User's Manual

WX12
AddMulti

vigilantplant.®

YOKOGAWA
Yokogawa Electric Corporation

IM WX12-01E
5th Edition

Foreword

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

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How to Use This Manual

Structure of the Manual

This User's Manual consists of the following chapters.

Chapter	Title	Description
1	**Before Using the AddMulti Software**	Gives an overview of the AddMulti software. Describes the PC requirements needed to run AddMulti, the installation procedures, and other information.
2	**Setting AddMulti (Launcher)**	Describes the procedures for setting the AddMulti environment and data logging conditions.
3	**Logging Data (Launcher)**	Describes the procedures for logging data.
4	**Confirming the Record Status (Overview)**	Describes how to display the data logging status of each group and how to view the list of saved data files.
5	**Monitoring the Data (Data Monitor)**	Describes how to display the data being logged using waveforms, numeric values, or on a meter and how to change the displays.
6	**Displaying the Logged Data (Historical Viewer)**	Describes how to display the logged data using waveforms or numeric values and how to change the displays. Also describes how to compute the statistics over a specified area and how to convert the data format.
7	**Error Messages and Corrective Actions**	Describes the error messages and their corrective actions.
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Scope of the Manual

This manual does not cover the basic operations of Windows XP, Windows 2000, and Windows Vista. For information regarding the basic operations of Windows, see the user's guide that came with Windows.

Conventions Used in This Manual

Unit

K	Denotes “1024.”	Example: 100 KB
M	Denotes “1024 K.”	Example: 10 MB
G	Denotes “1024 M.”	Example: 2 GB

Displayed Characters

Displayed characters such as menu commands, names of dialog boxes, and button names are indicated using bold characters.

Symbols Used on Pages Describing Operating Procedures

On pages that describe the operating procedure in Chapters 1 through 7, the following symbols are used to distinguish the procedure from their explanations.

Procedure This subsection contains the operating procedure used to carry out the function described in the current section. All procedures are written with inexperienced users in mind; experienced users may not need to carry out all the steps.

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

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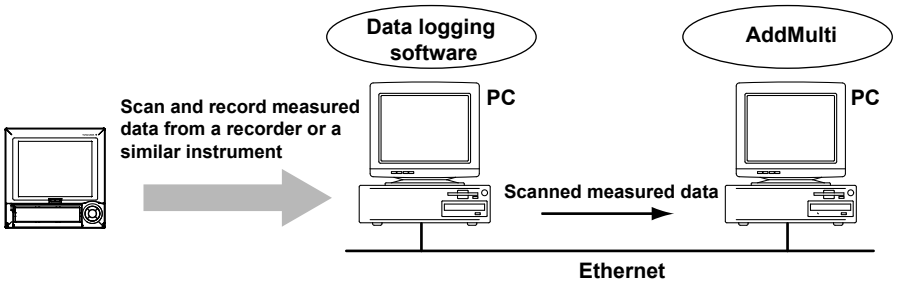
1.1 Overview of Functions

AddMulti is a software program that can simultaneously perform data logging of different logging conditions (this function is referred to as the multilogging function).

System Configuration

The following hardware and software are required to use the AddMulti software.

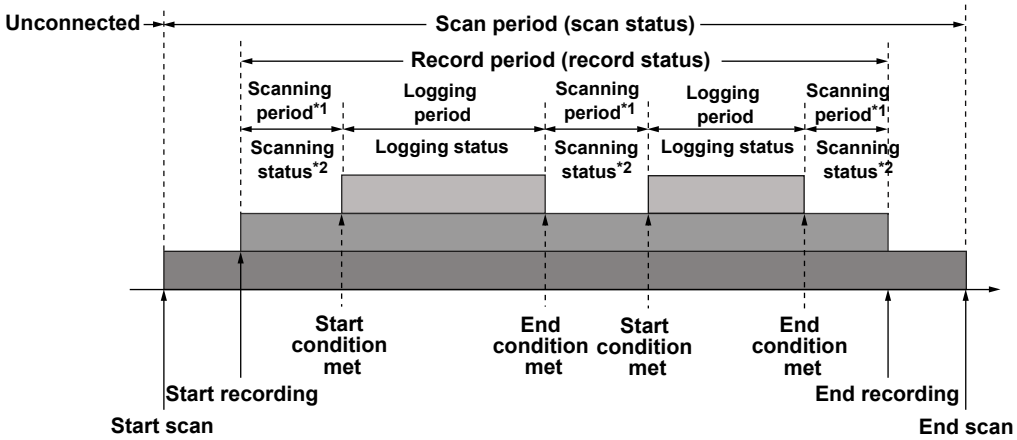
- PC on which AddMulti will run
- Data logging system
  - Data logging software (DAQLOGGER, DAQ32Plus, or MXLOGGER)
  - PC
  - Hardware such as a recorder
- Ethernet



Connect the PC on which the data logging software is running and the PC on which AddMulti is running on an Ethernet network. AddMulti is connected to the data logging software via the Ethernet network.
AddMulti retrieves measured data that the data logging software is scanning and recording from a recorder or a similar instrument. AddMulti operates based on the time information retrieved from the data logging software.
AddMulti can only connect to a single data logging software at any given time.

Data Logging Status and Terminology

AddMulti has the following five statuses related to data logging as shown below.



***1 Scanning period within the recording period**
***2 Scanning status when in record status**

Unconnected

Status in which AddMulti is not connected to the data logging software.

Scan

Scan refers to the act of retrieving the measured data from the destination monitor server (see “AddMulti Structure”) at a predetermined interval (scan interval). The scan interval of AddMulti is the same as that specified on the data logging software to which AddMulti is connected.

Scan starts when AddMulti is connected to the data logging software. Scan continues until the connection is dropped.

The fastest scan interval are indicated below.

- When connected to DAQ32Plus: 0.5 s
- When connected to DAQLOGGER: 1 s
- When connected to MXLOGGER: 0.01 s

Record

Record refers to the act of logging data according to the logging conditions. Record status is divided into scanning status and logging status.

Scanning

Scanning status refers to the condition in which AddMulti monitors whether the logging start condition is met after recording is started. Logging starts when the logging start condition is met.

Logging

Logging refers to the act of saving the measured data to a file on the hard disk at a predetermined interval (logging interval). In the logging status, AddMulti monitors whether the logging end condition is met. When the logging condition is met, AddMulti stops recording or enters the scanning status in which the next logging start condition is monitored.

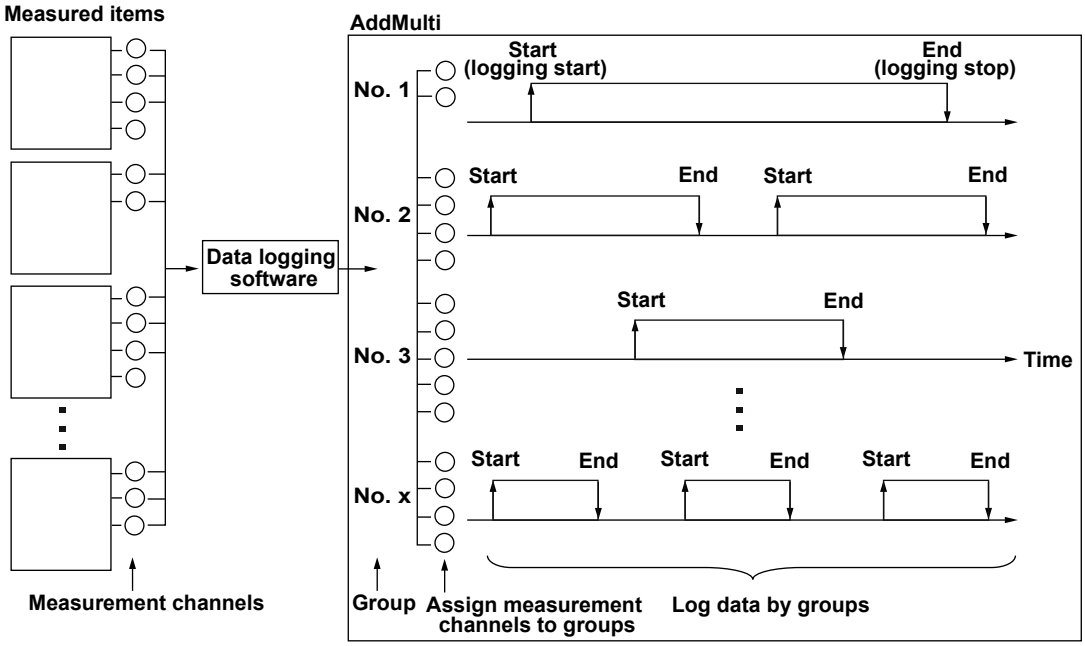
The logging interval can be set equal to the scan interval or its integer multiple.

Multilogging Function

Assigns the measurement channels used to log data to groups. Logging conditions such as the logging start condition, logging interval, and other items are set for each group. Each group logs the data of measurement channels independently according to the logging conditions for its group.

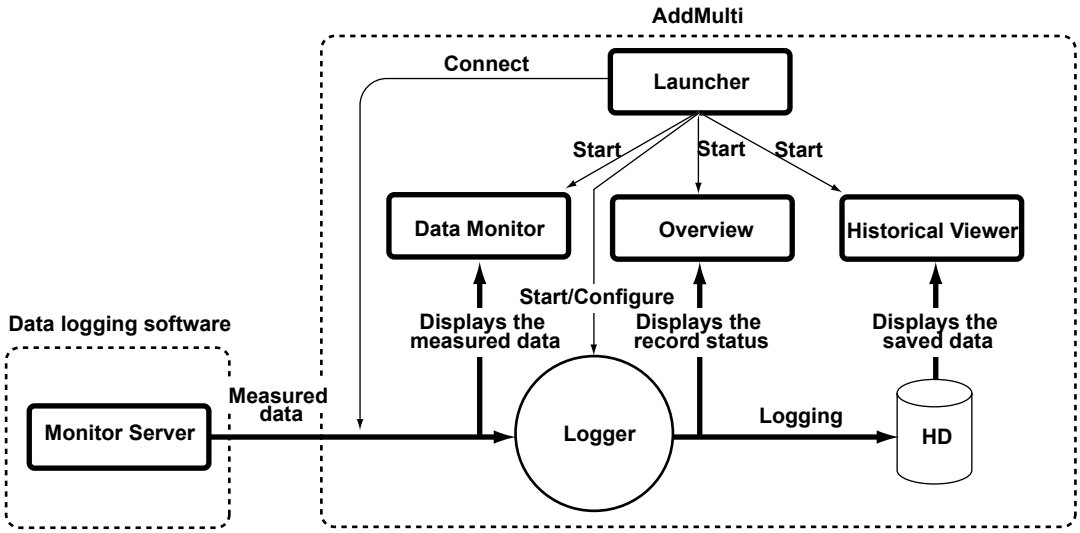
Number of groups that can be specified: Up 50

Number of channels per group: Up to 32



AddMulti Structure

The following figure shows the structure of AddMulti.



AddMulti connects to the monitor server of the data logging software.

- The Data Monitor is a software program for displaying the measured data that is retrieved from the monitor server at the scan interval.
- Overview is a software program for displaying the record status.
- The Historical Viewer is a software program for displaying the measured data that has been saved.
- The Logger is a software application that logs measured data. The logger runs according to the logging conditions that is set on the Launcher. The program does not appear on the screen.
- The Launcher is a software program that manages the AddMulti operation such as setting the logging conditions, connecting to the monitor server, and starting various software programs.

Launcher

The Launcher is started first when using AddMulti. The Launcher has the following functions.

Project Management

- Project refers to a unit of AddMulti settings that are grouped according to the user or purpose. You can create multiple projects and save them.
  For example, if you save the settings for logging the data of process A as “Project 1,” you only need to select “Project 1” to recall the settings for logging the data of process A.
- You can assign a password for each project and limit the operation (password protection).

Software	When the Password Protection Is Enabled
Launcher	Operations related to data logging are not allowed.
Overview	All operations are allowed.
Data Monitor	All operations are allowed.
Historical Viewer	All operations are allowed.

Note

The information included in a project is the setup information of the project itself, data logging conditions, connection destination monitor server, Launcher, Overview, Data Monitor, and Historical Viewer.

Logging Condition Setup

Sets the connection destination, channel assignments to groups, and logging conditions for each group, and other information. The display conditions used when displaying the logged data using the Historical Viewer are also specified. See “Data Logging Conditions.”

Scan/Record Execution

Starts/Stops the scan operation. You can set AddMulti to start the scan operation when the Launcher is started.

Starts/Stops recording for each group. You can also collectively start/stop recording of multiple groups.
You can set AddMulti to collectively start the recording operation of the specified groups when the Launcher is started.

Starting of the Data Monitor, Overview, and Historical Viewer

Starts the Data Monitor, Overview, and Historical Viewer.

Other Functions

- You can hide the icons displayed on the desktop and the Windows taskbar so that other programs cannot be started (desktop protection).
- You cannot shut down your PC when AddMulti is running (shutdown protection).

For details on Launcher operation, see chapters 2 and 3.

Overview

The Overview is started from the Launcher. The record status can be displayed.

- Record status display
  Displays the record status of each group using characters and a color indicating the status. The record status consists of **Stop**, **Scanning**, **Recording**, and **Error**.
- Detailed display of the record status
  Displays the details of the record status of each group in a table format. Detailed information includes the logging start time/end time, the trigger count,* the number of data points of the file (logging count), the free space on the save destination hard disk, and error information.
  * See “Data Logging Conditions.”
- Data file display
  Lists the information about the data file that has finished logging for each group. The file number, the group number, the file name, the time of the first data point, the time of the last data point, and the number of data points are displayed.

For the operating procedure of the Overview, see chapter 4.

Data Monitor

The Data Monitor is started from the Launcher.

- Displays the scanned data on the following six types of monitors.
  - Trend monitor
    Displays the scanned data using waveforms. You can carry out operations such as expanding or reducing the time axis and changing the display zone of each channel.
  - Numeric monitor
    Displays the scanned data using numeric values.
  - Meter monitor
    Displays the scanned data using a meter. You can select the type of meter from bar meter, analog meter, and thermometer.

- Alarm monitor
  Displays the alarm status of all groups on a single screen (overview display).
  If an alarm occurs on any one of the channels in a group, the group shows an alarm indication.
  The alarm monitor also displays a log of alarm occurrences/releases for each channel including the alarm type, date and time of occurrence/release, and channel name (alarm log display).
- Color graph monitor
  Displays the scanned data by assigning the following 50 colors in order.
  Blue (minimum display scale) – light blue – green – yellow – red (maximum display scale)
- Circular monitor
  Displays the scanned data using a circular graph.

Note

The data on the following channels can be displayed on the Data Monitor.
- Channels that are assigned to a group
- Channel that is configured to provide triggers for logging start and logging end of a group

- The displayed data is updated at the scan interval.
- You can change the display conditions by carrying out tasks such as changing the channels assigned to a group and turning ON/OFF the waveform display. The display conditions can also be saved.

Note

The display conditions can be set independent of the display conditions used when displaying the logged data on the Historical Viewer that are set on the Launcher.

For the operating procedure of the Data Monitor, see chapter 5.

Historical Viewer

The Historical Viewer is started from the Launcher or the Windows Start menu.
Displays the measured data that has been logged. You can also save the data by converting the data format.

- The Historical Viewer can handle only the data that has been logged by AddMulti. For data that are currently being logged, the Historical Viewer can handle only the section that has been stored to the hard disk. The file name extension is .mld.
- You can change the display conditions by carrying out tasks such as changing the channels assigned to a group and turning ON/OFF the waveform display. You can also save the modified display conditions.
- Connects files containing segmented data (see “Data Logging Conditions”) and displays the result.
- Calculates the maximum, minimum, P-P, mean, and rms values over the area that is specified by the cursor.
- Marks can be placed at arbitrary positions of the measured data.
- You can set search conditions and search for measured data, alarms, and marks.
- You can extract a section of the file to be stored to another file.
- Converts the data format to ASCII, Lotus, or Excel formats.
- Prints the displayed data (a printer is required).

For the operating procedure of the Historical Viewer, see chapter 6.

Data Logging Conditions

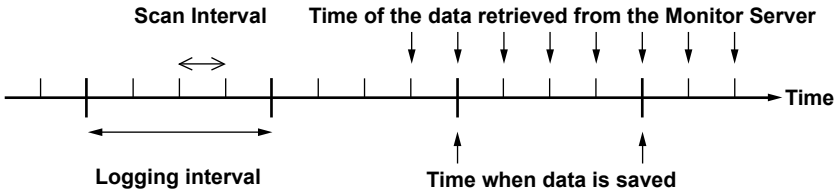
The data logging conditions are set using the Launcher.

Data Logging Channels

Of the channels defined in the data logging software of the connection destination, assign the channel that is to log the data to groups. Up to 32 channels can be assigned to one group. A single channel can be assigned to multiple groups.

Logging Interval

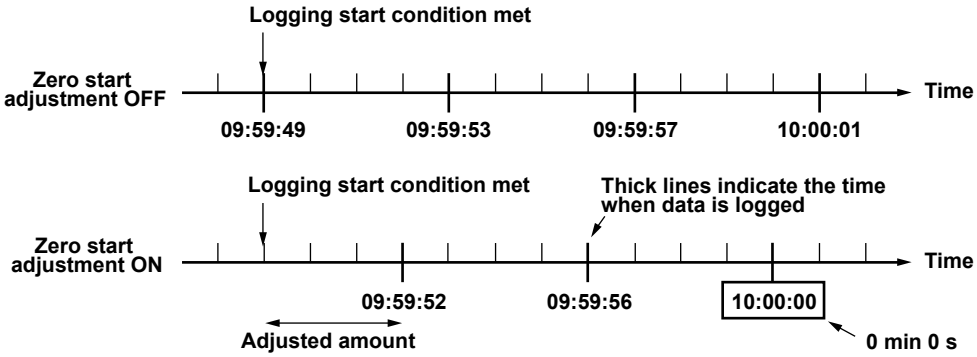
Set an integer multiple (recording rate) of the scan interval.



Example in which the recording rate is set to 4

- **Zero Start Adjustment Mode**

  Adjusts the logging start time so that data is logged at times including 0 min 0 s. The following figure is an example when the logging interval is set to 4 s.



The logging start condition is met at 9 hour 59 min 49 s. If the zero start adjustment is OFF, the data is logged at 9 hour 59 min 49 s, 9 hour 59 min 53, and so on, and is not logged at 0 min 0 s. If the zero start adjustment is ON, the logging operation is withheld for 3 s and started at 9 hour 59 min 52 s so that the data is logged at 0 min 0 s. The zero start adjustment can be enabled when the logging start condition is set to **On Record** or **Fixed Time** (see “Logging Start Condition/End Condition”). In addition, even if enabled, the setting is void when the following conditions are not met.

- The data retrieved from the monitor server includes the data at 0 min 0 s and
- The specified logging interval allows data to be logged at every 0 min 0 s applicable (for example, data cannot be logged every 0 min 0 s if the logging interval is set to 7 s.)

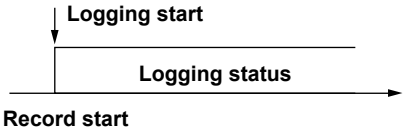
Note

When performing data logging in zero start adjustment mode, you must preset the data logging software to use the zero start adjustment mode.

Logging Start Condition/End Condition

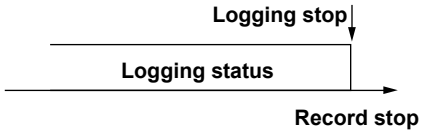
- **On Record (Logging Start Condition)**
  Logging starts when recording is started.

Logging start when set to On Record



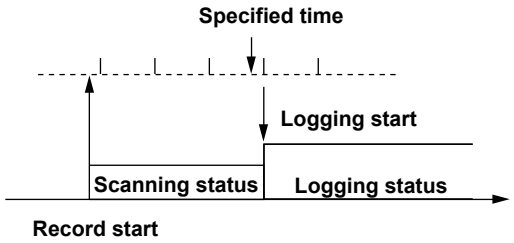
- **None (Logging End Condition)**
  Logging continues until recording is stopped. Logging and recording stop when you carry out the operation to stop recording.

Logging stop when set to None

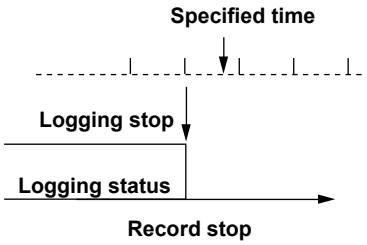


- **Fixed Time (Logging Start Condition/End Condition)**
  After recording is started, logging starts when the time of the data retrieved from the monitor server is equal to or immediately after the specified time.
  When logging, logging and recording stops when the time of the data retrieved from the monitor server is equal to or immediately before the specified time.

Logging start when set to Fixed Time

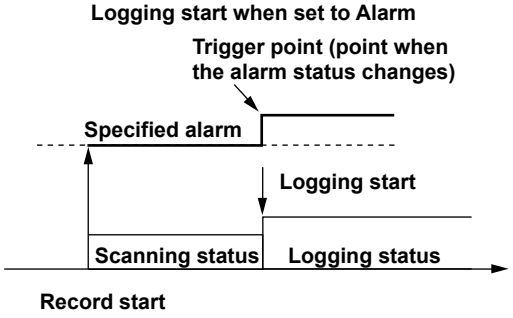


Logging stop when set to Fixed Time

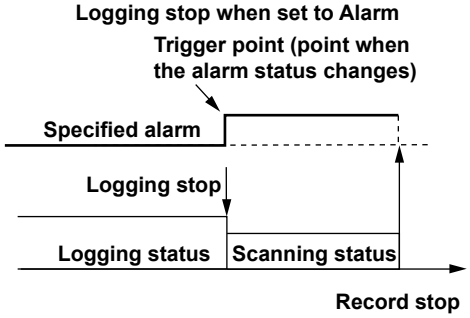


- **Alarm (Logging Start Condition/End Condition)**
  Monitors a single alarm on a channel. Logging starts/ends when a change is detected in the alarm (alarm occurrence or release).
  You can specify the trigger confirmation count (see the next page).

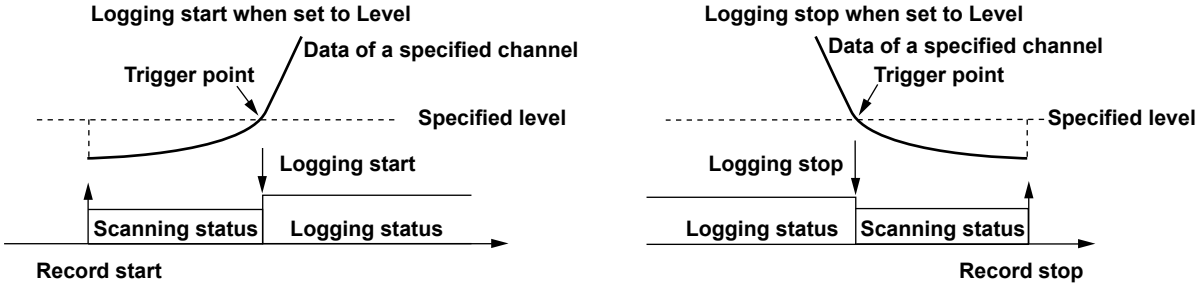
Logging start when set to Alarm



Logging stop when set to Alarm



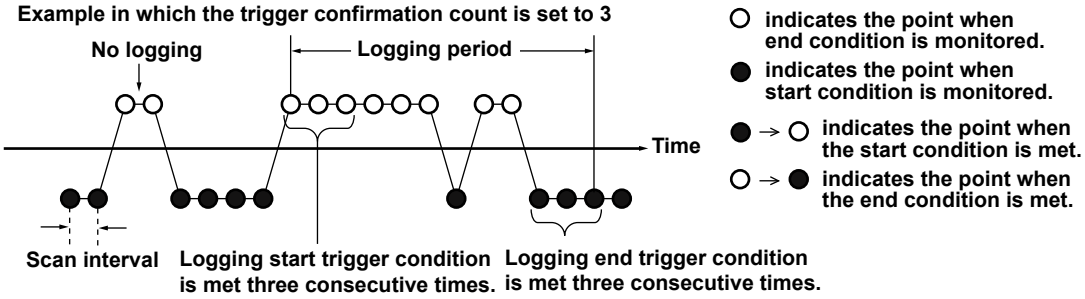
- **Level (Logging Start Condition/End Condition)**
  Monitors the measured data of a channel. Logging starts/ends when the measured value exceeds or falls below the specified value.
  You can specify the trigger confirmation count.



- **Data count (Logging End Condition)**
  Logging ends when a specified number of data points is logged.

Trigger Confirmation Count

When **Alarm** or **Level** is specified as the logging start/end condition, you can set AddMulti starts/ends logging when a trigger condition is detected consecutively the specified number of times (trigger confirmation count).
You can prevent undesirable triggers from occurring due to changes in the measured data caused by noise and other factors.

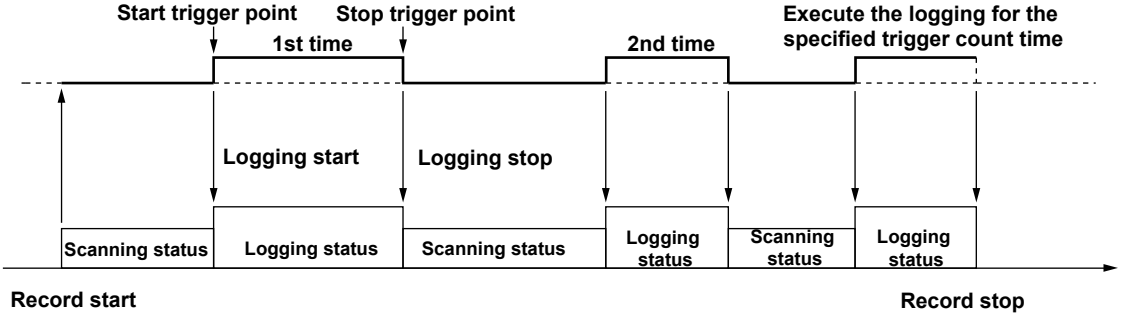


Trigger Count

For example, if logging is started after an alarm occurrence after record start, and logging is ended after the alarm is released, you can specify the number times to execute the logging start/end operation (trigger count). When the number of logging start/end operations is executed, recording stops.
The trigger count can be specified in the following cases.

- The logging start condition is **Alarm** or **Level** and
- The logging end condition is **Alarm**, **Level**, or **Data count**

Logging by specifying the trigger count



Saving Data Files

- **File Name**

  File names are automatically assigned to data files. You can add a specified character string or date to the file name. The extension is .mld.

  “Specified character string”-YYYYMMDDHH-0000.mld (When **per Hour** division is set. See description below for **per Hour** setting.)

  “Specified character string”-YYYYMMDD-0000.mld (for settings other than **per Hour**)

  YYYYMMDD, YYYYMMDDHH: Date/Time when logging was started.

  YYYY: Year, MM: Month, DD: Day, HH: Hour

  0000: Sequence number. The sequence number is incremented every time a file is created.

Note

- You can specify whether to add a character string or date to the file name. If neither is added, the file name becomes 0000.mld.
- If logging is started at 9 hour 10 min 25 s on February 26th, 2002, the YYYYMMDD section of the file name becomes “20020226.” If set to **per Hour**, it becomes “2002022609.”
- If a file with the same name exists, the sequence number is increased to create a unique file name.

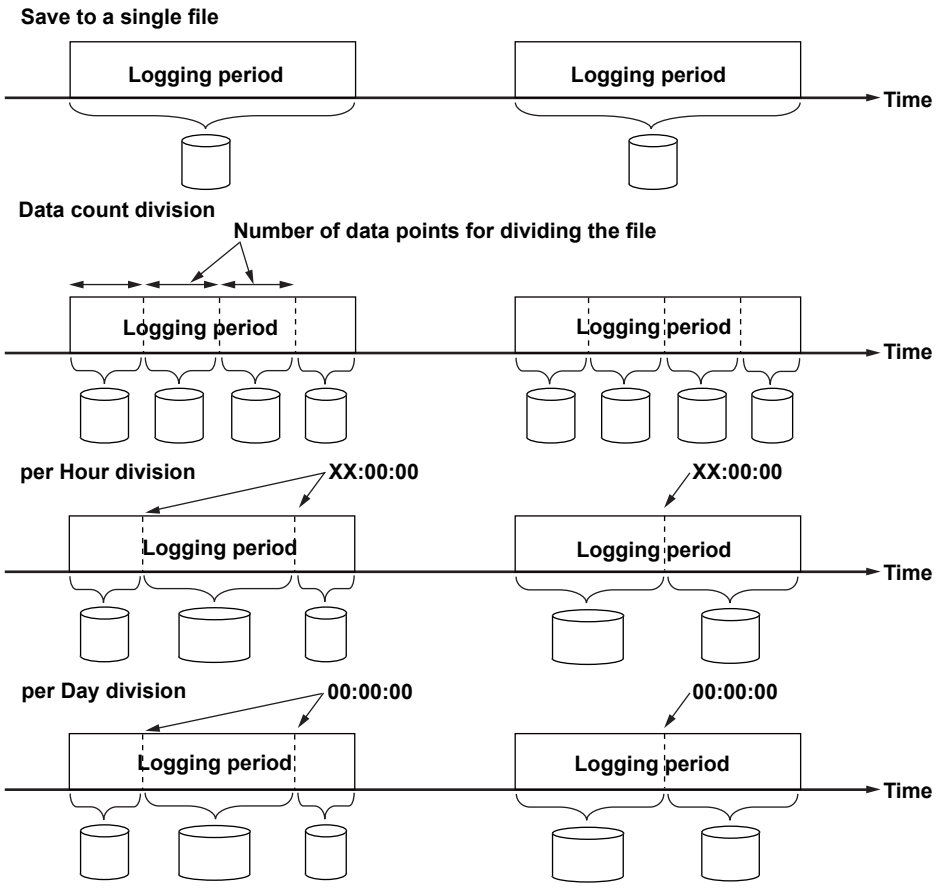
- **Saving the Data to a Single File or Multiple Files**

  The data in the logging period can be divided and saved in the following fashion.

  Data count: When a specified number of data points (logging count) is written to a file, AddMulti starts writing data to a new data file. The number of data points of the last data file to which data is written may be less than the specified number of data points.

  per Day: AddMulti starts writing data to a new data file at 0 hour 0 min 0s every day.

  per Hour: AddMulti starts writing data to a new data file at 0 min 0s every hour.



Automatically Converting the Data Format

The file format of the data that has finished logging can automatically be converted to ASCII, Lotus, or Excel format and saved as a separate file. The converted file is saved in the same folder as the original file.

The names of the converted files are as follows:

- ASCII conversion: “original file name”.txt
- Excel conversion: “original file name”.xls
  The file can be opened on Excel version 4.0 or later.
- Lotus conversion: “original file name”.wj2
  The file can be opened on Lotus1-2-3 version 2.0 or later.

Note

- If a file with the same name exists, the file name takes the following form.
  “original file name”_0000.extension
  0000 is the sequence number.
- There is a limit in the number of data points that Excel and Lotus1-2-3 can handle. Note that even if the number of data points is within the limits, loading the converted data may not be possible if the available free memory on the PC is insufficient.

Miscellaneous

Relationship between the Logging Start/End Conditions and Special Data

The data that the data logging software scans and records contains the following special data. AddMulti retrieves these types of data.

- +OVER: Data exceeding the high limit of the measurement range
- –OVER: Data below the low limit of the measurement range
- LACK: Data dropout
- OFF: When data cannot be scanned and recorded because the communication with the recorder was cut off.

If the logging start condition/end condition is **Alarm** or **Level** and the trigger monitoring channel contains special data, AddMulti behaves as follows:

- Positive overflow and negative overflow are ignored by the trigger monitoring process.
- LACK and OFF are not used by the trigger monitoring process (trigger is not activated while LACK or OFF is present)

Logging Start Condition and Scan Start Point

When the logging start condition is set to **Alarm** or **Level**, the scan start point is not considered a trigger point.

Reconnection Procedure with the Data Logging Software

If communication with the data logging software is cut off or the initial communication connection fails due to a network failure or other factors, AddMulti attempts to reconnect. In the case of failure to connect initially, the attempt to reconnect is made 30 s after the communication failure. If communication in progress is cut off, the attempt to reconnect is made at the scan interval.

Attempts to reconnect are made continuously until a connection is established, or until the user cancels the operation.

1.2 PC System Requirements and Data Logging Software That Can Be Connected

PC System

- **Supported Operating Systems (OS)**
  Run DAQWORX under any of the following operating systems.
  - Windows 2000 Professional SP4
  - Windows XP Home Edition SP2, SP3
  - Windows XP Professional SP2, SP3 (excluding Windows XP Professional x64 Edition)
  - Windows Vista Home Premium, SP1 (excluding the 64-bit edition)
  - Windows Vista Business, SP1 (excluding the 64-bit edition)

  The language displayed by the software under different language versions of the OS are as follows.

OS Language	Software Language
Japanese	Japanese
Other	English

- **File System**
  NTFS is recommended. With FAT32, the number of files that can be saved in a single folder is much smaller. If the limit is reached and additional files cannot be saved, the software will not function normally. To prevent this, please periodically stop recording by the software and move the data to a different folder.

- **PC**
  A PC that runs one of the OS above, and that meets the following CPU and memory requirements.

  When Using Windows 2000 or Windows XP
  Pentium 4, 1.6 GHz or faster
  512 MB or more of memory

  When Using Windows Vista
  Pentium 4, 3 GHz or faster
  2 GB or more of memory

- **Hard disk**
  Free disk space: 200 MB or more (more may be required depending on the amount of data to be acquired.)

- **CD-ROM Drive (for Use during Installation)**

- **Mouse**
  Mouse supported by the OS

- **Monitor**

  When Using Windows 2000 or Windows XP
  A monitor supported by the OS of 1024 × 768 dot or higher and 65,536 colors or more.

  When Using Windows Vista
  A video card recommended for use with Vista and a monitor supported by the OS of 1024 × 768 dot or higher and 65,536 colors or more.

- **Communication Port**
  Ethernet port supported by the OS.

- **Printer (Used When Printing)**
  Printer and printer driver supported by the OS

Note

- If you continuously perform multiple data logging operations simultaneously using this software, fragmentation occurs in the free space on the disk to which data is saved. As fragmentation progresses, contiguous free space decreases and large data files are divided into pieces when they are saved. As a result, the processing of the OS increases and may degrade the performance of the data logging operation. To prevent this from happening, it is recommended that free space be defragmented periodically using a disk optimization tool such as the “Disk Defragmenter.”
  The phenomenon described above occurs more often on Windows 98/Me systems.
- This utility software cannot handle data after 2038.

Connectable Data Logging Software

AddMulti can connect to the following data logging software. We recommend that you use the newest version to lessen the data communication load and make high-speed communications possible.

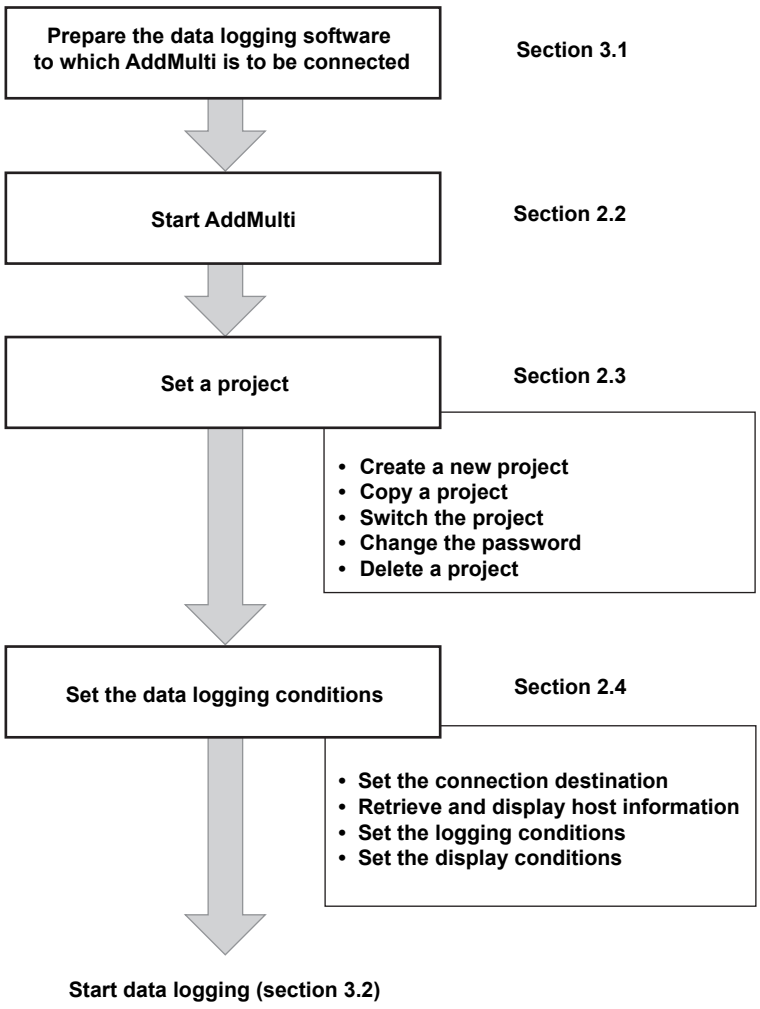
- DAQ32Plus R9.01 or later (R10.03 or later recommended)
- DAQLOGGER R3.01 or later (R5.01 or later recommended)
- MXLOGGER R1.01 or later

Note

Of the various types of systems, only one can be connected when connecting to MXLOGGER.

2.1 Setup Flow

A setup flow chart is shown below.



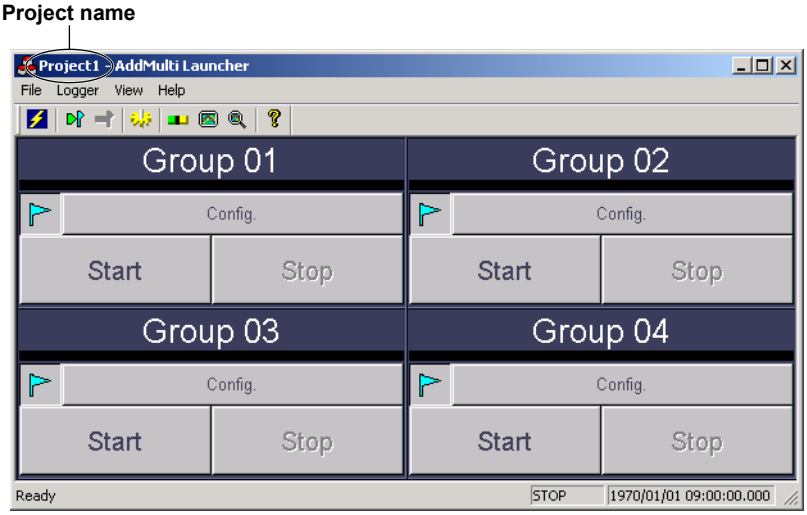
2.2 Starting and Quitting AddMulti

Starting AddMulti

Procedure

Choose **Programs** > **YOKOGAWA DAQWORX** > **AddMulti** > **Launcher** from the Windows Start menu.
The Launcher window appears.

Project name



Note

- The project that opens when AddMulti is started is the project that was being used when you quit the program last time.
- If the **Use Password Protection** check box is selected for the project, the Launcher starts with the password protection enabled. For the procedure of releasing the password protection, see section 3.3.
- For the procedure of switching the project, see section 2.3.

Quitting AddMulti

Note

Disconnect AddMulti from the data logging software before quitting the Launcher.

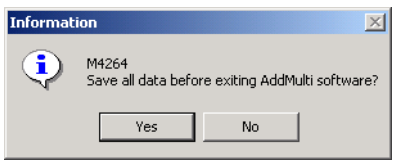
Procedure

1. Choose **Exit** from the **File** menu or click the **X** button at the right corner of the title bar.

   If no other software programs are running, AddMulti closes.

When Other Programs Are Running

The following dialog box opens.



2. Click **Yes** or **No**.

   Yes: Saves the current settings and quits AddMulti. When AddMulti is started the next time, the current settings are restored.

   No: Does not save the current settings and quits AddMulti.

2.3 Setting Projects

A project refers to a unit of settings that cover the entire AddMulti environment. You can create as many projects as you like and save them.
By switching projects, you can easily switch between different sets of AddMulti settings.

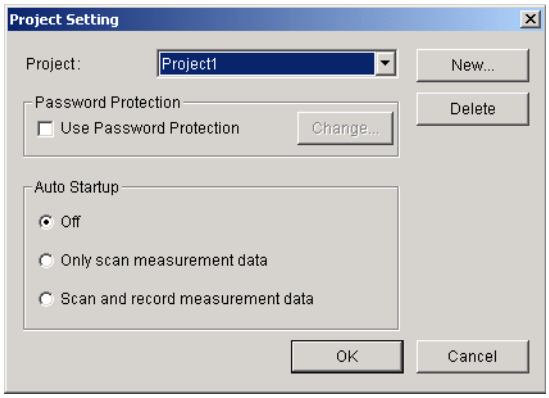
Note

You cannot carry out the following operations, if scanning is in progress or when programs other than the Launcher is running.

Creating a New Project

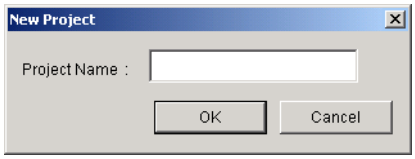
Procedure

1. Choose **Project Settings** from the **File** menu. The **Project Setting** dialog box opens.



By default, a project named “Project1” is registered.

2. Click **New...**. The **New Project** dialog box opens.



3. Enter a project name and click **OK**. A new project is created.

Note

- Set the project name using up to 16 characters.
- The following characters cannot be used in the project name: \ / : , ; * ? |
- A project name that starts with a period is not allowed.
- You cannot create a project with a name that already exists.

4. To use the password protection, select the **Use Password Protection** check box. The **New Password Setting** dialog box opens.

5. Enter a password in the **New Password** and **Confirm** boxes and click **OK**.

Note

- The password is used to open the project and release the password protection (see section 3.3).
- Set the password using up to 16 characters. There are no restrictions on the characters that can be used.
- Do not forget the password.

6. Click one of the option buttons to select the auto startup function.

   Off: Disable the auto startup function.

   Only scan measurement data: Start scanning when the Launcher is started.

   Scan and record measurement data: Start scanning and recording when the Launcher is started.

7. Click **OK**.

   The settings are saved, and the dialog box closes. The changes you make to the settings after this point apply to the new project.

   Click **Cancel** to cancel the settings. A new project is not created in this case.

Note

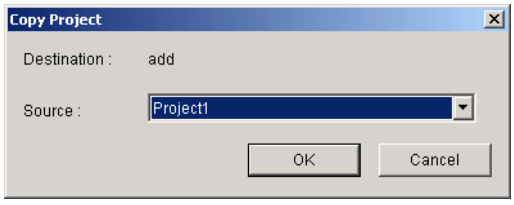
The settings that exist when you quit the Launcher or switch to another project are saved to the current project.

Copying a Project

Carry out the following procedure to copy the settings of another project to the currently selected project.

1. Choose **Project Copy** from the **File** menu.

   The **Copy Project** dialog box opens.



2. Choose the copy source project from the list box.
3. Click **OK**.

   The settings of the copy source project are copied to the currently selected project.

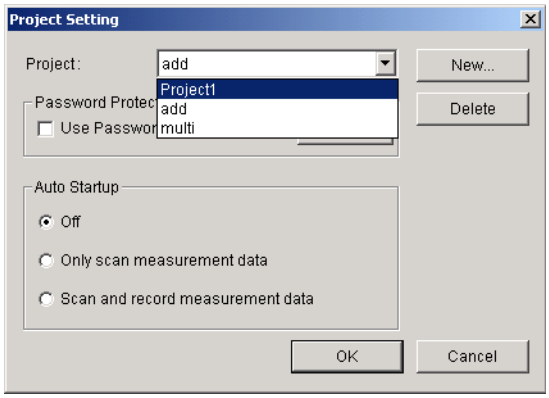
Switching the Project

Carry out the following procedure to switch the project.

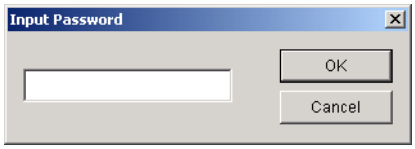
Procedure

1. Choose **Project Settings** from the **File** menu. The **Project Setting** dialog box opens.

2. Choose the desired project from the **Project** list box.



3. If the **Use Password Protection** check box is selected in the project that you selected, the **Password Input** dialog box opens.



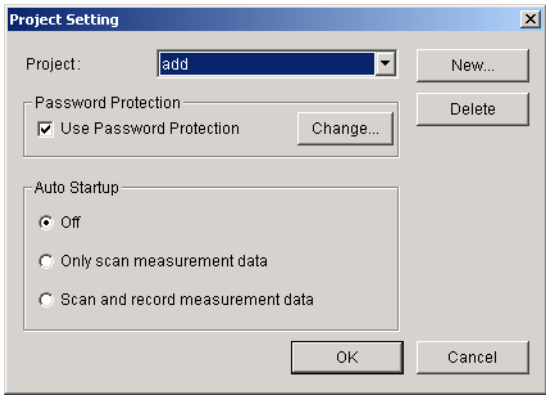
4. Enter the password and click **OK**. The dialog box closes.
5. Click **OK**. The **Project Setting** dialog box closes and the selected project is activated.

Changing the Password

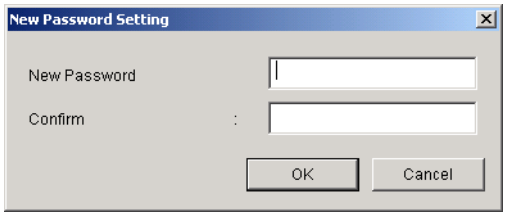
Carry out the following procedure to change the password when you are using the password protection.

Procedure

1. Choose **Project Settings** from the **File** menu. The **Project Setting** dialog box opens.



2. Click **Change**. The **New Password Setting** dialog box opens.



3. Enter a password in the **New Password** and **Confirm** boxes and click **OK.**

Note

- Set the password using up to 16 characters. There are no restrictions on the characters that can be used.
- Do not forget the password.

Deleting a Project

Carry out the following procedure to delete a project.

Procedure

1. Choose **Project Settings** from the **File** menu. The **Project Setting** dialog box opens.
2. Choose the desired project from the **Project** list box.
3. Click **Delete.**

Note

- If only a single project exists, you cannot delete the project.
- Even if you delete the project, the folder containing the setup file for the project remain (AddMulti installation folder\project name). If you create a project with the same name as the deleted project, the remaining setup file is loaded and the information is displayed. If you wish to display the project in the default condition, change the folder name of the deleted project, move the folder to another folder, or delete the folder using “Explorer” or a similar utility.

2.4 Setting Data Logging Conditions

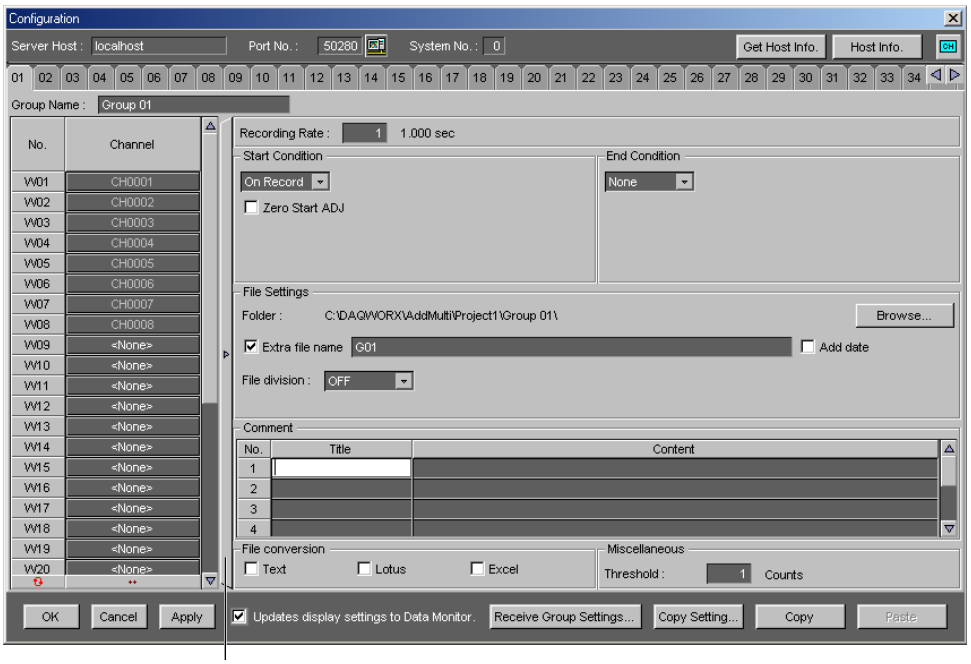
This section describes how to set the data logging conditions such as the connection destination, logging interval, and logging start conditions.
The display conditions used when displaying the logged data using the Historical Viewer are also described.

Setting the Connection Destination

Procedure

1. Click the **Configuration** button on the toolbar, or choose **Configuration** from the **Logger** menu, or click **Config.** of a group.

The **Configuration** dialog box opens.



Panel tab (see page 2-9)
Click the tab to display a screen used to set the display of the assigned channels.

2. Click the text box and enter the server host name, port number, and system No.

Server Host: Host name of the PC on which the data logging software to which AddMulti is to be connected is running.

Port No.: Number of the port that the monitor server of the data logging software to which AddMulti is to be connected is using.

Note

The initial port numbers of the data logging software are as follows:
For DAQLOGGER: 50280
For DAQ32Plus: 50278
For MXLOGGER: 50284

System No.: The system number is used to identify data sources when more than one source is being accessed by the monitor server. To determine whether a system number is required for the monitor server being used, see the user's manual for that monitor server.

Retrieving and Displaying Host Information

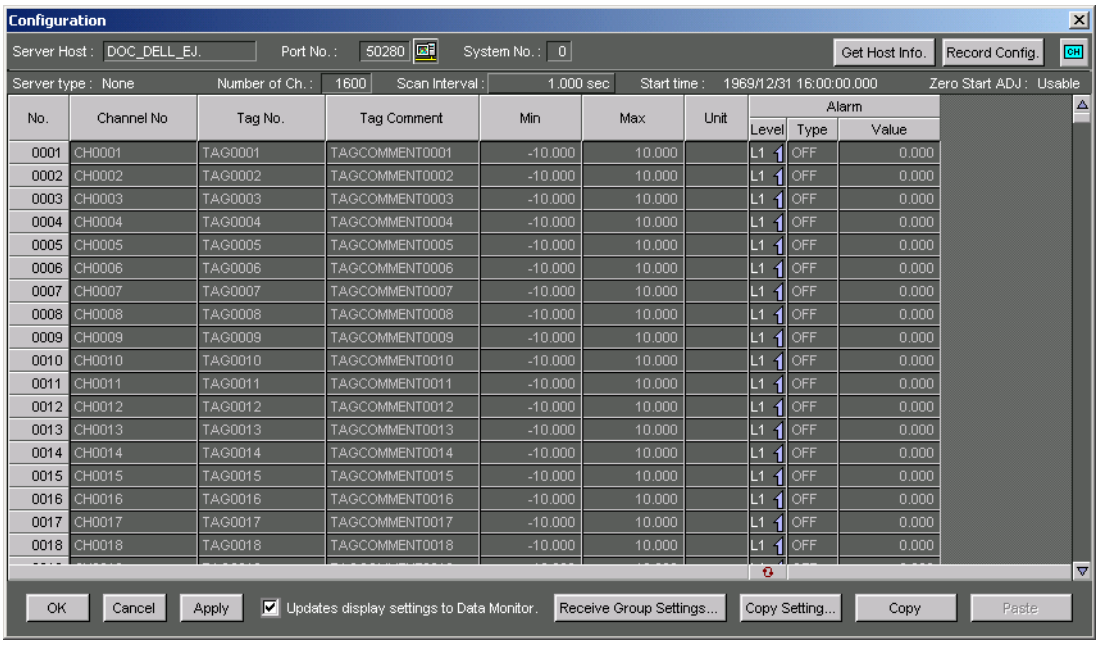
Procedure

1. Click **Get Host Info.** to retrieve the information about the specified data logging software.

Note

AddMulti connects to the data logging software to retrieve the host information and then drops the connection.

2. Click **Host Info.** to display the retrieved information about the data logging software.



3. Click the alarm level switch to switch the alarm display cyclically from alarm level 1 (L1) to alarm level 4 (L4).

Note

The host information is only for viewing. You cannot change or copy the information.

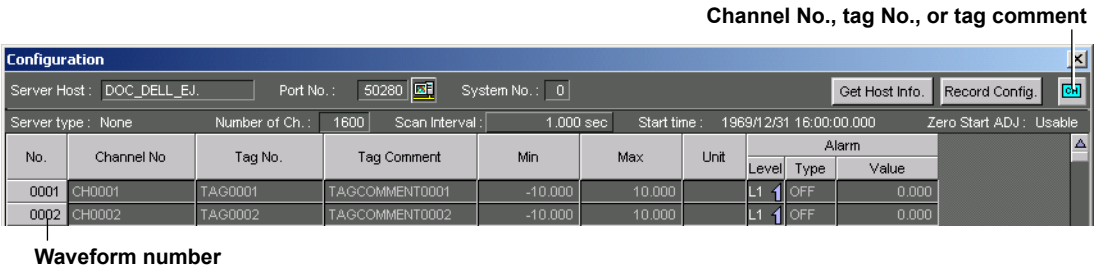
4. Click **Record Config.** to return to the logging configuration screen of AddMulti.

Basic Operation

Note

You can select the channel identifier from Channel, Tag No., or Tag Comment. In the explanations below, the channel identifier is set to Channel. Read it as Tag No. or Tag Comment according to your case.

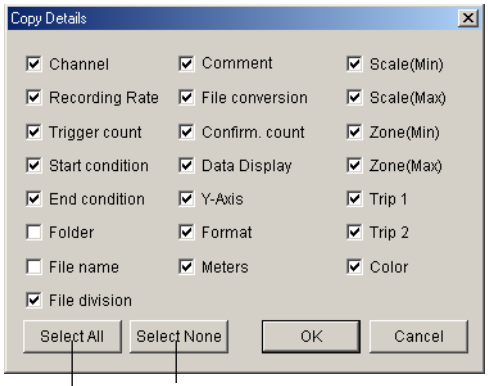
Procedure



- **Switching the Screen**
  Click the panel tab (see the figure on page 2-7) to switch the logging condition setup screen and the display setup screen.
- **Switching the Channel Identifier**
  Click the button at the upper right corner to switch between channel No., tag No., and tag comment.
- **Selecting the Waveform Number**
  - Click the waveform number (the **No.** column).
  - To select waveform numbers consecutively, click the first cell, and then, pressing the SHIFT key, click the waveform number. You can also drag the cursor from the first waveform to the last.
- **Copying the Group Settings**
  Carry out the following procedure to copy the logging conditions and display conditions of a group to another group.

  1. Click **Copy Setting** in the **Configuration** dialog box.

  The **Copy Details** dialog box opens.



  2. Select the check boxes for the items to be copied and click **OK**. The dialog box closes.

  3. Click the tab corresponding to the copy source group.

  4. Click **Copy.**

  5. Click the tab corresponding to the copy destination group.

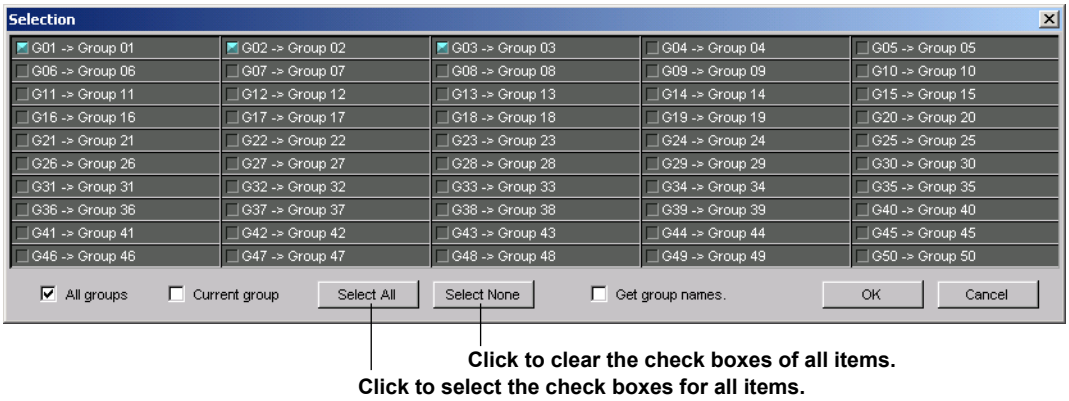
  6. Click **Paste.**

- **Copying the Group Information of the Data Logging Software**
  Carry out the following procedure to copy the group information of the data logging software to AddMulti groups.

  1. Click **Receive Group Settings**. The **Selection** dialog box opens.
  2. To also copy the group name, select the **Get group names** check box.

  Copying between the Same Group Numbers

  3. Select the **All groups** check box.

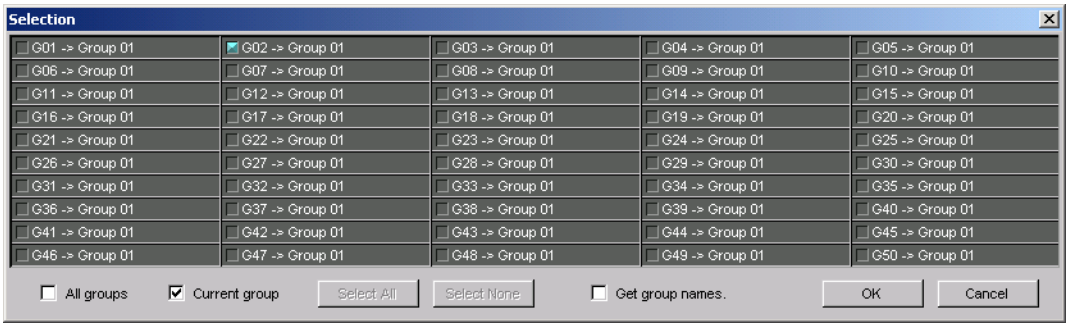


Click to clear the check boxes of all items.
Click to select the check boxes for all items.

  4. Select the check boxes for the groups to be copied.
  5. Click **OK.**

  Copying the Information to the Displayed Group

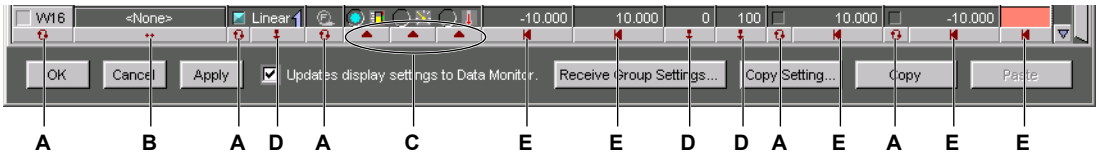
  3. Select the **Current group** check box.



  4. Select the check boxes for the groups to be copied.
  5. Click **OK.**

- **Showing/Hiding the Waveform, Y-axis, Trip 1, and Trip 2 (Operation When Setting the Display Conditions)**
  - Click the check boxes to switch between show (blue) and hide.
  - If consecutive cells are selected, you can click the tool cell at the bottom to collectively switch the show/hide setting of the cells in the selected range.

- **Using the Collective Setup Button (Operation When Setting the Display Conditions)**
  There are five types of collective setup buttons.



  Collectively sets the range that is selected using waveform numbers. If a range of waveform numbers is not selected, the action applies to all waveform numbers.
  A: Collectively shows or hides the items in the column.
  B: Taking the first channel number in the selected range as the reference, channels are assigned in order by incrementing the number.
  C: Collectively switches the meter type.
  D: Copies the first value in the selected range to all items in the selected range.
  E: Sets the values to default.

- **Applying the Display Condition Settings to the Display Conditions of the Data Monitor**
  Select the **Updates display settings to Data Monitor** check box. The settings are applied to the Data Monitor when you click **Apply** or **OK**. However, the Data Monitor must be running in this case.

- **Saving the Settings**
  Click **Apply** to save the settings. In this case, the **Configuration** dialog box remains opened.
  Click **OK** to save the settings and close the **Configuration** dialog box.
  Click **Cancel** to cancel the settings and close the **Configuration** dialog box.

Setting the Logging Conditions for Each Group

Procedure

For details on the logging conditions, see section 1.1.
Click the tab corresponding to the source group you wish to set.

Group Name

Click the text box. Enter the group name using up to 16 alphanumeric characters.

Recording Rate

Logging interval = Scan interval x Recording Rate

Click the text box. Set an integer.

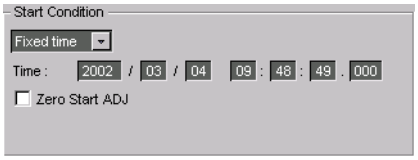
Start Condition

Click the list box and choose the logging start condition.

- **On Record**

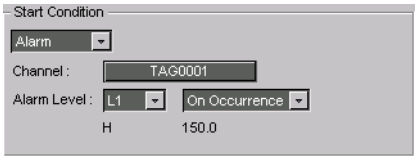
Starts logging at the same time recording is started.
To use the zero start adjustment mode, select the **Zero Start ADJ** check box. However, if the condition needed to log data in the zero start adjustment mode (see page 1-6) is not met, **Zero Start ADJ** is displayed in red. In this case, the setting is void even if you select the check box.

- **Fixed time**



Click the **Time** text box and enter the time to start logging.
To use the zero start adjustment mode, select the **Zero Start ADJ** check box. However, if the condition needed to log data in the zero start adjustment mode (see page 1-6) is not met, **Zero Start ADJ** is displayed in red. In this case, the setting is void even if you select the check box.

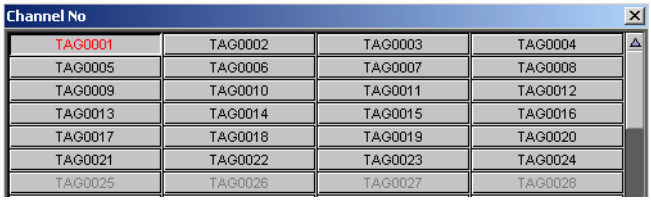
- **Alarm**



Set the alarm condition used as a trigger to start logging.

Channel

Click the channel number to open the **Channel No** dialog box.



Click the desired channel. The channel is selected and the dialog box closes.

Alarm Level

Click the list box and select a level from **L1** (level 1) to **L4** (level 4).

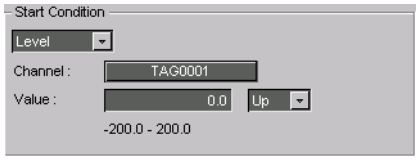
On Occurrence/On Release

Click the list box and choose either one.

On Occurrence: Make the alarm occurrence the trigger.

On Release: Make the alarm release the trigger.

- **Level**



Set the measurement data condition used to start logging.

Channel

Click the channel number to open the **Channel No** dialog box. Click the desired channel. The channel is selected and the dialog box closes.

Value

Click the text box and enter the reference value within the scale range.

UP/DOWN

Click the list box and choose either one.

UP: Starts logging when the measured data exceeds the reference.

DOWN: Starts logging when the measured data fall below the reference.

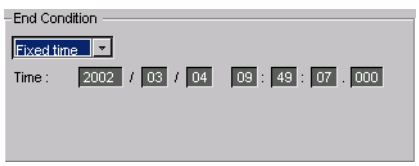
End Condition

Click the list box and choose the logging end condition.

- **None**

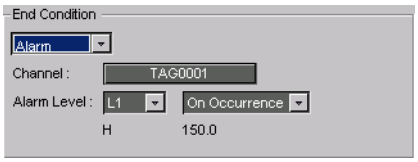
Continues logging until recording is stopped.

- **Fixed time**



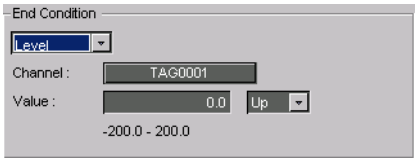
Click the **Time** text box and enter the time to end logging.

- **Alarm**



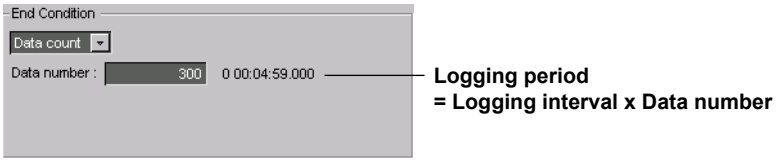
Set the alarm condition used as a trigger to end logging (see “Start Condition”).

- **Level**



Set the measurement data condition used to end logging (see “Start Condition”).

- **Data count**



Click the text box and set the number of data points (logging count) to be logged between logging start and logging end.

Trigger count

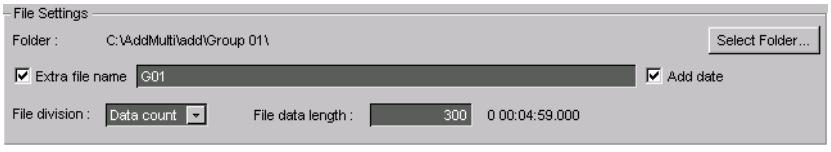
To specify the trigger count, select the **Trigger count** check box.
Enter the number of times (trigger count) to repeat the logging start/end operation.

Note

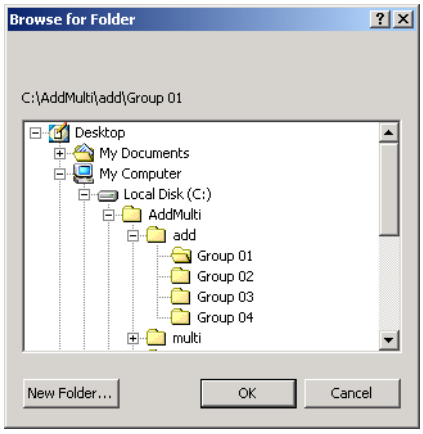
- If the **Trigger count** check box is not selected, the trigger count that you entered is void. The logging start/end operation is repeated indefinitely until the recording is stopped.
- The trigger count can be specified in the following cases.
  - The logging start condition is **Alarm** or **Level** and
  - The logging end condition is **Alarm**, **Level**, or **Data count**

File Settings

Sets how the data file is to be saved.

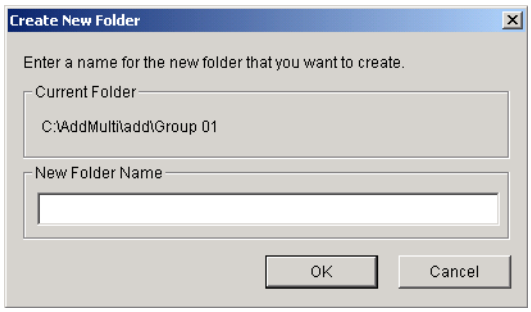


- **Folder**
  Click **Select Folder** to open the **Browse for Folder** dialog box. Select the folder for saving the data file.



When Creating a New Folder

1. Click **New Folder**. The **Create New Folder** dialog box opens.



2. Enter the folder name and click **OK**. The dialog box closes, and the folder is created.

Up to 256 characters can be input for folder names.

- **Extra file name**
  If you select the **Extra file name** check box, you can add a specified character string to the file name. Enter the character string.
  Click the **Add date** check box to add the date to the file name.

Note

The following characters cannot be used in the character string to be added to the file name: \ / : , ; * ? |

- **File division**
  Sets how the data file is to be divided.
  OFF: Saves all the data in the logging period to a single file.
  Data count: When a specified number of data points (logging count) is written to a file, the AddMulti writes to a new data file.
  per Day: The AddMulti writes data to a new data file at 0 hour 0 min 0s every day.
  per Hour: The AddMulti writes data to a new data file at 0 min 0s every hour.

Comments

Comments can be set by group, and are output to the automatic conversion results. Up to eight title and content sets can be entered. Up to sixteen alphanumeric characters can be used for titles, and up to sixty-four can be used for contents. You can set comments during data acquisition, or while data acquisition is paused. Comments cannot be set during data recording. They can only be displayed.

File conversion

Select the data format.

Text: Creates and saves the data file in ASCII format.
Lotus: Creates and saves the data file in Lotus format.
Excel: Creates and saves the data file in Excel format.

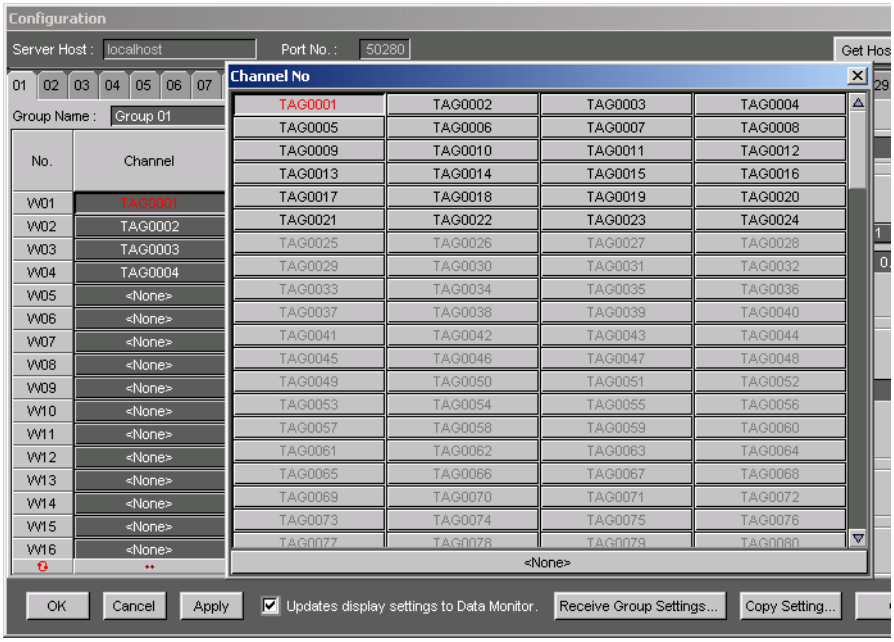
Miscellaneous

- **Confirm count**

Set the number of times to confirm the satisfaction of the trigger condition. AddMulti starts/ends logging when a trigger condition is detected consecutively the specified number of times (trigger confirmation count).
This item is valid when Alarm or Level is specified.

Assigning Channels to Groups

1. Click a channel box. The **Channel No** dialog box opens.



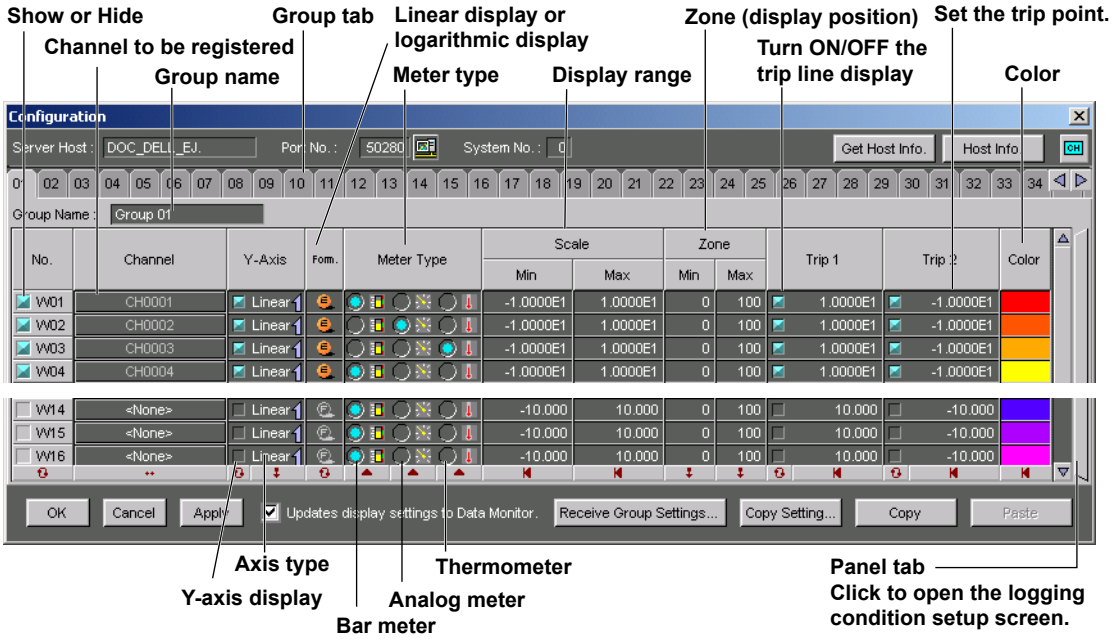
2. Click the desired channel. The channel is selected and the dialog box closes.
   To not assign a channel, click **None** at the bottom.

Setting the Display Conditions

Carry out the following procedure to set the display conditions used when displaying the logged data using the Historical Viewer. The display conditions can be applied to the display conditions of the Data Monitor (see “Basic Operation”).

Procedure

Click the panel tab to show the display setup screen.



Click a group tab to select the group.

Group Name

Click the **Group Name** box and enter the group name using up to 16 alphanumeric characters.

Showing/Hiding the Waveform

Select the **No.** check box.

Blue: Shows the waveform.

White: Hides the waveform.

Y-Axis

Set whether to show or hide the Y-Axis (scale) when multi-axis zone is selected. Click the check box.

Blue: Shows the Y-axis.

Dimmed: Hides the Y-axis.

Specifies the axis type. **Linear** and **Log** toggle each time the box is clicked.

Linear: Linear scale.

Log: Logarithmic scale.

Form.

Set the display format of numeric values. Select floating-point (100.0) or exponential (1.000E2). Floating-point and exponential toggle each time the box is clicked.

Meter Type

Click one of the option buttons to select the type of meter to be displayed on the meter monitor of the Data Monitor from bar meter, analog meter, and thermometer. It is not used on the Historical Viewer.

Scale

Click the value box and enter the maximum and minimum values of the scale.
The range of values that can be entered is from –999999999 to 999999999 excluding the decimal point.
If you set the minimum value larger than the maximum value, the waveform is inverted.

Note

The decimal point position of the entered value is adjusted according to the number of significant digits to the right of the decimal point.

Zone

Click the value box and enter the maximum and minimum values of the waveform display zone. The range of values that can be entered is 0 to 99% for the minimum value and 1 to 100% for the maximum value.

Trip 1 and Trip 2

Click the value box and enter the position of the trip line within the scale range.
When you enter a value, the check box turns blue. If you do not wish to use the trip line, clear the check box.
Blue: Enable.
Dimmed: Disabled.

Note

Trip line and 2 are displayed in red and blue, respectively.

Color

Set the display color of the waveform.

1. Click the **Color** box.

   The **Color** dialog box opens.

2. Click a color to select it. Click **OK** to confirm the new color. The dialog box closes.

Note

To create a new color, click **Define Custom Colors**. Use the palette that appears to create the new color.

2.5 Changing the Port Number Used by the Data Monitor

You can change the port number that the Data Monitor uses. The new port number is activated the next time AddMulti is started.
The default port number is 50282.
If other applications are not using this port number, you do not have to change it.

Note

- Set the value different from port numbers that other applications use.
- This port number is not the port number used by the monitor server of the data logging software. The port number that the monitor server of the data logging software uses is set in “Setting the Connection Destination” in section 2.4.
- You cannot change the port number while scanning is in progress.
- The port number cannot be changed while AddMulti is connected to the data logging software.

Procedure

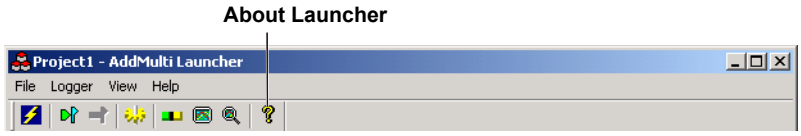
1. Choose **Port No. for the international communication** from the **File** menu. The **Port No. for the internal communication.** dialog box opens.

2. Enter the port number and click **OK**. The following message appears.

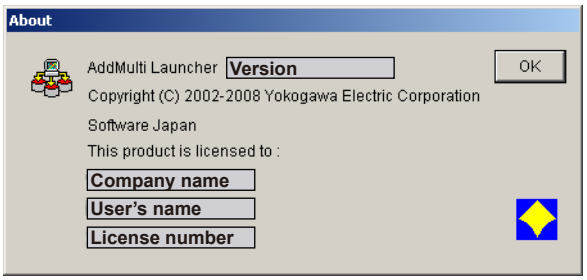
3. Click **OK.**
4. To activate the new port number, quit AddMulti and restart it.

2.6 Checking the Version Information

Click the **About Launcher** button on the toolbar or choose **About...** from the **Help** menu.



The **About** dialog box opens.



Click **OK** to close the dialog box.

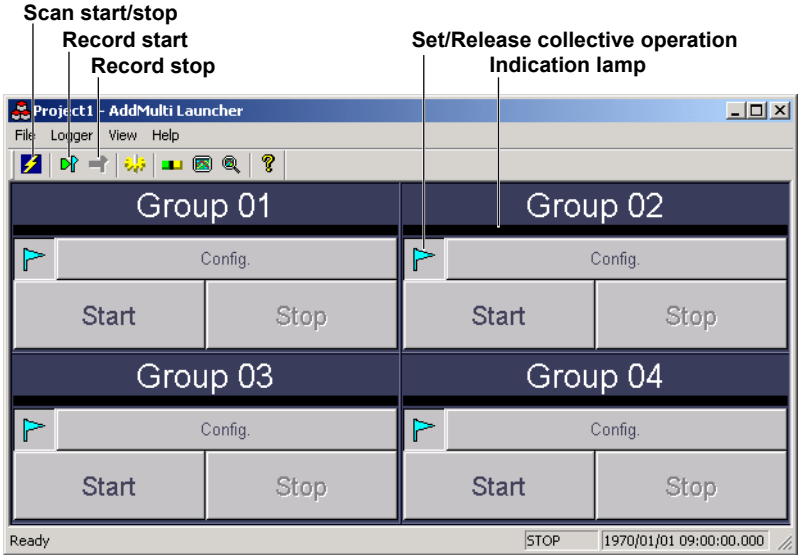
3.1 Preparing the Data Logging Software to Which AddMulti Is to Be Connected

Check the following items on the data logging software to which AddMulti is to be connected.

- Monitor server of the data logging software is running.
- Data logging software is scanning.

3.2 Scanning and Recording

For the procedure in starting AddMulti, see section 2.2.
For the procedure in selecting the project, see section 2.3.



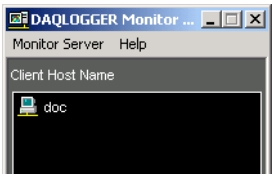
Starting the Scanning Operation

Procedure

Click **Scan start/stop** on the Launcher's toolbar or choose **Scan** from the **Logger** menu.
AddMulti retrieves all the data of the related channels that is scanned and held by the data logging software. Scanning starts.

Note

- When scanning is started, the monitor server of the data logging software displays the host name of the PC on which AddMulti is running.



- If initial communication with the device to be connected fails, a reattempt is made within 30 seconds after the communication failure was recognized. Additional time is required from the start of communication until failure is recognized.

Automatically Starting the Scan Operation

If **Only scan measurement data** is selected in the project, scanning starts when the Launcher is started (see section 2.3).

Stopping the Scanning Operation

Procedure

While scanning is in progress, click **Scan start/stop** on the Launcher's toolbar or choose **Scan** from the **Logger** menu.
Scanning stops.

Note

- When scanning is stopped, the host name (of the PC on which AddMulti is running) that is displayed on the monitor server of the data logging software disappears.
- You cannot stop the scan operation while recording is in progress.

Starting the Recording Operation

Procedure

Starting the Recording Operation for Each Group

1. Click **Start** of the group. A confirmation dialog box appears.

2. Click **OK** or **Cancel.**

   OK: Start recording of the group.

   Cancel: Do not start recording.

Collectively Starting the Recording Operation of the Specified Groups

- **Setting or Releasing the Collective Operation of the Group**

  Set or release the collective operation of the group using the following operations.

  - Click  of the group.
    Set and release toggle each time  is clicked.
    Blue: Collective operation enabled.
    Dimmed: Collective operation disabled.
  - Choose **Select All** from the **Logger** menu to set the collective operation on all groups.
  - Choose **Select None** from the **Logger** menu to release the collective operation on all groups.

- **Manually Starting the Recording Operation of the Specified Groups Collectively**

  1. Click **Record start** on the Launcher's toolbar or choose **Record Start** from the **Logger** menu. A confirmation window opens.
  2. Click **OK** or **Cancel.**

     OK: Start recording of the specified groups.

     Cancel: Do not start recording.

Note

If you carry out the operation to start recording when scanning is not in progress, scanning is started first and then recording is started.

- **Automatically Starting the Recording Operation**

  If **Scan and record measurement data** is selected in the project, scanning and recording start on the specified groups when the Launcher is started (see section 2.3).

Indication Lamp

Indicates the record status of the group using the following colors.

Green: Logging

Yellow: Scanning

Black: Recording stopped

Blinking red and black: Stopped due to an error

Stopping the Recording Operation

Procedure

Stopping the Recording Operation for Each Group

1. Click **Stop** of the group. A confirmation dialog box appears.

2. Click **OK** or **Cancel.**

   OK: Stop recording of the group.

   Cancel: Do not stop recording.

Collectively Stopping the Recording Operation of the Specified Groups

- **Setting or Releasing the Collective Operation of the Group**
  The selection procedure is the same as “Starting the Recording Operation.”
- **Collectively Stopping the Recording Operation of the Specified Groups**

1. Click **Record stop** on the Launcher’s toolbar or choose **Record Stop** from the **Logger** menu.

   A confirmation window opens.

2. Click **OK** or **Cancel.**

   OK: Stop recording of the specified groups.

   Cancel: Do not stop recording.

3.3 Using Password Protection

Note

Password protection can be used on a project that is configured to use password protection.

Enabling the Password Protection

Procedure

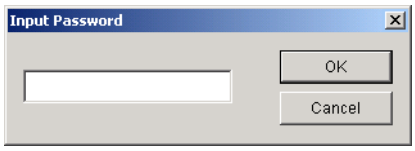
Choose **Password Protection** from the **File** menu. The password protection is enabled.

Releasing the Password Protection

Procedure

Carry out the following procedure to release the password protection.

1. Choose **Password Protection** from the **File** menu. The **Input Password** dialog box opens.



2. Enter the password and click **OK.**

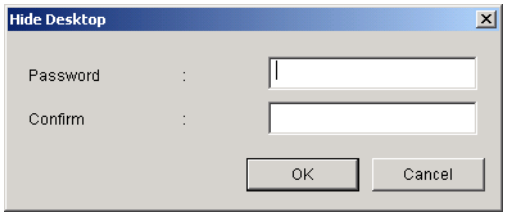
3.4 Using Desktop Protection

The desktop protection is a function used to hide the Windows Start menu and icon on the desktop.
When the desktop protection is enabled, other programs cannot be started.

Enabling the Desktop Protection

Procedure

1. Choose **Desktop Protection** from the **File** menu. The **Hide Desktop** dialog box opens.



2. Enter a password in the **Password** and **Confirm** boxes and click **OK**.

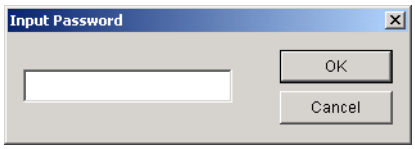
Note

- Set the password using up to 16 characters. There are no restrictions on the characters that can be used.
- You can set a different password from the password protection password.
- Do not forget the password.

Releasing the Desktop Protection

Procedure

1. Choose **Desktop Protection** from the **File** menu. The **Input Password** dialog box opens.



2. Enter the password and click **OK**.

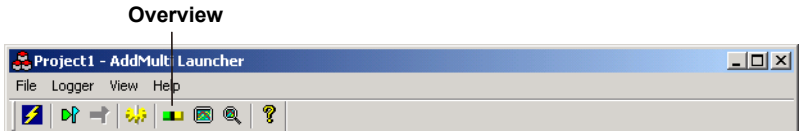
4.1 Displaying the Record Status

You can check the record status on the Overview. The Overview is started from the Launcher.

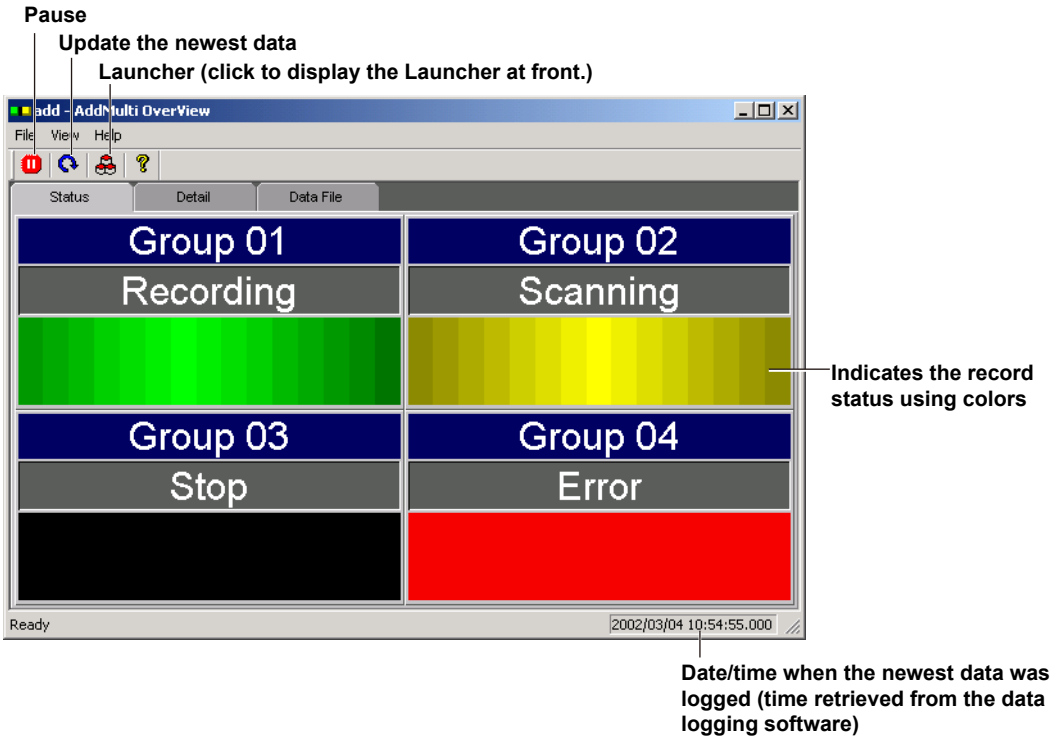
Starting the Overview

Procedure

Click **Overview** on the Launcher's toolbar or choose **Overview** from the **View** menu.



The Overview starts.



Monitoring the Record Status

The record status is indicated using characters and colors.

Record Status	Character Indication	Color
Recording stopped	Stop	Black
Scanning	Scanning	Yellow (there is a change in the shade when the display is being updated.)
Logging in progress	Recording	Green (there is a change in the shade when the display is being updated.)
Stopped due to an error	Error	Blinking red and black

Pausing/Resuming the Overview Display Updating

When the display updating is paused, you can scroll the list of data files (see section 4.3).

Procedure

Pausing

Click **Pause** on the Overview's toolbar or choose **Pause** from the **File** menu. The updating of the Overview display is paused. The changes in the shading of the record status color stops.

Resuming

While updating is paused, click **Pause** on the Overview's toolbar or choose **Pause** from the **File** menu. The updating of the Overview display is resumed.

Displaying Updated Information

Procedure

Click **Update the newest data** on the Overview's toolbar or choose **Update new** from the **View** menu. The newest information is displayed.

Quitting the Overview

Procedure

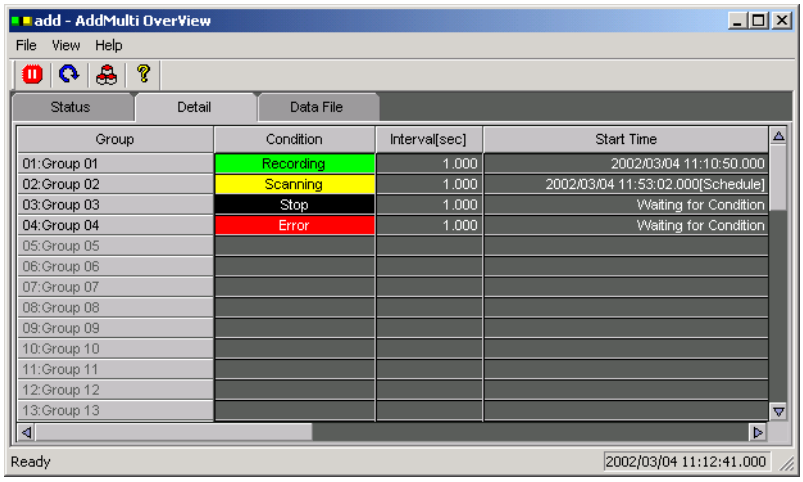
Choose **Exit** from the **File** menu or click the **X** button at the right corner of the title bar. The Overview closes.

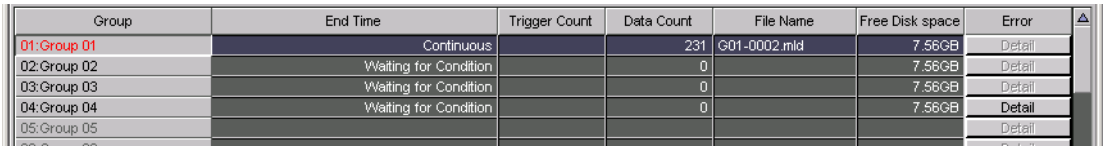
4.2 Displaying the Details of the Record Status

These procedures are carried out on the Overview.

Procedure

Click the **Detail** tab. The details of the record status are displayed. The following information is displayed.





Condition

Record Status	Character Indication*			Area Display Color
Recording stopped	Stop	or	Stop [ADJ]	Black
Scanning	Scanning	or	Scanning [ADJ]	Yellow
Logging in progress	Recording	or	Recording [ADJ]	Green
Stopped due to an error	Error	or	Error [ADJ]	Red

* [ADJ] appears when the zero start adjustment mode is specified and is executable.

Interval

Logging interval.

Start Time

Displays the following information.

Logging Start Condition	Record Status			
	Stop	Scanning	Recording	Error
On Record	Previous logging start time*	"Waiting for Condition"	Logging start time	Logging start time
Fixed Time	Previous logging start time*	"Specified time [Schedule]"	Logging start time	Logging start time
Alarm	Previous logging start time*	"Waiting for Condition"	Logging start time	Logging start time
Level	Previous logging start time*	"Waiting for Condition"	Logging start time	Logging start time

* May display "Waiting for Condition."

End Time

Displays the following information.

Logging End Condition	Record Status			
	Stop	Scanning	Recording	Error
None	Previous logging start time	“Waiting for Condition”	“Continuous”	Time when recording stopped due to an error
Fixed Time	Previous logging start time	“Specified time [Schedule]”	“Specified time [Schedule]”	Time when recording stopped due to an error
Data count	Previous logging start time	(Note 1)	(Note 1)	Time when recording stopped due to an error
Alarm	Previous logging start time	“Waiting for Condition”	“Waiting for Condition”	Time when recording stopped due to an error
Level	Previous logging start time	“Waiting for Condition”	“Waiting for Condition”	Time when recording stopped due to an error

(Note 1) “Scheduled end time [scheduled]” or “Waiting for Condition”

Trigger Count

The number of times the logging start condition was met and logging was started after starting the recording operation.
If the trigger count cannot be specified (see “Trigger count” in section 2.4), nothing is displayed.

Data Count

Number of data points (logging count) that was saved.

File Name

The name of the file in which data is being written.
Place the mouse pointer on top of the file name to display the path name.

Free Disk Space

The free space on the destination hard disk on which data is being saved.

Error

When an error occurs, click **Detail** to open the **Error** dialog box.

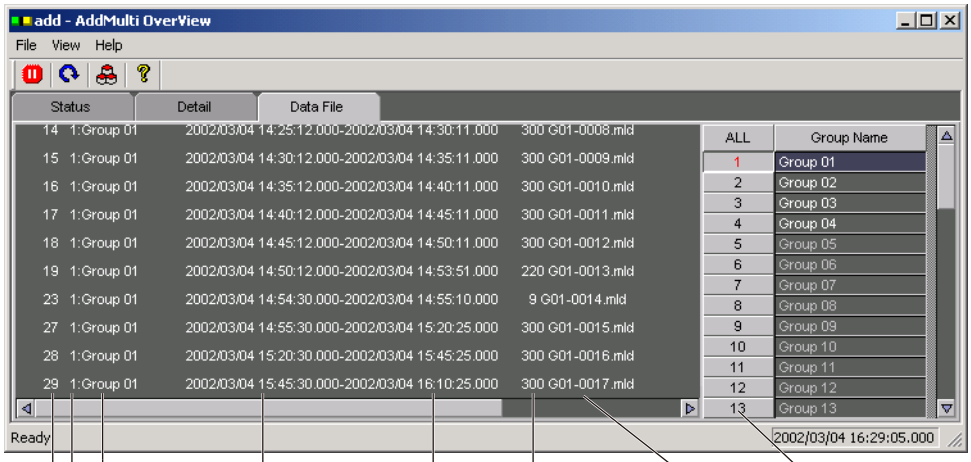
The error information is displayed. Check the information and click **OK**.
For details on error messages and corrective actions, see chapter 7.
You cannot click **Detail** when there is no error.

4.3 Checking the Data Files

These procedures are carried out on the Overview.

Procedure

Click the **Data File** tab. The data file page appears.



Displaying the Data Files of the Group

- Click the group selection button to list the data files in the group.
- To select groups consecutively, click the first selection button, and then, pressing the SHIFT key, click the last selection button. You can also drag the cursor from the first selection button to the last.
- Click **ALL** to select all groups. Click **ALL** again to return to the original selection state.

Displayed Information

Item	Description
File number	Number that AddMulti assigned in the order in which the files were created.
Group number	Group number (1 to 50).
Group name	Group name.
Time of the first data point	Time of the first data point in the file.
Time of the last data point	Time of the last data point in the file.
Data count	Number of data points (logging count) that was saved.
File name	File name.

Note

- Up to 200 data files are displayed.
- The newest data file is displayed on the last line.
- File in which data is being logged does not appear (file that has not finished data writing).

Scrolling the Data Files

You can scroll the data files when display updating of the Overview is paused.

Log File of the Data Files

The log of data files are saved to a log file. Each time a logging operation ends, a data file is added to the log file. However, a new log file is created each day.

Output destination folder: Installation folder of AddMulti\Project name\

Log file name: FILELOGYYYYMMDD.txt

YYYYMMDD is the year, month, and day when the log file was created.

YYYY: Year, MM: Month, DD: Day

The contents of the log is the same as the displayed contents of the data files on the Overview.

5.1 Displaying Waveforms on the Monitor Screen

The Data Monitor displays the data that is retrieved from the host at the scan interval. The following six types of monitor screens are available: Trend, Numeric, Meter, Alarm, Color Graph, and Circular.
The Data Monitor is started from the Launcher.

Note

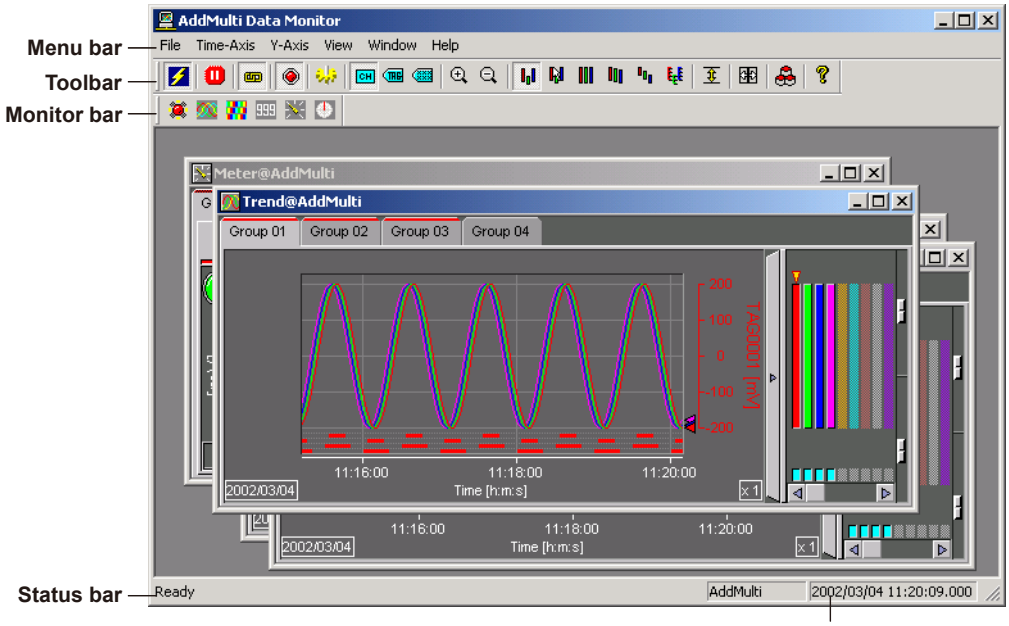
To change the port number that the Data Monitor is to use, see section 2.5.

Starting the Data Monitor

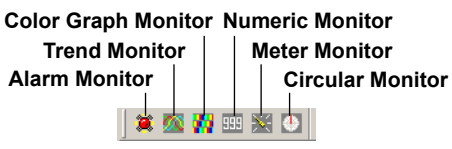
Procedure

1. Click **Data Monitor** on the Launcher's toolbar or choose **Data Monitor** from the **View** menu.

The Data Monitor starts and the Monitor screen appears.

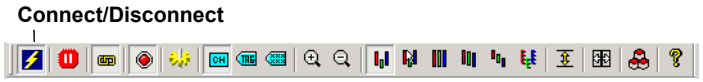


2. Click an icon on the monitor bar to open a new monitor screen. You can also choose "monitor name" from the **Window** menu to display the monitor screen.



Note

- The contents of the menu bar vary depending on the selected monitor screen. The toolbar displays all the tool buttons. However, only the buttons related to the selected monitor screen can be used.
- The number of monitor screens that can be opened is as follows:
  Alarm monitor: 1
  Trend monitor: Up to 4
  Color Graph monitor: Up to 4
  Numeric monitor: Up to 4
  Meter monitor: Up to 4
  Circular monitor: Up to 4
  However, opening multiple monitor screens may degrade the performance.
- On the trend, color graph, and circular monitors, scanned data from the time when the data logging software started scanning is displayed . However, AddMulti can hold up to 1800 scanned data in the memory. Old data is overwritten.
- If, for some reason, the Data Monitor cannot update the scan data, click **Connect/Disconnect** on the toolbar or choose **Connect** from the **File** menu. The condition will be recovered.
  Conversely, if you click **Connect/Disconnect** on the toolbar or choose **Disconnect** from the **File** menu when the Data Monitor is updating the scan data, the Data Monitor stops updating.



- The original project file information is displayed until connection of the initial communication with the device to be connected succeeds. When the connection succeeds, the information is updated.

Common Operations

Procedure

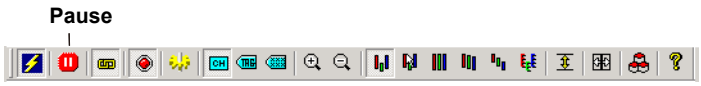
- **Liking with Other Monitors**
  When you change the displayed group on one monitor screen or change the channel identifier (channel, tag No., or tag comment), you can reflect the changes on the other monitors.

  Click **Link** on the toolbar or choose **Link** from the **File** menu.

- **Switching the Displayed Group**
  Click the group tab.
  The selected group is displayed.

- **Switching the Channel Identifier (Channel No., Tag No., or Tag comment)**
  Click **Channel No.**, **Tag No.**, or **Tag Comment** or choose **Channel No.**, **Tag No.**, or **Tag Comment** from the **View** menu.

- **Pausing the Data Monitor**
  Click **Pause** on the toolbar or choose **Pause** from the **File** menu. The updating of the display on the monitor screen is paused.
  Click **Pause** again or choose **Pause** from the **File** menu to resume the updating of the monitor screen.



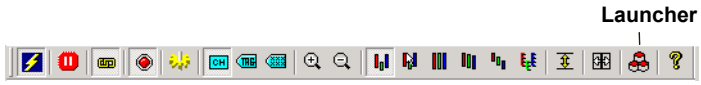
Note

Data is retrieved even when the display updating is paused. When you resume the display updating, the data that was scanned while the monitor screen was paused is displayed.

- **Arranging the Monitor Screens**
  Choose **Tile** or **Cascade** from the **Window** menu. The multiple monitor screens that are displayed are arranged accordingly.

- **Showing/Hiding the Toolbar, Monitor Bar, or Status Bar**
  Choose **Tool Bar**, **Monitor Bar**, or **Status Bar** from the **View** menu. The check mark disappears and the bar is hidden. To show the bar, select the command again.

- **Displaying the Launcher in Front**
  Click **Launcher** on the toolbar or choose **Launcher** from the **View** menu. The Launcher is displayed in front.



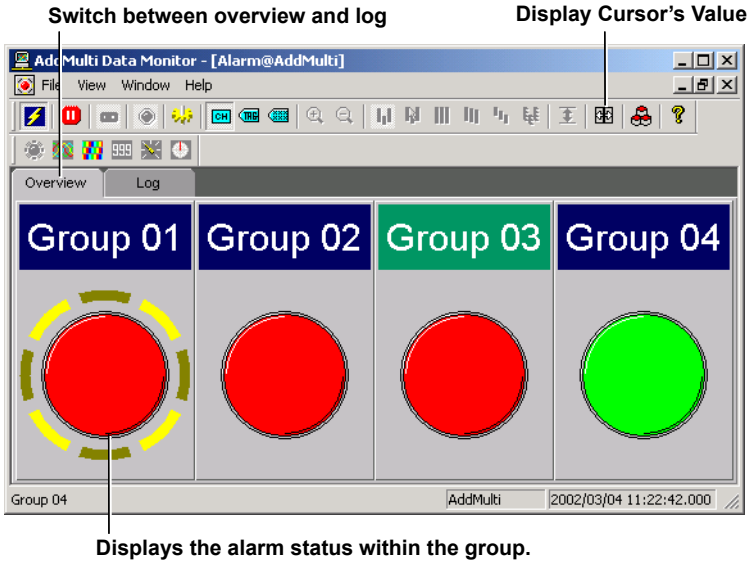
- **Closing the Monitor Screen**
  Click the **X** button at the right corner of the title bar. The monitor screen closes.

Alarm Monitor

You can switch between **Overview** and **Log** by clicking the tab.

Overview Display

Displays the alarm conditions by groups.



- **Alarm Status Display**

  Green lamp: No alarm is activated in the channels registered in the group whose waveform display is turned ON. Or, not a single alarm is specified in any of the channels.

  Red lamp: Alarm is activated in some of the channels registered in the group whose waveform display is turned ON.

  Blinking yellow ring: Unacknowledged alarms exist.

- **Acknowledging Alarms**

  If a blinking yellow ring is displayed around the alarm lamp, there are unacknowledged alarms.

Procedure

You can clear the ring by carrying out one of the following procedures.

- Click the group on which the blinking ring is displayed.
- Choose **Alarm Hold Reset** from the **View** menu to clear all the rings that are displayed.

- **Sounding Alarms and Stopping the Alarm Sound**

An alarm sound can be generated when an alarm occurs. An alarm is sounded only when all the following conditions are met.

- The alarm monitor is displayed.
- The alarm sound function is turned ON.
- Of the channels displayed in the monitor, at least one alarm is occurring.

Procedure

Setting the Alarm Sound Function

Choose **Alarm Sound** from the **File** menu to place a check mark. The alarm sound function is enabled. To disable the alarm sound function, choose **Alarm Sound** from the **File** menu again and clear the check mark.

Stopping the Alarm Sound

You can stop the alarm sound by carrying out any of the following procedures.

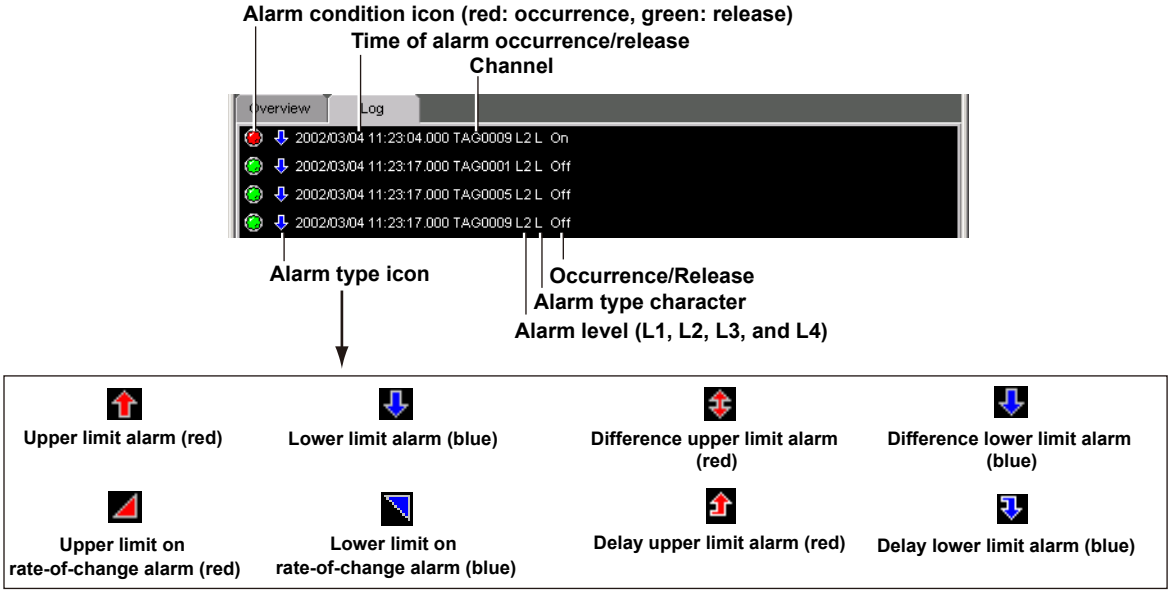
- Click all the groups on which alarms are occurring.
- Choose **Alarm Hold Reset** from the **View** menu.

Note

- Once an alarm starts sounding, the sound continues until it is stopped even if all alarm conditions are cleared.
- A sound source is required in sounding the alarm.

Log Display

Displays a list of the type and the time of occurrence and release of the alarms that occurred in the past. The newest log is displayed on the last line.
Up to 100 incidents can be displayed. You can scroll the log when display updating of the Data Monitor is paused.
For operations using the cursor, see section 5.4, “Using the Cursors.”



- **Hiding/Showing the Alarm Type Icons**

Procedure

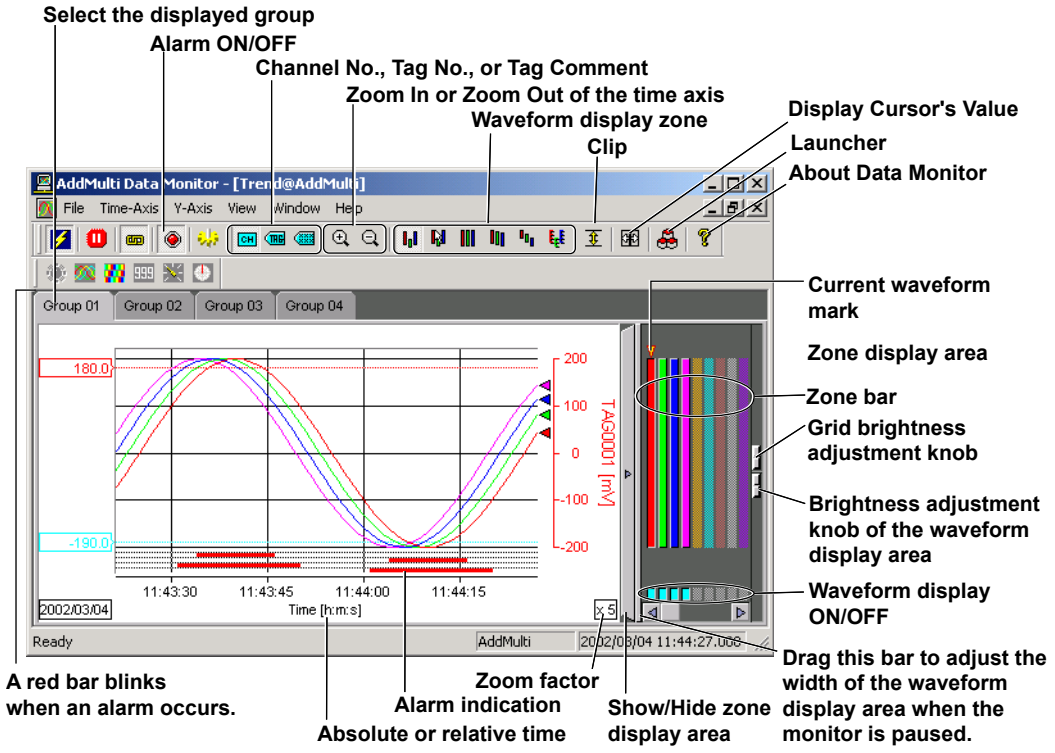
Choose **Alarm Type Icon** from the **View** menu to clear the alarm type icons on the log display. To display the icons, choose **Alarm Type Icon** from the **View** menu again.

Trend Monitor

For the operating procedure, see section 5.3, “Changing the Waveform Display.”
For operations using the cursor, see section 5.4, “Using the Cursors.”

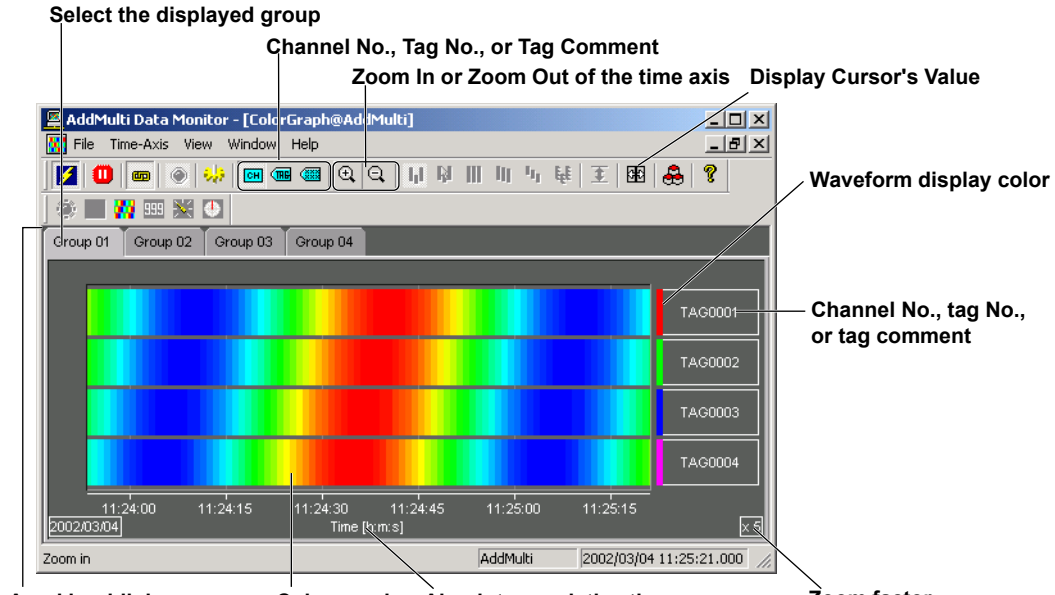
Note

Up to 1800 points of data can be displayed (30 minutes when the scan interval is set to 1 s).



Color Graph Monitor

For operations using the cursor, see section 5.4, “Using the Cursors.”

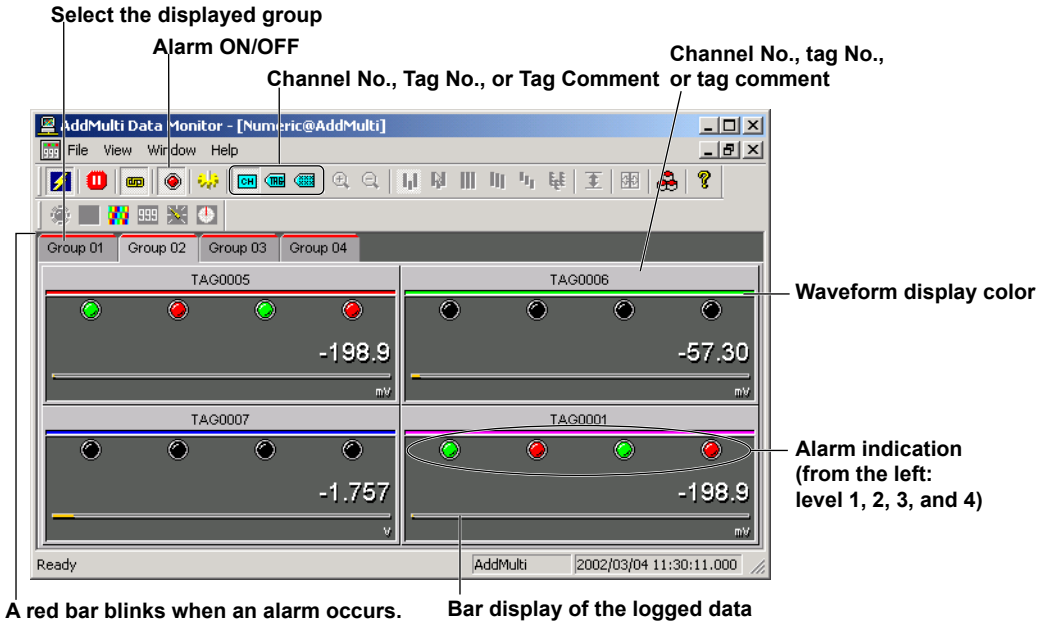


- **Changing the Time Axis**
  You can change the time axis display. On the absolute time display, the date is displayed at the left end.

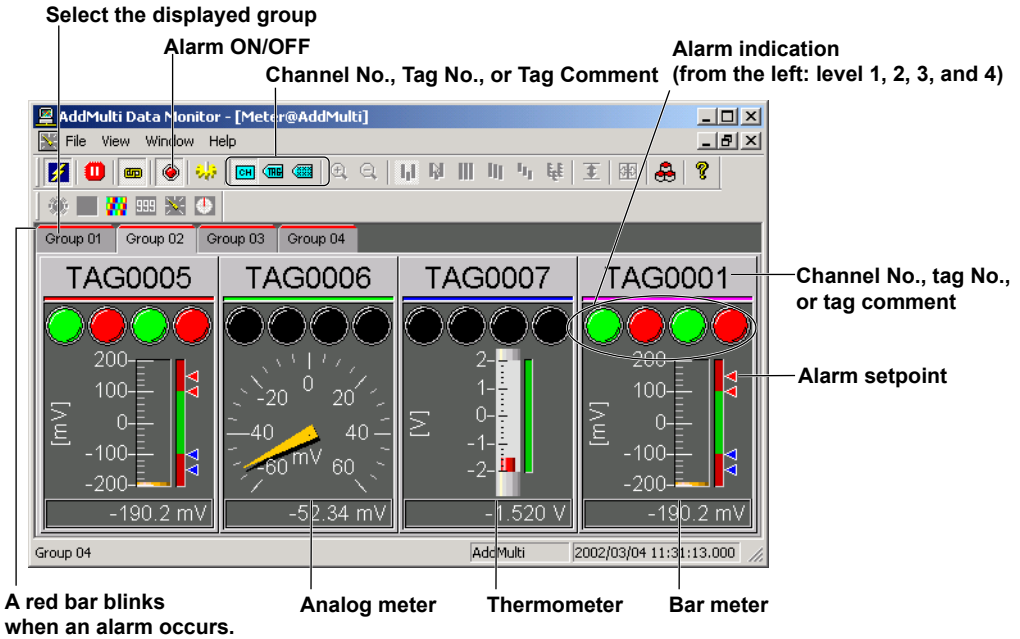
Procedure

Choose **Absolute Time** or **Relative Time** from the **Time-Axis** menu.
Absolute Time: Displays the time.
Relative Time: Displays the elapsed time from the start of the scanning operation.

Numeric Monitor

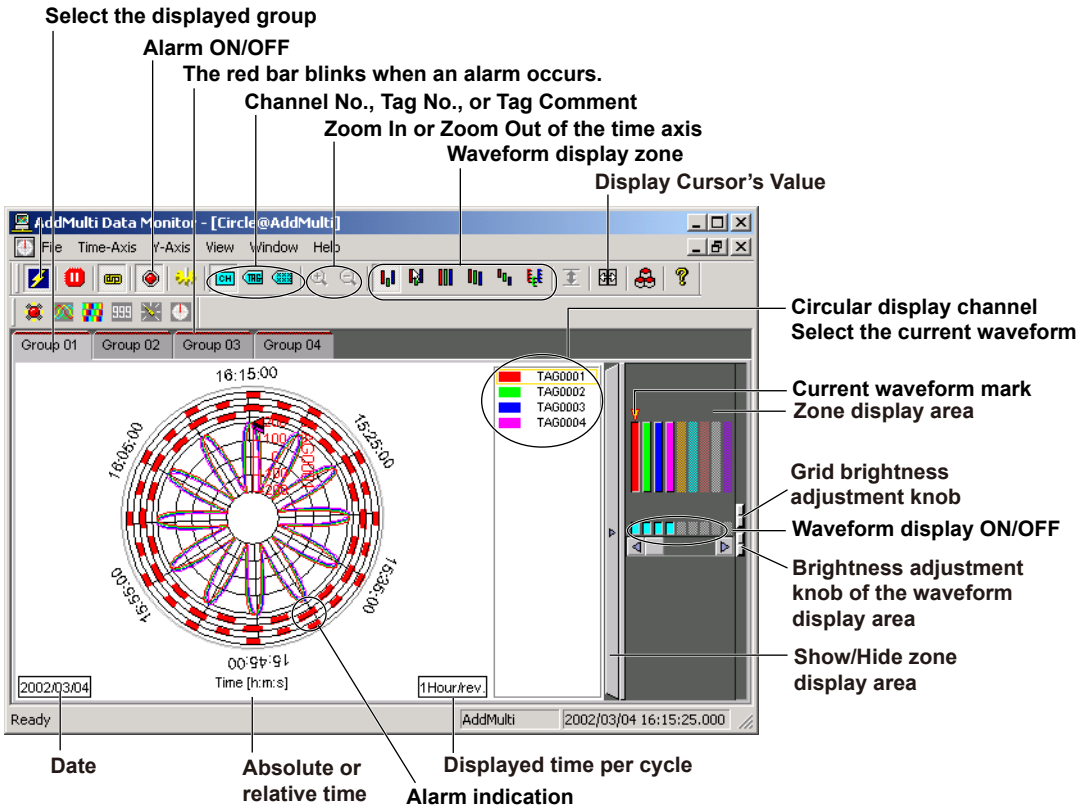


Meter Monitor

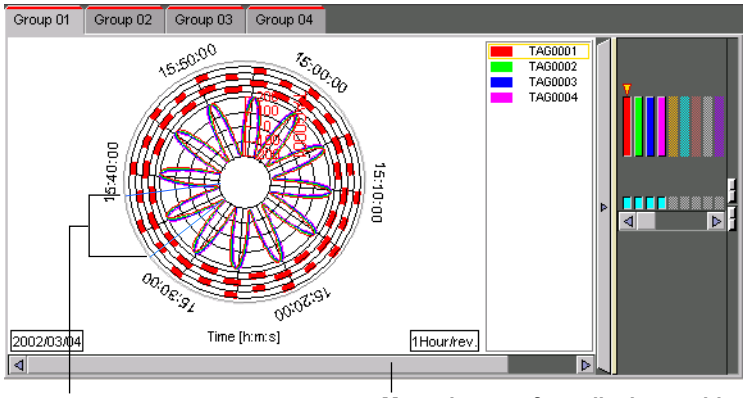


Circular Monitor

Displays the data over an hour to four weeks on a circular graph. On the circular graph, the radius corresponds to the Y-axis of the trend display, and the circumference corresponds to the time axis.



When the monitor is paused



For the following operating procedures, see section 5.3, "Changing the Waveform Display."

For operations using the cursor, see section 5.4, "Using the Cursors."

- Change the time axis display (absolute time or relative time).
- Select the waveform display zones (user zone, edit zone, full zone, slide zone, auto zone, multiple-axis zone).
- Turn ON/OFF the waveform display.
- Specify the thickness of the waveform display lines.
- Adjust the brightness of the waveform display area and grid.
- Show/Hide alarms.
- Use cursors.

Note

- **Dragging & Dropping the trip line**
  You cannot drag & drop the trip line on the circular monitor (page 5-17). To change the position of the trip line, change the value in the **General Display Settings** dialog box.
- **Waveform display limit**
  When the measured data is below the minimum display range, the waveform is displayed at the minimum value position; when the measured data is above the maximum value, the waveform is displayed at the maximum display position.

- **Setting the Time Axis**

Procedure

Choose “Time per cycle” from the **Time-Axis** menu.
You can select from 1 hour, 2 hours, 6 hours, 8 hours, 12 hours, 16 hours, 1 day, 2 days, 1 week, 2 weeks, or 4 weeks.

Note

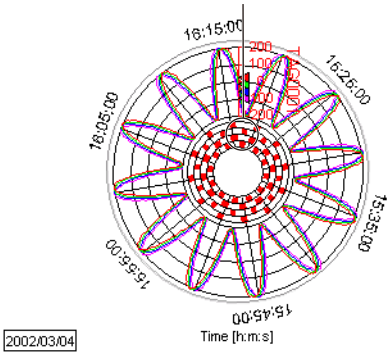
Up to 1800 points of data can be displayed (30 minutes when the scan interval is set to 1 s and 5 hours when the scan interval is set to 10 s).

- **Changing the Alarm Indication Position**
  You can select whether alarms are displayed on the inside or the outside of the waveform display section of the circular screen.

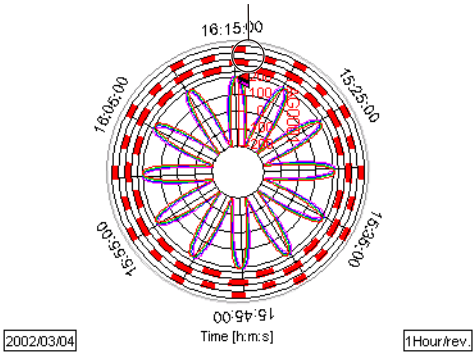
Procedure

Choose **Alarm Inside** or **Alarm Outside** from the **View** menu.

Alarm Inside



Alarm Outside



5.2 Setting the Display Conditions

Set the display conditions for each group.

Note

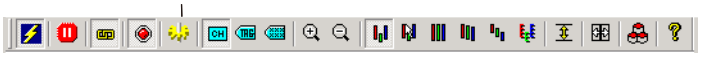
You can select the channel identifier from **Channel No.**, **Tag No.**, or **Tag Comment**. In the explanation below, the channel identifier is set to **Channel No.** Read it as **Tag No.** or **Tag Comment** according to your case.

Opening the General Display Settings Dialog Box

Procedure

Click **General Display Settings** on the toolbar or choose **General Display Settings** from the **View** menu. The **General Display Settings** dialog box opens.

General Display Settings

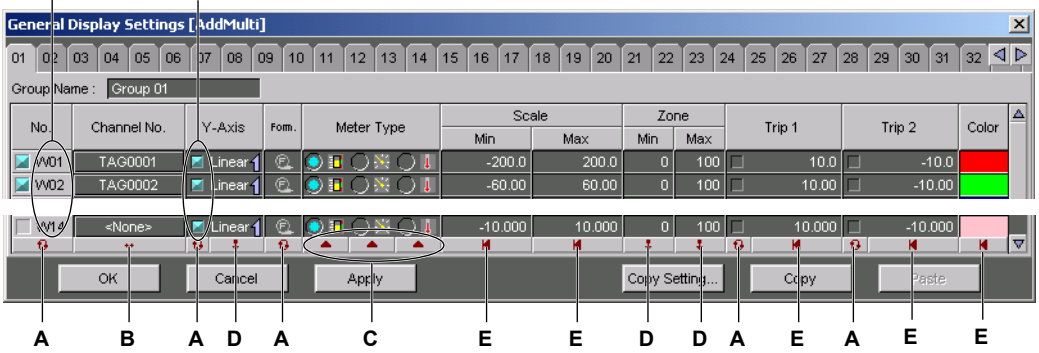


Basic Operation

Procedure

Waveform number

Show or Hide



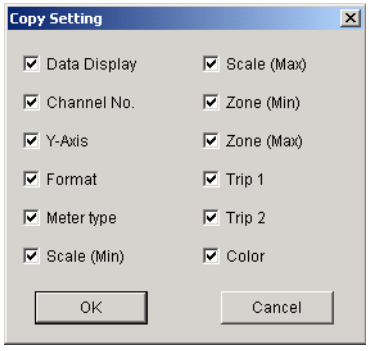
A to E are the collective setup buttons (see the next page).

- **Selecting the Waveform Number**
  - Click the waveform number (the **No.** column).
  - To select waveform numbers consecutively, click the first cell, and then, pressing the SHIFT key, click the waveform number. You can also drag the cursor from the first waveform to the last.
- **Copying the Group Settings**

  Carry out the following procedure to copy the display conditions of a group to another group.

  1. Click **Copy Setting...** in the **General Display Settings** dialog box.

     The **Copy Setting** dialog box opens.



2. Select the check boxes for the items to be copied and click **OK**. The dialog box closes.
3. Click the tab corresponding to the copy source group.
4. Click **Copy**.
5. Click the tab corresponding to the copy destination group.
6. Click **Paste**.

- **Showing/Hiding the Waveform, Y-axis, Trip 1, and Trip 2**
  - Click the check boxes to switch between show (blue) and hide.
  - If consecutive cells are selected, you can click the tool cell at the bottom to collectively switch the show/hide setting of the cells in the selected range.
- **Using the Collective Setup Button**

  There are five types of collective setup buttons.

  Collectively sets the range selected using waveform numbers. If a range of waveform numbers is not selected, the action applies to all waveform numbers.

  A: Collectively shows or hides the items in the column.

  B: Taking the first channel number in the selected range as the reference, channels are assigned in order by incrementing the number.

  C: Collectively switches the meter type.

  D: Copies the first value in the selected range to all items in the selected range.

  E: Sets the values to default.
- **Saving the Settings**

  Click **Apply** to save the settings. In this case, the **General Display Settings** dialog box remains opened.

  Click **OK** to save the settings and close the **General Display Settings** dialog box.

  Click **Cancel** to cancel the settings and close the **General Display Settings** dialog box.

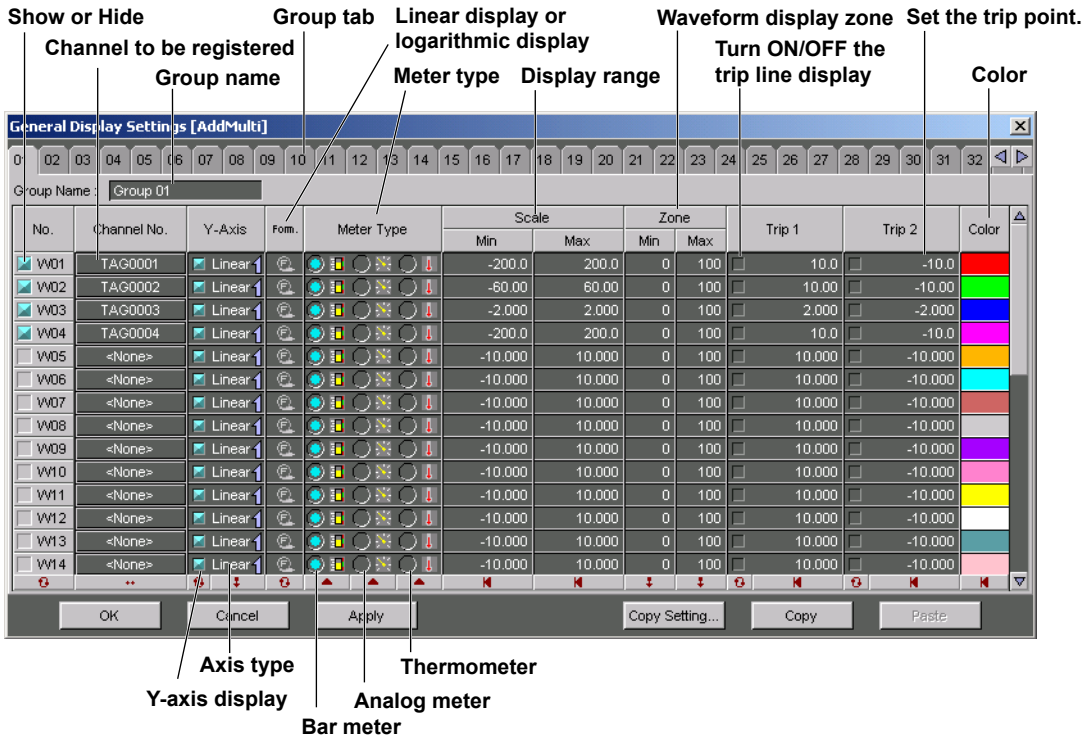
Note

If the Data Monitor is running, the display settings entered on the Launcher can automatically be copied to the general display settings of the Data Monitor (see “Basic Operation” in section 2.4).

Setting the Display Conditions for Each Group

Up to 32 channels can be assigned to a group. A maximum of 50 groups can be used.

Procedure



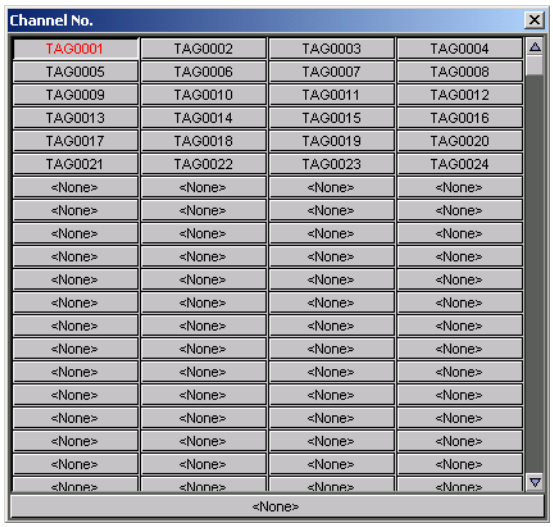
Click a group tab to select the group.

Group Name

Click the **Group Name** box and enter the group name using up to 16 alphanumeric characters.

Channel

1. Click a channel box. The **Channel No.** dialog box opens.



2. Click the desired channel. The channel is selected and the dialog box closes.
   To not assign a channel, click **None** at the bottom.

Showing/Hiding the Waveform
Select the **No.** check box.
Blue: Shows the waveform.
White: Hides the waveform.

Y-Axis
Set whether to show or hide the Y-Axis when multi-axis zone is selected. Click the check box.
Blue: Shows the Y-axis.
Dimmed: Hides the Y-axis.
Specifies the axis type. **Linear** and **Log** toggle each time the box is clicked.
Linear: Linear scale.
Log: Logarithmic scale.

Form.
Set the display format of numeric values. Select floating-point (100.0) or exponential (1.000E2). Floating-point and exponential toggle each time the box is clicked.

Meter Type
Click one of the option buttons to select the type of meter to be displayed on the meter monitor from bar meter, analog meter, and thermometer.

Scale
Click the value box and enter the maximum and minimum values of the scale.
The range of values that can be entered is from –999999999 to 999999999 excluding the decimal point.
If you set the minimum value larger than the maximum value, the waveform is inverted.

Note

The decimal point position of the entered value is adjusted according to the number of significant digits to the right of the decimal point.

Zone
Click the value box and enter the maximum and minimum values of the waveform display zone. The range of values that can be entered is 0 to 99% for the minimum value and 1 to 100% for the maximum value.

Trip 1 and Trip 2
Click the value box and enter the position of the trip line within the scale range.
When you enter a value, the check box turns blue. If you do not wish to use the trip line, clear the check box.
Blue: Enable.
Dimmed: Disabled.

Note

Trip line 1 and 2 are displayed in red and blue, respectively.

Color

Set the waveform display color.

1. Click the **Color** box.

   The **Color** dialog box appears.

2. Click a color to select it. Click **OK** to confirm the new color. The **Color** dialog box closes.

Note

To create a new color, click **Define Custom Colors**. Use the palette that appears to create the new color.

5.3 Changing the Waveform Display

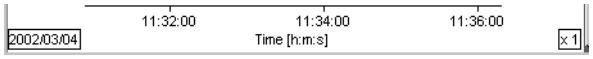
This section describes how to change the display on the trend monitor screen and the circular monitor screen.

Changing the Time Axis (Trend and Circular Monitor Screen)

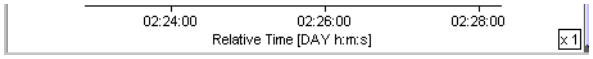
You can change the time axis display. On the absolute time display, the date is displayed at the left end.

Procedure

Choose **Absolute Time** or **Relative Time** from the **Time-Axis** menu.
Absolute Time: Displays the time.



Relative Time: Displays the elapsed time from the start of the scanning operation on the data logging software.

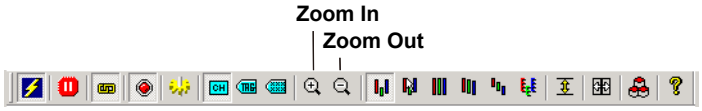


Zooming in or out of the Time Axis (Trend Monitor Screen)

You can adjust the time span. The zoom factor of the time axis is displayed at the lower right corner.

Procedure

Click **Zoom In** or **Zoom Out** on the toolbar or choose **Zoom In** or **Zoom Out** from the **Time-Axis** menu.



The waveform is displayed by zooming in or out of the time axis.

Note

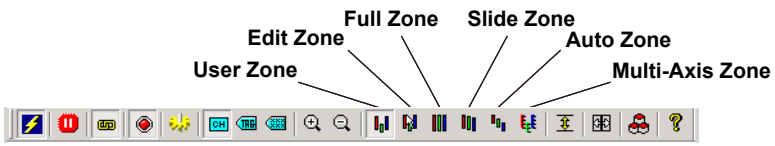
- There are 14 zoom factors: 1/1000, 1/500, 1/200, 1/100, 1/50, 1/20, 1/10, 1/5, 1/2, 1, 2, 5, 10, and 20
  However, the minimum zoom factor that can be displayed varies depending on the number of pixels in the waveform display area. Therefore, the minimum zoom factor that can be displayed varies depending on the monitor screen size.
- The absolute and relative time format (example: MM/DD HH:MM or HH:MM:SS) automatically switches depending on the zoom factor.

Selecting the Waveform Display Zone (Trend and Circular Monitor Screen)

You can change the display zone of the waveform.

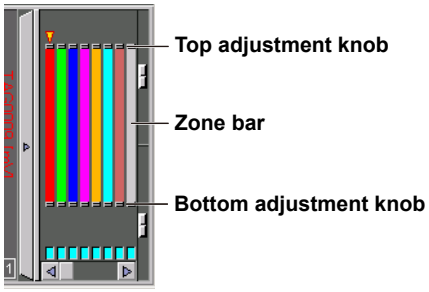
Procedure

Click an icon for the waveform display zone on the toolbar or choose “waveform display zone” from the **Y-Axis** menu.

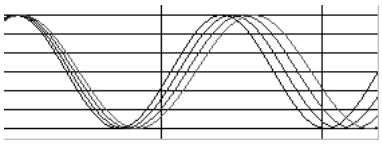


- **User Zone**
  Displays the waveform using the zone specified in the General Display Settings.

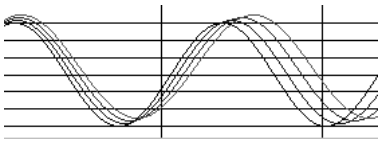
- **Edit Zone**
  You can change the zone in the zone display area of the trend monitor screen.
  In the zone display area, drag the knob at the top and bottom ends of the zone bar to change the zone. The zone setting specified in the zone display area is reflected in the **General Display Settings** dialog box.



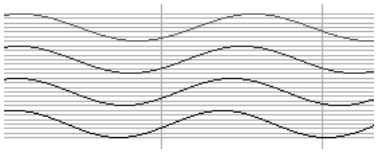
- **Full Zone**
  Assigns a full zone to all the displayed waveforms.



- **Slide Zone**
  The zone width of each waveform is made equal, and the start position of the display zone is offset slightly for each waveform.



- **Auto Zone**
  Displays the waveforms by equally dividing the waveform display area according to the number of displayed waveforms.



- **Multi-Axis Zone**

  Displays the waveforms and multiple Y-axis (scale) in the zone specified in the General Display Settings.

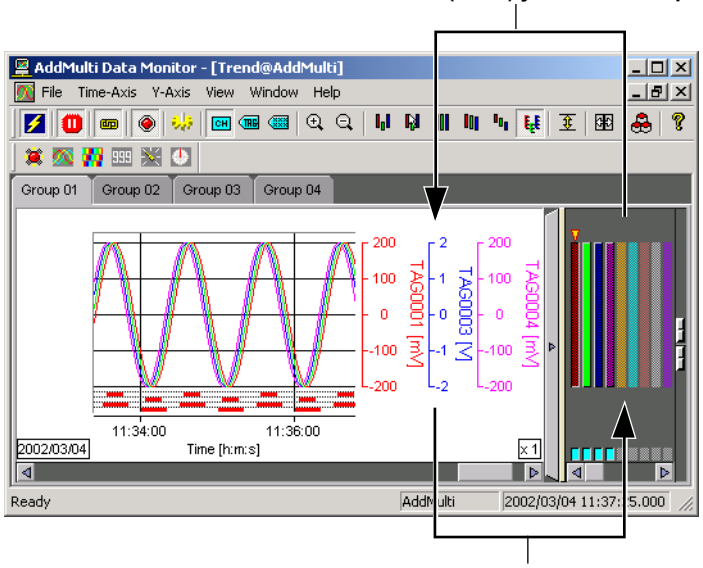
  When the Data Monitor display updating is paused, you can add/delete the Y axis by carrying out the following procedure.*

  When adding an Y axis: In the zone display area, drag the zone bar to be displayed in the waveform display area.

  When deleting an Y axis: In the waveform display area, drag the Y axis to be deleted and drop it in the zone display area.

  * This operation is not applicable to the circular monitor screen

Drag & drop the zone bar corresponding to the Y axis (scale) you wish to display.



Drag & drop the Y axis (scale) to be deleted.

Note

The waveform display area shows a grid that corresponds to the left-most Y axis (scale). In addition, only the trip lines of the channels that have the left-most Y axis are displayed.

Assigning Display Limits (Trend Monitor Screen)

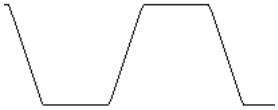
Set how to display the waveform outside the display range.

Procedure

Click **Clip** on the toolbar or choose **Clip** from the **Y-Axis** menu.

The waveform display range along the Y axis is limited to the minimum and maximum values of the scale specified in the General Display Settings. Measured data that is smaller than the scale (minimum) is displayed as a minimum value on the scale; measured data that is greater than the scale (maximum) is displayed as a maximum value on the scale.

- Display example when display limits are assigned on the displayed waveform



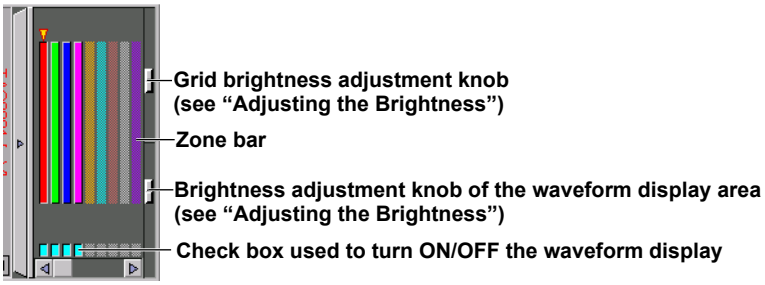
- Display example when display limits are not assigned on the displayed waveform

Turning ON/OFF the Waveform Display (Trend and Circular Monitor Screen)

To make a specific waveform stand out, you can hide other waveforms.

Procedure

Click the check box below the zone bar to turn ON (blue)/OFF the waveform display.



Specifying the Thickness of the Waveform Display Lines (Trend and Circular Monitor Screen)

Procedure

Choose **Normal Line**, **Medium Line**, or **Thick Line** from the **View** menu.

Adjusting the Brightness (Trend and Circular Monitor Screen)

You can adjust the brightness of the grid and background.

Procedure

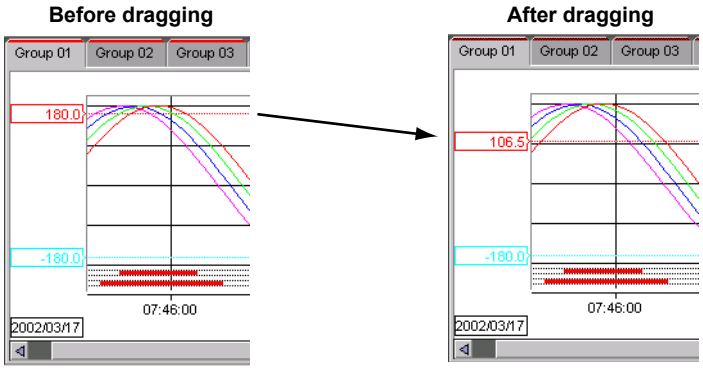
Drag the grid brightness adjustment knob to change the grid brightness.
Drag the brightness adjustment knob of the waveform display area to change the are brightness.

Moving the Trip Line (Trend Monitor Screen)

You can move the trip line when display updating of the Data Monitor is paused.

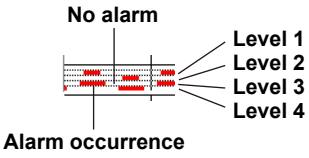
Procedure

1. Click **Pause** on the toolbar or choose **Pause** from the **File** menu.
   The updating of the display on the monitor screen is paused.
2. Drag and drop the trip line to the desired position.



Showing/Hiding Alarms (Trend and Circular Monitor Screen)

The alarm status is indicated at the bottom section of the waveform display area on the trend monitor.
When an alarm occurs, the time span during which alarm is activated is displayed using the waveform display color.
Level 1 to Level 4 alarms are shown in order from the top.
When multiple alarms occur simultaneously, the alarm corresponding to the current waveform (with a current waveform mark) is displayed on top.



Procedure

Click **Alarm ON/OFF** on the toolbar or choose **Alarm** from the **View** menu.
The alarms are shown or hidden.

5.4 Using Cursors

Cursors can be used on the trend monitor, color graph monitor, circular monitor, and alarm monitor.

- On the trend monitor, color graph monitor, and circular monitor, the measured data at the cursor position can be read out.
- On the alarm monitor, you can specify the alarm log using the cursor and read the measured data numerically at that point.
- When Link is turned ON, the cursor movement is reflected on the trend monitor, color graph monitor, circular monitor, and alarm monitor.

There are two cursors, cursor A and cursor B.

The **Cursor's Value** dialog box displays numerically the measured data at the positions of cursor A and cursor B and the difference between the two.

Showing the Cursors and Reading the Values at the Cursor Positions

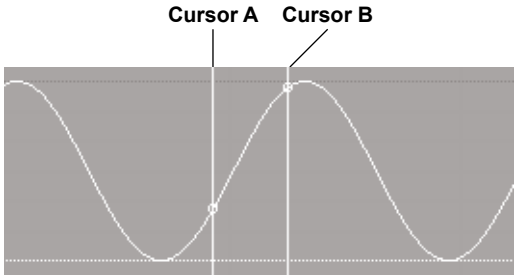
You can use the cursor when display updating of the Data Monitor is paused.

Procedure

1. Click **Pause** on the toolbar or choose **Pause** from the **File** menu.

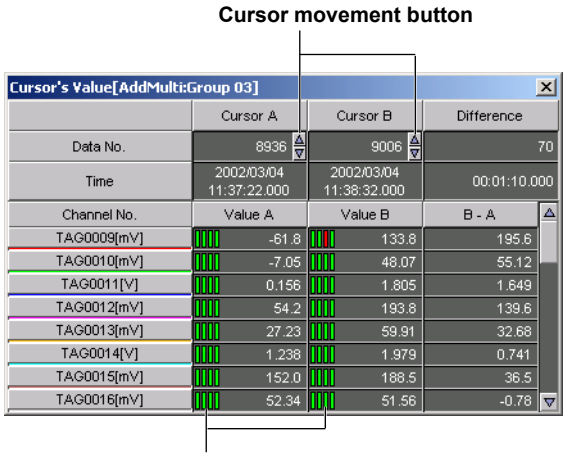
   The updating of the display on the monitor screen is paused.

2. On the waveform display area, point to the position where measured data is to be read and drag the mouse to the other position. The first position is cursor A; the second position is cursor B.



3. Click **Display Cursor's Value** on the toolbar or choose **Display Cursor's Value** from the **View** menu.

The **Cursor's Value** dialog box opens. The log date/time and values at the positions of cursor A and B are displayed.
To fine adjust the cursor position, click the cursor movement buttons to the right of the data number. Click once to move the cursor by one data point.
When you move the cursor on the monitor screen, the result is reflected in the **Cursor's Value** dialog box. This behavior is also true the other way around.



Displaying the Cursor Value from the AlarmLog Display

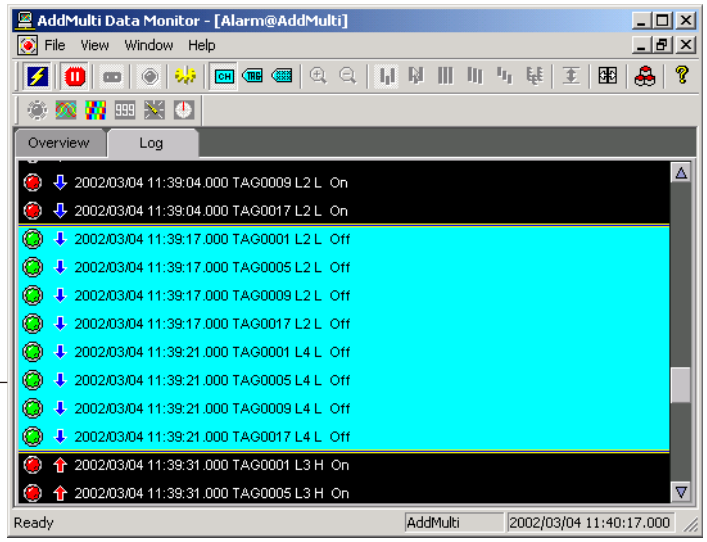
You can move the cursor when display updating of the Data Monitor is paused.

Procedure

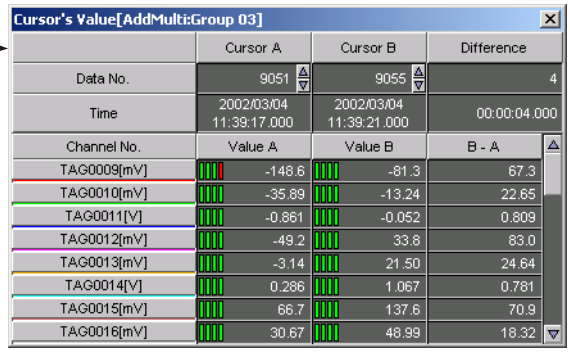
1. Click **Pause** on the toolbar or choose **Pause** from the **File** menu.
   The updating of the display on the monitor screen is paused.
2. Click **Display Cursor's Value** on the toolbar or choose **Display Cursor's Value** from the **View** menu.
   The **Cursor's Value** dialog box opens.

3. On the **Log** page of the alarm monitor, point to an alarm log and drag the mouse to the alarm log. The first position is cursor A; the second position is cursor B.

The log time and values at the positions of cursor A and B are displayed in the **Cursor's Value** dialog box.



Display the values at the start and end points of the cursor selection area.



	Cursor A	Cursor B	Difference
Data No.	9051	9055	4
Time	2002/03/04 11:39:17.000	2002/03/04 11:39:21.000	00:00:04.000
Channel No.	Value A	Value B	B - A
TAG0009[mV]	-148.6	-81.3	67.3
TAG0010[mV]	-35.89	-13.24	22.65
TAG0011[V]	-0.861	-0.052	0.809
TAG0012[mV]	-49.2	33.8	83.0
TAG0013[mV]	-3.14	21.50	24.64
TAG0014[V]	0.286	1.067	0.781
TAG0015[mV]	66.7	137.6	70.9
TAG0016[mV]	30.67	48.99	18.32

Clearing Cursors

Carry out the following procedure to clear the displayed cursors.
Cursors are also cleared when you resume the display updating.

Procedure

Choose **Hide Cursor** from the **View** menu.
When you clear the cursors, nothing is displayed on the **Cursor's Value** dialog box.

5.5 Saving the Connection Settings and Quitting the Monitor

Saving the Connection Settings

Connection settings refers to the display conditions of the Data Monitor. If you save the connection settings before quitting the Data Monitor, the condition is restored the next time the Data Monitor is started.

Procedure

Select **Save** from the **File** menu. The connection settings are saved to the “AddMulti installation folder\project name\” folder (with .rmt extension).

Quitting the Data Monitor

Procedure

Choose **Exit** from the **File** menu or click the **X** button at the upper right corner of the title bar.
The Data Monitor closes.

6.1 Displaying Waveforms on the Historical Viewer

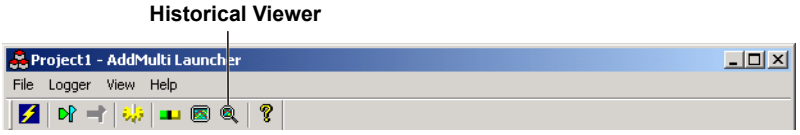
The Historical Viewer displays the data that has been logged using waveforms or values. You can start the Historical Viewer from the Launcher or the Windows Start menu.

Starting the Historical Viewer

Procedure

Start the Historical Viewer using one of the following methods.

- Click **Historical Viewer** on the Launcher's toolbar or choose **Historical Viewer** from the **View** menu.

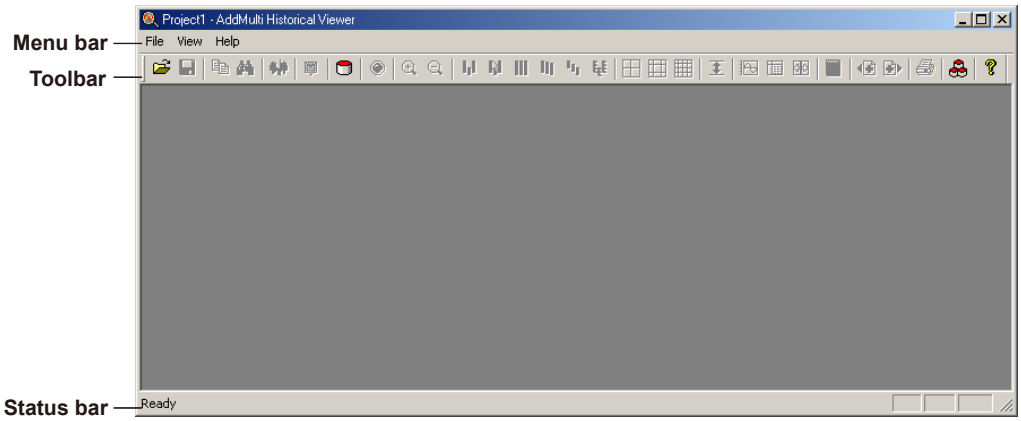


- Choose **Programs** > **YOKOGAWA DAQWORX** > **AddMulti** > **Historical Viewer** from the Windows Start menu.

Note

If you started the Historical Viewer from the Launcher, you can display data that is currently being logged. If you started the Historical Viewer from the Windows Start menu, you cannot.

The Historical Viewer starts and the following screen appears.

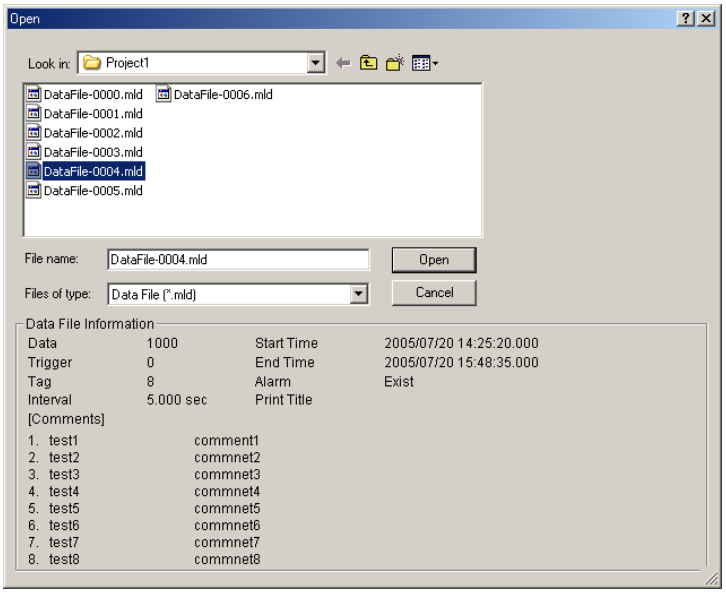


Opening Data Files

Procedure

1. Click **Open** on the toolbar or choose **Open** from the **File** menu.

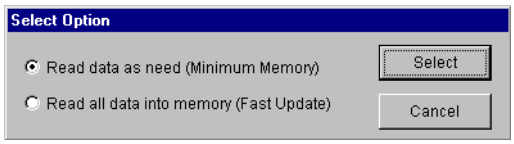
The **Open** dialog box opens.



2. Select the files (the information about the selected file is displayed at the bottom section of the dialog box) and click **Open**. Waveforms are displayed.

Note

- The Historical Viewer can only display data that has been logged using AddMulti. The extension is .mld.
- You can open multiple data files simultaneously. The number of data files that can be opened simultaneously varies depending on the memory size of the PC and the free disk space.
- If the file size is large (the number of data points that are logged is greater than or equal to 8 K and the size is 10 MB or more), the **Select Option** (file loading condition) dialog box appears for you to decide how to read the file contents.

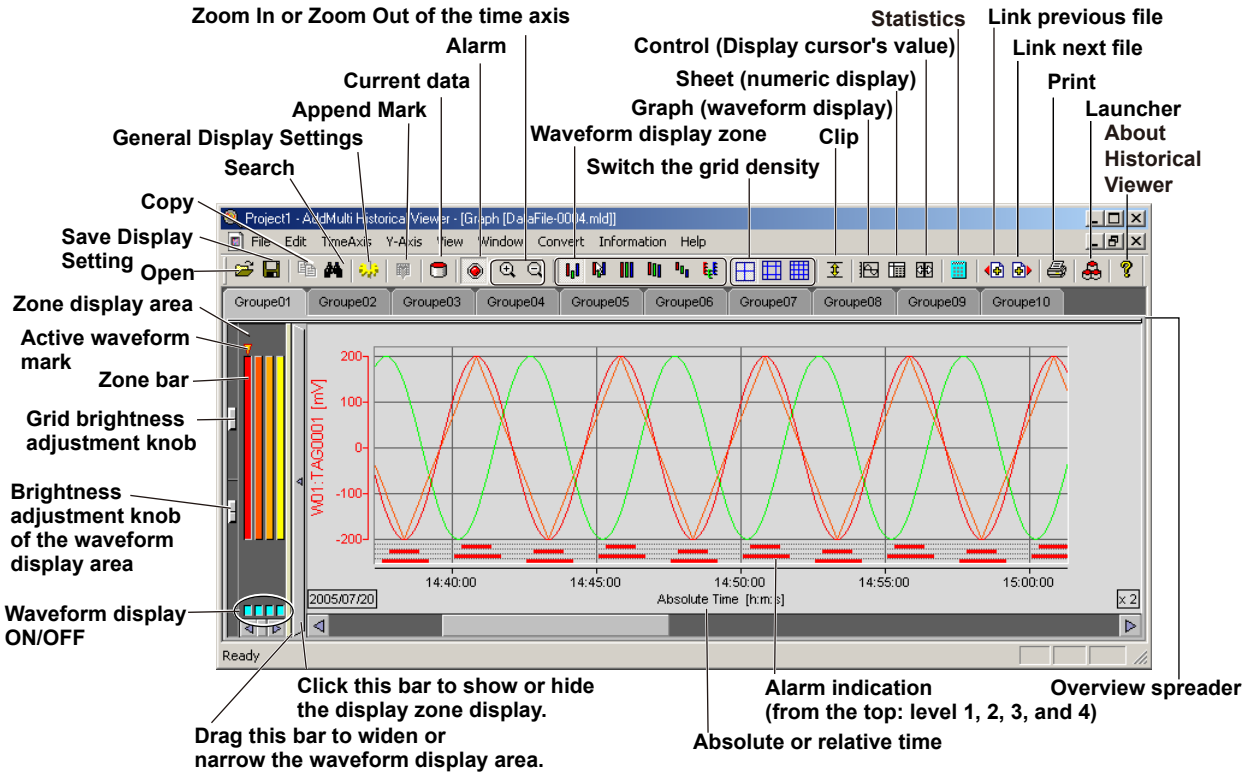


Select either of the following methods and click **Select**. The waveforms appear.

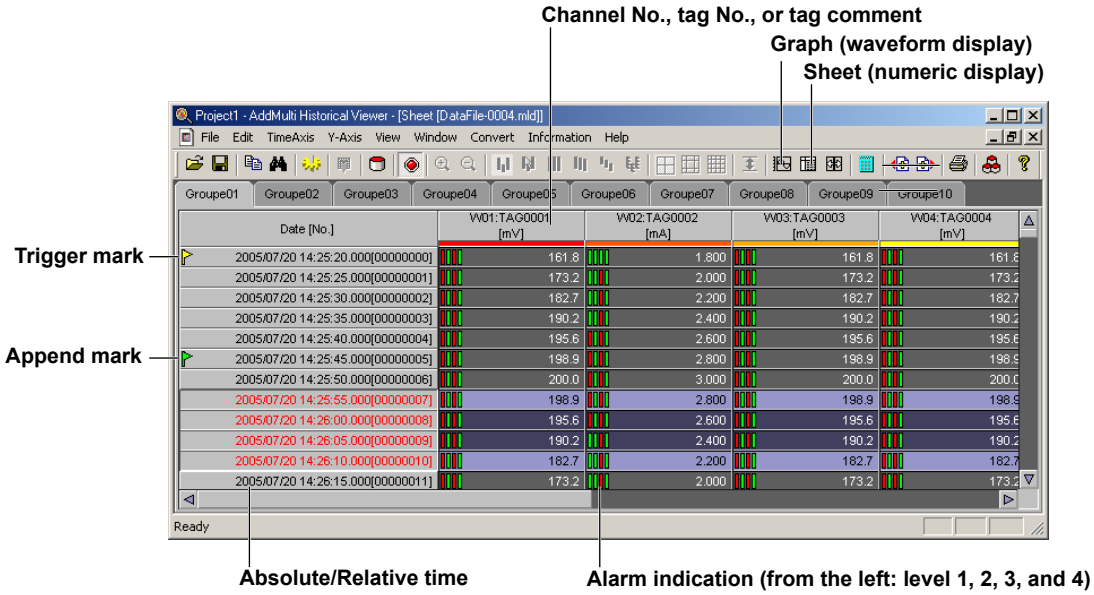
- When **Read data as need (Minimum Memory)** is selected
  Displays the data so that the size of the used memory is minimized. The display speed is slower, but the size of the used memory can be minimized.
- When **Read all data into memory (Fast Update)** is selected
  Displays the data by loading all the data into the memory. The amount of used memory is large, but the display speed is faster.

3. Carry out the following procedure to switch between waveform display and numeric display.
   - Click **Graph** on the toolbar or choose **Graph** from the **View** menu.
   - Click **Sheet** on the toolbar or choose **Sheet** from the **View** menu.

• Graph Screen



• Sheet Screen



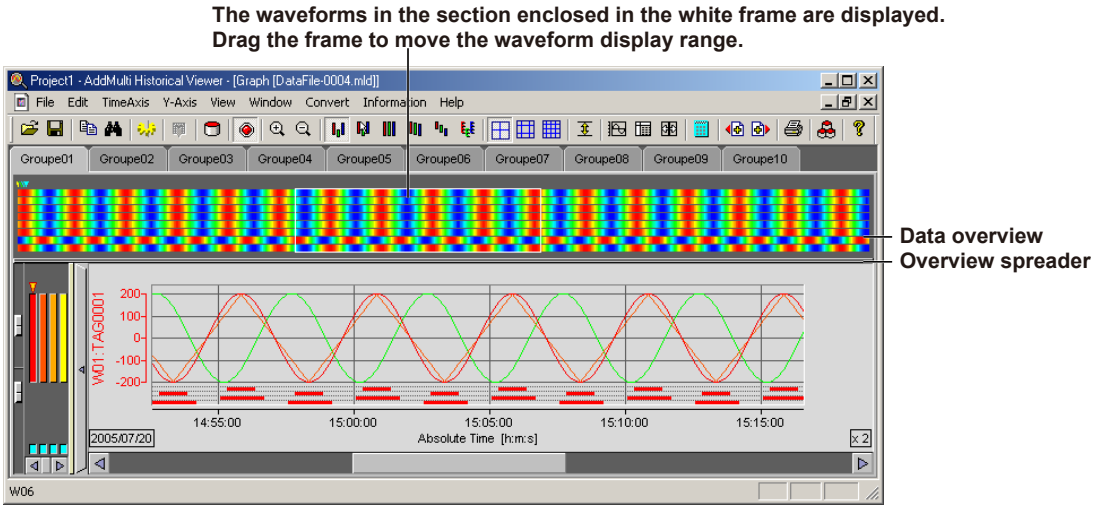
- **Data Overview**

  When set to waveform display, dragging the Overview spreader downward shows the Data Overview.

  The Data Overview displays the measured data by assigning the following 50 colors in order.

  Blue (minimum display scale) – light blue – green – yellow – red (maximum display scale)

  The waveforms in the section enclosed in the white frame on the Data Overview are displayed.



Displaying the Waveforms That Are Currently Being Logged

You can display the data that is currently being logged. This operation is possible only when the Historical Viewer is started from the Launcher.

Procedure

1. Click **Current Data** on the toolbar or choose **Current Data** from the **View** menu.

The **Current Data** dialog box opens.

2. Click a group name to display the data that is being logged.

Note

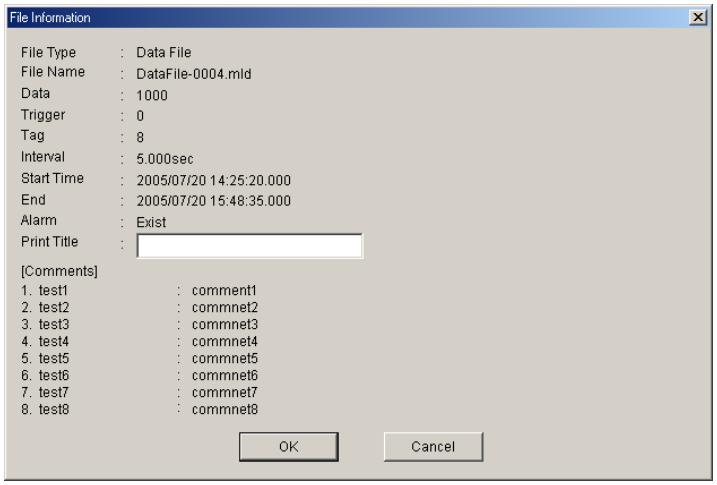
- You can only click the groups that are logging data.
- If you click multiple groups, the data of each group is displayed on separate windows.
- Group names specified in the Launcher are displayed on the **Current Data** dialog box.
- Click **All** to display the data of all groups that are logging data.
- Each time a group name is clicked, the logging data up to that point is redisplayed.
- Do not display data being logged when starting the Historical Viewer from the PC's Start menu. Operation cannot be guaranteed. Data errors may occur.

Checking the Information about the Loaded File

You can view the information about the data file on the active window.

Procedure

1. Choose **About Document...** from the **Information** menu to display the **File Information** dialog box.



2. You can enter or change the header for the data printout (**Print Title** in the above figure).

   Click **Print Title** and enter the character string (up to 32 characters).

Note

- You can also enter or change the print title on the **Printout Setup** dialog box.
- When you enter or change the print title, the print title on the **Printout Setup** dialog box is changed accordingly.

Common Operations

Procedure

- **Arranging the Monitor Screens**
  Choose **Tile** or **Cascade** from the **Window** menu. The multiple monitor screens that are displayed are arranged accordingly.

- **Showing/Hiding the Toolbar or Status Bar**
  Choose **Tool Bar** or **Status Bar** from the **View** menu. The check mark disappears and the bar is hidden. To show the bar, select the command again.

- **Displaying the Launcher in Front**
  Click **Launcher** on the toolbar or choose **Launcher** from the **View** menu. The Launcher is displayed in front.

- **Closing the Group Screen**
  Click the **X** button at the right end of the title bar. Or, activate the group screen you wish to close and choose **Close** from the **File** menu.
  A message **Save changes to xxx?** (where “xxx” is the file name) appears. Click **Yes**, **No**, or **Cancel**.
  Yes: Saves the display settings and closes the group screen.
  No: Does not save the display settings and closes the group screen.
  Cancel: Cancels the operation of closing the group screen.

6.2 Setting the Display Conditions

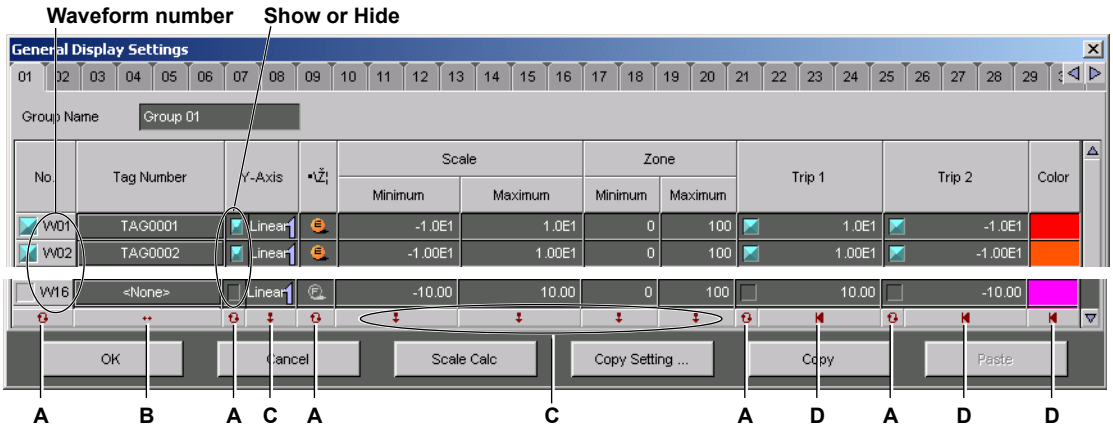
Set the display conditions for each group.

Note

You can select the channel identifier from **Channel No.**, **Tag No.**, or **Tag Comment**. In the explanation below, the channel identifier is set to **Channel No.** Read it as **Tag No.** or **Tag Comment** according to your case.

Basic Operation

Procedure



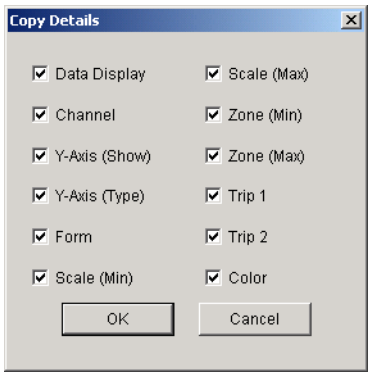
A to D are the collective setup buttons (see the next page).

- **Selecting the Waveform Number**
  - Click the waveform number (the **No.** column).
  - To select waveform numbers consecutively, click the first cell, and then, pressing the SHIFT key, click the waveform number. You can also drag the cursor from the first waveform to the last.
- **Copying the Group Settings**

  Carry out the following procedure to copy the detail settings of a group to another group.

  1. Click **Copy Setting** in the **General Display Settings** dialog box.

     The **Copy Details** dialog box opens.



  2. Select the check boxes for the items to be copied and click **OK**. The dialog box closes.
  3. Click the tab corresponding to the copy source group.
  4. Click **Copy**.
  5. Click the tab corresponding to the copy destination group.
  6. Click **Paste**.

- **Showing/Hiding the Waveform, Y-axis, Trip 1, and Trip 2**
  - Click the check boxes to switch between show (blue) and hide.
  - If consecutive cells are selected, you can click the tool cell at the bottom to collectively switch the show/hide setting of the cells in the selected range.
- **Using the Collective Setup Button**
  There are four types of collective setup buttons.
  Collectively sets the range selected using waveform numbers. If a range of waveform numbers is not selected, the action applies to all waveform numbers.
  A: Collectively shows or hides the items in the column.
  B: Taking the first channel number in the selected range as the reference, channels are assigned in order by incrementing the number.
  C: Copies the first value in the selected range to all items in the selected range.
  D: Sets the values to default.
- **Saving the Settings**
  Click **OK** to save the settings and close the **General Display Settings** dialog box.
  Click **Cancel** to cancel the settings and close the **General Display Settings** dialog box.

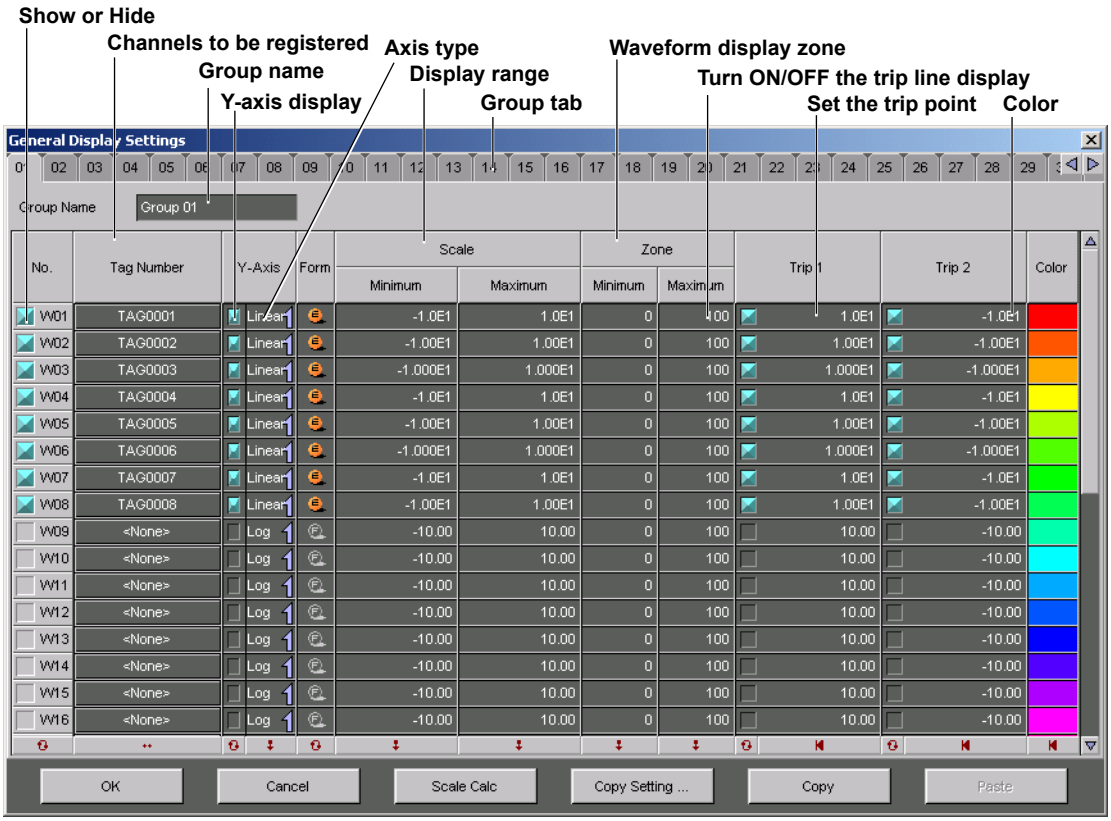
Setting the Display Conditions for Each Group

Up to 32 channels can be assigned to a group. A maximum of 50 groups can be used. The **General Display Settings** of the Historical Viewer differs from that of the Data Monitor in the following points. Others are common.

- There is no **Form.** item.
- There is no **Meter Type** item.
- There is no **Apply** button.
- There is a **Scale Calc** button.

Procedure

Click **General Display Settings** on the toolbar or choose **General Display Settings** from the **View** menu. The **General Display Settings** dialog box opens.



Click a group tab to select the group.

Group Name

Click the **Group Name** box and enter the group name using up to 16 alphanumeric characters.

Tag No.

1. Click a tag number box. The **Tag Number** dialog box opens.

2. Click the desired channel. The channel is selected and the dialog box closes.
   To not assign a channel, click **None** at the bottom.

Showing/Hiding the Waveform

Select the **No.** check box to change the setting.
Blue: Shows the waveform.
White: Hides the waveform.

Y-Axis

Set whether to show or hide the Y-Axis when multi-axis zone is selected. Click the check box.
Blue: Shows the Y-axis.
Dimmed: Hides the Y-axis.
Specifies the axis type. **Linear** and **Log** toggle each time the box is clicked.
Linear: Linear scale.
Log: Logarithmic scale.

Scale

Click the value box and enter the maximum and minimum values of the scale.
The range of values that can be entered is from –999999999 to 999999999 excluding the decimal point.
If you set the minimum value larger than the maximum value, the waveform is inverted.

Note

The decimal point position of the entered value is adjusted according to the number of significant digits to the right of the decimal point.

If you select a waveform number and click **Scale Calc**, the scale of the selected waveform number is set as follows:

- Scale minimum = the minimum value of the logged data in the file
- Scale maximum = the maximum value of the logged data in the file

Zone

Click the value box and enter the maximum and minimum values of the waveform display zone. The range of values that can be entered is 0 to 99% for the minimum value and 1 to 100% for the maximum value.

Trip 1 and Trip 2

Click the value box and enter the position of the trip line within the scale range.
When you enter a value, the check box turns blue. If you do not wish to use the trip line, clear the check box.
Blue: Enable.
Dimmed: Disabled.

Note

Trip line 1 and 2 are displayed in red and blue, respectively.

Color

Set the waveform display color.

1. Click the **Color** box.

   The **Color** dialog box appears.

2. Click a color to select it. Click **OK** to confirm the new color. The **Color** dialog box closes.

Note

To create a new color, click **Define Custom Colors**. Use the palette that appears to create the new color.

6.3 Changing the Waveform Display and Numerical Display

This section describes how to change the display on the Historical Viewer screen.

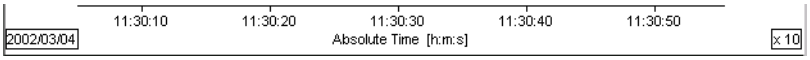
Changing the Time Axis

You can change the time axis display. On the absolute time display, the date is displayed at the left end.

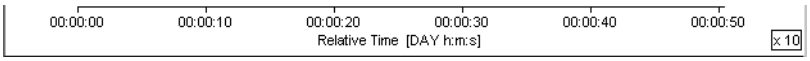
Procedure

Choose **Absolute Time** or **Relative Time** from the **Time-Axis** menu.

Absolute Time: Displays the time.



Relative Time: Displays the elapsed time from the first data point.



Zooming in or out of the Time Axis

You can adjust the time span. The zoom factor of the time axis is displayed at the lower right corner.

Procedure

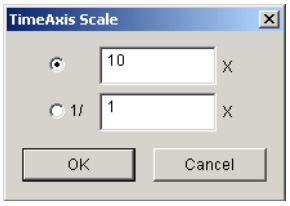
Click **Zoom In** or **Zoom Out** on the toolbar or choose **Zoom In** or **Zoom Out** from the **Time-Axis** menu.

The waveform is displayed by zooming in or out of the time axis.

Note

- There are 14 zoom factors: 1/1000, 1/500, 1/200, 1/100, 1/50, 1/20, 1/10, 1/5, 1/2, 1, 2, 5, 10, and 20
  However, the minimum zoom factor that can be displayed varies depending on the number of pixels in the waveform display area. Therefore, the minimum zoom factor that can be displayed varies depending on the monitor screen size.
- The absolute and relative time format (example: MM/DD HH:MM or HH:MM:SS) automatically switches depending on the zoom factor.

Choose **Set Scale** from the **Time-Axis** menu to open the **Time Axis Scale** dialog box.



You can expand or reduce the time axis at an arbitrary factor that you enter.

- Zoom in range: 1 to 20 (whole number)
- Zoom out range: 1/1 to 1/1000 (the denominator is a whole number)

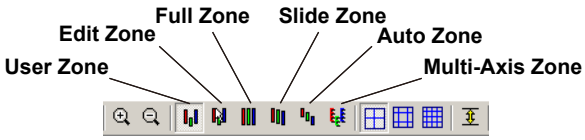
Choose **All** from the **Time-Axis** menu to adjust the zoom factor so that all the data can be displayed on the waveform display screen.

Selecting the Waveform Display Zone

You can change the display zone of the waveform.

Procedure

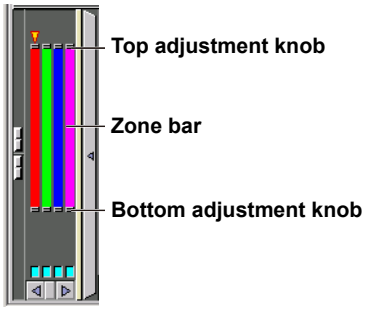
Click an icon for the waveform display zone on the toolbar or choose “waveform display zone” from the **Y-Axis** menu.



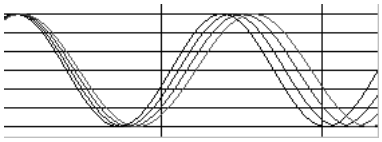
- **User Zone**
  Displays the waveform using the zone specified in the General Display Settings.

- **Edit Zone**
  You can change the zone in the zone display area of the graph screen.
  In the zone display area, click the knob at the top and bottom ends of the zone bar to change the zone. The zone setting specified in the zone display area is reflected in the **General Display Settings** dialog box.

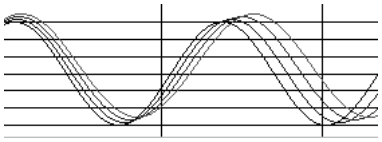
  Drag the top adjustment knob to move the top end of the zone.
  Likewise, drag the bottom adjustment knob to move the bottom end of the zone.
  The entire zone moves by dragging the zone bar.



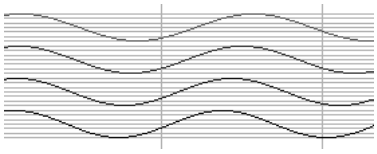
- **Full zone**
  Assigns a full zone to all the displayed waveforms.



- **Slide Zone**
  The zone width of each waveform is made equal, and the start position of the display zone is offset slightly for each waveform.

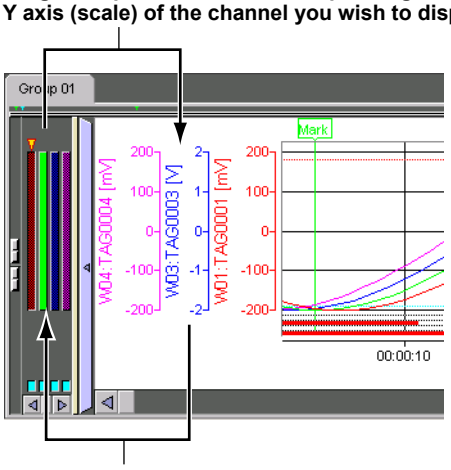


- **Auto Zone**
  Displays the waveforms by equally dividing the waveform display area according to the number of displayed waveforms.



- **Multi-Axis Zone**
  Displays the waveforms and multiple Y-axis (scale) in the zone specified in the General Display Settings.
  You can add/delete the Y axis by carrying out the following procedure.
  When adding an Y axis: In the zone display area, drag the zone bar to be displayed in the waveform display area.
  When deleting an Y axis: In the waveform display area, drag the Y axis to be deleted and drop it in the zone display area.

Drag & drop the zone bar corresponding to the Y axis (scale) of the channel you wish to display



Drag & drop the Y axis (scale) to be deleted

Note

The waveform display area shows a grid that corresponds to the right-most Y axis (scale). In addition, only the trip lines of the channels that have the right-most Y axis are displayed.

Assigning Display Limits

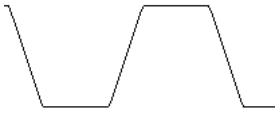
Set how to display the waveform outside the display range.

Procedure

Click **Clip** on the toolbar or choose **Clip** from the **Y-Axis** menu.

The waveform display range along the Y axis is limited to the minimum and maximum values of the scale specified in the General Display Settings. Measured data that is smaller than the scale (minimum) is displayed as a minimum value on the scale; measured data that is greater than the scale (maximum) is displayed as a maximum value on the scale.

- Display example when display limits are assigned on the displayed waveform



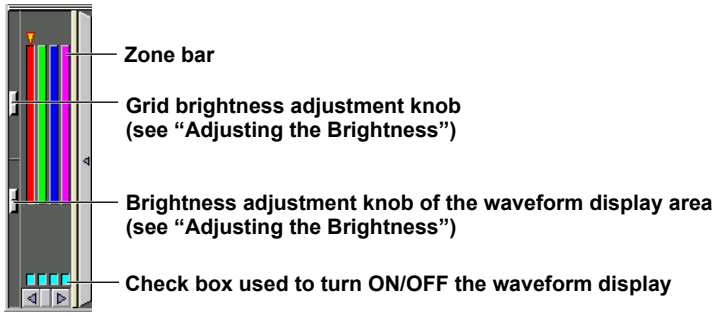
- Display example when display limits are not assigned on the displayed waveform

Turning ON/OFF the Waveform Display

To make a specific waveform stand out, you can hide other waveforms.

Procedure

Click the check box below the zone bar to turn ON (blue)/OFF the waveform display.



Adjusting the Brightness

You can adjust the brightness of the grid and background.

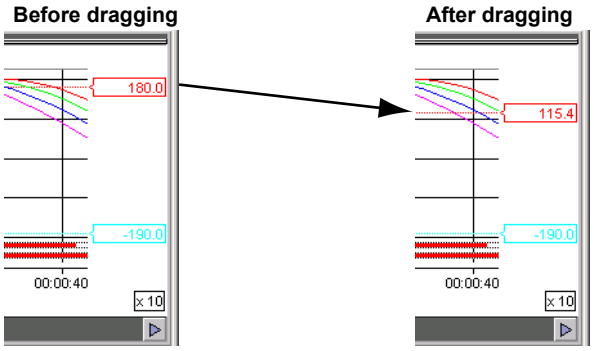
Procedure

Drag the grid brightness adjustment knob to change the grid brightness.
Drag the brightness adjustment knob of the waveform display area to change the are brightness.

Moving the Trip Line

Procedure

Drag and drop the trip line to the desired position.



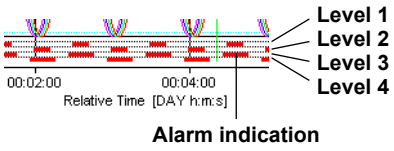
Showing/Hiding Alarms

Procedure

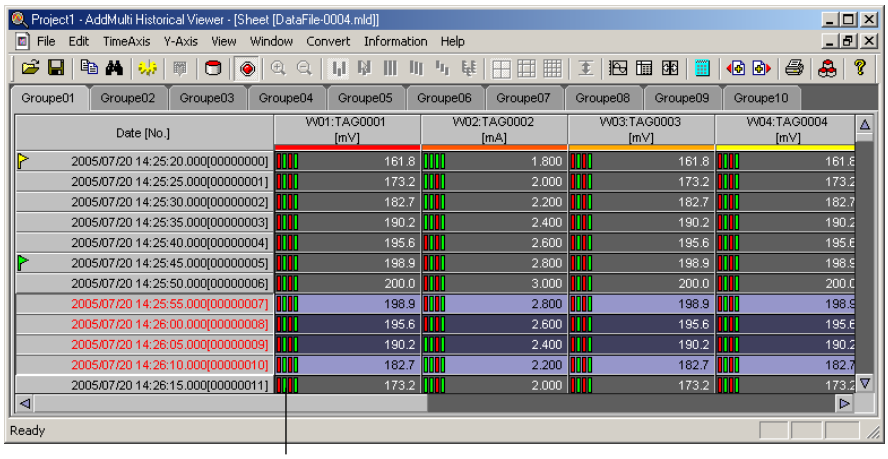
Click **Alarm** on the toolbar or choose **Alarm** from the **View** menu. The alarms are shown or hidden.

Alarm indication appears on the **Graph** screen, **Sheet** screen, and the **Control** dialog box.
However, if there is no alarm data in the loaded data file, alarms are not displayed.

- **Graph Screen**
  The time span during which alarm is activated is displayed using the waveform display color. Level 1 to Level 4 alarms are shown in order from the top. When multiple alarms occur simultaneously, the alarm corresponding to the active waveform (with an active mark) is displayed on top.

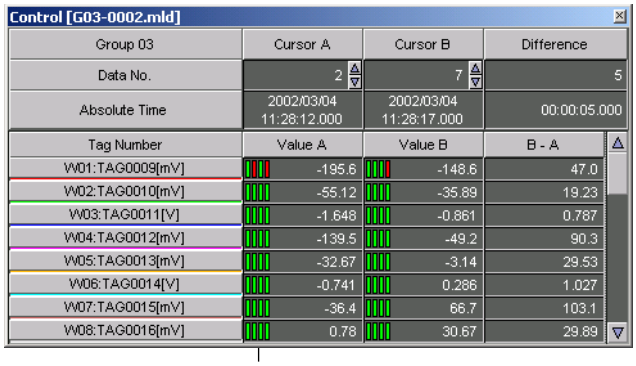


- **Sheet Screen**



Alarm indication (from the left: level 1, 2, 3, and 4)
Alarm occurring: red, no alarm: green

- **Control Dialog Box**



Alarm indication (from the left: level 1, 2, 3, and 4)
Alarm occurring: red, no alarm: green

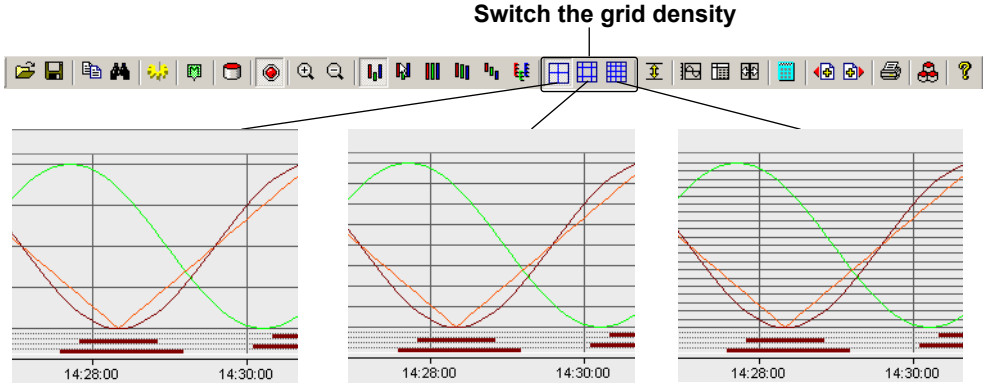
Note

- When the alarm display is turned ON/OFF on one of the screens above, the alarm display on the other two screens is also changed.
- When there is no alarm data in the loaded data file, **Alarm** on the **View** menu is unavailable.

Changing the Grid Display

Procedure

Select the grid type by clicking Grid density on the toolbar, or Y-axis on the menu bar.
Switch the grid density.



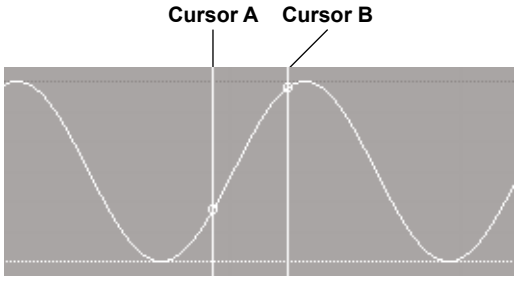
6.4 Using Cursors

On the **Graph** screen, the measured data at the cursor position can be read. There are two cursors, cursor A and cursor B.
The **Control** dialog box displays numerically the measured data at the positions of cursor A and cursor B and the difference between the two.
You can specify an area using cursor A and cursor B and display the maximum value, minimum value, P-P value, average value, and rms value of the measured data in the area.

Showing the Cursors and Reading the Values at the Cursor Positions

Procedure

1. On the waveform display area, point to the position where measured data is to be read and drag the mouse to the other position. The first position is cursor A; the second position is cursor B.



2. Click **Control** on the toolbar or choose **Control** from the **Window** menu.

Control (Display Cursor's Value)

The **Control** dialog box opens. The log date/time and values at the positions of cursor A and B are displayed.

To fine adjust the cursor position, click the cursor movement buttons to the right of the data number. Click once to move the cursor by one data point.

The cursor operation and display apply to the **Graph** screen, **Sheet** screen, and **Control** dialog box.

Cursor movement button

Control [G01-0002.mld]

Group 01	Cursor A	Cursor B	Difference
Data No.	1	2	1
Absolute Time	2003/06/24 10:50:20.000	2003/06/24 10:50:25.000	00:00:05.000
Channel No.	Value A	Value B	B - A
W01:TAG0001[mV]	182.7	173.2	-9.5
W02:TAG0002[mV]	48.99	45.11	-3.88
W03:TAG0003[V]	1.376	1.217	-0.159
W04:TAG0004[mV]	106.7	88.4	-18.3
W05:TAG0005[mV]	21.50	15.52	-5.98
W06:TAG0006[V]	0.338	0.130	-0.208
W07:TAG0007[mV]	-5.2	-26.1	-20.9
W08:TAG0008[mV]	-13.24	-19.28	-6.04

Clearing Cursors

Carry out the following procedure to clear the displayed cursors.

Procedure

Choose **Hide Cursor** from the **View** menu.
When you clear the cursors, nothing is displayed on the **Control** dialog box.

Copying the Data between the Cursors to the Clipboard

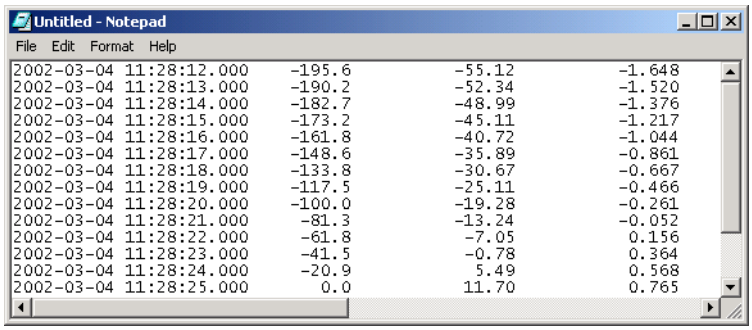
You can copy the data in the range specified using the cursors to the clipboard to be used in other applications.

Procedure

1. On the G**raph** screen or **Sheet** screen, drag the mouse to select the range (up to 1000 points) you wish to copy to the clipboard.
2. Click **Copy** on the toolbar or choose **Copy** from the **Edit** menu.
   The data in the selected range is copied to the Windows clipboard.

3. Data that has been copied to the clipboard can be pasted in other applications for use.

   Example of copying to the clipboard



Note

- You can copy up to 1000 data points to the clipboard.
- 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.

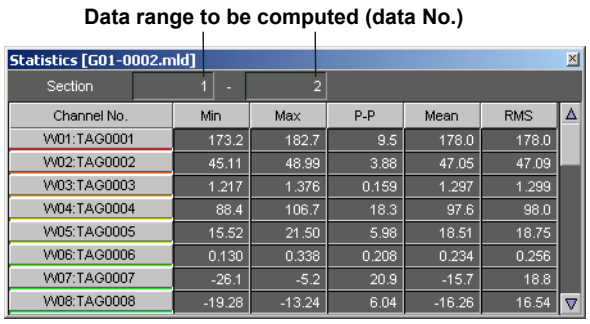
Displaying Statistical Computation Results over an Area

You can specify an area using cursor A and cursor B and display the maximum value, minimum value, P-P value, average value, and rms value of the measured data in the area.

Procedure

1. Specify the computation area by dragging the mouse on the **Graph** screen or **Sheet** screen.
2. Click **Statistics** on the toolbar or choose **Statistics** from the **Window** menu.

The **Statistics** dialog box shows the computed result.



Channel No.	Min	Max	P-P	Mean	RMS
W01:TAG0001	173.2	182.7	9.5	178.0	178.0
W02:TAG0002	45.11	48.99	3.88	47.05	47.09
W03:TAG0003	1.217	1.376	0.159	1.297	1.299
W04:TAG0004	88.4	106.7	18.3	97.6	98.0
W05:TAG0005	15.52	21.50	5.98	18.51	18.75
W06:TAG0006	0.130	0.338	0.208	0.234	0.256
W07:TAG0007	-26.1	-5.2	20.9	-15.7	18.8
W08:TAG0008	-19.28	-13.24	6.04	-16.26	16.54

Note

- If you change the computation area, carry out the above procedure again.
- If a computation area is not specified using the cursors, the computation is performed over the entire area of the data file.
- The **Statistics** dialog box shows the computed results of the data displayed on the active viewer screen.
- The rms value is computed using the following equation.

$$rms = \sqrt{\frac{1}{n}\sum_{k=0}^{n-1}(x_k)^2}$$

n : Number of data
x_k: Value

6.5 Using Marks

Marks can be placed at the positions specified with the cursor.
By default, the following marks are placed.

- TRIG: Data at the logging start point (first data of the file)
- BOUNDARY: Data at the division point when the logged data is stored to divided files (first data point of files after the 1st file) and the first data point of the file that is created by data exporting (see section 6.8).

Placing Marks

Procedure

1. On the **Graph** screen, click the position where a mark is to be placed. Or, on the **Sheet** screen, click the **Date [No]** box where a mark is to be placed.

   One cursor is displayed.

2. Click **Append Mark** on the toolbar or choose **Append Mark** from the **Edit** menu.

   The **Mark Setting** dialog box opens.

3. Click the option button to select the group on which a mark is to be placed.

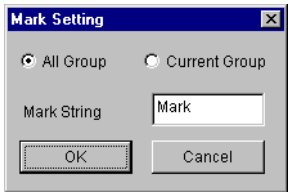
   All Group: Places marks on all groups.

   Current Group: Places a mark on the displayed group.

Note

Make this selection when you create groups on the Historical Viewer.

4. Click the text box and enter the character string (up to 16 characters).



5. Click **OK**.

   A mark is displayed at the cursor position.

Note

- To change the mark character string, double-click the mark. The **Mark Setting** dialog box opens.
- If two cursors are displayed, you cannot place marks.

Deleting Marks

Procedure

1. Place cursor A and cursor B so that the marks to be deleted are in between the cursors.
2. Choose **Delete Mark** from the **Edit** menu.

   The marks between cursor A and cursor B are deleted.

Setting the Marks to the Default Condition (Clearing all marks except TRIG and BOUNDARY)

Procedure

Choose **Reset Mark** from the **Edit** menu. All the added marks are deleted.

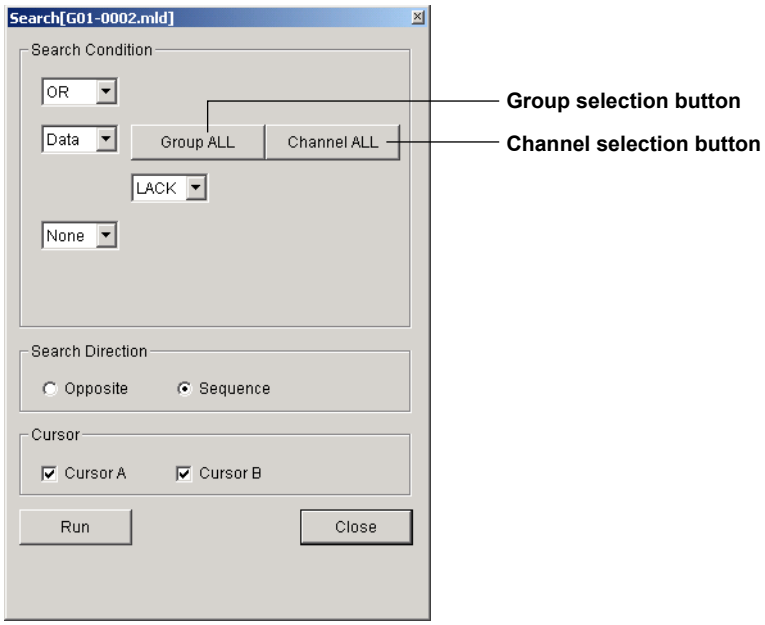
6.6 Searching Measured Data, Alarms, and Marks

You can set search conditions and search for measured data, alarms, and marks. When the measured data, alarm, or mark is found, the cursor is displayed at that position.

Procedure

1. Select the search range using the cursors.
2. Click **Search** on the toolbar or choose **Search** from the **Edit** menu.

The **Search** dialog box opens.



3. Set an OR or AND logic for the two conditions specified in steps 4 to 8.
   Click the list box and choose either one.
   OR: Search items where either condition is met.
   AND: Search items where both conditions are met.

Repeat steps 4 to 8 to set conditions 1 and 2.

4. Click the list box and select the search type.
   None: Set no conditions.
   Data: Search for special data (LACK, +OVER, –OVER, and OFF) (see the next page).
   Mark: Search marks.
   Alarm: Search alarms.
   Value: Search measured data.

When Searching Special Data

5. Select the groups to be searched.
   Click the group selection button to display the **Select Group** dialog box. Click a group name. Click **ALL** to select all groups to be searched.
   The selected groups are displayed on the group selection button.

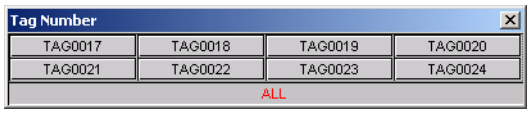
Note

Make this selection when you create groups on the Historical Viewer.

6. Select the channels to be searched.

   Click the channel selection button. The **Tag Number** dialog box displays the channels that are contained in the group. Click a channel. Click **ALL** to select all the channels in the group to be searched.

   The selected channels are displayed on the channel selection button.



7. Click the list box and select the type of data to be searched.

   LACK: Search for data dropouts.

   +OVER: Search data that is over the upper limit of the measurement range.

   –OVER: Search data that is below the lower limit of the measurement range.

   OFF: Search for OFF data.*

   * OFF data refers to data that indicates the condition in which the communication to the recorder is disconnected and the data logging software cannot scan and record the data from the recorder.

When Searching Marks

5. Select the groups to be searched.

   The operating procedure is the same as for “When Searching Special Data.”

6. Set the mark string.

   Marks containing the specified string in their name are searched. The search is not case-sensitive. If you specify only an asterisk, all marks are searched.

When Searching Alarms

5. Select the groups to be searched.

   The operating procedure is the same as for “When Searching Special Data.”

6. Select the channels to be searched.

   The operating procedure is the same as for “When Searching Special Data.”

7. Select the alarm type.

   Click the list box and select the alarm type.

   Alarm All: Search all alarms.

   Alarm 1, Alarm 2, Alarm 3, or Alarm 4: Search for the specified Alarm No. (alarm level).

8. Set the alarm condition to be searched.

   Click the list box and select the alarm status.

   Changed: Data position where the alarm changed from ON to OFF or OFF to ON.

   Start: Data position where the alarm ON status started.

   End: Data position where the alarm ON status ended (data position immediately before the alarm turned OFF).

   ON: Data position where the alarm is ON.

   OFF: Data position where the alarm is OFF.

When Searching Measured Data

5. Select the groups to be searched.

The operating procedure is the same as for “When Searching Special Data.”

6. Select the channels to be searched.

The operating procedure is the same as for “When Searching Special Data.”

7. Set the type of comparison. The reference value is set in step 8.

Select the type of comparison from the list box.

==: Search data that are equal to the reference value.

>: Search data that are greater than the reference value.

<: Search data that are less than the reference value.

>=: Search data that are greater than or equal to the reference value.

<=: Search data that are less than or equal to the reference value.

!=: Search data that are not equal to the reference value.

8. Set the reference value.

Click the box and enter the value.

The range of values is from –9999999999 to 9999999999. You can also use exponential notation (example: 32E+5).

Search Direction

9. Select **Opposite** (reverse direction) or **Sequence** (forward direction) using the option button. The search direction depends on the number of cursors that are displayed and the **Opposite** or **Sequence** setting as follows:

Number of Cursors Displayed	Opposite/Sequence	Search Direction
None	Sequence	From the first data point to the last data point.
	Opposite	From the last data point to the first data point.
1 (A and B are at the same position)	Sequence	From the cursor position to the last data point.
	Opposite	From the cursor position to the first data point.
2 (A is in front of B on the time axis)	Sequence	From cursor A to cursor B.
	Opposite	From cursor B to cursor A.

10. Specify the cursor to be displayed at the data position that matched the search conditions. You can specify Cursor A, Cursor B, or Cursor A and B.

11. Click **Run** to execute the search, and the cursor is displayed at the data position that matched the search conditions. The search result (group number, waveform number, and data number) is displayed at the bottom section of the dialog box.

12. If you click **Run** again, the cursor is displayed at the next data position that matched the search conditions, and the search result is displayed at the bottom section of the dialog box.

If there are no data that match the search conditions, **Not Found** is displayed at the bottom section of the dialog box.

13. Click **Close** to close the **Search** dialog box.

- **Example of an Alarm Search**

  This section explains the procedure for searching the point of change of alarm level 1 of channel TAG0005 in the range specified by the cursors.

  1. Display the waveform and specify a range using the cursors.

  2. Click **Search** on the toolbar. The **Search** dialog box opens.

  3. Set the search conditions as follows.

OR/AND:	You do not have to change this, because only one condition will be specified.
Search Type:	Alarm
Group:	You do not have to change this (ALL)
Tag:	TAG0005
Alarm Level:	Alarm 1
Alarm Condition:	Point of Change
2nd Condition:	None

  4. Set the search direction equal to the progression of time.

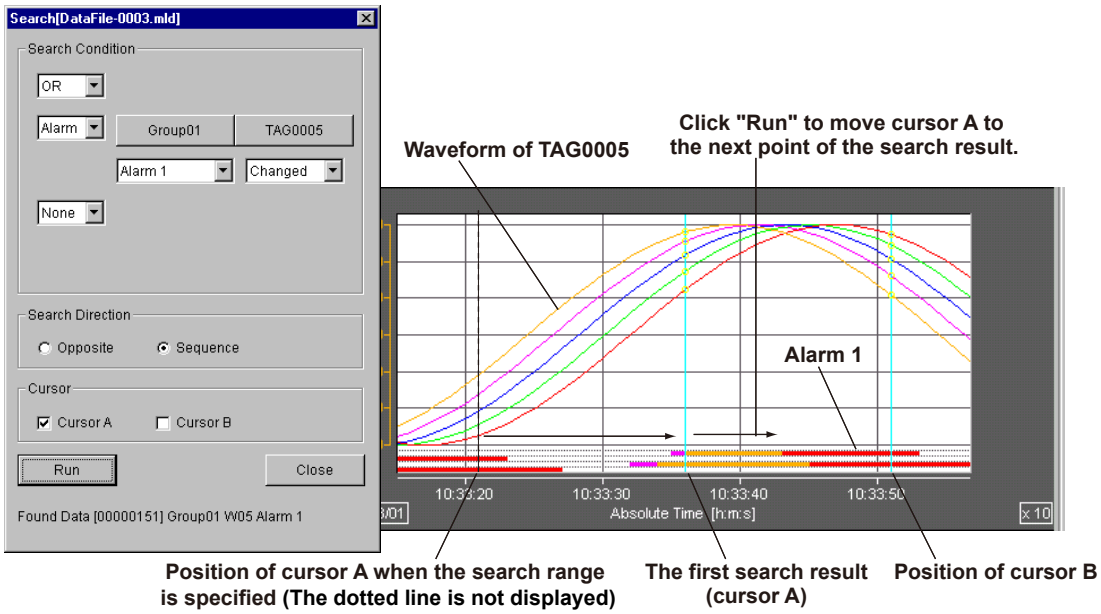
  Click the **Sequence** option button.

  5. Display cursor A at the search result.

  Cursor: Select the cursor A check box.

  6. Click **Run** to execute the search. Cursor A is displayed at the data position where the alarm changed. Data at the cursor position can be read.

  7 . Click **Run** to execute the search again. Cursor A is displayed at the next data position where the alarm (that matches the conditions) changed.

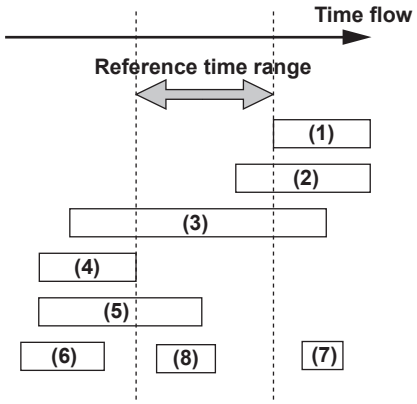


6.7 Linking and Displaying Data Files

File Link and Display Function

Data files that are continuous in time can be linked and displayed. The Historical Viewer can handle data files that have been saved to divided files as a single file.

Data files that are continuous in time



Files that are continuous in time

- **(1), (4) : Files containing data that does not overlap with the reference time range and is continuous with the reference time range.**
- **(2), (3), (5) : Files containing data that overlaps with the reference time range and data in the time range before, after, or both. (Files that are continuous in time must be data files that are created in a single session of logging start and logging end. Even if the above conditions are met, data files that were created during different logging start and logging end operations are not files that are continuous in time.)**

Files that are discontinuous in time

- **(6), (7) : Files that are not continuous with the reference time range**
- **(8) : Files that are contained in the reference time range**

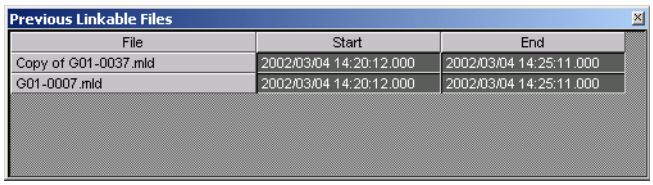
Linking Previous Files

Searches for files containing data that are continuous in time that is before the time range that is currently displayed ((3), (4), and (5) in the above figure) and links the appropriate data file. The files are searched within the same directory as the data file that is currently loaded and displayed.

Procedure

1. Click the **Link previous file** on the toolbar or choose **Link Previous File** from the **File** menu. Data files that can be linked are searched.

2. The following three operations are executed depending on the search result.
   - If a file that can be linked does not exist, linking is not performed, and **Link Previous File** in the **File** menu and the toolbar button become unavailable.
   - If a single file that can be linked is found, the file is automatically linked.
   - If multiple files that can be linked are found, the **Previous Linkable Files** dialog box appears. A list of linkable files is displayed with the start and end times. When linking previous files, the files are displayed in order from those with the oldest start time. Click the name of the file you wish to link to perform the link.



3. When the name of the file you wish to link is selected, a **Select Option** dialog box may appear. Select either process, and click **Select** to perform the link.

Note

- The **Select Option** dialog box appears when adding the selected file causes the number of displayed data points to be 8 KB or more and the load size to be 10 MB or more. For details, see "Opening Data Files" in section 6.1.
- When data files are linked, the extension of the data file name that is displayed on the title bar changes from .mld to .lml (If the extension is already .lml, it is not changed).

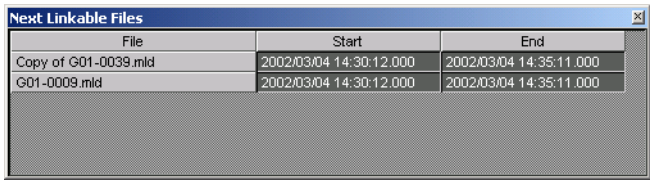
Linking Succeeding Files

Searches for a data file that is continuous in time that is after the time range that is currently displayed ((1), (2), and (3) in the figure on the previous page) and links the appropriate data file. The files are searched within the same directory as the data file that is currently loaded and displayed.

Procedure

1. Click the **Link next file** on the toolbar or choose **Link Next File** from the **File** menu. Data files that can be linked are searched.

2. The following three operations are executed depending on the search result.
   - If a file that can be linked does not exist, linking is not performed, and **Link Next File** in the **File** menu and the toolbar button become unavailable.
   - If a single file that can be linked is found, the file is automatically linked.
   - If multiple files that can be linked are found, the **Next Linkable Files** dialog box appears. A list of linkable files is displayed with the start and end times. When linking succeeding files, the files are displayed in order from those with the oldest start time. Click the name of the file you wish to link to perform the link.



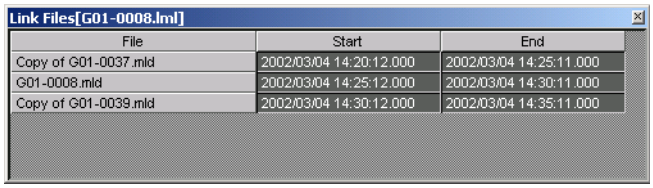
3. When the name of the file you wish to link is selected, a **Select Option** dialog box may appear. For details, see Linking Previous Files in the previous section.

Displaying a List of Linked Files

You can display a list of linked files and check the link condition of the current file.

Procedure

1. Select **Link Files** from the **Window** menu. The **Link Files** dialog box appears.



The displayed information consists of **File**, **Start**, and **End**. The list is displayed in order from the oldest start time.

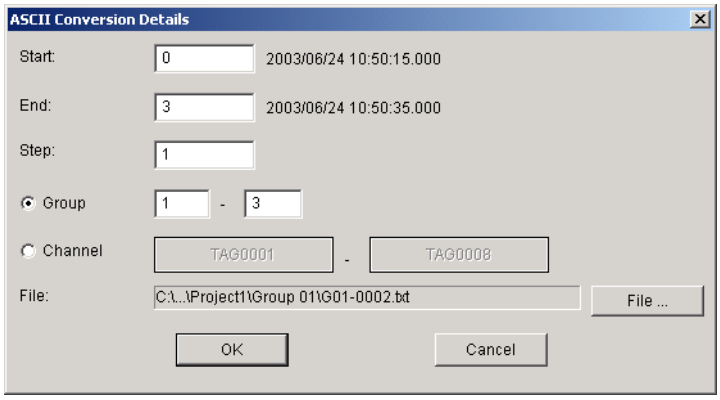
6.8 Converting the Data Format

You can convert data files to ASCII, Lotus, or Excel data format.
The names of the converted files are as follows:

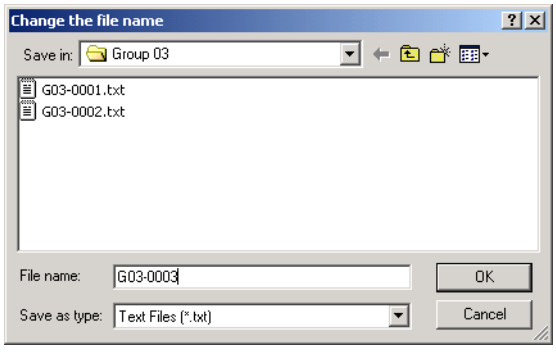
- ASCII conversion: “original file name”.txt
- Excel conversion: “original file name”.xls
  The file can be opened on Excel version 4.0 or later.
- Lotus conversion: “original file name”.wj2
  The file can be opened on Lotus1-2-3 version 2.0 or later.

Procedure

1. Choose **To ASCII**, **To Lotus**, or **To Excel** from the **Convert** menu.
   The conversion dialog box appears.
2. Enter the range of data to be converted (data number for starting the conversion* and data number for ending the conversion*). The logging time is displayed to the right of the text box.
   * The data number is numbered from 0 from the first data point in the file.
3. Enter the step number (**Step**).
   To convert all the data in the specified range, set the step number (**Step**) to 1.



3. To specify the data to be converted using groups, click the **Group** option button to enter the group number in the text box.
   To specify the data to be converted using channel numbers, click the **Tag** option button to press the channel number button.
   A dialog box used to select the channel number appears. Click the desired channel number.
4. 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 appears.



5. Select the destination and the file type and enter the file name.
6. Click **OK**.

   The measured data is converted to the selected data format and saved to the file.

File Conversion Format of Logged Data

The Lotus 1-2-3, Excel, and ASCII file formats are indicated below.

- **Lotus 1-2-3 and Excel File Format**

	A	B	C	D	E	F	G
1	AddMulti R x.xx				License No. xxx-xxxx-xxxxx-****		
2	Start Time		2000/01/03		14:28:42.000		
3	End Time		2000/01/03		14:28:52.000		
4	Sample Rate		1.000	Sec			
5	Data Count		11				
6	Group		01	-	01		
7	Comment 1		Title01		Comment1		
8	Comment 2		Title02		Comment2		
9	Comment 3		Title03		Comment3		
10	Comment 4		Title04		Comment4		
11	Comment 5		Title05		Comment5		
12	Comment 6		Title06		Comment6		
13	Comment 7		Title07		Comment7		
14	Comment 8		Title08		Comment8		
15			Ch. No.	TAG0001	TAG0002	TAG0003	TAG0004
16			Tag No.	TAG0001	TAG0002	TAG0003	TAG0004
17			Tag Comment	DAQLOG-0001	DAQLOG-0002	DAQLOG-0003	DAQLOG-0004
18	Date	Time	Sec	mV	mV	V	mV
19	01/03	14:28:42	0.000	148.6	51.56	1.885	197.9
20	01/03	14:28:43	0.000	161.8	54.48	1.944	199.8
21	01/03	14:28:44	0.000	173.2	56.81	1.982	199.5

- **ASCII File Format**

Title	**CR**	**LF**
Date and time the first data point was logged	**CR**	**LF**
Date and time the last data point was logged	**CR**	**LF**
Data acquisition interval	**CR**	**LF**
Data count	**CR**	**LF**
Group	**CR**	**LF**
Comment (eight lines)	**CR**	**LF**
Channel	**CR**	**LF**
Tag No.	**CR**	**LF**
Tag comment	**CR**	**LF**
Unit	**CR**	**LF**
Date format	**CR**	**LF**
Time when the data was measured and the measured data (Repeat the number of data points)	**CR**	**LF**

- **Title**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
"	A	d	d	M	u	l	t	i		(	R		X	.	X	X	)		

21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
	S	o	f	t	w	a	r	e		I	D		1	2	3	-	4	5	6

41	42	43	44	45	46	47	48	49	50
7	8	-	9	0	1	2	"	CR	LF

RX.XX is the software revision number. Software ID is the license number.

- **Date and Time the First Data Point Was Logged**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
"	S	t	a	r	t		T	I	m	e	"	,	"	2	0	0	2	/	0

21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
3	/	3	1	"	,	"	0	1	:	0	2	:	0	0	.	5	0	0	"

41	42
CR	LF

- **Date and Time the Last Data Point Was Logged**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
"	E	n	d				T	i	m	e	"	,	"	2	0	0	2	/	0

21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
3	/	3	1	"	,	"	2	3	:	5	9	:	5	9	.	0	0	0	"

41	42
CR	LF

- **Data Acquisition Interval**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
"	S	a	m	p	l	e		R	a	t	e		(	S	e	c	)	"	,

21	22	23	24	25	26	27	28	29	30	31
Data acquisition interval									CR	LF

Data acquisition interval example (top section: 0.5 s, bottom section: 60 s)

21	22	23	24	25	26	27	28	29
				0	.	5	0	0
			6	0	.	0	0	0

• Data Count

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
"	D	a	t	a		C	o	u	n	t	"	,	Data count						

21	22	23	24
		CR	LF

Data count example (top section: 100 points, bottom section: 120000 points)

15	16	17	18	19	20	21	22
					1	0	0
		1	2	0	0	0	0

• Group

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
"	G	r	o	u	p	"	,	"	0	2	-	1	0	"

If you converted the data by specifying groups, the range of groups is displayed.
If you converted the data by specifying channels (tags), spaces are inserted for the group range.

• Comment

Example when the comment number is 1

1	2	3	4	5	6	7	8	9	10	11	12	13	14 . . . 29	30	31
"	C	o	m	m	e	n	t		1	"	,	"	Title 16 characters	"	,

32	33 96	97
"	Comment 64 characters	"

• Channel

1	2	3	4	5	6	7	8	9 . . . . . ?
"	C	H	.		N	o	.	" Channel 1 " ,

? . . . . . ?		?	?
" Channel 2 " ,	. . . . .	CR	LF

The length occupied by a single channel varies depending on the length of the character string.
Each channel is enclosed in quotations. Thus, the length occupied by a single channel is
"the length of the channel character string + 2."

Channel example (when the first channels is "CH0001" and the second channel is "CH0002")

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
"	C	H	0	0	0	1	"	,	"	0	0	0	2	"	,

• Tag No.

1	2	3	4	5	6	7	8	9 . . . . . ?
"	T	a	g		N	o	.	" Tag No. 1 " ,

? . . . . . ?		?	?
" Tag No. 2 " ,	. . . . .	CR	LF

The length occupied by a single tag No. varies depending on the length of the character string.
Each tag No. is enclosed in quotations.
Thus, the length occupied by a single tag No. is "the length of the tag No. + 2."

Tag No. example (when the first tag No. is "TAGNO01" and the second tag No. is "002")

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
"	T	A	G	N	O	0	1	"	,	"	0	0	2	"	,

• Tag Comment

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15 · · · · ?
"	T	a	g		C	o	m	m	e	n	t	"	,	" Tag comment 1 " ,

? . . . . . ?		?	?
" Tag comment 2 " ,	. . . . .	CR	LF

The length occupied by a tag comment varies depending on the length of the character string.
Each tag comment is enclosed in quotations.
Thus, the length occupied by a single tag comment is "the length of the tag comment + 2."

Tag comment example (when the first tag comment is "TAG0001" and the second tag comment is "0002")

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
"	T	A	G	0	0	0	1	"	,	"	0	0	0	2	"	,	"

• Unit

1	2	3	4	5	6	7	8	· · · ·	?	· · · · ·
"	U	n	i	t	"	,	"	Unit 1 "	,	" Unit 2 "

?		?	?
,	. . . . .	CR	LF

The length occupied by a single unit varies depending on the length of the character string.
Each unit is enclosed in quotations.
Thus, the length occupied by a single unit is "the length of the unit + 2."

Unit example (when the first unit is "V" and the second unit is "mV")

8	9	10	11	12	13	14	15	16	17
"	V	"	,	"	m	V	"	,	"

• Date Format

For absolute time

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
"	Y	Y	Y	Y	/	M	M	/	D	D		H	H	:	m	m	:	S	S

21	22	23	24	25
.	S	S	S	"

For relative time

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
"	D	D	D		H	H	:	m	m	:	S	S	.	S	S	S	"

• Time When the Data Was Measured and the Measured Data

For absolute time

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
"	Y	Y	Y	Y	-	M	M	-	D	D		H	H	:	m	m	:	S	S

21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
.	S	S	S	"	,	Measured value 1									,	Measured value 2			

41	42	43	44	45	46													?	?
					,	.	.	.	.	.	.	.	.	.	.	.	.	CR	LF

For relative time

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
"	D	D	D		H	H	:	m	m	:	S	S	.	S	S	S	"	,	

21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Value						,	Value											,	

41	42	43	44	45	46	47	48											?	?
Value								,	.	.	.	.	.	.	.	.	.	CR	LF

The length occupied by an absolute time is fixed to 25 characters.
The length occupied by a relative time is fixed to 18 characters.
The length occupied by a single measured value is fixed to 9 characters.

Absolute time example (for 10:30:10.5 on March 31, 2002)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
"	2	0	0	2	/	0	3	/	3	1		1	0	:	3	0	:	1	0

21	22	23	24	25	26
.	5	0	0	"	,

Relative time example (for 10:30:10.5 on the third day)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
"	0	0	3		1	0	:	3	0	:	1	0	.	5	0	0	"

Measured data example (top section: 10.12, bottom section: 1200.0)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
				1	0	.	1	2	,
			1	2	0	0	.	0	,

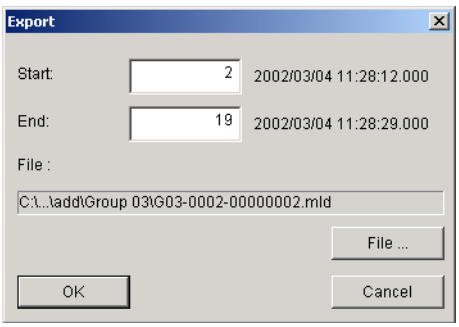
6.9 Exporting Data

You can cut out (copy) a section of a data file and save the result. This operation does not change the original data.

Procedure

1. Select the range of data to be cut out using the cursors.
2. Choose **Export** from the **Convert** menu.

   The **Export** dialog box opens.



3. The range that was selected by the cursors is indicated in the **Start** and **End** boxes using data numbers. The logging time is displayed to the right of the text box.

   To change the data range to be exported, enter values in the appropriate boxes.
4. Click **File** to open the **Change the file name** dialog box. Change the file name and destination as necessary and click **OK**.

Note

The default file name is as follows:
"Original file name"-"first data number (8 digits) of the range to be exported".mld

5. Click **OK** to create the file and close the dialog box. Click **Cancel** to close the dialog box without creating the file.

6.10 Printing the Data

You can print out the measured data that is displayed on the Historical Viewer.

Setting the Printer

Set the printer used to print the data.
Printer setup operation is the same as that of the standard Windows print command.

Procedure

1. Choose **Print Setup** from the **File** menu.
   The **Print Setup** dialog box opens.
2. Set the items in the dialog box, and then click **OK**.

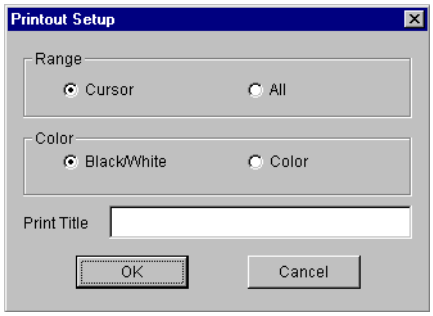
Note

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

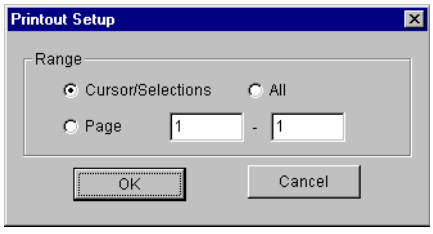
Previewing the Printout

Procedure

1. Select **Print Preview** from the **File** menu.
   The **Printout Setup** dialog box opens.
2. Specify the print range and other information.
   For graphs, click the option button to set the **Range** and **Color**. Enter the **Print Title** as necessary.



For sheets, specify the print range.



3. Click **OK**.
   The print preview window is displayed.

Note

For the print preview operation, see the instruction manual that came with your operating system.

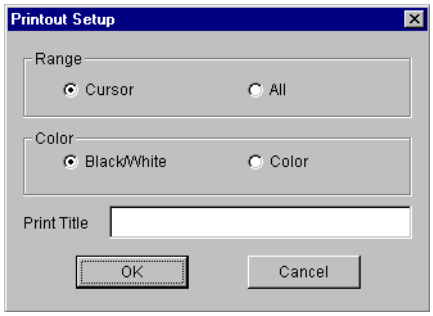
Printing the Data

Procedure

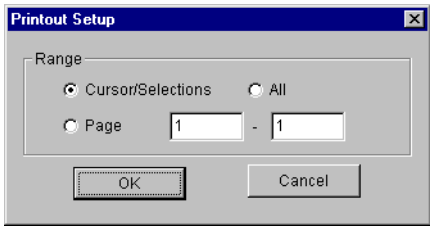
1. Click **Print** on the toolbar or choose **Print** from the **File** menu.

2. Specify the print range and other information.

   For graphs, click the option button to set the **Range** and **Color**. Enter the **Print Title** as necessary.

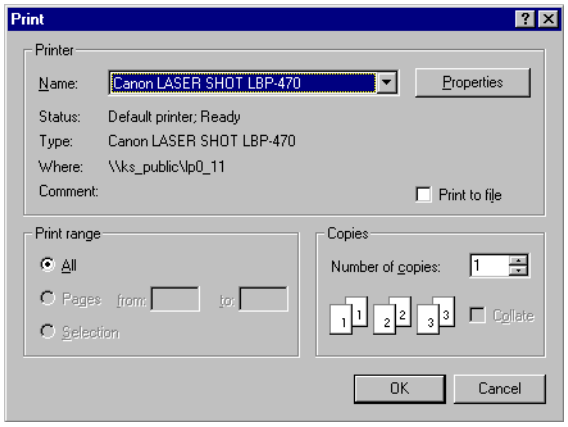


   For sheets, specify the print range.



3. Click **OK**.

   The Print dialog box opens.



4. Set **Name** and **Number of copies** and click **OK**.

   Printing starts.

Note

The **Print Range** on the **Print** dialog box is void. The **Range** specified on the **Printout Setup** dialog box is used.

6.11 Saving the Display Settings, Saving the Link Settings, and Quitting the Historical Viewer

When quitting the Historical Viewer, the display settings can be saved. The next time the Historical Viewer is started the display settings are restored.
You can also save the display settings by choosing **Save Display Setting** from the **File** menu. When multiple data files are linked and displayed using the file link display function of section 6.7, the display settings at that point is saved, and the link settings are saved as a link file. If the link file is loaded the next time the Historical Viewer is started, the link settings are also restored and displayed.

The information that is saved to the display settings file is as follows:

- Print title
- Cursor A and Cursor B positions
- ON/OFF condition of the waveform display limiter
- Settings specified in the General Display Settings
- Mark information
- Zoom factor of the time axis
- Display mode of the time axis (absolute/relative)
- Waveform display area
- The background and grid color of the waveform display area
- Y-axis zone setting
- The active waveform
- Selected group
- ON/OFF condition of the alarm display
- Displayed channel identifier (channel, tag No., or tag comment)
- Group name
- Grid density

Saving the Display Settings

Save the display settings of the data file. The display conditions are saved to a file with ".dml" extension in the same folder as the data file. When multiple files are linked, the link status is saved to the link file (.lml extension) in addition to the display settings.

Procedure

Click **Save Display Setting** on the toolbar or choose **Save Display Setting** from the **File** menu.
The display settings are saved.

Save Display Setting

Saving the Display Settings and Link Settings

Save the link file by specifying the file name. This operation is possible only when a linked data file is displayed.

Procedure

1. Choose **Save Display Setting As** from the **File** menu.
2. The **Select File** dialog box opens. Specify the destination and file name and click **OK**.

   The link file and display settings file are saved.

Note

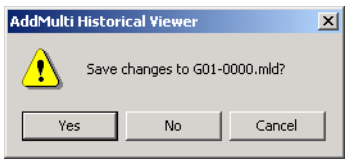
When reverting the link condition by loading a link file, the data files that are to be linked must reside in the same folder as the link file.

Quitting the Historical Viewer

If there are unsaved display settings, a confirmation message appears for you to decide whether to save the settings. Save the settings according to the message.

Procedure

1. Choose **Exit** from the **File** menu or click the **X** button at the right end of the title bar.



2. If there are unsaved display settings, a confirmation message appears for you to decide whether to save the settings.

   Click **Yes**, **No**, or **Cancel**.

   Yes: Saves the display settings and closes the Historical Viewer.

   No: Does not save the display settings and closes the Historical Viewer.

   Cancel: Cancels the operation of quitting the Historical Viewer.

7.1 Messages and Corrective Actions

A message may appear on the screen during operation. This section describes the meanings of the messages and their corrective actions.

Code	Message	Corrective Action
E0002	Insufficient memory. Please exit at once.	Exit all other programs and restart AddMulti. Or, restart Windows.
E0003	Cannot open shared memory.	Exit all other programs and restart AddMulti. Or, restart Windows.
E0004	Invalid serial number.	Please reinstall the software.
E0101	Please open from the AddMulti launcher.	Please open from the AddMulti launcher.
E0213	Cannot open the file.	Check whether the file exists, whether the file is of a type that the software supports, and whether the file system is operating normally.
E0211	Cannot write to the file.	Check whether there is sufficient space on the hard disk, whether writing is permitted, and whether the file system is operating normally.
E3556	Different server type. Port No. is already in use.	The port number that is displayed when you choose **Port No. for the internal communication** from the **File** menu on the Launcher is already in use by another software.Set an unused port number for the internal communication.
E4202	The number limit of client connections was exceeded!	The number of clients that are connected to the monitor server of the destination data logger software has been exceeded. Disconnect a client that is connected to the monitor server of the data logging software and connect AddMulti.
E4203	A client with the same ID is connected from another PC.	AddMulti that has been installed with the same serial number is already connected to the monitor server of the data logging software. Reinstall the software using another serial number or disconnect AddMulti that is currently connected.
E4205	Connection was dropped.	Check whether the monitor server of the destination data logging software is running and whether the network is connected properly.
E4206	TCP/IP initialization error. Please check the TCP/IP.	Check whether TCP is operating normally.
E4207	Connection failure. Please check the host name, port No., and server.	Check the destination host name, port number, whether the monitor server of the destination data logging software is running, and whether the network is connected properly.
E4208	Time limit has passed.	Check whether the monitor server of the data logging software is running and whether the network is connected properly.
E4209	Maximum packet size exceeded.	The destination is not a monitor server that AddMulti supports. Check whether the destination is a monitor server.
E4210	System number incorrect.	Check whether the specified system number exists on the data acquisition software to be connected.
E4213	Failed to create folder.	Specify a folder name using 256 characters or fewer.
E4214	Invalid folder name.	Folder name that starts with a period is not allowed. Enter a correct folder name.
E4215	Connection to this monitor server is not allowed.	Check whether the destination is a monitor server that AddMulti supports.
E4254	Password and confirmation mismatch.	Enter the same characters for the password and password confirmation.
E4255	Invalid password.	Enter the correct password.
E4256	Cannot exit AddMulti Launcher while scanning/ recording is in progress.	Stop the scanning first, and then exit the Launcher.
E4257	Cannot contain any of the following characters:\ / : , ; * ? " < > |	Specify other characters that can be used.
E4259	Cannot exit AddMulti Launcher while Desktop protection is active.	Clear the desktop protection first, and then exit the Launcher
E4260	Cannot exit AddMulti Launcher while Password protection is active.	Clear the password protection first, and then exit the Launcher.

7.1 Messages and Corrective Actions

Code	Message	Corrective Action
E4261	Cannot shut down Windows while AddMulti is being used.	Shut down or log off after exiting the Launcher.
E4262	A project with the same name already exists.	A name of a registered project cannot be used. Create a project with a different name.
E4275	Invalid Project name.	Project name that starts with a period is not allowed. Enter a correct project name.
E4301	There are no effective channels.	Recording cannot be executed if channels are not assigned in the logging settings or if channels are assigned but valid channels do not exist. Assign a valid channel.
E4302	Recording was stopped since a monitor server setting may have been changed.	A setting has been changed on the destination data logging software. To start recording, carry out the step to start the recording again on the Launcher.
E4304	Failed to open the data file.	Check whether there is sufficient space on the hard disk, whether the destination folder exists, whether writing is permitted on the folder, and whether the file system is operating normally.
E4305	Failed to write to the data file.	Check whether there is sufficient space on the hard disk, whether the destination folder exists, whether writing is permitted on the folder, and whether the file system is operating normally.
E4307	The monitor server has no data.	Start data logging on the destination data logging software.
E4308	The monitor server has stopped.	Start the monitor server on the destination data logging software.
E4309	Monitor server stopped.	Start the monitor server of the data acquisition software to be connected, then start data acquisition.
E4351	Port No. for the internal communication is already in use.	The port number that is displayed when you choose **Port No. for the internal communication** from the **File** menu on the Launcher is already in use by another software.Set an unused port number for the internal communication.
E4352	The new Port No. for the internal communication will be effective after restarting the server.	To make the new port number for the internal communication effective, restart the Launcher.
E4451	Failed to convert data files.	Failed to automatically convert the file. Check whether there is sufficient space on the hard disk, whether the destination folder exists, whether writing is permitted on the folder, and whether the file system is operating normally.

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