User's Manual

DXA200
DAQEXPLORER

YOKOGAWA
Yokogawa Electric Corporation

IM 04L02A01-62E
3rd Edition

Foreword

Thank you for purchasing the DAQEXPLORER.
This manual explains the operating procedures of the DAQEXPLORER on Windows 98/2000/Me/XP and Windows NT4.0.
Keep this manual in a safe place for quick reference in the event a question arises.
For information about the handling precautions, functions, and operating procedures of the DX100/DX200/MV100/MV200/CX1000/CX2000 and the handling and operating procedures of Windows, see the respective manuals.

Contents of the Package

The package contains the following items:

- DAQEXPLORER (Model: DXA200) Installation Disk: CD
- User's Manual (IM04L02A01-62E, this manual): 1 piece

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer as listed on the back cover of this manual.
- Copying or reproducing all or any part of the contents of this manual without YOKOGAWA's permission is strictly prohibited.
- Use of this software on more than one computer at the same time is prohibited. Use by more than one user is also prohibited.
- Transfer or lending of this software to any third party is prohibited.
- Yokogawa Electric Corporation provides no guarantees other than for physical deficiencies found on the original disk upon opening the product package.
- Yokogawa Electric Corporation shall not be held responsible by any party for any losses or damage, direct or indirect, caused by the use or any unpredictable defect of the product.
- Please keep the original disk in a safe place.
- The serial number will not be reissued.

Trademarks

- Windows is a trademark of Microsoft Corporation.
- Lotus1-2-3 is a registered trademark of Lotus Development Corporation.
- Other product names are trademarks or registered trademarks of their respective holders.

Revisions

First Edition: December 1999
Second Edition: July 2000
Third Edition: April 2002

Disk No. RE22
3rd Edition: April 2002 (YK)
All Rights Reserved, Copyright © 1999 Yokogawa Electric Corporation

How to Use this Manual

Structure of the Manual

This manual consists of the following 6 chapters and an index.

Chapter	Title	Description
1	Before Use	Describes the PC requirements needed to run the DAQEXPLORER, the installation procedures, and other information.
2	Using the DAQ Desktop	Describes the DAQ desktop used to start various software programs. It also describes the procedures to setup communications between the DX100/DX200/MV100/MV200/CX1000/CX2000 and the PC.
3	Using the Data Monitor	Describes the operations used when monitoring the data in real-time on the monitor connected to the DX100/DX200/MV100/MV200/CX1000/CX2000 via network.
4	Displaying Data with the Data Viewer	Describes the operations used when monitoring the stored data on the hard disk or converting the stored data to other formats such as ASCII.
5	Configuring the DX100/DX200/MV100/MV200	Describes the procedures used to configure the DX100/DX200/MV100/MV200 such as measurement conditions.
6	Configuring the CX1000/CX2000	Describes the procedures used to configure the CX1000/CX2000 such as measurement condition and control function.
7	Error Messages and Their Corrective Actions	Describes error messages and their countermeasures.
Index		Gives an index.

The Scope of This Manual

This manual does not explain the basic operations of Windows 98/2000/Me/XP or Windows NT4.0. For information related to the basic operation of Windows 98/2000/Me/XP and Windows NT4.0, see the manual that came with Windows.

Conventions Used in this Manual

Unit

K Denotes 1024. Example 100 KB

Notations of menus, commands, dialog boxes, and buttons

Enclosed with [ ].

Symbols

Note

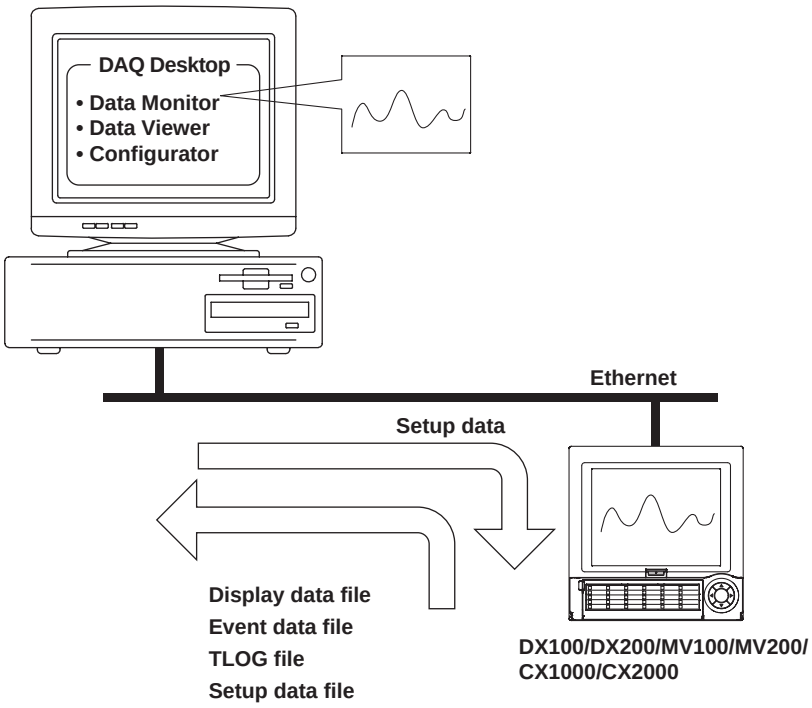
Gives useful tips on the operation of the software.

Contents

1.1 DAQEXPLORER Overview

The DAQEXPLORER consists of the following four software programs:

- DAQ Desktop
- Data Monitor
- Data Viewer
- Configurator



DAQ Desktop

The DAQ Desktop can be used to perform the following operations:

- Mount the DX100/DX200/MV100/MV200/CX1000/CX2000 on the network (make it accessible from the DAQEXPLORER).
- Start the Data Monitor, Data Viewer, and Configurator programs.
- Check the files residing in the internal memory or external storage medium of the DX100/DX200/MV100/MV200/CX1000/CX2000.
- Snap shot display of the DX100/DX200/MV100/MV200/CX1000/CX2000 display screen.
- Automatic transfer of the DX100/DX200/MV100/MV200/CX1000/CX2000 data.
- Copy DX100/DX200/MV100/MV200/CX1000/CX2000 data to the DAQ Desktop.
- Send triggers to the DX100/DX200/MV100/MV200/CX1000/CX2000.

Note

The DAQ Desktop and Data Viewer are automatically registered under [Programs] of the [Start] menu of Windows 98/2000/Me/XP or Windows NT4.0 when the DAQEXPLORER is installed.

Data Monitor

Monitor the DX100/DX200/MV100/MV200/CX1000/CX2000 data using a PC connected to the network by viewing the trend waveform, for example. The following types of monitor screens are available:

- Alarm Monitor : Lists the alarm conditions of each group or alarms that occurred in the past. It can be used to monitor alarms.
- Trend Monitor : Displays the waveforms of the measured and computed data. This is useful when you wish to observe the data trend.
- Color Graph Monitor : Displays the measured and computed data using colors that correspond to specific values. This is useful when you wish to observe the overall tendency of the measured and computed data.
- Numerical Monitor : Displays the measured and computed data using numerical (digital) values. This is useful when you wish to read the exact values.
- Meter Monitor : Displays the measured and computed data using analog meters. You can select bar graph, meter, or thermometer. This provides a useful way to display the current conditions graphically.
- Circular Monitor : Displays the measured and computed data in a circular fashion.

Data Viewer

The following five types of data files generated by DX100/DX200/MV100/MV200/CX1000/CX2000 can be displayed as trends, digital values or in a circular fashion on the screen or printed.

- Display data file (.dds)
- Event data file (.dev)
- TLOG file (.dtg)
- Report file: .dhr (hourly), .ddr (daily), .dwr (weekly), and .dmr (monthly)
- Manual sample file (.dmn)

You can also use cursors to read the values of the displayed data, perform computation over a specified region, and convert data to a file in ASCII format or a format that can be opened using Excel/Lotus.

If you wish to open multiple Data Viewers, select [Program] - [DAQEXPLORER] - [Viewer] from the Start menu.

Configurator

The Configurator is used to configure DX100/DX200/MV100/MV200/CX1000/CX2000 setup data such as the configuration of the measurement channels and computation channels, the screen display format, etc. Configuration data can also be stored to or retrieved from the hard disk on the connected PC. There are three methods for setting the DX100/DX200/MV100/MV200/CX1000/CX2000:

- Retrieving the current setup data from the connected DX/MV/CX and subsequently modifying the settings.
- Loading saved setup data from the PC and changing the settings.
- Configuring a new system and settings.

1.2 System Requirements

Hardware

PC

PC capable of running Windows 98/2000/Me/XP or Windows NT 4.0 with at least a Pentium 166 MHz MMX processor (Pentium II 266 MHz or better recommended).

RAM

64 MB or more (The recommended amount of RAM depends on various parameters such as the performance of the graphics card. In general, 128 MB of RAM will provide smooth operation.) However, the necessary amount of RAM may increase, if you are running other programs simultaneously.

Hard Disk

Free space of at least 100 MB.

CD-ROM Drive

CD-ROM drive (for installing the DAQEXPLORER)

Mouse

Mouse supported by Windows 98/2000/Me/XP or Windows NT4.0.

Monitor

A monitor supported by Windows 98/2000/Me/XP or Windows NT4.0. At least 800 x 600 resolution with at least 32 K of colors. 1024 x 768 resolution with 65536 colors recommended.

Communication Card

An Ethernet card supported by Windows. The TCP/IP protocol must also be installed.

Printer

Printer supported by Windows. You will also need an appropriate printer driver.

Operating System

Windows 98/2000/Me/XP or Windows NT4.0.

Note

- When using Window NT4.0, install [Service Pack5] or a later version of the service pack.
- When numerous DX100/DX200/MV100/MV200/CX1000/CX2000s are mounted onto the DAQ Desktop on Windows 98 and many windows are opened, a message “A required resource was unavailable.” may appear and the operation may become unstable.
- If daylight savings exists in the specified time zone, check “Automatically adjust clock for daylight savings changes.”
- Do not specify time zone settings in the Windows autoexec.bat file. If you see a line such as “TZ=GTM0” in the autoexec.bat file, deactivate it by attaching a REM command in front.
- This program cannot handle data after year 2038.

1.3 Installing the DAQEXPLORER

The DAQEXPLORER is provided on a CD-ROM. To install the software, an appropriate serial number needs to be entered. The serial number is indicated on the CD-ROM.

Procedure

1. Turn on the computer. Windows starts.
2. Insert the CD-ROM into the CD-ROM drive of the computer.
3. The installation program starts automatically. Follow the instructions on the screen to proceed with the installation.

   If the installation program does not start automatically when you insert the CD-ROM into the CD-ROM drive, use the following procedure to start it.

4. In [My Computer], double-click the CD-ROM icon.
5. Double-click the setup.exe file in the root directory. Installation starts. Follow the instructions on the screen to complete the installation.

Note

- Terminate memory resident programs such as virus protection programs before installation.
- The DAQ Desktop and Data Viewer programs are registered in the Start menu immediately after installation.
- When reinstalling the software, do an uninstall first.
- To uninstall the program, follow the procedures below:
  1. Double-click “Add/Remove Programs” in the Windows Control Panel and uninstall the program.
  2. As necessary, back up the following files to a different directory:
     All files in the [Config] and [Desktops] directories that are located in the directory where this program was installed.
  3. Using Explorer, delete the Files and subdirectories that were created after the installation of the program. Also, delete the directory to which the program was installed.

1.4 Configuring the Network

The network must be configured so that the DX/MV/CX and the PC can communicate properly using DAQEXPLORER.
Set the network configuration on the DX/MV/CX side.
For the configuration procedure, see the respective communication interface user's manual.

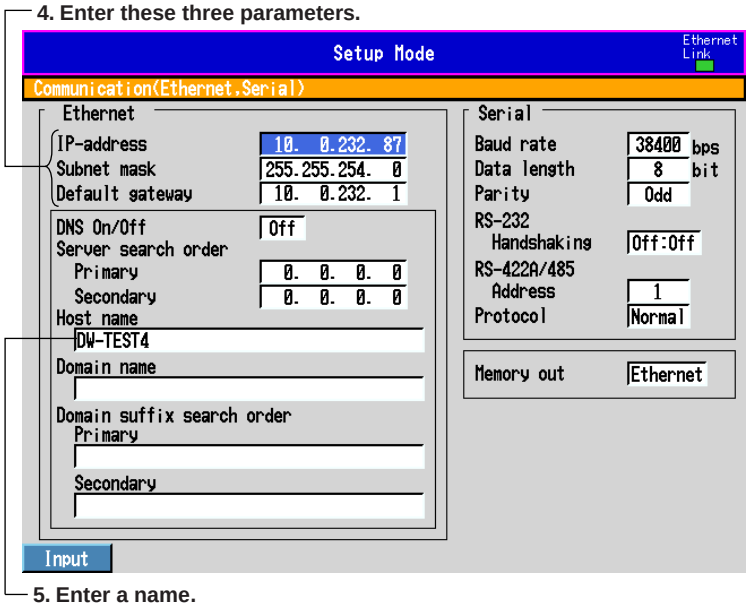
1. Press the MENU key to display the setting mode menu.
2. Press the FUNC key for approximately three seconds to display the basic setting mode menu.

For the DX100/MV100/CX1000

3. Press the [#10 (Communications)] soft key ([#9] (Communications) soft key on CX1000), then the [#1 (Ethernet, IP address)] soft key. Then, press the [#2 (Ethernet, DNS)] soft key.

For the DX200/MV200/CX2000

3. Press the [#6 (Communications)] soft key ([#7] (Communications) soft key on CX2000), then the [#1 (Ethernet)] soft key to display the following communication function menu:



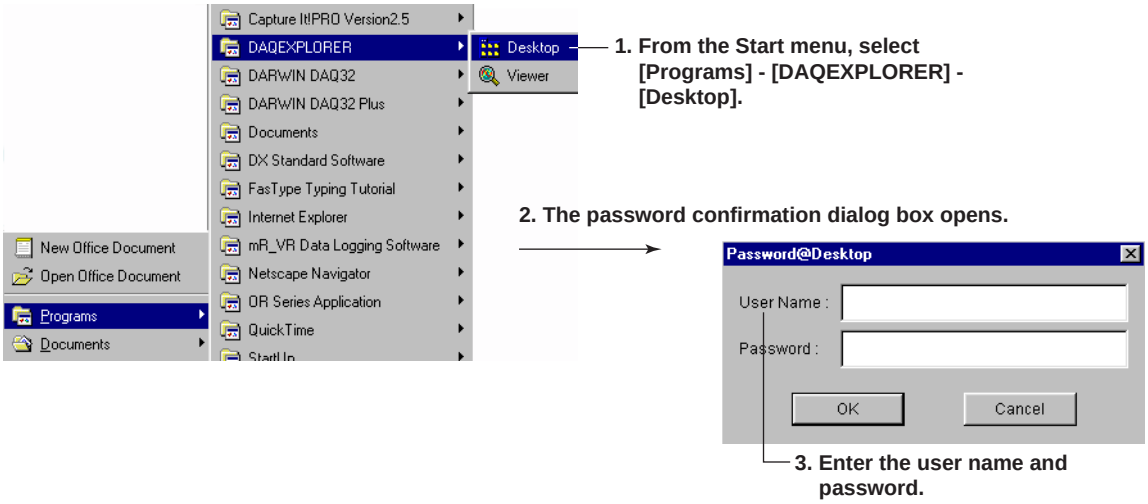
* Host name The name that is specified here is used as an identification name for the DX100/DX200/MV100/MV200/CX1000/CX2000 that can be mounted from within the network folder. If a name is not specified, the IP address will be used as the identification name.

Note

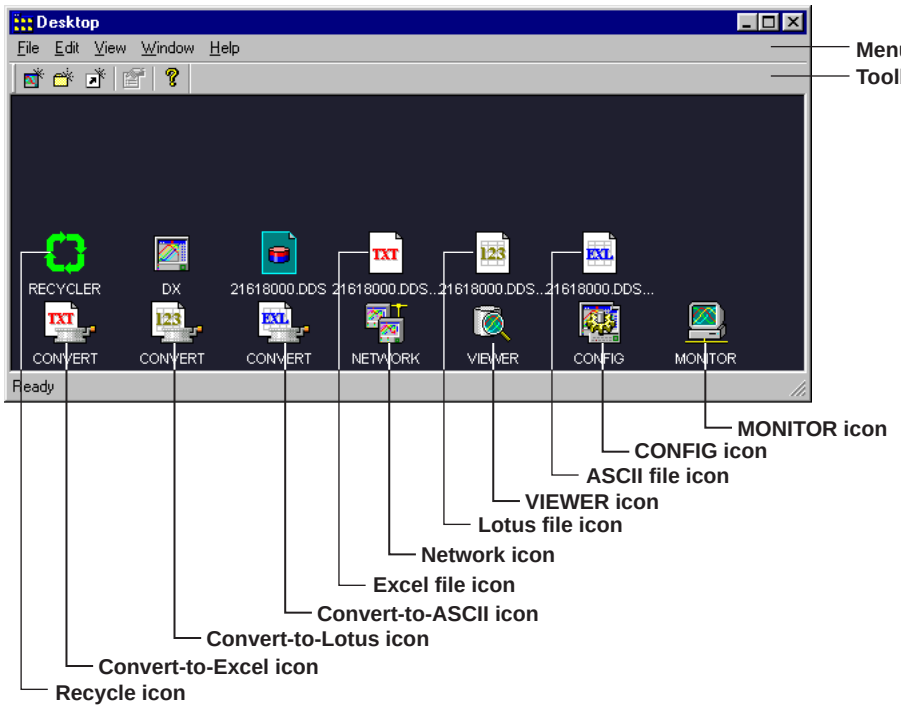
- In using this software, the DNS, domain name, and suffix search order do not need to be configured.
- You can check and save the configuration using the TCP/IP menu of the Configurator.
- If you change the IP address, make sure to reboot the DX/MV/CX.

2.1 Starting and Exiting the DAQ Desktop

Starting the DAQ Desktop



4. The DAQ Desktop opens.



Password confirmation

If the Ethernet login on the DX100/DX200/MV100/MV200/CX1000/CX2000 is set to [On] at the [admin] level, enter the user name and password of the administrator that was registered on the DX/MV/CX.

If the Ethernet login is set to [Not] (not used), you do not have to enter the user name or password. Clicking the [OK] or the [Cancel] button starts the DAQ Desktop.

Note

If there are multiple DX100/DX200/MV100/MV200/CX1000/CX2000s that have the Ethernet login configured, only the DX100/DX200/MV100/MV200/CX1000/CX2000 with the matching user name and password specified in step 3 will be mountable.

DAQ Desktop Functions

The DAQ Desktop has the following functions:

Menu bar

- File
  - New Mount: Mounts the DX100/DX200/MV100/MV200/CX1000/CX2000 with the specified host name or IP address onto the DAQ Desktop.
  - New Folder: Creates a new folder. You can also make the folder the data transfer destination.
  - New Sortcut: Creates a new shortcut icon on the disktop.
    You cannot create shortcuts for the following folders.
    - Root directory such as drive C
    - DAQStation and ~recycler folders
    - Folders in the ~DX___, MV___ and CX___ folders
    - Folders that are displayed on the desktop
    - Folders for which a shortcut already exists
  - Property: Displays the properties of the DX100/DX200/MV100/MV200/CX1000/CX2000.
  - Set Time: Sets the date and time of all mounted DX100s, DX200s, MV100s, MV200s, CX1000s and CX2000s at once.
  - Port No.: You can check or change the port number.
  - Exit : Exits the DAQ Desktop and returns to the Windows screen.
  - Edit: Copies and Pastes selected files.
  - View: Refreshes information, selects the display format of the list, and shows or hides the toolbar and status bar.
  - Window: Closes all windows.
  - Help : Displays the version information of the DAQ Desktop.

Toolbar

-  (New Mount): This icon is equivalent to selecting [File] - [New Mount] from the menu bar.
-  (New Folder): This icon is equivalent to selecting [File] - [New Folder] from the menu bar.
-  (New Sortcut): This icon is eqivalent to selecting [File] - [New Shortcut] from the menu bar.
-  (Property): This icon is equivalent to selecting [File] - [Property] from the menu bar.
-  (Version Information): This icon is equivalent to selecting [Help] - [About] from the menu bar.

Network icon

- Lists the DX100/DX200/MV100/MV200/CX1000/CX2000s that are on the same segment of the network.
- Mounts the DX100/DX200/MV100/MV200/CX1000/CX2000 that is on the network onto the DAQ Desktop.

Recycle icon

Deletes files and folders and dismounts the DX100/DX200/MV100/MV200/CX1000/CX2000.

VIEWER icon Starts the Data Viewer program.
MONITOR icon Starts the Data Monitor program.
CONFIG icon Starts the Configurator program.

DX/MV/CX icon

The following operations can be performed:

- Start/Stop the data acquisition to the internal memory of the DX100/DX200/MV100/MV200/CX1000/CX2000.
- Start the Data Monitor, Data Viewer,Configurator programs.
- Snap shot.
- View the files residing in the internal memory or the external storage medium of the DX100/DX200/MV100/MV200/CX1000/CX2000.
- View and change the DX100/DX200/MV100/MV200/CX1000/CX2000 configuration.
- Create automatic transfer destination for the DX100/DX200/MV100/MV200/CX1000/CX2000 data and list the transfer data.

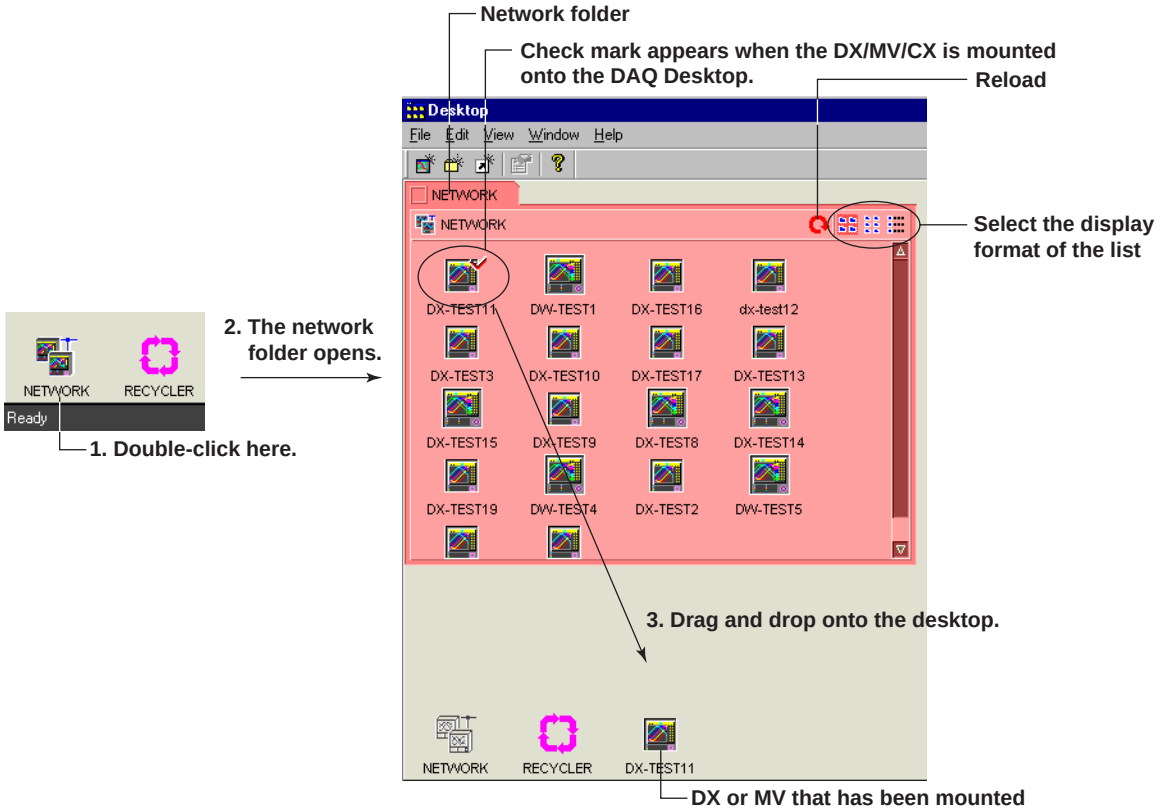
Folder icon

This is the automatic transfer destination for the DX100/DX200/MV100/MV200/CX1000/CX2000 data. For the procedures to create folder icons, see section 2.5.

Note

- Files and folders that are dragged and dropped onto the recycler icon are temporarily placed in the following folder:DAQEXPLORER\desktops\DAQStation\recycler.
- When the DAQEXPLORER is restarted, all the data in the recycler folder are deleted.

Mounting the DX100/DX200/MV100/MV200/CX1000/CX2000



Network folder

The network folder will list the mountable DX100/DX200/MV100/MV200/CX1000/CX2000s that are within the same segment.

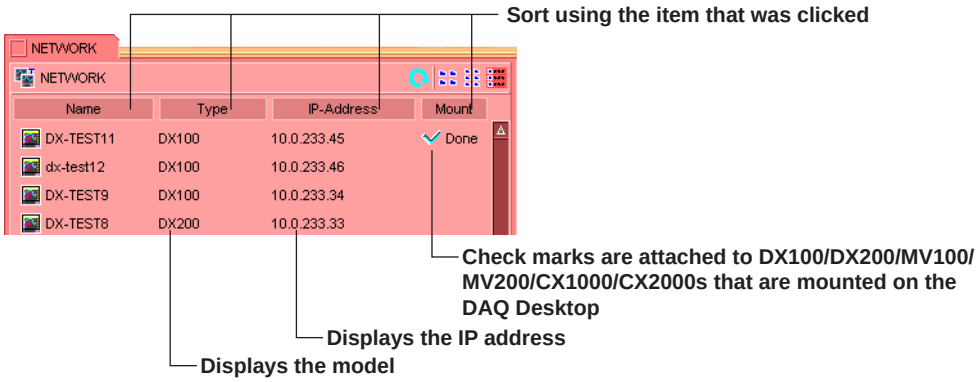
The DX100/DX200/MV100/MV200/CX1000/CX2000 icons that have already been mounted onto the DAQ Desktop will display red check marks.

In addition, the list of DX100/DX200/MV100/MV200/CX1000/CX2000 icons will show the host names that were specified in section 1.4.

Methods used to display the list

You can select Icons, List, or Details.

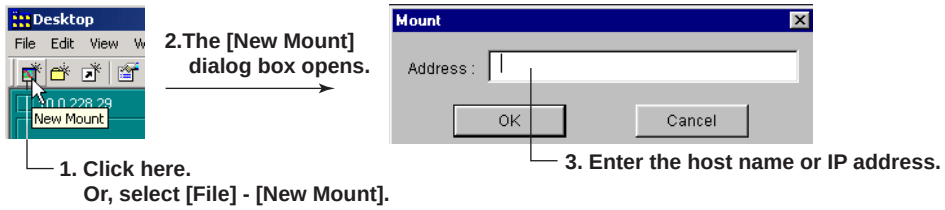
- **Display example when details is selected**



Note

Depending on the network conditions, the DX100/DX200/MV100/MV200/CX1000/CX2000, even when it is in the same segment, may not be listed. In this case, mount the DX100/DX200/MV100/MV200/ CX1000/CX2000 by specifying the IP address or host name. For details related to mounting, see the next page.

Mounting by Specifying the IP Address or Host Name



New Mount

Mount the DX100/DX200/MV100/MV200/CX1000/CX2000 by specifying the IP address or host name.

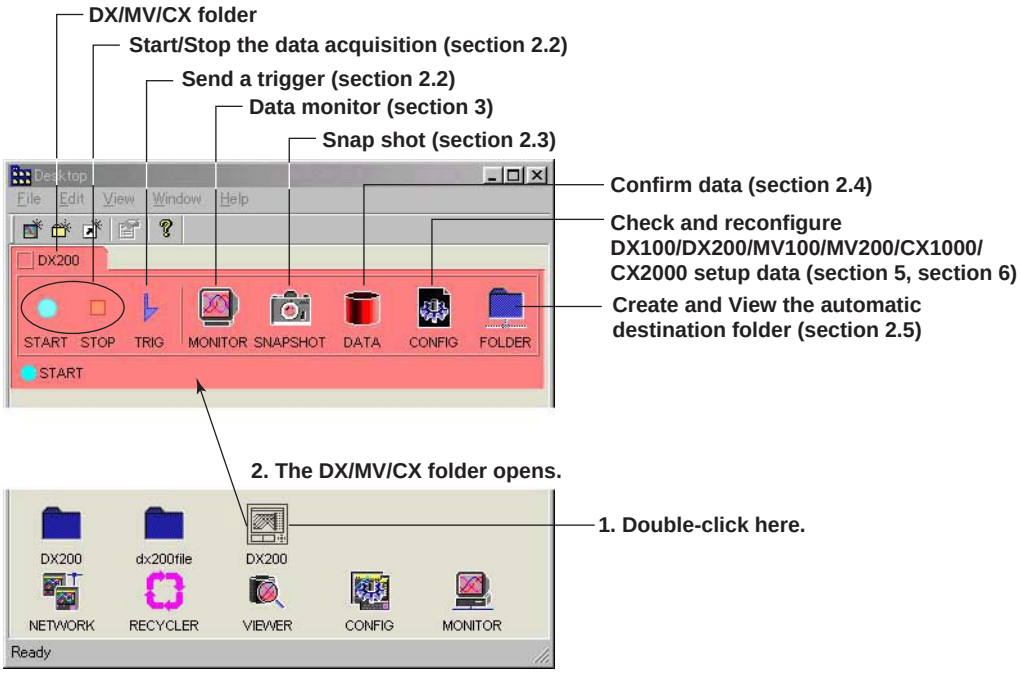
This method is used to mount a DX100/DX200/MV100/MV200/CX1000/CX2000 residing in another network.

Clicking the [OK] button displays the icon of the DX100/DX200/MV100/MV200/CX1000/CX2000 that has been mounted on the DAQ Desktop.

Note

- The maximum number of DX100/DX200/MV100/MV200/CX1000/CX2000s that can be mounted is 16.
- The icon of the DX100/DX200/MV100/MV200/CX1000/CX2000 that could not be connected is indicated with a red "×" mark.
- Connecting is not possible in the following cases:
  - The DX/MV/CX is not turned ON.
  - The DX/MV/CX with the specified IP address or host name does not exist.
  - The user name and password (see page 2-1) do not match.
  - Another user is using the particular DX/MV/CX.

Opening the DX/MV/CX Folder



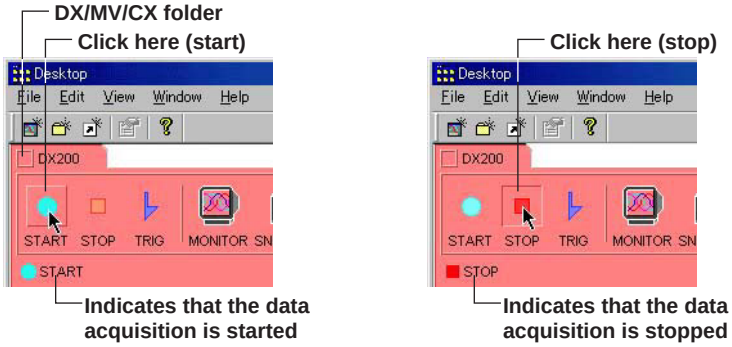
Exiting the DAQ Desktop

If you attempt to exit the program while the Data Monitor, Data Viewer, or Configurator is running and the desktop is busy carrying out some operation, a message “Now working! Do you exit all compulsory?” is displayed.

Note

You cannot exit from the DAQ Desktop, if you are editing a file that is outside the management of the DAQ Desktop on the Data Viewer that was started from the Start menu or on the Configurator program.

2.2 Starting and Stopping Data Acquisition on the DX/MV/CX, Send a Trigger



Starting

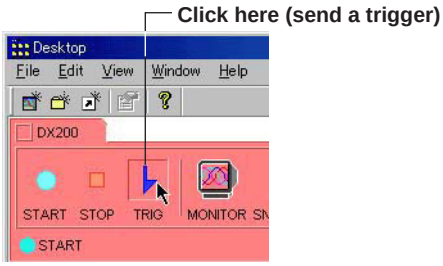
Clicking the start button starts the data acquisition to the internal memory of the DX100/DX200/MV100/MV200/CX1000/CX2000.

Stopping

When you click the stop button, a message, “Do you stop recording?” appears. Clicking the [OK] button stops the data acquisition to the internal memory of the DX100/DX200/MV100/MV200/CX1000/CX2000.

Note

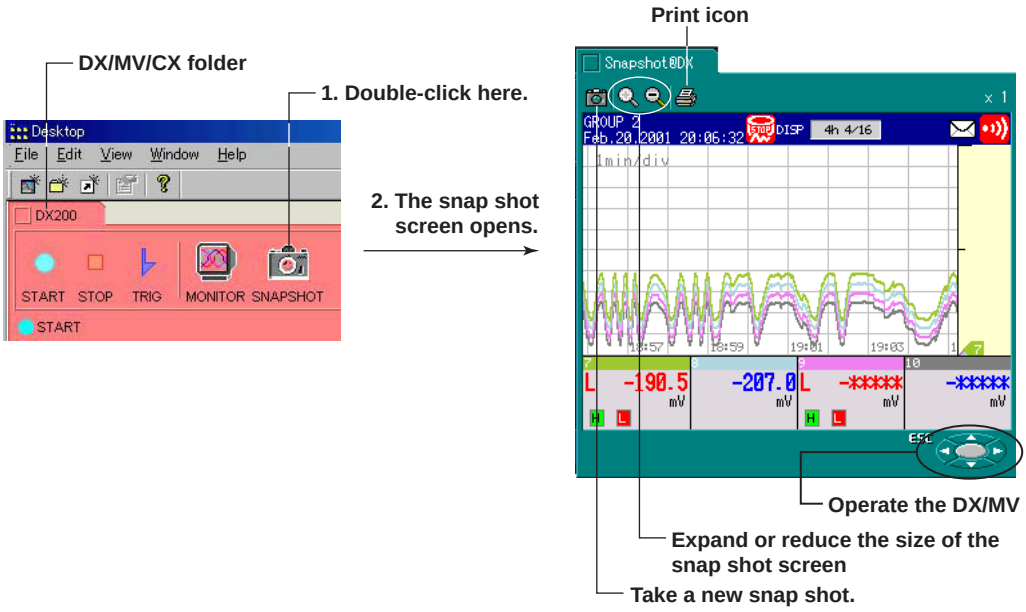
In some cases, the start/stop indicator may not be correct such as when the data acquisition is started or stopped on the DX/MV/CX.



Trigger

Sends the trigger signal used to store the event data to the internal memory. The trigger is valid when the mode used to store the event data to the internal memory of the DX, MV or CX is [Trigger] or [Rotate], trigger type is set to key trigger ([Manual Trigger] is set to [ON], see page 5-17 or 6-35) and the DX, MV or CX is in the trigger-wait condition after you press the Start button. The trigger button is invalid during all other operations.

2.3 Using the Snap Shot Function



Saving the snap shot screen

Drag and drop the snap shot screen that you wish to save onto the DAQ Desktop or onto a folder on the DAQ Desktop.

The screen data that are dragged and dropped onto the DAQ Desktop are saved to the DAQEXPLORER\desktop\DAQStation folder in the drive where the DAQEXPLORER was installed.

The extension of the saved data file is [png].

The data that are saved cannot be opened using the DAQEXPLORER. You will need a separate software program that can open the screen data.

Procedure for the DX/MV

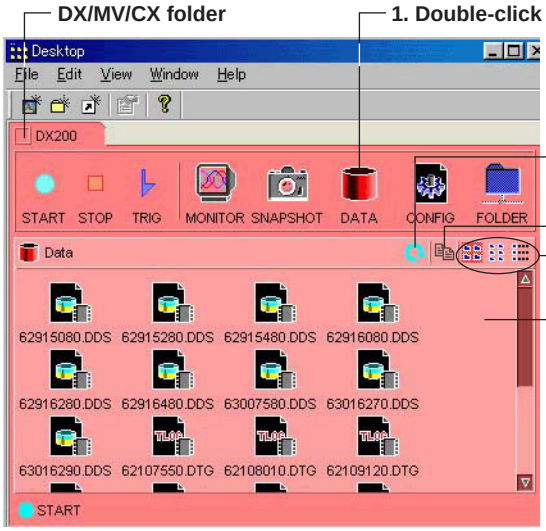
You can operate the snap shot screen with the keys appearing in the lower right. Even if you double click the image data file (.png) of the screen display created by the DX/MV, the snapshot folder appears but you cannot operate the DX/MV.

Printing the Snap Shot Screen

If you click the print icon, the current snap shot screen is printed out. For printer settings, choose File > Print Setup.

2.4 Confirming the DX100/DX200/MV100/MV200/ CX1000/CX2000 Data

Confirming the Data



Displaying the data list

Displays a list of the files in the active folder of the internal memory or the external storage medium of the DX100/DX200/MV100/MV200/CX1000/CX2000.

Data that can be displayed

The following data files can be listed:

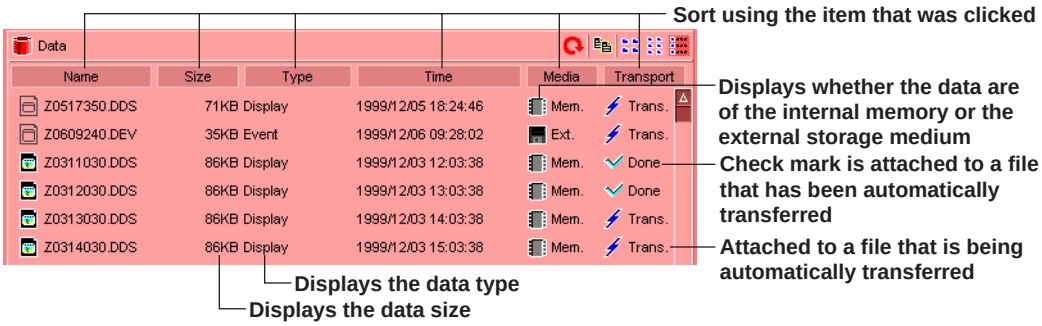
- Setup data file (*.PNL)
- Display data file (*.DDS)
- Event data file (.DEV)
- Report file
  - Hourly report file (*.DHR)
  - Daily report file (*.DDR)
  - Weekly report file (*.DWR)
  - Monthly report file (*.DMR)
- TLOG file (*.DTG)
- Manual sample file (*.DMN)
- Display image data file (*.png)

Of the files listed above, display files, event files, and TLOG files can be opened using the Data Viewer (See section 3).

Methods used to display the list

You can select Icons, List, or Details.

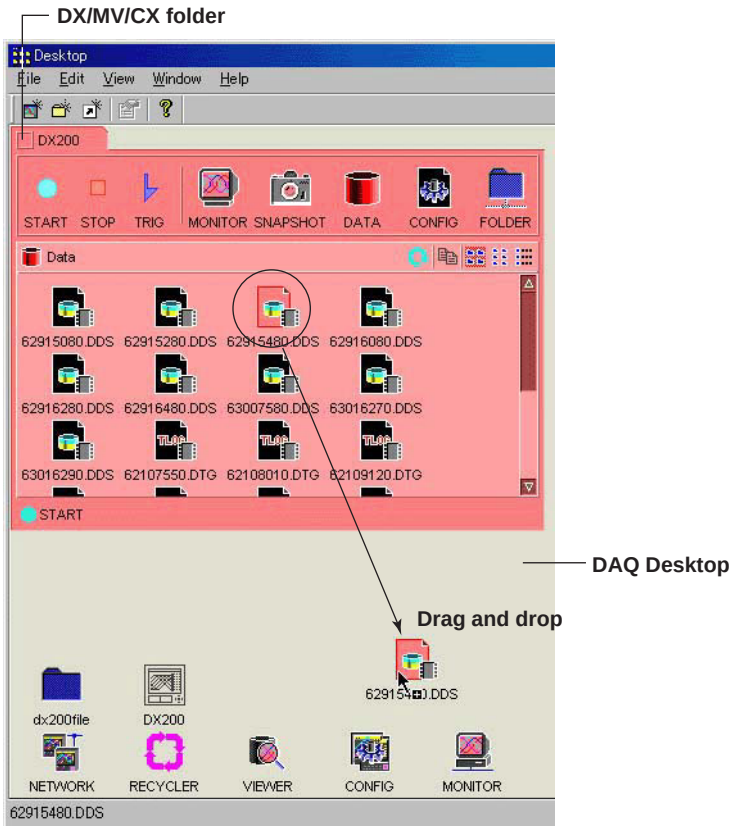
- **Display example when details is selected**



Note

When viewing the contents of the external storage medium, only the data files in the directory that was specified as the data save destination on the DX/MV/CX are listed.

Copying Files to the DAQ Desktop



You can copy the file that is located in the DX/MV/CX to the DAQ Desktop by dragging and dropping the file onto the DAQ Desktop.

Copying and pasting files

To copy the files, select the files and select [Edit] - [Copy].

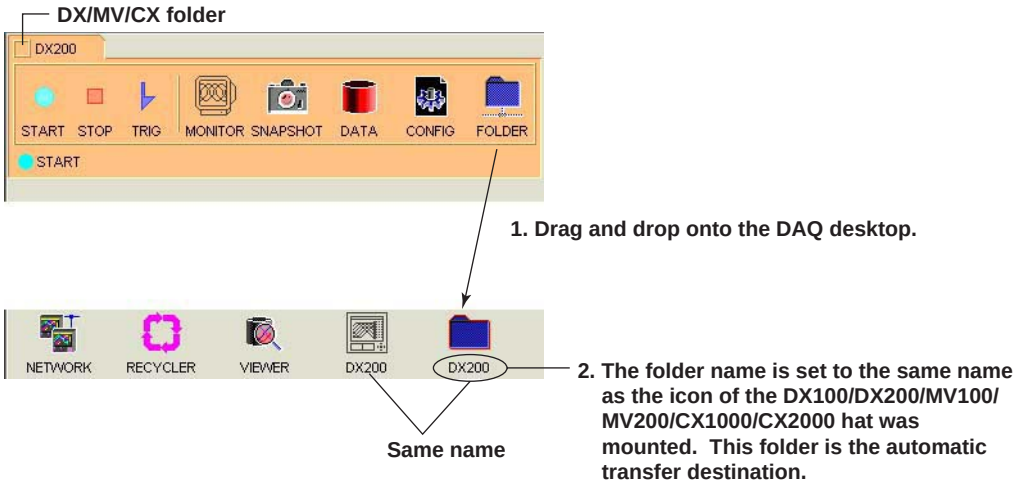
The files that are copied can be pasted to the active window by selecting [Edit] - [Paste].

Note

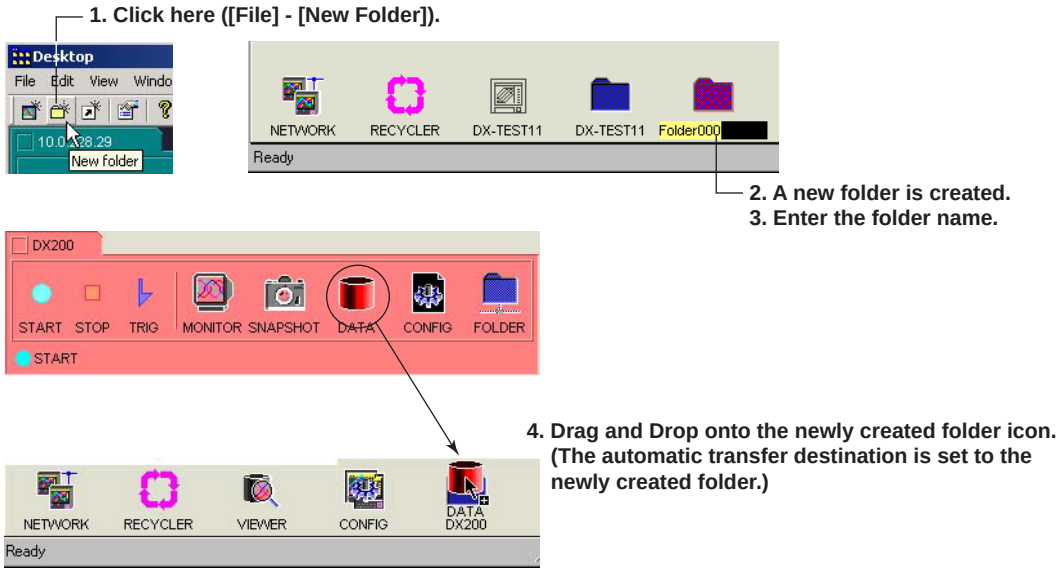
When the data are reloaded, the files residing the copy buffer are cleared.

2.5 Automatically Transferring Data in the DX/MV/CX

Setting the Automatic Transfer Destination

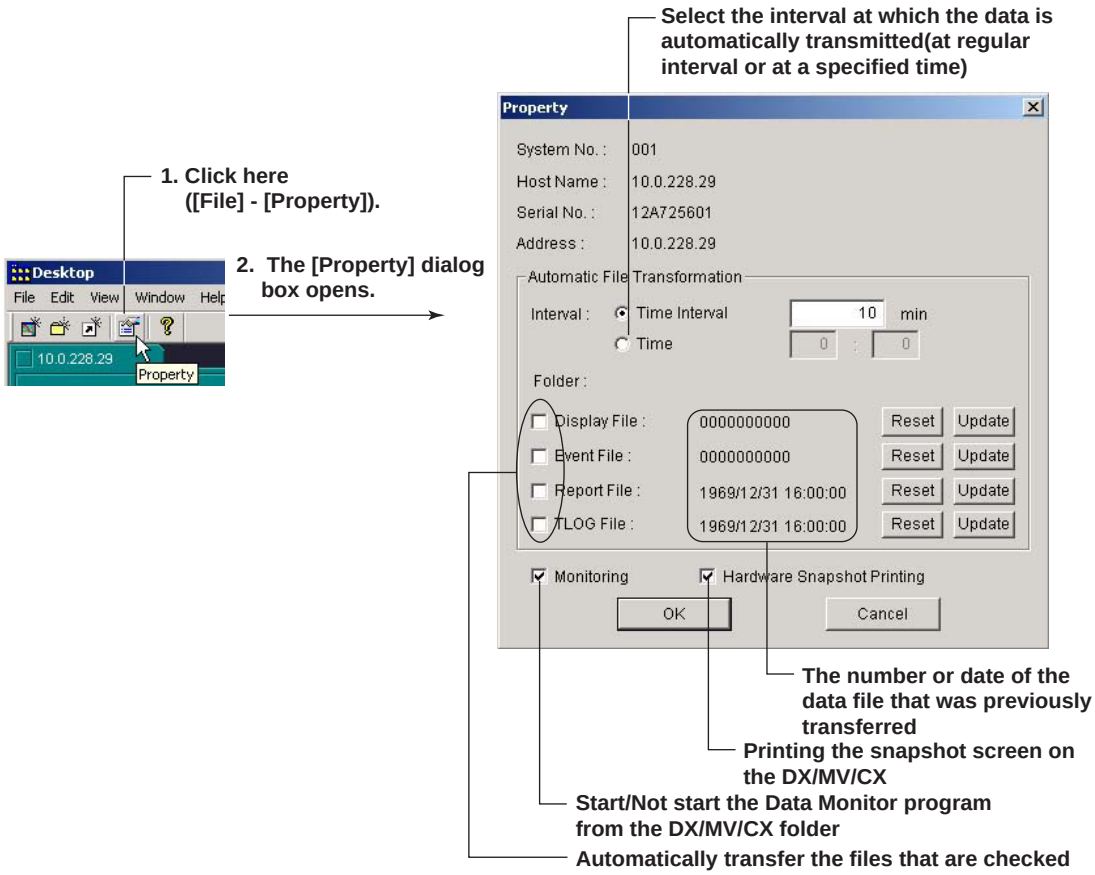


Renaming the automatic transfer destination folder



The data residing in the internal memory or external storage medium of the DX/MV/CX can be automatically transferred to the specified folder on the PC.

Selecting the Files to be Automatically Transferred



Files that can be automatically transferred

The following files residing in the internal memory or the external storage medium of the DX100/ DX200/MV100/MV200/CX1000/CX2000 can be automatically transferred:

- Display data file
- Event data file
- Report file
- TLOG file

Resetting

All existing files of the selected types are automatically transferred at the time of the data transfer immediately after the [Reset] button is clicked.

Updating

All files of the selected types that are created after the [Update] button is clicked are automatically transferred during the next data transfer.

Monitoring

Select whether or not to start the Data Monitor program from the DX/MV/CX folder. If you deselect the check box, you will not be able to select the MONITOR icon of the DX/MV/CX folder.

Note

- If the DAQEXPLORER is terminated with some files still selected to be transferred (denoted on each file by a check mark), the selected files will be transferred when the first data transfer is performed once the DAQEXPLORER has been restarted.
- The property icon ([File] - [Property]) cannot be selected unless the DX/MV/CX folder is active (the DX/MV/CX folder is selected).

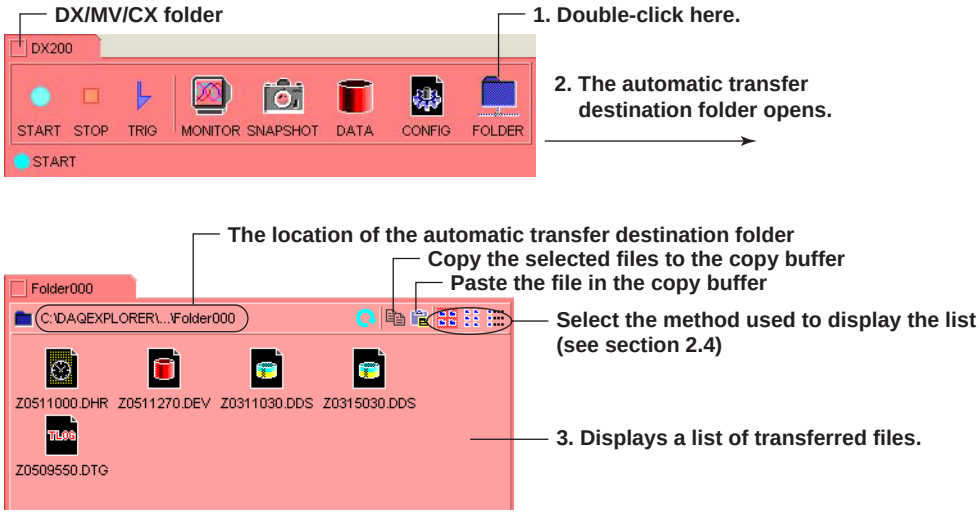
Printing the Snap Shot Screen on the DX/MV/CX

If you select the "Hardware Snapshot Printing" check box on the properties on the previous page, screen snapshots taken on the DX, MV, or CX are automatically printed out on the specified printer. For printer settings, choose File > Print Setup.

Data Conversion

If the optional auto file conversion function (/XF1) is installed, you can automatically create conversion files from the automatically transferred files.

Confirming the Transferred Files



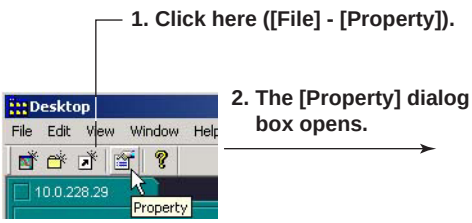
You can also open the above folder by double-clicking the automatic transfer destination folder located on the DAQ Desktop.

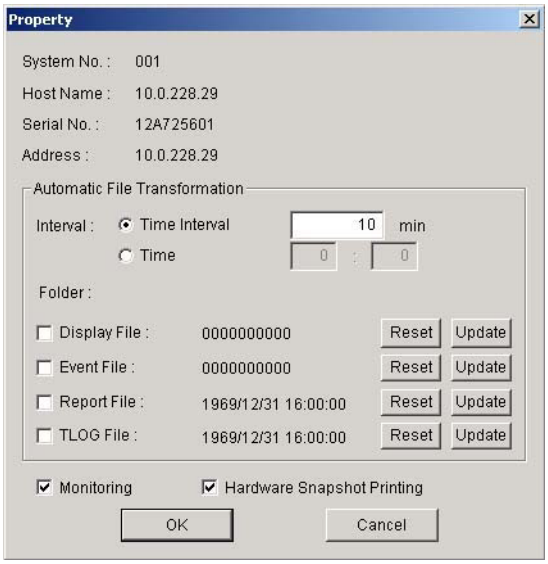
Note

When the list of data residing in the internal memory or external storage medium of the DX100/DX200/MV100/MV200/CX1000/CX2000 is displayed, data that have been transferred are indicated with red check marks.

2.6 Viewing the Property and Version Information

Property





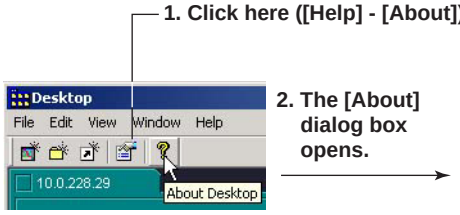
The properties of the active DX100/DX200/MV100/MV200/CX1000/CX2000 are displayed. The following items are displayed:

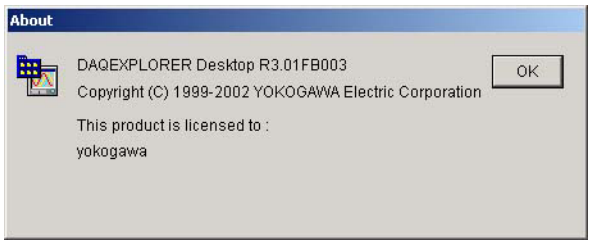
System No.: Number used on the Data Monitor
Host Name: DX100/DX200/MV100/MV200/CX1000/CX2000 host name
Serial No.: DX100/DX200/MV100/MV200/CX1000/CX2000 serial number
Address: DX100/DX200/MV100/MV200/CX1000/CX2000 IP address or host name
Interval: Automatic transfer interval of data (10 to 120 minute range)
Folder: Automatic transfer destination for the data
Reset: Transfer all existing data files
Update: Transfer only newly created data files.
Monitoring: Use/Not use the Data Monitor program.
Interval: Interval at which the data is automatically transmitted (at regular intervals or at a specified time)
Hardware Snaoshot Printing: Whether or not screen snap shots taken on the DX/MV/CX are automatically printed

Note

The property icon ([File] - [Property]) cannot be selected unless the DX/MV/CX folder is active (the DX/MV/CX folder is selected).

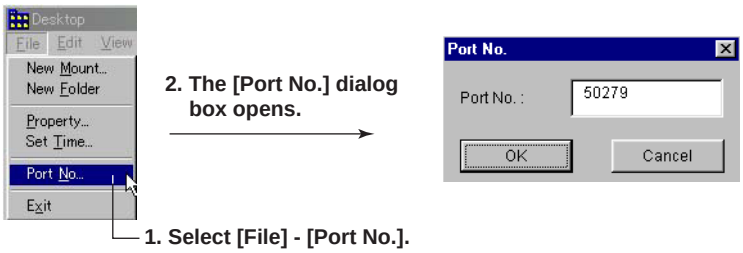
Version Information





The version information of the DAQ Desktop is displayed.

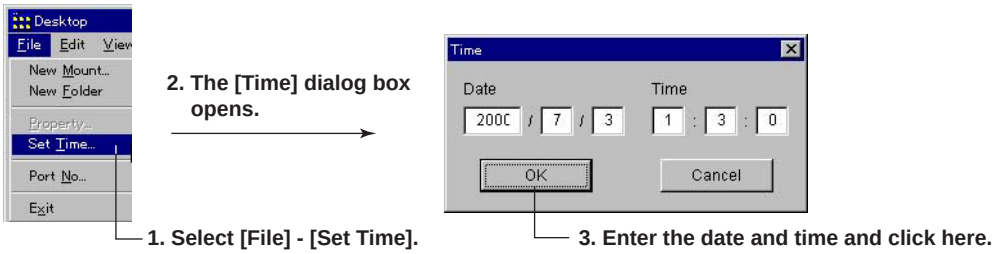
2.7 Confirming the Port Number Setting the Time on the DX/MV/CX



Note

The above dialog box can be used to change the port number. However, please consult your network administrator when changing the port number.

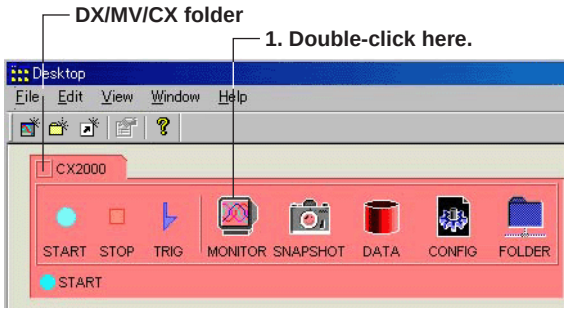
Setting the Time on the DX/MV/CX

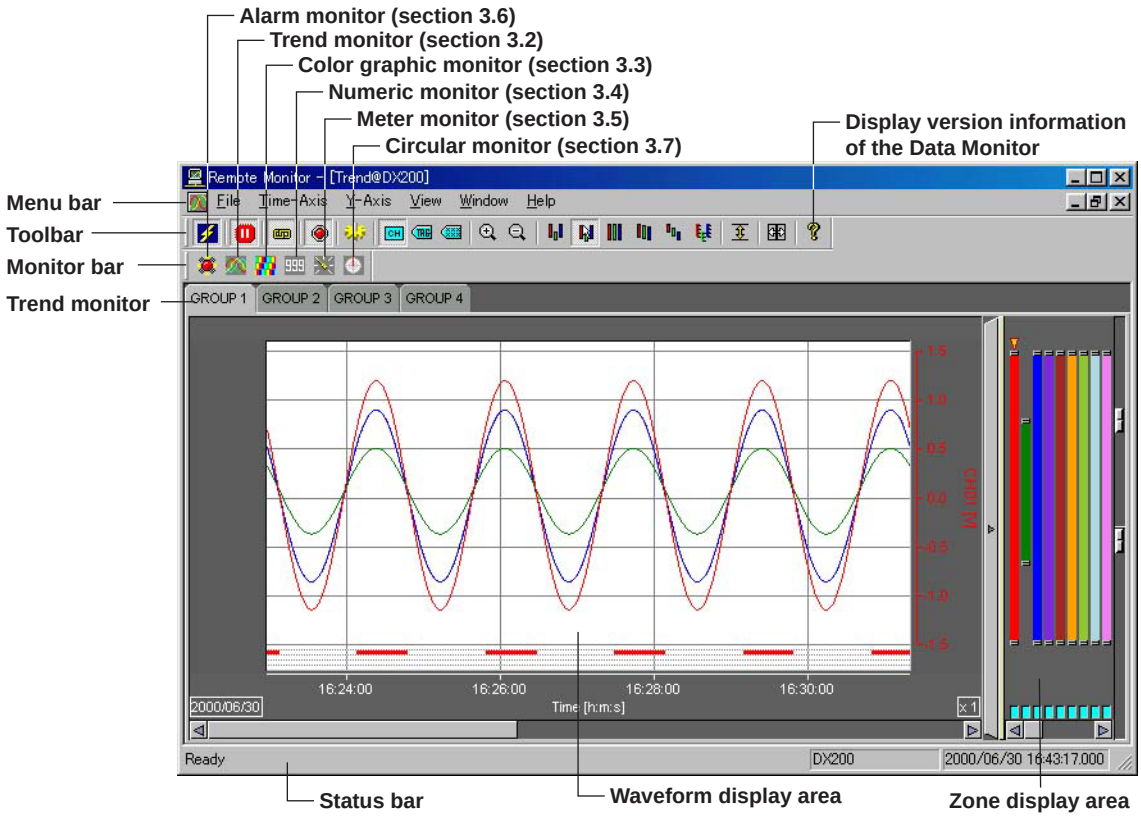


Sets the date and time of all mounted DX100s, DX200s, MV100s, MV200s, CX1000s, and CX2000s at once.

3.1 Starting the Data Monitor

Starting the Data Monitor (From the DX/MV/CX Folder)





The Data Monitor can be used to monitor the measured/computed data and the alarms of the DX100/DX200/MV100/MV200/CX1000/CX2000. The following six monitoring methods are available:

- Alarm monitor
- Trend monitor
- Color graph monitor
- Numeric monitor
- Meter monitor
- Circular monitor

Toolbar, monitor bar, and status bar

Clicking [View] - [Tool Bar], [Monitor Bar], or [Status Bar] from the menu bar displays the corresponding bar in the window. The bar will disappear if the check is removed.

Note

- You cannot launch the Data Monitor using the MONITOR icon, if the Data Monitor is already running.
- You can monitor the data on the Data Monitor, even if the data acquisition to the internal memory of the DX/MV/CX is stopped.
- The trend screen is initially displayed when the Data Monitor is started.
- The DX/MV/CX folder is displayed by double-clicking the DX/MV/CX icon on the DAQ Desktop.
- If the connection conditions are saved by selecting [File] - [Save], they will be restored the next time the Data Monitor is opened.

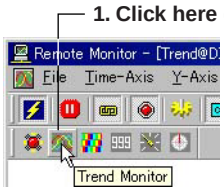
Starting the Data Monitor (From the Desktop)

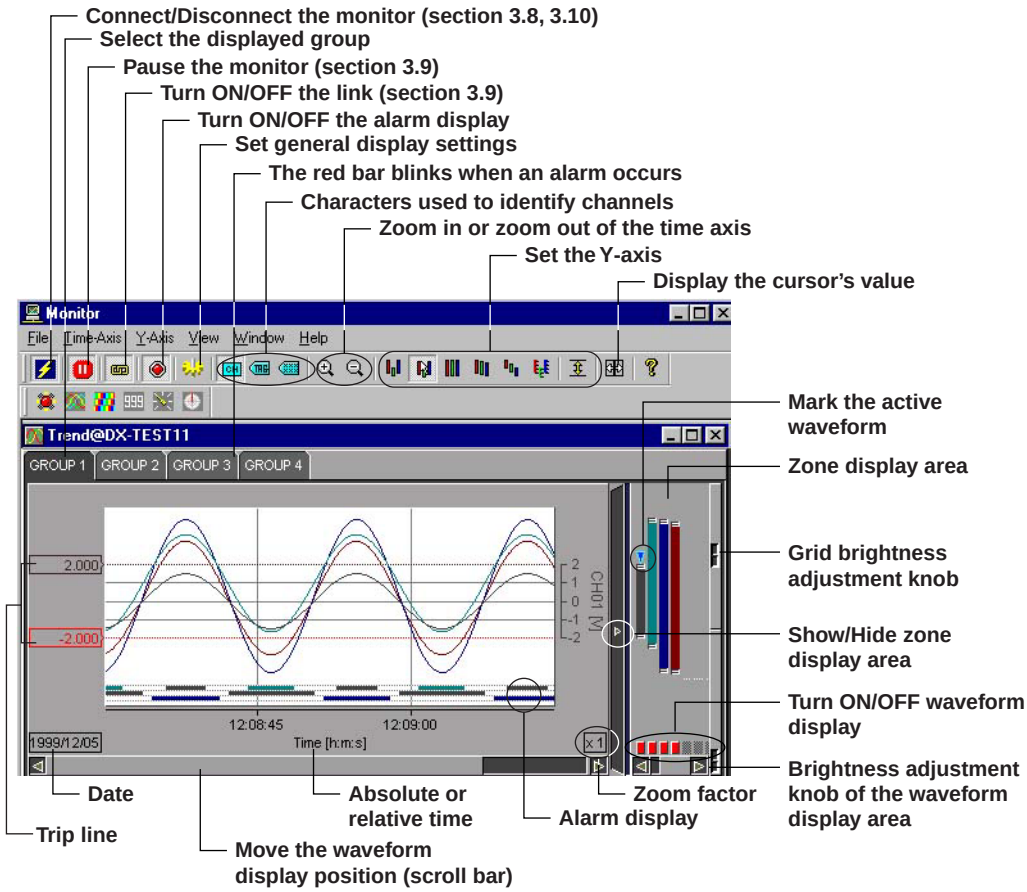
1. Double-click here.

For the operations that follow, see section 3.8, “Connecting Communications between the Data Monitor and the DAQ Desktop.”

3.2 Displaying the Trend

Displaying the Trend

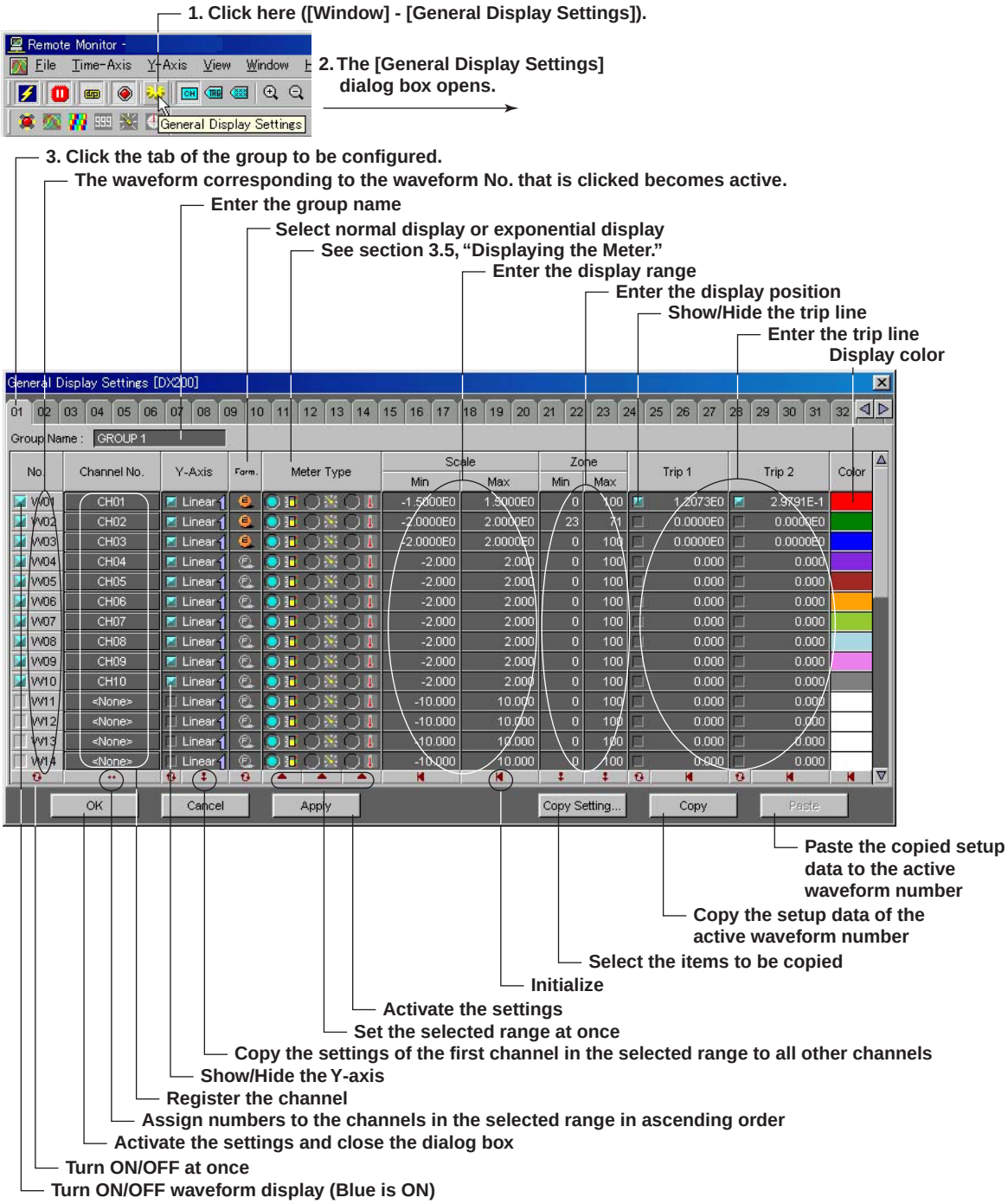




Select the displayed group

Select the group for which the trend is to be displayed from the groups specified in [General Display Settings]. The registration of channels to groups is done at [General Display Settings] - [Channel No.].

General Display Settings



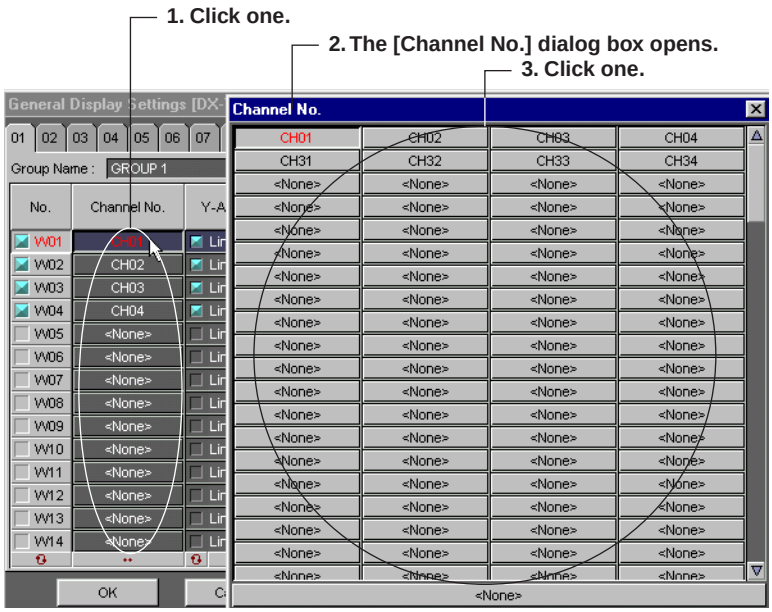
Group

A maximum of 50 groups can be set. A maximum of 32 channels can be registered in one group.

Turn ON/OFF the display

Check the box of the waveform number to be displayed. This is synchronized to the ON/OFF button of the waveform display of the zone display area.

Registering the channel



Types of Y-axis and turning ON/OFF the Y-axis

Select linear or logarithmic by clicking the Y-axis display area. If [Multi-Axis Zone] (page 3-7, Setting the Y-axis) is selected, you can select whether or not to display the Y-axis. The Y-axis of the waveform for which the check box is shown in [blue] will be displayed.

Scale (display range)

The range of minimum and maximum values is from -999999999 to 999999999, excluding the decimal point.

Click the scale value display area to enter values.

Zone (display position)

The range is as follows:

- Minimum value: 0 to 99%
- Maximum value: 1 to 100%

Specify the waveform display position by taking the bottom edge of the waveform display area of the trend display screen to be 0% and the top edge to be 100%. Click the zone display area to enter values.

Trip line

Two trip lines (trip 1 is red, trip 2 is blue) can be set for each waveform. Only the trip lines of the active waveform are displayed on the trend screen. However, on the auto zone display screen (“Setting the Y-axis” on page 3-7), the trip lines of all displayed waveforms that are checked are displayed.

When the monitor is paused (section 3.9), you can change the position of the trip line by dragging it.

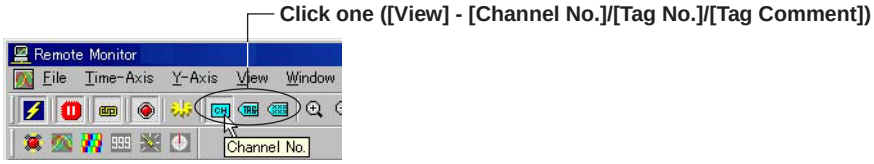
Display color

You can select the color of each waveform. To create custom colors, click the [Define Custom Colors] button in the [Color] dialog box.

Copy/Paste

The parameters that are checked in the [Copy Setting] dialog box, that opens when the [Copy Setting] button is clicked, are copied.
When the [Copy] button is clicked, the settings of the waveform corresponding to the waveform No. that was activated (displayed in red) are copied. When the [Paste] button is clicked, the settings are copied to the waveform corresponding to the waveform No. that was activated.

Selecting the Characters Used to Identify Channels



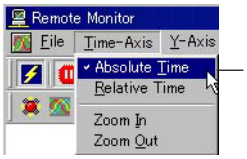
Select the character string used to identify the channel from channel No., tag No., and tag comment. The selected character string will be used as a label to indicate the waveform name. The string can be registered on the DX100/DX200/MV100/MV200/CX1000/CX2000 directly or by using the Configurator.
If [Tag No.] is selected the first eight characters of the registered character string are used. If [Tag Comment] is selected all the characters are used.

Note

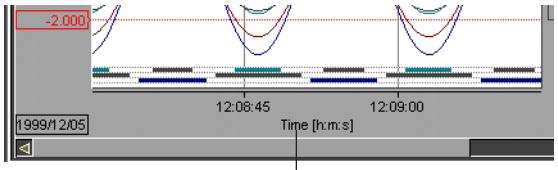
When the identification string is switched, the channel character string displayed on each monitor, [Cursor Value] window, and [General Display Setting] window will change accordingly.

Setting the Time Axis

Selecting absolute or relative time display



1. Select [Time Axis] - [Absolute Time] or [Relative Time] from the menu bar.



2. The specified time axis is displayed.

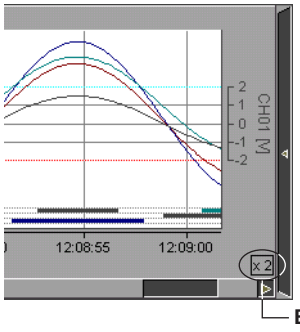
Absolute Time: Displays the time.
Relative Time: Displays the relative time from the first data point.

Note

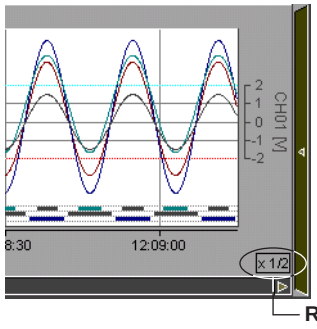
The time information display of the cursor's value display is set to the specified setting (absolute or relative).

Zooming in or zooming out of the time axis

- **Zoom In Example**

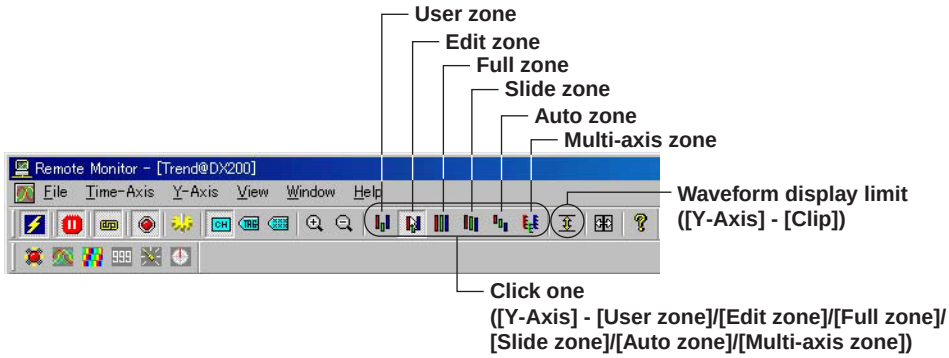


- **Zoom Out Example**



Setting the Y-axis

Selecting the waveform display zone



Select from the following list of choices:

For the display examples of each zone, see the next page.

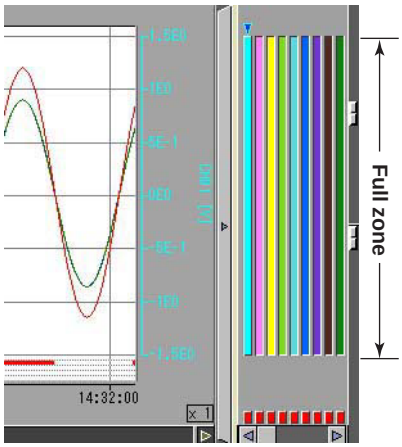
- User zone: Each waveform is displayed in the range specified in [Zone] under the [General Display Setting] (the zone cannot be changed on the trend display screen).
- Edit zone: Each waveform is displayed in the range specified in [Zone] under the [General Display Setting] (the zone can be changed on the trend display screen).
- Full zone: Display all waveforms using full zones.
- Slide zone: Display the waveforms in a cascade fashion from the top to the bottom of the waveform display area.
- Auto zone: Display the waveforms by equally dividing the waveform display area by the number of displayed waveforms.
- Multi-axis zone: Display the Y-axis of multiple waveforms.

Note

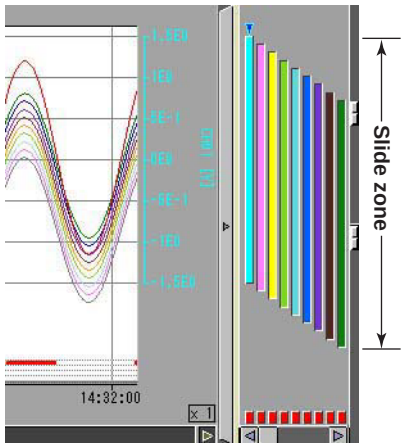
If the waveform display zone is set to some setting other than multi-axis zone and auto zone, only the Y-axis of the active waveform is displayed.

Examples of the Various Zone Settings

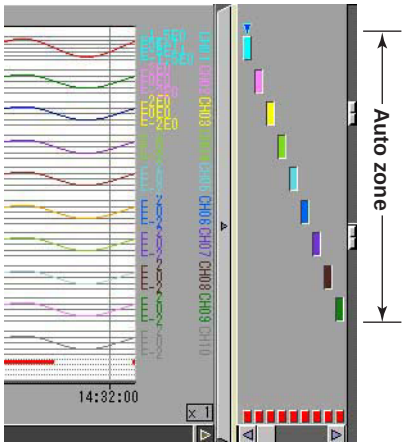
- Full zone



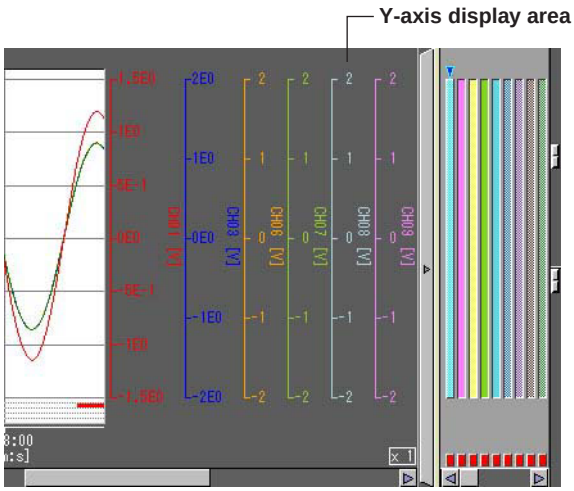
- Slide zone



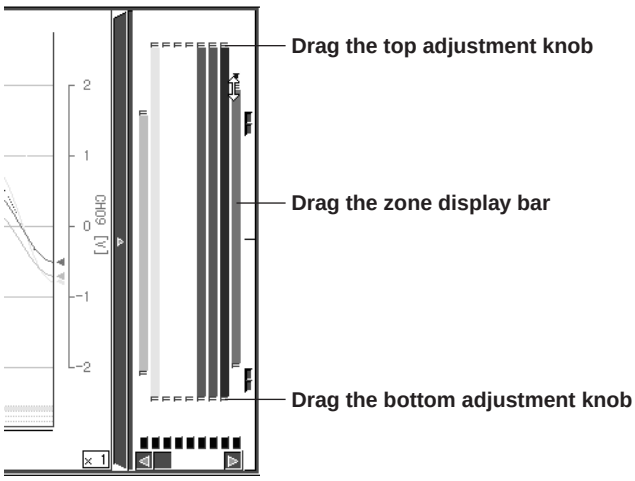
- Auto zone



- Multi-axis zone



Editing zones

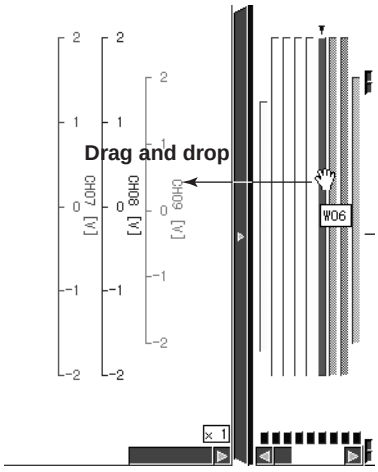


You can change the waveform display zone on the trend display screen by clicking the edit zone icon or by selecting [Y-Axis] - [Edit Zone].
The size of the zone can be changed by dragging the top and bottom adjustment knobs. The entire zone can be moved by dragging the zone display bar.
The zones that are set in [Edit Zone] are reflected in the [Zone] setting of the [General Display Settings].

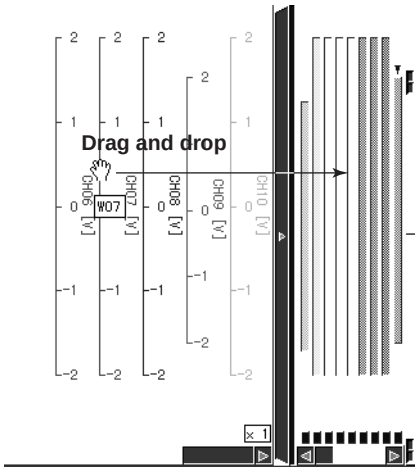
Displaying multiple Y-axis

When multi-axis zone is selected, the Y-axis scales corresponding to the [Y-Axis] boxes in the [General Display Settings] that are checked will be displayed.
The Y-axis can only be added or deleted by dragging or dropping when the monitor is paused.

- Adding a Y-axis



- Deleting a Y-axis



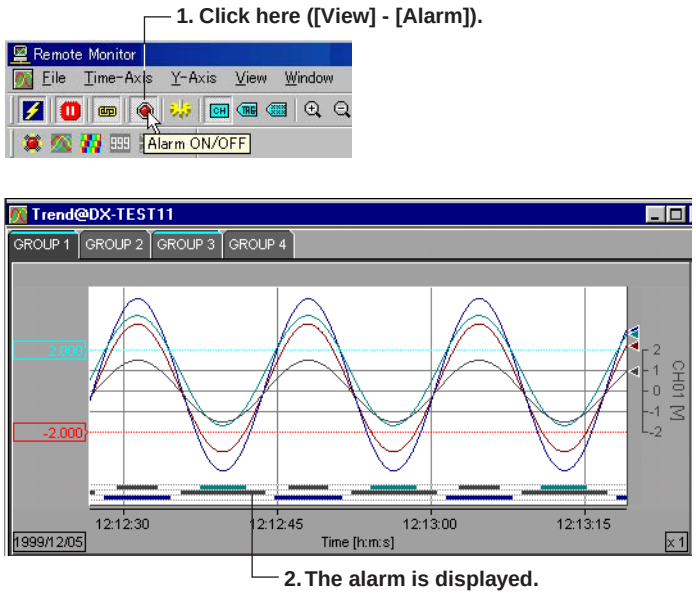
Waveform display limit (clip)

When the waveform display limit is enabled by clicking the clip icon or by selecting [Y-Axis] - [Clip], the Y-axis display range of the waveform are limited to the minimum and maximum values that were specified under [General Display Settings] - [Scale]. Measured values that are less than the minimum value are set to the minimum value and values that are greater than the maximum value are set to the maximum value.

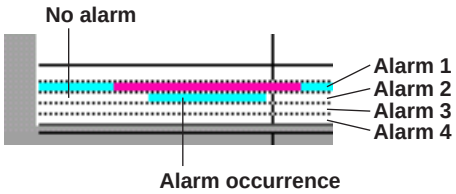
- **Example in which Display Limit is Enabled**

- **Example in which Display Limit is Disabled**

Turning ON/OFF the Alarm Display



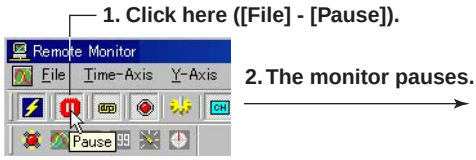
Alarm display

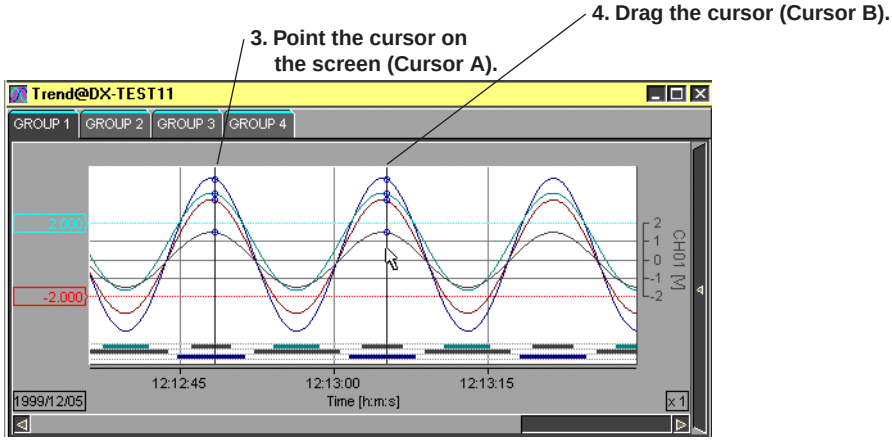


The alarm of the active waveform is displayed in front.

Showing/Hiding Cursors

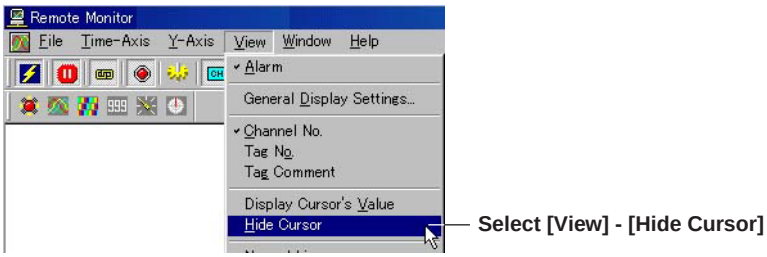
Showing the cursor



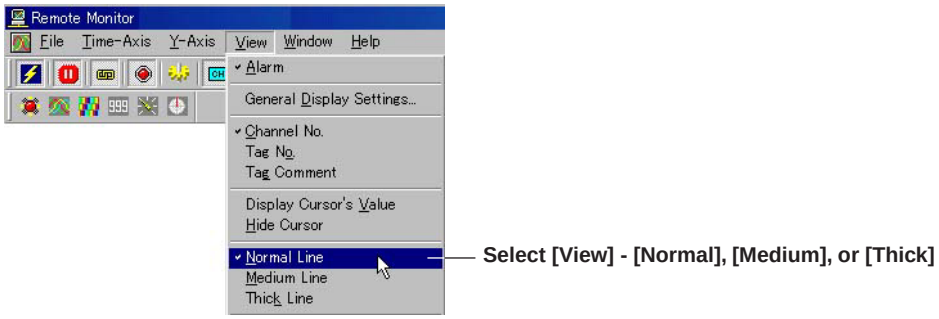


When the mouse is pointed on the screen, Cursor A and Cursor B are overlapped.
Cursors can be displayed only when the monitor is paused. Pause the monitor before pointing the cursor on the trend screen.

Hiding the cursor

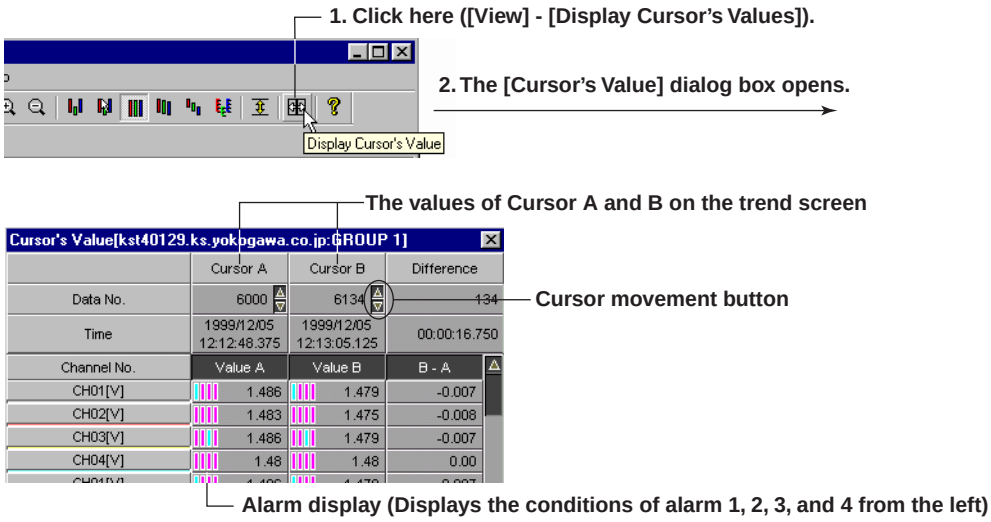


Selecting the Line Type of the Waveform (Normal/Medium/Thick)



You can select the thickness of the line of the displayed waveform from Normal, Medium, and Thick.

Displaying Cursor's Values



A list of Cursor A and B values and their differences on the trend screen is displayed. You can change the values of Cursor A and B by clicking the cursor movement buttons.
When the alarm display is turned ON, the alarm conditions are displayed. When an alarm is in effect, the indicator is red. When it is not, the indicator is green. If the alarm is not set, the indicator is black.

Displaying numeric values of abnormal data

The abnormal data are displayed as follows:

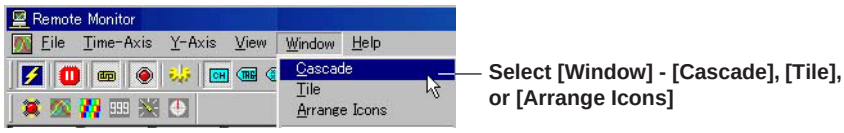
+OVER: Measured/computed data are over the positive limit
-OVER: Measured/computed data are under the negative limit
LACK: Computation error or data dropout

Note

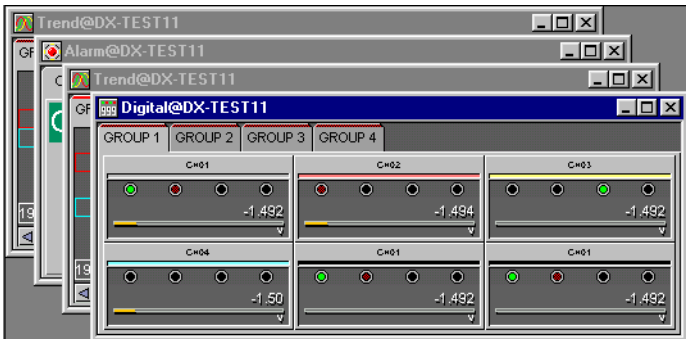
When a cursor is not displayed on the trend screen, the cursor's value display area becomes blank.

Setting the Window

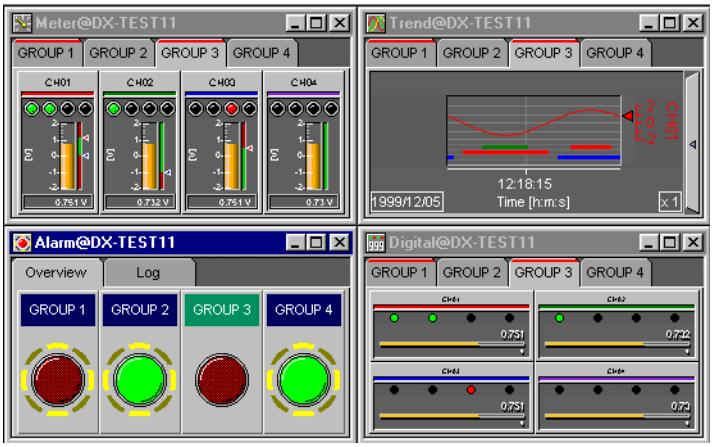
Cascade/Tile/Arrange Icons



- **Example of a Cascading Display**

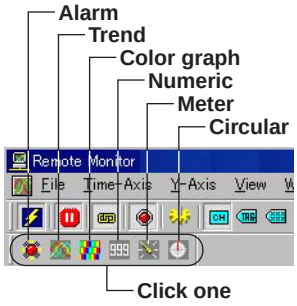


- **Example of a Tiled Display**



- **Example of Arranged icons**

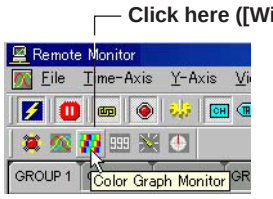
Displaying a new trend monitor, color graph monitor, numeric monitor, meter monitor or circular monitor

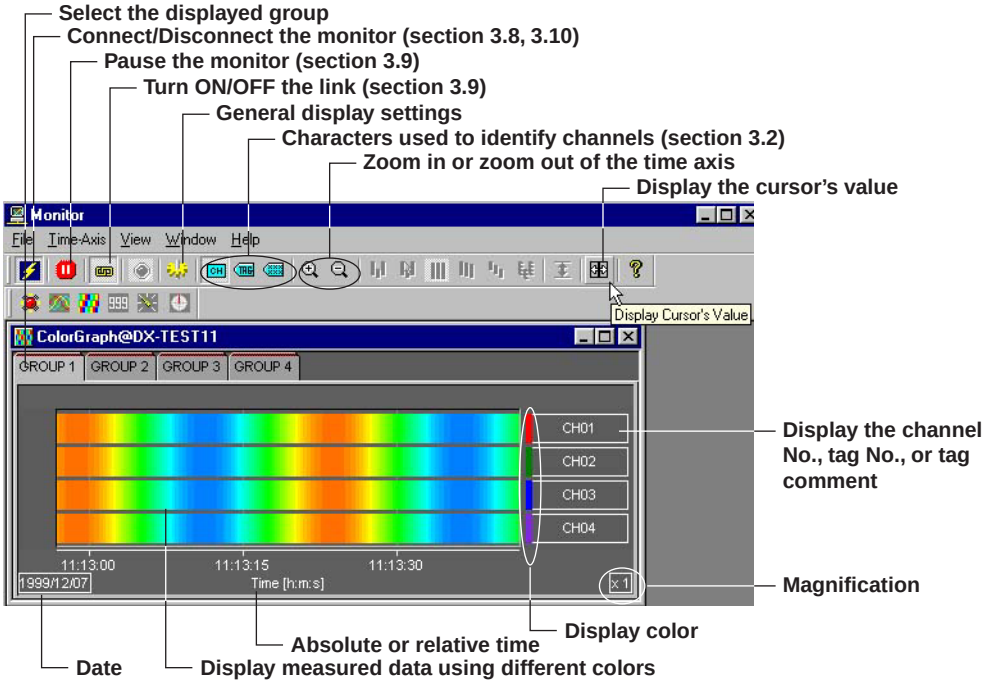


A new monitor opens every time the icon is clicked. This is useful when you wish to view multiple groups simultaneously.

3.3 Displaying the Color Graph

Displaying the Color Graph





General Display Settings

The parameters in the [General Display Settings] dialog box related to the color graph display are as follows:

- Turn ON/OFF waveform display: The color graph of the waveform that has channels registered and is turned ON is displayed.
- Registering the channel: The measured or computed data of the registered channel can be displayed.
- Setting the displayed range: By assigning 50 different colors from the minimum to the maximum values of the scale, the measured values are displayed using those colors. The measured data are colored in the following order: blue (minimum value), light blue, green, yellow, and red (maximum value).
- Display color

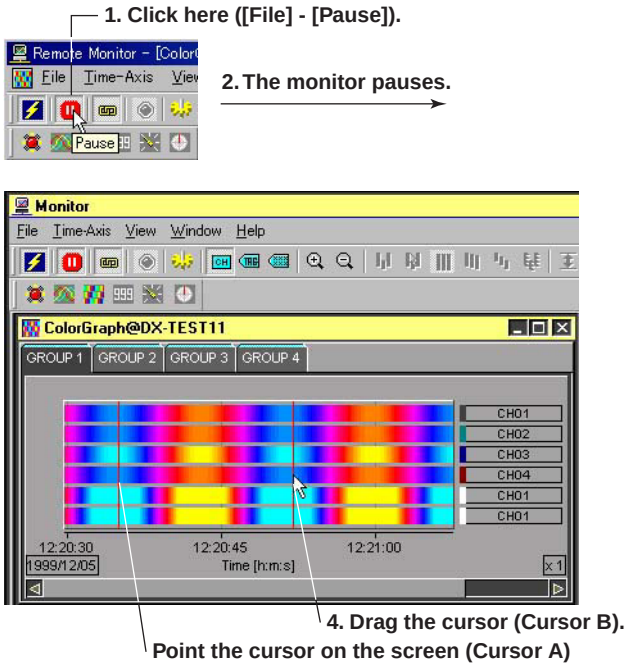
For details related to the setting procedures, see "General Display Settings" in section 3.2, "Displaying the Trend."

Setting the Time Axis and Cursor Display

Selecting absolute or relative time display, zooming in or out of the time axis, displaying cursor's values

For details, see "Setting the time axis" and "Displaying Cursor's Values" in section 3.2, "Displaying the Trend."

Showing the cursor



Cursors can be displayed only when the monitor is paused. Pause the monitor before pointing the cursor on the screen.

Hiding the cursor

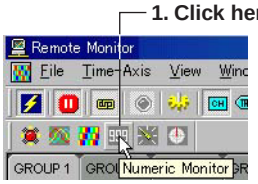
For details, see "Hiding the Cursor" in section 3.2, "Displaying the Trend."

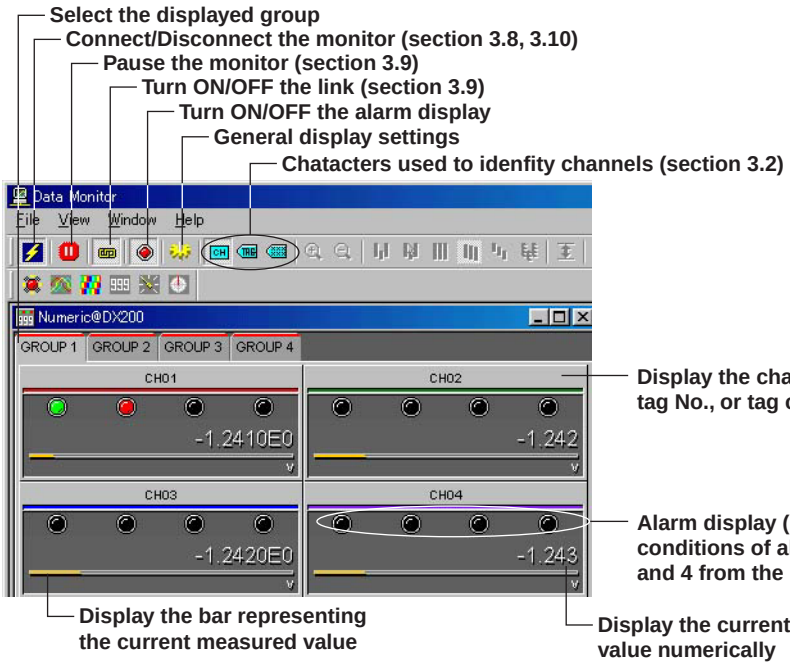
Setting the Window

For details, see "Setting the Window" in section 3.2, "Displaying the Trend."

3.4 Displaying Numeric Values

Displaying Numeric Values





General Display Settings

The parameters in the [General Display Settings] dialog box related to the numeric display are as follows:

- Turn ON/OFF waveform display
- Registering the channel
- Setting the displayed range: The bar representing the current measured value is displayed by normalizing it to the minimum and maximum values of the scale.

For details related to the setting procedures, see “General Display Settings” in section 3.2, “Displaying the Trend.”

Turn ON/OFF the Alarm Display

The alarm conditions of alarms 1 to 4 are displayed on the screen by clicking the alarm display icon or selecting [View] - [Alarm] and turning ON the alarm display. When an alarm is in effect, the indicator is red. When it is not, the indicator is green. If the alarm is not set, the indicator is black.

Setting the Window

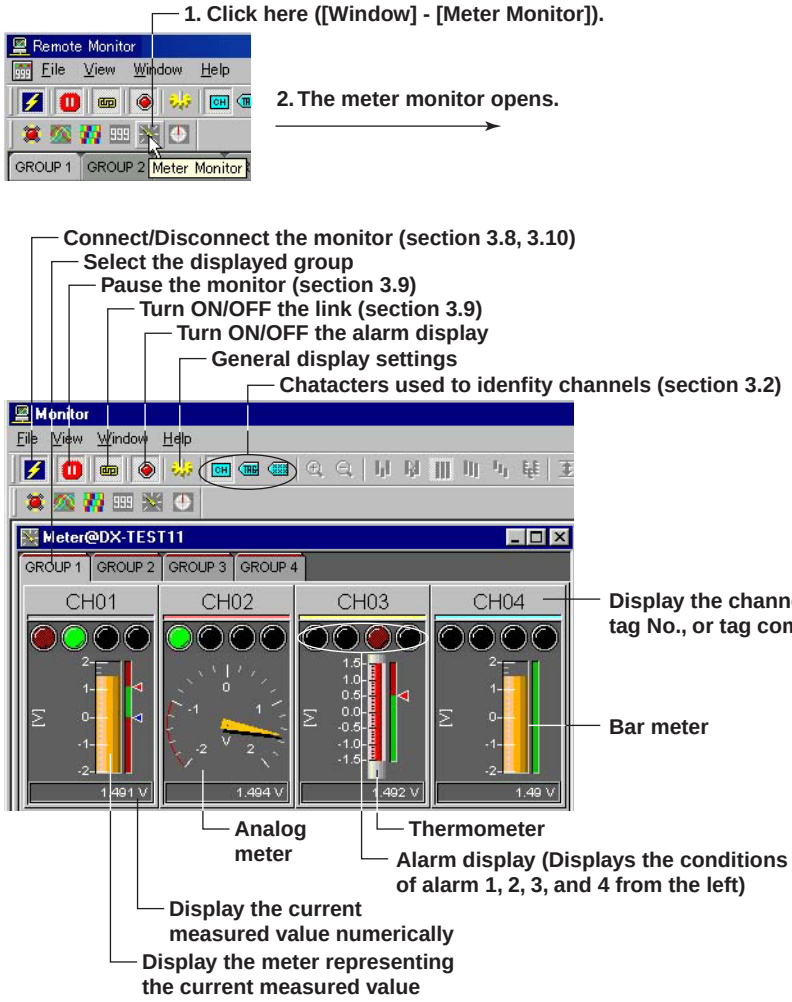
For details, see “Setting the Window” in section 3.2, “Displaying the Trend.”

Note

For the numeric display of abnormal data, see page 3-12.

3.5 Displaying the Meter

Displaying the Meter



Note

For the numeric display of abnormal data, see page 3-12.

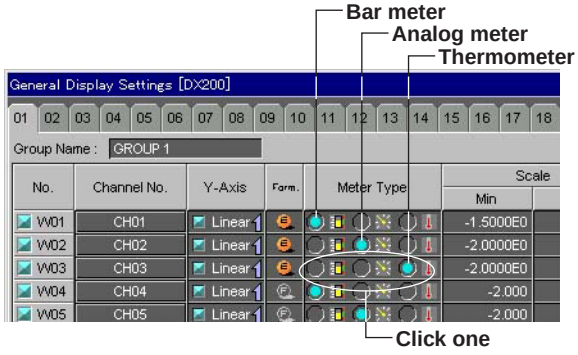
General Display Settings

The parameters in the [General Display Settings] dialog box related to the meter display are as follows:

- Turn ON/OFF waveform display
- Registering the channel
- Meter type: Select the meter from bar meter, analog meter, and thermometer.
- Setting the displayed range: The minimum and maximum values of the scale become the lower and upper limits of the meter scale.

For details related to the setting procedures, see “General Display Settings” in section 3.2, “Displaying the Trend.”

Selecting the meter type



Turn ON/OFF the Alarm Display

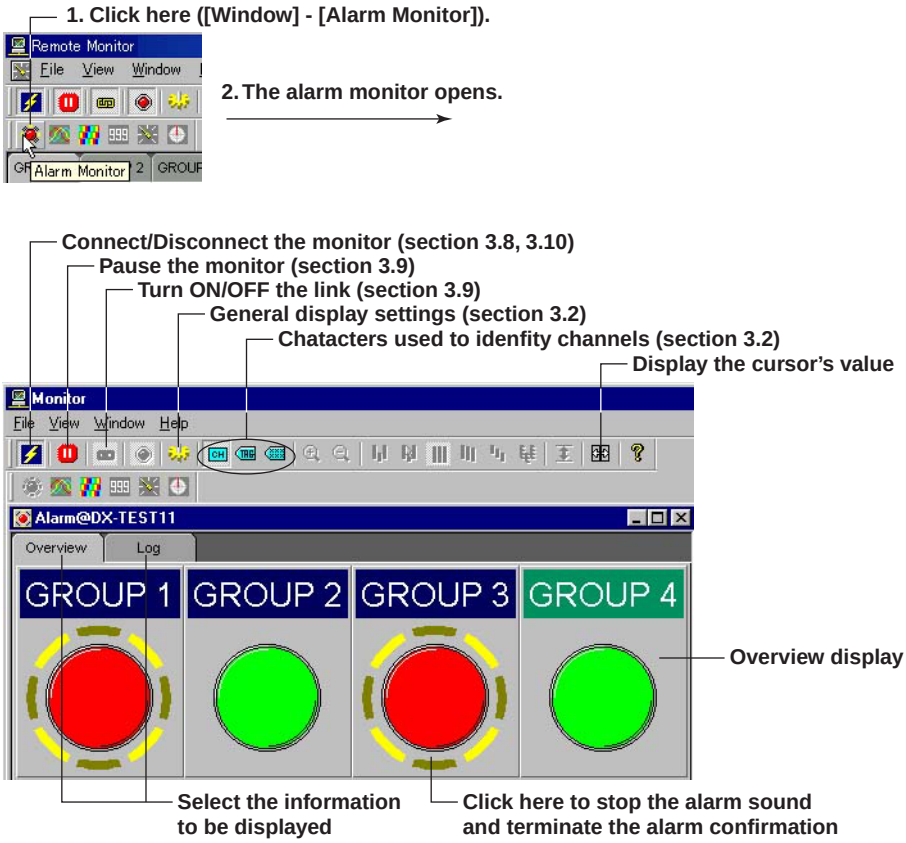
For details, see section 3.4, “Displaying Numeric Values.”

Setting the Window

For details, see “Setting the Window” in section 3.2, “Displaying the Trend.”

3.6 Displaying Alarms

Displaying Alarms



General Display Settings

The parameters in the [General Display Settings] dialog box related to the alarm display are as follows:

- Turn ON/OFF waveform display
- Registering the channel
- Group Name

For details related to the setting procedures, see "General Display Settings" in section 3.2, "Displaying the Trend."

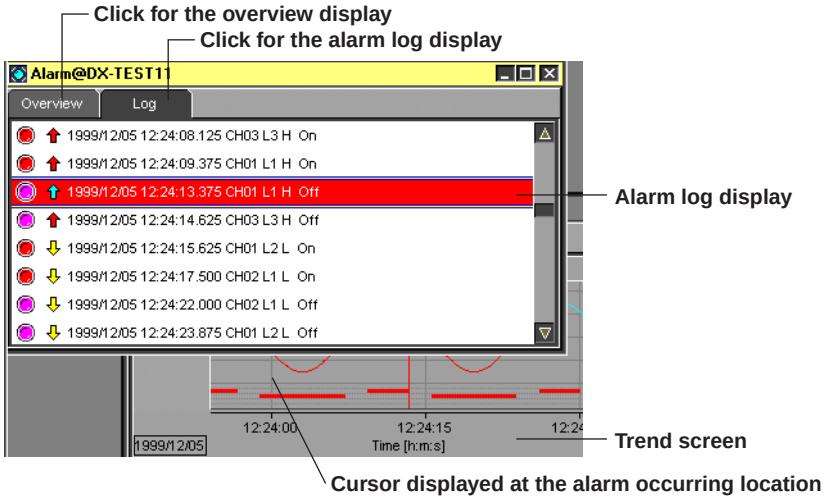
Turn ON/OFF the Alarm Sound

An alarm sound can be generated when an alarm occurs. To stop the alarm sound, confirm all alarms by clicking all groups in which alarms are occurring or select [View] - [Alarm Hold Reset].

Note

- Only one alarm monitor can be displayed for one connection. If you displayed multiple alarm monitors, select [File] - [Connect] to reconnect to the host. For details related to the connection, see section 3.7.
- To use the alarm sound, a sound source (sound card) must be installed on the PC.

Selecting the Information to be Displayed



Overview and log

The following two types of alarm displays are available:

- **Overview**

  The following four types of lamps are used to display the alarm conditions within the group:

  - Green lamp: No alarms are occurring.
  - Red lamp: An alarm is occurring.
  - Green lamp and blinking ring: No alarms are occurring, but there are alarms that have occurred in the past that have not been confirmed.
  - Red lamp and blinking ring: An alarm is occurring. In addition, there are alarms that have occurred in the past that have not been confirmed.

Note

By displaying the overview and clicking the group in which the alarm is occurring, the alarm can be confirmed. You can also confirm alarms by selecting [View] - [Alarm Hold Reset]. The blinking ring disappears when a confirmation is made.

- **Alarm log**

  Displays a list of the type, the time of occurrence and release, and the channel of the alarms that occurred in the past. A maximum of 100 alarm logs can be displayed.

  The symbols used in the alarm log are as follows:

  : Upper limit alarm
  : Lower limit alarm
  : Delay upper limit alarm
  : Delay lower limit alarm
  : Difference upper limit alarm (red)
  : Difference lower limit alarm (blue)
  : Upper limit on rate-of-change alarm
  : Lower limit on rate-of-change alarm
  : Deviation upper & lower limit
  : Deviation within upper & lower limits
  : Others

  The following operations are possible on the alarm log display when the monitor is paused.

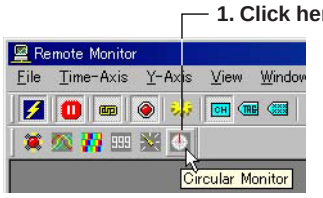
  - If an item is clicked, the cursor on the trend screen or the color graph screen will move to the corresponding time.
  - Scroll the displayed items

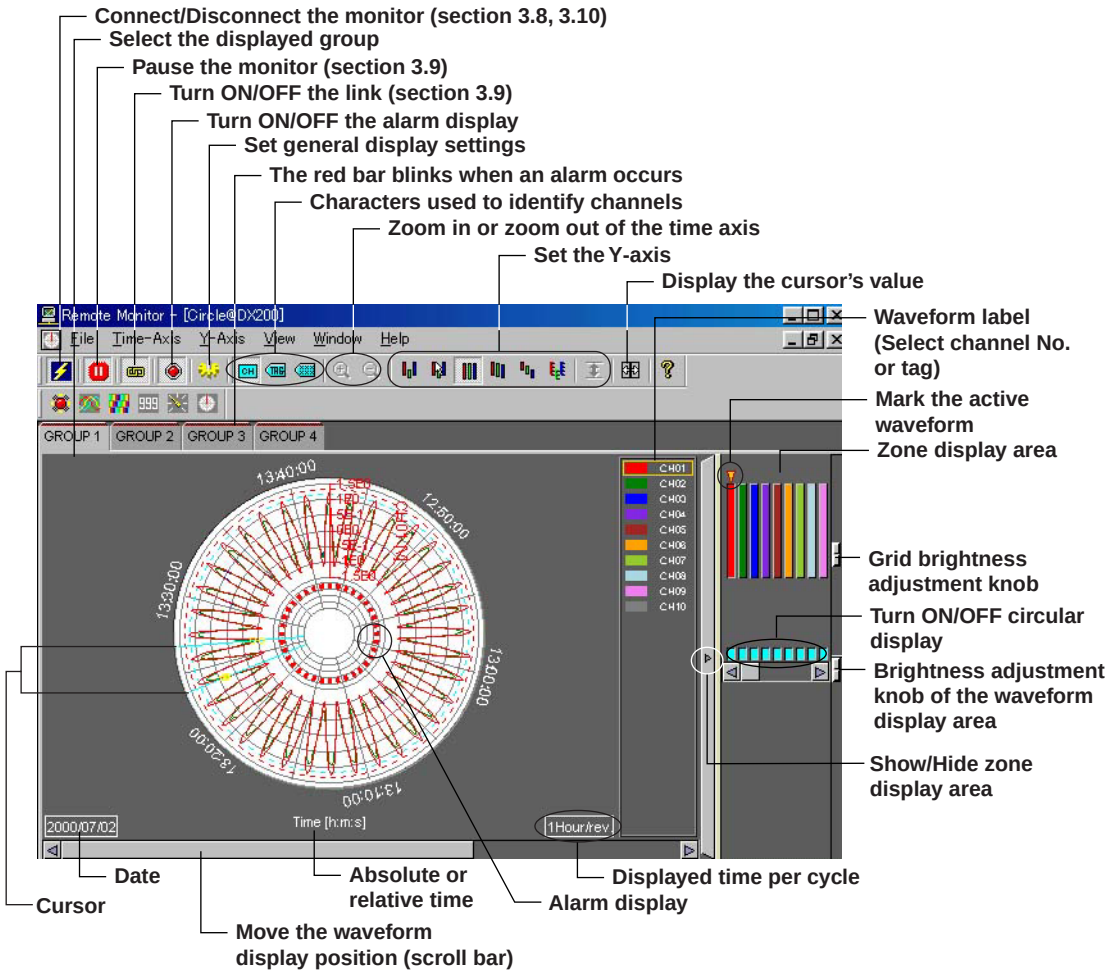
Displaying Cursor's Values and Setting the Window

For details, see "Displaying Cursor's Values" and "Setting the Window" in section 3.2, "Displaying the Trend."

3.7 Circular Display

Circular Display





General Display Settings

The parameters in the [General Display Settings] dialog box that are different between the circular display and the trend display (section 3.2) are as follows:

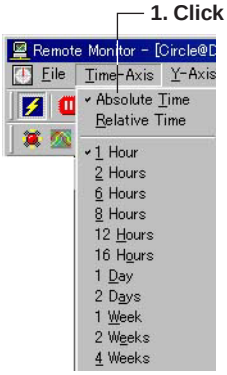
Trip line

The trip lines on the circular screen cannot be dragged and dropped.

You can change the position of the trip lines by changing the values in the [General Display Settings] dialog box.

Setting the Time Axis

Selecting absolute or relative time display



Note

The number of displayed data points for a single waveform is 1800. The time over which the measured data can be monitored on the circular screen depends on the scan interval and the step value (page 3-24).

Setting the Y-axis

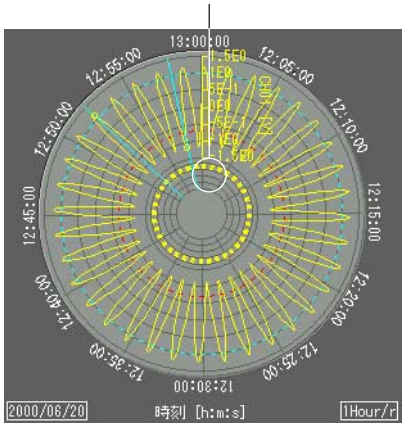
Waveform display limit

The circular screen always displays the waveform that is limited to the values between the maximum and minimum values of the Y-axis display range. The range is set using [Scale] in the [General Display Settings] dialog box.

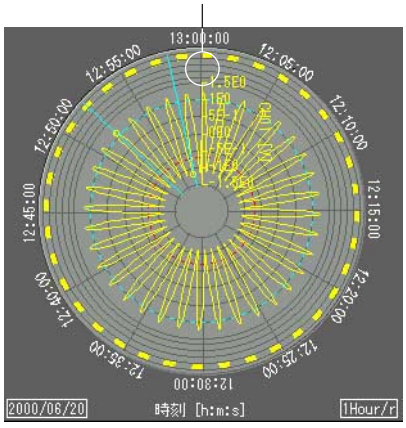
Alarm Display

You can select whether to display the alarm on the inside or the outside of the waveform display section of the circular screen.

Alarm Inside



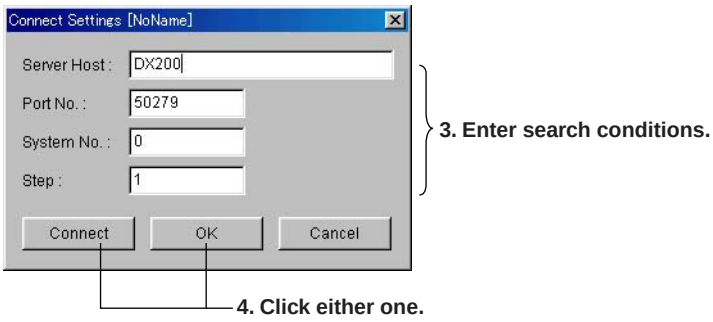
Alarm Outside



3.8 Connecting Communications between the Data Monitor and the DAQ Desktop

Connecting Communications

1. Select [File] - [New] from the menu bar. A trend monitor screen without data is displayed.
2. Select [File] - [Connect] or [Configuration] from the menu bar. The [Connect] dialog box opens.



Connection Conditions

Specify the following four items of the DAQ Desktop you wish to connect: Up to 16 DAQ Desktops can be connected. The maximum number of connections is 16.

- Host Name: The host name or IP address of the PC that is running the DAQ Desktop that is to be connected.
- Port No.: The port number to be used. The default value is 50279 (The number can be confirmed using Port No. as described in section 2.7).
- System No.: The number assigned by the DAQ Desktop to the mounted DX100/DX200/MV100/MV200/CX1000/CX2000. (The number can be confirmed using Property - System No. as described in section 2.6.)
- Step: Set the step value used to acquire data points from the host. For example, a value of 1 will result in every data point being acquired, a value of 2 will acquire every other data point, a value of 3 acquires every third data point, and so on. The default value is 1.

If the connection conditions are already specified, selecting [File] - [Connect] will connect the communications between the Data Monitor and the DAQ Desktop.

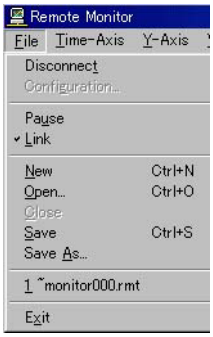
Connecting

Clicking the [Connect] button connects the communications between the Data Monitor and the DAQ Desktop. Clicking the [OK] button activates the specified information and closes the dialog box (not connected, yet). Clicking the [Cancel] button discards the specified information and closes the dialog box.

Note

- If the Data Viewer is launched by double-clicking the MONITOR icon of the DX/MV/CX folder, the communications between the Data Monitor and the DAQ Desktop are automatically connected.
- The port number must match the port number that was specified in the DAQ Desktop.
- Depending on the line condition, the connection may be stopped. In that case, reconnect to the host.
- If you clicked the [OK] button, you can click the [Connect/Disconnect] icon on the toolbar or select [File] - [Connect] to connect to the DAQ Desktop.

Saving the Connection Conditions



Select [File] - [Save As] or [Save]. The [Save As] dialog box opens. Specify the file name and the destination directory and click the [Save] button.

Note

- If the data monitor is started (connected) by double-clicking the MONITOR icon in the DX/MV/CX folder and you select [File] - [Save], the [Save As] dialog box does not appear and the file is saved to the following location:
  DAQEXPLORER-desktops-DAQStation folder - DX/MV/CX icon name
  The file extension is [rmt].
  In addition, at the time of reconnection, the conditions saved using [File] - [Save] (such as the type of displayed monitor and cascaded windows) are used to start the data monitor.

Connecting Using the Preexisting Connection Conditions

The following methods can be used to connect to the DAQ Desktop:

- Communication that is deactivated is resumed by clicking the connect icon on the toolbar or selecting [File] - [Connect].
- Select [File] - [Open] and specify the file in the [Open] dialog box to connect.

3.9 Pausing the Monitor and Turning ON/OFF the Link

Pausing the Monitor

The display data are continuously acquired even when the monitor is paused. Thus, when the monitor is restarted, the measured values acquired while the monitor was paused are also displayed.
The monitors that pause are those on the same connection as the active window.

Turn ON/OFF the Link

You can specify whether or not to link the group display operation of the data monitor (trend monitor, color graphics monitor, numeric monitor, meter monitor, and circular monitor) of the same connection.
When the link is turned ON and the displayed group is changed in one Data Monitor, the displayed groups in all monitors that have the link turned ON also change.

Note

- As default, all monitor links are turned ON.
- There is no link setting for the alarm monitor, because it displays all groups.

3.10 Stopping Communications between the Data Monitor and DAQ Desktop and Exiting the Data Monitor

Disconnecting from the DAQ Desktop

When you attempt to disconnect, a message, “Communication in progress. Cancel communications?” is displayed. Clicking the [OK] button stops communication with the active data monitor.
The communication is resumed by clicking the connect icon on the toolbar or selecting [File] - [Connect].

Exiting the Data Monitor

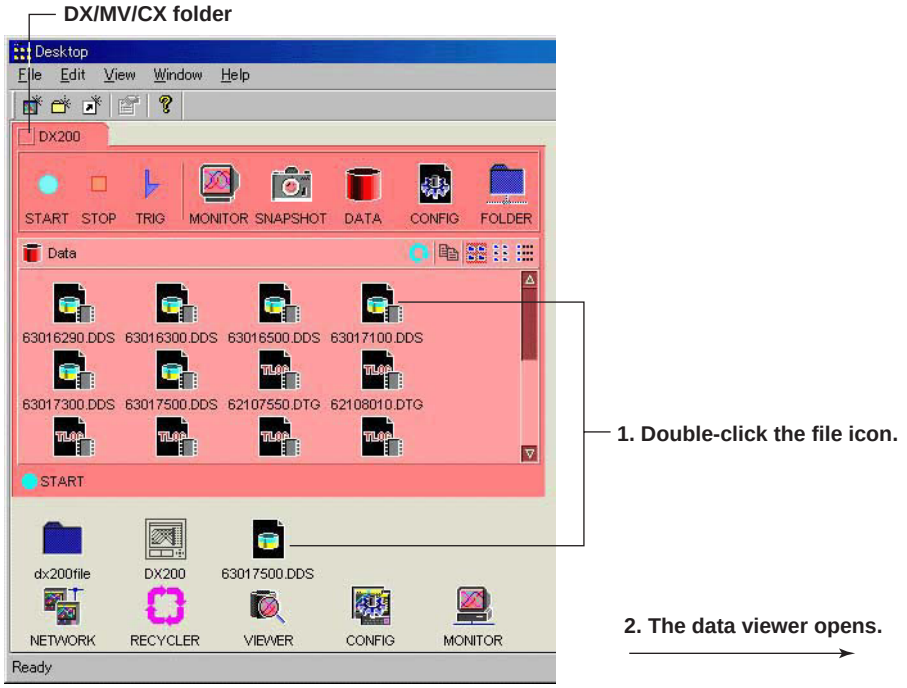
After stopping communications, select [File] - [Exit] or click the [×] button to exit the Data Monitor.
If you attempt to exit while the communication is active, a message, “Communication in progress. Cancel all communications?” is displayed. Clicking the [OK] button stops communication with the active data monitor. Then, carry out the exit operation again.

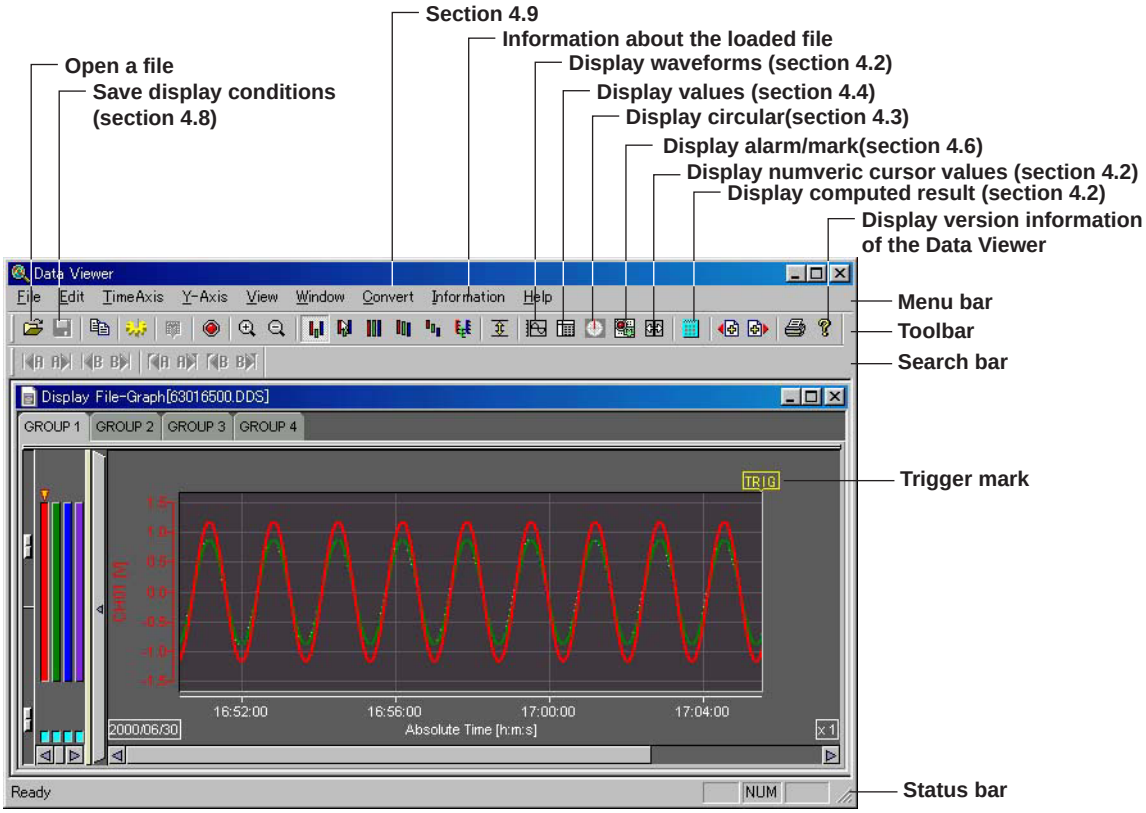
Note

[File] - [Connect] of the menu bar switches to [File] - [Disconnect] when the connection is activated.

4.1 Starting and Exiting the Data Viewer

Starting the Data Viewer





You can also start the program by selecting [Start] - [Programs] - [DAQEXPLORER] - [Viewer].
In addition, you can start the program from the desktop.
You can start multiple Data Viewers by starting the program from the Start menu.

Files that launch the Data Viewer

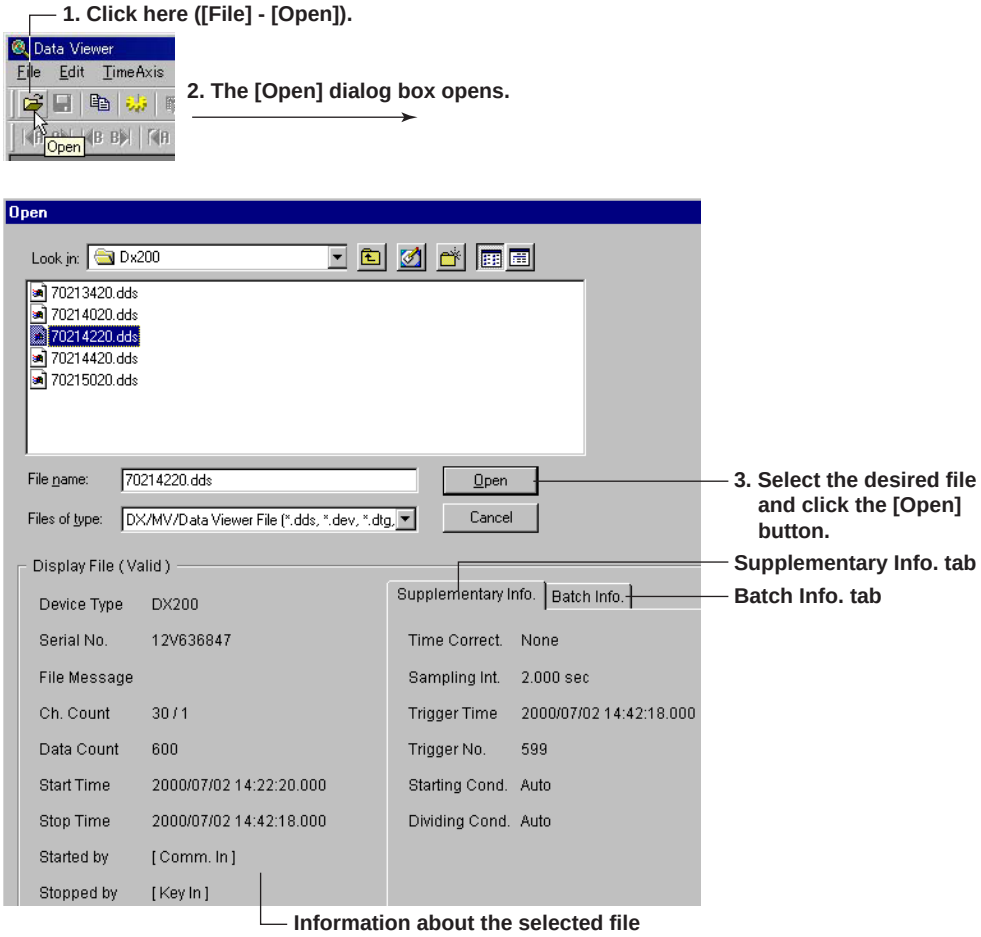
The Data Viewer starts by opening the following three types of files:

- : Display data file (*.dds)
- : Event data file (*.dev)
- : TLOG file (*.dtg)
- : Link setting file (*.ldx)
- : Hourly repot file (*.dhr)
- : Dayly repot file (*.ddr)
- : Weekly repot file (*.dwr)
- : Monthly repot file (*.dmr)
- : Manual sampling file (*.dmn)

Toolbar, search bar, and status bar

Clicking [View] - [Toolbar], [Search Bar], or [Status Bar] from the menu bar displays the corresponding bar in the window. The bar will disappear if the check is removed.

Opening the File by Specifying its Location

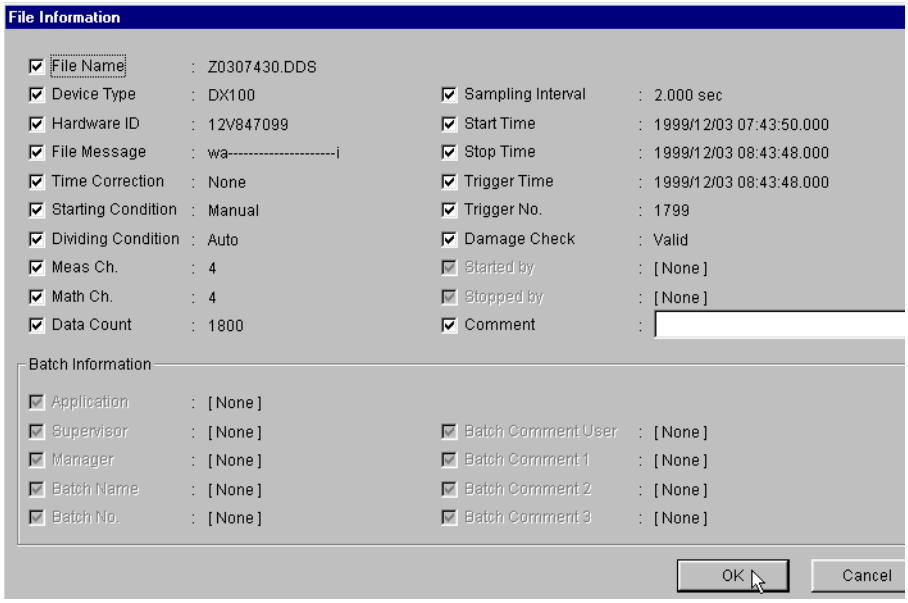


You can open a file by specifying the location. You cannot specify the internal memory or the external storage medium of the DX100/DX200/MV100/MV200/CX1000/CX2000.

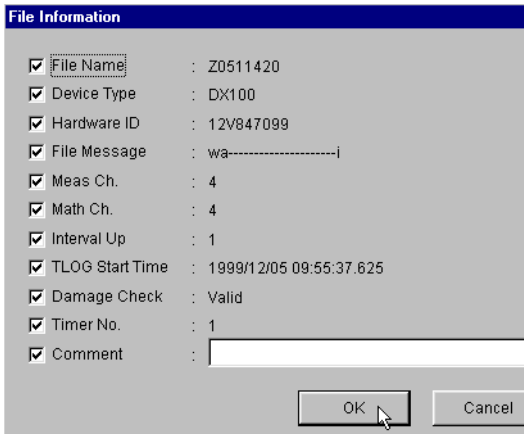
Checking the information about the loaded file

You can check the information about the active data file by selecting [Information] - [About Document].

- **For waveform data files and event data files**



- **For TLOG files**



The items that are checked are output in the header when printed.

Note

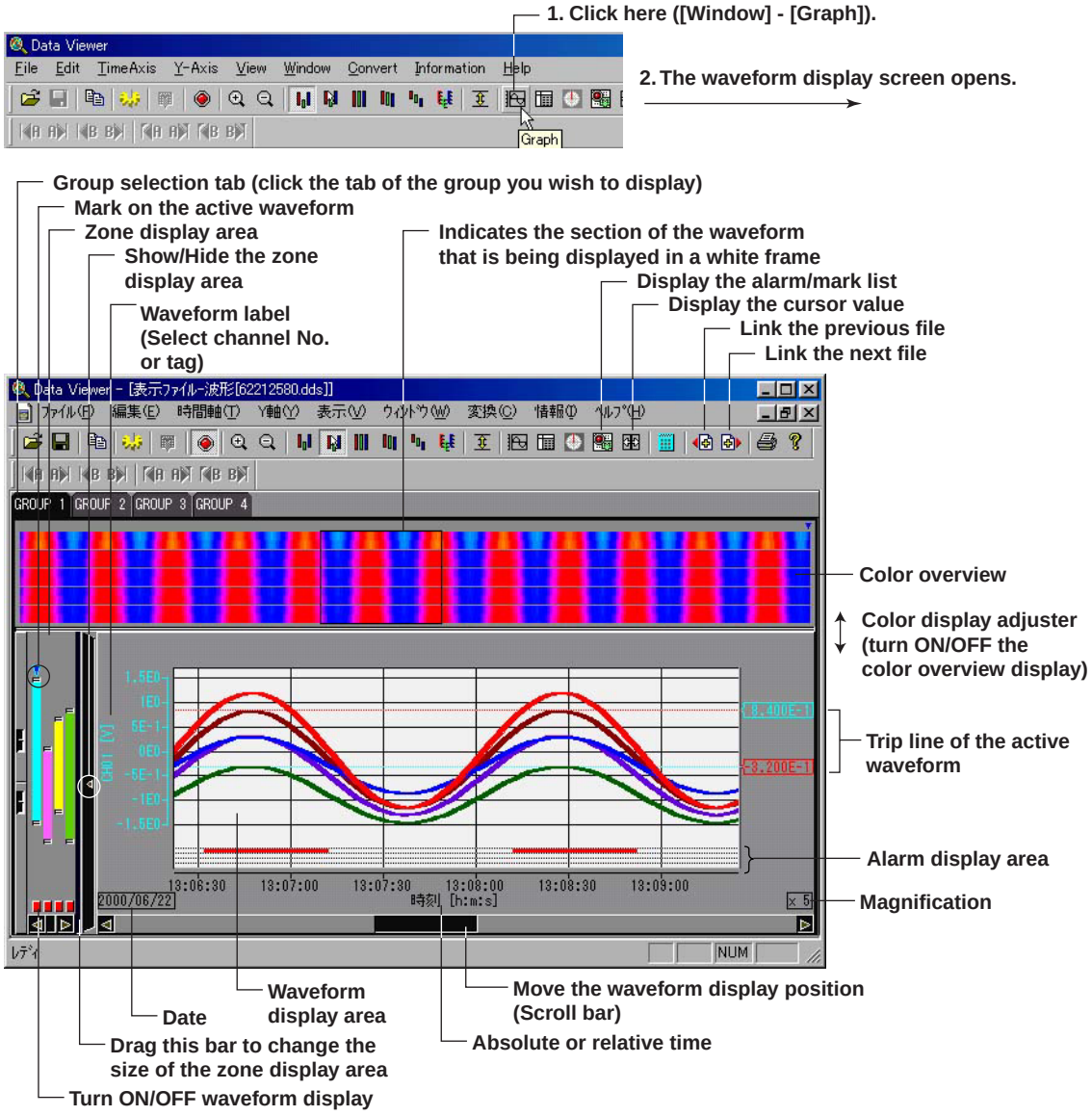
- Multiple files can be opened simultaneously.
- The number of files that can be opened simultaneously depends on the memory size of the PC and the free disk space.

Exiting the Data Viewer

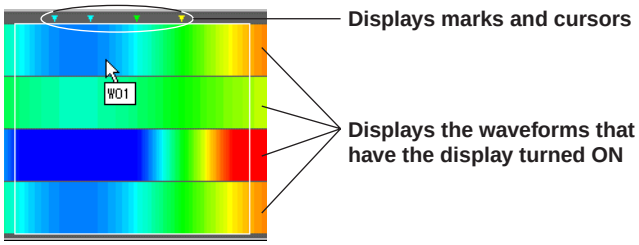
Select [File] - [Exit] or click the [×] button. If you changed the settings in any of the windows, a message “Save changes to ****.***?” is displayed. Click the [Yes] button, if you wish to save the settings and exit the Data Viewer. Click the [No] button, if you do not wish to save the settings and exit the Data Viewer.

4.2 Displaying the Waveform

Displaying the Waveform



Color overview display

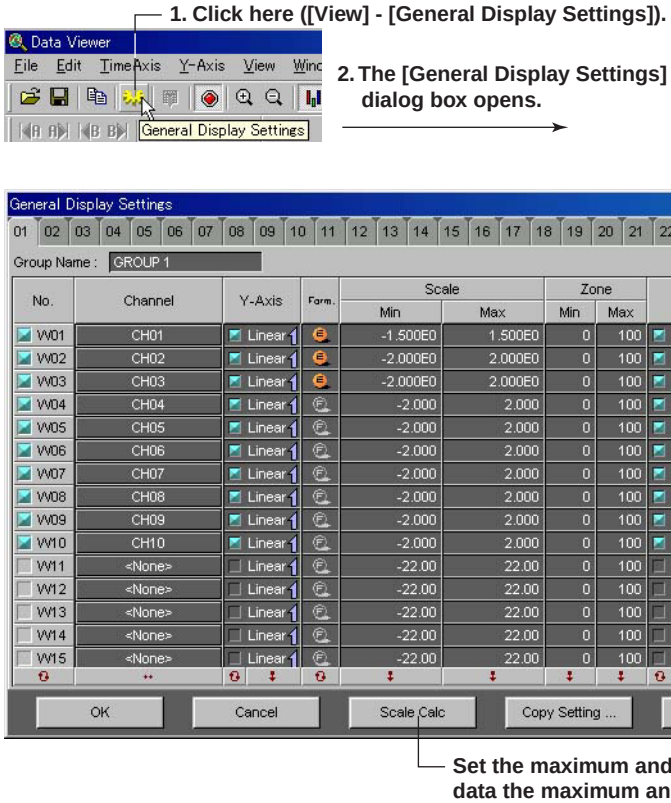


The measured values of the entire data are displayed using various colors. By assigning 50 different colors from the minimum to the maximum values of the scale, the measured values are assigned to those colors.
If the data are display data, the maximum value is displayed at the top of the space allocated to a single waveform, and the minimmum value is displayed at the bottom.
If you click or drag the cursor on the color overview display area, the section of the waveform is displayed in the waveform display area.

Note

The color overview is turned OFF as default.

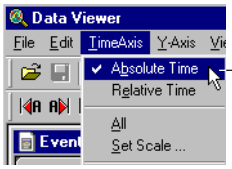
General Display Settings



For details related to the setting procedures, see “General Display Settings” in section 3.2, “Displaying the Trend.”

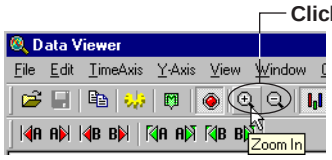
Setting the Time Axis

Selecting absolute or relative time display

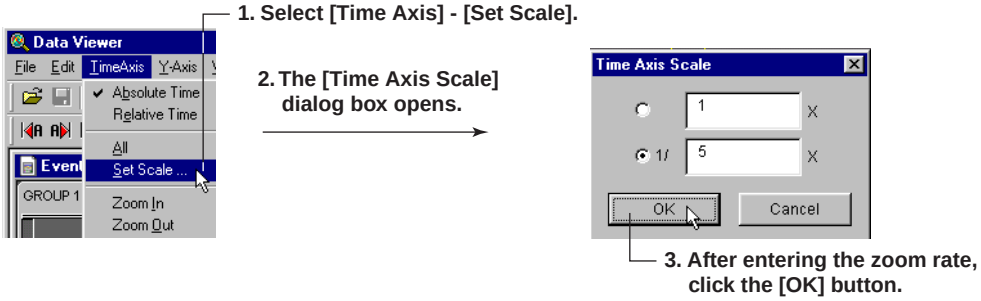


Select [Time Axis] - [Absolute Time] or [Relative Time].

Zoom in or zoom out on the time axis

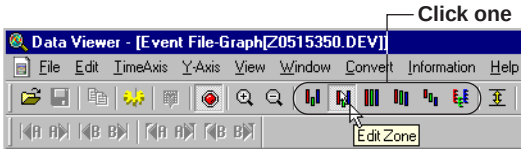


By selecting [Time Axis] - [All], the time axis is adjusted so that all the data can be displayed. If you wish to zoom in or out by specifying the zoom rate, take the following steps (resolution is 1/1000 to 20):



Setting the Y-axis

Selecting the waveform display zone

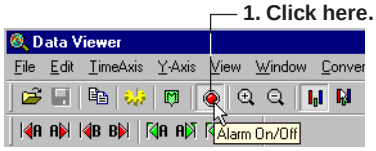


For zone setting examples and the edit zone operation, see section 3.2, “Displaying the Trend.”

Waveform Display Limit

See “Waveform display limit (clip)” in section 3.2.

Turn ON/OFF the Alarm Display



2. The alarm conditions of alarm 1 to 4 are displayed in the alarm display area.
   For details related to the alarm display, see “Turning ON/OFF the Alarm Display” in section 3.2, “Displaying the Trend.”

Selecting the Characters Used to Identify Channels

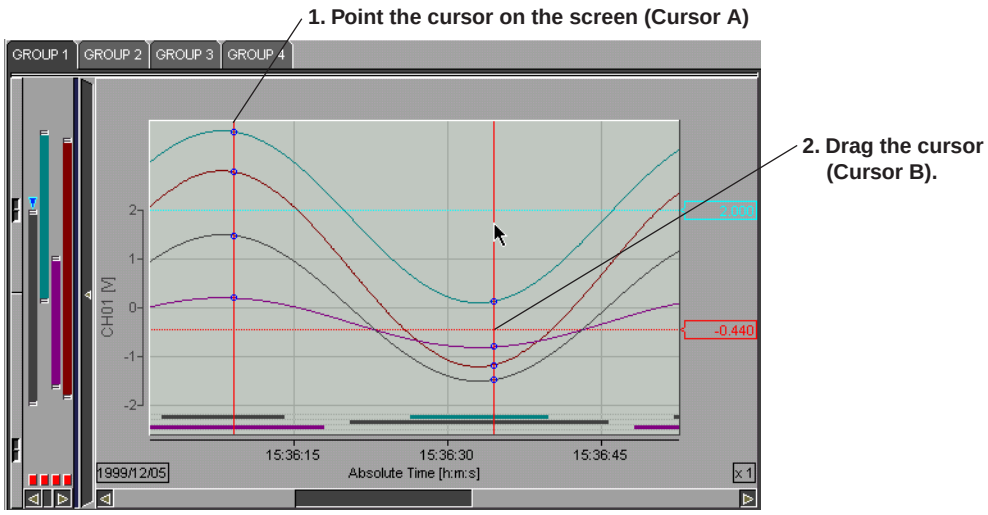
You can select the channel No. or tag as the character string used to identify the channels by selecting [View] - [Channel No.] or [Tag]. The selected character string will be used as a label to indicate the waveform name.
The character string is registered on the DX100/DX200/MV100/MV200/CX1000/CX2000 or by using the Configurator.

Note

- When the identification string is switched, the channel character string displayed on the Y-axis of the waveform display window, circular display window, numeric window, list display window, [Cursor Value] window, [Computed Result] window, [General Display Setting] window, and data conversion dialog box will change accordingly.
- Both the channel No. and tag are used in the output result of the data conversion.

Showing/Hiding Cursors

Showing the cursor

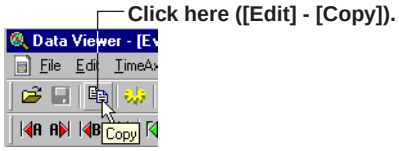


By selecting [Edit] - [Select All], Cursor A and Cursor B moves to the beginning and the end of the data, respectively.

Hiding the cursor

Select [View] - [Hide Cursor].

Copying the data to the clipboard



On the numerical window and list display window (section 4.6), you can copy the data between Cursor A and Cursor B to the Windows clipboard. On the waveform display window and circular display window, the displayed image can be copied to the clipboard.

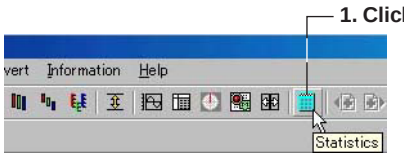
Note

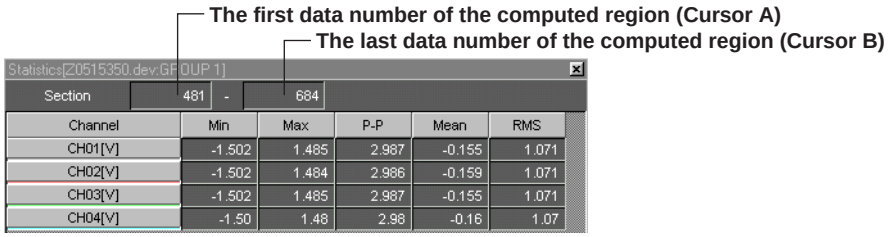
- The maximum number of data points that can be copied to the clipboard is 1000.
- The channels that are copied to the clipboard are those that are registered in the selected group with the waveform display turned ON.
- When the display mode of the time axis is set to absolute time, the absolute time is output. If it is set to relative time, the relative time from the first data point is output.
- Contents that have been copied to the clipboard can be pasted to other applications for use.

Displaying Cursor's Values

Clicking the control icon or selecting [Window] - [Control] displays the [Control] dialog box. For details related to [Control] dialog box, see "Displaying cursor's values" in section 3.2, "Displaying the Trend."

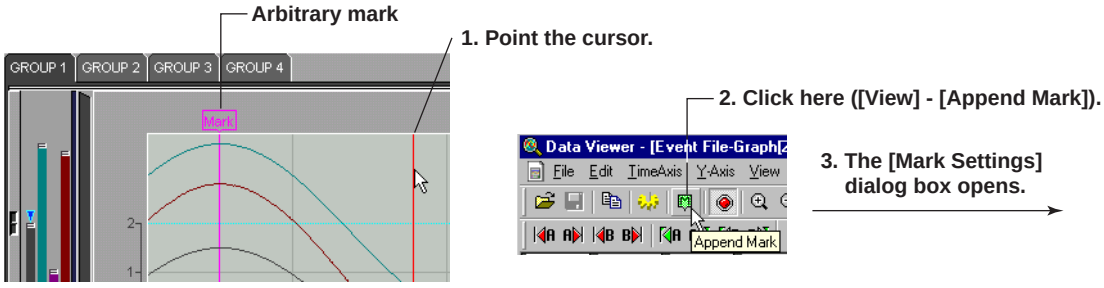
Displaying Statistics

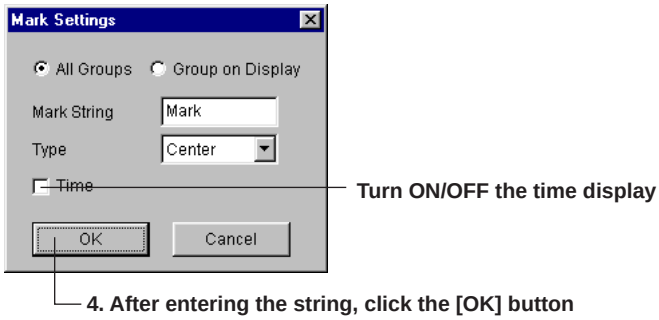




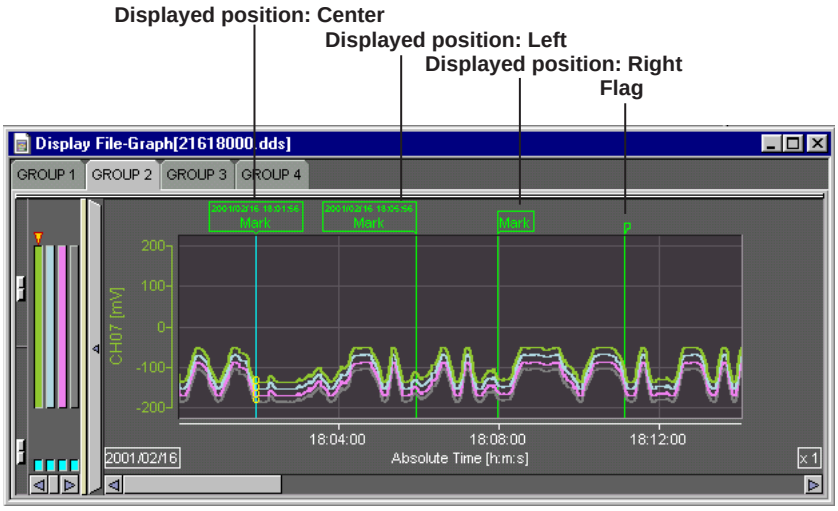
The minimum value, maximum value, P-P, mean, and rms value for each waveform in the range specified by Cursors A and B are computed and displayed. If the cursor is not displayed, the computation is performed over the entire data.

Adding Arbitrary Marks



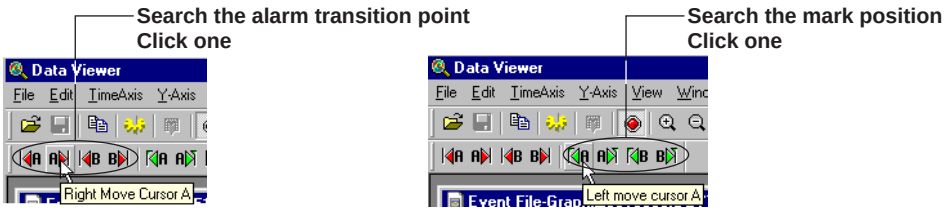


When Cursor A and Cursor B are at the same position, arbitrary marks can be placed. You can select whether to put the arbitrary marks on all groups or only on the displayed group. In addition, double-clicking a mark, that has been created using the Data Viewer, opens the [Mark] dialog box in which you can change the displayed group and the mark name.



If you left-click the mark while pressing the “Ctrl” key, the mark is displayed in front.
If you left-click the mark while pressing the “Shift” key, the mark is displayed in the back.

Searching the Alarm Transition Point and Mark Position



Searching the alarm transition point

Moves Cursor A or Cursor B to the alarm transition point (the point at which the alarm occurred and the point at which the alarm was released) of the active channel.
Searching is possible to the left and right of the cursor.

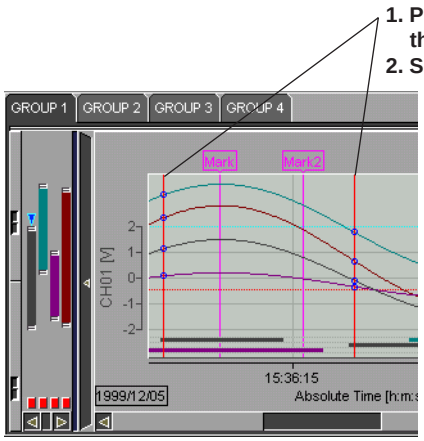
Searching the mark position

Moves Cursor A or Cursor B to the mark position (arbitrary mark or trigger mark) of the active channel.
Searching is possible to the left and right of the cursor.

Note

- The searching function cannot be used, if the cursor is not displayed.
- The search function cannot be used, if there are no arbitrary marks or when the alarm display is OFF.

Deleting Marks



The arbitrary marks (green/yellow) and trigger marks (yellow) between Cursor A and Cursor B are deleted.

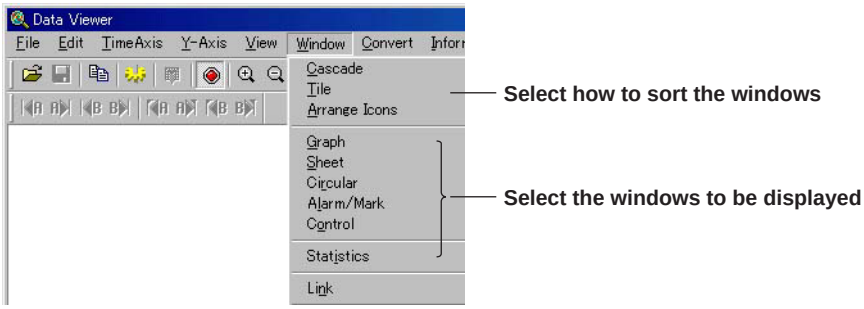
Note

- The arbitrary marks placed on the Data Viewer are green. The arbitrary marks (messages) and trigger points placed on the DX100/DX200/MV100/MV200/CX1000/CX2000 are yellow.
- Up to 16 characters can be used for a mark name.

Resetting Marks

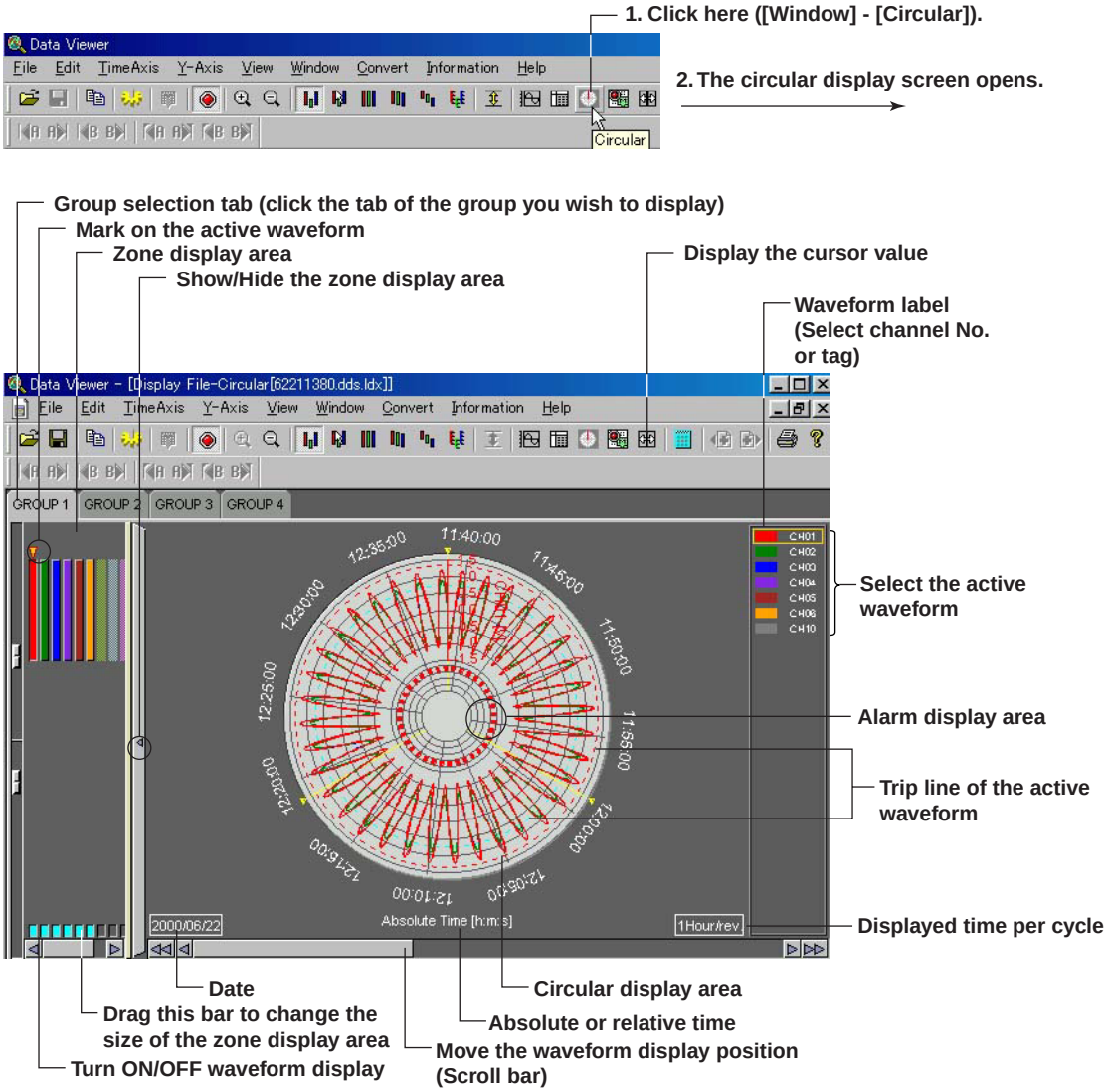
All arbitrary marks created on the Data Viewer are erased by selecting [Edit] - [Reset Mark]. The marks (messages) and the trigger point that were created on the DX100/DX200/MV100/MV200/CX1000/CX2000 but deleted on the Data Viewer are displayed again.

Setting the Window



4.3 Circular Display

Circular Display



General Display Settings

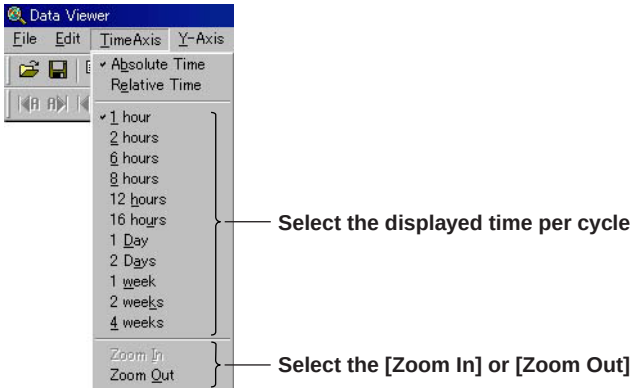
For details related to the setting procedures, see “General Display Settings” in section 3.7, “Circular Display.”

Setting the Time Axis

Selecting absolute or relative time display and zooming in or zooming out on the time axis

See section 4.2, “Displaying the Waveform.”

Selecting the displayed time



Setting the Y-axis

Waveform display limit

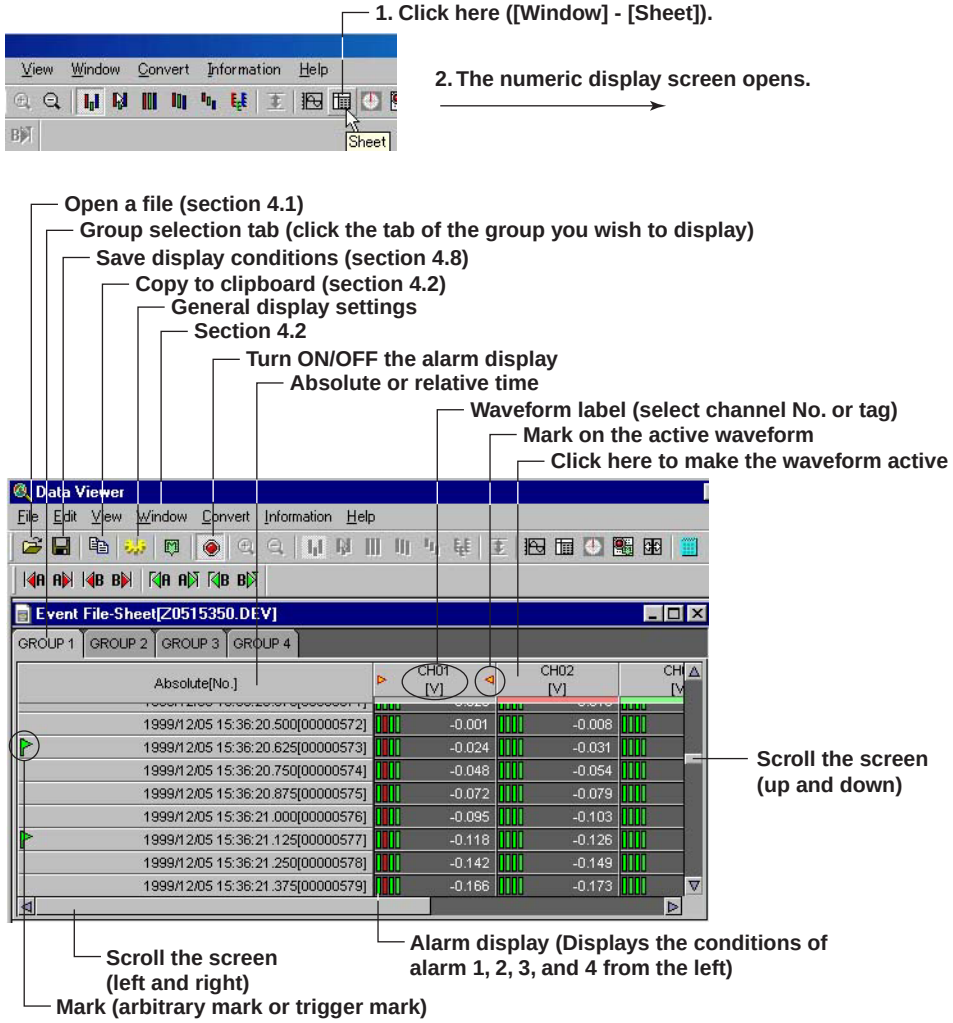
See section 3.7, “Circular Display.”

Turning ON/OFF the Alarm Display

For details on the alarm display, see Alarm Display in section 3.7, “Circular Display.”

4.4 Displaying Numeric Values

Displaying Numeric Values



General Display Settings of the Numeric Display

Clicking the General Display Settings icon or selecting [View] -[General Display Settings] opens the [General Display Settings] dialog box. Of the parameters in the [General Display Settings] dialog box, those that relate to the numeric display are as follows:

- Turn ON/OFF numeric value display
- Registering the channel

For details related to the setting procedures, see “General Display Settings” in section 3.2, “Displaying the Trend.”

Setting the Time Axis

Select [View] - [Absolute Time] or [Relative Time]. Then, select the time display format using [Format].

Turn ON/OFF the Alarm Display

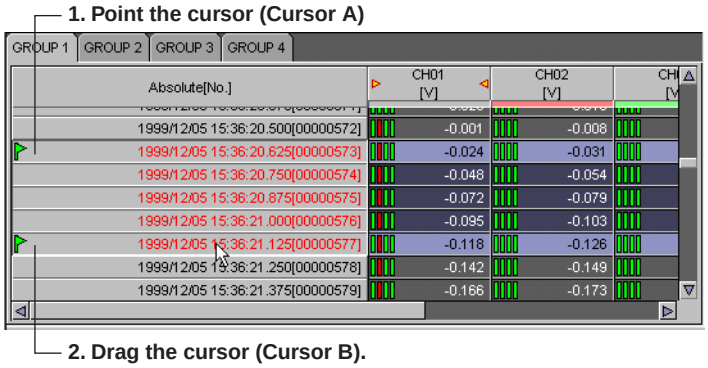
The alarm conditions of alarms 1 to 4 are displayed on the screen by clicking the alarm display icon or selecting [View] - [Alarm] and turning ON the alarm display. When an alarm is in effect, the indicator is red. When it is not, the indicator is green.

Selecting the Characters Used to Identify Channels

For details, see “Selecting the Characters Used to Identify Channels” in section 4.2, “Displaying the Waveform.”

Showing/Hiding Cursors

Showing the cursor



By selecting [Edit] - [Select All], Cursor A and Cursor B moves to the beginning and the end of the data, respectively.

Showing the cursor value, displaying statistics and hiding the cursor

For details, see “Displaying Cursor’s values,” “Hiding the Cursor,” “Displaying Statistics” in section 4.2, “Displaying the Waveform.”

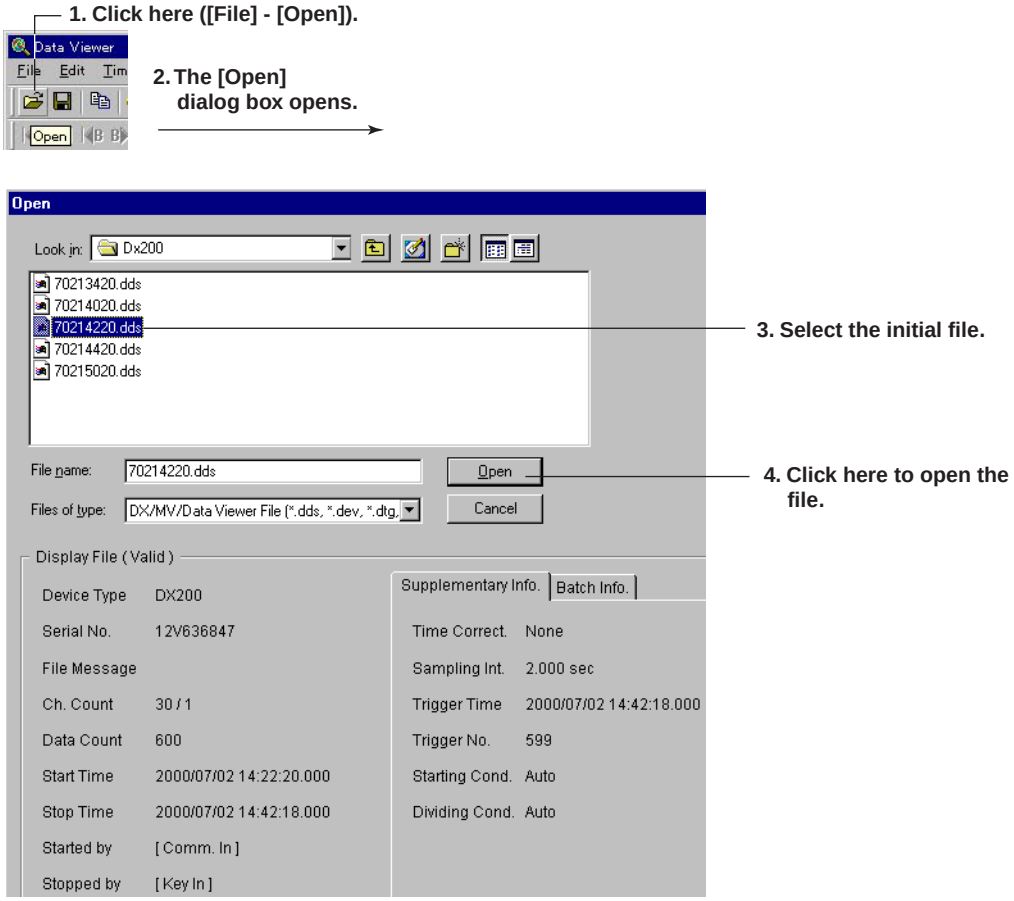
Adding Arbitrary Marks, Deleting Marks, and Resetting Marks

For details, see “Adding Arbitrary Marks,” “Deleting Marks,” and “Resetting Marks” in section 4.2, “Displaying the Waveform.”

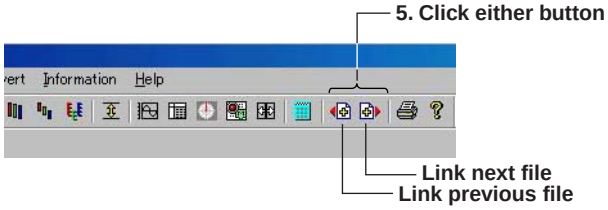
4.5 Linking Files and Saving the Link Settings File

Linking Files

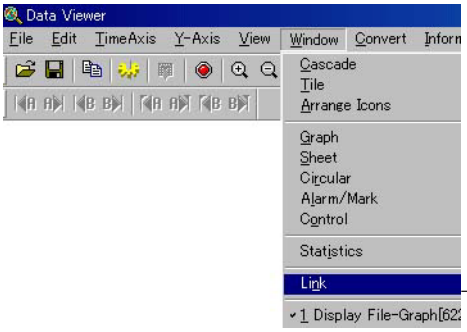
You can link and display DX100/DX200/MV100/MV200/CX1000/CX2000 files that have been divided by the auto save function, power failures, or other means (factors).
The files that can be linked are those that exist in the same directory. There are two methods to link files, from the toolbar and from the menu bar.



From the toolbar



From the menu bar

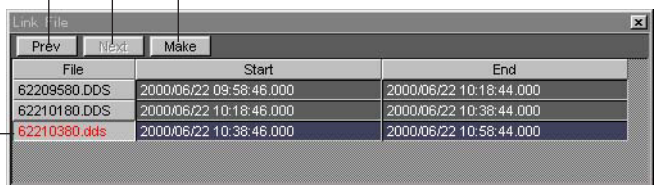


5. Click here([Window]-[Link]).

6. The [Link] dialog box opens.

8. Select [Prev](previous file) or [Next](next file).

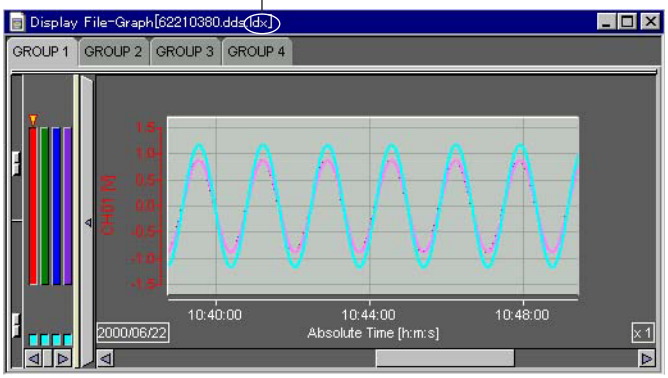
7. Click here(display files for linking).



9. Displays the linked files.

10. Displays the linked files in a different color.

The file extension .ldx is appended to the original file name



When linking and displaying files, make sure that the number of data points after linking does not exceed 1048576.
In addition, if there is a period over which data does not exist such as when a power failure occurs, data is counted as if the data is acquired at the given scan interval even during that period. The scan interval and the maximum period for linking files are indicated below.

Interval	Period
1/8 s	1.51 days
1 s	12.1 days
10 s	3.91 months
60 s	1.99 years
10 min	19.9 years

For example, if data is acquired continuously at 1-s scan interval and there is a period of power failure over 12.1 days, the data before and after the power failure cannot be linked and displayed.

Saving the Link Settings File

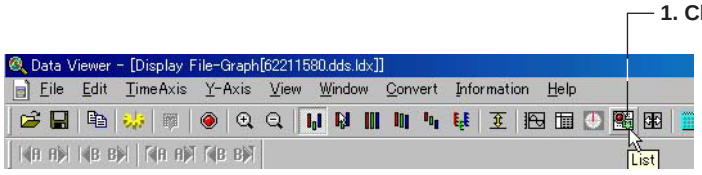
Select [File] - [Save Display Setting As] to save the link settings file to the same directory as the linked files.

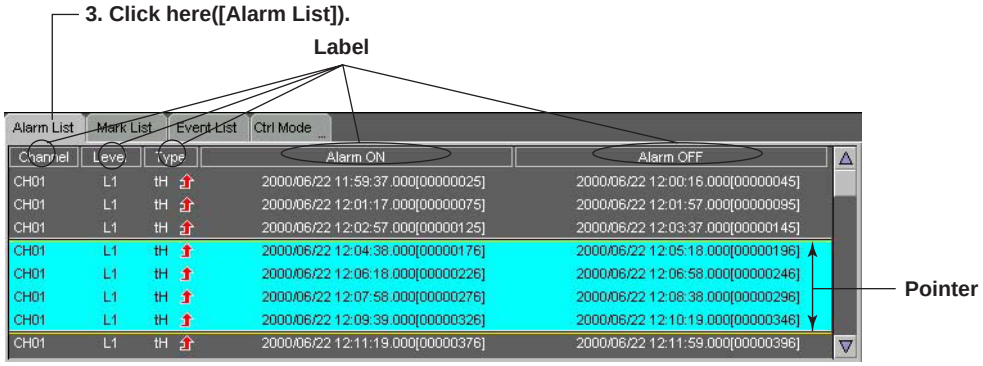
The file name takes the form of the original file name with the file extension .ldx.

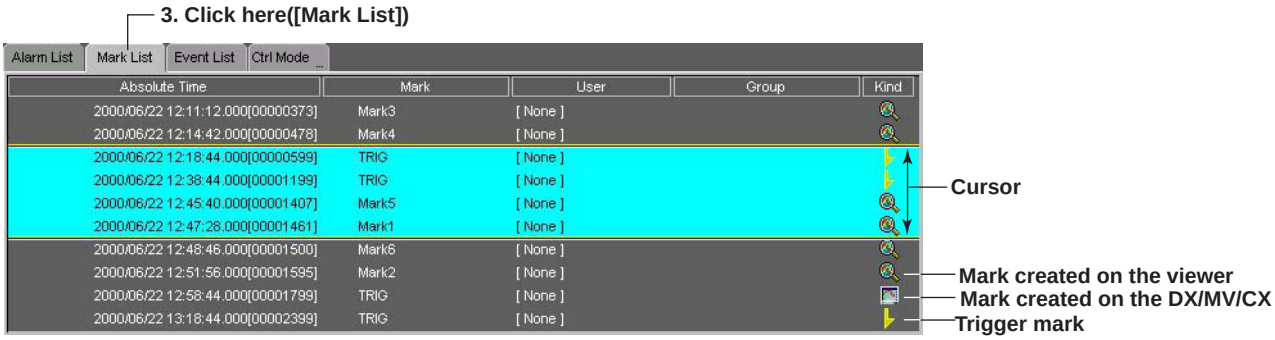
You can save the file by specifying the file name and the destination directory by selecting [File] - [Save Display Setting].

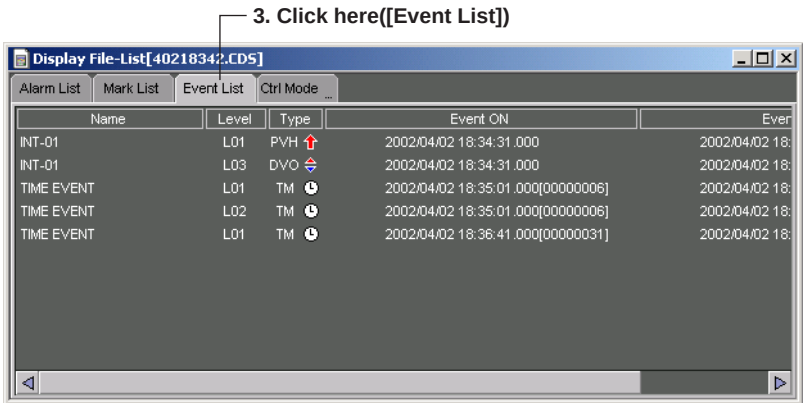
4.6 Listing Alarms and Marks and Converting the List

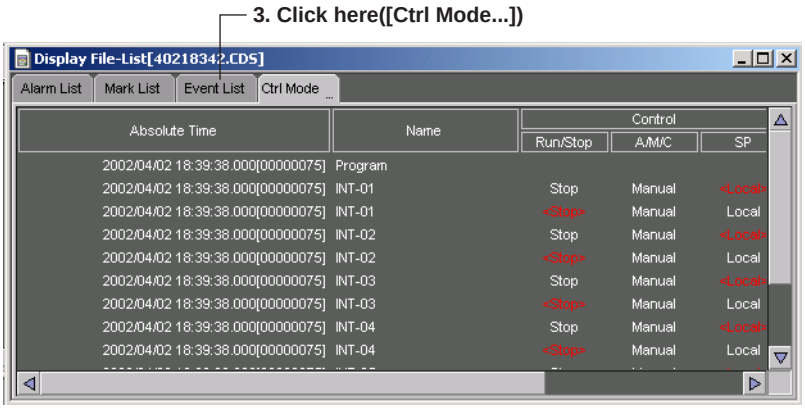
A list of alarms and marks is displayed with the display file or event file opened.











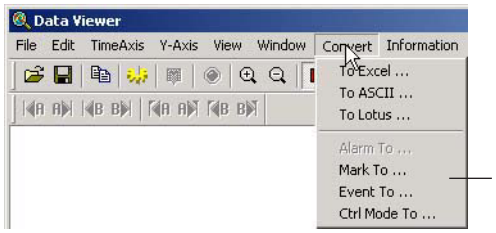
Click a label to sort using the label. The first click will sort the list in the ascending order; the second click will sort the list in the descending order.

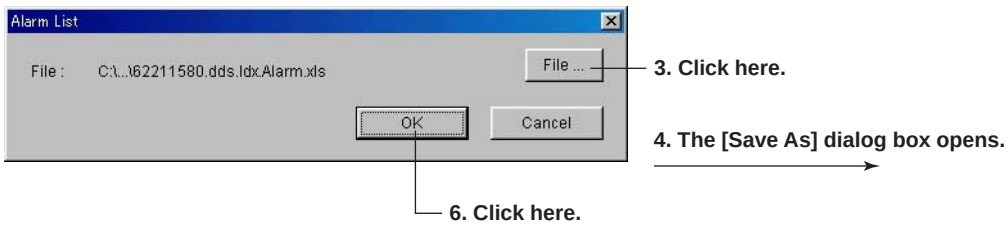
Note

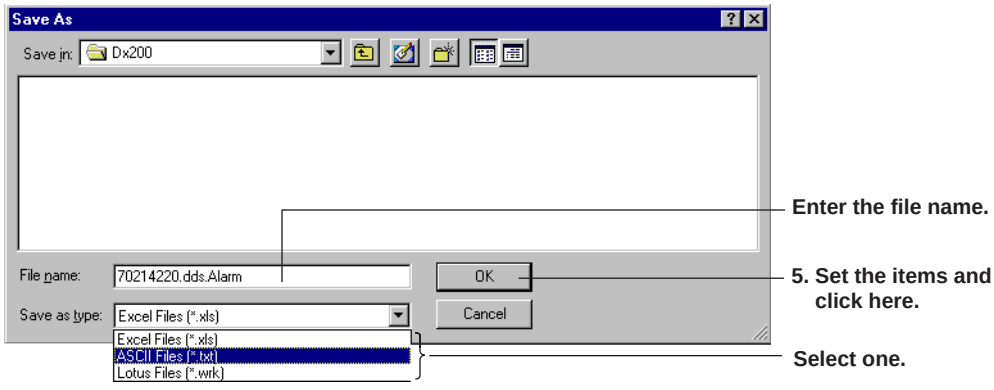
If you drag on the “Alarm List” display screen, a pointer is displayed. The cursor on the waveform display, circular display, numerical display, and cursor value display are not synchronized to this pointer.

Converting and outputting the alarm or mark list

The Alarm or Mark List can be converted to ASCII, Lotus, and Excel formats.

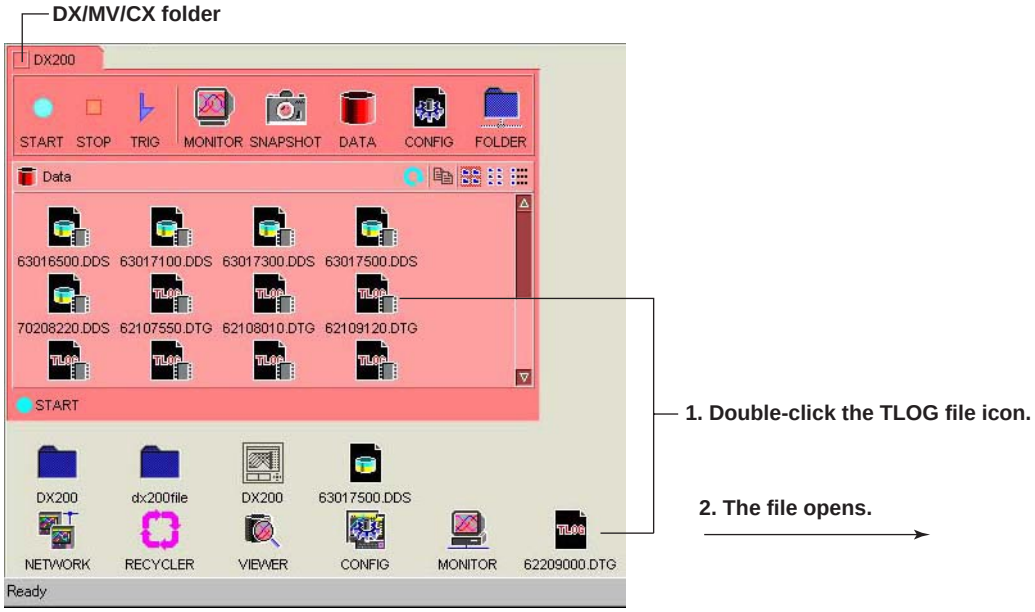


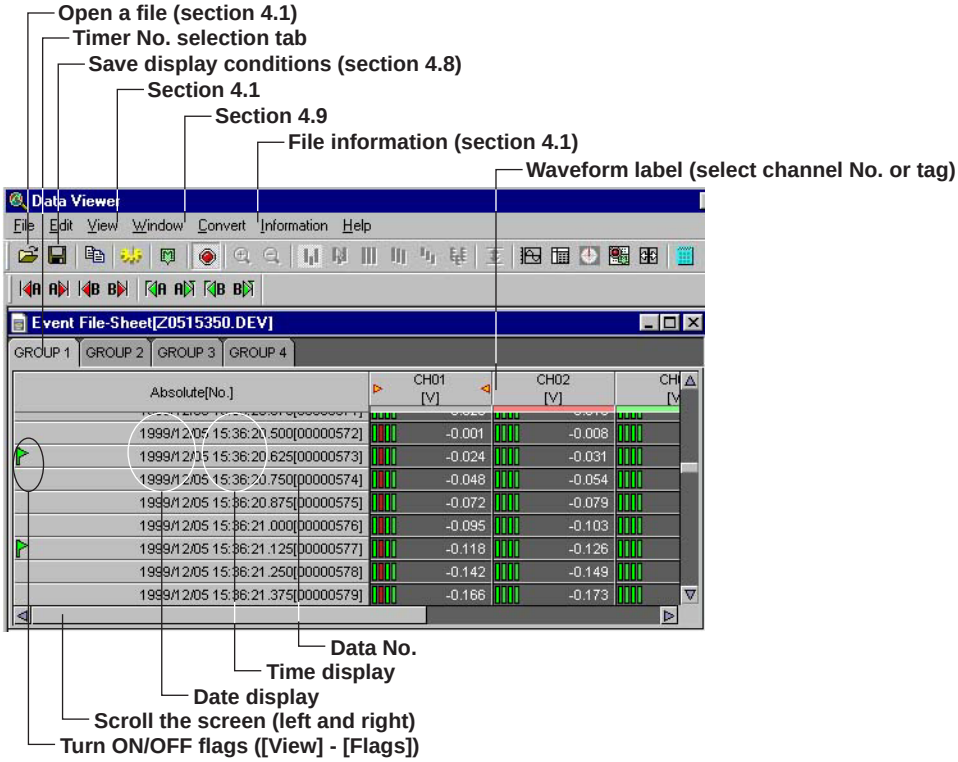




4.7 Displaying the TLOG File

Displaying the TLOG File





Turning ON/OFF Flags

When [View] - [Flags] is checked, the following status information is displayed:

 : Stopped TLOG computation.

 : The DX/MV/CX time and date was changed during TLOG computation.

 : Power failure occurred during TLOG computation.

Date/Time display

Select [View] - [Date Format] or [Time Format] to select the display format. If [None] is selected, the date or time will not be displayed.

Data No.

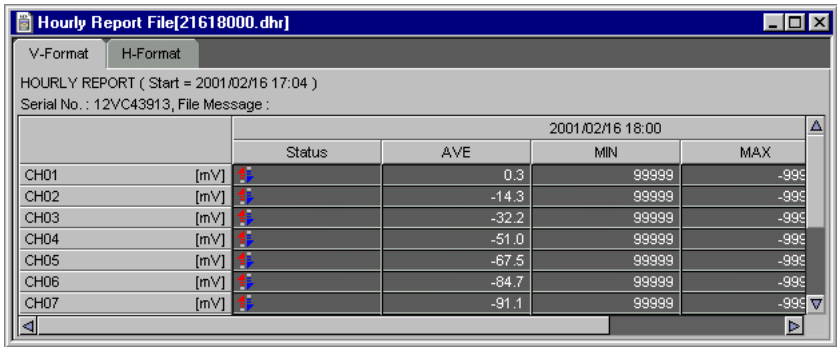
When [View] - [Data No.] is checked, the data number is displayed.

Selecting the Characters Used to Identify Channels

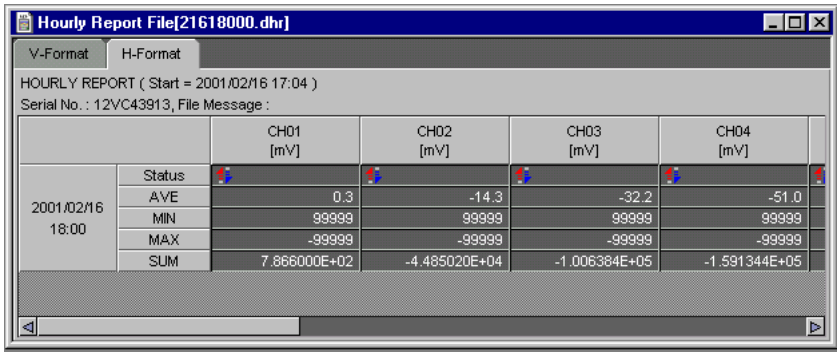
For details, see "Selecting the Characters Used to Identify Channels" in section 4.2, "Displaying the Waveform."

4.8 Displaying the Report File

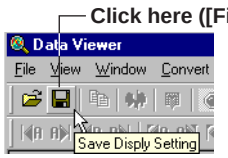
Vertical display



Horizontal display



4.9 Saving the Display Settings



The display settings can be saved to a file. The following display settings can be saved:

For display file, event file, and link file displays

- Print comment
- Cursor A and Cursor B positions
- ON/OFF condition of the clipping of the displayed waveform
- Settings specified in the General Display Settings
- Mark information
- Zoom rate of the time axis
- Display mode of the time axis (absolute/relative)
- Waveform display area
- The channel identification string mode (channel/tag)
- ON/OFF condition of file information items (see section 4.1)
- The background and grid color of the waveform display area
- Y-axis zone setting
- The active waveform
- The height of the data overview of each group
- The width of the zone display area of each group
- Show/Hide condition of the zone display area
- Selected group
- ON/OFF condition of the alarm display

For TLOG file display

- ON/OFF condition of TLOG file information items (see section 4.1) and print comment
- The string to be used (channel/tag)
- Timer No.
- Display format of date and time

The information is saved to the same directory as the data files. The name of the saved file is the name of the data file being displayed, with an added [vdx] extension (Y1116040.DDS.vdx, for example).
This display setting file can be overwritten unlimited number of times.
When the data with the same file name is reopened, the display settings that were saved are used. If you do not wish to open the data using the saved settings, delete the display setting file ([vdx] extension) before opening the data file.

Note

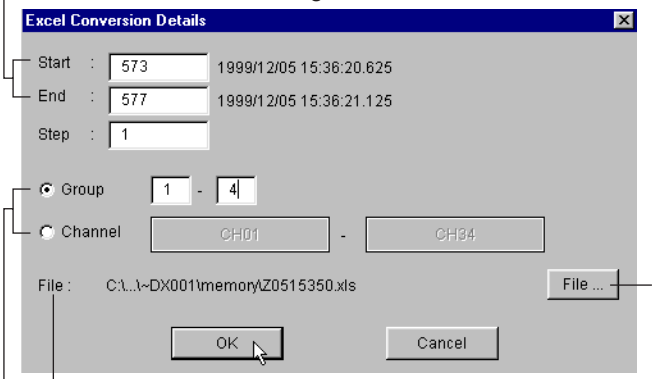
When the data residing in the internal memory or the external storage medium of the DX100/DX200/MV100/MV200/CX1000/CX2000 are being displayed, the display settings cannot be saved.

4.10 Converting the Data

1. Select one.
2. The [Conversion Details] dialog box opens.

When waveform display or numeric display is open

3. Enter the conversion range.



5. Change the save destination.

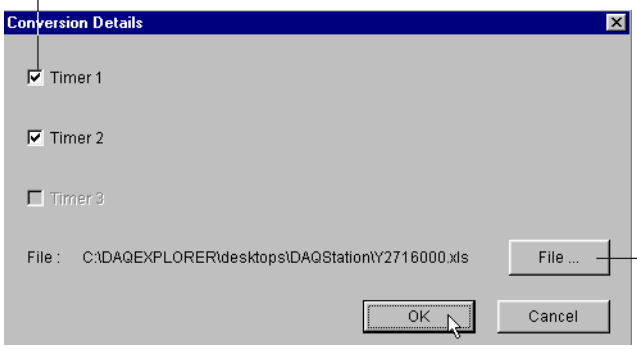
Save destination and file name

4. Select either one.

The measured data can be converted to ASCII, Lotus, and Excel formats.

When displaying the TLOG File

3. Check the timer No. to be converted.



4. Change the save destination.

Start point and end point

Cursor A and Cursor B are used to set the start point and end point of the range, respectively. If Cursor A and Cursor B are not specified or the cursors were erased, the data numbers of the start and end points are automatically set to [0] and [total number of data points - 1], respectively.
To convert all the data in the specified range, set the step number to 1.

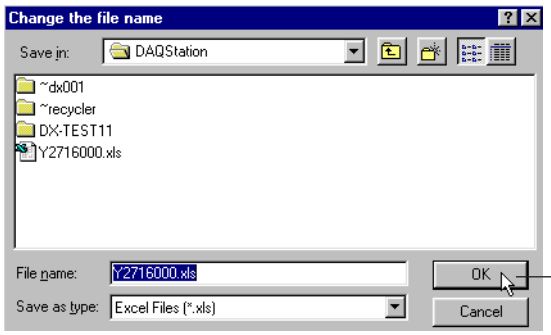
Step

To convert all the data in the specified range, set the step number to 1.

Group/Channel

If you select [Group], enter the range of groups to be converted.
If you select [Channel], enter the range of channels to be converted.

Changing the save destination



Select the destination folder and file and click the [OK] button

To change the destination folder or the name of the file containing the converted data, click the [File] button. The [Change the file name] dialog box opens.

Note

- The default group is set to the number of the group that is currently being displayed. The default channel is set to all channels.
- The name of the destination file is automatically set to the displayed file name followed by the extension that identifies the data format. For ASCII, Lotus, and Excel conversions, the file extensions [txt], [wrk] (can be loaded using version 2.0 or later, and [xls] (can be loaded by version 4.0 or later) are attached, respectively.
- There is a limit in the number of data points that Lotus1-2-3 and Excel can handle. For these programs, specify the number of data points to be converted before performing the conversion. Note that even if the number of data points to be converted is within the limits, it still may not be possible to load the data if there is not enough free memory available on the PC.
- Do not specify a floppy disk or an external storage medium as the save destination as it will take a long time for the save operation.
- Do not specify the root directory as the save destination.
- Prepare enough free space on the destination disk.

Conversion Example

ASCII conversion file

"DAQEXPLORER","R1.02"
"Data Viewer","R1.02"
"","kawamura","111-00000-0000"
"Device Type","DX200"
"Serial No.","12V636847 "
"File Message",""
"Time Correction","None"
"Starting Condition","Auto"
"Dividing Condition","Manual"
"Meas Ch.", 30
"Math Ch.", 1
"Data Count", 180
"Sampling Interval", 2.000,"sec"
"Start Time","1999/11/17","20:34:28", 0.000
"Stop Time","1999/11/17","20:40:26", 0.000
"Trigger Time","1999/11/17","20:40:26", 0.000
"Trigger No.", 179
"Damaged Check","Not Damaged"
"Started by","[Key In]"
"Stopped by","[Comm In]"
"Converted Group", 1,"-", 1
"Ch.","CH01","CH02","CH03","CH04","CH05","CH06","CH07","CH08","CH09","CH10"
"Tag","","","","","","","","","","",""
"Unit","V","","","","V","V","V","V","V","V"
"Date","Time","sec","Min","Max","Min","Max","Min","Max","Min","Max","Min","Max","Min","Max",
"Min","Max","Min","Max","Min","Max","Min","Max"
"1999/11/17","20:34:28", 0.000, -0.506, -0.409, 66.39, 72.87, 122.38, 126.31,
122.46, 126.39, -0.498, -0.401, -0.496, -0.399, -0.495, -0.397, -0.493, -0.394, -
0.491, -0.392, -0.489, -0.390

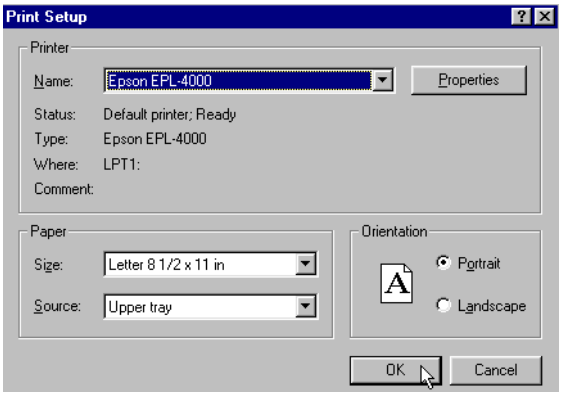
Excel conversion file

	A	B	C	D	E	F
1	DAQEXPLORER		R1.02			
2	Data Viewer		R1.02			
3	yokogawa		kaisui		111-000-0000	
4						
5	Device Type		DX100			
6	Serial No.		12V847099			
7	File Message		wa----------i			
8	Time Correction		None			
9	Starting Condition		Manual			
10	Dividing Condition		Auto			
11	Meas Ch.		4			
12	Math Ch.		4			
13	Data Count		1800			
14	Sampling Interval		2.000	sec		
15	Start Time		1999/12/0	15:35:10	0.000	
16	Stop Time		1999/12/0	16:35:08	0.000	
17	Trigger Time		1999/12/0	16:35:08	0.000	
18	Trigger No.		1799			
19	Damaged Check		Not Damaged			
20	Started by		[Nothing]			
21	Stopped by		[Nothing]			
22						
23	Converted Group		1	-	1	
24						
25			Ch.	CH01		CH02
26			Tag	a		b
27			Unit	V		V
28	Date	Time	sec	Min	Max	Min
29	1999/12/0	15:38:20	0.000	-1.215	-0.959	-1.212
30	1999/12/0	15:38:22	0.000	-0.959	-0.641	-0.953

4.11 Printing

Setting the Printer

1. Select [File] - [Print Setup].



2. Set the printer, paper and orientation.

Note

Set the printer according to the configuration of the system that you are using.

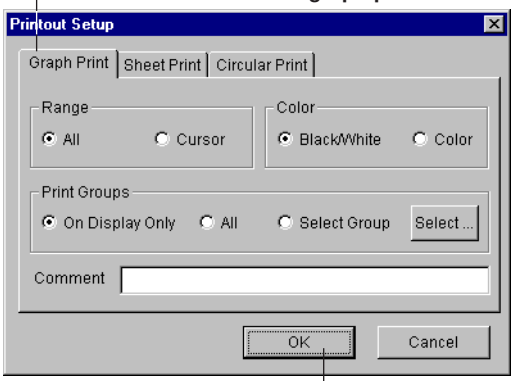
Specifying the Contents to be Printed (for Display Data File and Event Data File)

Specify the contents to be printed before executing the print. This is not necessary when printing the TLOG file.

Select [File] - [Print Settings]. The [Printout Setup] dialog box opens. When the waveform is displayed, printing is carried out according to the settings under the Graph Print tab of the [Printout Setup] dialog box. If numeric values are displayed, printing is carried out according to the settings under the Sheet Print tab.

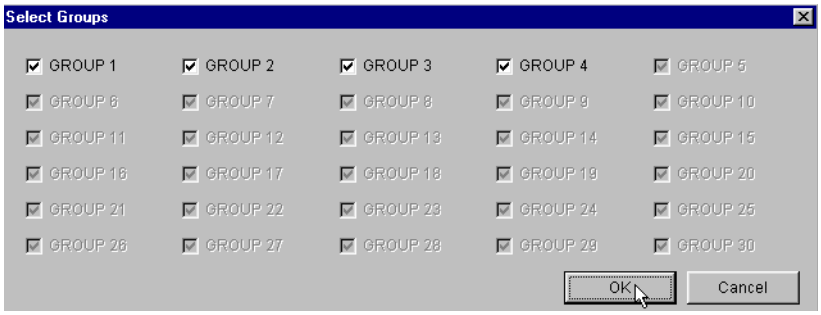
Setting graph print

Click this tab to set the graph print



Set the range, color, print group, and comment, then click the [OK] button

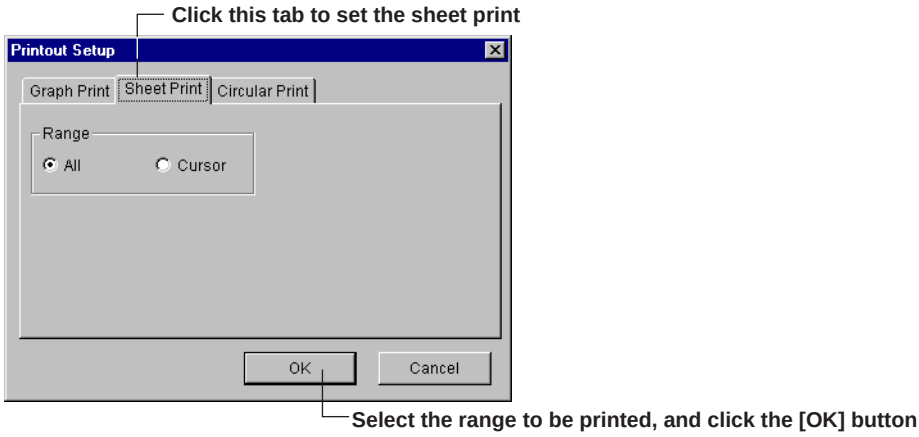
If you selected [Select Group], click the [Select] button. The [Select Groups] dialog box opens. Select the groups to be printed. Click the [OK] button to close the dialog box.



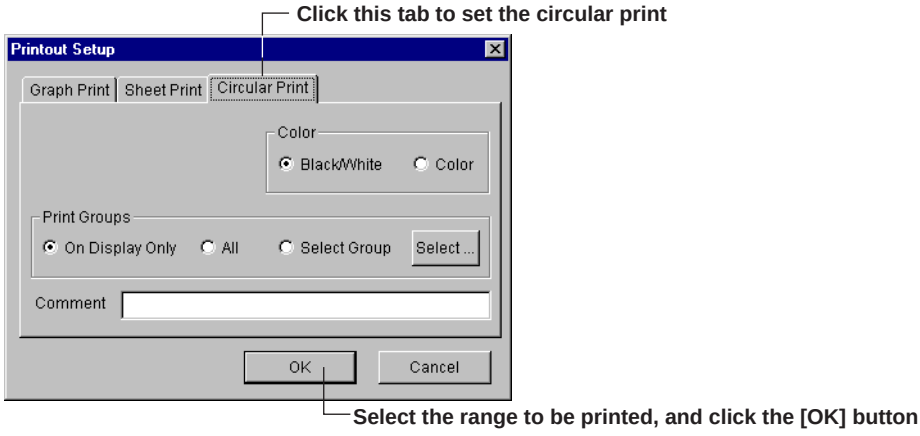
Note

- The [Comment] can be entered or changed using [About Document] (see “Viewing the information of the loaded file” page 4-3). When the print comment is entered or changed, it is reflected in the comment of [About Document] dialog box.
- Up to 127 characters can be entered in the [Comment] entry box. However, the number of characters that is actually printed is limited.
- When the cursor is not displayed,select the [All] button under [Range] in the [Printout Setup] dialogu box.

Setting sheet print



Setting circular print



For the operations that follows, see “Setting graph print.”

Header

A header can be printed when printing the waveform or a TLOG file.
Of the items that are displayed in the file information dialog box ([Information] - [About Document]), those that are checked are printed in the header section. For details related to the file information, see section 4.1.

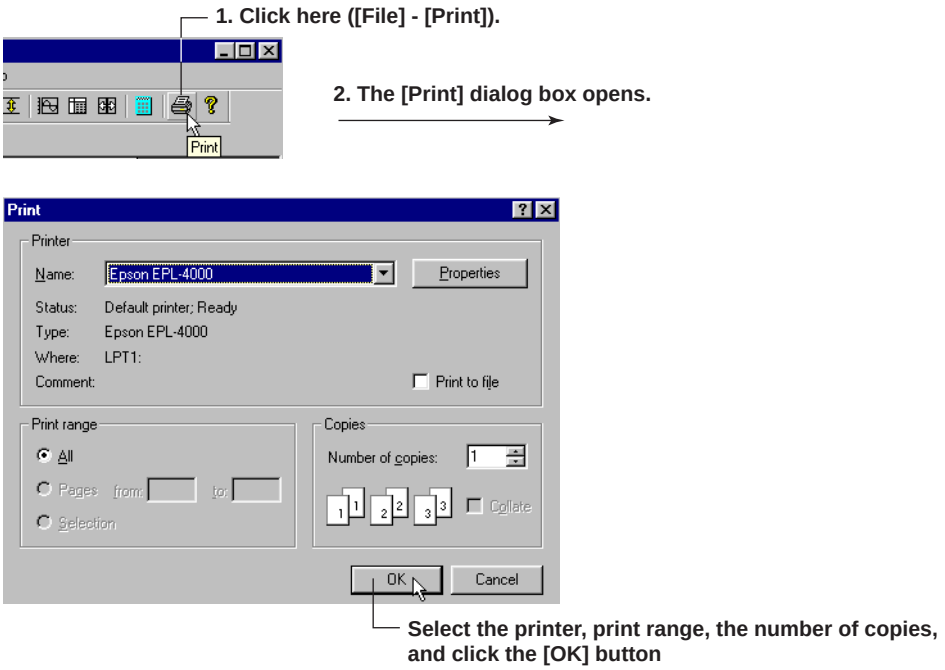
Print Preview

You can preview the print layout before actually printing the data.
Selecting [File] - [Print Preview] displays the print preview screen.

Note

- The preview screen will display the print image of the specified range.
- The file information is also displayed when previewing the graph. If the color overview, alarm, [Cursor value] window, and [Statistics] window are displayed, these are also displayed on the preview screen along with the graph
- For the print preview operation, see the instruction manual that came with your operating system.

Printing



5.1 Starting the Configurator

The following two types of files can be opened using the Configurator:

CONFIG file

This is the file located in the DX/MV folder. It allows a direct view of the setup data of the DX100/DX200/MV100/MV200. Only one CONFIG file exists in one DX/MV folder.
You can change the setting on the Configurator, but the file cannot be saved.

Setup data file (*.PNL)

This is the file that is saved to the PC such as to the DAQ Desktop. You can change the settings on the Configurator and save the file and create new setup data.

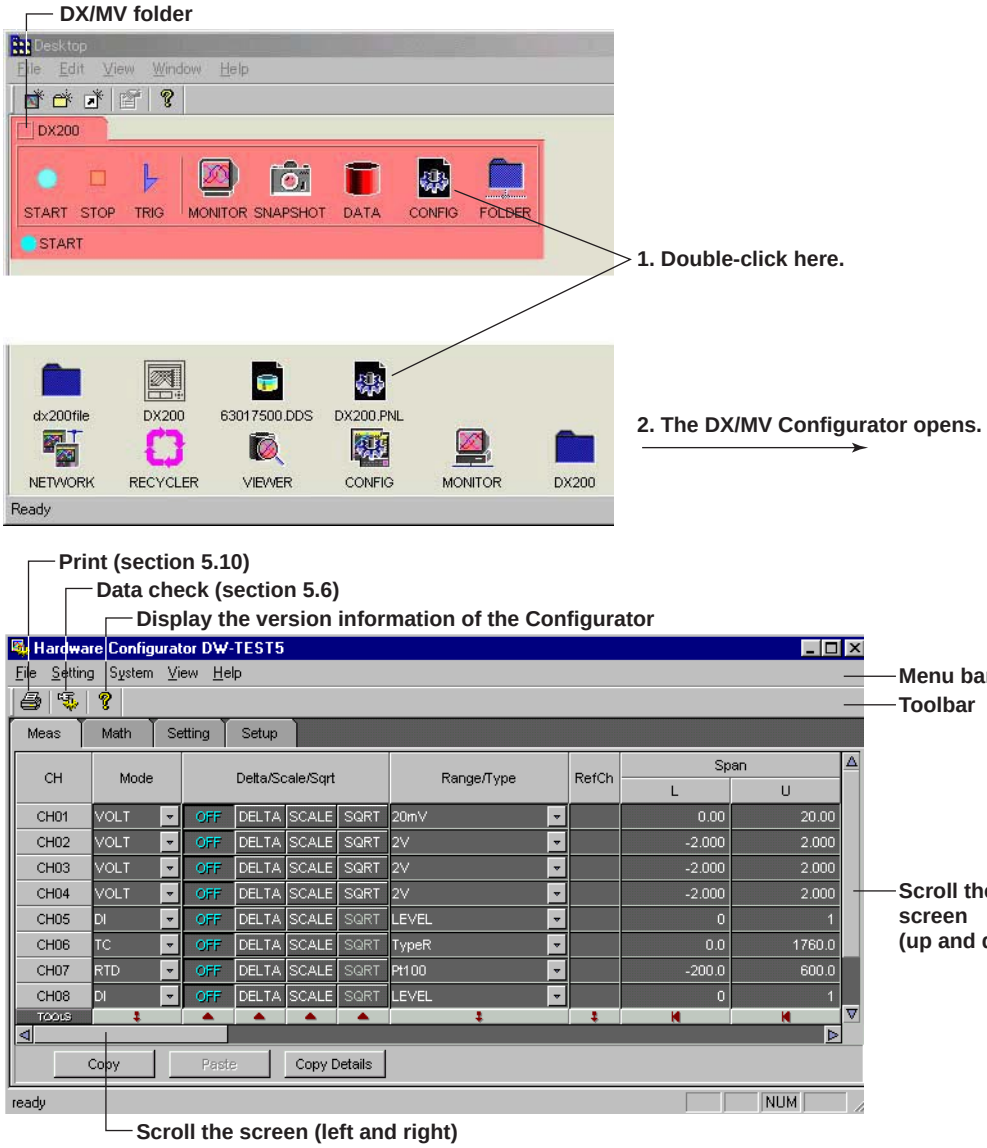
The Configurator can transmit and receive the setup data, change the setup data, and create new setup data. It can configure the following style numbers of DX and MV.

DX/MV	Style1	Style2	Style3	Style4
DX100	○	○		○
DX200	○	○		○
MV100		○	○	○
MV200			○	○

Copying the Setup Data to the DAQ Desktop

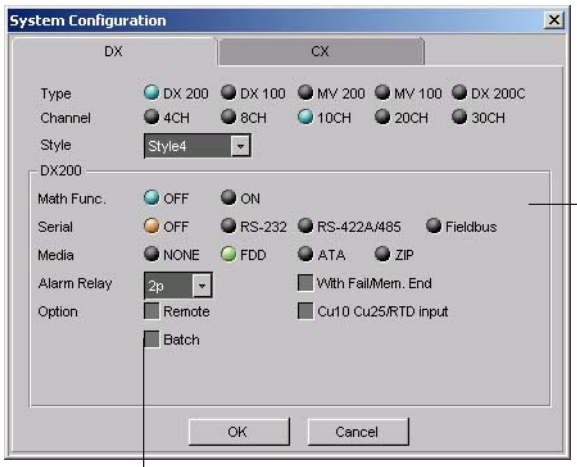
You can copy the CONFIG file to the DAQ Desktop by dragging and dropping the CONFIG icon of the DX/MV folder onto the DAQ Desktop.
The extension of the file that is copied becomes [PNL].

Starting the Configurator



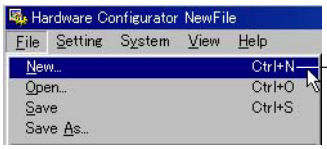
Creating Setup Data by Configuring a New System

1. Douoble-click the CONFIG icon on the desktop.
2. The [System Configuration] dialog box opens.



3. Click the appropriate items and click the [OK] button to open the Configurator screen.

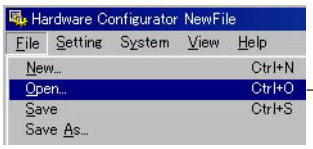
Batch function option is selectable when the style number is greater than or equal to 2



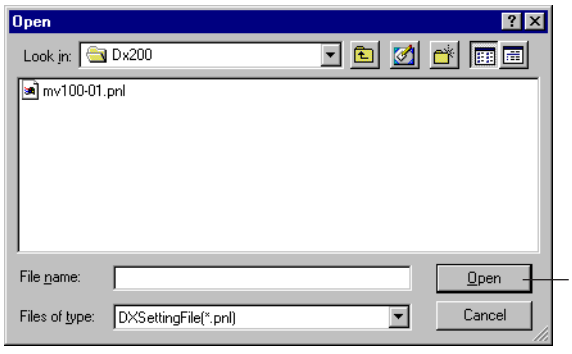
Select [File]-[New] to create new setup data from the second time.

Create the setup data according to step 2 and 3.

Loading Preexisting Setup Data



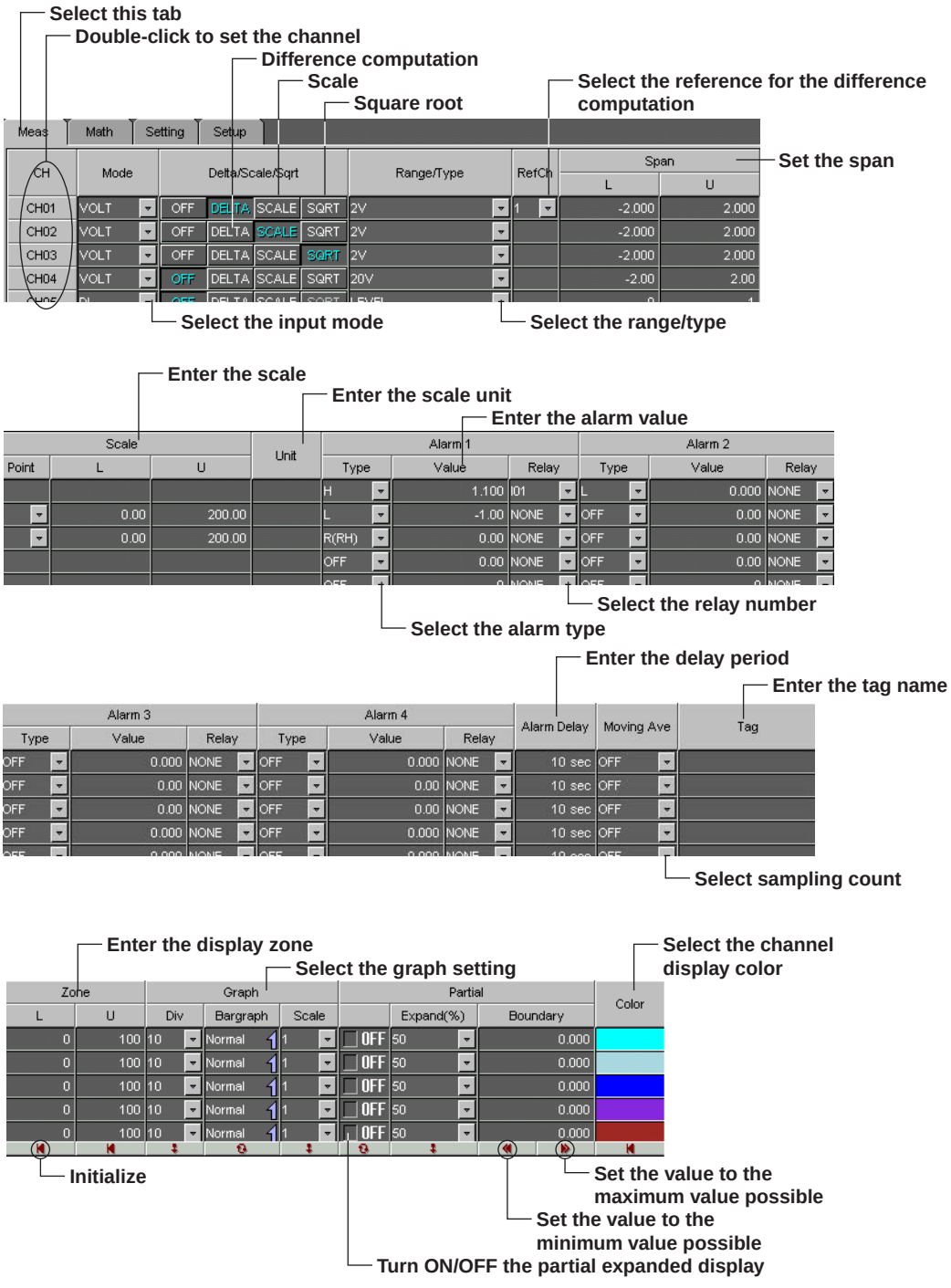
1. Select [File]-[Open].
2. The [Open] dialog box opens.



Select a file with .pnl estension and click here.

You can specify the location where the setup data file is located and open the Configurator.

5.2 Setting the Measurement Channels



Input Type (Mode and Range/Type)

Select from the list of choices from the pull-down menu.

Mode	Relevant Settings
VOLT (voltage)	Range, span L, and span U
TC (thermocouple)	Type, span L, and span U
RTD (resistance temperature detector)	Type, span L, and span U
DI (voltage level/contact input)	Range, span L, and span U
SKIP (Measurement/Display OFF)	None

Note

- When a value outside the range is entered or when the span L and span U values are set to the same value, they are corrected when the data are checked.
- If SKIP is selected, settings such as Delta/Scale/Sqrt and Range/Type are discarded.

Difference Computation and Reference

Displays the difference between the input and the reference channel.
If difference computation is performed between channels that have different range and type settings, the decimal position of the computed result is set to that of the channel computing the difference. If the number of digits to the right of the decimal of the reference channel is greater than that of the channel computing the difference, the reference value below the least significant digit of the channel computing difference is rounded beforehand.

Display Span

Sets the upper and lower limits (full scale) of the display.
When the span L and span U values are set to the same value or when a value outside the range is entered, they are corrected when the data are checked.

Scale

Scale L, scale U, and decimal point

Scale's value is displayed by taking the range between scale L and scale U to be full scale.
Enter the upper and lower limit values to which you wish to convert the raw values. Include the decimal point.
When the scale L and scale U values are set to the same value or when a value outside the range is entered, they are corrected when the data are checked.

Unit

Enter the unit using up to six characters.

Square Root

Computes and displays the square root of the input. This setting can be used only when the input mode is set to VOLT (voltage). As necessary, set the span, scale, and unit.

Alarm

Four alarms (Alarm 1 to 4) can be specified on each channel.

Type

Select H, L, h, l, R, T or t. T or t is selectable when the style number is greater than or equal to 2. The selectable alarms vary depending on the input mode and computation type. For details, see section 6.2 in the User's Manual IM04L02A01-01E.

Alarm value

Alarm is generated using the specified value as the boundary. The selectable range of alarm values vary depending on the input mode and range.

Alarm delay

Alarm is generated when the measured value stays above or below the specified alarm value for the specified time (delay period).

Relay

To output relays, select the output relay number. Otherwise, select [NONE].

Input Filter and Moving Average

Moving average can be specified on models DX106, DX112, DX210, DX220, DX230, MV106, MV112, MV210, MV220, and MV230.
Input filter can be specified on models DX102, DX104, DX204, DX208, MV102, MV104, MV204, and MV208.

Input filter

To use the input filter, select the time constant (2 s, 5 s, or 10 s).

Moving average

To use the moving average, select the sampling count (2 to 16).

Tag

Up to 16 characters can be entered for the tag.
You can use the tag name instead of the channel name to be displayed on the screen.
The [Setup] screen is used to select whether to display the channel name or the tag name on the screen.
If tag is selected in the [Setup] screen, you will be able to select tag No., tag comment, or tag in the Data Monitor or Data Viewer.

Display Zone

You can select the range of the screen in which the waveform of each channel is to be displayed.
Specify positions (%) on the display scale for the upper and lower limits.
The conditions for setting the zones are as follows:

- Range: 0% to 100%
  The lower limit must be less than the upper limit
- The difference between the lower and upper limits is at least 5%.

Graph

Divisions

Select the number of bar graph divisions.

Bar graph

Select the reference position of the bar graph. Selecting [Center] when the bar graph is vertical produces no effect.
It is set back to [Normal] when the data are checked.

Scale

When using scale display on the trend screen, select the position to display the scale.
For details related to divisions, bar graph, and scale, see section 7.10 in the DX100/DX200/MV100/MV200 User's Manual.

Partial Expanded Display

Position (%)

Set the boundary for the partial expanded display. The range is from 1 to 99%.

Boundary

The conditions used to set the boundary vary depending on the measurement and computation channels as follows:

- Measurement channel
  When SCALE and SQRT are not used: Span L < boundary < span U
  When SCALE and SQRT are used: Scale L < boundary < scale U

- Computation channel
  Span L < boundary < span U

Note

The partial expansion settings take effect when the partial expansion function is set to [Use] in the [Aux] section of the [Setup] tab.

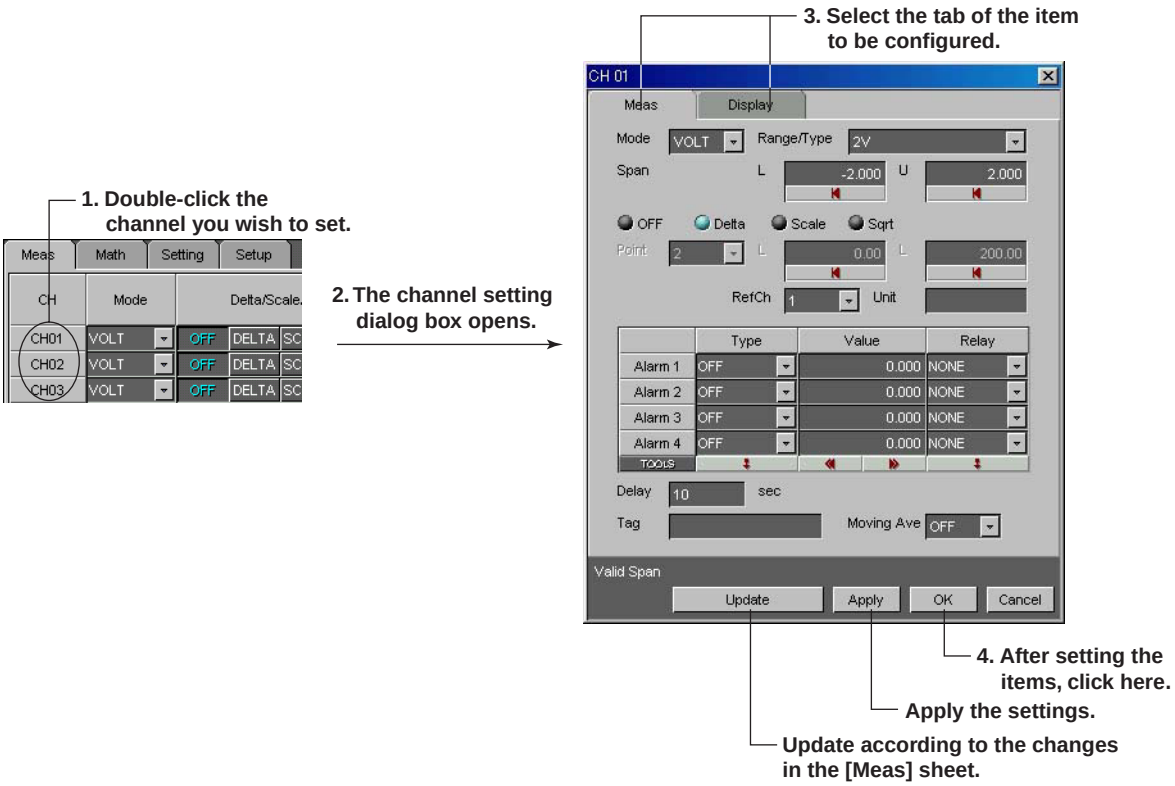
Display Color

You can select the display color of each channel from 16 colors.

Copying and Pasting Setup Data

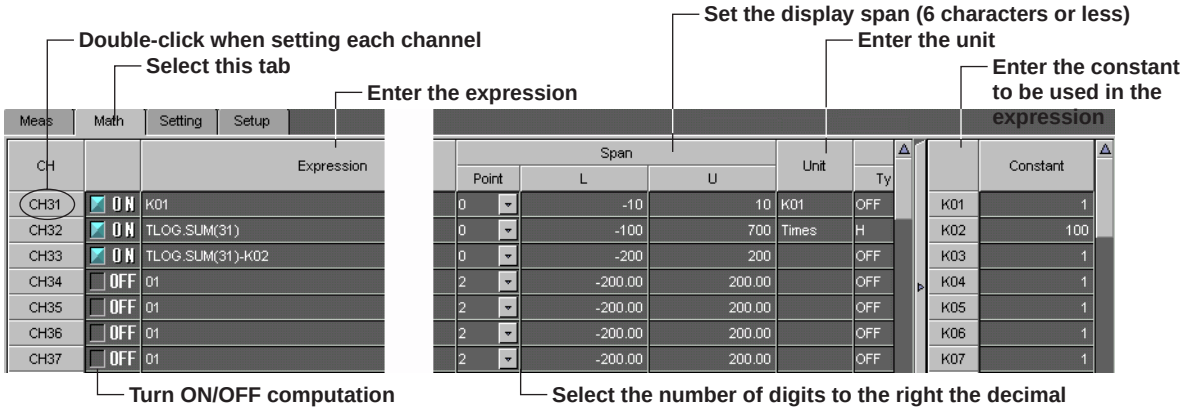
The items checked in [Copy Details] can be copied and pasted. Click the channel number to select the copy source or paste destination.
To select multiple channels to be copied, drag the channel number to specify the range to be copied. To select multiple copy destinations, select the range in a similar fashion.

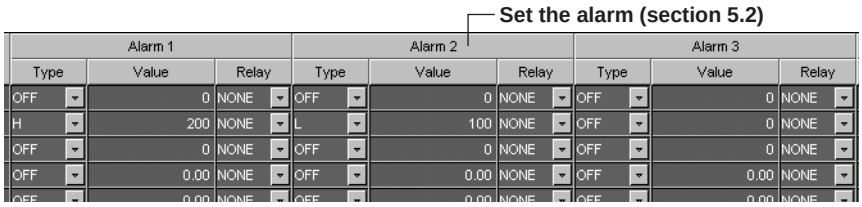
Setting One Channel at a Time

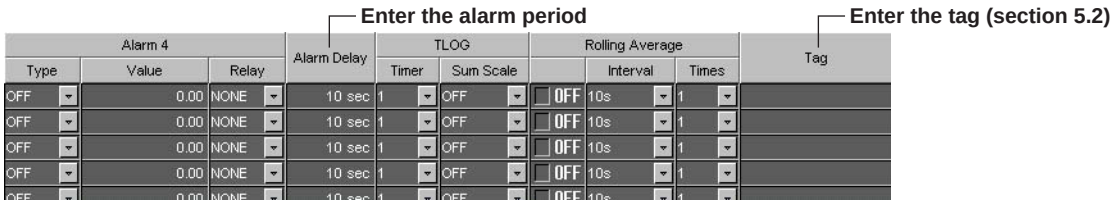


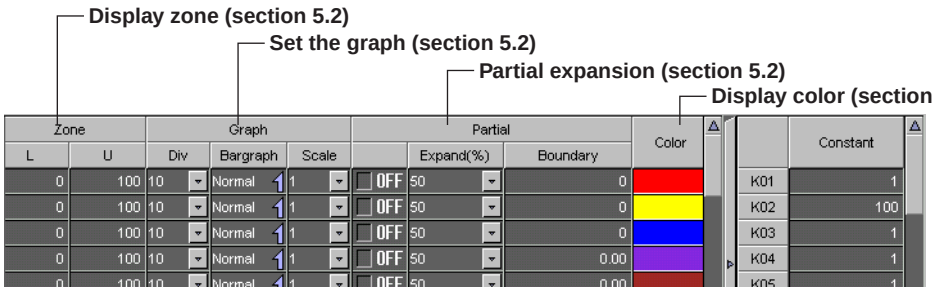
The items in the measurement channel tab can be configured for each channel. The items that are configured are the same as those configured on the spreadsheet. For details, see the page corresponding to the item.

5.3 Setting the Computation Channels









Turning ON/OFF Computation

Select whether or not to perform computation for each channel.

Expression

Enter the expression using up to 40 characters. For details related to the expression, see the DX100/DX200/MV100/MV200 User's Manual.

Display Span

Sets the upper and lower limits of the display.
The range is from -9999999 to 99999999. Set the number of digits to the right the decimal to four digits or less.

Alarm and Tag

The settings are the same as the measurement channels. For details, see section 5.2, “Setting the Measurement Channel.”

TLOG Computation

Timer

Select one of the timers (1 to 3) set in the setup mode.
The computation interval of TLOG computation is set to the time assigned to the selected timer.

Sum scale

Set the sum scale.

Rolling Average

Interval

Select the sampling interval when rolling average is activated.

Times (Number of samples)

Select the number of samples (number of data points used to compute the rolling average).

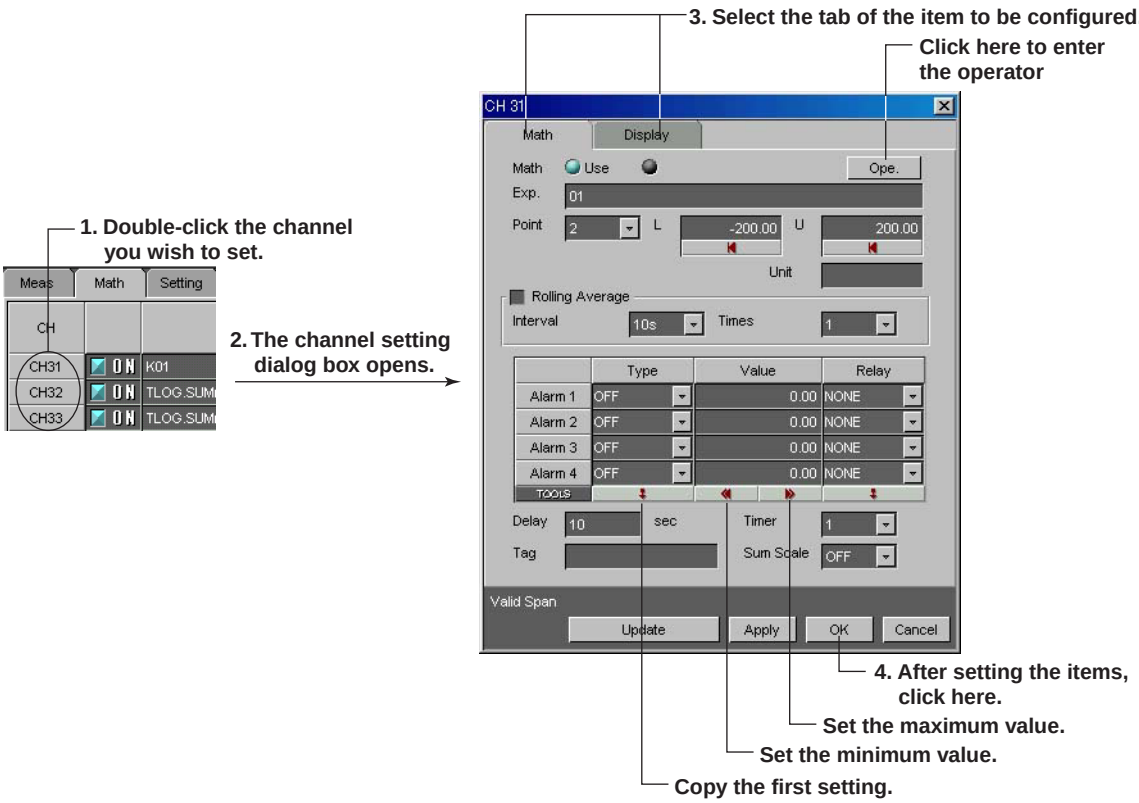
Display Zone, Graph, Partial Expansion, and Color

The settings are the same as the measurement channels. For details, see section 5.2, “Setting the Measurement Channel.”

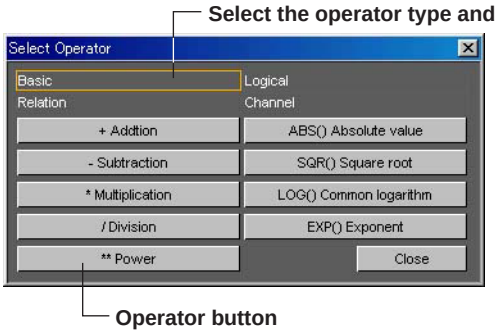
Constant

You can set constants to be used in the expression. Up to 12 and 30 constants can be specified on the DX100/MV100 and DX200/MV200, respectively.

Setting One Computation Channel at a Time



<Select Operator dialog box>



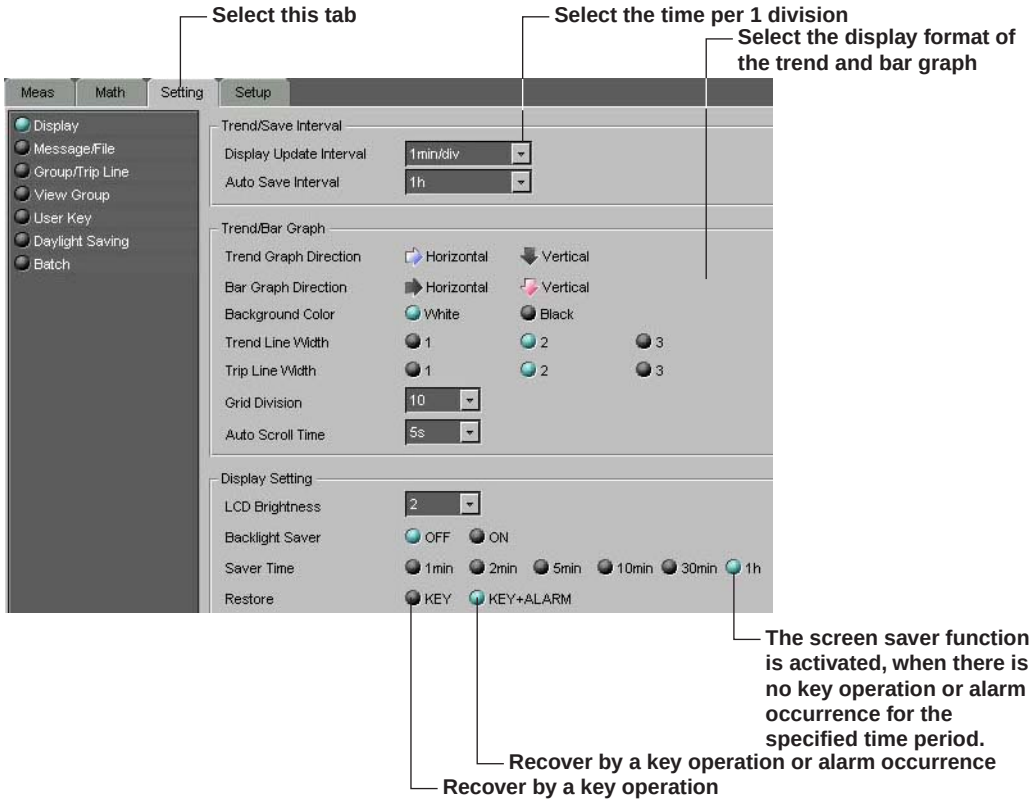
The items in the math channel tab can be configured for each channel. The items that are configured are the same as those configured on the spreadsheet. For details, see the page corresponding to the item.

Copying and Pasting Setup Data

See section 5.2, “Setting the Measurement Channel.”

5.4 Configuring the Settings

Screen Display



If you selected MV100 in the "System Configuration" dialog box, "User key" on the "Setting" page will not be displayed.

Display update interval

You can select the display update interval from 1 min/div, 2 min/div, 5 min/div, 10 min/div, 20 min/div, 30 min/div, 1 h/div, 2 h/div, and 4 h/div. In addition to these selections, 15 sec/div and 30 sec/div can also be selected on the MV102, MV104, MV204, and MV208 when the style number is greater than or equal to 3.

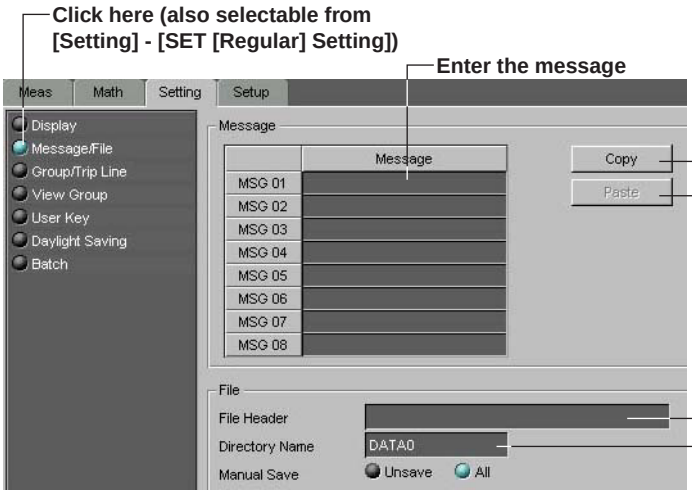
Auto save interval

The auto save interval can be specified when the [Save] is set to [Auto] (see page 5-17) and the data type is set to [DISPLAY] or [EVENT&DISP] in the memory sample section of the setup tab.

Auto scroll time

This is the time period used to automatically switch the displayed group. It can be specified when the style number of the DX or MV is greater than or equal to 2.

Message/File



Message

Up to 16 characters can be entered for the message.

File header

Adds a comment to the header section of the measurement/computation data file.

Director name

Set the name of the folder in which the measurement/computation data files is to be saved.

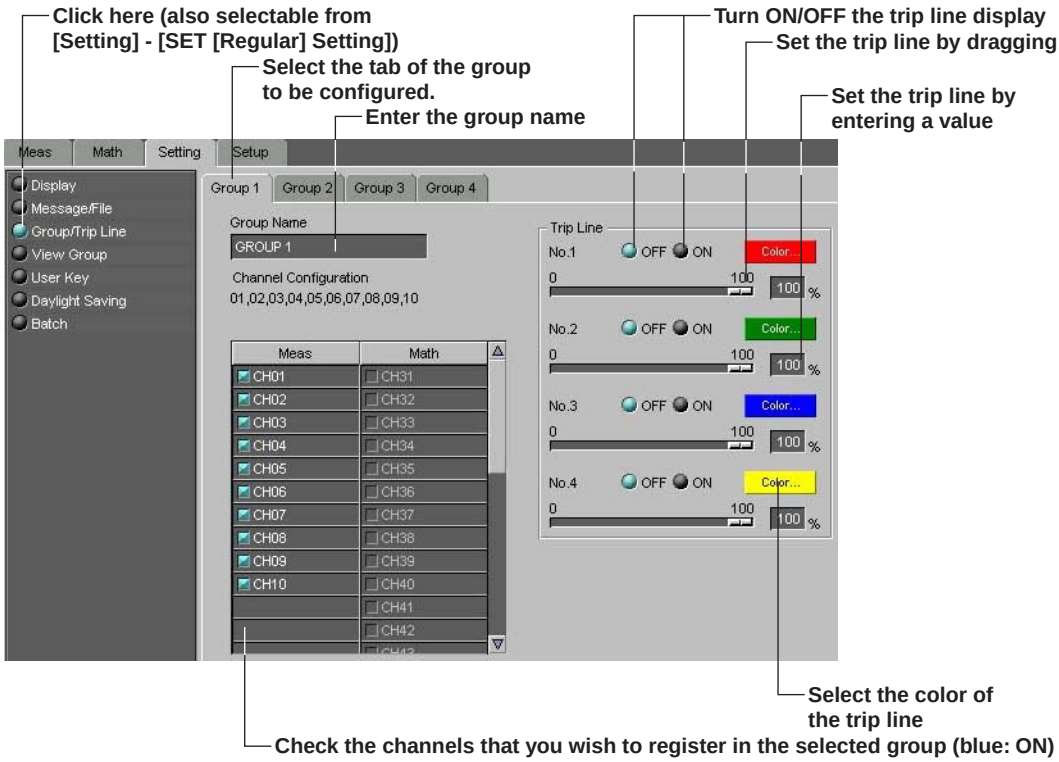
Note

- Up to eight characters can be entered for the file header and director name. AUX, CON, PRN, NUL, and CLOCK cannot be used.
- If the directory name is not specified, DATA0 (default) is automatically set.

Manual save

Select whether to save all the data or data that have not been saved during manual save.

Group/Trip Line



Group name

Up to 16 characters can be entered for the group name.

Number of channels

The maximum number of channels that can be assigned to a group is 10 and 6 for DX200/MV200 and DX100/MV100, respectively. The assigned channels are listed under [Channel Configuration].

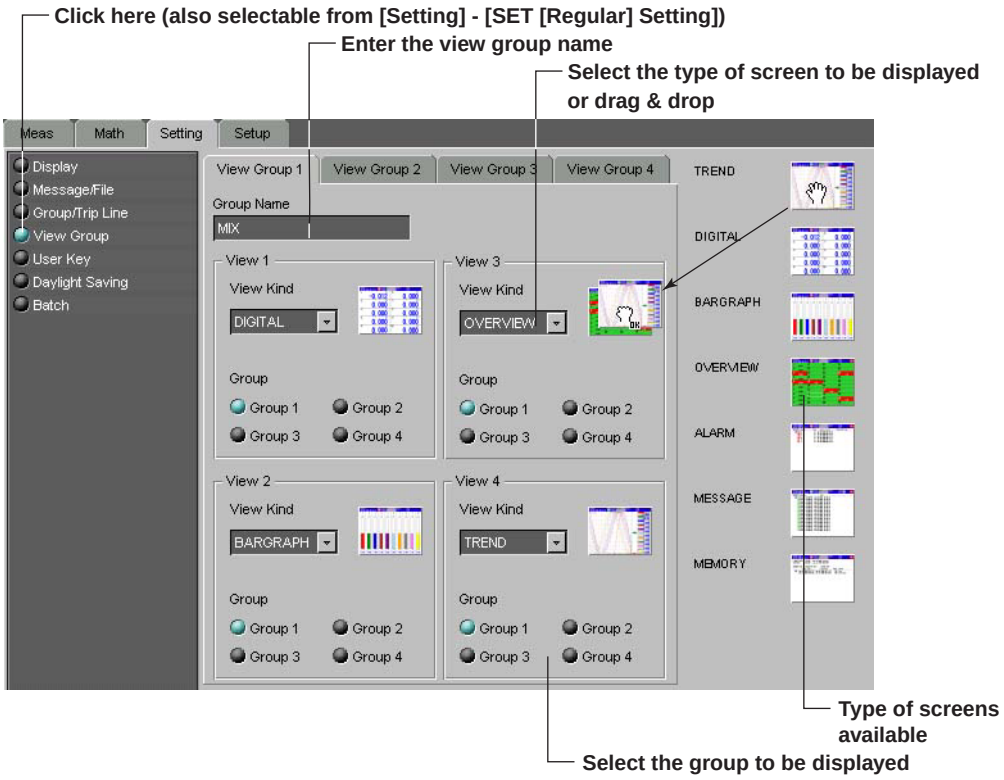
If no channels are specified, CH01 is automatically assigned.

Trip line

Up to four trip lines can be set to one group.

With regard to the trip lines set here, the first and second settings (No.1 and No. 2) refer to the trip lines in the Data Monitor and Data Viewer. If you change them here, they will also change in the Data Monitor and Data Viewer.

Setting the View Group (DX200, MV200 Only)



View group

Up to four view groups can be registered.

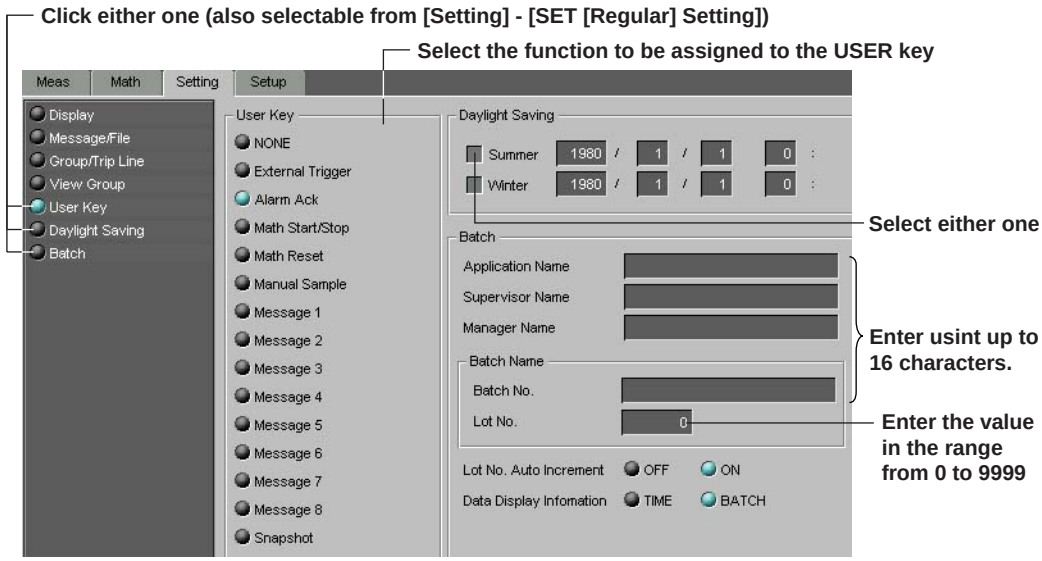
Group Name

Up to 16 characters can be entered for the group name. The specified group name appears as a sub menu of the [4 Panel] display of the DX200/MV200.

Screen type

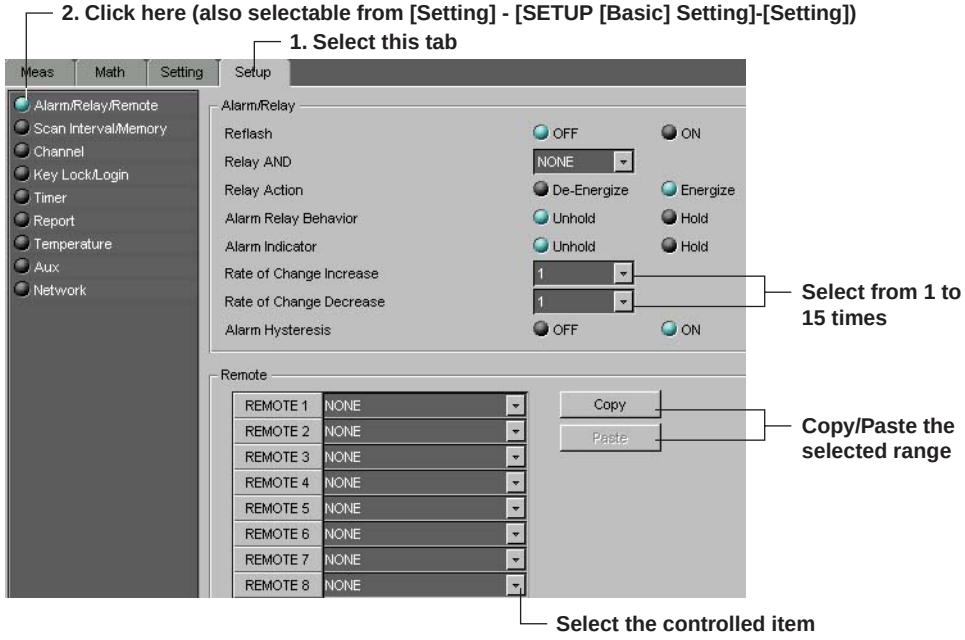
The view group is made up of four screens. Select the type of screen to display in each screen.

USER Key (DX100, DX200 and MV200 Only), Daylight Saving, Batch (Option, When the Style Number is Greater than or Equal to 2)



5.5 Configuring the Setup Mode

Alarm/Relay/Remote



Alarm

Select the alarm format. The selected items become blue.

Relay AND

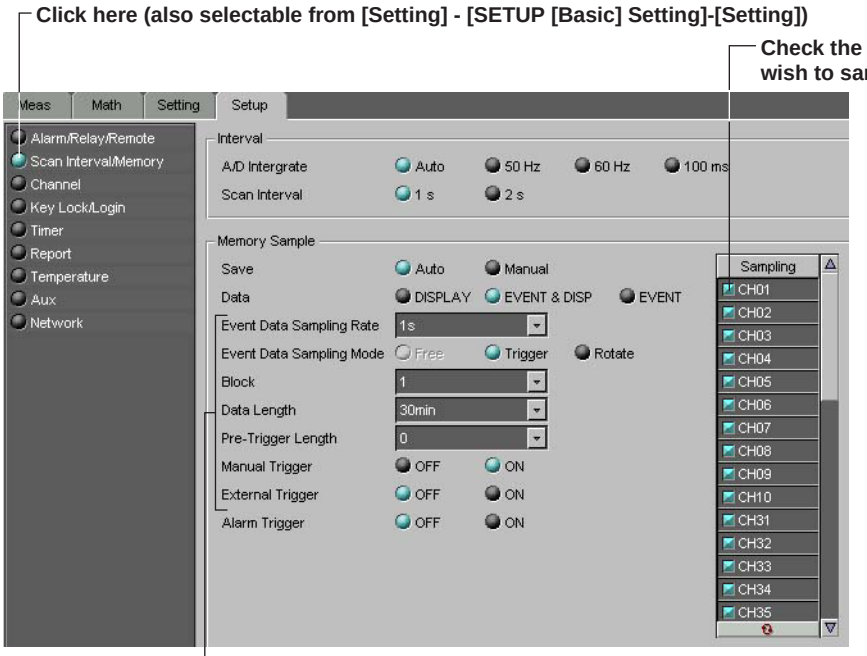
Set the range of relays (from the first alarm relay) to take the AND logic. All other relays will be set to OR logic. If [NONE] is selected, all relays will operate using the OR logic.

Remote (Option)

You can assign items to be controlled by the eight remote control terminals. This is possible, if the remote function is available.

For details related to the copy/paste function, see page 5-7.

Scan Interval/Memory



Scan interval

The selectable scan intervals vary depending on the model as follows:

DX102, DX104, DX204, DX208, MV102, MV104, MV204, and MV208: 125 ms and 250 ms

DX106, DX112, DX210, DX220, DX230, MV106, MV112, MV220, and MV230: 1 s and 2 s

A/D Integrate

100 ms can be selected only when the scan interval is set to 2 s.

Memory Sample (save method of measured/computed data)

- Number of blocks
  When the data type is [EVENT], select 1, 2, 4, 8, or 16.
  When the data type is [EVENT&DISP], select 1, 2, or 4.

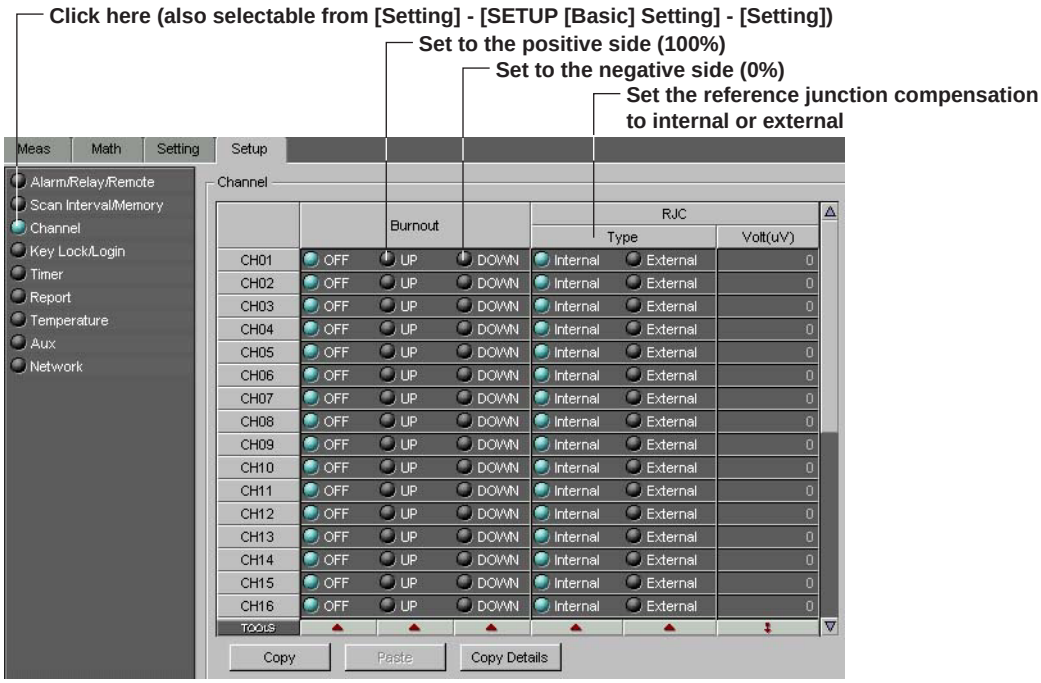
- Pre-Trigger Length
  If 0% is selected, the event file will entirely consist of data after the trigger. If 100% is selected, the event file will entirely consist of data before the trigger.

- Memory Sample
  Select the channels that are to be saved to the memory.

Note

If [Save] is set to [Manual], the data directory is created at a location that cannot be managed by the DAQ Desktop. Therefore, the DAQ Desktop cannot be used to handle data files in that directory.

Channel (Setting the Burnout and RJC)



Burnout

For thermocouple (TC) inputs, select how the measurement results are to be handled when the thermocouple burns out.

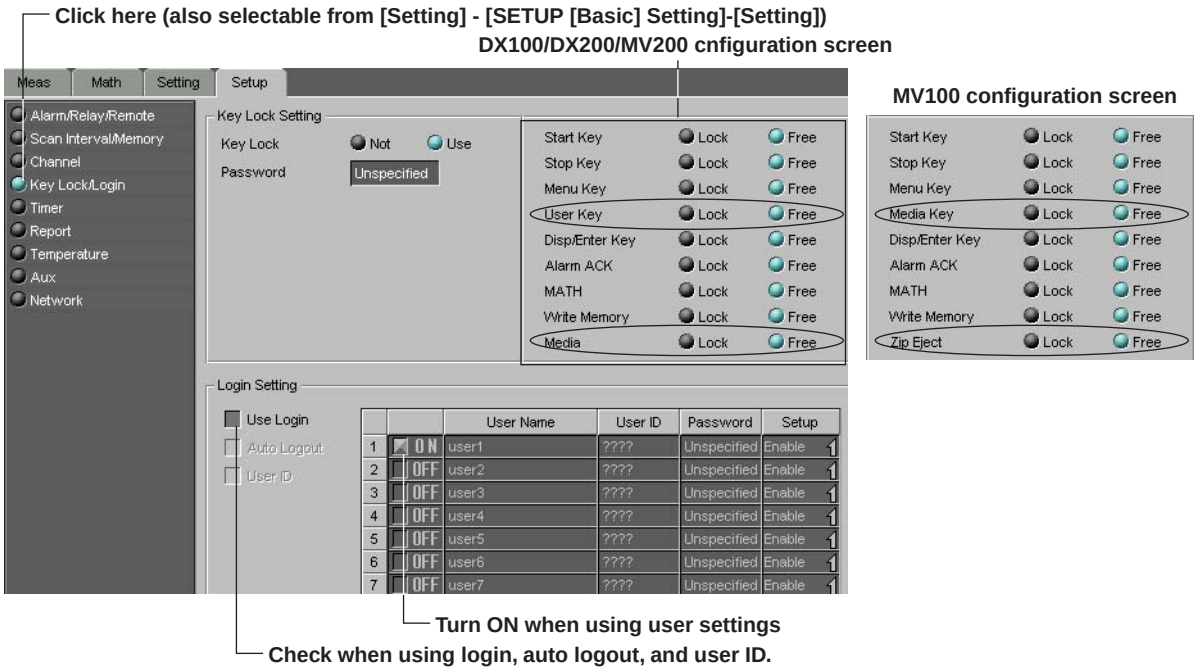
RJC Volt (uV)

When the reference junction compensation is set to [External], set the compensation value in the range from -20,000 to 20,000.

Copying and pasting setup data

The items checked in [Copy Details] can be copied and pasted. Click the channel number to select the copy source or paste destination.
To select multiple channels to be copied, drag the channel number to specify the range to be copied. To select multiple copy destinations, select the range in a similar fashion.

Key Lock/Login



Setting the key lock

- **Key Lock**

  When using the key lock function, select whether or not to activate the key lock function (lock or free).

- **Password**

  Enter the password used to release the key lock using up to six characters. [???] is displayed after the password is entered.

Setting the login

- **User name**

  Up to 16 characters can be entered for the user name.

- **User ID**

  Up to 4 characters can be entered for the User ID. [???] is displayed after the password is entered.

- **Password**

  Up to 6 characters can be entered for the password. [???] is displayed after the password is entered.

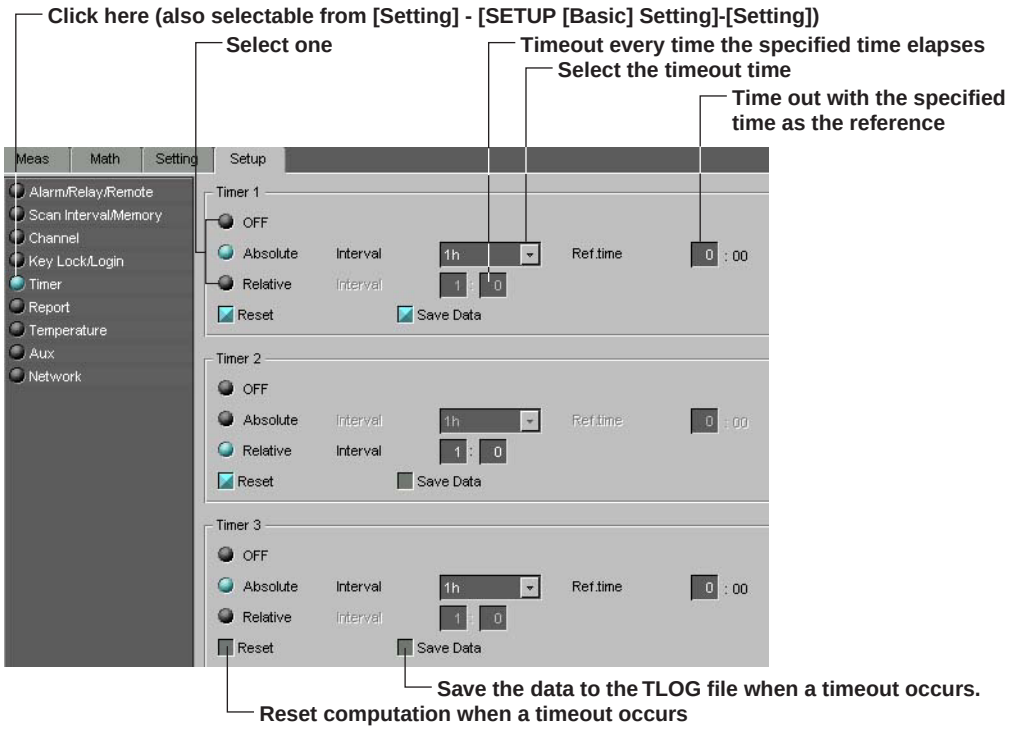
- **Setup**

  Select whether or not to allow setting changes in the setup mode.

Note

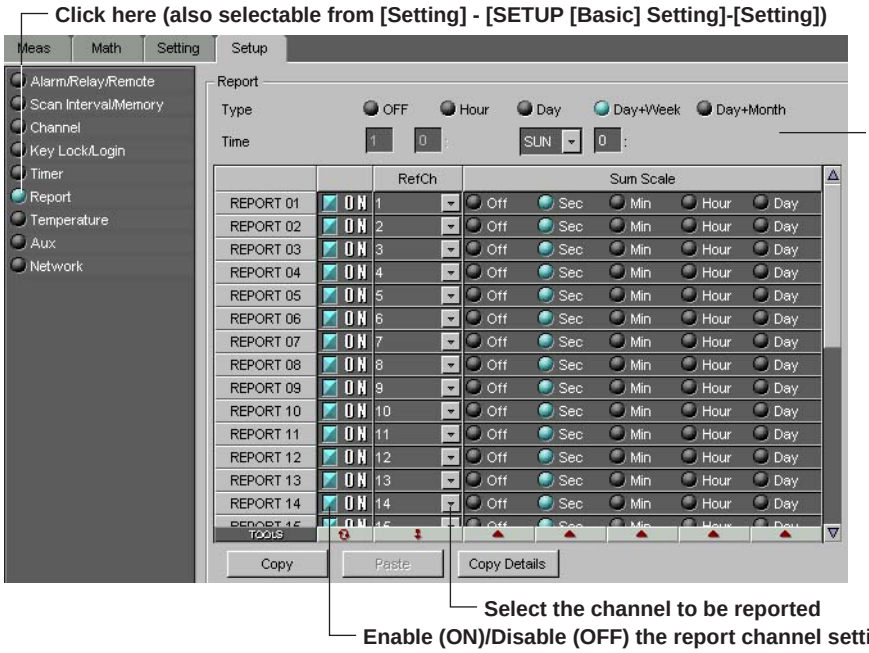
- If there is a duplicate [User Name] that is turned ON, the user with the larger user number is turned OFF.
- If [Setup] of all users that are turned ON is set to [Disable], the [Setup] of the user with the smallest number is set to [Enable].

Timer (Option)



You can set three types of timers to be used in the statistical computation. You can have the data saved to a TLOG file or reset the computation when the specified timeout time elapses.

Report (Creating Hourly/Daily/Weekly/Monthly Reports)



Report channel

There are 30 channels and 12 channels on the DX200/MV200 and DX100/MV100, respectively.

Converting the reference unit time

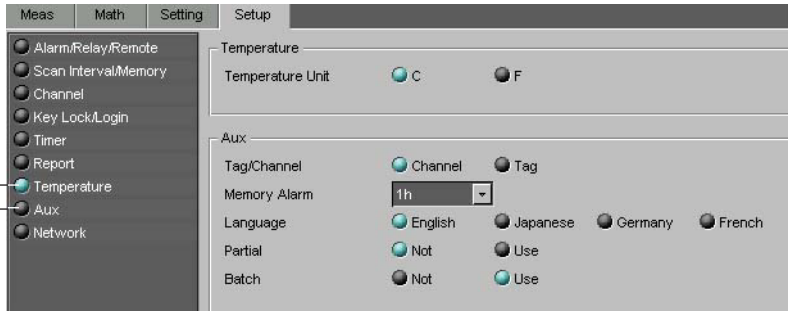
Select whether or not to convert the computed results of the TLOG.SUM computation channels to a specified time unit value. Select [Off (no conversion)], [Sec (seconds)], [Min (minutes)], or [Hour (hours)].

Copy

For details related to the copy/paste function, see page 5-7.

Setting the Temperature, Tag, Memory Alarm Time, Displayed Language, and Partial Expanded Display

Click either one (also selectable from [Setting] - [SETUP [Basic] Setting]-[Setting])



-

emperature

elect the °C or °F for the temperature unit.

ag/Channel

elect whether to use the tag name or channel number as the measurement/computation hannel label (See “Selecting the Characters Used to Identify Channels” on page 3-6).
f you select tag name, you can select the label display from tag and channel.

emory alarm time

ree space in the internal memory is monitored, and the memory full relay can be programmed o activate some period of time before the memory is completely full. This time period is called he memory alarm time.

isplayed language

elect the language to be used on the display.
he types of displayed language vary depending on the style number of the DX or MV. If the tyle number is greater than or equal to 2, you can select German or French in addition to nglish and Japanese.

artial expanded display

f the partial expanded display is set to [Not], the partial expanded display settings of the Meas/M ath tab are void.

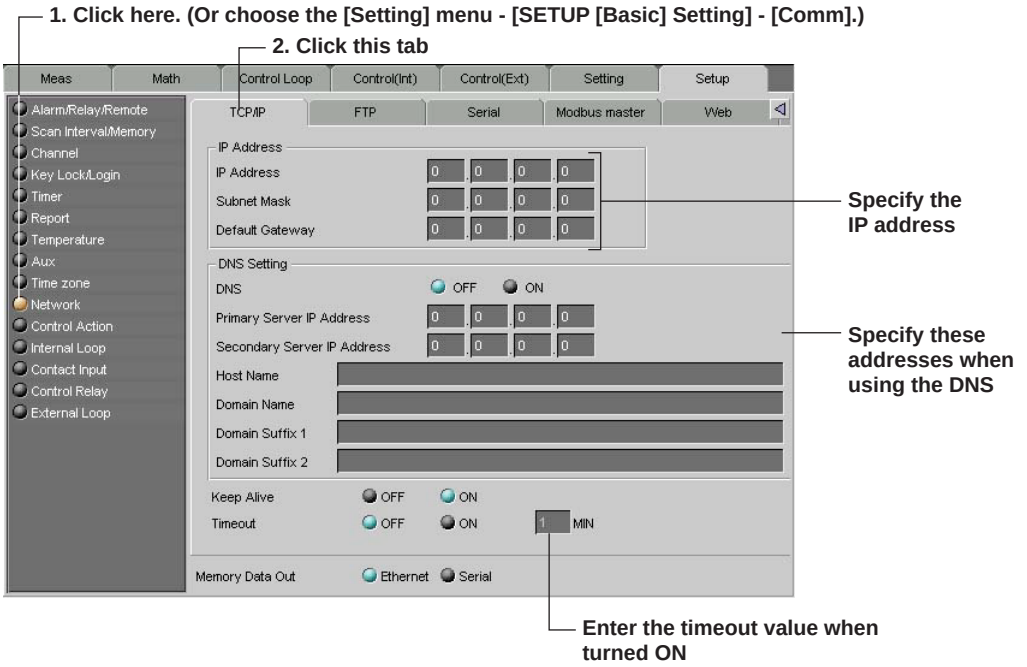
Batch function (option)

ou can set the batch function when the style number of the DX or MV is greater than or equal o 2.

Network

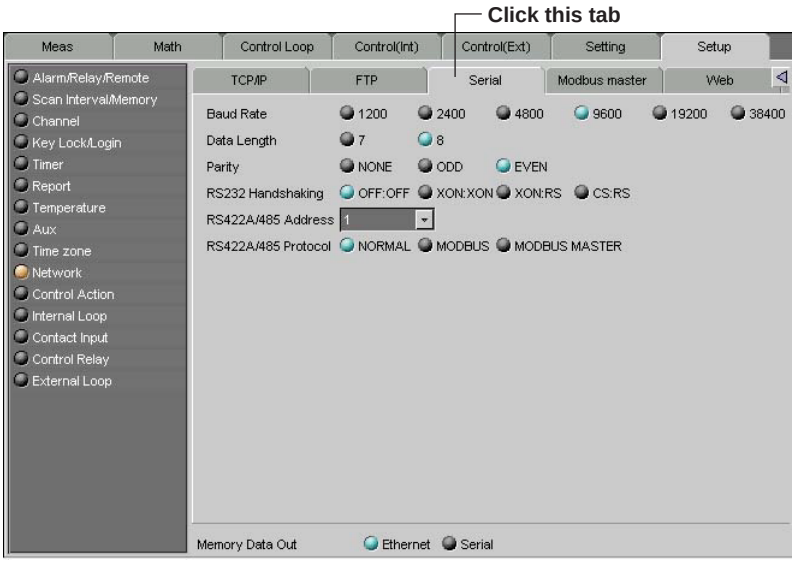
TCP/IP Settings

Connect the CX to the Ethernet and, in the dialog box below, enter TCP/IP settings. Type the same address for [IP Address] as the one of the [Address] box of the [Network Settings] dialog box.



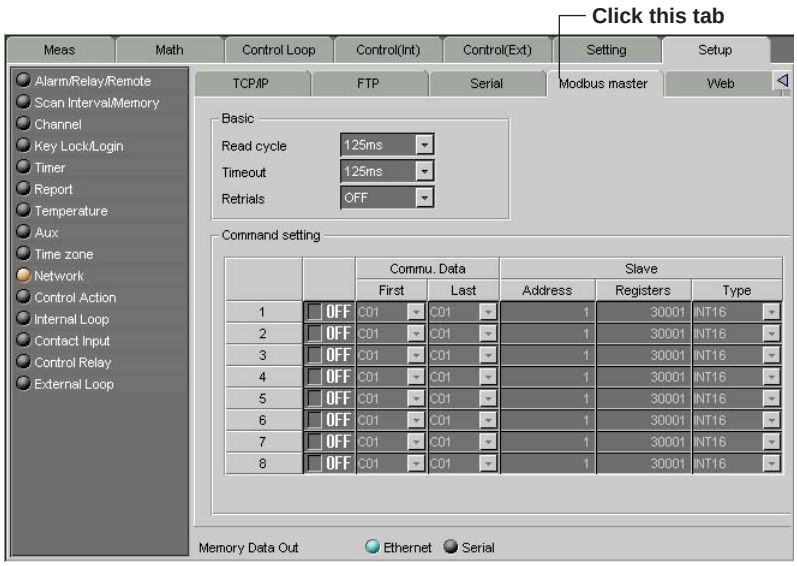
Serial Communication Settings

When using serial communications between the CX and other devices, set the parameters required for serial communications. In the [Protocol] settings, if [MODBUS MASTER] is selected, you must to click the [Modbus master] tab and make Modbus master settings.



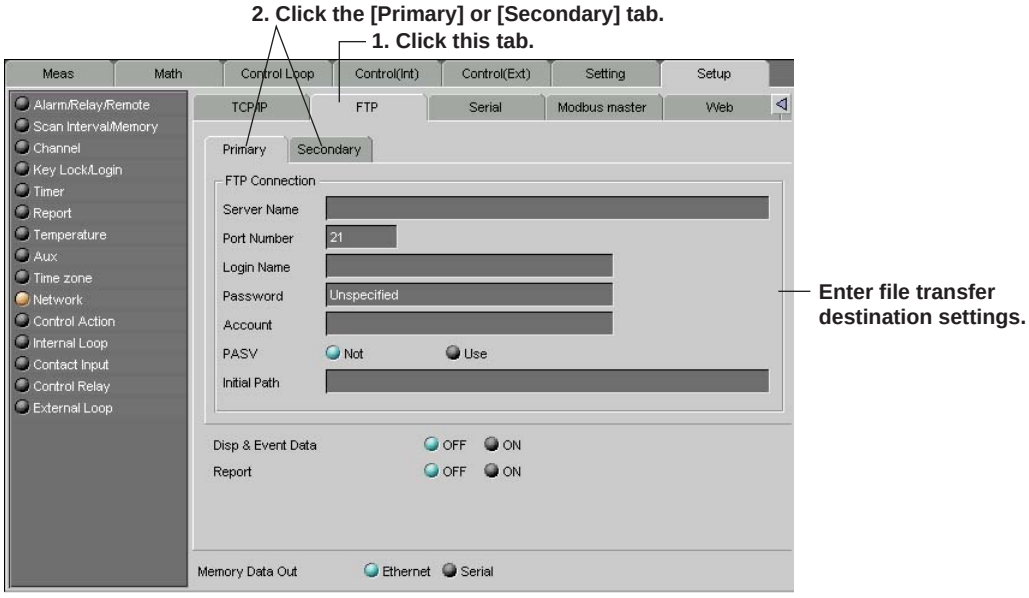
Modbus Master Settings

When using the CX as a Modbus master, enter the Modbus master basic and command settings. For details about the settings.



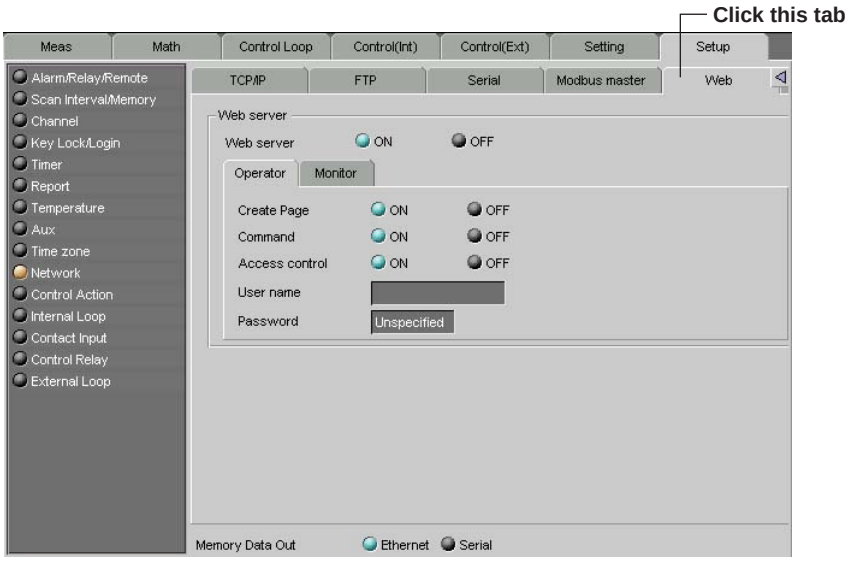
FTP Settings

Using the FTP function, measurement/calculation data can be automatically transferred from the CX to the specified server as files. The FTP function can be used only with Ethernet communications. When using the FTP function, specify the necessary [FTP Connection] settings in the dialog box below.



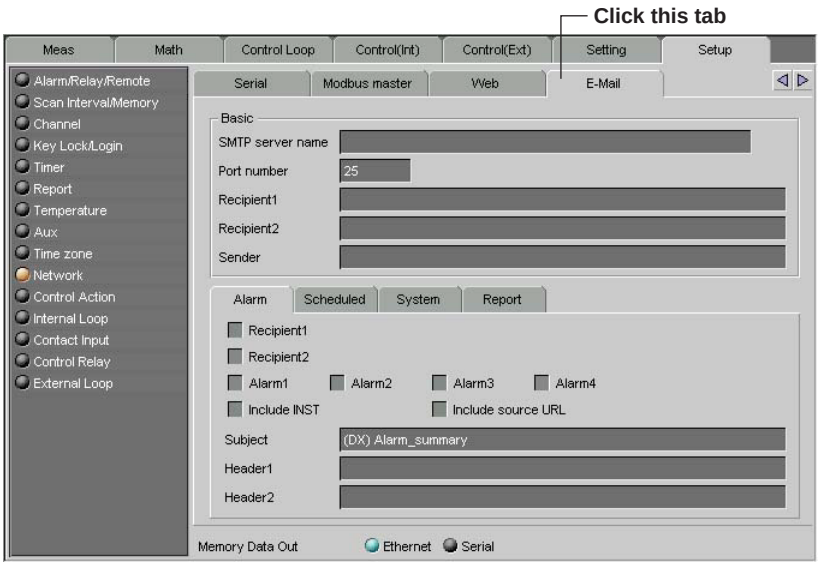
Web Server Settings

When using Ethernet communications, the CX can be set up as a web server. Set [Web Server] to [ON], and then set the access certification for the operator page and monitor page.



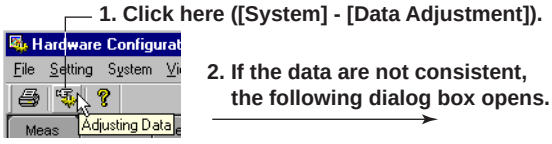
E-mail Transmission Settings

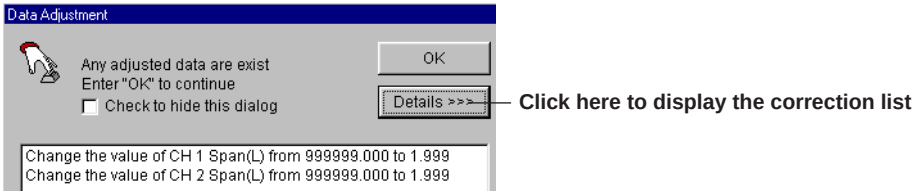
When using e-mail transmission, specify [SMTP server name], [Port number], [Recipient1], etc. For details about the settings.



By clicking the [Alarm], [Scheduled], [System], or [Report] tab, you can make settings separately for each type of e-mail message.

5.6 Adjusting the Setup Data (Checking the Data)





Checks whether or not the specified setup is consistent with the actual system. If it is not, the data are automatically corrected.
The data are corrected in the following cases:

- When the values of the items of the Meas/Math tab are outside the range.
- When an invalid character string is used

Data adjustment dialog box

If [View] - [Data Adjustment Dialog Box] is checked, the [Data Adjustment] dialog box will open when the data are not consistent at the time of the data check or at the time of data transmission.

Note

Perform the data check before sending the new setup data to the DX100/DX200/MV100/MV200.

5.7 Sending the Setup Data to the DX/MV

The method used to send the data varies depending on whether a CONFIG file or setup data file is being transmitted.

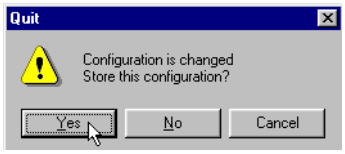
CONFIG file

The following two methods are available:

- **Selecting from the toolbar**

The setup data are sent when [File] - [Store] is selected.

- **Clicking the [X] button**

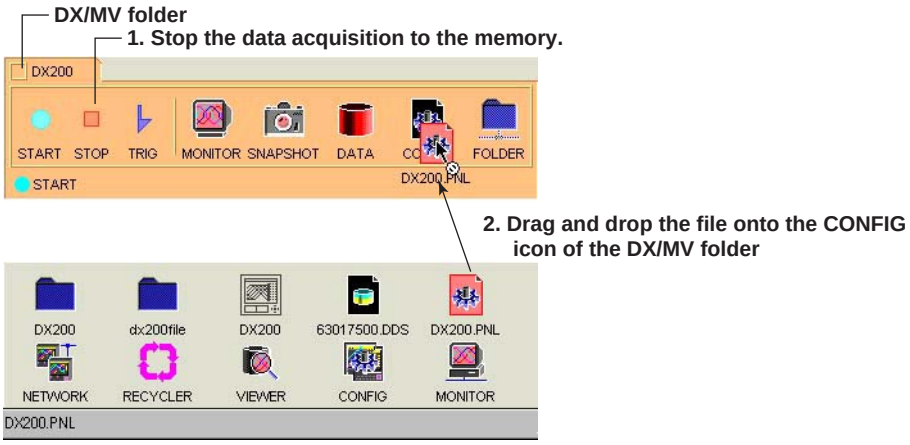


When the Configurator is closed by clicking the [×] button, a confirmation dialog box is displayed.

To send the new setup data to the DX100/DX200/MV100/MV200, click the [Yes] button. Otherwise, click the [No] or [Cancel] button.7

If the DX100/DX200/MV100/MV200 is acquiring data to the memory, a message “Now Memory & Math sampling. Can’t store setting” is displayed. The data will not be sent in this case.

Setup data file



The contents of the setup data file (*.PNL) located on the DAQ Desktop can be transmitted. If the DX100/DX200/MV100/MV200 is acquiring data to the memory, the data will not be sent in this case.

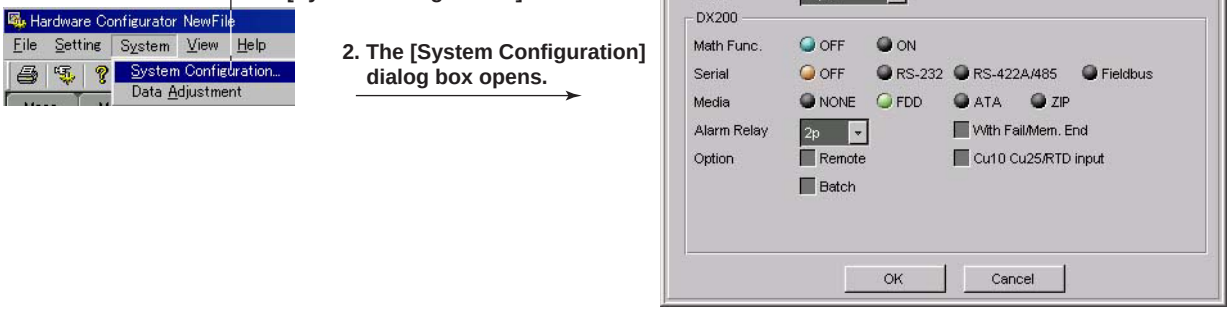
Note

Of the network settings in the [Setup] tab, the following items are not transmitted.

- [IP Address] under the [TCP/IP] tab
- All settings under the [Serial], [Modbus master], and [Web] tabs

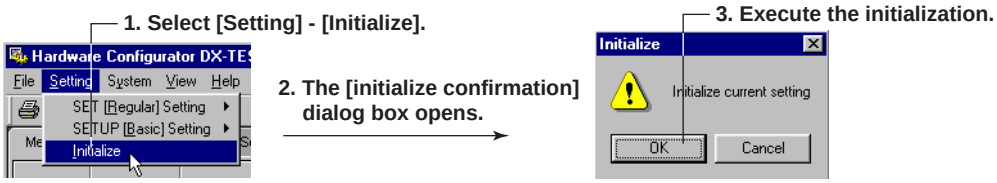
5.8 Checking the System Configuration and Initializing Setup Data

Checking the System Configuration

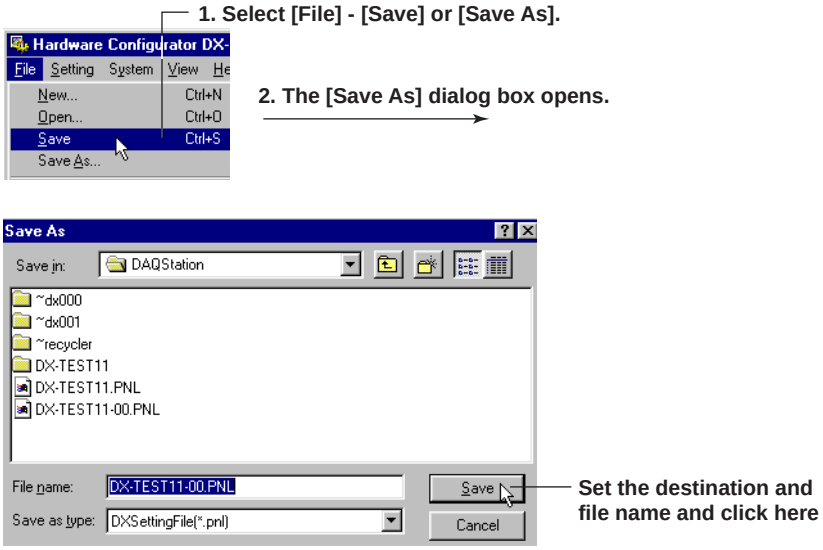


Only the system configuration in the setup data file can be checked. If the system configuration is changed and the [OK] button is clicked, a message "System Configuration is changed Input & Data are Initialized" appears. Clicking the [OK] button initializes the data.

Initializing the Setup Data



5.9 Saving the Setup Data



Save

The setup data are overwritten to the preexisting file (*.pnl). The [Save As] dialog box does not open.

Save As

Saves the setup data by specifying the save destination and file name.

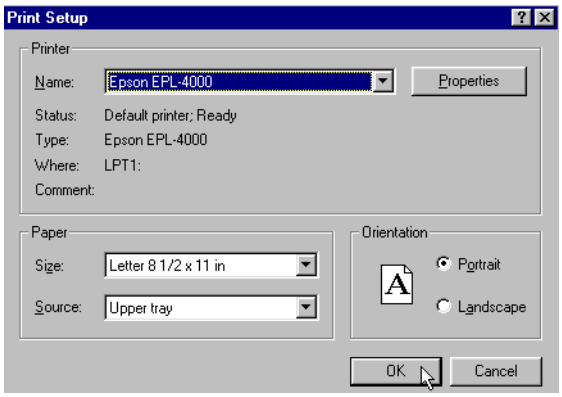
Note

The CONFIG file (directly view the setup data of the DX100/DX200/MV100/MV200) cannot be saved using [Save] or [Save As].

5.10 Printing the Setup Data

Setting the Printer

1. Select [File] - [Print Setup].



2. Set the printer, paper and orientation.

Note

Set the printer according to the environment of the system that you are using.

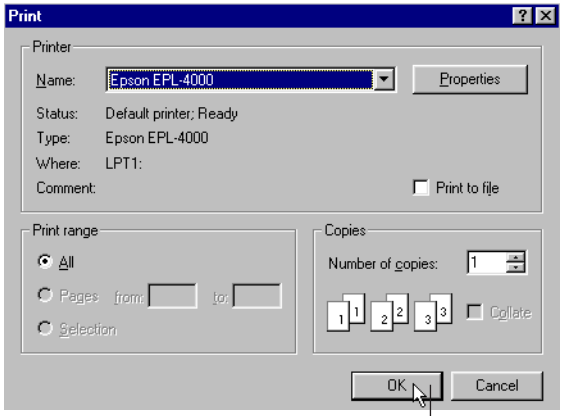
Print Preview

You can preview the print layout before actually printing the data.
Selecting [File] - [Print Preview] displays the print preview screen.

Printing

1. Click here ([File] - [Print]).

2. The [Print] dialog box opens.



Select the printer, print range, the number of copies, and click the [OK] button

5.11 Characters that can be Used

The characters in the following table can be used when entering a group name, a view group name, a message, a comment to the file header, a save destination directory name, the password for the key lock function, and login parameters such as the user name, user ID, and password.

SP	#	%	(	)	*	+	-	.	/
0	1	2	3	4	5	6	7	8	9
A	B	C	D	E	F	G	H	I	J
K	L	M	N	O	P	Q	R	S	T
U	V	W	X	Y	Z				
a	b	c	d	e	f	g	h	i	j
k	l	m	n	o	p	q	r	s	t
u	v	w	x	y	z				
_	°	@							

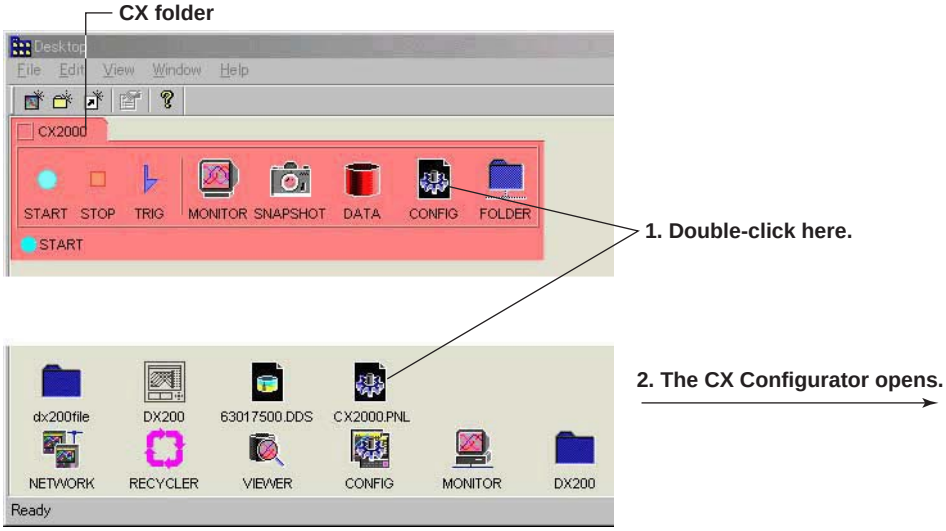
Note

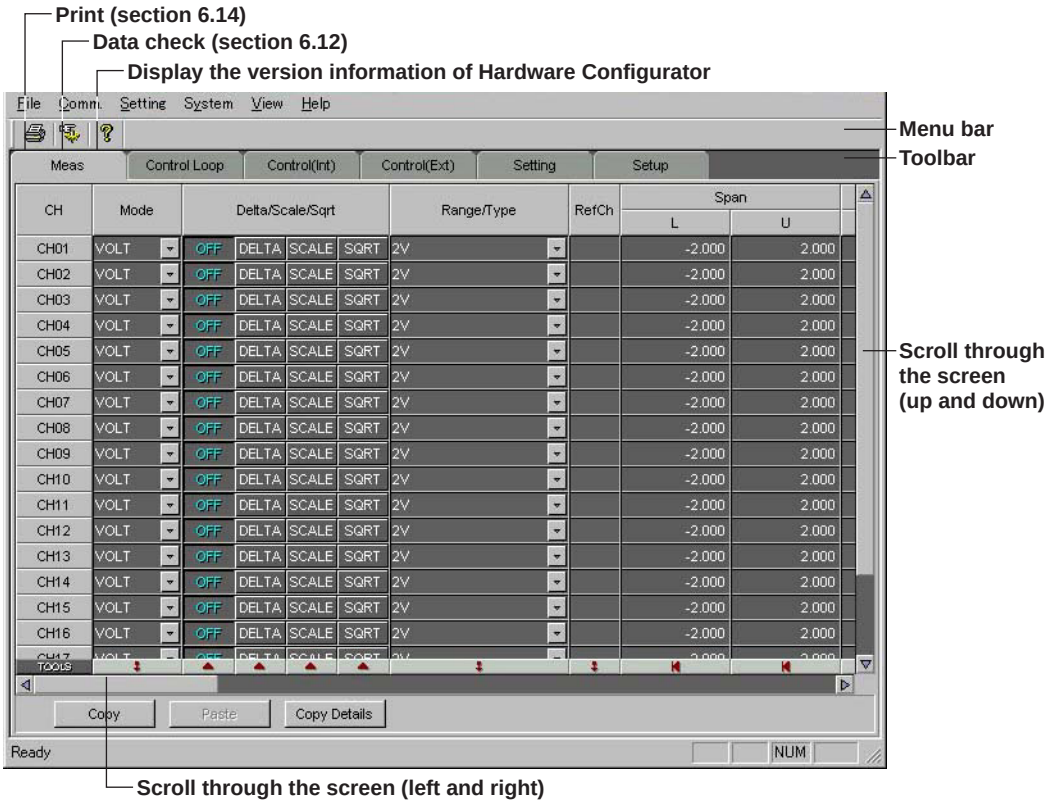
(*), (+), (.), and (/) cannot be used for the name of the directory where files are to be saved.

6.1 Starting the Hardware Configurator, the Hardware Configurator Window, and System Configuration Settings

The Hardware Configurator can be used to transmit and receive the setup data, change the setup data, and create new setup data for CX style number S1.

Starting the Hardware Configurator

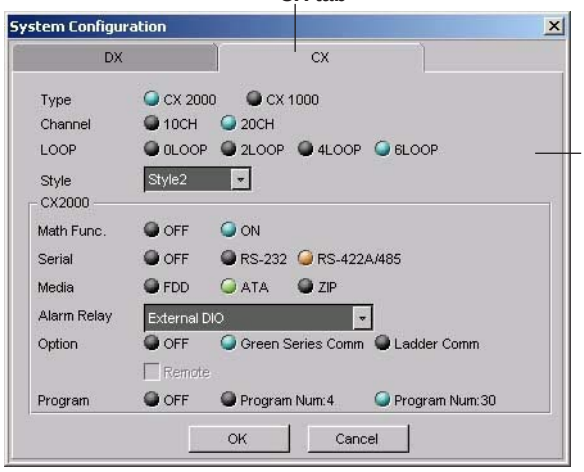




Creating Setup Data by Configuring a New System

1. Douoble-click the CONFIG icon on the desktop.
2. The [System Configuration] dialog box opens.

CX tab

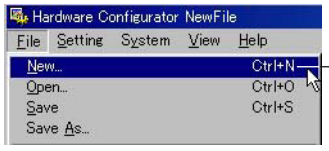


3. Click the appropriate items and click the [OK] button to open the Configurator screen.

For details about the settings in the [System Configuration] dialog box, see section 6.2 “Setting and Checking the System Configration and Initializing Setup Data”.

Note

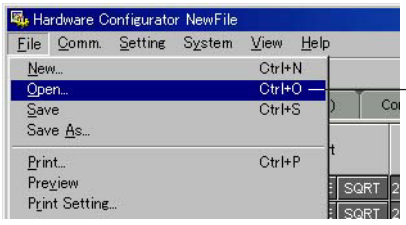
In the procedure for the System Configuration dialog box, make sure that the CX tab is selected before entering settings. If the DX tab is selected, the settings you enter will apply only to those instruments.



Select [File]-[New] to create new setup data from the second time.

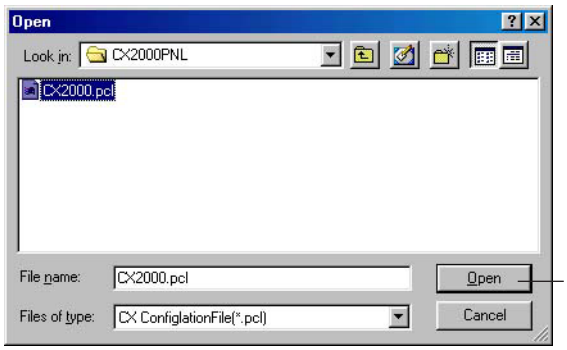
Create the setup data according to step 2 and 3.

Loading Preexisting Setup Data



1. Click the open file button or [Open] on the [File] menu.

2. The [Open] dialog box opens.



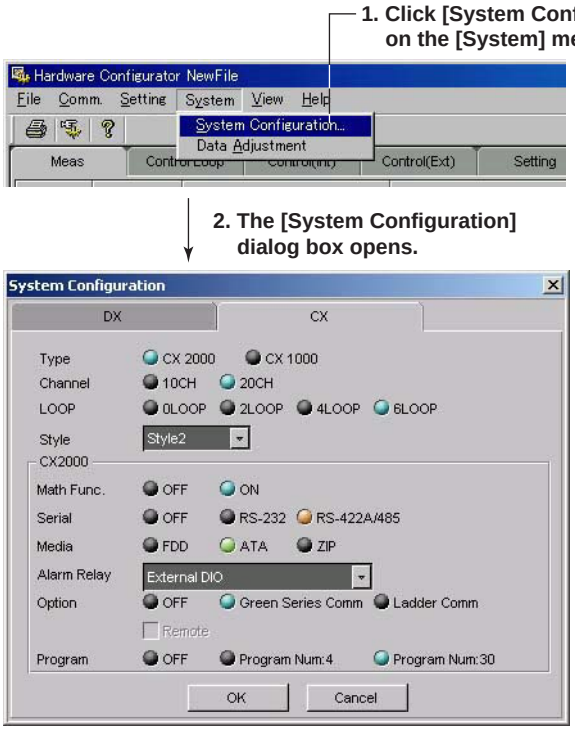
Select a file with .pcl extension and click here.

Specify the location of the setup data file and return to the Hardware Configurator window.

6.2 Setting and Checking the System Configuration and Initializing Setup Data

Entering and Checking System Settings

You can create new configuration files or open existing configuration files, and then enter or check system configuration according to the connected CX specifications.
Normally these settings should be entered per the specifications of the CX being setup.



You can enter the following settings in this dialog box.

Type

Select either CX2000 or CX1000.

Channel

Select the number of channels of the CX. The CX1000 is fixed at 6 channels.
Select either 10 or 20 channels for the CX2000.

LOOP

Select the number of loops.
CX1000: [0LOOP], [2LOOP]
CX2000: [0LOOP], [2LOOP], [4LOOP], [6LOOP]
Select the CX style number. The default is Style1.

Math Function

Select whether or not to enable the math functions.

Serial

Select the serial communications mode from [OFF], [RS-232], or [RS-422A/485].

Media

Select the external storage media from [FDD], [ATA], or [ZIP].

Alarm Relay

Select the type of alarm relay from [NONE], [4p+With Fail/Mem. End], [6p], or [External Loop] (only for CX2000). If you select 2LOOP for the CX1000, the Alarm Relay is automatically set to NONE.

Options

The options include the following.

- Green Series Comm
  Select whether communication options are installed and an external environmental monitoring system. This option can only be selected when [Serial] is set to [RS-232] or [RS-422A/485].
- Ladder Comm
  Select whether a ladder communication option is installed. This option can only be selected when [Serial] is set to [RS-232] or [RS-422A/485].
  Also, this option is not available if 0LOOP is selected.

Remote

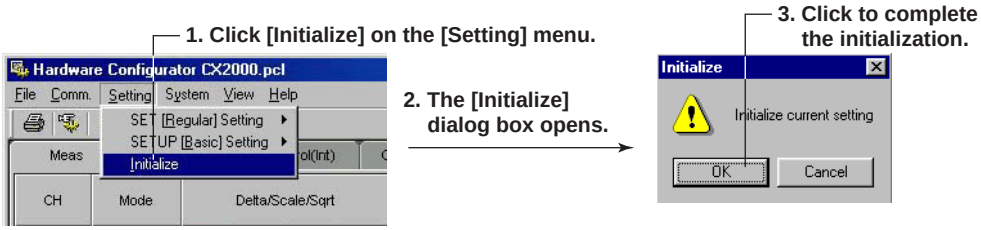
Select whether a remote option. This option is installed can only be selected when [Alarm Relay] is set to [4p+With fail/Mem. End] or [6p].

Program

Select [None], [Program Num#:4], or [Program Num#:30].

When you change the system configuration and click the [OK] button, the "System configuration has been changed. The input configuration and data will be initialized. Continue?" message appears. Click the [OK] button to initialize the data.

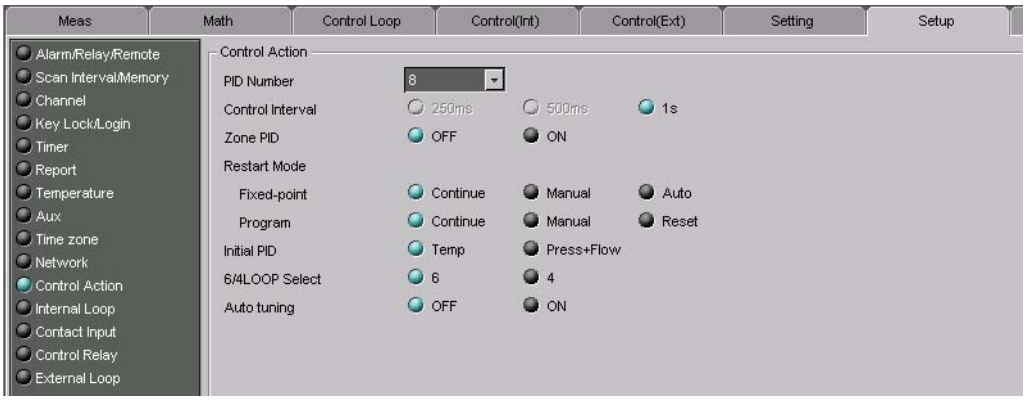
Initializing the Setup Data



6.3 Control Function Basic Settings

Make the basic settings of control function.
To do so, click the [Setup] tab then select the settings you wish to enter from the list that appears on the left of the screen. Or, you can select the items by choosing [Control Settings] - [Setup Mode] .

Control Action



PID Number

Set between 1 and 8. If the number is changed, the program pattern for the program control option will be initialized.

Control Interval

Set to [250ms], [500ms], or [1s].
However, when [A/D Integrate] under [Scan Interval/Memory] is set to [100ms], you can only select [1s].

Zone PID

Turn ON or OFF.

Restart Mode

Set to [Continue], [Manual], or [Auto].
With the program control option, the choices are [Continue], [Manual], or [Reset].

Initial PID

Set to [Temp] or [Press].

6/4LOOP Select (only for CX2000)

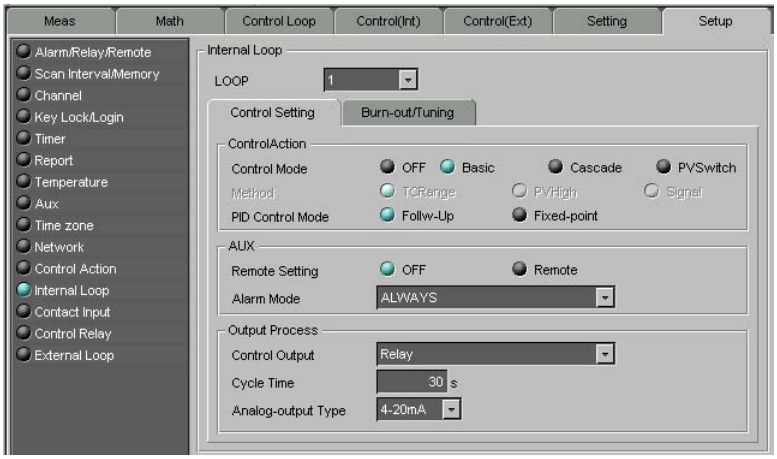
Set to 6 or 4 loops.
This selection is only available when the [LOOP] setting in the [System Configuration] dialog box is set to [6LOOP].

Auto Tuning

Turn ON or OFF.

Internal Loop

For each loop there are Control Setting and Burn-out/Tuning items.



LOOP

Select the loop number (CX1000: 1 and 2, CX2000: 1 to 6) to which the settings apply. Only the loops for which system settings were entered appear in the list.

[Control Setting] Tab

Contains the basic settings for internal loops.

- Control Action

  Control Mode

  Select the control mode from [Basic], [Cascade], or [PVSwitching]. For a loop with no control, select [OFF]. Selecting [Cascade], because of a common setting between two loops of a control output terminal block, when you set loop 1 to cascade, loop 2 can also automatically be set to cascade, for example.

  Method

  Select the switching conditions of two measurement inputs from [TCRange], [PVHigh], or [Signal]. You can only make this selection when [Control Mode] is set to [PVSwitching].

  Program Control (with the Program Control Option)

  Turn program control ON or OFF. This setting applies to both loops of a single control output terminal block.

  PID Control Mode

  Select the PID control mode from [Follow-Up] or [Fixed-point]. You cannot make this selection when [Control mode] is [OFF] for a loop.

- AUX

  Remote Setting

  When performing measurements by remote, select [Remote]. When [Control Mode] is set to [Cascade], it is not possible to set [Remote] for secondary measurement loop numbers.

  Alarm Mode

  Select from the following whether you want the alarm to be inactive.

  ALWAYS:
  Alarm is always active.

  STOP:
  Alarm inactive when operation is stopped.

  STOP/MAN:
  Alarm is inactive in manual operation mode or when operation is stopped.

- Output Process

  When [Control Mode] is set to [Cascade], the output process settings are not available.

  Control Output

  Select the type of control output from the following:

  - Relay
  - Voltage-pulse
  - Current-output
  - On/Off-control

  Cycle Time

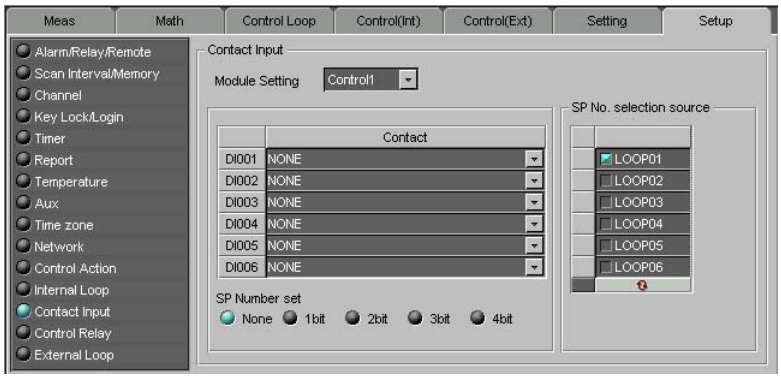
  With a PID proportional to time, set the cycle time (control output cycle) between [1]s and [1000]s.

  Analog-output Type

  For the current output, select the output current range from the following:

  - [4-20mA], [0-20mA], [20-4mA], and [20-0mA].

Contact Input



Module Setting

Select the terminal blocks where you want to register contact inputs from [CTRL3-4] for a CX2000 with 4 loops or more, [CTRL5-6] for a CX2000 with 6 loops or more, or [EXTDIO] for a CX2000 with External DIO selected for Alarm Relay.

Contact

For each contact input number, select the type of contact input from the following. For details about the contact input settings, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)*.

- ControlStopAll
- ControlStartAll
- ControlStart/Stop (CX1000: 1 to 2, CX2000: 1 to 6)
- Remote/Local (CX1000: 1 to 2, CX2000: 1 to 6)
- Auto/Man (CX1000: 1 to 2, CX2000: 1 to 6) ← not selectable in cascade control
- Cascade (1-2, 3-4) ← selectable only in cascade control (3-4 is only for CX2000)
- Auto1-2 or 3-4 ← selectable only in cascade control (3-4 is only for CX2000)
- Man1-2 or 3-4 ← selectable only in cascade control (3-4 is only for CX2000)
- SPNumber0 to 3 bit (enter by selecting one of the options under SP Number set).
- PVSwitching (CX1000: 1 to 2, CX2000: 1 to 6) ← selectable only in loop control with PV switching
- Memory Start/Stop
- Trigger
- Alarm ACK
- Time Adjust
- Math Start/Stop
- Math Reset
- Manual Sample
- Panel1 Load to Panel3 Load
- Message1 to 8
- Snapshot

SP Number Set

Select the SP number set to switch to when registering contact inputs.

SP No. Selection Source

When specifying input contacts of SP No. settings, select the loop number of the SP Number set to be switched. Activate or deactivate each loop number (CX1000: LOOP1 and LOOP2, CX2000: LOOP1 to LOOP6).

Pattern Number Selection

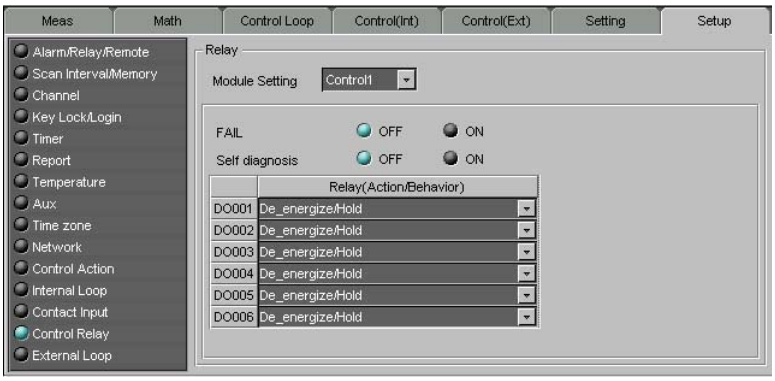
(When [Program Control] for [Internal Loop] is ON)

With program control, you can select the range of pattern numbers when switching program patterns through contact input. The pattern numbers are entered in binary according to the number of relays required as shown in the following chart.

Pattern No.	No. of Relays	Assigned Relay(s)
1	1 (1 bit)	DI001
1–3	2 (2 bits)	DI001, DI002
1–7	3 (3 bits)	DI001–DI003
1–15	4 (4 bits)	DI001–DI004
1–30	5 (5 bits)	DI001–DI005

These are automatically registered under contact inputs according to the selected range of program pattern numbers. [1–15] and [1–30] are active only if the number of program patterns is 30 (/PG2).

Control Relay



Module Setting

Select the terminal blocks where you want to register contact inputs from [CTRL1-2], [CTRL3-4], [CTRL5-6], or [EXTDIO]. [CTRL3-4], [CTRL5-6], and [EXTDIO] are available only for the CX2000.

FAIL

Activates the output of a relay contact signal (FAIL signal) if a fault occurs in the CX CPU. When it is [ON] (default: [OFF]), contact output number [DO001] of control output terminal block 1 is automatically assigned to [De_energize/Nonhold].

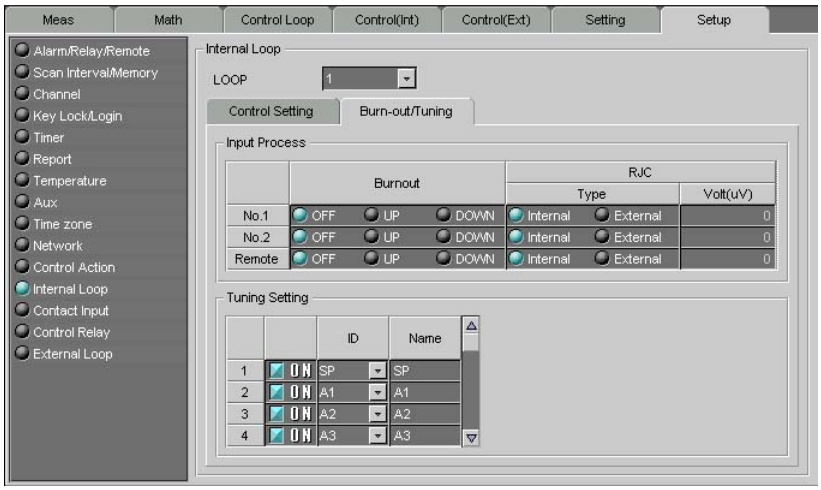
Self Diagnosis

Activates the output of a relay contact signal in the event of input burnout, an A/D converter fault, or reference contact compensation failure. When it is [ON] (default: [OFF]), contact output number [DO002] of control output terminal block 1 is automatically assigned to [De_energize/Nonhold].

Relay (Action/Behavior)

Set the contact output relay operating mode to [De_energize/Hold], [De_energize/Nonhold], [Energize/Hold], or [Energize/Nonhold].

[Burnout/Tuning] Tab



- Input Process

  Burnout

  For the measurement input to each loop, select the burnout direction (open-circuit detection) from [OFF], [UP], or [DOWN]. The [No.2] setting is valid when [Control Mode] is set to [PVSwitching], and the [Remote] setting is valid when remote input is used as measurement input. This setting is invalid for measurement inputs other than thermocouple and unified signals.

  RJC (Type, Volt (uV))

  This is the r eference contact compensation setting for a thermocouple input. Set for the measurement input of each loop. The [No.2] setting is valid when [Control Mode] is set to [PVSwitching], and the [Remote] setting is valid when remote input is used as measurement input. This setting is invalid for measurement inputs other than thermocouple and unified signals.

  Select from [Internal] and [External] for [Type].

  When [External] is selected, s et [Volt (uV)] between -20000 and 20000 uV.

  Tuning Setting

  Switch tuning ON or OFF.

  Select [ON] for the parameters that you want to display in the tuning window, and [OFF] for other parameters.

  ID

  Select the ID of the item from the following.

  SP (target set point), A1 (alarm 1 setting), A2 (alarm 2 setting), A3 (alarm 3 setting), A4 (alarm 4 setting), P (proportional range), I (integration time), D (differentiation time), OH (upper output limit), OL (lower output limit), MR (manual reset), H (hysteresis), DR (control action direction), and PO (preset output).

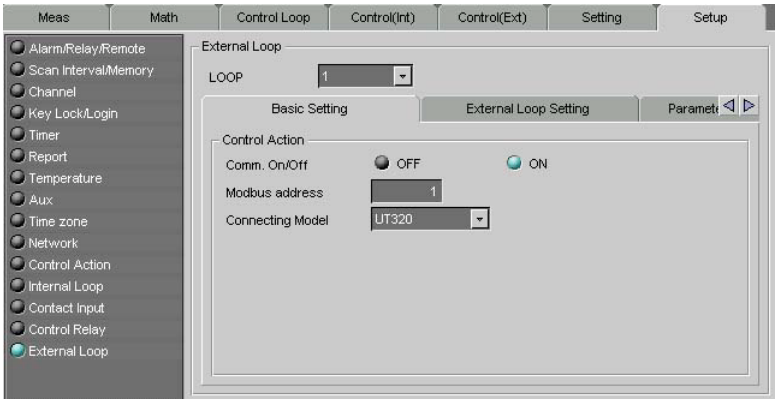
  Name

  Specify the name of the item using a maximum of 6 characters.

External Loop

For each loop there are Basic Setting, External Loop Setting, Parameter Address Setting, and Tuning Setting items.

[Basic Setting] Tab



- Control Action

  Comm. On/Off

  Select to turn the external loop function (the loop controller communications function which allows the CX to communicate with loop controllers) ON or OFF.

  If you select OFF, all settings below will be deactivated.

  Modbus address

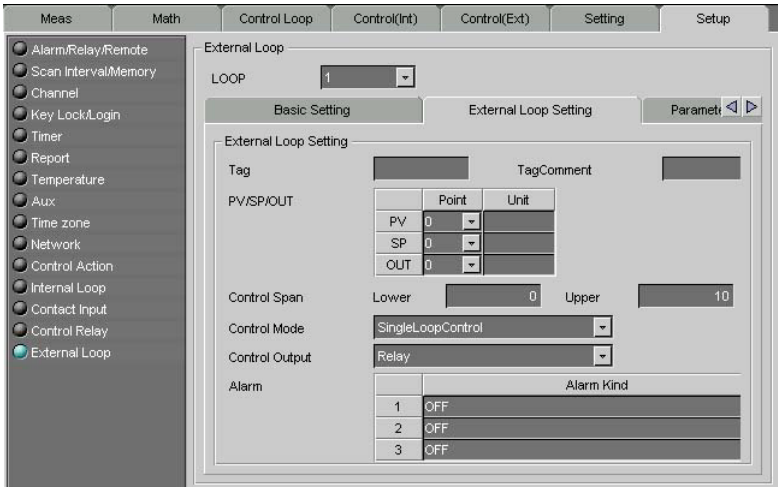
  Enter the Modbus address of the environment used in external loop control.

  Connecting Model

  Select the type of connected UT series controler. Select [Other] when connecting to an adjustor other than a UT series instrument.

  The following settings vary depending on the selected instrument.

[External Loop Setting] Tab



- Control Action

  Loop Select

  Select the loop from [Loop1] or [Loop2].

  This item appears when [Connecting Model] in [Basic Setting] is set to a model capable of two-loop control, such as the UT550.

Tag
Specify a tag using a maximum of 8 characters.

Tag Comment
Specify a tag comment using a maximum of 8 alphanumeric characters.

PV/SP/OUT
Set the decimal place and units of PV, SP, and OUT.

Control Span
Set the control span between the upper and lower limits.

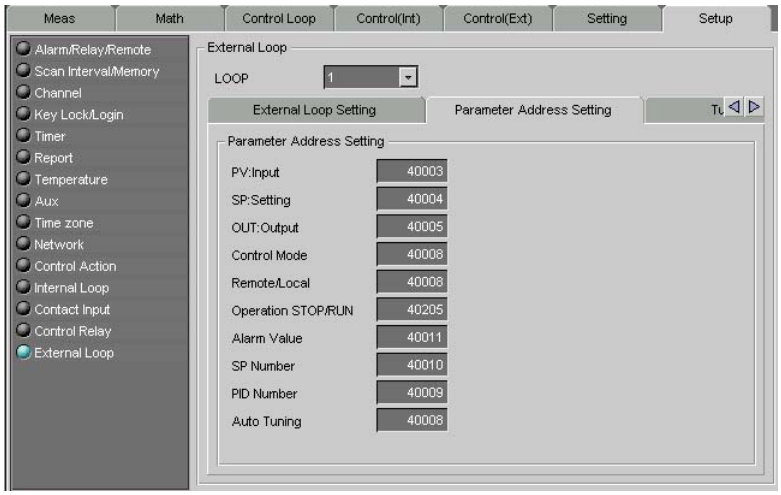
Control Mode
Select the control mode from the following (The available control modes differ depending on the connected instrument.):
[SingleLoopControl], [CascadePrimaryLoop], [CascadeSecondaryLoop], [CascadeControl], [ControlBackUp], PVSwitching], [PVAutoSelector], or [PVHoldFunction].

Control Output
Select the type of control output from the following:
[Relay], [Voltage-pulse], [Current-output], and [On/Off-control]

Alarm
Select the type of alarm from the following:

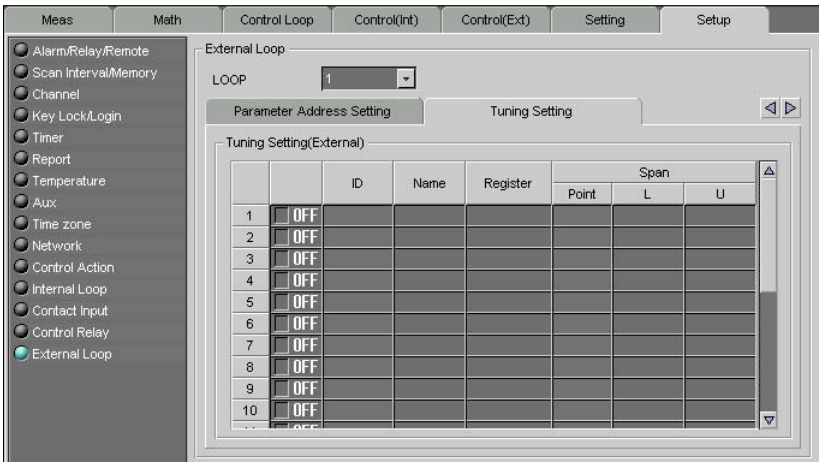
[OFF], [PV-High(Energ)], [PV-Low(Energ)], [Deviation-High(Energ)], [Deviation-Low(Energ)], [Deviation-High(Deenerg)], [Deviation-Low(Deenerg)], [Deviation-H&L(Energ)], [Dev-within-H&L(Energ)], [PV-High(Deenerg)], [PV-Low(Deenerg)], [PV-High(Energ/Standby)], [PV-Low(Energ/Standby)], [Dev-High(Energ/Standby)], [Dev-Low(Energ/Standby)], [Dev-High(Deenerg/Standby)], [Dev-Low(Deenerg/Standby)], [Dev-H&L(Energ/Standby)], [Dev-w-H&L(Energ/Standby)], [PV-High(Deenerg/Standby)], [PV-Low(Deenerg/Standby)], [Timer-upward(h:m)], [Timer-downward(h:m)], [Timer-upward(m:s)], [Timer-downward(m:s)], [Sensor-grounding], [Problem-diagnostic], [FAIL-output], [SP-High], [SP-Low], [Output-High], [Output-Low], [Header-burnout1], and [Header-burnout2].

[Parameter Address Setting] Tab



Select the parameter address settings from the following ranges.
30001 to 39999, 300001 to 365535, 40001 to 49999, 400001 to 465535.

[Tuning Setting] Tab



- Tuning Setting (External)

  Tuning item ON/OFF

  Select [On] for the parameters that you want to display in the tuning window, and [Off] for other parameters.

  ID

  Select the ID of the item from the following:

  SP (target set point), A1 (alarm 1 setting), A2 (alarm 2 setting), A3 (alarm 3 setting), A4 (alarm 4 setting: cannot select with UT320, UT350, or UT420), P (proportional range), I (integration time), D (differentiation time), OH (upper output limit), OL (lower output limit), MR (manual reset), H (hysteresis), DR (control action direction), PO (preset output), and ETC (others).

Note

When [Connecting Model] in the [Basic Setting] tab of [External Loop] is set to [Other], you can only select [ETC].

Name

Specify the name of the item using a maximum of 6 characters.

Register

Set the register address in the following ranges.

30001 to 339999, 300001 to 365535, 40001 to 49999, and 400001 to 465535.

Span (Point)

Set the parameter decimal point position in the range of 0 to 4.

Span (L)

Set the lower control span value between -30000 to 30000.

Span (U)

Set the upper control span value between -30000 to 30000.

6.4 Control Function General Settings

Make settings for the internal loop control functions, using the [Control Loop] tab and [Control Group] on the [Setting] tab. You can also enter these settings by choosing [Control Setting] - [SETUP [Regular] Setting] - [Control Loop] , or [Control Settings] - [SETUP [Regular] Setting] - [Control Group] .

On the [Control Loop] tab, click the button (LOOP01, LOOP02, ...) of each loop number that you want to set, and then make the settings for that loop. The label of the selected loop number button is red. Select each item (Control Input, PID/Alarm, Operation Related, Linearizer, and Control Function) with the option buttons.

Control Input

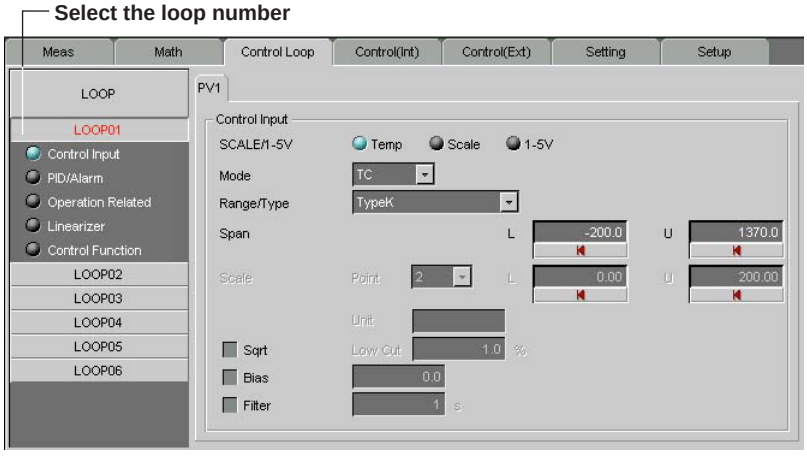
The control input settings vary depending on the [Control Mode] setting selected in [Setup] - [Internal Loop]. You can make settings for the inputs [PV1], [PV2], [Remote], and [PVrange]. They appear in the following situations.

		PV1	PV1	Remote	PVrange
Basic	Odd loops	○		○	
	Even loops	○		○	
Cascade	Odd loops	○		○	
	Even loops	○		○	
PVSwitching	Odd loops	○	○	○*	○
	Even loops	○	○		○

* With 6 loops, and 6/4LOOP Select set to 6 loops.

Remote appears if the Setup tab's Internal Loop > Remote setting is set to Remote.

The settings displayed depend on the input type, [PV 1], [PV2], [Remote], and [PVrange], but the settings are the same.



SCALE/1-5V (PV1, PV2, Remote)

Select the channel measurement mode from [Temp], [Scale], or [1-5V].

Mode (PV1, PV2, Remote)

Select the channel input mode from [VOLT], [TC], or [RTD]. When [SCALE/1.5V] is set to [1.5V], [Mode] is set to [VOLT].

Range/Type (PV1, PV2, Remote)

Select the voltage range, thermocouple, and resistive temperature detector type.

VOLT: 20mV, 60mV, 200mV, 2V, 6V, 20V, or 50V

TC: TypeK, TypeJ, TypeT, TypeB, TypeS, TypeR, TypeN, TypeE, TypeL, TypeU, TypeW, PLATINEL, PR40-20, or WRe3-25

RTD: JPt100 or Pt100

When [SCALE/1.5V] is set to [1.5V], [Range/Type] is set to [6V].

Span (PV1, PV2, Remote)

Specify the measurement span in EU.

Scale (PV1, PV2, Remote)

Specify the scale between –30000 and 30000. However, this is only valid when [SCALE/1-5V] is set to [Scale].

Unit (PV1, PV2, Remote)

Specify the units.

Use a maximum of 6 characters.

Sqrt (PV1, PV2, Remote)

Select or clear the check box to turn the square root function ON or OFF.

When it is on, set [Low Cut] between 0.0 and 5.0.

Bias (PV1, Remote)

Select the check box to turn the bias ON.

When it is ON, specify a EU (–100 to 100%) value.

Filter (PV1, Remote)

Select the check box to use a filter.

When it is ON, set between 1 and 120.

Ratio setting (Remote)

Turn ON when applying the designated ratio to remote measurement input.

When it is ON, set between 0.001 and 9.999.

PV Range (PV Range)

Enter the maximum value, minimum value, decimal place, and units.

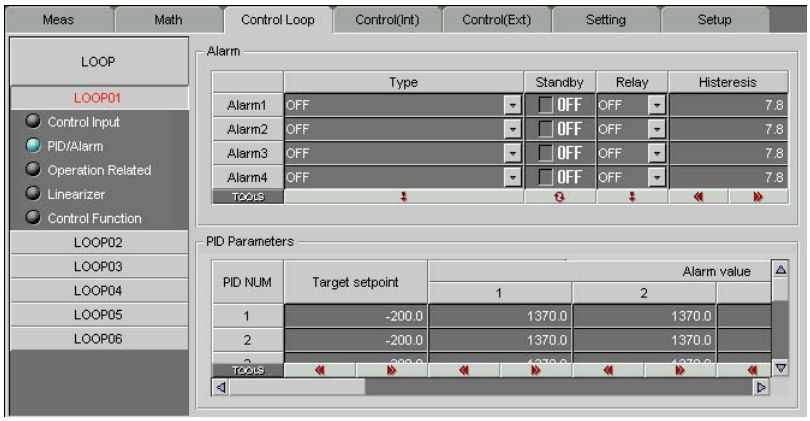
Set the max. and min. values between –30000 and 30000 such that max. > min., and max. - min. = 30000.

PV Switching (PV Range)

Set within the input range. When setting Method to T/C Range in the Control Setting tab within the Setup tab's internal loop item, or when setting Method to PVHigh, only the upper limit is set.

If you set Method to Signal, the PV Input Switching setting is not available.

PID/Alarm



- Alarm
  Specify an alarm for each loop.

  Type
  Select the type of alarm from the following:
  [PV-High], [PV-Low], [Deviation-High], [Deviation-Low], [Deviation-H&L], [Dev-within-H&L], [SP-High], [SP-Low], [Output-High], and [Output-Low].

  Standby
  Activate or deactivate standby.
  For details about the alarms that can be turned on or off, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)* .

  Relay
  Select the type of relay (DO001 to DO006, R0001 to R0012).
  R0001 to R0002 can only be set on a CX2000 with the control extension DIO.

  Hysteresis
  Specify the alarm hysteresis in EUS (0.0 to 10.0%).

- PID Parameters
  Specify the PID parameters for each loop.

  Target setpoint
  Specify the target setpoint in EU (0.0 to 100.0%).
  Set between the target setpoint's upper and lower limits.

  Alarm value (1 to 4)
  Set the alarm value. (The setting depends on the type of alarm.)

PV and SP alarms	EU (0 to 100%)
Deviation-High and Deviation-Low alarms	EUS (–100 to 100%)
Deviation alarms	EUS (0 to 100%)
Output alarms	–5.0 to 105.0%

  Proportional band (P)
  Specify between 0.1 and 999.9%.

  Integral Time(I)
  Specify between 0 and 6000s.

  Derivative Time(D)
  Specify between 0 and 6000s.

Lower Limit
Set the output lower limit between –5.0 and 105.0%.

Upper Limit
Set the output upper limit between –5.0 and 105.0%.

Shutdown
Turn the shutdown function ON or OFF.

Manual Reset
Set the manual reset between –5.0 and 105.0%.

Relay Hysteresis (Value)
Set the relay hysteresis in EU (0.0 to 100.0%).

Relay Hysteresis (Point)
Select the Hysteresis operating point when using ON/OFF control from [Mid], [Lower Limit], or [Upper Limit].

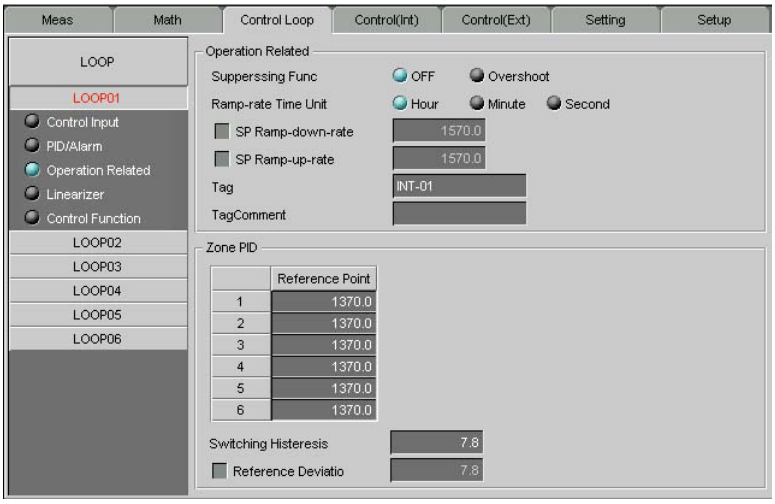
Preset Out
Select from -5.0 to 105.0% to be used when operation is stopped.

Reverse/Direct
Select reverse/direct switching from [Direct] or [Reverse].

Note

[Relay Hysteresis (Value)] and [Relay Hysteresis (Point)] appear in PID Parameters when [Control Output] is set to [On/Off-control] on the [Internal Loop] tab of the [Setup] tab. In that case, [PID], [Output Limit], [Shutdown], and [Manual Reset] are not shown.

Operation Related



- Operation Related
  Make the internal loop control operation related settings.

  Suppressing Function
  Select [OFF] or [Overshoot].

  Ramp-rate Time Unit
  Set the ramp-rate time units.

  SP Ramp-down-rate
  Set between 1 digit and EUS (100%).

SP Ramp-up-rate
Set between 1 digit and EUS (100%).

Tag
Specify a tag.
Use a maximum of 8 characters.

Tag Comment
Specify a comment for the tag.
Use a maximum of 8 characters.

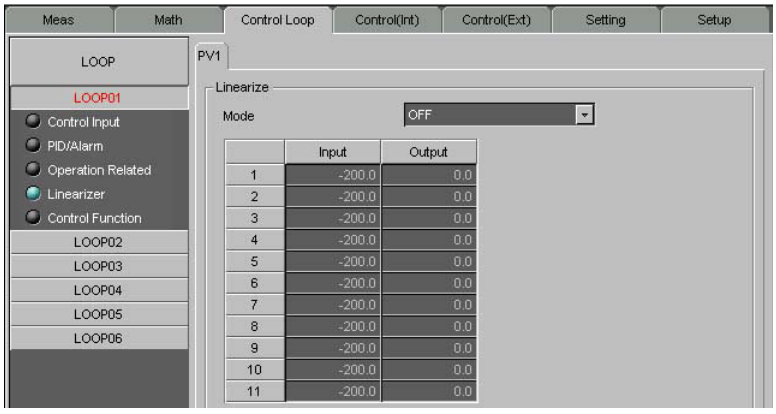
- Zone PID
  Specify the internal loop control zone PID.
  The zone PID setting appears when [Zone PID] is [ON] in [Setup] - [Control Action].

  Reference Point(displayed when the PID number is 3 or higher)
  Specify the reference point with the measurement input span EU (0.0 to 100.0%).
  The number of points depends on the number of PID. ([PID Number]: 2.) Therefore, it is not displayed when the PID number is 2 or less.
  The value of each point is such that 1 ≤2≤...≤6 is set.

  Switching Hysteresis
  Specify the switching hysteresis value with the measurement input span EUS (0.0 to 10.0%).

  Reference Deviation
  Turn the reference deviation on or off, and specify the value with the measurement input span one-digit EUS (100.0%). With style number S1 (system setting), it is not displayed if the PID number is 1. With style # S2, it is not displayed when the PID number is 2 or less.

Linearize



Mode
Select the linearize mode from [OFF], [Biasing], or [Approximation].

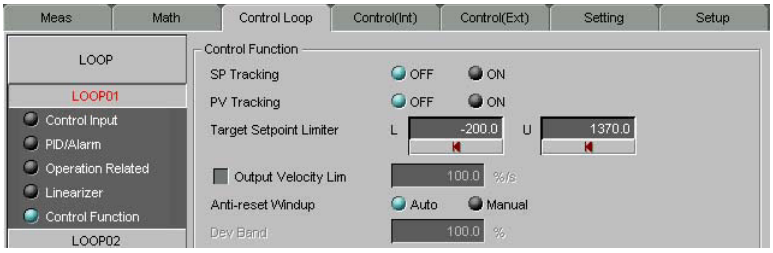
Input
Enter the linearize input value. (The value depends on the linearize mode.)
Biasing: Set with the measurement input span EU (–5.0 to 105.0%).
Approximation: Set with the measurement input span EU (–5.0 to 105.0%).
You must set between 2 and 11 points total.

Output
Enter the linearize output value. (The value depends on the linearize mode.)
Biasing: Set with measurement input span EUS (–100.0 to 100.0%).
Approximation: Set with measurement input span EU (–5.0 to 105.0%).

Note

- With linearize bias, set so that input + output is EU(-5–105%).
- Starting from the third point, if you set a value smaller than the previous value, all settings after that point become disabled.

Control Function Settings



SP Tracking

Turn the target setpoint tracking ON or OFF.

PV Tracking

Turn the measurement value tracking ON or OFF.

Target Setpoint Limiter

Specify the measurement input range in the EU (0.0 to 100.0%) range.

Output Velocity Lim

Select or clear the check box to turn the output velocity limiter ON or OFF, and specify a value between 0.1 and 100.0. This is unavailable for style number S2 if you set [Control Output] to [On/Off control] in the [Setup] tab for [Internal Loop].

Anti-reset Windup

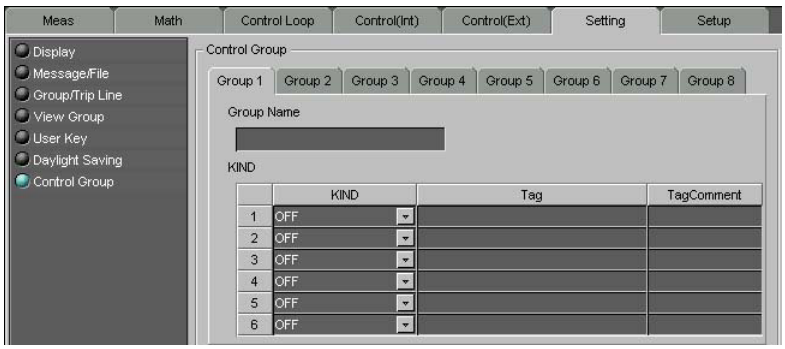
Select the anti-reset windup from [Auto] or [Manual]. This is unavailable for style number S2 if you set [Control Output] to [On/Off control] in the [Setup] tab for [Internal Loop].

Dev Band

Set the deviation band of the anti-reset windup between 50.0 and 200.0%.
This setting is only valid when the [Anti-reset Windup] is set to [Manual].

Control Groups

Set the groups to which control functions apply.



From the [Setting] tab, select [Control Group].

Group Name

Enter a group name using a maximum of 16 characters.

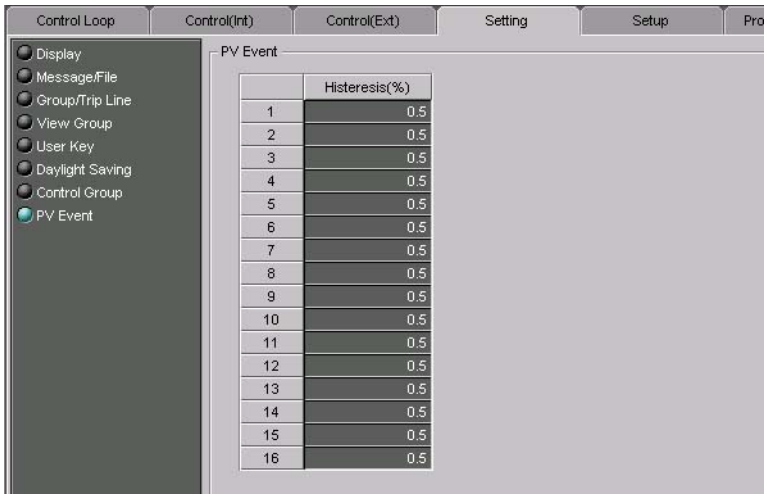
KIND

Select the loops and measurement channels you want to assign to a Group. For the CX1000, you can select 1–2 internal loops and 1–4 external loops. For the CX2000, you can select 1–6 internal loops, and 1–16 external loops.

Group1 consists of up to 4 types on the CX1000, or up to 6 types on the CX2000 corresponding to the control loops and measurement channels.

PV Event Hysteresis

This is unavailable for style number S2 if you set [Program Control] to [On] in the [Setup] tab for [Internal Loop].

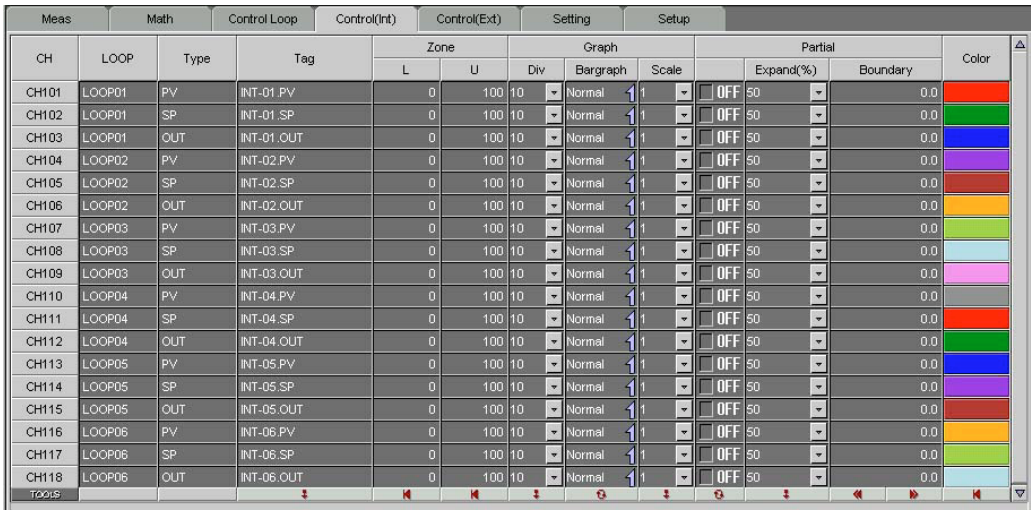


From the [Setting] tab, select [PV Event].

6.5 Control Channel Settings (Internal/External)

The following settings apply to the internal and external loops' SP, PV, and OUT measurement displays.

To enter control channel settings, click the [Control(Int)] tab. Or, you can select the items by choosing [Control Setting] - [SET [Basic] Setting] - [Control Channels (Internal)] .



Meas	Math	Control Loop	Control(Int)	Control(Ext)	Setting	Setup

CH	LOOP	Type	Tag	Zone		Graph			Partial			Color
				L	U	Div	Bargraph	Scale		Expand(%)	Boundary	
CH101	LOOP01	PV	INT-01.PV	0	100	10	Normal	1	OFF	50	0.0	
CH102	LOOP01	SP	INT-01.SP	0	100	10	Normal	1	OFF	50	0.0	
CH103	LOOP01	OUT	INT-01.OUT	0	100	10	Normal	1	OFF	50	0.0	
CH104	LOOP02	PV	INT-02.PV	0	100	10	Normal	1	OFF	50	0.0	
CH105	LOOP02	SP	INT-02.SP	0	100	10	Normal	1	OFF	50	0.0	
CH106	LOOP02	OUT	INT-02.OUT	0	100	10	Normal	1	OFF	50	0.0	
CH107	LOOP03	PV	INT-03.PV	0	100	10	Normal	1	OFF	50	0.0	
CH108	LOOP03	SP	INT-03.SP	0	100	10	Normal	1	OFF	50	0.0	
CH109	LOOP03	OUT	INT-03.OUT	0	100	10	Normal	1	OFF	50	0.0	
CH110	LOOP04	PV	INT-04.PV	0	100	10	Normal	1	OFF	50	0.0	
CH111	LOOP04	SP	INT-04.SP	0	100	10	Normal	1	OFF	50	0.0	
CH112	LOOP04	OUT	INT-04.OUT	0	100	10	Normal	1	OFF	50	0.0	
CH113	LOOP05	PV	INT-05.PV	0	100	10	Normal	1	OFF	50	0.0	
CH114	LOOP05	SP	INT-05.SP	0	100	10	Normal	1	OFF	50	0.0	
CH115	LOOP05	OUT	INT-05.OUT	0	100	10	Normal	1	OFF	50	0.0	
CH116	LOOP06	PV	INT-06.PV	0	100	10	Normal	1	OFF	50	0.0	
CH117	LOOP06	SP	INT-06.SP	0	100	10	Normal	1	OFF	50	0.0	
CH118	LOOP06	OUT	INT-06.OUT	0	100	10	Normal	1	OFF	50	0.0	

TOOLS

Tag

Enter a tag of using maximum of 16 characters.

You can enter a tag to be displayed on the screen instead of the channel number. Select whether the channel name or tag is displayed in the [Setup] tab. By selecting [Tag] in [Aux] of the [Setup] tab, you can select the tag No./tag comment or tag in the Data Monitor or Data Viewer.

Zone

You can select the range on the CX's screen where each channel waveform is displayed.

Set the lower and upper limits as percentages on the scale displayed.

The zone setting conditions are as follows:

- Setting range: 0 to 100%
  Lower limit < Upper limit
- Difference between upper and lower limits: at least 5%

Graph

Div

Select the number of bar graph divisions from 4 to 12, or C10.

When selecting [C10], the scale of the trend display is divided in 10 major divisions, numbered at the [0], [30], [50], [70], and [100]% marks.

Bar graph

Select the bar graph reference point. When the bar graph is displayed vertically, [Center] is invalid, even if selected. During the data check it is changed back to [Normal].

Scale

When the scale is displayed in the trend display, select the scale display position.

For details, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)* .

Partial

Expand(%)

The boundary value is displayed as a percentage along the width of the display, between 1 and 99%.

Boundary

The setting conditions depend on the internal control channel and external control channel as follows:

- Internal contorol channel
  PV Switching: PV Range L < boundary value < PV Range U
  With Single Control or Cascade Control, when the Scale/1-5 V setting under Control Input on the Control Loop tab is set to Scale or 1-5 V: scale minimum value < boundary value < scale maximum value
- External contorol channel
  span L < boundary value < span U
  However, when external loop is off, the partial expansion/reduction is also off.

Note

- The partial expansion/reduction settings are valid when [Partial] is set to [Use] in [Aux] of the [Setup] tab.
- For the external control channel, set a boundary within the span determined by the internal span -50–1050 and the specified decimal point. Normally there is one decimal place, so it can be set to -5.0% < boundary < 105.0%.

Color

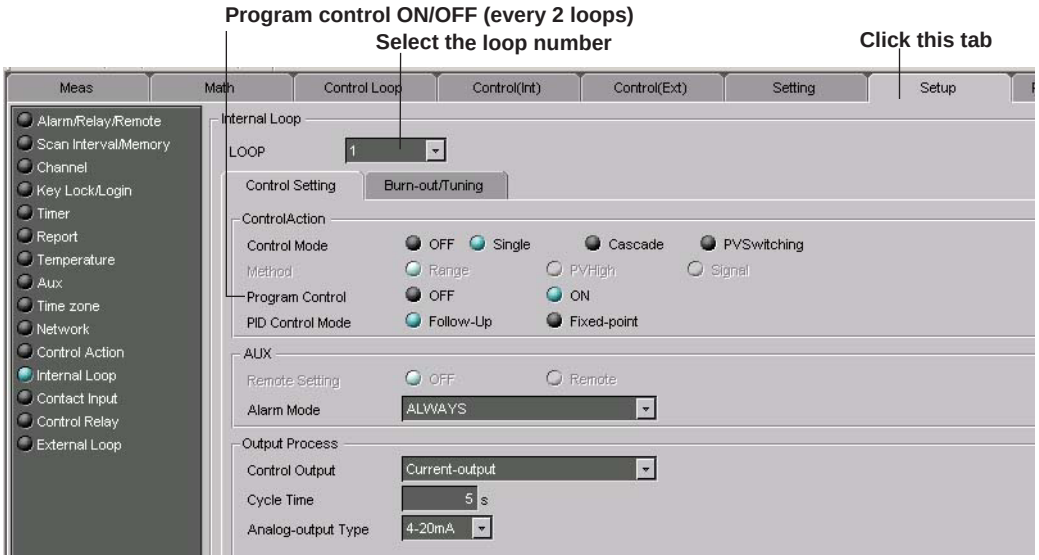
For each channel you can choose from 16 colors.

6.6 Program Control Related Setup Operations

Turn ON/OFF Program Control

Program control can be turned ON and OFF using the internal loop setting of the control function basic settings.

Click the Setup tab then select [Internal Loop] from the list that appears on the left of the screen. Or, you can select the items by choosing Control Settings > Setup[Basic] Setting > Internal Loop.

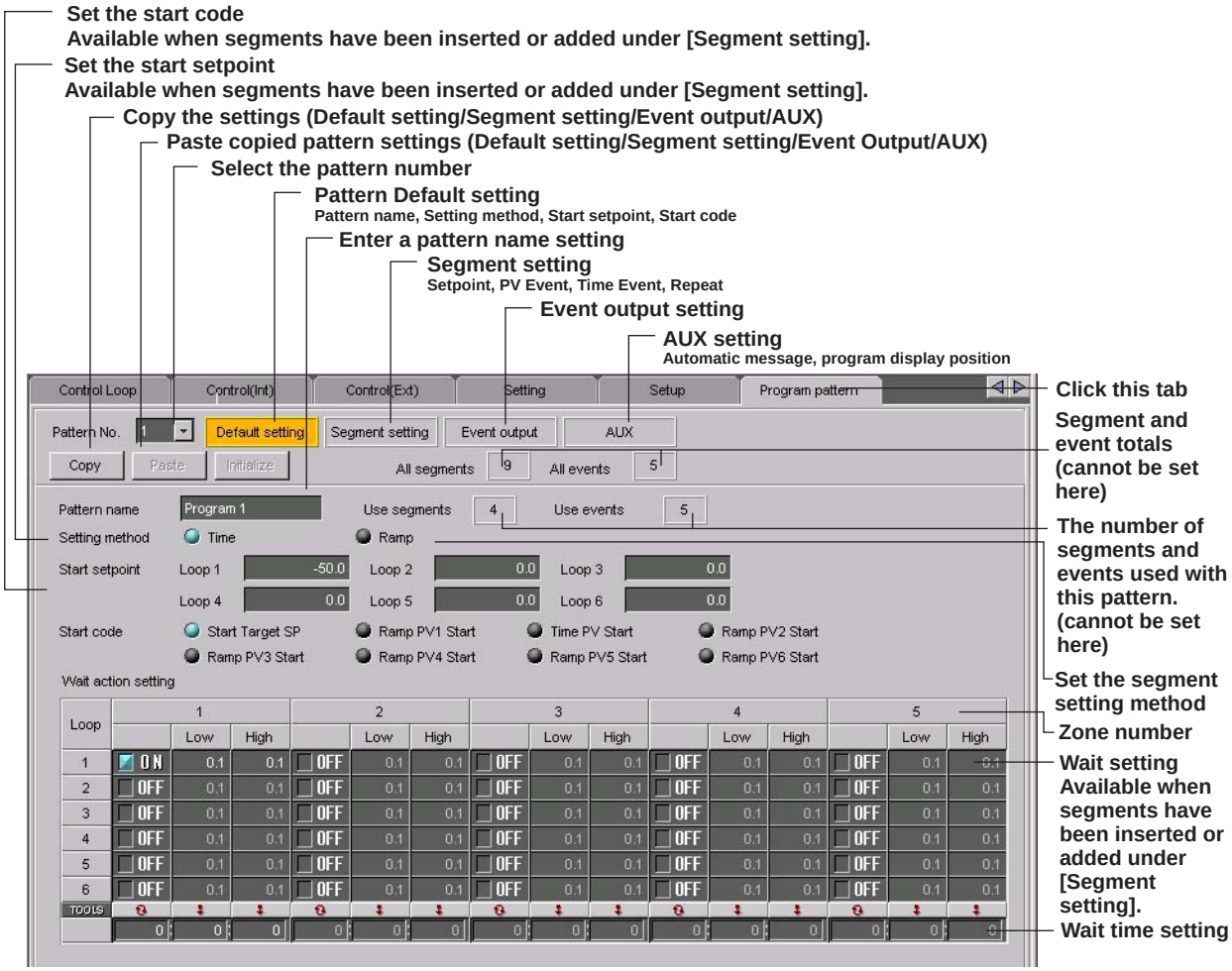


Note

You must first turn ON program control to carry out the program control related settings below.

Initial Program Patterns

You can set the default program patterns by clicking the [Program pattern] tab, then selecting [Default setting]. Settings cannot be entered when the number of segments is 0. Add segments using [Segment setting].



Pattern number

Select the number of the desired pattern from [1] to [30] ([1] to [4] for models with /PG1 option).

Pattern name

Enter the pattern name using up to 16 alphanumeric characters.

Segment setting method

Select segment time setting method or segment time ramp grade setting method. If you change this setting, the program pattern setting corresponding to the pattern number is initialized.

Start target setpoint

Set the start SP, a starting condition, in the range of [EU (0.0% to 100.0%)] (initial value is 0%) of the measurement span. Only the loops that are set as follows are displayed: [Setup] tab > [Internal Loop] > [Program control] to [On] During cascade control, even-numbered loops within the same terminal block are not displayed.

Start code

Select the operation start condition from the following. However, only the possible loop conditions are displayed.

Starting target setpoint start, PV1 to PV 6 ramp-prioritized PV start, time-prioritized ramp start (not displayed for segment time ramp setting method)

Wait time

Set the wait time in [hh:mm:ss] format (selectable range: [00:00:00] to [99:59:59]) for all the available zones. The setting applies to the same zones in each loop. Wait time is no available if the wait zones of all loops are set to OFF.

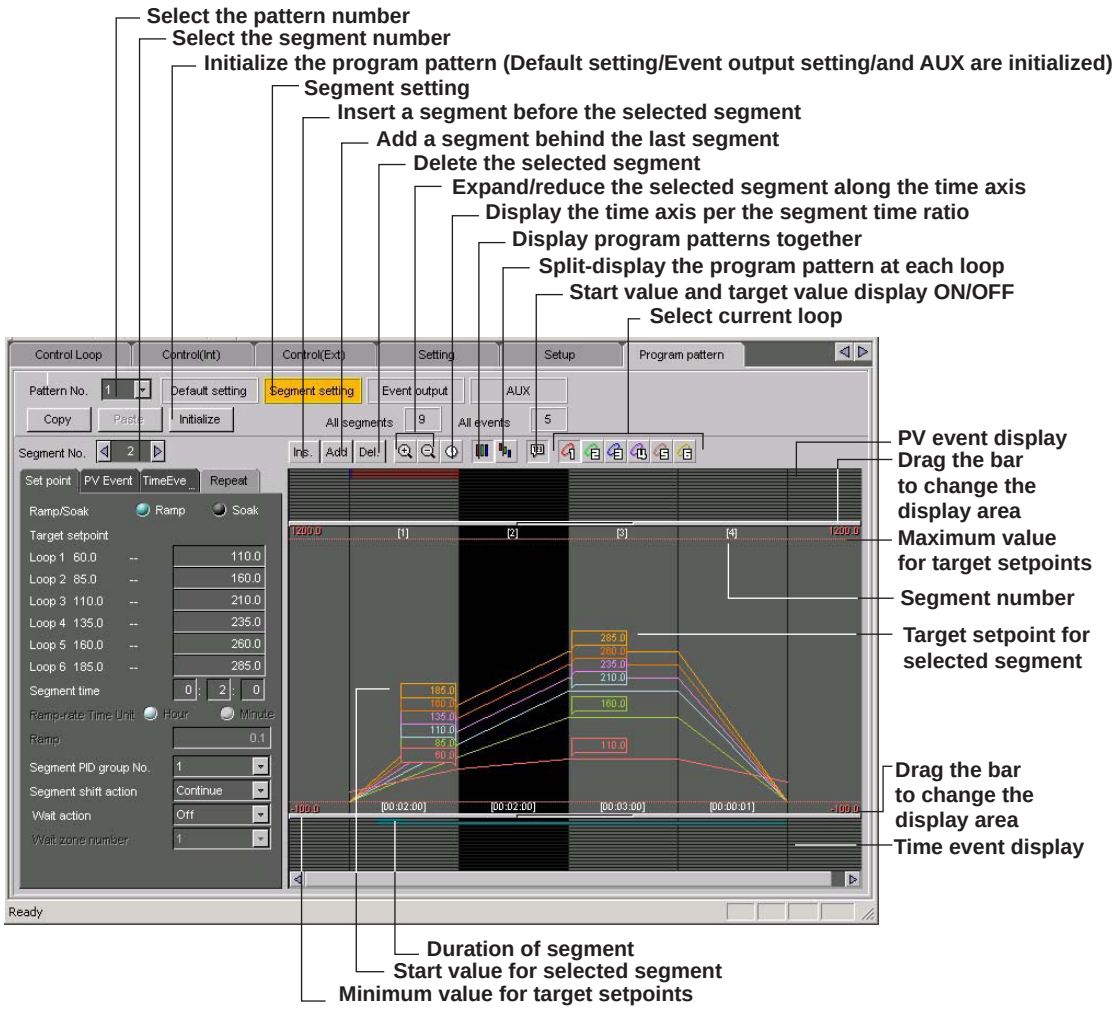
Wait action setting

Set the wait zones for 6 (number of loops) × 5 (number of zones) (CX1000: 2 (number of loops) × 5 (number of zones))in the range of [EUS (0.0 to 100.0%)] of the measurement span.

Program Patern Setting(Segment setting)

Program Pattern Settings (Segment Setting)

Set a program pattern for each segment, by clicking the [Program pattern] tab, then selecting [Segment settings].

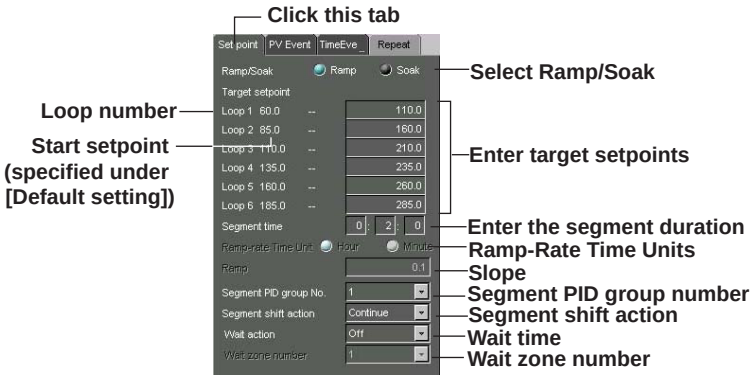


Select the Segment

Click the [Segment No.] arrow to select the desired segment in the program pattern display screen.

Select Setpoints

Enter a program pattern for each segment.



- Ramp/Soak select
  Select the type of segment to be specified ([Ramp] or [Soak]).

- Target setpoint (ramp segment only)
  Set the final SP of the ramp segment in the range of “EU (0.0% to 100.0%)” (initial value is 0%) of the measurement span. Only the loops that are set as follows are available: [Setup] tab> [Internal Loop] > [Control mode] to a mode other than [Off] and [Program control] to [On] During cascade control, even-numbered loops within the same terminal block are not displayed.

- Segment time
  Set the segment time in the range of [0:00:01] to [99:59:59] (0 hour 0 min 1 s to 99 hour 59 min 59 s). This item is available at all times during segment time setting method and only when soak is selected during segment time ramp setting method.

- Ramp-rate time unit
  Set the ramp-rate time unit for ramps to [Hour] or [Minute]. This item is available only during segment time setting method.

- Ramp
  Set the ramp per unit time in the range of “1 digit to EUS (100%) of the measurement span.” The measurement span and decimal point position of the selectable range vary depending on the smallest numbered loop to be specified. This item is available only during ramp in the segment time ramp setting method.

- Segment PID group No.
  Select the segment PID group number [1] to [8]. This item is not displayed when zone PID is selected. Only the PID group numbers that can be specified through [Setup] tab > [Control action] > [PID number] are displayed.

- Segment shift action
  Set the segment shifting action to [Continue], [Hold] (hold after end of segment), [Local] (local mode after completing the last segment), or [Reset] (reset mode after completing the last segment).

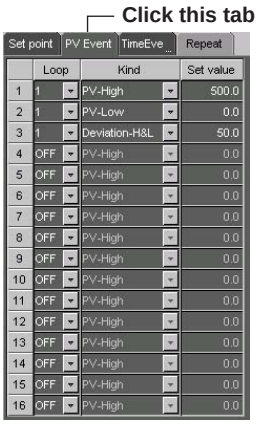
Note

When creating the program pattern, data is created so that the segment set to [Local] or [Reset] is the last segment of program control.

- Wait action
  Set the wait action type to [Shift] or [Within]. To disable the wait action, select [Off].
- Wait zone number
  Select the wait zone number from [1] to [5]. This item is available only when [Wait action] is set to [Shift] or [Within].

PV Event

Set the PV Event.



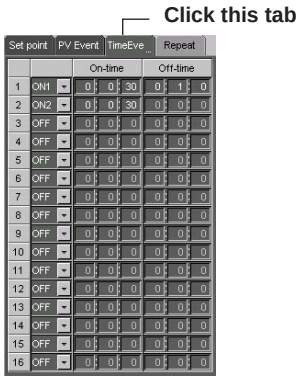
- Loop
  Set the target loop number [1] to [6] of the PV event (only selectable loop numbers). Up to 16 events can be assigned. Select [Off] (initial setting) for the number of the loops to which the event is not to be assigned.
- Type
  Select the type of PV event from the following.
  PV high-limit, PV low-limit, deviation high-limit, deviation low-limit, deviation high & low limit, deviation within high & low limits, SP high-limit, SP low-limit , output high-limit , and output low-limit
- Value
  Set the value in the following range according to the type of PV event.
  PV/SP event: EU (0.0 to 100.0%) of the measurement span
  Deviation high-limit event/low-limit event: EUS (–100.0 to 100.0%) of the measurement span
  Deviation high & low limit/within high & low limits: EUS (0.0 to 100.0%) of the measurement span
  Output event: –5% to 105% of output (% indication only for output events)

PV event display

A bar showing that the PV event was set is displayed in the upper part of the program pattern screen display screen.

Time Event

Set the Time Event.

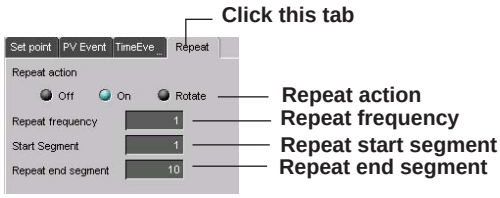


- On1/On2/On3/Off
  Set the ON/OFF setting type of each event (16 events) from the following. Select [Off] for events that are not to be assigned.
  On1: Use On time and Off time
  On2: Use On time only
  On3: Use Off time only

- On-time/Off-time
  Set the ON-time/OFF-time of the time event in "hh:mm:ss" format. The selectable range is "00:00:00 to 99:59:59." Set On-time £ Off-time.

Repeat

Set the repeat action.
The repeat start segment, repeat end segment, and repeat frequency is displayed in the program display screen.

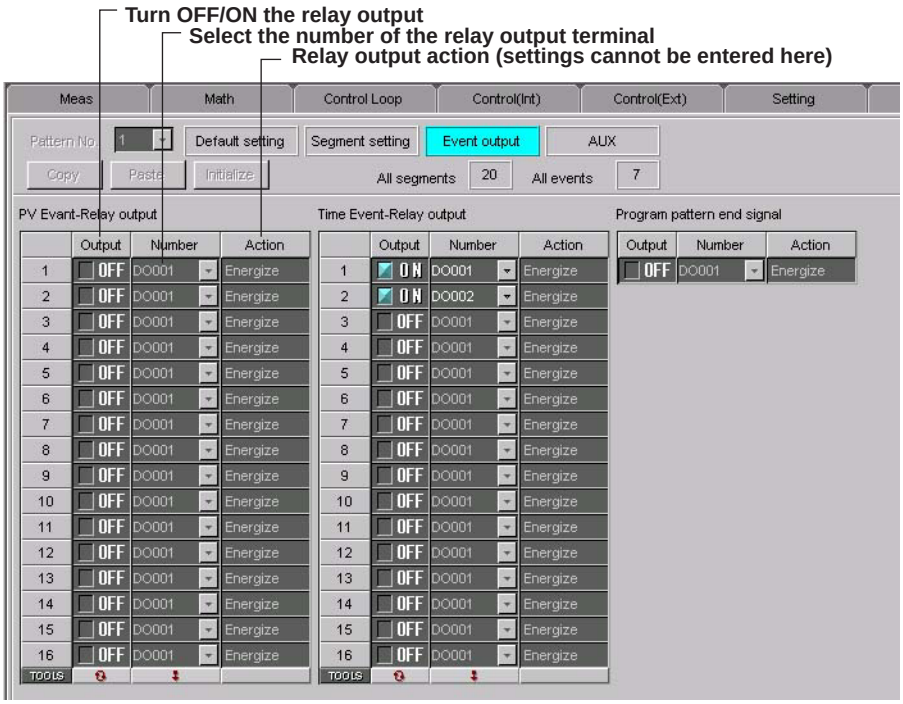


- Repeat action
  Select the repeat function from [Off], [On], and [Repeat].

- Repeat frequency
  Set the number of repetitions when the repeat function is turned ON in the range of [1] to [999].

- Repeat start segment/Repeat end segment
  Set the repeat start segment number and the repeat end segment number when the repeat function is turned ON or when repeating in the range of "1 to 99." However, the maximum value is the maximum segment number set for the pattern. The selectable range for the maximum value is
  Set repeat start segment ≤ repeat end segment.

Event Output Setting(PV event-relay output/Time event-relay output/Program pattern end signal)



Relay Output

Turn OFF/ON the relay output.

Number

Select the number of the relay output terminal from the following.

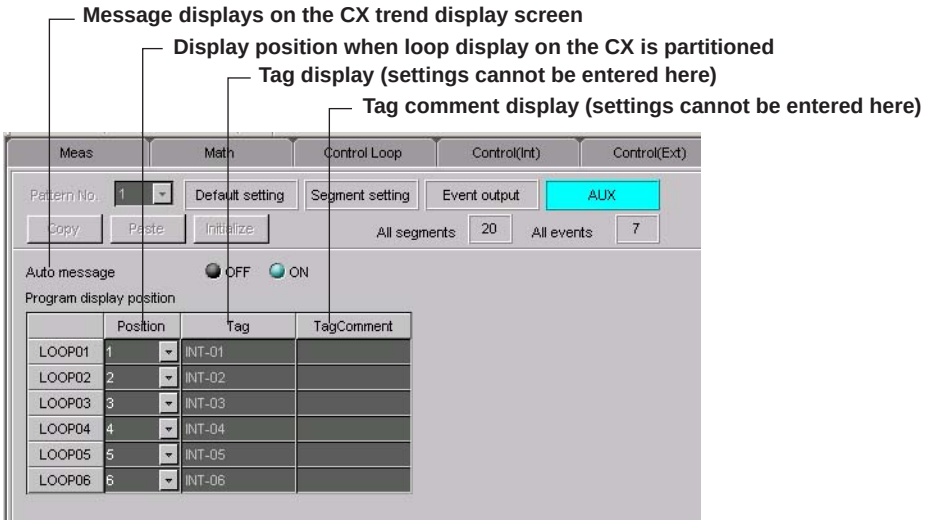
DO001 to 006, DO101 to 106, DO201 to 206, RO001 to 012 (on models with the expansion DIO terminal block)

Action

Displays the relay output action (Energized/Nonhold) per the [Control Relay] settings on the [Setup] tab.

AUX (Automatic Message, Display Position)

Turn message display ON/OFF, and set the loop display position on the CX.



On/Off

If you select [On] (initial setting), a message is automatically written on the trend display when program control is started and when program control is stopped as shown in the figure below. If you do not wish to write messages, select [Off]. The message when starting program operation is “PROGRAM RUN”; the message when stopping the program operation is “PROGRAM RESET.”

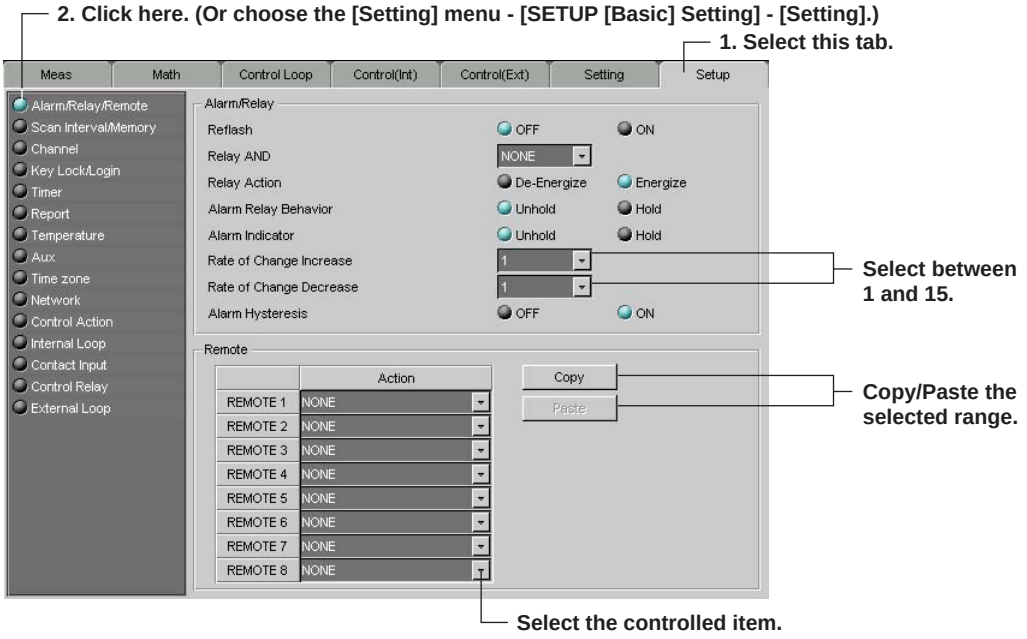
Position

On the program selection display and program control display, the specified patterns and PV waveforms can be displayed in the same display frame (full display) as well as display data by dividing the display position per loop (split display). When using split display, select the display position number from [1] to [6] for each loop. Applicable loops are those set to [Control] > [#1 Control action, Input setting] > [Control mode] to a mode other than [Off] and [Program control] to [On] During cascade control, even-numbered loops within the same terminal block are not available.

6.7 Basic Measurement Function Basic Settings

To enter measurement function basic settings, click the [Setup] tab. Or, you can select the items by choosing [Setting] - [SETUP [Basic] Setting] - [Setting] .

Alarm/Relay/Remote



Alarm/Relay

Select the alarm format. The selected items are blue.

- Reflash
  Set whether to use the alarm relay output reflash.

- Relay AND
  Set the range of relays (from the first alarm relay) using the AND logic gate. All other relays are set to the OR logic gate. If [NONE] is selected, all relays use the OR logic gate.

- Relay Action
  Select whether the alarm output relay should be [Energize] or [De-Energize] when an alarm occurs.

- Alarm Relay Behavior
  Select the output relay when returning from an alarm to the normal state of operation (when the alarm is released). This applies to all alarm output relays. If the measuring alarm output option is not active, this setting is invalid.
  Unhold (Default): When the alarm is released, the output relay stays off.
  Hold: The output relay stays on until an Alarm ACK operation is performed.

- Alarm Indicator
  Select the alarm indicator when returning from an alarm to the normal state of operation.
  Unhold (Default): The alarm display ends when the alarm is released.
  Hold: The alarm display stays on until an Alarm ACK operation performed.

- Rate of Change Increase
  Select the number of data samples that determines the interval of the rate of change of an upper limit alarm between [1] and [15].

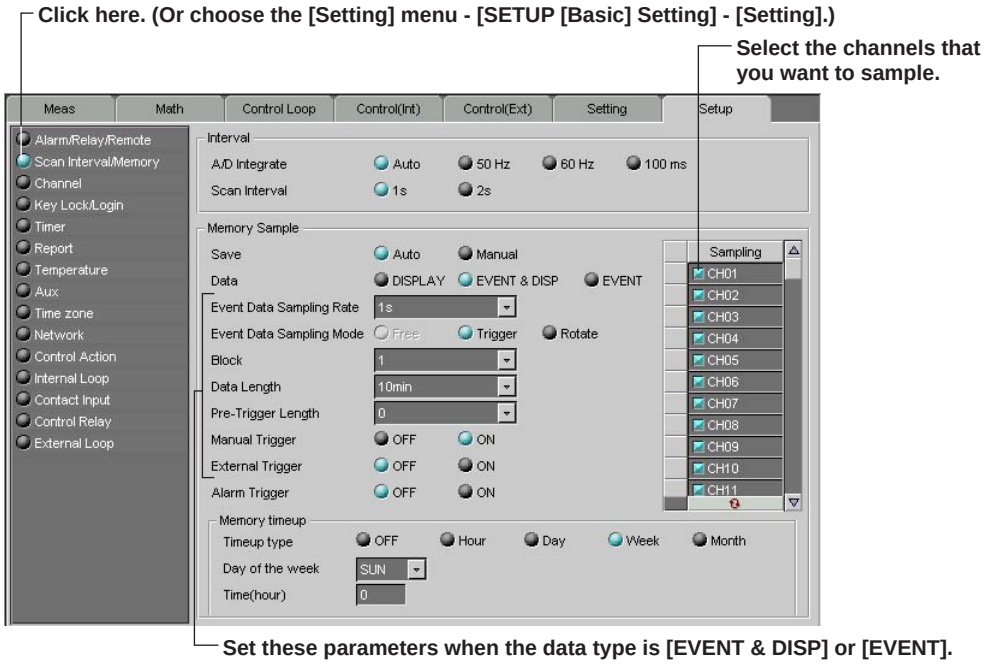
- Rate of Change Decrease
  Select the number of data samples that determines the interval of the rate of change of an lower limit alarm between [1] and [15].

- Alarm Hysteresis
  Set the alarm hysteresis to [ON] or [OFF]. When it is [ON], the hysteresis is set to 0.5% of the scale or the measurement span.

Remote (Option)

You can assign items to be controlled by the eight remote control terminals. This is possible, if the measurement remote input is available. For details, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)*.
Select a remote number, and then click the [Copy] button. This copies the setting of that remote number. When you want to paste the copied setting, select the remote number where you want to paste the setting, and then click the [Paste] button.

Scan Interval/Memory



A/D Integrate

Select from [Auto], [50 Hz], [60 Hz], and [100 ms]. The [Auto] setting automatically detects the CX power supply frequency, and switches the integration time.

Scan Interval

Select [1s] or [2s].

Memory Sample (save method of measured/computed data)

- Save
  Select the save method of internal memory data to an external storage media from [Auto] or [Manual].
  Manual: Inserting the external storage media into the drive and closing the cover displays the “Save confirmation” message, allowing data to be saved. When the operation is complete, remove the external storage media from the drive, so that the next set of data save operation can be performed. You can select whether to save all of the data from internal memory or only to update the data still not saved to an external storage media.
  Auto: If an external storage media is always in the drive, data is saved automatically at a preset interval.

- Data
  Select the data to be written to internal memory from the following: [DISPLAY] (displayed data only), [EVENT & DISP] (event data and displayed data), or [EVENT] (event data only).

- Event Data Sampling Rate
  Select the interval at which event data is saved from the following: [1s], [2s], [5s], [10s], [30s], [60s], [120s], [300s], or [600s].

- Event Data Sampling Mode
  Select [Free], [Trigger] or [Rotate].

- Block
  When the data type is [EVENT], select 1, 2, 4, 8, or 16.
  When the data type is [EVENT & DISP], select 1, 2, or 4.

- Data Length
  Set the interval corresponding to the amount of data (data length) that can be written as a block of the event data storage region. The data length that can be set depends on the event data sampling rate. It also depends on the block setting and number of Meas and Math channels.

- Pre-Trigger Length
  If 0 is selected, the event file entirely consists of data after the trigger. If 100 is selected, the event file entirely consists of data before the trigger.

- Manual Trigger
  When applying triggers with keys, select [ON].

- External Trigger
  When applying trigger signals by remote input, select [ON].

- Alarm Trigger
  When applying alarms as triggers, select [ON].

- Sampling
  Select the channels to be saved to the memory.

Memory Timeup

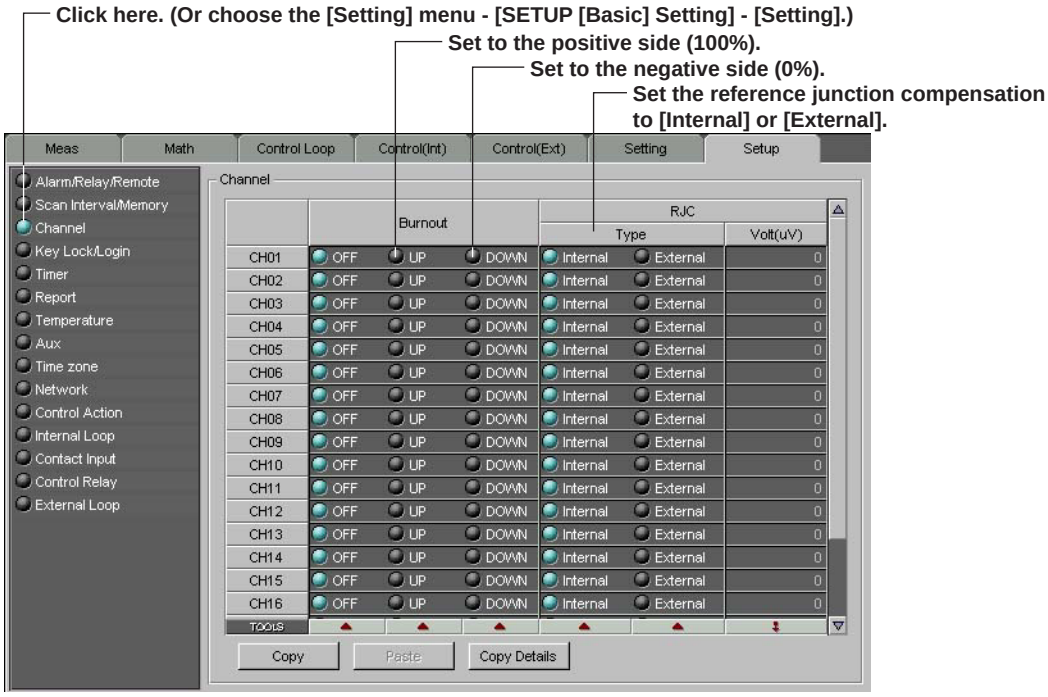
When the [Save] is set to [Auto] in [Memory Save], specify the date and time of the save operation.

- Timeup type
  Select the type of save interval from [Hour], [Day], [Week], or [Month]. When you are not using this function, select [OFF].

- Day of the week/Date
  When [Timeup type] is [Week], select a day.
  When [Timeup type] is [Month], specify the date, between 1 and 28. It is not possible to specify dates 29 to 31.

- Time (hour)
  When [Day], [Week], or [Month] is selected as [Timeup type], specify the time of the save operation. When [Timeup type] is [Hour], this setting is invalid. Specify between [00] and [23].

Channel (Setting the Burnout and RJC)



Burnout

Set the burnout operation. For details, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)*.

RJC Volt (uV)

Thermocouple input basic contact compensation setting. For details, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)* .

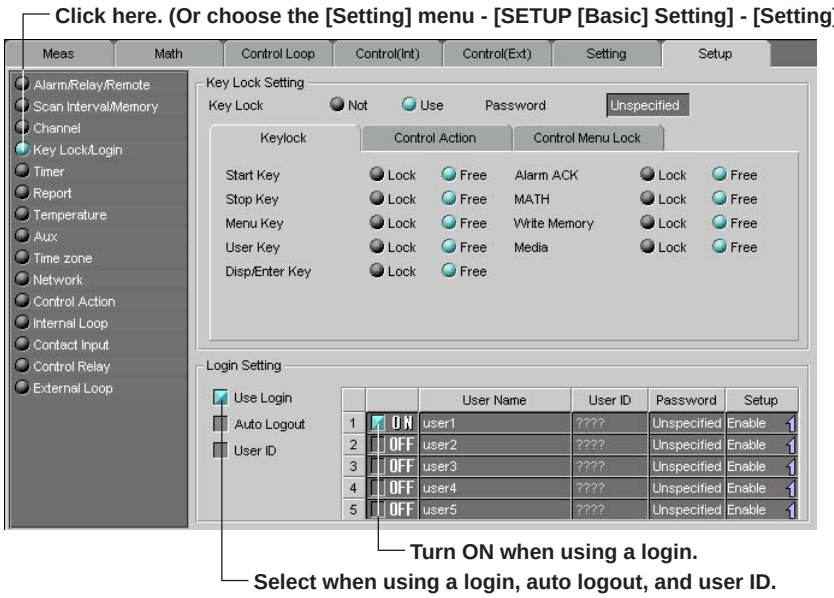
Copying and Pasting Setup Data

You can copy the setup data of one channel or more to other channels. Use the following procedure to copy and paste.

1. Click the source channel number that you want to copy. To select many channels, click the first source channel, then drag over all the channels that you want to copy.
2. Click the [Copy] button at the bottom of the window.
3. Click the destination channel number. To select many channels, click the first destination channel, then drag over all the channels where you want to paste.
4. Click the [Paste] button at the bottom of the window.

You can also copy and paste specific channel items.
After selecting the copy source in step 1, click the [Copy Details] button to display the [Setup Channel Copy Details] dialog box.
Select the items that you want to copy.

Key Lock/Login



Key Lock Setting

- **Key Lock**

  When using the key lock function, select whether or not to activate the key lock function (lock or free). For details, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)* .

- **Password**

  Enter the password used to release the key lock using up to six characters. [???] is displayed after the password is entered.

Login Setting

- **Use Login**

  When you use the login, auto-logout, or user ID, select the appropriate items.

- **Auto Logout**

  Selected: if idle for ten minutes, logs out automatically.
  Clear: need to perform the logout operation to log out.

- **User ID**
  Specify whether you want to use a user ID when logging in. When selected, you can specify user ID.

User Setting List

- **User name**
  Use up to 16 characters for the user name.

- **User ID**
  Up to 4 characters can be entered for the User ID. [???] is displayed after the password is entered.

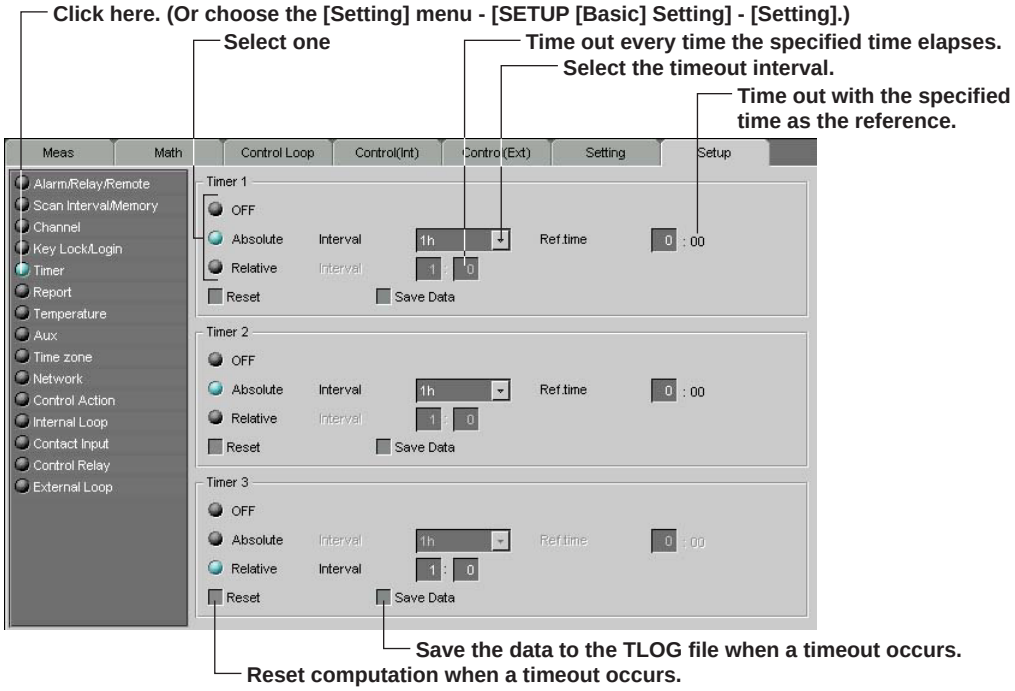
- **Password**
  Up to 6 characters can be entered for the password. [???] is displayed after the password is entered.

- **Setup**
  Select whether to allow setting changes in the setup mode for the user.

Note

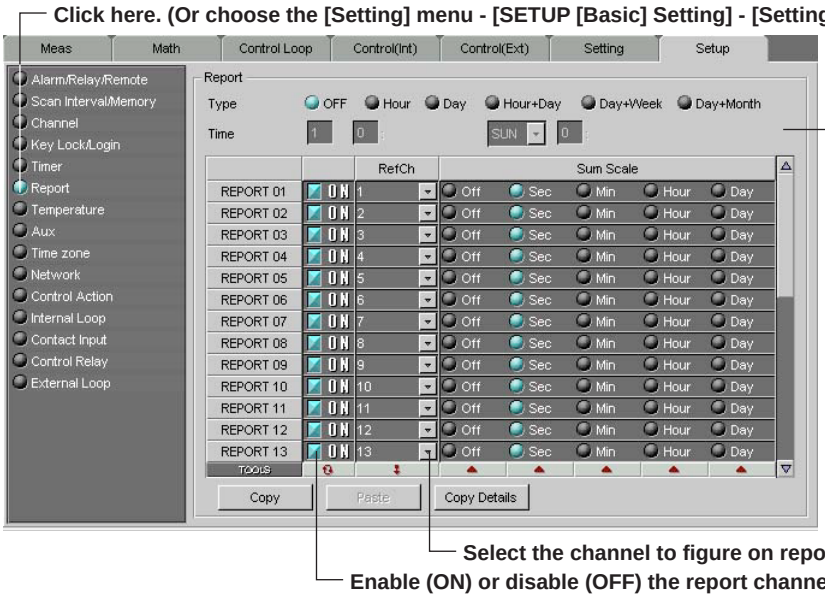
- If there is a duplicate [User Name] turned ON, the user with the larger user number is turned OFF.
- If [Setup] of all users that are turned ON is set to [Disable], the [Setup] of the user with the smallest number is set to [Enable].

Timer (Option)



You can set three types of timers to be used in the statistical computation. You can save the data to a TLOG file or reset the computation when the specified timeout interval elapses. This function is available only if the Computation function is installed.
For details about the types of timers and various settings, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)*.

Report (Creating Hourly/Daily/Weekly/Monthly Reports, Setting Available when the Computation Function Option is Active.)



Type

Select the type of report. For details, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)*.

Time

Specify the time for the report production time. For details, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)* .

Report Channel

There are 12 report channels for CX1000 and 30 report channels for CX2000.
The check boxes on the right of the report channels are used to select what report to produce. Clear ([OFF]) the reports you do not want to produce.

RefCh

Selects the report reference channel. For details, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)*.

Sum Scale

Select whether to convert the results of the TLOG.SUM computation channels to a specified time unitary value. Select [Off], [Sec], [Min], [Hour], [Day]. This function is available only if the Computation function is installed.
For details, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)* .

Copying and Pasting Setup Data

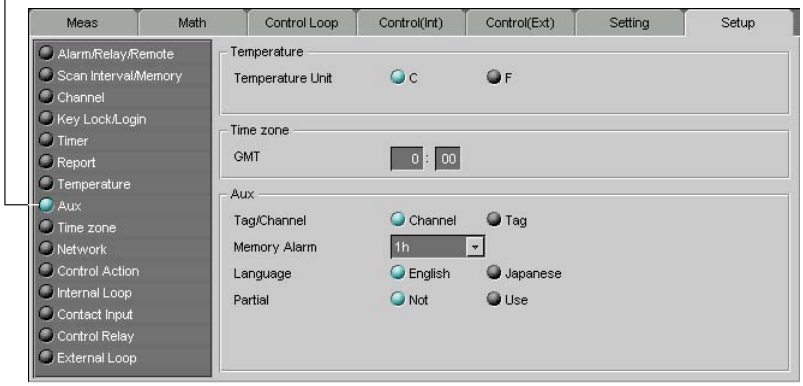
You can copy the setup data of one channel or more to other channels. Use the following procedure to copy and paste.

1. Click the source channel number that you want to copy. To select many channels, click the first source channel, then drag over all the channels that you want to copy.
2. Click the [Copy] button at the bottom of the window.
3. Click the destination channel number. To select many channels, click the first destination channel, then drag over all the channels where you want to paste.
4. Click the [Paste] button at the bottom of the window.

You can also copy and paste specific channel items.
After selecting the copy source in step 1, click the [Copy Details] button to display the [Report Copy Details] dialog box.
Select the items that you want to copy.

Tag, Memory Alarm Time, Displayed Language, and Partial Expanded Display Settings

Click either one. (Or choose the [Setting] menu - [SETUP [Basic] Setting] - [Setting].)



Tag/Channel

Select whether to use the tag name or channel number as the measurement/computation channel label.
If you select tag name, you can select the label display from tag and channel.

Memory Alarm

Free internal memory is monitored, and the memory end can be programmed to activate some period of time before the memory is completely full. This time period is called the memory alarm time.

Language

Select the language ([English] or [Japanese]) to be used on the CX's display.

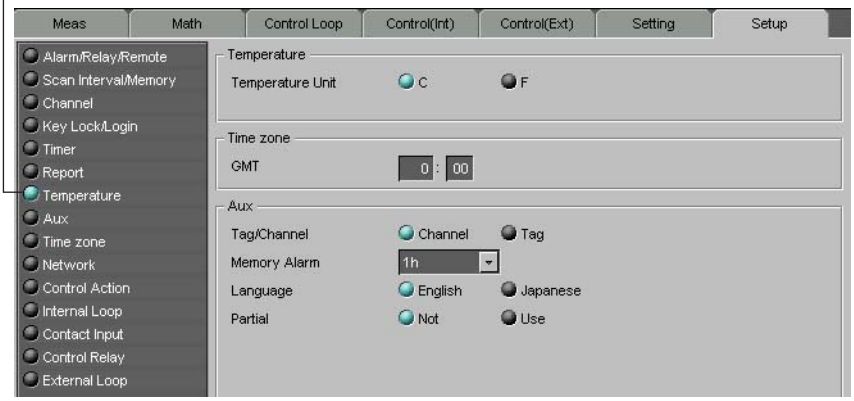
Partial

If set to [Not], the partial expanded display settings of the Meas, Math, and Control tabs are void.

Temperature Unit

Set the temperature unit from [C](Celsius) or [F](Fahrenheit).

1. Click here. (Or choose the [Setting] menu - [SETUP [Basic] Setting] - [Comm].)

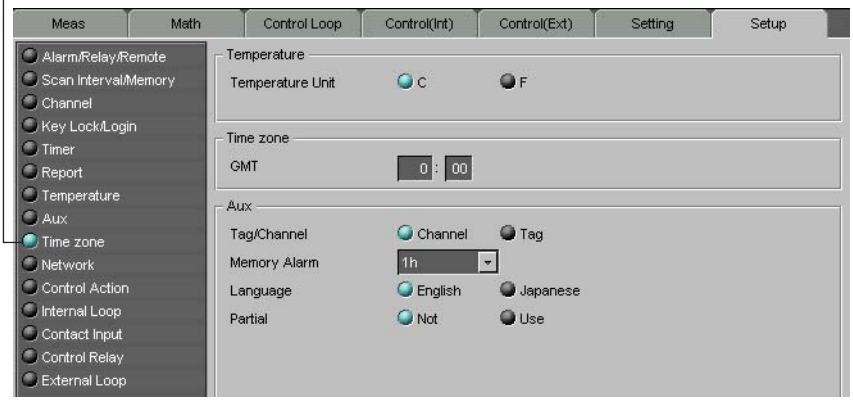


Time Zone

Set the difference in time from the GMT.

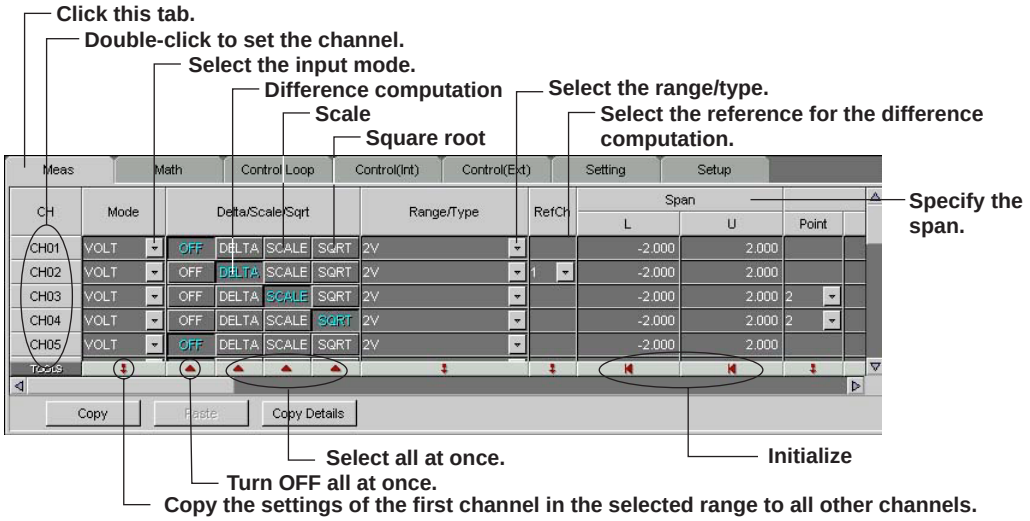
For example, with Japanese time this is normally +9:00.

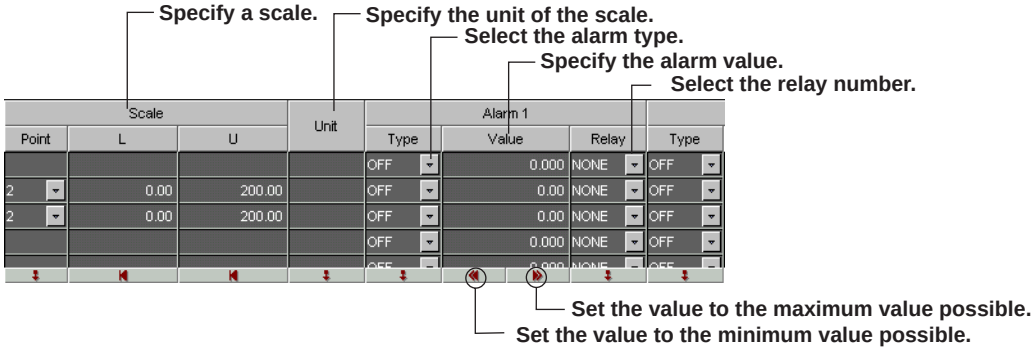
1. Click here. (Or choose the [Setting] menu - [SETUP [Basic] Setting] - [Comm].)

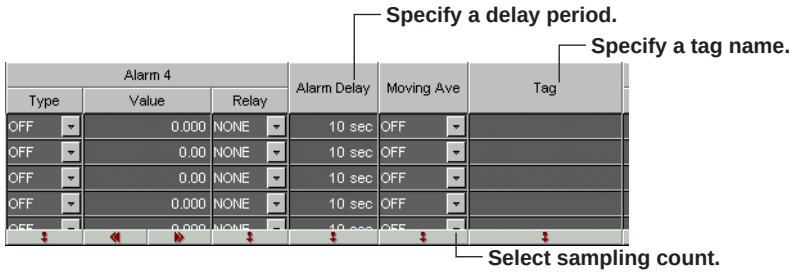


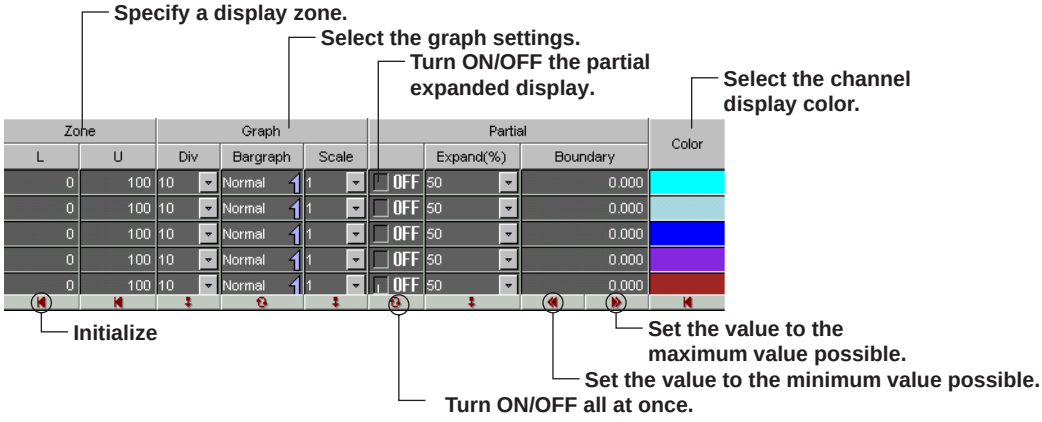
6.8 Measurement Channels Settings

To enter measurement channel settings, click the [Meas] tab. Or, you can select the items by choosing [Setting] - [SET [Regular] Setting] - [Meas Channels] .









Input Type (Mode and Range/Type)

Select from the pull-down list.

Mode	Relevant Settings
VOLT (voltage)	Range, span L, and span U
TC (thermocouple)	Type, span L, and span U
RTD (resistance temperature detector)	Type, span L, and span U
DI (voltage level/contact input)	Range, span L, and span U
SKIP (Measurement/Display OFF)	None

Note

- When a value outside the range is entered or when the span L and span U are set to the same value, they are corrected when the data is checked.
- If SKIP is selected, settings such as Delta/Scale/Sqrt and Range/Type are discarded.

Difference Computation and Reference

Displays the difference between the input and the reference channel.
If difference computation is performed between channels that have different range and type settings, the decimal place of the result is set to that of the channel computing the difference. If the number of decimals of the reference channel is greater than that of the channel computing the difference, the reference value below the least significant digit of the channel the difference is rounded down beforehand.

Square Root

Computes and displays the square root of the input. This setting can be used only when the input mode is set to VOLT. As necessary, set the span, scale, and unit.

Display Span

Sets the upper and lower limits (full scale) of the display.
When the span L and span U are set to the same value or when a value outside the range is entered, they are corrected when the data is checked.

Scale

Scale L, scale U, and Decimal Point

The scale value is displayed by taking the range between scale L and scale U to be the full scale. Enter the upper and lower limits to which you want to convert the raw values. Include the decimal point.
When the scale L and scale U values are set to the same value or when a value outside the range is entered, they are corrected when the data is checked.

Unit

Enter the unit using up to six characters.

Alarm

Four alarms (Alarm 1 to 4) can be specified on each channel.

Type

Select H, L, h (dH), l (dL), R (RH), r(RL) T, or t. T or t is selectable when the style number is greater than or equal to 2. The selectable alarms vary depending on the input mode and computation type. For details, see section 7.2 of the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)*.

Value

Alarm is generated using the specified value as the boundary. The selectable range of alarm values varies depending on the input mode and range.

Relay

To output relays, select the output relay number. Otherwise, select [NONE].

Alarm Delay

An alarm is generated when the measured value stays above or below the specified value for the specified length of time.

Moving Average

To use the moving average, select the sampling count (2 to 16).

Tag

Use up to 16 characters to specify a tag.
You can select tags instead of channel number to be displayed on the screen.
The [Setup] screen is used to select whether to display channel names or tag names on the screen.
If tag is selected in [Tag/Channel] of [Aux] on the [Setup] tab. You can select tag No., tag comment, or tag in the Data Monitor or Data Viewer.

Zone

You can select the range of the screen in which the waveform of each channel is displayed.
Specify positions (%) on the display scale for the upper and lower limits.
The conditions for setting the zones are as follows:

- Range: 0% to 100%
  The lower limit must be less than the upper limit
- The difference between the lower and upper limits must be at least 5%.

Graph

Divisions

Select the number of bar graph divisions.

Bar graph

Select the reference position of the bar graph. Selecting [Center] when the bar graph is vertical produces no effect.
It is set back to [Normal] when the data is checked.

Scale

When using scale display on the trend screen, select the scale display position.

Partial

Expand (%)

Set the boundary for the partial expanded display. The range is 1 to 99%.

Boundary

The conditions used to set the boundary vary depending on the measurement and computation channels as follows:

- Measurement channel
  When SCALE and SQRT are not used: Span L < boundary < span U
  When SCALE and SQRT are used: Scale L < boundary < scale U
- Computation channel
  Span L < boundary < span U
  For details, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)* .

Note

The partial expansion settings take effect when the partial expansion function is set to [Use] in the [Aux] section of the [Setup] tab.

Display Color

You can select the display color of each channel from 16 colors.

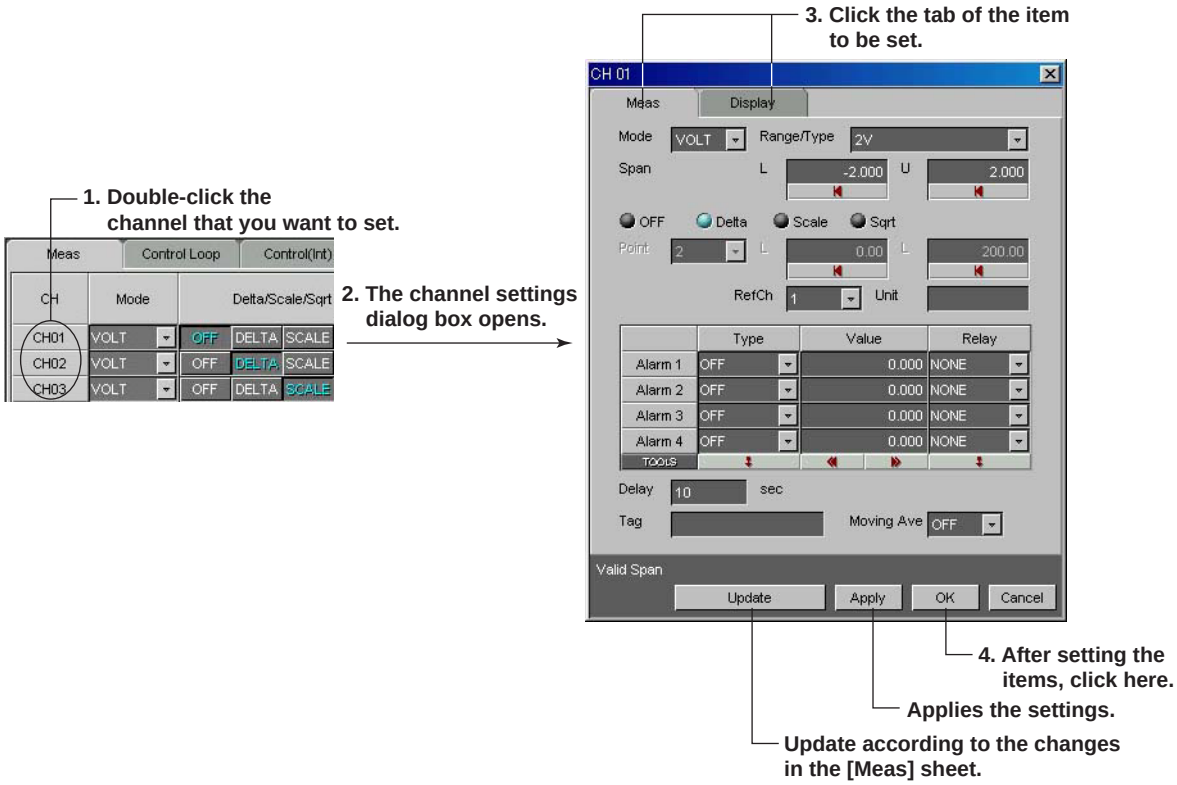
Copying and Pasting Setup Data

You can copy the setup data of one channel or more to other channels. Use the following procedure to copy and paste.

1. Click the source channel number that you want to copy. To select many channels, click the first source channel, then drag over all the channels that you want to copy.
2. Click the [Copy] button at the bottom of the window.
3. Click the destination channel number. To select many channels, click the first destination channel, then drag over all the channels where you want to paste.
4. Click the [Paste] button at the bottom of the window.

You can also copy and paste specific channel items.
After selecting the copy source in step 1, click the [Copy Details] button to display the [Meas Channel Copy Details] dialog box.
Select the items that you want to copy.

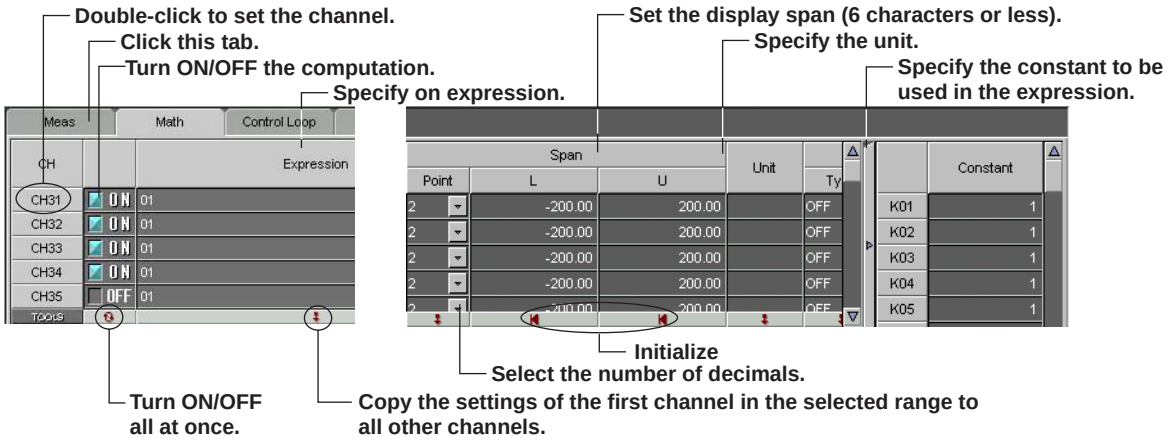
Setting One Channel at a Time

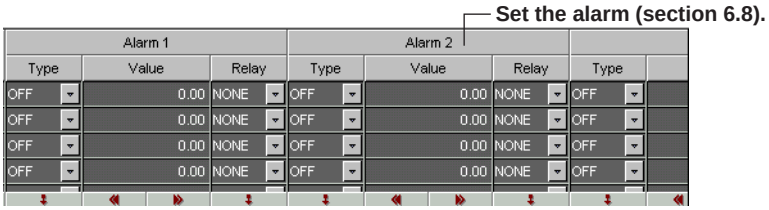


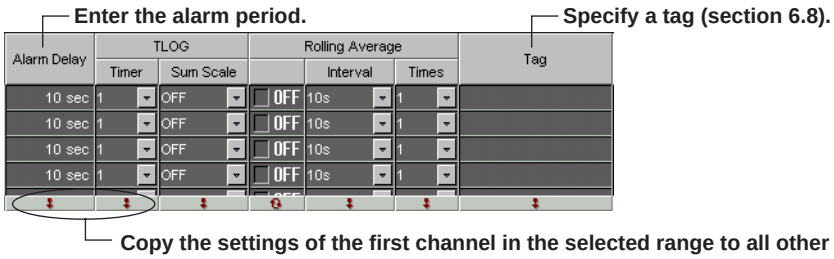
The items of the [Meas] tab can be set for each channel. The items set here are the same as the ones in the [Meas] tab of the Hardware Configurator. For details, see the page corresponding to the item.

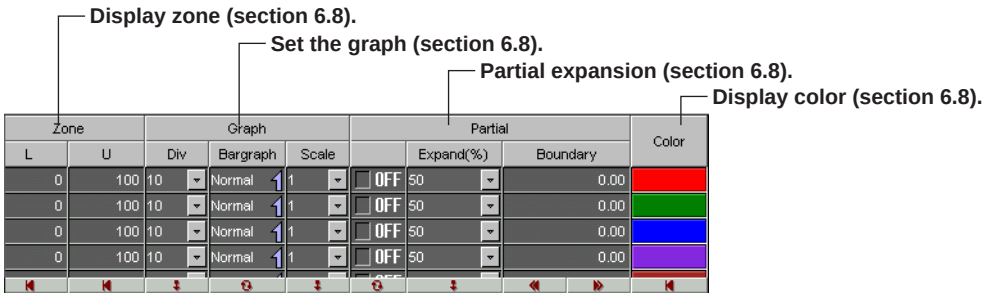
6.9 Computation Channel Settings

To enter computation channel settings, click the [Math] tab. Or, you can choose [Setting] - [SET [Regular] Setting] - [Math Functions] .









Computation ON/OFF

Select whether to perform computation for each channel.

Expression

Enter an expression using up to 40 characters. For details about the expression, see the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)* .

Display Span

Set the upper and lower limits of the display.
The range is –9999999 to 99999999. Set the number of decimals to four digits or less.

Alarm and Tag

The settings are the same as the measurement channels. For details, see section 6.8, "Measurement Channels Settings".

TLOG Computation

Timer

Select one of the timers (1 to 3) set in the setup mode.
The computation interval of TLOG computation is set to the time assigned to the selected timer.

Sum Scale

Set the sum scale.

Rolling Average

Rolling Average Computation ON/OFF

Select whether to compute the rolling average.

Interval

Select the sampling interval when rolling average is activated.

Times (Number of Samples)

Select the number of samples (number of data points used to compute the rolling average).

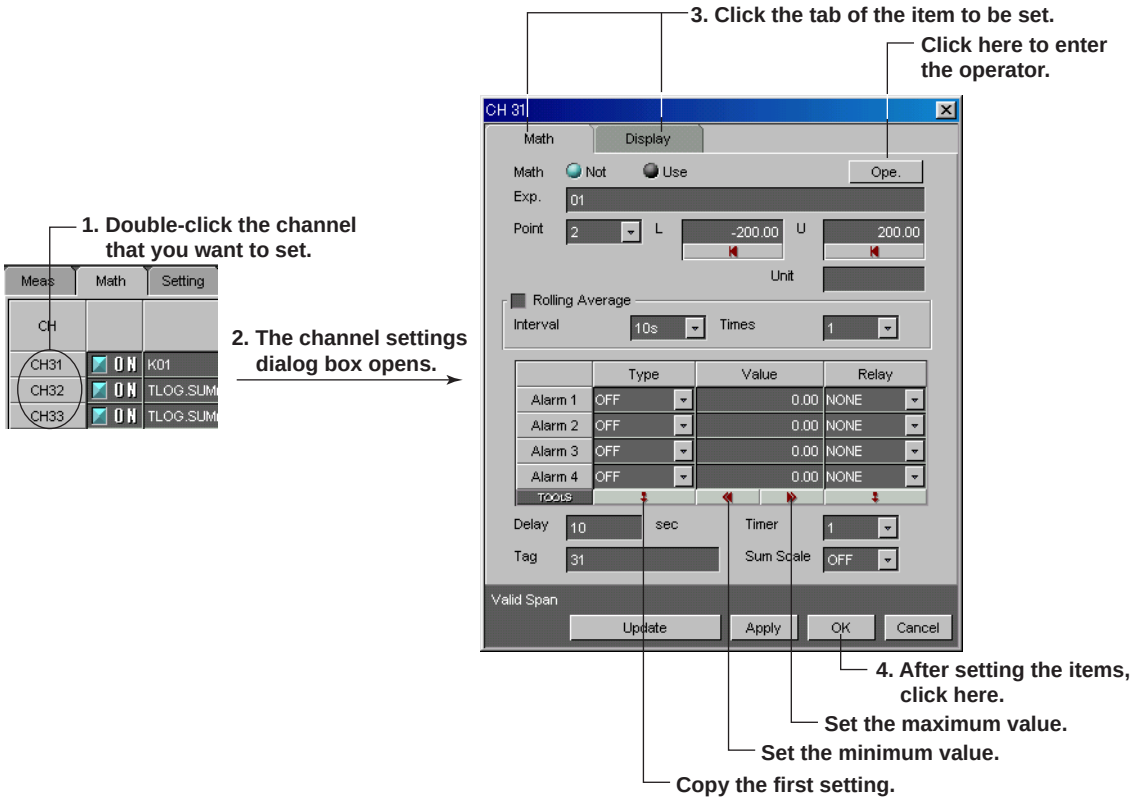
Zone, Graph, Partial, and Color

The settings are the same as the measurement channels. For details, see section 6.8, "Measurement Channels Settings".

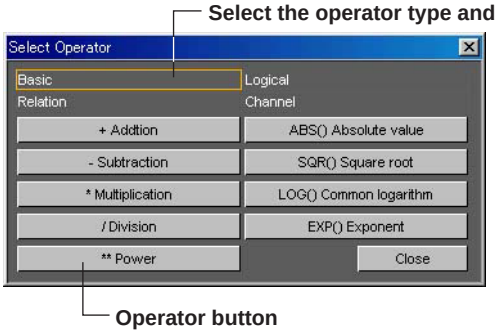
Constant

You can set constants to be used in the expression. Up to 12 constants (CX1000) or up tp 30 constants (CX2000) can be specified.

Setting One Computation Channel at a Time



[Select Operator] dialog box



The items of the [Math] tab can be set for each channel. The items set here are the same as the ones in the [Math] tab of the Hardware Configurator. For details, see the page corresponding to the item.

Copying and Pasting Setup Data

You can copy the setup data of one channel or more to other channels. Use the following procedure to copy and paste.

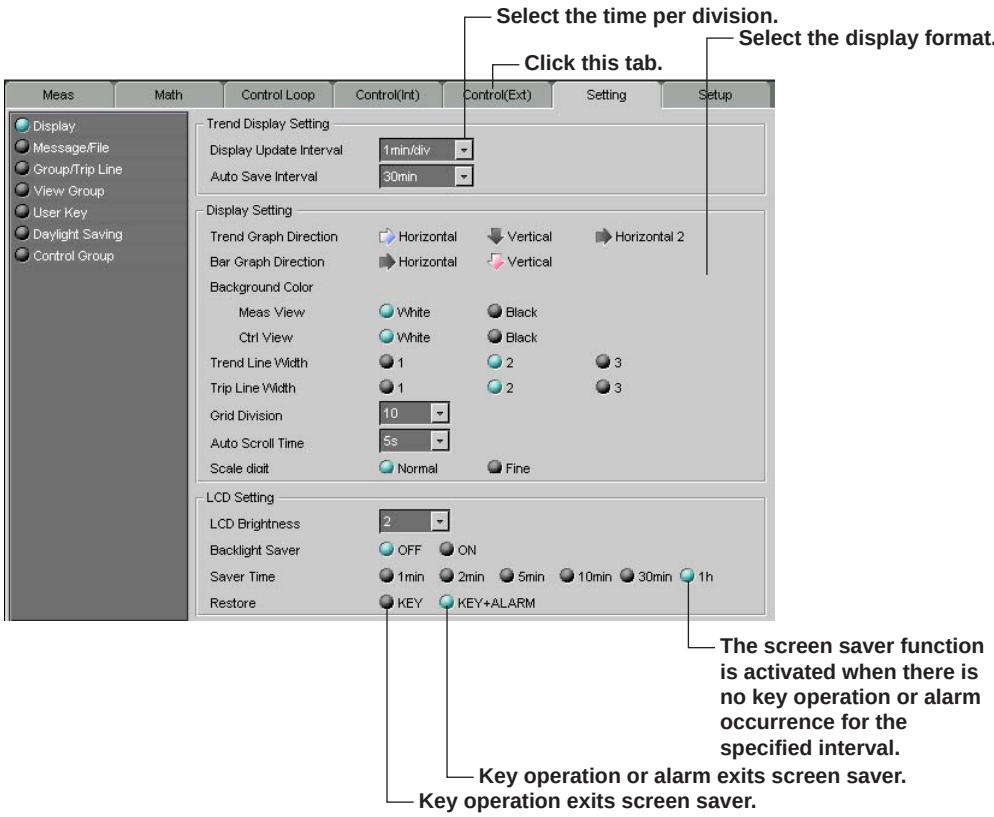
1. Click the source channel number that you want to copy. To select many channels, click the first source channel, then drag over all the channels that you want to copy.
2. Click the [Copy] button at the bottom of the window.
3. Click the destination channel number. To select many channels, click the first destination channel, then drag over all the channels where you want to paste.
4. Click the [Paste] button at the bottom of the window.

You can also copy and paste specific channel items.
After selecting the copy source in step 1, click the [Copy Details] button to display the [Math Channel Copy Details] dialog box.
Select the items that you want to copy.

6.10 Display Settings

To enter display settings, click the [Setting] tab. Or, you can select the items by choosing [Setting] - [SET [Regular] Setting] - [Display Setting] .

Display



Display Update Interval

You can select the display update interval of the trend display from [1 min/div], [2 min/div], [5 min/div], [10 min/div], [20 min/div], [30 min/div], [1 h/div], [2 h/div], [4 h/div], or [10 h/div] of the time axis.

Auto Save Interval

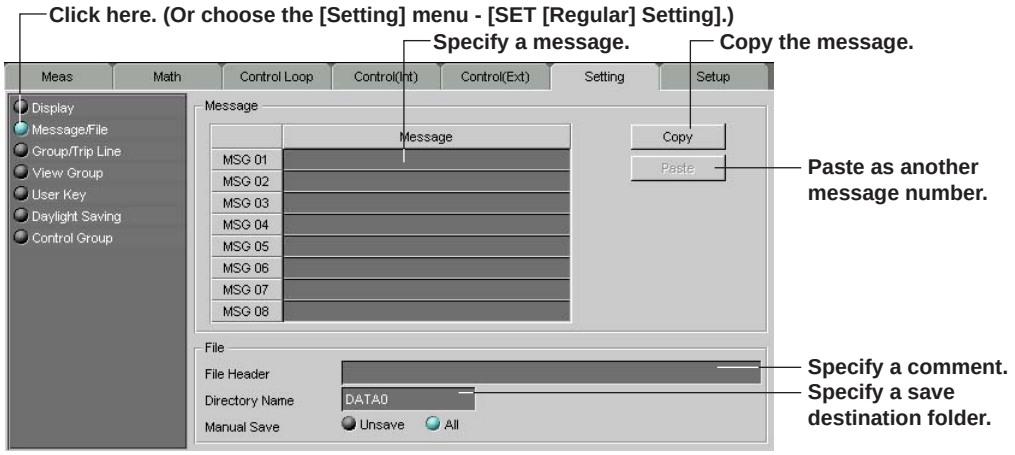
The auto save interval can be specified when the [Save] is set to [Auto] and the data type is set to [DISPLAY] or [EVENT & DISP] in [Scan Interval/Memory] of the [Setup] tab.

Auto Scroll Time

This is the time period used to automatically switch the displayed group. Select from [5s], [10s], [20s], [30s], or [1min].

For details about the other settings, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E).*

Message/File



Message

Use up to 16 characters can be entered for the message.

File Header

Add a comment to the header section of the measurement/computation data file.

Directory Name

Specify the name of the folder where measurement/computation data files are saved.

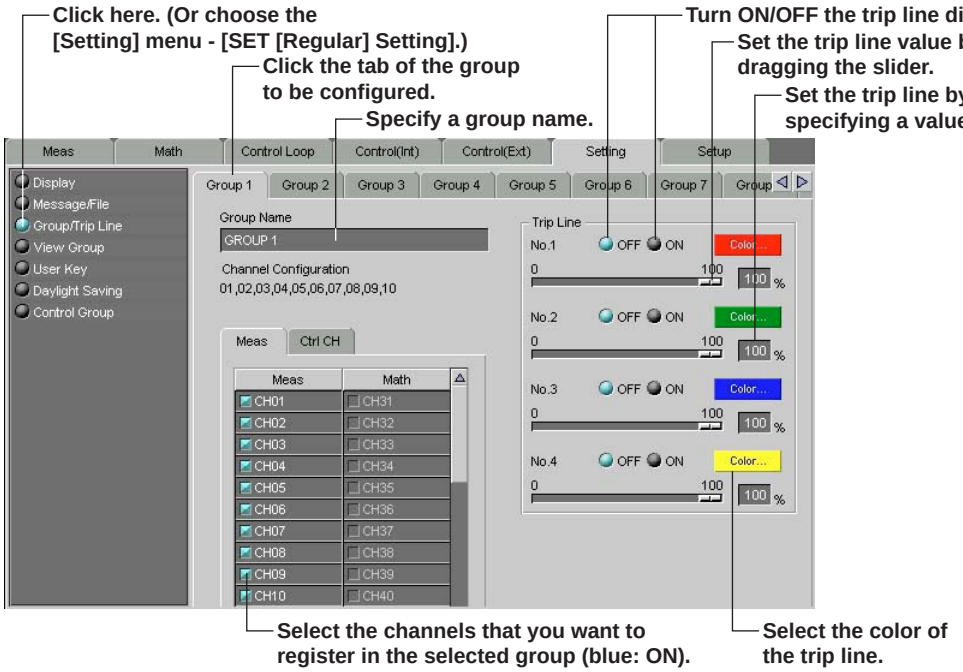
Note

- Up to eight characters can be entered for the file header and director, name. AUX, CON, PRN, NUL, and CLOCK cannot be used.
- If the directory name is not specified, DATA0 (default) is automatically set as the directory name.

Manual Save

Select whether to save all the data or data that has not been saved during manual save.

Group/Trip Line



Group Name

Use up to 16 characters can be entered for the group name.

Channel Configuration

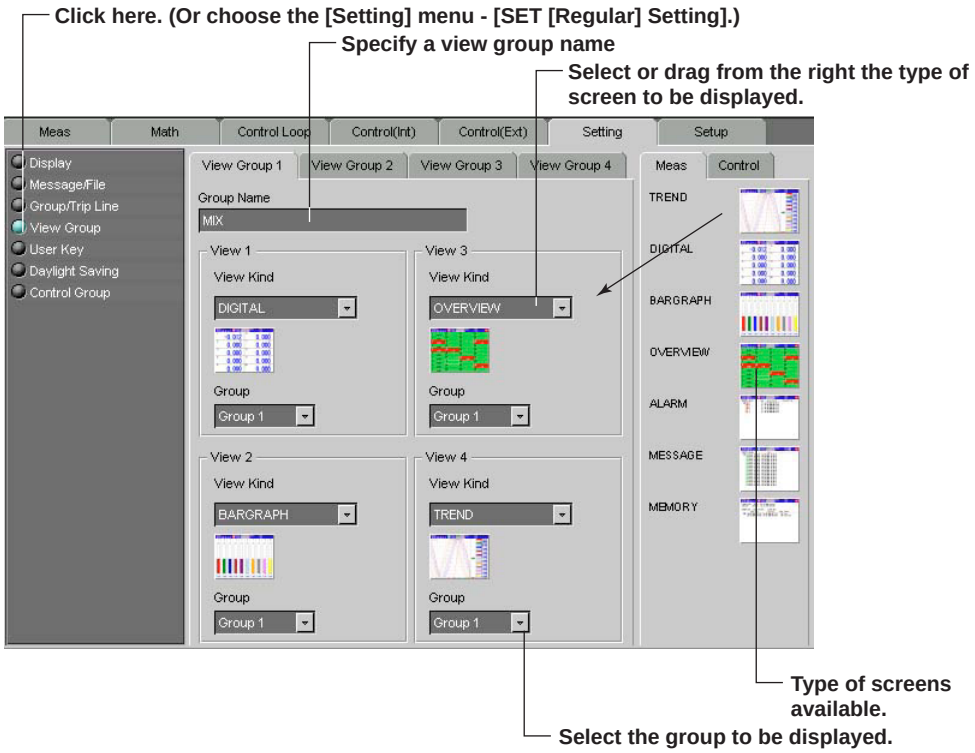
The maximum number of channels that can be assigned to a group is 6 for the CX1000 and 10 for the CX2000. The assigned channels are listed under [Channel Configuration].

Trip Line

Up to four trip lines can be set to one group.

With regard to the trip lines set here, the first and second settings (No.1 and No. 2) refer to the trip lines in Data Monitor and Data Viewer. If you change them here, they also change in Data Monitor and Data Viewer. For details about the other trip line settings, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)* .

View Group



View Groups

Up to four view groups can be registered.

Group Name

Use up to 16 characters can be entered for the group name. The group name appears as a submenu of the [4 PANEL] display of the CX2000.

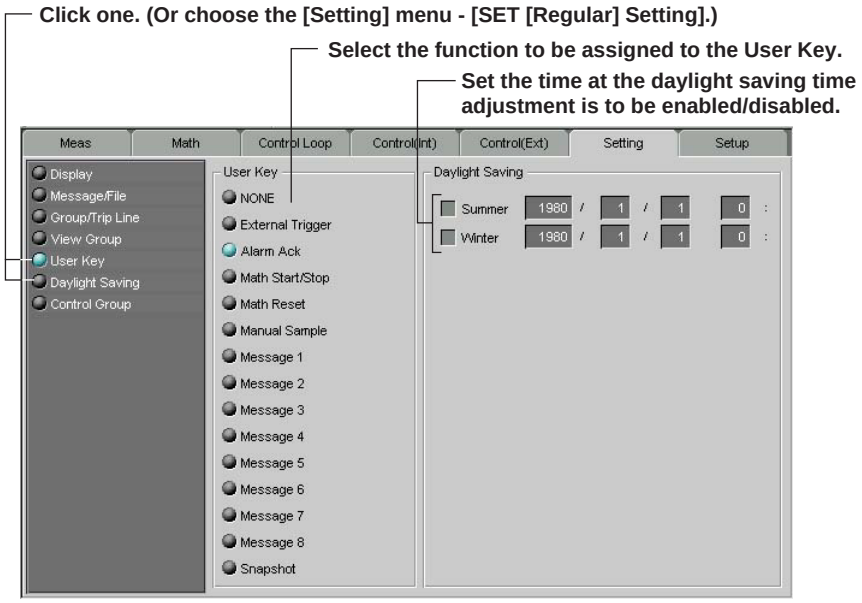
View Kind

The view group consists of four views. Select the type of screen to display in each view.

Group

Depending on the type of view selected, the group displayed varies. When selecting a view from the [Meas] tag, select the group from the measurement groups (Group 1 to 10). When you selecting a view from the [Control] tag, select the group from the control groups (Group 1 to 8).

User Key/Daylight Saving



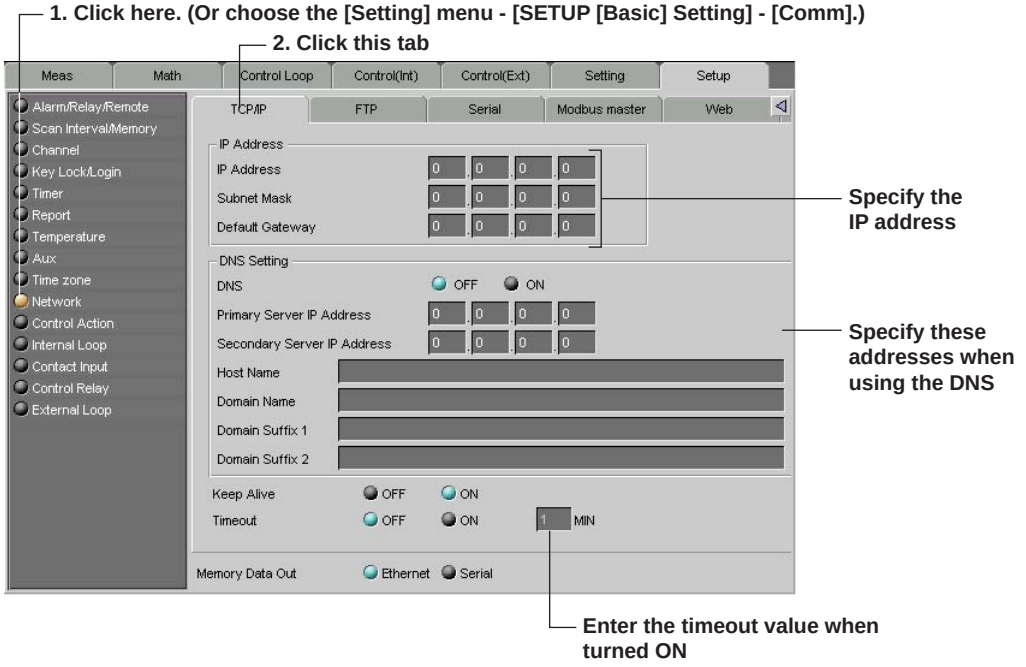
For details about the User Key settings, refer to the *CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E)*.

6.11 Network Settings

To make network settings, click the [Setup] tab, then select the [Network] from the list on the left. It is also possible to select the item in [SETUP [Basic] Setting] on the [Setting] menu.

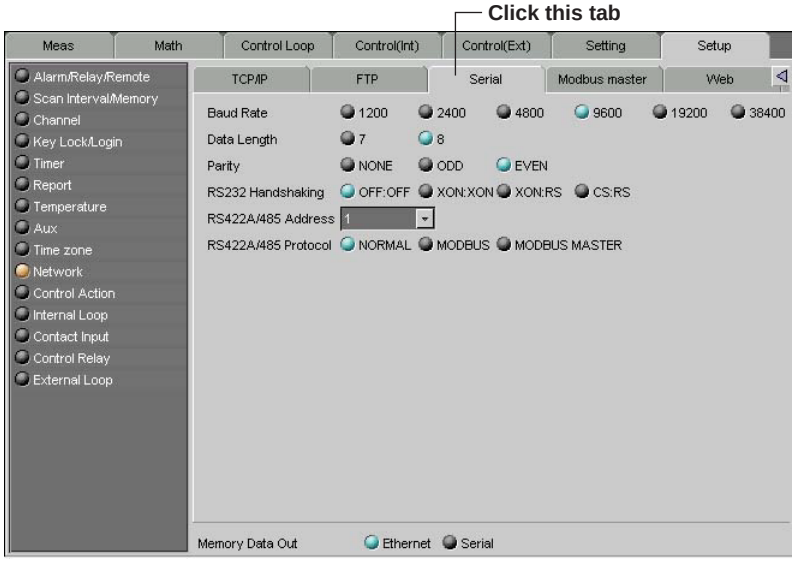
TCP/IP Settings

Connect the CX to the Ethernet and, in the dialog box below, enter TCP/IP settings. Type the same address for [IP Address] as the one of the [Address] box of the [Network Settings] dialog box.



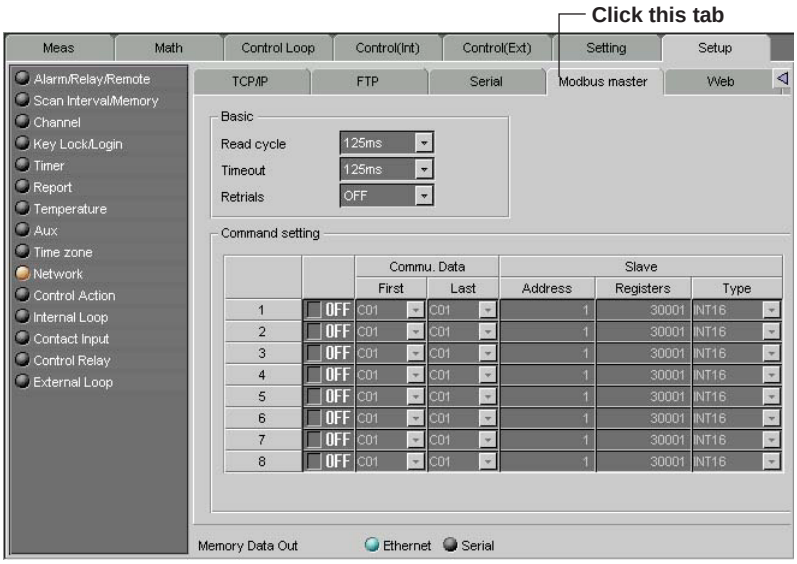
Serial Communication Settings

When using serial communications between the CX and other devices, set the parameters required for serial communications. In the [Protocol] settings, if [MODBUS MASTER] is selected, you must to click the [Modbus master] tab and make Modbus master settings.



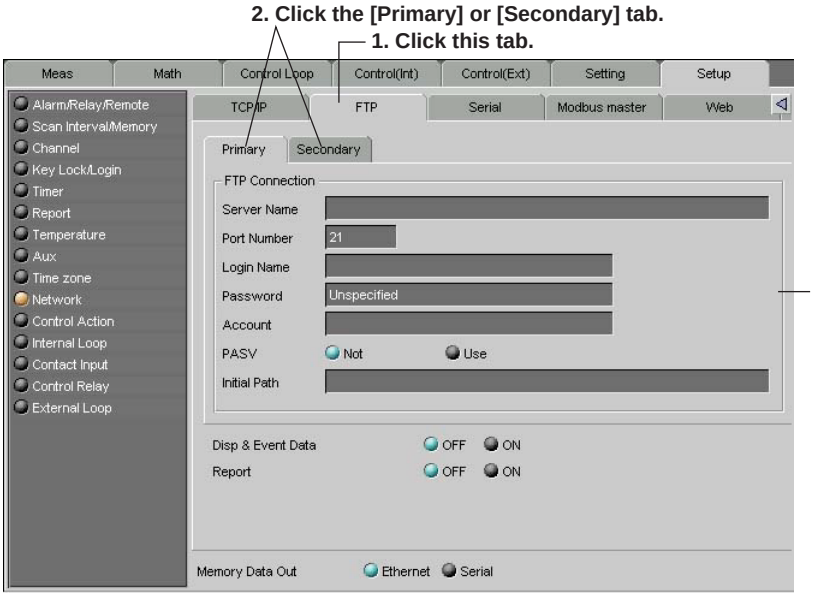
Modbus Master Settings

When using the CX as a Modbus master, enter the Modbus master basic and command settings. For details about the settings.



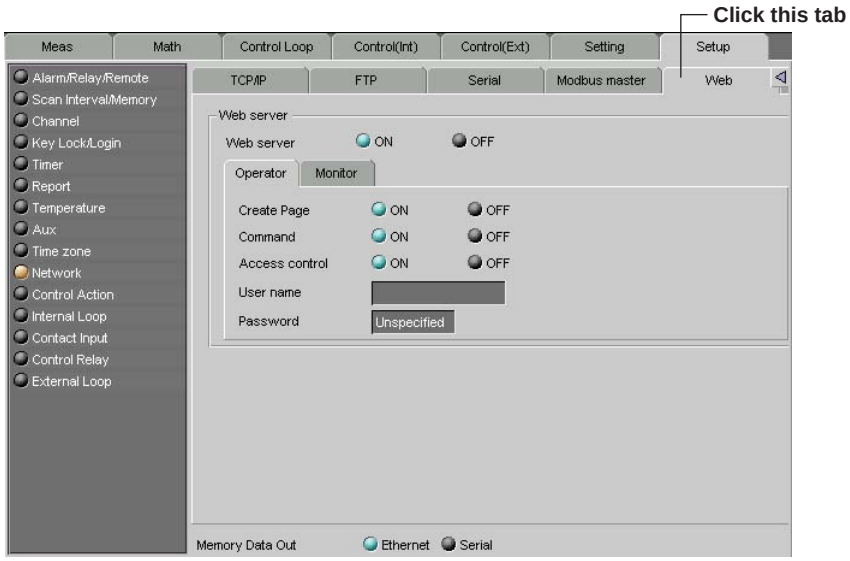
FTP Settings

Using the FTP function, measurement/calculation data can be automatically transferred from the CX to the specified server as files. The FTP function can be used only with Ethernet communications. When using the FTP function, specify the necessary [FTP Connection] settings in the dialog box below.



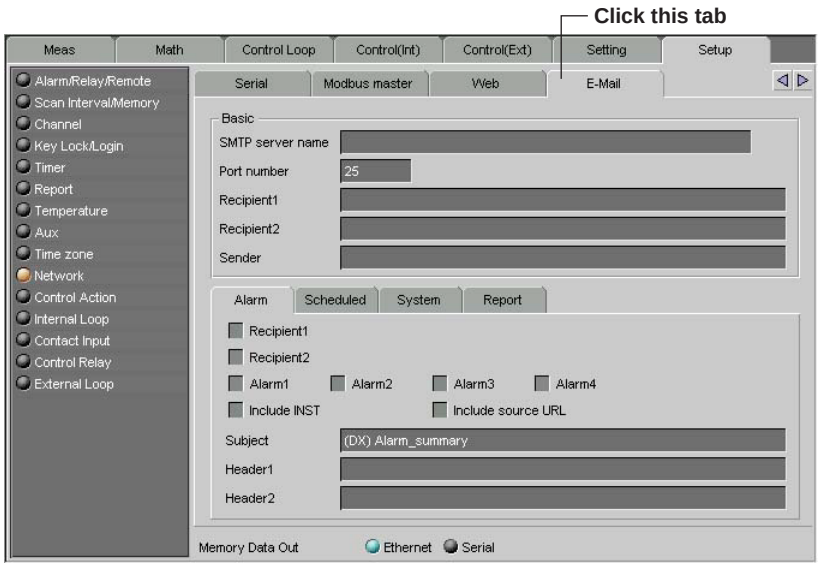
Web Server Settings

When using Ethernet communications, the CX can be set up as a web server. Set [Web Server] to [ON], and then set the access certification for the operator page and monitor page.



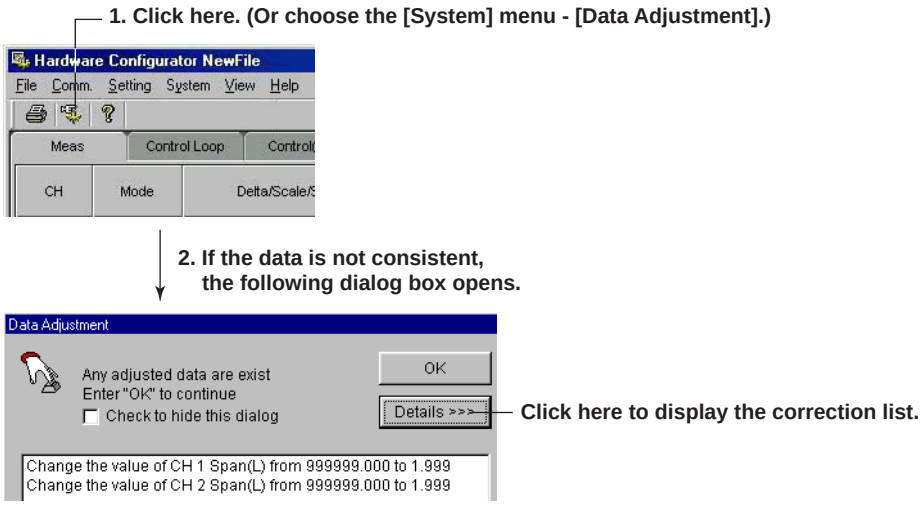
E-mail Transmission Settings

When using e-mail transmission, specify [SMTP server name], [Port number], [Recipient1], etc. For details about the settings.



By clicking the [Alarm], [Scheduled], [System], or [Report] tab, you can make settings separately for each type of e-mail message.

6.12 Setup Data Adjustment



Checks whether the specified setup is consistent with the actual system. If not, the data is automatically corrected.

Data is corrected in the following cases:

- When values of items of the Meas/Math tab are outside the specified range.
- When an invalid character string is used.

[Data Adjustment] Dialog Box

If [Data Adjustment] Dialog on the [View] menu is checked, the [Data Adjustment] dialog box opens when data is not consistent checking data or transmitting data.

Note

Perform the data check before sending the new setup data to the CX.

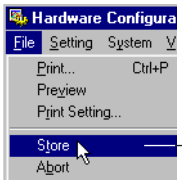
6.13 Sending the Setup Data to the CX

The method used to send the data varies depending on whether a CONFIG file or setup data file is being transmitted.

CONFIG file

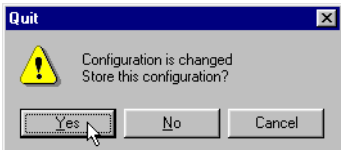
The following two methods are available:

- **Selecting from the toolbar**



The setup data are sent when [File] - [Store] is selected.

- **Clicking the [X] button**

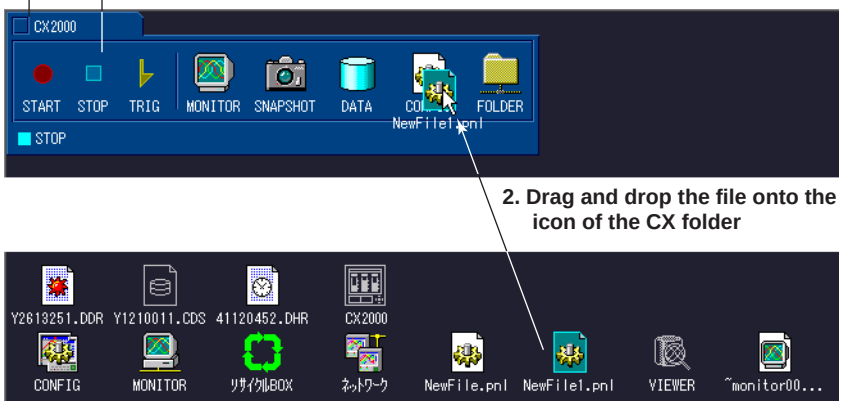


When the Configurator is closed by clicking the [×] button, a confirmation dialog box is displayed.
To send the new setup data to the CX, click the [Yes] button.
Otherwise, click the [No] or [Cancel] button.7
If the CX is acquiring data to the memory, a message “Now Memory & Math sampling. Can’t store setting” is displayed. The data will not be sent in this case.

Setup data file

CX folder

1. Stop the data acquisition to the memory.



2. Drag and drop the file onto the CONFIG icon of the CX folder

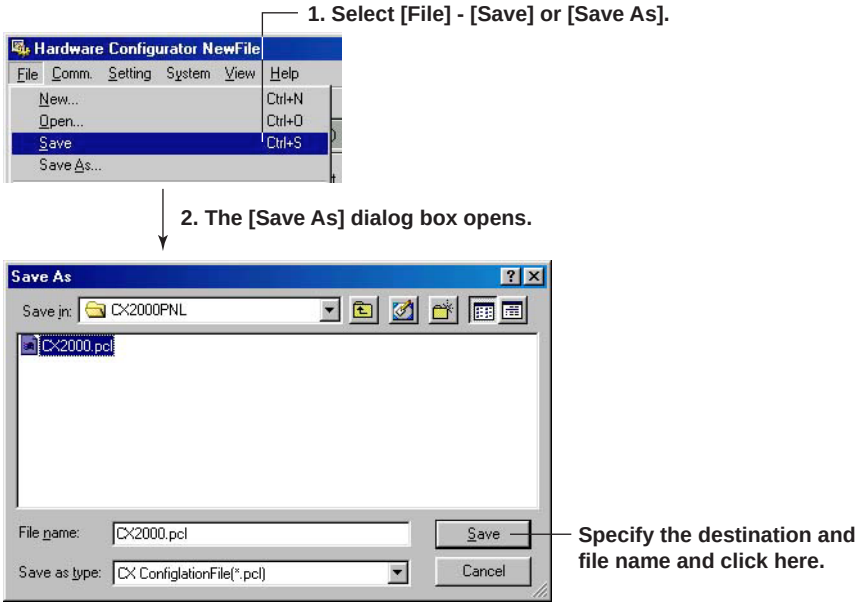
The contents of the setup data file (*.PNL) located on the DAQ Desktop can be transmitted. If the CX is acquiring data to the memory, the data will not be sent in this case.

Note

Of the network settings in the [Setup] tab, the following items are not transmitted.

- [IP Address] under the [TCP/IP] tab
- All settings under the [Serial], [Modbus master], and [Web] tabs

6.14 Saving the Setup Data



Save

The setup data overwrites a preexisting file (*.pcl). The [Save As] dialog box does not open.

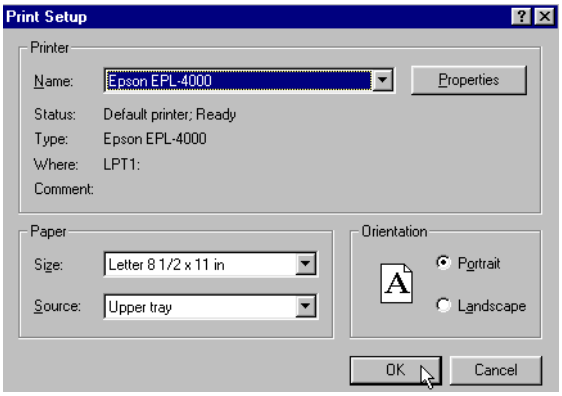
Save As

Saves the setup data by specifying the save destination and file name.

6.15 Printing the Setup Data

Printer Settings

1. Select [File] - [Print Setting].



2. Set the printer, paper and orientation.

Note

Set the printer according to the environment that you are using.

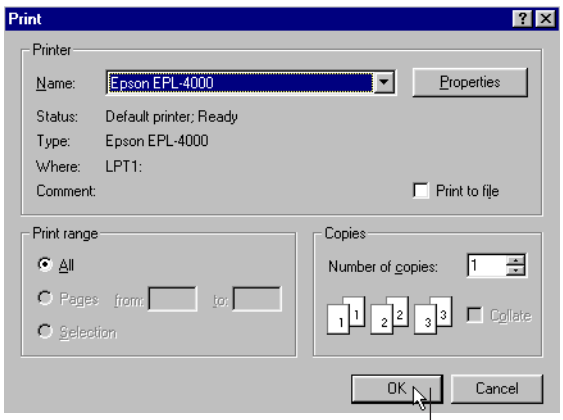
Preview

You can preview the print layout before printing the data.
Selecting [File] - [Preview] displays the print preview window.

Printing

1. Click here. (Or choose the [File] menu - [Print].)

2. The [Print] dialog box opens.



Select the printer, print range, number of copies, and then click the [OK] button.

6.16 Usable Characters

The characters in the following table can be used when entering group names, view group names, messages, comments to file headers, save destination directory names, the password for the key lock function, and login parameters such as user names, user ID, and passwords.

SP	#	%	(	)	*	+	-	.	/
0	1	2	3	4	5	6	7	8	9
A	B	C	D	E	F	G	H	I	J
K	L	M	N	O	P	Q	R	S	T
U	V	W	X	Y	Z				
a	b	c	d	e	f	g	h	i	j
k	l	m	n	o	p	q	r	s	t
u	v	w	x	y	z				
_	°	@							

Note

(*), (+), (.), and (/) cannot be used for folder names where files are saved.

7.1 Error Messages and Their Corrective Actions

Message

Message
Failed to store any settings.
Failed to store settings.
Permission denied.
Need a password.
Need a user name.
Cautionary information exists.

Error Message

No.	Message	Corrective Action
E0004	Invalid serial number.	Reinstall using the correct serial number.
E0101	Can't be executed by itself.	Launch the program from the DAQ Desktop.

Data Viewer

Message	Corrective Action	Reference Page
Insufficient memory. Please close at once.	Exit other programs and restart or reboot the OS and restart.	–
Can't write to file.	Check the capacity of the directory or check that other programs are not using it.	–
Can't read file.	Check that the file exists and check that the file system is normal.	–
Can't open file.	Check that the file exists and check that the file system is normal.	–
Unsupported file.	Select another file.	4-2
Data dose not exist.	Select another file.	–
Channel dose not exist.	Select another file.	–
This file already exists. Replace existing file?	Execute to overwrite the file. Otherwise, change the file name.	–
This name's directory already exists.	Overwriting is not possible when a directory with the same name exists. Change the file name.	–
Can't overwrite to file.	–	–

Configurator

A List of Warnings

Message	Reference Page
System configuration has been changed. The input configuration and data will be initialized. Continue?	5-27
Data can't be processed after the year 2038.	–
Any destroyed A/D converter exist. Any settings may be failed to store.	–

A List of Errors

Message	Corrective Action	Reference Page
Unreadable file.	Select another file.	5-1, 5-3
Failed to open file.	If the file cannot be loaded the second time, the file may be corrupt. Select another file.	–
Failed to make file.	Check the capacity of the directory.	–
Now sampling. Can't to store settings.	Transmit the data after the write operation to the DX/MV/CX internal memory is finished.	5-26
Now calculating. Can't store settings.	Transmit the data after the computation is finished.	5-26
Now samplig & calculating. Can't to store settings.	Transmit the data after the write operation to the DX/MV/CX internal memory and the computation are finished.	5-26
Communication Error	Check the communication settings.	1-5
Connection timeout.	There may be too much traffic. Retry after a little while.	–
Illegal user information.	Check to see that the user name is correct.	5-19
Connection was refused.	Check the communication settings. Check that the DX/MV/CX is turned ON.	1-5
Connection is busy.	Retry after a little while.	–
Memory Error	Exit other programs and restart or reboot the OS and restart.	–
User level Error	The operation is not authorized to the user ID that is logged in.	–

Index

A

B

C

D

E

F

G

H

I

K

L

M

N

O

P

R

S

T

U

V

W

Y

Z