JPt100:2mA | –200.0 to 250.0°C |
| DAQDA100_RANGE_RTD_2MAPT50 | Pt50:2mA | –200.0 to 550.0°C |
| DAQDA100_RANGE_RTD_1MAPTH | Pt100:1mA-H | –140.00 to 150.00°C |
| DAQDA100_RANGE_RTD_2MAPTH | Pt100:2mA-H | –70.00 to 70.00°C |
| DAQDA100_RANGE_RTD_1MAJPTH | JPt100:1mA-H | –140.00 to 150.00°C |
| DAQDA100_RANGE_RTD_2MAJPTH | JPt100:2mA-H | –70.00 to 70.00°C |
| DAQDA100_RANGE_RTD_1MANS | Ni100:1mA-S | –200.0 to 250.0°C |
| DAQDA100_RANGE_RTD_1MANID | Ni100:1mA-D | –60.0 to 180.0°C |
| DAQDA100_RANGE_RTD_1MANI120 | Ni120:1mA | –70.0 to 200.0°C |
| DAQDA100_RANGE_RTD_CU10GE | Cu10:GE | –200.0 to 300.0°C |
| DAQDA100_RANGE_RTD_CU10LN | Cu10:L&N | –200.0 to 300.0°C |
| DAQDA100_RANGE_RTD_CU10WEED | Cu10:WEED | –200.0 to 300.0°C |
| DAQDA100_RANGE_RTD_CU10BAILEY | Cu10:BAILEY | –200.0 to 300.0°C |
| DAQDA100_RANGE_RTD_J263B | J263*B | –0.0 to 300.0 K |

## Contact Input Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_DI_LEVEL | Voltage input | 0: Less than 2.4 V,<br>1: Greater than or equal to 2.4 V |
| DAQDA100_RANGE_DI_CONTACT | Contact input | 0:open,1:close |

## Strain Input Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_STRAIN_2K | 2 k | –2000 to 2000 μStrain *1<br>–1000 to 1000 μstrain *2<br>–500 to 500 μstrain *3 |
| DAQDA100_RANGE_STRAIN_20K | 20 k | –20000 to 20000 μStrain *1<br>–10000 to 10000 μstrain *2<br>–5000 to 5000 μstrain *3 |
| DAQDA100_RANGE_STRAIN_200K | 200 k | –200000 to 200000 μStrain *1<br>–100000 to 100000 μstrain *2<br>–50000 to 50000 μstrain *3 |

*1: 1-Gauge Method, *2: 2-Gauge Method, *3: 4-Gauge Method

## Pulse Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_PULSE_RATE | RATE | 0 - 30000 |
| DAQDA100_RANGE_PULSE_GATE | GATE | 0 - 30000 |

## Power Monitor Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_POWER_25V05A | 25 V 0.5 A | Voltage 25 V, current 0.5 A |
| DAQDA100_RANGE_POWER_25V5A | 25 V 5 A | Voltage 25 V, current 5 A |
| DAQDA100_RANGE_POWER_250V05A | 250 V 0.5 A | Voltage 250 V, current 0.5 A |
| DAQDA100_RANGE_POWER_250V5A | 250 V 5 A | Voltage 250 V, current 5 A |

## DC Current Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_MA_20MA | 20 mA | –20.000 to 20.000 mA |

## SKIP Range

| Mnemonic | Description |
|---|---|
| DAQDA100_RANGE_SKIP SKIP | SKIP (not used) range |

# Constants for Visual Basic and Visual Basic.NET/C#

This section describes the mnemonics for and the meanings of the constants. For the details on the DARWIN functions, see the relevant user's manual.
In C#, it is the constant data for the DAQDA100 class. Prefix each constant with DAQDA100 (Ex.: DAQDA100.DAQDA100_NUMCHANNEL).

## Constants

| Mnemonic | Description |
|---|---|
| DAQDA100_NUMCH_BYUNIT | Channel numbers in the unit |
| DAQDA100_CHTYPE_MEASALL | Specifies all measurement channels (computation channels are not included) |
| DAQDA100_CHNO_ALL | Specification of all channel numbers |
| DAQDA100_LEVELNO_ALL | Specification of all alarm levels |

## Retrieve Code Types

| Mnemonic | Description |
|---|---|
| DAQDA100_CODE_BINARY | Binary code |
| DAQDA100_CODE_ASCII | ASCII code |

The retrieval code type is the output format type when retrieving measured data.

## Communication Constants

| Mnemonic | Description |
|---|---|
| DAQDA100_COMMPORT | Communication port number of DARWIN. |

## Number of Items

| Mnemonic | Description |
|---|---|
| DAQDA100_NUMCHANNEL | The number of channels. |
| DAQDA100_NUMALARM | The number of alarms. |
| DAQDA100_NUMUNIT | The number of subunits. |
| DAQDA100_NUMSLOT | The number of slots per subunit. |
| DAQDA100_NUMTERM | The number of terminals per slot (module). |

Sets the number of items such as the number of modules or units.

## Maximum Value

| Mnemonic | Description |
|---|---|
| DAQDA100_MAXCHNAMELEN | Maximum length of the channel name string. |
| DAQDA100_MAXCHRANGLEN | Maximum length of the channel range name string. |
| DAQDA100_MAXUNITLEN | Maximum length of the unit name string. |
| DAQDA100_MAXMODULELEN | Maximum length of the module name string. |
| DAQDA100_MAXRELAYLEN | Maximum length of the relay name string. Same as maximum length of the channel name string. Relay refers to the output relay of the alarm output module or the DI/DO module. |
| DAQDA100_MAXDECIMALPOINT | Maximum value of the decimal point position. |

The maximum length of the string does not include the terminator (NULL).

## Boolean values (Valid/Invalid Value)

| Mnemonic | Description |
|---|---|
| DAQDA100_VALID_OFF | Invalid (OFF) value. |
| DAQDA100_VALID_ON | Valid (ON) value. |

## Flag Status

| Mnemonic | Description |
|---|---|
| DAQDA100_FLAG_OFF | All OFF. |
| DAQDA100_FLAG_ENDDATA | The data line retrieved using ASCII codes or in units of lines is at the last data set. |

Can be synthesized using logical OR operators.

## Data Status Values

| Mnemonic | Description |
|---|---|
| DAQDA100_UNKNWON | The data status is not set. |
| DAQDA100_DATA_NORMAL | Normal. |
| DAQDA100_DATA_DIFFINPUT | Difference computation between channels being performed. |
| DAQDA100_DATA_PLUSOVER | Positive overrange. |
| DAQDA100_DATA_MINUSOVER | Negative overrange. |
| DAQDA100_DATA_SKIP | SKIP (not used). |
| DAQDA100_DATA_ILLEGAL | Illegal data status. |
| DAQDA100_DATA_ABNORMAL | Abnormal data status. |
| DAQDA100_DATA_NODATA | No data status. |
| DAQDA100_DATA_READER | Status when loading and communicating instantaneous value data |

When using the communication port for loading instantaneous value data, the status when loading and communicating instantaneous value data is the channel status in which channel information data is retrieved.

## Alarm Types

◊ indicates a space.

| Mnemonic | Description | String |
|---|---|---|
| DAQDA100_ALARM_NONE | No alarm (alarm OFF) | ◊◊ |
| DAQDA100_ALARM_UPPER | Upper limit alarm | H◊ |
| DAQDA100_ALARM_LOWER | Lower limit alarm | L◊ |
| DAQDA100_ALARM_UPDIFF | Difference upper limit alarm | dH |
| DAQDA100_ALARM_LOWDIFF | Difference lower limit alarm | dL |
| DAQDA100_ALARM_INCRATE | High limit on rate-of-change alarm | RH |
| DAQDA100_ALARM_DECRATE | Low limit on rate-of-change alarm | RL |

## Channel/Relay Types

Type values for channels, relays, communication input, and computation constants. Can be used to specify the channel or relay.

| Mnemonic | Description | Channel | Relay |
|---|---|---|---|
| DAQDA100_CHTYPE_MAINUNIT | Expandable model main unit. | - | Yes |
| DAQDA100_CHTYPE_STANDALONE | Value representing the standalone unit. Same as subunit number of 0. | Yes | Yes |
| DAQDA100_CHTYPE_MATHTYPE | Value representing the computation channel. | Yes | - |
| DAQDA100_CHTYPE_SWITCH | Value representing the internal switch. | - | Yes |
| DAQDA100_CHTYPE_COMMDATA | Value representing the communication input. | - | - |
| DAQDA100_CHTYPE_CONSTANT | Value representing the computation constant. | - | - |
| DAQDA100_CHTYPE_REPORT | Value representing the report. | - | - |

Yes : Channel/Relay of the type exists.
- : Channel/Relay of the type does not exist.

***Note***

The subunit number used to identify the subunit that is connected to the expandable model is also a type number. The subunit number is an integer value between 0 and 5. See appendix 2.

## Operation Modes

| Mnemonic | Description |
|---|---|
| DAQDA100_MODE_OPE | Operation mode |
| DAQDA100_MODE_SETUP | Setup mode |
| DAQDA100_MODE_CALIB | A/D calibration mode |

## Talker Function Types

| Mnemonic | Description |
|---|---|
| DAQDA100_TALK_MEASUREDDATA | Outputs measured and computed data |
| DAQDA100_TALK_OPEDATA | Outputs the setup data of operation mode. |
| DAQDA100_TALK_CHINFODATA | Outputs the channel information data |
| DAQDA100_TALK_SYSINFODATA | Outputs the system configuration data |
| DAQDA100_TALK_CALIBDATA | Outputs the calibration data (setup data of calibration mode) |
| DAQDA100_TALK_SETUPDATA | Outputs the setup data of setup mode |
| DAQDA100_TALK_REPORTDATA | Outputs the report status |

## Status Byte Values

Can be synthesized using logical OR operators.

| Mnemonic | Description |
|---|---|
| DAQDA100_STATUS_OFF | Value when all status bytes are invalid |
| DAQDA100_STATUS_ADCONV | A/D conversion complete |
| DAQDA100_STATUS_SYNTAX | Command syntax error |
| DAQDA100_STATUS_TIMER | Internal timer start/report creation |
| DAQDA100_STATUS_MEDIA | Access to medium (DC100) |
| DAQDA100_STATUS_RELEASE | Measurement dropout during computation |
| DAQDA100_STATUS_ALL | Mask value that enables all status bytes |
| DAQDA100_STATUS_SRQ | SRQ |

For details on the meaning of the status byte value, see the communication interface user's manual for the DARWIN instrument.

## Establish Setup Mode

| Mnemonic | Description |
|---|---|
| DAQDA100_SETUP_ABORT | Destroy |
| DAQDA100_SETUP_STORE | Establish |

## Unit Numbers

| Mnemonic | Description |
|---|---|
| DAQDA100_UNITNO_MAINUNIT | Main unit of the extension model |
| DAQDA100_UNITNO_STANDALONE | Standalone model unit |

The subunit number is numerical.  See Channel/Relay types.

## Computation

| Mnemonic | Description |
|---|---|
| DAQDA100_COMPUTE_START | Computation start |
| DAQDA100_COMPUTE_STOP | Computation stop |
| DAQDA100_COMPUTE_RESTART | After clearing computation data, restart |
| DAQDA100_COMPUTE_CLEAR | Clears computation data |
| DAQDA100_COMPUTE_RELEASE | Clears status display of measurement dropouts |

## Report Execution Types

| Mnemonic | Description |
|---|---|
| DAQDA100_REPORT_RUN_START | Report start |
| DAQDA100_REPORT_RUN_STOP | Report stop |

## Report Types

| Mnemonic | Description |
|---|---|
| DAQDA100_REPORT_HOURLY | Hourly |
| DAQDA100_REPORT_DAILY | Daily |
| DAQDA100_REPORT_MONTHLY | Monthly |
| DAQDA100_REPORT_STATUS | Status |

## Report Statuses

Can be synthesized using logical OR operators.

| Mnemonic | Description |
|---|---|
| DAQDA100_REPSTATUS_NONE | All invalid |
| DAQDA100_REPSTATUS_HOURLY_NEW | Newest hourly |
| DAQDA100_REPSTATUS_HOURLY_VALID | Valid hourly |
| DAQDA100_REPSTATUS_DAILY_NEW | Newest daily |
| DAQDA100_REPSTATUS_DAILY_VALID | Valid daily |
| DAQDA100_REPSTATUS_MONTHLY_NEW | Newest monthly |
| DAQDA100_REPSTATUS_MONTHLY_VALID | Valid monthly |

## Range Types

The Extended API provides definitions for identifying unique ranges.
It is synthesized with logical operations.

| Mnemonic | Description |
|---|---|
| DAQDA100_RANGETYPE_VOLT | DC voltage range |
| DAQDA100_RANGETYPE_DI | Contact range |
| DAQDA100_RANGETYPE_TC | TC range |
| DAQDA100_RANGETYPE_RTD | RTD range |
| DAQDA100_RANGETYPE_SKIP | SKIP range |
| DAQDA100_RANGETYPE_MA | DC current range |
| DAQDA100_RANGETYPE_POWER | Power monitor range |
| DAQDA100_RANGETYPE_STRAIN | Strain input range |
| DAQDA100_RANGETYPE_PULSE | Pulse range |

When specifying the range, specify the above types and the synthesized unique range types shown below.

## DC Voltage Range Types

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_VOLT_20MV | 20 mV | –20.000 to 20.000 mV |
| DAQDA100_RANGE_VOLT_60MV | 60 mV | –60.00 to 60.00 mV |
| DAQDA100_RANGE_VOLT_200MV | 200 mV | –200.00 to 200.00 mV |
| DAQDA100_RANGE_VOLT_2V | 2 V | –2.0000 to 2.0000 V |
| DAQDA100_RANGE_VOLT_6V | 6 V | –6.000 to 6.000 V |
| DAQDA100_RANGE_VOLT_20V | 20 V | –20.000 to 20.000 V |
| DAQDA100_RANGE_VOLT_50V | 50 V | –50.00 to 50.00 V |

## TC Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_TC_R | R | 0.0 to 1760.0°C |
| DAQDA100_RANGE_TC_S | S | 0.0 to 1760.0°C |
| DAQDA100_RANGE_TC_B | B | 0.0 to 1820.0°C |
| DAQDA100_RANGE_TC_K | K | –200.0 to 1370.0°C |
| DAQDA100_RANGE_TC_E | E | –200.0 to 800.0°C |
| DAQDA100_RANGE_TC_J | J | –200.0 to 1100.0°C |
| DAQDA100_RANGE_TC_T | T | –200.0 to 400.0°C |
| DAQDA100_RANGE_TC_N | N | 0.0 to 1300.0°C |
| DAQDA100_RANGE_TC_W | W | 0.0 to 2315.0°C |
| DAQDA100_RANGE_TC_L | L | –200.0 to 900.0°C |
| DAQDA100_RANGE_TC_U | U | –200.0 to 400.0°C |
| DAQDA100_RANGE_TC_KP | KpAu7Fe | 0.0 to 300.0 K |

## RTD Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_RTD_1MAPT | Pt100:1mA | –200.0 to 600.0°C |
| DAQDA100_RANGE_RTD_2MAPT | Pt100:2mA | –200.0 to 250.0°C |
| DAQDA100_RANGE_RTD_1MAJPT | JPt100:1mA | –200.0 to 550.0°C |
| DAQDA100_RANGE_RTD_2MAJPT | JPt100:2mA | –200.0 to 250.0°C |
| DAQDA100_RANGE_RTD_2MAPT50 | Pt50:2mA | –200.0 to 550.0°C |
| DAQDA100_RANGE_RTD_1MAPTH | Pt100:1mA-H | –140.00 to 150.00°C |
| DAQDA100_RANGE_RTD_2MAPTH | Pt100:2mA-H | –70.00 to 70.00°C |
| DAQDA100_RANGE_RTD_1MAJPTH | JPt100:1mA-H | –140.00 to 150.00°C |
| DAQDA100_RANGE_RTD_2MAJPTH | JPt100:2mA-H | –70.00 to 70.00°C |
| DAQDA100_RANGE_RTD_1MANS | Ni100:1mA-S | –200.0 to 250.0°C |
| DAQDA100_RANGE_RTD_1MANID | Ni100:1mA-D | –60.0 to 180.0°C |
| DAQDA100_RANGE_RTD_1MANI120 | Ni120:1mA | –70.0 to 200.0°C |
| DAQDA100_RANGE_RTD_CU10GE | Cu10:GE | –200.0 to 300.0°C |
| DAQDA100_RANGE_RTD_CU10LN | Cu10:L&N | –200.0 to 300.0°C |
| DAQDA100_RANGE_RTD_CU10WEED | Cu10:WEED | –200.0 to 300.0°C |
| DAQDA100_RANGE_RTD_CU10BAILEY | Cu10:BAILEY | –200.0 to 300.0°C |
| DAQDA100_RANGE_RTD_J263B | J263*B | –0.0 to 300.0 K |

## Contact Input (DI) Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_DI_LEVEL | Voltage input | Less than 2.4 V,<br>Greater than or equal to 2.4 V |
| DAQDA100_RANGE_DI_CONTACT | Contact input | 0:open,1:close |

## Strain Input Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_STRAIN_2K | 2 k | –2000 to 2000 mStrain *1<br>–1000 to 1000 mStrain *2<br>–500 to 500 mStrain *3 |
| DAQDA100_RANGE_STRAIN_20K | 20 k | –20000 to 20000 μStrain *1<br>–10000 to 10000 mstrain *2<br>–5000 to 5000 mStrain *3 |
| DAQDA100_RANGE_STRAIN_200K | 200 k | –200000 to 200000 μStrain *1<br>–100000 to 100000 mStrain *2<br>–50000 to 50000 mStrain *3 |

*1: 1-Gauge Method, *2: 2-Gauge Method, *3: 4-Gauge Method

## Pulse Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_PULSE_RATE | RATE | 0 to 30000 |
| DAQDA100_RANGE_PULSE_GATE | GATE | 0 to 30000 |

### Power Monitor Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_POWER_25V05A | 25 V 0.5 A | Voltage 25 V, current 0.5 A |
| DAQDA100_RANGE_POWER_25V5A | 25 V 5 A | Voltage 25 V, current 5 A |
| DAQDA100_RANGE_POWER_250V05A | 250 V 0.5 A | Voltage 250 V, current 0.5 A |
| DAQDA100_RANGE_POWER_250V5A | 250 V 5 A | Voltage 250 V, current 5 A |

### DC Current Ranges

| Mnemonic | Description | Setting range |
|---|---|---|
| DAQDA100_RANGE_MA_20MA | 20 mA | -20.000-20.000 mA |

### SKIP Ranges

| Mnemonic | Description |
|---|---|
| DAQDA100_RANGE_SKIP SKIP | (not used) |

## Power Connection Methods

| Mnemonic | Description |
|---|---|
| DAQDA100_WIRE_1PH2W | Single-phase two-wire |
| DAQDA100_WIRE_1PH3W | Single phase, 3-wire (for 3-wire only) |
| DAQDA100_WIRE_3PH3W2I | 3-phase 3-wire (for 2 voltage 2 current 3-wire only) |
| DAQDA100_WIRE_3PH3W3I | 3-phase 3-wire (for 3 voltage 3 current 3-wire only) |
| DAQDA100_WIRE_3PH4W | 3-phase, 4-wire (for 3-wire only) |

## Power Measurement Parameters

| Mnemonic | Description |
|---|---|
| DAQDA100_POWERITEM_I0 | (I1+I2+I3)/3 |
| DAQDA100_POWERITEM_I1 | Effective current 1 |
| DAQDA100_POWERITEM_I2 | Effective current 2 |
| DAQDA100_POWERITEM_I3 | Effective current 3 |
| DAQDA100_POWERITEM_I13 | (I1+I3)/2 |
| DAQDA100_POWERITEM_P0 | P1+P2+P3 |
| DAQDA100_POWERITEM_P1 | Active power 1 |
| DAQDA100_POWERITEM_P2 | Active power 2 |
| DAQDA100_POWERITEM_P3 | Active power 3 |
| DAQDA100_POWERITEM_P13 | P1+P3 |
| DAQDA100_POWERITEM_PF0 | $P0/(P0^2+VAR0^2)^{1/2}=P0/VA0$ |
| DAQDA100_POWERITEM_PF1 | Power factor 1 |
| DAQDA100_POWERITEM_PF2 | Power factor 2 |
| DAQDA100_POWERITEM_PF3 | Power factor 3 |
| DAQDA100_POWERITEM_PF13 | $P13/(P13^2+VAR132)^{1/2}=P13/VA13$ |
| DAQDA100_POWERITEM_PH0 | $\tan^{-1}(VAR0/P0)$ |
| DAQDA100_POWERITEM_PH1 | Phase 1 |
| DAQDA100_POWERITEM_PH2 | Phase 2 |
| DAQDA100_POWERITEM_PH3 | Phase 3 |
| DAQDA100_POWERITEM_PH13 | $\tan^{-1}(VAR13/P13)$ |
| DAQDA100_POWERITEM_V0 | (V1+V2+V3)/3 |
| DAQDA100_POWERITEM_V1 | Effective power 1 |
| DAQDA100_POWERITEM_V2 | Effective power 2 |
| DAQDA100_POWERITEM_V3 | Effective power 3 |
| DAQDA100_POWERITEM_V13 | (V1+V3)/2 |
| DAQDA100_POWERITEM_VA0 | VA1+VA2+VA3 |
| DAQDA100_POWERITEM_VA1 | Apparent power 1 |
| DAQDA100_POWERITEM_VA2 | Apparent power 2 |
| DAQDA100_POWERITEM_VA3 | Apparent power 3 |
| DAQDA100_POWERITEM_VA13 | VA1+VA3 |
| DAQDA100_POWERITEM_VAR0 | VAR1+VAR2+VAR3 |
| DAQDA100_POWERITEM_VAR1 | Reactive power 1 |
| DAQDA100_POWERITEM_VAR2 | Reactive power 2 |
| DAQDA100_POWERITEM_VAR3 | Reactive power 3 |
| DAQDA100_POWERITEM_VAR13 | VAR1+VAR3 |
| DAQDA100_POWERITEM_FREQ | Frequency |

# 25.3 DARWIN Types

### DAQDA100

Type for storing the device descriptor for these functions.
Handled as a Long type in Visual Basic and as int in Visual C. Handled as an Integer type in Visual Basic.NET. Handled as the int type in C#.

### Callback Type

| Type | Description |
|---|---|
| Callback type | Add prefix “DLL” to the function name and write in uppercase.<br>Example: callback type of the openDA100 function: DLLOPENDA100 |

The callback type is used to link the executable module (.dll) when using the Visual C.

# 25.4 Overview of DARWIN Constants for Loading Instantaneous Value Data

The types of constants provided are listed below.

| Type | Description | Page |
|---|---|---|
| Constants | Channel numbers in the unit, etc. | 25-2, 25-17 |
| Numbers of items | Number of subunits, etc. | 11-2, 25-17 |
| Maximum values | Max length of the channel name string, etc. | 11-2, 25-17 |
| Boolean values | Valid (ON) setting or Invalid (OFF) setting | 11-2, 25-17 |
| Communication constants | The inst value data loading port number | 25-16, 25-18 |
| Data status values | Status of the measured data | 11-3, 25-18 |
| Alarm types | Upper-limit alarm, etc. | 11-3, 25-18 |
| Channel types/relay types | Channel or relay types | 11-4, 25-19 |
| Unit numbers | Expandable model, standalone model | 11-5, 25-19 |

# 25.5 DARWIN Constants for Loading Instantaneous Value Data

## Visual C/Visual C++ Constants

In Visual C/Visual C++, the constants from sections 11.2 and 25.2 are inherited. The following constants have been added.

### Communication Constants

| Mnemonic | Description |
|---|---|
| DAQDA100_DATAPORT | The instantaneous value data loading port number. |

## Constants for Visual Basic and Visual Basic.NET/C#

This section describes the mnemonics for and the meanings of the constants. For the details on the DARWIN functions, see the relevant user's manual.
In C#, it is the constant data for the DAQDA100Reader class. Prefix each constant with DAQDA100Reader (Ex.: DAQDA100.Reader.DAQDA100READER_NUMCHANNEL).

### Constants

| Mnemonic | Description |
|---|---|
| DAQDA100_CHTYPE_MEASALL | Specifies all measurement channels (computation channels are not included) |
| DAQDA100_CHNO_ALL | Specification of all channel numbers. |

### Number of Items

| Mnemonic | Description |
|---|---|
| DAQDA100READER_NUMCHANNEL | The number of channels. |
| DAQDA100READER_NUMALARM | The number of alarms. |
| DAQDA100READER_NUMUNIT | The number of subunits. |
| DAQDA100READER_NUMSLOT | The number of slots per subunit. |
| DAQDA100READER_NUMTERM | The number of terminals per slot (module). |

### Maximum Values

| Mnemonic | Description |
|---|---|
| DAQDA100READER_MAXUNITLEN | Maximum length of the unit name string. |

The maximum length of the string does not include the terminator (NULL).

### Boolean values (Valid/Invalid Value)

| Mnemonic | Description |
|---|---|
| DAQDA100READER_VALID_OFF | Invalid (OFF) value. |
| DAQDA100READER_VALID_ON | Valid (ON) value. |

## Communication Constants

| Mnemonic | Description |
|---|---|
| DAQDA100READER_DATAPORT | The instantaneous value data loading port number. |

## Data Status Values

| Mnemonic | Description |
|---|---|
| DAQDA100READER_UNKNWON | Unknown.<br>The data status is not set. |
| DAQDA100READER_DATA_NORMAL | Normal status. |
| DAQDA100READER_DATA_DIFFINPUT | Differential input status. |
| DAQDA100READER_DATA_PLUSOVER | Positive overrange. |
| DAQDA100READER_DATA_MINUSOVER | Negative overrange. |
| DAQDA100READER_DATA_SKIP | SKIP status. |
| DAQDA100READER_DATA_ILLEGAL | Illegal data status. |
| DAQDA100READER_DATA_ABNORMAL | Abnormal data status. |
| DAQDA100READER_DATA_NODATA | No data status. |
| DAQDA100READER_DATA_READER | Loading instantaneous value data<br>Status during communication. |

When using the communication port for loading instantaneous value data, the status when loading and communicating instantaneous value data is the channel status in which channel information data is retrieved.

## Alarm Types

◊ indicates a space.

| Mnemonic | Description | String |
|---|---|---|
| DAQDA100READER_ALARM_NONE Alarm | OFF | ◊◊<br>(Alarm OFF) |
| DAQDA100READER_ALARM_UPPER | Upper limit alarm | H◊ |
| DAQDA100READER_ALARM_LOWER | Lower limit alarm | L◊ |
| DAQDA100READER_ALARM_UPDIFF | Difference upper limit alarm | dH |
| DAQDA100READER_ALARM_LOWDIFF | Difference lower limit alarm | dL |
| DAQDA100READER_ALARM_INCRATE | High limit on rate-of-change alarm | RH |
| DAQDA100READER_ALARM_DECRATE | Low limit on rate-of-change alarm | RL |

## Channel/Relay types

| Mnemonic | Description |
|---|---|
| DAQDA100READER_CHTYPE_MAINUNIT | Value expressing the main unit of the expandable model. |
| DAQDA100READER_CHTYPE_STANDALONE | Value expressing the main unit of the standalone model.<br>Same as subunit number 0. |
| DAQDA100READER_CHTYPE_MATHTYPE | Value representing the computation. |

## Unit Number

| Mnemonic | Description |
|---|---|
| DAQDA100READER_UNITNO_MAINUNIT | Main unit of the expandable model |
| DAQDA100READER_UNITNO_STANDALONE | Standalone model unit |

The subunit number is numerical. See Channel/Relay types.

# 25.6 DARWIN Types for Loading Instantaneous Value Data

### DAQDA100READER

Type for storing the device descriptor for these functions.
Handled as the Long type in Visual Basic and as int in Visual C. Handled as an Integer type in Visual Basic.NET. Handled as the int type in C#.

### Callback Type

| Type | Description |
|---|---|
| Callback type | Add prefix “DLL” to the function name and write in uppercase.<br>Example: callback type of the openDA100Reader function: DLLOPENDA100READER |

The callback type is used to link the executable module (.dll) when using the Visual C.

# 26.1 API Error Messages

When a function fails during execution, an error number is returned. Below is a list of error numbers, message strings, and corrective actions. They are common to the MX100 and DARWIN.

| Error number | Message string<br>Description<br>Corrective Action/Remarks |
|---|---|
| 0 | Success<br>Completed normally.<br>- |
| 1 | Communication error<br>Communication error occurred.<br>Check the communication environment (address, cable, power to the device). |
| 2 | Timeout<br>Communication timeout occurred.<br>Check the communication environment (load condition). |
| 3 | Receive continue<br>Receive data continues.<br>Received data too long. Receive the rest of the data or check the communication procedure. |
| 4 | Creating connection is failure<br>Failed to create the communication descriptor.<br>Memory or resources may be low. Check the PC environment. |
| 5 | Creating descriptor is failure<br>Failed to create the device descriptor.<br>Memory or resources may be low. Check the PC environment. |
| 6 | Connection exists already<br>Communication already established.<br>Do not connect to a device that is already connected. |
| 7 | Not connected<br>Not connected.<br>May be executing a command without making a connection. Make a connection, then execute the command. |
| 8 | Not descriptor<br>No device descriptor.<br>The device descriptor designation may be incorrect. Specify the device descriptor. |
| 9 | Commands are not processed successfully<br>Failed to execute the command.<br>Error occurred on the measurement instrument. Check the transmitted command or the operation mode of the main unit. |

| Error number | Message string<br>Description<br>Corrective Action/Remarks |
|---|---|
| 10 | Not acknowledge<br>Received an unsupported response.<br>The response from the measurement instrument is different from the expected response. Check the transmitted command or the procedure. |
| 11 | Not support<br>Specified an unsupported function.<br>May have specified a value outside the range. Check the values of the parameters passed to the function. |
| 12 | Not data<br>There is no data.<br>Invalid input to the function. The data specified in the parameters may be incorrect. Or, if the parameter is a string, the string may not be correct. Check the values of the parameters passed to the function. |
| 13 | Exception<br>An exception occurred.<br>A system exception may have occurred, or field may have failed to be established. Check the PC environment. |

# 26.2 MX100 - Specific Error Messages -

Below is a list of error values generated by the MX100, descriptions, and corrective actions. The function CDAQMX::getLastError or getLastErrorMX can be used to retrieve the value. With the extension API, a function (DAQMX100::getLastError or lastErrorMX100) can be used to retrieve the value.

| Value | Description<br>Corrective Action/Remarks |
|---|---|
| 0 | No error.<br>- |
| 1 | Not supported because the version is different.<br>Confirm the version number of MX100 and the API for the MX100/DARWIN. |
| 2 | The packet is too large.<br>Confirm the packet size. |
| 3 | Unknown request.<br>Confirm the request. |
| 4 | Inconsistent request.<br>Confirm the packet format. |
| 6 | The session number is incorrect.<br>Confirm the session number. |
| 7 | The FIFO number is incorrect.<br>Confirm the FIFO number. |
| 8 | Channel number is incorrect.<br>Confirm the channel number. |
| 9 | Data does not exist in the specified range.<br>Confirm the data number. |
| 10 | Configuration failed.<br>Confirm the module type and its status. |
| 11 | Failed due to the status.<br>Confirm the mode of the MX100. Executes the request when idle. |
| 12 | Invalid request against the DO.<br>Confirm the output setting for DO. |
| 13 | No CF card.<br>Insert a CF card in the drive. |
| 14 | The CF card cannot be formatted (the CF card is present).<br>The CF card may be out of order. Replace the CF card. |
| 23 | Initial balancing not correctly performed. Check the module's installation conditions, then perform initial balancing again. If the error occurs even after recalibrating, please contact your nearest Yokogawa representative. |
| 255 | Communication error.<br>Communication error. Please contact your nearest Yokogawa representative. |
| 256 | Other error.<br>Other error. Please contact your nearest Yokogawa representative. |

# Appendix 1 MX100 Terminology

This section describes the terminology related to this software and the MX100. The main terms are listed in alphabetical order.
For more details, see the MX100 user's manual.

## 7-Segment LED

Data indicating the display of the 7-segment LED.
See the MXSegment structure.
There are two 7-segment LEDs on the MX100. The two 7-segment LEDs must always be handled as a group.

### Display Format

The display status of all segments are indicated using a display format value.

### Display Pattern

The display pattern value for each 7-segment LED.
It is a hexadecimal integer value between 0 and F.
If the value is outside the range, nothing is displayed.

### Display Time

Display time of the display pattern.
The unit is milliseconds.
Cannot exceed the maximum value.

### Segment Number

A value used to identify the 7-segment LED position.
It is an integer value between 0 and 1.
Numbers are defined.

## Alarm

Alarm function.
See the MXAlarm structure.

### Alarm Level

Alarm function ID number within the channel.
It is an integer value between 1 and 2.
Numbers are defined.

### Alarm Value

The threshold level for alarm activation (the ON value).
It is an integer value with the decimal point excluded.

### Hysteresis

The difference between the alarm value and alarm OFF threshold value when assigning a width between the two.
It is a positive integer value with the decimal point excluded.

## AO/PWM Data

Data that indicates the AO/PWM channel output.
See the MXAOPWM structure.
The MXAOPWMData structure includes all channels.
It consists of valid and invalid values and the data.
When data is retrieved, the command AO/PWM channels are shown as valid or invalid.
When data is sent, only channels specified as valid are sent.

### AO/PWM Data Number (AO Data Number, PWM Data Number)

A value for identifying the AO or PWM channel position.
It is an integer value between 1 and 60.
Numbers are defined.

### Output Data Value

Data values that indicate the output values that identify the instrument.
Differs depending on the range type.
As these values differ from the actual output values, they are determined using the conversion function for output values and output data values.
Note that the data values and span may differ.

## Backup

Function used to record the measured data to the CF card when the communication is cut off.

## Channel

The channel is represented by the channel type and channel number.
Channel numbers are determined by the slot position on the unit and the terminal position of the module installed in that slot.

### Channel Name

The name is created from the unit number and the channel number within the unit.
Expressed with an integer.
In the case of strings, a five-digit decimal (ex. “0001” is used.
It is not used for this API.

### Channel Number

Specified with an integer.
It is an integer value between 1 and 60.
Numbers are defined.

Example: The channel number for terminal number 2 of the module in slot number 3 is 32.
In this case the module number is “3.”

### Channel Range

Represents the consecutive channels of the same channel type.
It is specified using the channel type, start channel number, and end channel number.
If the end channel number is less than or equal to the start channel number, it is considered a single channel specified by the start channel number.
The channel type may be omitted.

### Channel Type

A value used to identify the channel position and type.
Not required for the MX100.
However, it is set to 0 (measurement channel) for consistency with DARWIN.

## Channel ID Information

A value for identifying channels using channel setup data and channel information data.
See the MXChID structure.
It includes the following information.

- Channel number
- Decimal point position
- Channel status (Boolean value)
- Channel kind
- Range type
- Scale type
- Unit name
- Tag
- Comment
- Alarm

### Comment

An arbitrary string of up to 30 bytes.
The terminator is NULL.

### Tag

An arbitrary string of up to 15 bytes.
The terminator is NULL.

### Unit Name

An arbitrary string of up to 6 bytes.
The terminator is NULL.
Can be assigned regardless of the range configured.

## Channel Information Data

Information for identifying the position within the FIFO when retrieving the measured data of the input channel.
See the MXChInfo structure.
It includes the channel identification information and the following information.

- FIFO number
- Channel sequence number in the FIFO
- Reference range (not used)
- Display range (valid range specified by the span and scale).
- Actual range (measurable range of the range type)

## Channel Setup Data

Setup information for each channel.
See the MXChConfig structure.
The MXChConfigData structure includes all channels.
It includes the channel identification information and the by-type settings for each channel.

## Data Identifier

The value that identifies the data values created by the user with data manipulation functions of the extension API.
It is an integer starting from 0. The above depends on the system.
It is assigned for each data type. The following types are available.

- DO data identifier
- AO/PWM data identifier
- Initial balance data identifier
- Transmission output data identifier

## Device Descriptor

Value used to identify the measuring instrument.
The device descriptor is required when executing the functions.
For the API, the entity is a reference to the CDAQMX object. The DAQMX type is used for storage and designation.
For the extension API, the entity is a reference to the CDAQMX100 object.
The DAQMX100 type is used for storage and designation.

## DO Data

Data that indicates the DO channel output.
See the MXDO structure.
The MXDOData structure includes all channels.
It consists of valid and invalid values and the ON/OFF values.
When data is retrieved, the command DO channels are shown as valid or invalid.
When data is sent, only channels specified as valid are sent.

### DO Data Number

A value used to identify the DO channel position.
It is an integer value between 1 and 60.
Numbers are defined.

## FIFO

The operation of writing measured data to the FIFO buffer.
On the MX100, the FIFO must be started to retrieve measured data.
The user can specify the starting and stopping of the FIFO. The FIFO can also be set to auto control.
In the case of the MX100, the FIFO is divided up by measurement interval type.
Each type is identified by the FIFO number.
The measurement interval and FIFO structure are as follows.

- Measured data from input modules of the same measurement interval are acquired in the order of the channel numbers of the same FIFO.
- Interval numbers (FIFO numbers) are assigned starting from the shortest measurement interval.
- Writing to the FIFO (data buffer) is handled according to the data number updated each measurement.
- Data readout is performed by specifying FIFO numbers and data numbers.
- The range of data that can be read out is provided using the data numbers.

### Auto Control

The FIFO is stopped when a setup command is executed while the FIFO is running.
When auto control is enabled, the FIFO is automatically started after the execution of the setup command is complete.

### Data Number

A sequential number applied to stored data in the order of measurement.
The number is different for each FIFO number.

### FIFO Number

A number assigned to the FIFO.
A number is assigned to measurement interval types in order of speed.
It is an integer value between 0 and 2.
Numbers are defined.

## Initial Balance Data

Data that shows the initial balance values of strain channels.
See the MXBalance structure.
The MXBalanceData structure includes all channels.
It consists of valid and invalid values, and the initial balance values.
When data is retrieved, it is displayed as the valid and invalid values of the strain channels.
When data is sent, only channels specified as valid are updated and sent.

### Initial Balance Data Number

A value used to identify the strain channel position.
It is an integer value between 1 and 60.
Numbers are defined.

## Measured Data

Data value information for the measurement points of each channel.
See the MXDateInfo structure.
The API allows the instantaneous values and FIFO values to be retrieved.
It includes the following information.

- Data value
- Data status values
- Alarm (presence/absence) Boolean

### FIFO Value

The data values stored in the FIFO.
When retrieving measured data, specifies the range to be retrieved using the start and end data numbers.
You can retrieve data numbers from the status data.

### Instantaneous Value

The newest data values stored in the FIFO.
When retrieving measured data, you can omit the data numbers indicating the range to be retrieved.
The constant for “Data number for instantaneous value specification” is also defined.
Instantaneous values can be retrieved at 100 ms at the fastest.

## Measured Value

The measured values are expressed using a data value and a decimal point position.
The value with an engineering unit is obtained by using the data value and the decimal point position.

### Data Value

A value that expresses the mantissa of the measured value as an integer value.

### Decimal Point Position

A value that expresses the exponent of the measured value.
It is an integer value between 0 and 4.
Is -1 only for the strain range of 200000 μstrain.

## Module Information

Information on each module excluding the main module.
Identified by the slot position on the unit.
It consists of the following items.

- Product information
- Module type (at startup, actual)
- Number of channels
- Interval type
- AD integration time type
- Terminal type
- Valid/Invalid value
- Module version
- FIFO number

### Module Number

A number used to identify the module position (slot position).
It is an integer value between 0 and 5.
Numbers are defined.

## Network Information Data

Network setup information.
See the MXNetInfo structure.

## Output Channel Data

Data that specifies the control method for output data using output channels (AO/PWM channels).
For details of the specified actions, see the “MX100 Data Acquisition Unit User’s Manual” (IM MX100-01E) and the “MX100 Standard Software User’s Manual” (IM-MX180-01E).
See MXOutput structure.
The MXOutputData structure includes all channels.
It is a portion of the setup data.
It consists of the following items.

- Output type
- Value selected (when idle or during error)
- User specified output value
- Pulse interval integer multiple (PWM channels only)

The user specified output values, are specified with integers in the same manner as the data value and span.

### Output Channel Data Number

A value used to identify the output channel position.
It is an integer value between 1 and 60.
Numbers are defined.

## Packet

In the case of the MX100, the communication is carried out using binary transmission of packets.
The packet is created inside the class and transmitted according to the request command. The response packet is received, analyzed, and the necessary data is stored in the structure and returned.

## Pulse interval integer multiple

The value that indicates the pulse width using PWM channels.
Specifies the integer multiple of the resolution of the range type.
It is an integer value between 1 and 30000.
The maximum value is defined.

## Reference Alarm

Shows to which alarms the DO channels correspond. The alarm is specified using the channel number and the alarm level.

### Reference Channel Number

The channel used as a reference for difference computations with AI/DI channels or for remote RJC with AI channels.
It is the channel number of the transmission source for transmission output with AO/PWM channels.

### Response

For every request command there is a corresponding reply. For every request command there is a corresponding reply. The response is either of the following.

- Processing was carried out normally.
- Processing was not carried out normally.

If processing is not carried out normally or execution fails, the function returns an error number. Detailed error numbers are shown in “MX-Specific Errors.” You can retrieve them separately.

### RJC Voltage

Compensation voltage when using the external RJC function.
It is an integer with units mV.

### Status Data

System (unit) status.
See the MXStatus structure.
It includes the following status information.

- Unit status value
- CF status information
- FIFO status information

### Setup Item Numbers

These numbers are added to each item of the setup data structure to unify them. When sending the setup data, the numbers show the detected location when an error occurs during a consistency check.
A definition file is available. See section 6.3, “MX100 Setup Item Numbers.”

## Setup Data

Setup information of the MX100.
See the MXConfigData structure.
All setup data gets the basic settings, system configuration data, and status data and merges the information.
For information about the items retrieved for each data, see the data structures for each item under “Type.”
It consists of the following data.

- System configuration data
- Network information data
- Status data
- Channel setup data
- Initial balance data
- Output channel data

### Basic Settings

Basic settings and static information about the system from among the setup information.

## System Configuration Data

The system consists of multiple modules.
See the MXSystemInfo structure.
It consists of the following items.

- Unit information
- Module information

## Time Information Data

The date/time data indicating the measurement time.
Generally, this is the number of seconds from Jan. 1, 1970.
See the MXDateTime structure.
The milliseconds value is also included.

## Transmission Output Data

Data that indicates the AO/PWM channel transmission status.
See the MXTransmit structure.
See AO/PWM data for more about the command AO/PWM channels.
When data is retrieved, it shows the status of the current transmission output.
When data is sent, it indicates the start and stop control of the transmission output.

## Unit

Expresses the status when data is retrieved.
Used to indicate the data terminator for data retrieval.
Represents the status when the data is retrieved using the talker.
A value synthesized through logical OR computations of the flag status.

## Unit Information

A unit is a single system centering on a main module.
It consists of the following items.

- Product information
- Unit type
- Style
- Temperature unit type
- Unit number
- Timeout value
- CF write mode
- Power supply frequency
- Part number

### Timeout Value

Time until the saving of the measured data to the CF card is started when the connection is cut off.
It is an integer greater than or equal to 60. The unit is seconds.
See appendix 3.

### Unit Number

Unit identification number. The user can specify the number.
It is an integer value between 0 and 98.
It is displayed on the 7-segment LED of the main module.

## User Count

User-defined sequence information.
Sent to the main unit via communications after the settings.
The main unit is added to the data number of the acquired data.
In retrieval of measured data, you can retrieve this value at the same time as the time information data corresponding to the data number.

# Appendix 2 DARWIN Terminology

This section describes the terminology related to the API and the DARWIN. The main terms are listed in alphabetical order.
For more details, see the DARWIN user's manual.

## Alarm

Alarm function.

### Alarm Level

Alarm function ID number within the channel.
It is an integer value between 1 and 4.
Numbers are defined.

### Alarm Type

For DARWIN, it is the alarm type indicated in the alarm type list.

### Alarm Value

The value at which the alarm turns ON.
It is an integer value with the decimal point excluded.

## Channel

The channel is represented by the channel type and channel number.
DARWIN has measurement channels and computation channels.

### Measurement Channels

Channels whose channel type represents the subunit number of the expandable model or the unit on the standalone model.
It is the input position identifying number that determines the module connection position.
The channel number is created from the slot number and the terminal number.
The number may not be consecutive depending on the system configuration.

### Computation Channels

The channel when the channel type is a value that represents ìcomputation.”
The computation channels can be used on models with the computation option.
On the standalone model, the channel number is an integer from 1 to 30.
On the expandable model, the channel number is an integer from 1 to 60.

### Channel Type

A value used to identify the channel position and type.
For DARWIN, it is a value used to identify the channel position and type.
See Channel/Relay types.
Either the subunit number of the expandable model, the unit of the standalone model, or computation.

### Channel Number

Specified with an integer.
It is an integer value between 1 and 60.
Example: The channel number for terminal number 2 of the 10-CH, Medium-Speed Universal Input Module in slot number 3 is 32.
For computation channels, it is an integer value between 1 and 60 on the expandable model and 1 and 30 on the standalone model.

### Channel Range

Represents the consecutive channels of the same channel type.
It is specified using the channel type, start channel number, and end channel number.
If the end channel number is something other than the start channel number, it is considered a single channel specified by the start channel number.

## Channel Information Data

Static information such as the channel type, channel number, and decimal point position for each channel.
See the DarwinChInfo structure.
The data can be retrieved using the output of the channel information data by the talker.

### Unit Name

An arbitrary string of up to 6 bytes.

### Channel Status

Uses a value that is common with the data status.
See the data status value.

## Device Descriptor

Value used to identify the measuring instrument.
The device descriptor is required when executing the functions.
For the API, the entity is a reference to the CDAQDARWIN object.
DAQDARWIN type is used for storage and designation.
For the extension API, the entity is a reference to the CDAQDA100 object.
CDAQDA100 type is used for storage and designation.

## Measured Data

Data value information for the measurement points of each channel.
See the DarwinDataInfo structure.
The measured data can be retrieved using the output of the measured data by the talker.
The alarm presence/absence is expressed by the alarm type.

### Data Status

Uses a value that is common with the channel status. See the data status value.

## Measured Value

The measured value is expressed by the data value and the decimal point position.
The engineering unit is obtained from the data value and the decimal point position.

### Data Value

A value that expresses the mantissa of the measured value as an integer value.

### Decimal Point Position

A value that expresses the exponent of the measured value.
It is an integer value between 0 and 4.

## Measurement Interval

The measurement interval.
The unit is seconds.

## Relay

The relay is represented by the relay type and relay number.

### Relay Type

A value used to identify the relay position and type. See Channel/Relay types.
Either the main unit and subunit number of the expandable model, or internal switch.

### Relay Number

Noncontinuous between relay types.
It is an integer value between 1 and 60.
If the relay type is a unit number, the number represents the relay position ID number determined by the position where the module is connected. Consists of the slot number and the terminal number. The number may not be consecutive depending on the system configuration.

## Response

After a command is sent, a response is received from the measurement instrument.
Unless the data output request is made as a talker, any of the following is received.

- Processing was carried out normally.
- Processing was not carried out normally.

If processing is not carried out normally or execution fails, the function returns an error number.

## Scale

Consists of the left value, right value, and decimal point position. The value is in the range from -30000 to 30000.
With the specification of this API, if the left and right values are the same, they are considered omitted.

## Span

Consists of the left value and right value. The values vary depending on the type of measurement range.
With the specification of this API, if the left and right values are the same, they are considered omitted.

## Status Byte

A value indicating the status of the instrument. A value synthesized through logical OR computations of the status byte.

## System Configuration Data

Unit and module information.
See the DarwinSystemInfo structure.

### Unit Number

A number identifying the unit in the system configuration.
See Channel/Relay types.
It is either the main unit or subunit number.
On the standalone model, the only valid unit number is 0.

### Subunit Number

A number used to identify the subunit connected on the expandable model.
It is an integer value between 0 and 5.
On the standalone model, this number is the same as the unit number, and the only valid subunit number is 0.

### Slot Number

Represents the position where the module is connected for each unit.
It is an integer value between 0 and 5.

### Terminal Number

A number used to identify the position of the channel/relay in the module connected to the slot.
It is an integer value between 1 and 10.
Differs depending on the module type.

## Talker

A function that performs data output. The types indicated by the talker function type are supported.
Since the data of multiple channels or lines are output, data retrieval commands are executed by channel or by line after the start command is executed.

## Terminator

String indicating the end of the command.

### Time Information Data

Date/Time data indicating the measurement time. Generally, this is the number of seconds from Jan. 1, 1970.
See the DarwinDateTime structure.
The milliseconds value is not used.
Milliseconds is used when using the instantaneous value data loading communication port.

### Unit

Expresses the status when data is retrieved.
Used to indicate the data terminator for data retrieval.
A value synthesized through logical OR computations of the flag status.

# Appendix 3 Calculation of the MX100 Timeout Value

The timeout value is the time until the saving of the data sampled at the measurement interval to the CF card is started when the connection is cut off. It is an integer greater than or equal to 60. The unit is seconds. The default value is 60 s. To save the sampled data to the CF card without dropouts when the communication is cut off, the data must be saved to the CF card before the unsaved data in the FIFO buffer is overwritten. If the value is not appropriate, an error will occur when saving to the CF card starts, and the sampled data will not be saved.
Refer to the calculation method of the timeout value shown below.

**Timeout value (s) < (FIFO buffer size/data size per second) -20 s**

FIFO buffer size = 2 MB (2097152 bytes)
FIFO data size per second = (the byte size of time + the byte size of the measured value × the number of channels) × the number of measurements in 1 second
The byte size of time = 16 bytes
The byte size of the measured value = 4 bytes
20 s: Time required to save the data to the CF card (estimate)

**Calculation Example 1**

FIFO: 60 channels and scan interval of 10 ms

Data size per second = (16 + 4 × 60 ch) × 1000/10 = 25600 bytes
Setting = (2 MB/25600 bytes) - 20 s = 61.9 > 60 s (estimated setting)

**Calculation Example 2**

When three FIFOs below are running
FIFO: 40 channels and scan interval of 10 ms, 4 channels and scan interval of 50 ms, and 10 channels and scan interval of 100 ms

Data size per second = (16 + 4 × 40 ch) × 1000/10 = 17600 bytes
Data size per second = (16 + 4 × 4 ch) × 1000/50 = 640 bytes
Data size per second = (16 + 4 × 10 ch) × 1000/100 = 560 bytes
Setting = (2 MB/(17600 + 640 + 560 bytes)) - 20 s = 91.5 > 90 s (estimated setting)

# Appendix 4 API Revision History (R2.01)

The following lists the additions and deletions that were made to functions for this API R2.01.

## Visual C and Visual Basic Functions

### New MX100 Functions

changeAOPWMDataMX
changeBalanceMX
changeTransmitMX
getAlarmNameMX (Visual C only)
getAOPWMDataMX
getBalanceMX
getItemErrorMX
getMaxLenAlarmNameMX
getOutputMX
isDataNoMX (Visual C only)
isDataNoVBMX
resetBalanceMX
runBalanceMX
setAOMX
setAOPWMDataMX
setAOTypeMX
setBalanceMX
setChoiceMX
setOutputMX
setOutputTypeMX
setPulseTimeMX
setPWMMX
setPWMTypeMX
setRESMX
setSTRAINMX
setTransmitMX
toAlarmNameMX
toAOPWMValueMX
toRealValueMX
toStyleVersionMX

## New DARWIN Functions

computeDARWIN
establishDARWIN
getAlarmNameDARWIN (Visual C only)
getMaxLenAlarmNameDARWIN
getReportStatusDARWIN
receiveByteDARWIN
reportingDARWIN
setMADARWIN
setPOWERDARWIN
setPULSEDARWIN
setSTRAINDARWIN

# Visual C++ Functions

## New MX100 Classes

CDAQMXAOPWMData Class
CDAQMXBalanceData Class
CDAQMXBalanceResult Class
CDAQMXOutputData Class
CDAQMXTransmit Class

## New MX100 Members

CDAQMX::clearLastDataNoCh
CDAQMX::clearLastDataNoFIFO
CDAQMX::getAOPWMData
CDAQMX::getBalance
CDAQMX::getItemError
CDAQMX::getOutput
CDAQMX::getPacketVersion
CDAQMX::isObject
CDAQMX::m_bTalkChInfo
CDAQMX::m_bTalkConfig
CDAQMX::m_bTalkData
CDAQMX::m_nItemError
CDAQMX::m_nTimeNum
CDAQMX::m_packetVer
CDAQMX::receiveBuffer
CDAQMX::resetBalance
CDAQMX::runBalance
CDAQMX::runPacket
CDAQMX::setAOPWMData
CDAQMX::setBalance
CDAQMX::setOutput
CDAQMX::setTransmit
CDAQMXChConfig::getItemError
CDAQMXChConfig::getRangeMax
CDAQMXChConfig::getRangeMin
CDAQMXChConfig::getRangePoint
CDAQMXChConfig::initMXChConfig
CDAQMXChConfig::isObject
CDAQMXChConfig::m_nItemError

CDAQMXChConfig::setAO
CDAQMXChConfig::setPWM
CDAQMXChConfig::setRES
CDAQMXChConfig::setSTRAIN
CDAQMXChConfigData::getItemError
CDAQMXChConfigData::initMXChConfigData
CDAQMXChConfigData::isObject
CDAQMXChConfigData::m_cMXChConfig
CDAQMXChConfigData::m_nItemError
CDAQMXChID::getChName
CDAQMXChID::initMXChID
CDAQMXChID::isObject
CDAQMXChID::toChName
CDAQMXChID::toChNo
CDAQMXChID::toUnitNo
CDAQMXChInfo::initMXChInfo
CDAQMXChInfo::isObject
CDAQMXConfig::getChName
CDAQMXConfig::getClassMXBalanceData
CDAQMXConfig::getClassMXChConfig
CDAQMXConfig::getClassMXOutputData
CDAQMXConfig::getItemError
CDAQMXConfig::getRangePoint
CDAQMXConfig::getSpanPoint
CDAQMXConfig::initMXConfigData
CDAQMXConfig::isObject
CDAQMXConfig::m_cMXBalanceData
CDAQMXConfig::m_cMXOutputData
CDAQMXConfig::m_nItemError
CDAQMXConfig::setAO
CDAQMXConfig::setAOType
CDAQMXConfig::setChKind
CDAQMXConfig::setPWM
CDAQMXConfig::setPWMType
CDAQMXConfig::setRES
CDAQMXConfig::setSTRAIN
CDAQMXDataInfo::initMXDataInfo
CDAQMXDataInfo::isObject
CDAQMXDateTime::initMXDateTime
CDAQMXDateTime::isObject

CDAQMXDOData::initMXDOData
CDAQMXDOData::isObject
CDAQMXDOData::setDOONOFF
CDAQMXNetInfo::getPart
CDAQMXNetInfo::initMXNetInfo
CDAQMXNetInfo::isObject
CDAQMXSegment::initMXSegment
CDAQMXSegment::isObject
CDAQMXStatus::getDateTime
CDAQMXStatus::getMilliSecond
CDAQMXStatus::getTime
CDAQMXStatus::initMXStatus
CDAQMXStatus::isBackup
CDAQMXStatus::isDataNo
CDAQMXStatus::isObject
CDAQMXSysInfo::getItemError
CDAQMXSysInfo::initMXSystemInfo
CDAQMXSysInfo::isObject
CDAQMXSysInfo::m_nItemError

## Deleted MX100 Members

Deleted due to version incompatibility.
CDAQMXChConfig::setFromBlockChConfig
CDAQMXChConfigData::setFromAckGetConfigPacket
CDAQMXChInfo::setFromBlockChInfo
CDAQMXConfig::setFromAckGetConfigPacket
CDAQMXDataInfo::setFromBlockData
CDAQMXNetInfo::setFromAckGetConfigPacket
CDAQMXStatus::setFromAckGetConfigPacket
CDAQMXStatus::setFromAckGetStatusPacket
CDAQMXSysInfo::setFromAckGetConfigPacket
CDAQMXSysInfo::setFromAckGetUnitInfoPacket

## New DARWIN Members

CDAQDARWIN::compute
CDAQDARWIN::establish
CDAQDARWIN::getReportStatus
CDAQDARWIN::isObject
CDAQDARWIN::receiveByte
CDAQDARWIN::reporting
CDAQDARWIN::setMA
CDAQDARWIN::setSTRAIN
CDAQDARWIN::setPULSE
CDAQDARWIN::setPOWER
CDAQDARWINChInfo::initDarwinChInfo
CDAQDARWINChInfo::isObject
CDAQDARWINDataInfo::getMaxLenAlarmName
CDAQDARWINDataInfo::initDarwinDataInfo
CDAQDARWINDataInfo::isObject
CDAQDARWINDateTime::getFullYear
CDAQDARWINDateTime::initDarwinDateTime
CDAQDARWINDateTime::isObject
CDAQDARWINSysInfo::getModuleCode
CDAQDARWINSysInfo::initDarwinSystemInfo
CDAQDARWINSysInfo::isObject

# Appendix 5 API Revision History (R3.01)

The following lists the additions and changes that were made for this API R3.01.

## API

## Visual C++

### New MX100 Members

CDAQMXChConfig::isChatFilter
CDAQMXChConfig::setChatFilter
CDAQMXChConfig::setCOM
CDAQMXChConfig::setPULSE
CDAQMXConfig::setCOM
CDAQMXConfig::setPULSE

### Changed MX100 Members

CDAQMXChConfig::setDELTA
CDAQMXConfig::setDELTA

## Visual C / Visual Basic

### New MX100 Functions

setChatFilterMX
setCOMMX
setPULSEMX

# Constants

## New MX100 Constants

DAQMX_CHKIND_PI
DAQMX_CHKIND_PIDIFF
DAQMX_CHKIND_CI
DAQMX_CHKIND_CIDIFF
DAQMX_MODULE_HIDDEN
DAQMX_MODULE_MX114PLSM10
DAQMX_MODULE_MX110VTDL30
DAQMX_MODULE_MX118CANM10
DAQMX_MODULE_MX118CANM20
DAQMX_MODULE_MX118CANM30
DAQMX_MODULE_MX118CANSUB
DAQMX_MODULE_MX118CANMERR
DAQMX_MODULE_MX118CANSERR
DAQMX_CHNUM_30
DAQMX_TERMINAL_DSUB
DAQMX_RANGE_TC_XK
DAQMX_RANGE_RTD_1MAPTG
DAQMX_RANGE_RTD_1MACU100G
DAQMX_RANGE_RTD_1MACU50G
DAQMX_RANGE_RTD_1MACU10G
DAQMX_RANGE_RTD_2MACU100G
DAQMX_RANGE_RTD_2MACU50G
DAQMX_RANGE_RTD_2MACU10G
DAQMX_RANGE_DI_CONTACT_AI30
DAQMX_RANGE_COM_CAN
DAQMX_RANGE_PI_LEVEL
DAQMX_RANGE_PI_CONTACT

## Changed MX100 Constants

DAQMX_NUMALARM

# Setting Item Numbers

## New MX100 Setting Item Numbers

DAQMX_ITEM_CHCHATFILTER
DAQMX_ITEM_ALARMTYPE2
DAQMX_ITEM_ALARMON2
DAQMX_ITEM_ALARMOFF2
DAQMX_ITEM_CHREFALARM2

## New MX100 Constants

DAQMX_MAX_INDEX_FIFO
DAQMX_MAX_INDEX_MODULE
DAQMX_MAX_INDEX_CHANNEL
DAQMX_ITEM_ALL_END_R3

## Changed MX100 Constants

DAQMX_ITEM_ALL_END

# Types

## Changed MX100 Types

DAQMX
MXDataInfo
MXChConfigAIDI
MXChConfigAI
MXChConfigDO
MXChID
MXChConfig
MXChConfigData
MXChInfo

# Extended API

## Visual C++

### New MX100 Members

CDAQMX100::setChatFilter

### Changed MX100 Members

CDAQMX100::measDataCh
CDAQMX100::measDataFIFO
CDAQMX100::measInstCh
CDAQMX100::measInstFIFO

## Visual C / Visual Basic

### New MX100 Functions

setChatFilterMX100
channelChatFilterMX100

## Constants

### New MX100 Constants

DAQMX100_CHKIND_PI
DAQMX100_CHKIND_PIDIFF
DAQMX100_CHKIND_CI
DAQMX100_CHKIND_CIDIFF
DAQMX100_MODULE_HIDDEN
DAQMX100_MODULE_MX114PLSM10
DAQMX100_MODULE_MX110VTDL30
DAQMX100_MODULE_MX118CANM10
DAQMX100_MODULE_MX118CANM20
DAQMX100_MODULE_MX118CANM30
DAQMX100_MODULE_MX118CANSUB
DAQMX100_MODULE_MX118CANMERR
DAQMX100_MODULE_MX118CANSERR
DAQMX100_CHNUM_30
DAQMX100_TERMINAL_DSUB
DAQMX100_RANGE_TC_XK

DAQMX100_RANGE_RTD_1MAPTG
DAQMX100_RANGE_RTD_1MACU100G
DAQMX100_RANGE_RTD_1MACU50G
DAQMX100_RANGE_RTD_1MACU10G
DAQMX100_RANGE_RTD_2MACU100G
DAQMX100_RANGE_RTD_2MACU50G
DAQMX100_RANGE_RTD_2MACU10G
DAQMX100_RANGE_DI_CONTACT_AI30
DAQMX100_RANGE_COM_CAN
DAQMX100_RANGE_PI_LEVEL
DAQMX100_RANGE_PI_CONTACT

### Changed MX100 Constants

DAQMX100_NUMALARM

## Types

### Changed MX100 Types

DAQMX100

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