User's Manual

FXA120
DAQSTANDARD for FX1000
Hardware Configurator

vigilantplant.®

YOKOGAWA
Yokogawa Electric Corporation

IM 04L21B01-64EN
3rd Edition

Thank you for purchasing DAQSTANDARD for FX1000 (model name: FXA120, hereafter referred to as DAQSTANDARD). This manual explains how to use DAQSTANDARD Hardware Configurator. Please read this manual carefully before operating the software to ensure its correct use.

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Revisions

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End of document

How to Use This Manual

Structure of the Manual

This manual consists of the following three chapters and index.

Chapter	Title	Content
1	Before using the DAQSTANDARD	Explains the PC system environment required for use of the DAQSTANDARD. Also explains how to install it.
2	Configuring the FX1000	Explains how to configure the FX1000 measurement conditions and other settings.
3	Troubleshooting	Gives a list of error messages and corrective measures.
Index		Gives a list of important terms used in this manual.

Scope of this Manual

This manual does not explain the basic operations of your PC's operating system (OS). For such descriptions, refer to the Windows User's Guide etc.

Conventions Used in This Manual

- **Unit**
  K ..... Indicates "1024". (Example: 100 KB)
- **Menus, commands, dialog boxes and buttons**
  Enclosed in [ ].
- **Note**
  Provides useful information regarding operation of the software.

About Images

The images that appear in this manual may be different from those that appear on the software, but not to a degree that interferes with procedural explanations.

Products Covered in This Manual

Item	Described in This Manual
FX1000	Up to firmware version R1.1x. In the explanations in this manual, this is referred to as the "FX."
DAQSTANDARD for FX1000 Hardware Configurator	Up to version R9.03.xx.

Revision History

Edition	Additions and Changes
1	New edition
2	Revised for upgrade to 9.02 Release: (Added) Italian, Spanish, Portuguese, Russian, and Korean as display language. Improvements to descriptions.
3	Revised for upgrade to 9.03 Release: (Added) Pseudo log and nonlinear log settings of the FX1000 (firmware version R1.11 or later.) Improvements to descriptions.

Contents

1.1 Overview of DAQSTANDARD

DAQSTANDARD Software Package

DAQSTANDARD consists of the following two software applications.

- Viewer
- Hardware Configurator
  This manual explains the Hardware Configurator.

- **Viewer**
  Data Viewer displays the values and waveforms of the measured data from the recorder and prints them.

- **Hardware Configurator**
  Hardware Configurator is a software application for creating setup data for the recorder. It can send setup files that you have created to the recorder and save them to storage media.

About Hardware Configurator

Creating Setup Data

You can use one of the following three methods to create setup data:

- Specify a new device and options.
- Edit setup data that is stored on an external storage medium or the PC.
- Edit setup data received from the recorder.

Configuring the Recorder

You can use one of the following two methods to configure the recorder:

- Load the settings to the recorder from a CF card or other external storage medium.
- Send the setup data to the recorder.

Printing Setup Data

You can print setup data.

Recorder Information Acquisition

You can acquire the recorder’s device information through communication.

1.2 PC System Requirements

Hardware

Personal Computer

A computer which runs on Windows XP, Windows Vista, or Windows 7.

CPU and Main Memory

- **When Using Windows XP**
  Pentium III, 600 MHz or faster Intel x64 or x86 processor; 128 MB or more of memory
- **When Using Windows Vista**
  Pentium 4, 3 GHz or faster Intel x64 or x86 processor; 2 GB or more of memory
- **When Using Windows 7**
  32-bit edition: Intel Pentium 4, 3 GHz or faster x64 or x86 processor; 2 GB or more of memory
  64-bit edition: Intel x64 processor that is equivalent to Intel Pentium 4, 3 GHz or faster; 2 GB or more of memory

Hard Disk

Free space of 100 MB or more (more space may be required, depending on the amount of data stored).

CD-ROM Drive

One CD-ROM drive.

Mouse

A mouse supported by Windows.

Monitor

A video card that is recommended for the OS and a display that is supported by the OS, has a resolution of 1024×768 or higher, and that can show 65,536 colors (16-bit, high color) or more.

Interface Port

When communicating through RS-232, use a COM port (COM1, COM2, COM3, or COM4) supported by Windows.
When communicating through RS-422/RS-485, connect a converter to an RS-232 port.
To communicate through an Ethernet connection, you need an Ethernet card supported by Windows. Also, the TCP/IP protocol must be installed.

Printer

A printer supported by Windows is required. An appropriate printer driver is also required.

Operating System (OS)

OS	Version
Windows XP	Home Edition SP3
	Professional SP3 (excluding x64 Editions)
Windows Vista	Home Premium SP2 (excluding 64-bit editions)
	Business SP2 (excluding 64-bit editions)
Windows 7	Home Premium, SP1 (32- or 64-bit edition)
	Professional, SP1 (32- or 64-bit edition)

Note

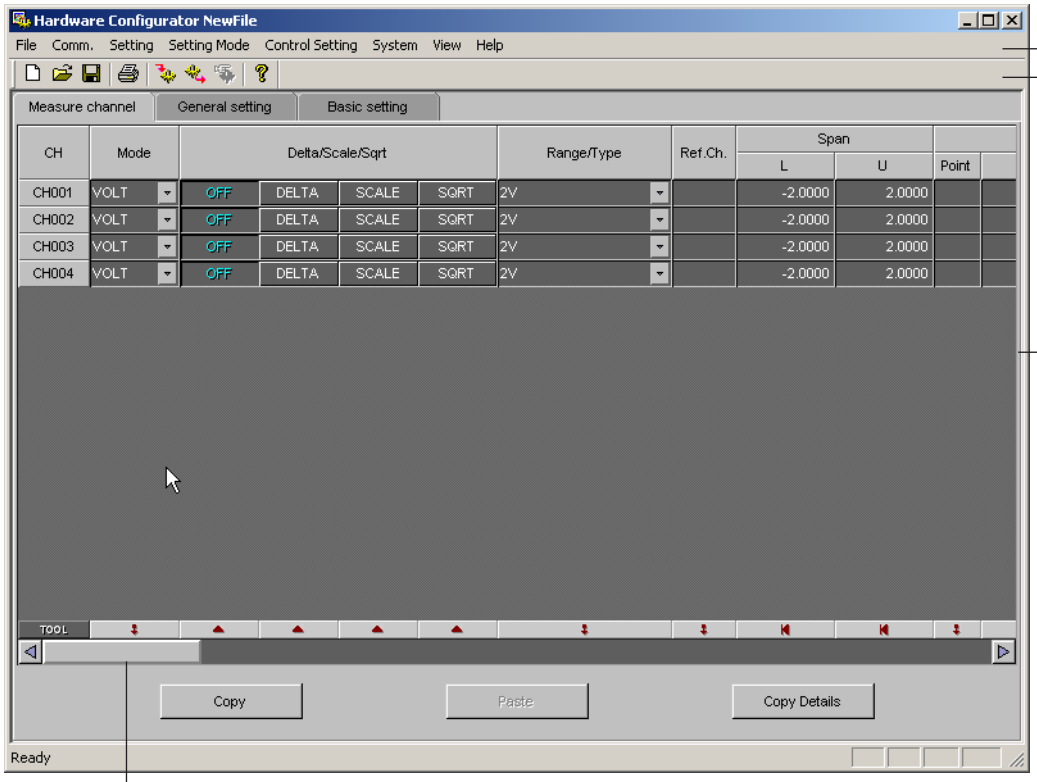
- The time zone can be set in [Date/Time] which can be opened from [Control Panel].
- If daylight saving time is used, mark the check box of “Automatically adjust clock for daylight saving changes.”
- The time zone should not be set using the autoexec.bat file. If “TZ=GTM0” is set in the file, specify “rem” to disable it.
- Data created in 2038 or later cannot be handled.
- The font “Courier New” needs to be installed on your personal computer.

1.3 Starting/Exiting the Software

Starting

From the Start menu, select [All Programs] - [DAQSTANDARD] - [Hardware Configurator].

Hardware Configurator starts, and the following window appears.



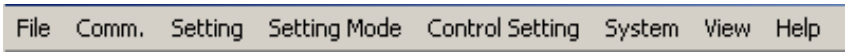
Exiting

To exit Hardware Configurator, select [File] - [Exit], or click the [X] button.

1.4 Menu Bar and ToolBar

Menu Bar

Only the menu items that can be selected are available.



Menu			Description
File	New		Creates new setup data.
	Open		Opens setup data that has been saved in the past.
	Save		Overwrites the current file.
	Save As		Saves to a specified file name.
	Restore Original		See the explanation later in this section.
	Print Format Settings		See section 1.5.
	Print		Prints data.
	Print Preview		Displays a print preview.
	Print Setup		Set up the printer.
	Exit		Exits the software.
Comm.*	Receive Setting		Receives setup data from the recorder.
	Send Setting		Sends setup data to the recorder.
	Action	Hardware Info	Receives the device information from the recorder and displays it.
		Memory&Math Start	Starts memory sampling.
		Memory&Math Stop	Stops memory sampling.
	Partial Transfer	Address Settings	See section 2.7.
Setting	Meas Channels		This item appears for the FX.
	Math Channels		
	Ext. Channels		Not used.
	General Setting	(Submenu)	This item appears for the FX.
	Basic Setting	(Submenu)	
	Initialize		
	Load Changed Settings		See the explanation later in this section.
Setting Mode	SET (Regular) Setting	(Submenu)	Not used.
	SETUP (Basic) Setting	(Submenu)	
	Initialize		
Control Setting	SET (Regular) Setting	(Submenu)	Not used.
	SETUP (Basic) Setting	(Submenu)	
	Program Pattern Setting	(Submenu)	
System	System Configuration		Set the setup data system configuration.
	Data Adjustment		Not used.
View	Standard Toolbar		Shows or hides the toolbar.
	Status bar		Shows or hides the status bar.
	Data Adjustment Dialog		Not used.
Help	About		Shows the version. See section 1.6.
	User's Manual		Shows the user's manual.

* This can only be used on FXs that have a communication interface (/C2, /C3, or /C7 option).

About [File] - [Restore Original]

When you select [File] - [Restore Original], the data from the last time one of the following operations was performed is restored.

- [File] - [New]
- [File] - [Open]
- [File] - [Save]
- [File] - [Save As]
- [Comm.] - [Receive Setting]
- [Comm.] - [Send Setting]
- [Comm.] - [Partial Transfer]
- [System] - [System Configuration]

About [Setting] - [Load Changed Settings]

You can change the settings on the currently displayed setting screen to those of a specified setup file.

1. Select [Setting] - [Load Changed Settings].
   The [Open] dialog box appears.

2. Specify a file, and click [Open].
   The contents of the displayed setting screen are changed to those of the specified file.

Note

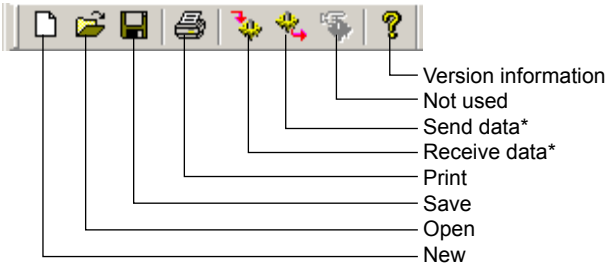
- Only the settings on the displayed setting screen are changed.
- Settings that do not match those of the setup data that you are currently editing are not loaded.
- Settings that are not included in the setup data that you are currently editing are not loaded.

Displaying the Manual

Select [Help] - [User's Manual]. A PDF of the manual appears.

Toolbar

Only the icons of tools that can be used are available.



* This can only be used on FXs that have a communication interface (/C2, /C3, or /C7 option).

1.5 Displaying the Version Information

Procedure

1. Select [Help] - [About] on the menu bar.
   The [About] dialog box appears.

2. Click [OK] to close the [About] dialog box.

2.1 Displaying Setup Data

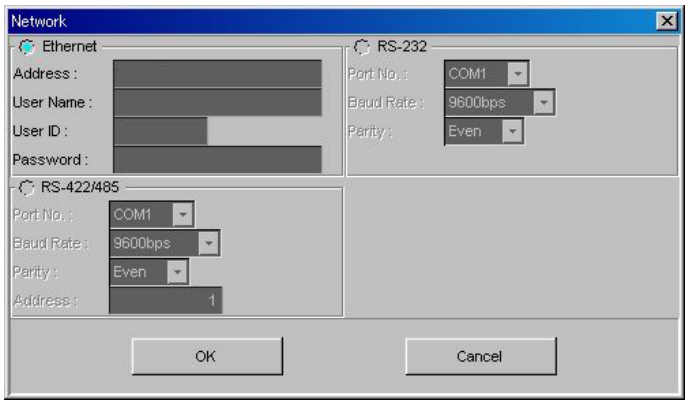
The Hardware Configurator can transmit and receive the setup data, change the setup data, and create new setup data. The settings on the setting screen vary depending on the specifications of the connected FX.
The setting screen may differ from your actual screen.

Loading Setup Data from the FX

This procedure can only be performed on FXs that have a communication interface (/C2, /C3, or /C7 option). Before performing the following procedure, please make sure that the communication method and parameters are correct.

1. Click the [Receive Data] button, or select [Comm.] - [Receive Setting] from the menu bar.
The [Network] dialog box appears.

2. Enter the parameters, and click the [OK] button.

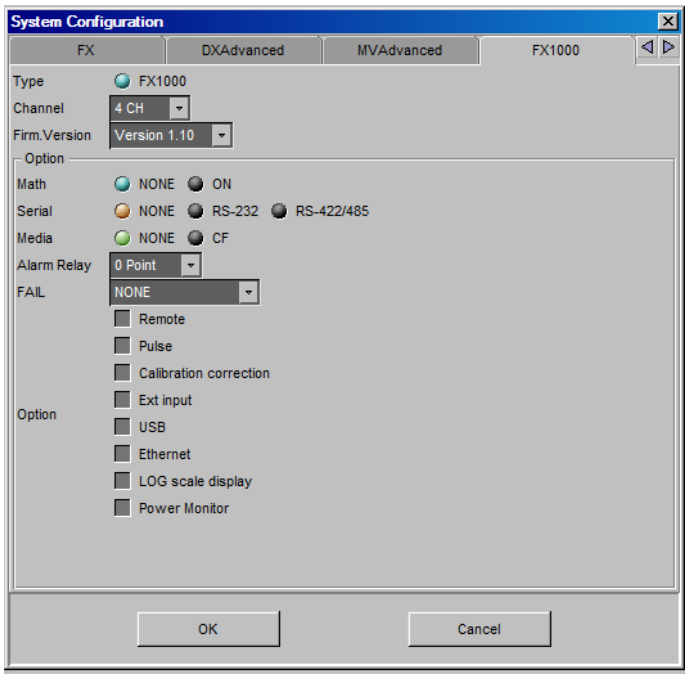


The [Receive Data] dialog box appears.

3. Click the [OK] button.
The software receives the setup data from the FX and displays it.

Creating Setup Data by Configuring a New System

1. Click the [New] button, or choose [File] - [New] from the menu bar.
   The [System Configuration] dialog box opens. Click the [FX1000] tab.



Item	Setting	Explanation
Channel	2CH	FX1002
	4CH	FX1004
	6CH	FX1006
	8CH	FX1008
	10CH	FX1010
	12CH	FX1012
Firm.Version	(Version number)	FX firmware version*
Math	ON	/M1 option
Serial	RS-232	/C2 option
	RS-422/485	/C3 option
Media	NONE	No CF card slot
	CF	CF card slot present
Alarm Relay	2 Point	/A1 option
	4 Point	/A2 option
	6 Point	/A3 option
	12 Point	/A4A option
FAIL	FAIL and status output relays	/F1 option
Remote		/R1 option
Pulse		/PM1 option
Calibration correction		/CC1 option
Ext input		/N3F option
USB		/USB1 option
Ethernet		/C7 option
LOG scale display		/LG1 option
Power Monitor		/PWR1 option

* Select the number of the FX1000 firmware. If the firmware version is R1.11, select [Version 1.10] from the list.

2. Enter all settings on the [FX1000] tab, then click the [OK] button. The FX setting screen in displayed.

Loading Existing Setup Data

1. Click the [Open] button, or choose [File] - [Open] from the menu bar.
The [Open] dialog box is displayed.

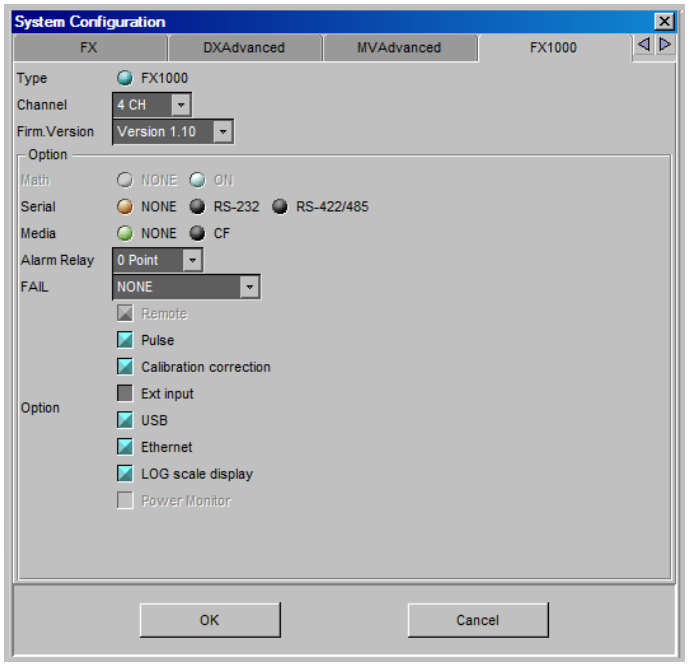
2. Select a setup data file (with the .PDL extension).

2.2 Setting and Checking the System Configuration and Initializing Setup Data

Changing/Checking the System Configuration

You can create new hardware configuration files, or open existing configuration files and then check the system configuration or change the configuration according to the specifications of the connected FX.
Normally, a system is set up according to the specifications of the FX to be set up.

1. Choose [System] - [System Configuration] from the menu bar.
   The [System Configuration] dialog box opens.
   Click the [FX1000] tab.



2. Change the various settings according to the FX that you will connect to (Blue, orange, and green are used to indicate the selected items. Gray is used to indicate the items that are not selected.).
   The settings in the Option group differ depending on the model and options of the instrument.
   For example, if you select [Pulse] (the check box is displayed in blue), you cannot select [Math] or [Remote].

3. After changing the configuration and clicking the [OK] button, the message, “System configuration has been changed. The input configuration and data will be initialized. Continue?” appears.

4. Click the [OK] button to initialize the data.

Initializing the Setup Data

1. Choose [Setting] - [Initialize] from the menu bar.
   The [Initialize] dialog box opens.

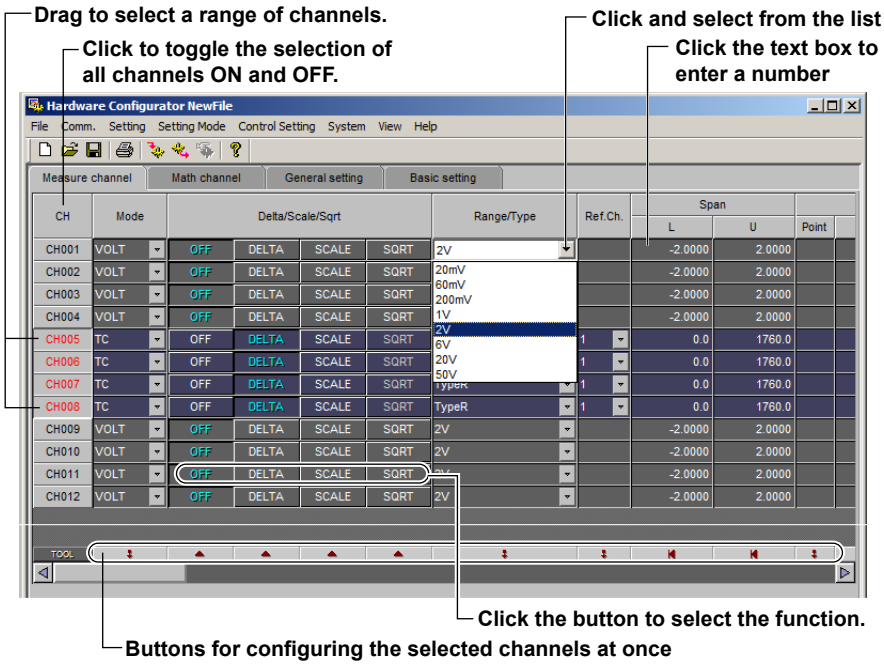
2. Click the [OK] button to initialize the current settings.
   The changed settings are restored to the condition when they were newly created.

2.3 Setting the Measurement Channels

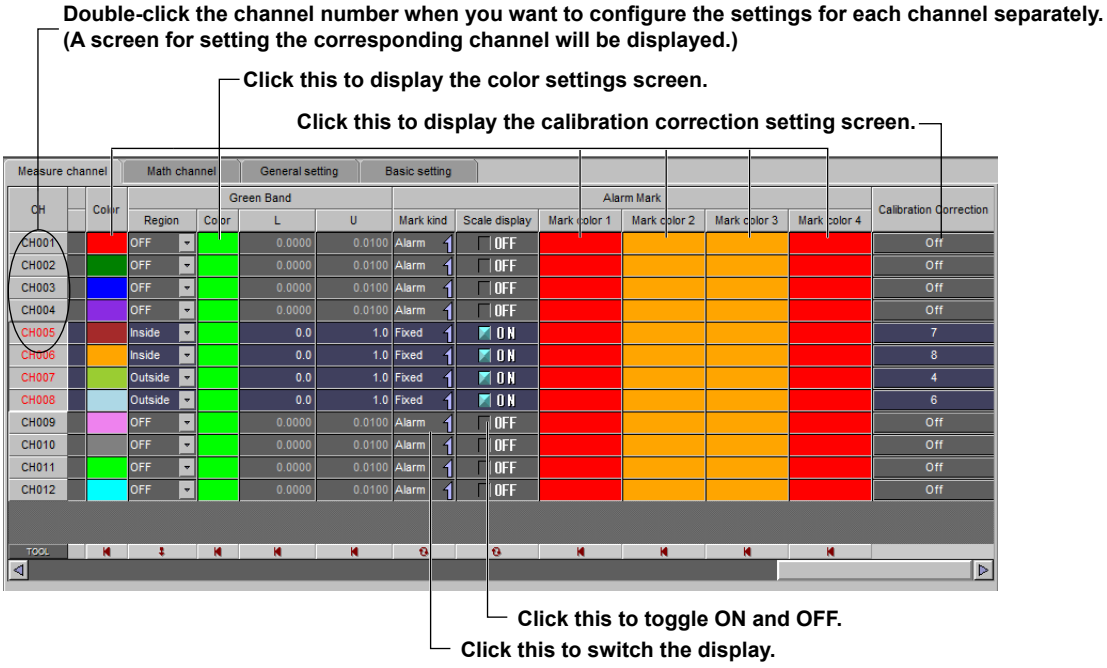
The items that you can configure vary depending on the system configuration and the settings.

Setting Operation

You can select a range of channels and set each item at once.



The range select shortcut buttons are effective on the channel range selected. If no channels are selected, the range select shortcut buttons are effective on all channels. For the function of each button, see next page.



Buttons for Configuring the Selected Channels at Once

Copies the settings of the first channel

Set all channels at once.

Turns all channels ON or OFF

Initializes all channels

Set all values to their minimum settable values.

Set all values to their maximum settable values.

Input Type (Mode and Range/Type)

Delta, scaling, and square root are supported for the various modes as shown below.

Mode	Delta, Scaling, and Square Root					
	OFF	DELTA	SCALE	SQRT	LogType1	LogType2
SKIP	No	No	No	No	No	No
VOLT	Yes	Yes	Yes	Yes	Yes	Yes
TC	Yes	Yes	Yes	No	No	No
RTD	Yes	Yes	Yes	No	No	No
DI	Yes	Yes	Yes	No	No	No
1-5 V	No	No	Yes	No	No	No

The values in the Range/Type list box vary depending on the above settings.

- **Span L, Span U**
  Input range. You cannot enter values that are outside of the range.

Note

- You cannot set the same value to [Span L] and [Span U].
- When [Delta/Scale/Sqrt/LOG Scale] is set to [Sqrt], [LogType1], or [LogType2], or [Mode] is set to [1-5V], you can only set [Span L] to a value that is less than [Span U].

Linear Scaling (SCALE)

Converts the unit to obtain the measured value.

- **Scale L, Scale U**
  Input range after converting the unit. The selectable range is from –30000 to 30000.
- **Point**
  Set the number of digits to the right the decimal to four digits or less.

Note

- The FX converts the measured value to a value obtained by removing the decimal point from the value span specified by [Scale L] and [Scale U]. For example, if the scale setting is "–5 to 5," the value is converted to a value within the span of "10"; if the scale setting is "–5.0 to 5.0," the value is converted to a value within a span of "100." In this case, the resolution of the value converted to a span of "10" is lower than the value converted to a span of "100." To prevent the display from becoming rough, it is recommended that the scale be set so that this value is greater than 100.
- You cannot set the same value to [Scale L and [Scale U].
- When the [Mode] is [1-5V] or [Sqrt], [Scale L] must be less than [Scale U].

Difference Computation (DELTA)

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

Ref. CH

The reference channel for difference computation.

Note

If you set the reference channel of a differential computation between channels to a channel that is set to [LogType1] or [LogType2], an error will be returned as the measured result of the differential computation between channels.

Square Root

Computes and displays the square root of the input. This setting can be used only when the input mode is set to VOLT (voltage). As necessary, set the span, scale, and unit. You can only configure the settings such that [Scale_L] is less than [Scale_U].

Unit

Enter the unit using up to six characters.

Log Scale (LogType1 and LogType2)

When you use the log scale (/LG1 option), set the scale upper and lower limits and alarm values by specifying the mantissas and exponents.

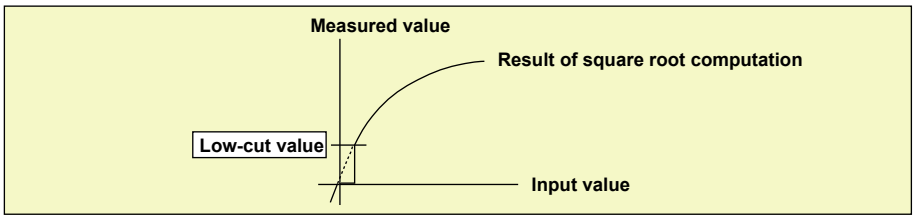
Type	Item	Setting	Conditions
LogType1 (lower limit < upper limit)	Lower limit mantissa	1.00 to 9.99	
	Lower limit exponent	Integer between –15 and 15 1 ≤ |upper limit – lower limit| ≤ 15	The lower limit mantissa must be 1.00.
		Integer between –15 and 15. 2 ≤ |upper limit – lower limit| ≤ 15	The lower limit mantissa must be a value other than 1.00.
	Upper limit mantissa	1.00 to 9.99	
	Upper limit exponent	Integer between –15 and 15 1 ≤ |upper limit – lower limit| ≤ 15	The lower limit mantissa must be 1.00.
		Integer between –15 and 15 2 ≤ |upper limit – lower limit| ≤ 15	The lower limit mantissa must be a value other than 1.00.
LogType2 (lower limit ≠ upper limit)	Lower limit mantissa	1.00 to 9.99	
	Lower limit exponent	Integer between –15 and 15 1 ≤ |upper limit – lower limit| ≤ 15	The lower limit mantissa must be 1.00.
		Integer between –15 and 14 1 ≤ |upper limit – lower limit| ≤ 14	The lower limit mantissa must be a value other than 1.00.
	Upper limit mantissa	Cannot be set	This is the same value as the lower limit mantissa.
	Upper limit exponent	Integer between –15 and 15 1 ≤ |upper limit – lower limit| ≤ 15	The lower limit mantissa must be 1.00.
		Integer between –15 and 14 1 ≤ |upper limit – lower limit| ≤ 14	The lower limit mantissa must be a value other than 1.00.

Low-cut (Can be set when the mode is 1-5V and when the mode is VOLT with square root (SQRT) selected.)

Select [ON] to use the low-cut function.

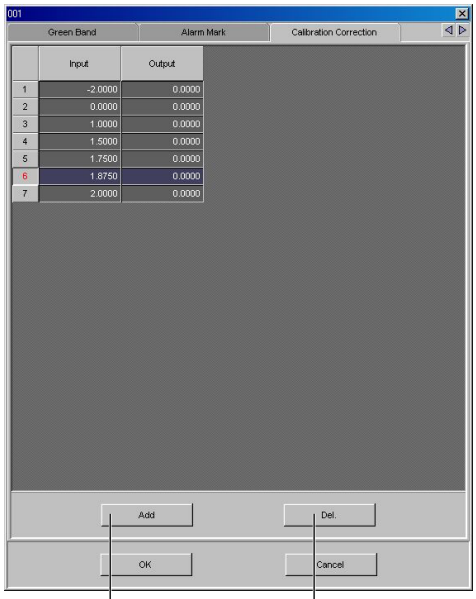
Low-cut value (Can be set when the mode is VOLT with square root (SQRT) selected.)

Set the low-cut value in the range of 0.0% to 5.0% of the input span.



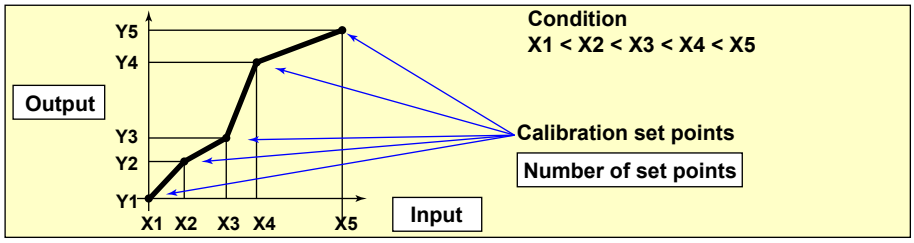
Calibration Correction

Set the input and output values for the calibration correction. The number of set points (including the start and end points) can be specified in the range 2 to 16.



Click to delete the selected row.

Click to add set points (rows) to the number of calibration set points.



Selectable Range of Input and Output Values

- **Channels on which linear scaling is specified (SCALE)**
  –30000 to 30000 (the decimal place is the same setting as the scale value)
- **Other channels (OFF, DELTA, SQRT, LogType1)**
  Value in the measurable range of the selected range
  Example: –2.0000 to 2.0000 for 2 V range

Note

- When you set calibration correction on a channel that is set to LogType1 (nonlinear logs), the set points are specified in the range of voltage values.
- You cannot set calibration correction on a channel that is set to LogType2.

Alarm

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

Type

Select H, L, h, l, R, r, T or t. The selectable alarms vary depending on the input mode and computation type. For details, see chapter 3 in the FX User's Manual.

Alarm value and exponent

Alarm is generated using the specified value as the boundary. The selectable range of alarm values vary depending on the input mode and range.
For channels that are set to [LogType1] or [LogType2], set the value by specifying the mantissa and exponent. Enter the mantissa under [Value].

Alarm Relay

Specify the internal switch or output relay that will be used to generate alarms. Otherwise, select [None].

Detect

This can be selected when [No Logging] is turned [ON] under [Alarm] - [Alarm action] in the [Basic Setting] tab.
Select whether to show or hide the alarm indication when an alarm occurs. If set to [OFF], a signal is output to the alarm output relay or internal switch when an alarm occurs, but it is not indicated on the screen. The alarm is also not recorded in the alarm summary.

Alarm delay

Set the alarm delay time to an integer value from 1 to 3600 s. If the measured value remains above or below the set alarm value for the set period of time (the delay time), an alarm is activated.

Note

FX specifications

- The alarm delay time takes on a value that is an integer multiple of the scan interval. For example, if the alarm delay time is set to 5 s when the scan interval is 2 s, the actual delay time is 6 s.
- The delay alarm has the following special operations.
  - If the computation is stopped in a condition in which the computed value is exceeding the alarm setting when a delay alarm is set on a computation channel, the alarm is turned On after the specified period (delay period) elapses.
  - The alarm detection operation is reset if a power failure occurs. The operation restarts after the power recovers.
  - If the alarm setting of the delay high limit alarm is changed when an alarm is already activated and the input is greater than or equal to the new setting, the alarm continues. For all other cases, the alarm detection operation starts at the new setting. This is also true for the delay lower limit alarm.

Moving Average

To use the moving average, select the sampling count [Times] (2 to 400).

Tag

You can use the tag instead of the channel number to be displayed on the screen.
This can be selected when [Tag] is [Tag] under [Detail Setting] in the [Basic Setting] tab.
You can enter tags using up to 16 characters.

Memory Sampling

Turn [ON] (sample) or [OFF] (do not sample).

Zone (Zone L and U)

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

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

Graph

For details, see section 5.7 in the FX User's Manual.

Scale display position

Select the scale display position on the trend display from 1 to 6. Select [OFF] if you do not wish to display the scale.

Scale divide position

Select the number of main scale marks on the trend display from 4 to 12 and C10.
If you select [C10], the scale is equally divided into 10 sections by main scale marks, and scale values are indicated at 0, 30, 50, 70, and 100% positions.
This setting is not applied to any channels that are set to [LogType1] or [LogType2].

Bar display position

Select [Normal], [Center], [Lower], or [Upper].

Bar divide number

Select number of divisions of the scale on the bar graph display.

Partial (Partial Expanded Display)

Bound position (%)

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

Boundary

Set the value that is to be the boundary between the reduced section and the expanded section in the range of “minimum span value + 1 digit to maximum span value – 1 digit.” For channels that are set to scaling, the selectable range is “minimum scale value + 1 digit to maximum scale value – 1 digit.”

Example: Input range: –6 V to 6V. Bound position: 30. Boundary: 0
The –6 V to 0 V range is displayed in the 0% to 30% range, and the 0 V to 6 V range is displayed in the 30% to 100% range.

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

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

Note

- Partial expanded display settings are valid when [Partial] is turned [ON] under [Detail Setting] in the [Basic Setting] tab.
- You cannot turn ON the partial expanded display for any channels that are set to [LogType1] or [LogType2].

Color (Display Color)

You can select the display color of each channel from 24 colors.

Green Band

Displays a specified section of the measurement range using a color band on the scale. This setting is common with the bar graph display.

Region (Band area)

Settings	Description
Inside	Displays the area inside using the color band.
Outside	Displays the area outside using the color band.
OFF	Disables the function.

Color

Set the display color.

L and U

Specify the display position. Set a value within the span or scale range.

L: Lower limit of the area.

U: Upper limit of the area.

For channels that are set to [LogType1] or [LogType2], set the value by specifying the mantissa and exponent. Enter the mantissas under [L] and [U].

Alarm Mark

Mark kind

Settings	Description
Alarm	Indicates green under normal conditions and red when an alarm is activated.
Fixed	Displays a fixed color.

Scale display

To display alarm point marks, select [ON].

Mark color

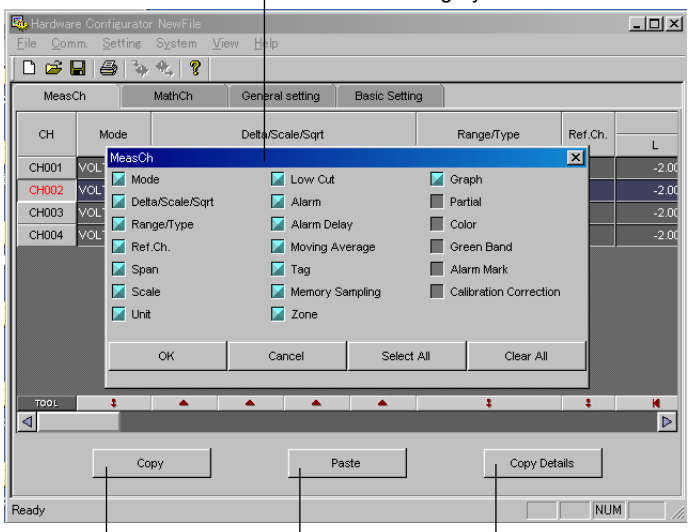
If the [Mark kind] is set to [Fixed], specify the color of the alarm point marks. Click a setup box to open its display color selection dialog box.

Copying and Pasting Setup Data

You can copy and paste settings using the [Copy], [Paste], and [Copy Details] buttons.

Selecting the Items That You Want to Copy

1. Click the [Copy Detail] button.
   The item selection dialog box opens.
2. Select the items that you want to copy.
   Items with a blue box will be copied.



The item selection dialog box that opens when you click the [Copy Detail] button
Setting items appear. An item with a blue box is selected. An item with a gray box is not selected.

Click this button to open the item selection dialog box and select the items that you want to copy

Paste to the copy destination

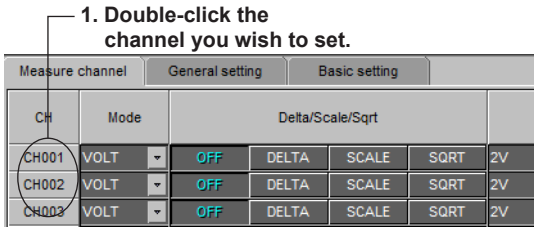
Copy the copy source settings

Copying and Pasting Settings

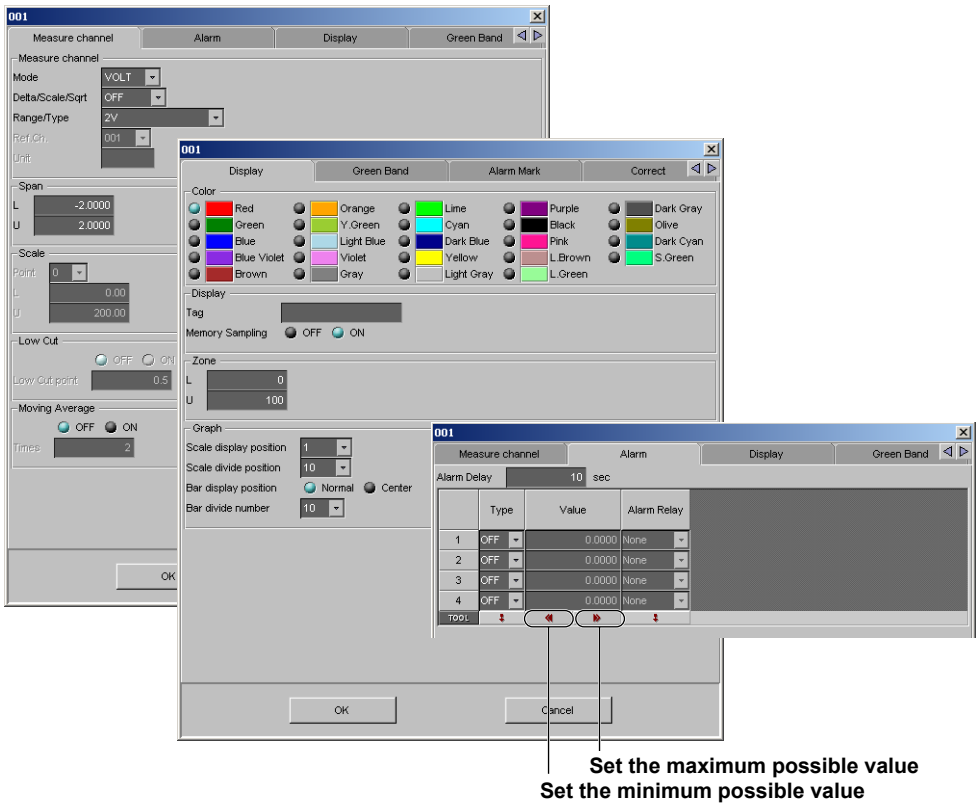
1. Select the copy source numbers (the [CH] row in this figure) and click the [Copy] button.
   * To specify multiple copy sources, drag over the numbers to select them.
2. Select the copy destination numbers (the [CH] row in this figure) and click the [Paste] button.
   * To specify multiple copy destinations, drag over the numbers to select them.

   The settings are copied and pasted.

Setting One Channel at a Time



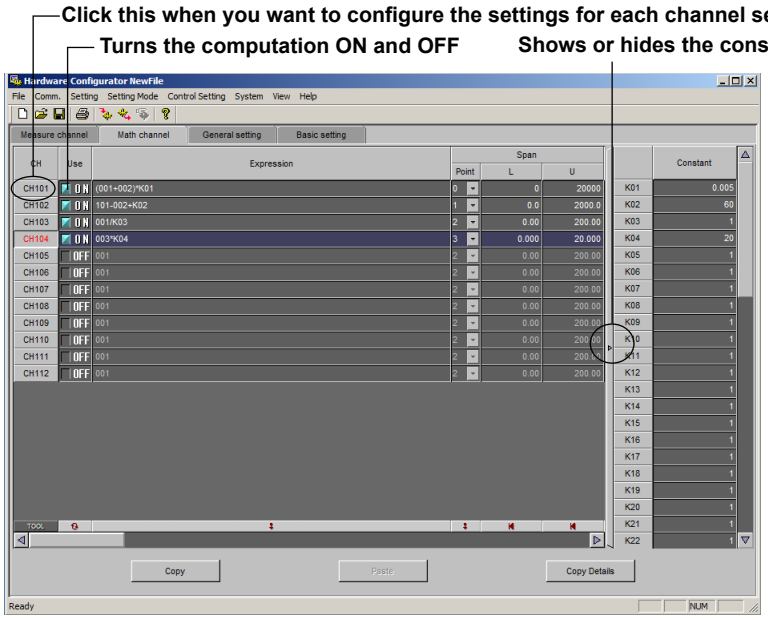
2. The channel setting dialog box opens.



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

2.4 Setting the Computation Channels

The setting operation is the same as for setting the measurement channels.
See pages 2-4 and 2-5 of section 2.3, “Setting the Measurement Channels.”
The items that you can configure vary depending on the system configuration and the settings.

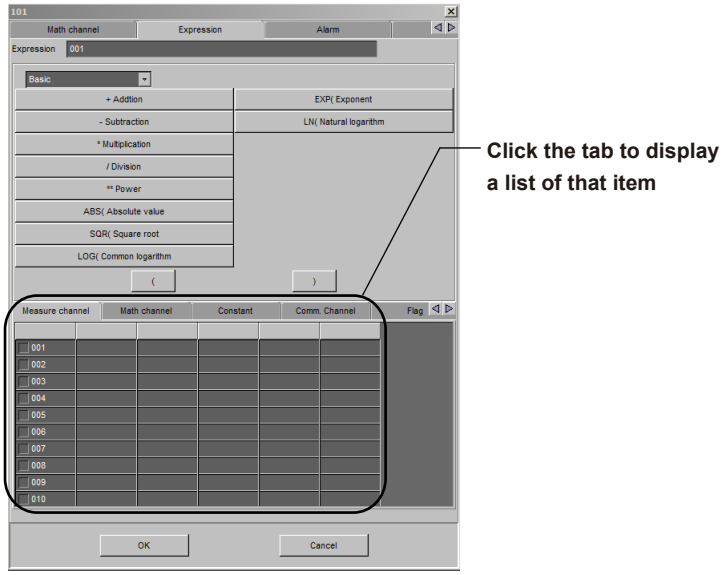


Turning Computation ON/OFF

Set whether or not to perform computation for each computation channel (math channel).

Entering Expressions

Enter an expression using up to 120 characters. You can display the variables or constants list and add one of the variables or constants in the list to your expression simply by clicking it. For details related to the expression, see the FX User’s Manual.



Note

Do not include channels that are set to Log scale in a computation channel expression. If you include these channels, an error will be returned as the measured result.

Span (Display Span) and Point

Sets the upper and lower limits of the display.
The range is from –9999999 to 99999999. Set the number of digits to the right the decimal to four digits or less (0 to 4).

Unit

Enter the unit using up to six characters.

TLOG (TLOG Computation)

Timer

Select the number of the timer that you want to use.

Sum Scale

Set the sum scale to [/s], [/min], [/h] to match the unit of the measured value.
Example: If the unit of the measured value is "m^3/min," select [/min].
If you select [OFF], the measured data is summed as-is once per scan interval.

Reset

To reset the TLOG computed value at each interval, select [ON].

Alarm and Tag

The setting operation is the same as that for setting the measurement channels. See section 2.3, "Setting the Measurement Channels."

Rolling Average

ON/OFF

To take the rolling average of the measured results, select [ON].

Interval

Select the sampling interval when taking the rolling average from the following: The sampling interval takes on a value that is an integer multiple of the scan interval. For example, if the sampling interval is set to 5 s when the scan interval is 2 s, the actual sampling interval is 6 s.

Count (Number of samples)

Set the number of samples for the rolling average using an integer between 1 and 1500.
The rolling average time is equal to the sampling interval × the number of samples.

Note

FX Specifications

- If the number of data points to be averaged has not reached the specified number of samples immediately after computation is started, the average of the available data is calculated.
- Computation error data is excluded from the rolling average computation.
- If the computed data exceeds the upper or lower limit, the data is clipped at the upper or lower limit, and the rolling average is computed. The upper and lower limit is "±100000000" excluding the decimal point. The decimal place is the same as that of the span lower limit.

Memory Sampling, Zone, Graph, Partial, Color, Green Band, and Alarm Mark

The setting operation is the same as that for setting the measurement channels. See section 2.3, "Setting the Measurement Channels."

Constant

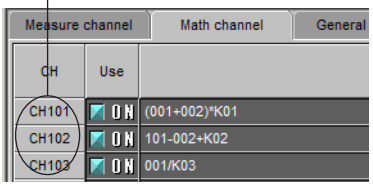
You can set constants to be used in the expression. Up to 60 constants can be specified.

Copying and Pasting Setup Data

See page 2-12 of section 2.3, “Setting the Measurement Channels.”

Setting One Computation Channel (Math Channel) at a Time

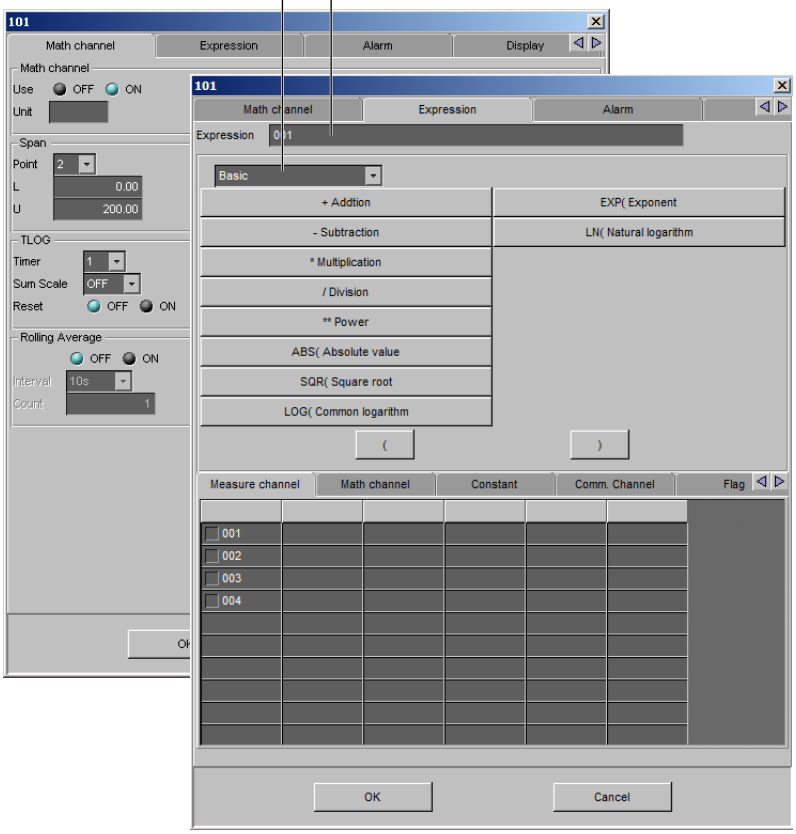
1. Double-click the channel you wish to set.



2. The channel setting dialog box opens.

Clicking here and selecting the list of operators switches the display

Select channels and constants on the Measure channel, Math channel, Constant, and other tabbed pages and select desired operators to create an expression.

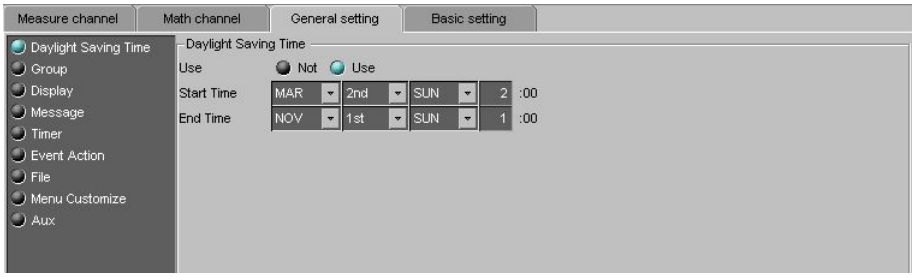


The items in the [Math channel] tab can be configured for each channel. The items that are configured are the same as those configured on the spreadsheet. For details, see the page corresponding to the item.

2.5 Entering General Settings

The items that you can configure vary depending on the system configuration and the settings.

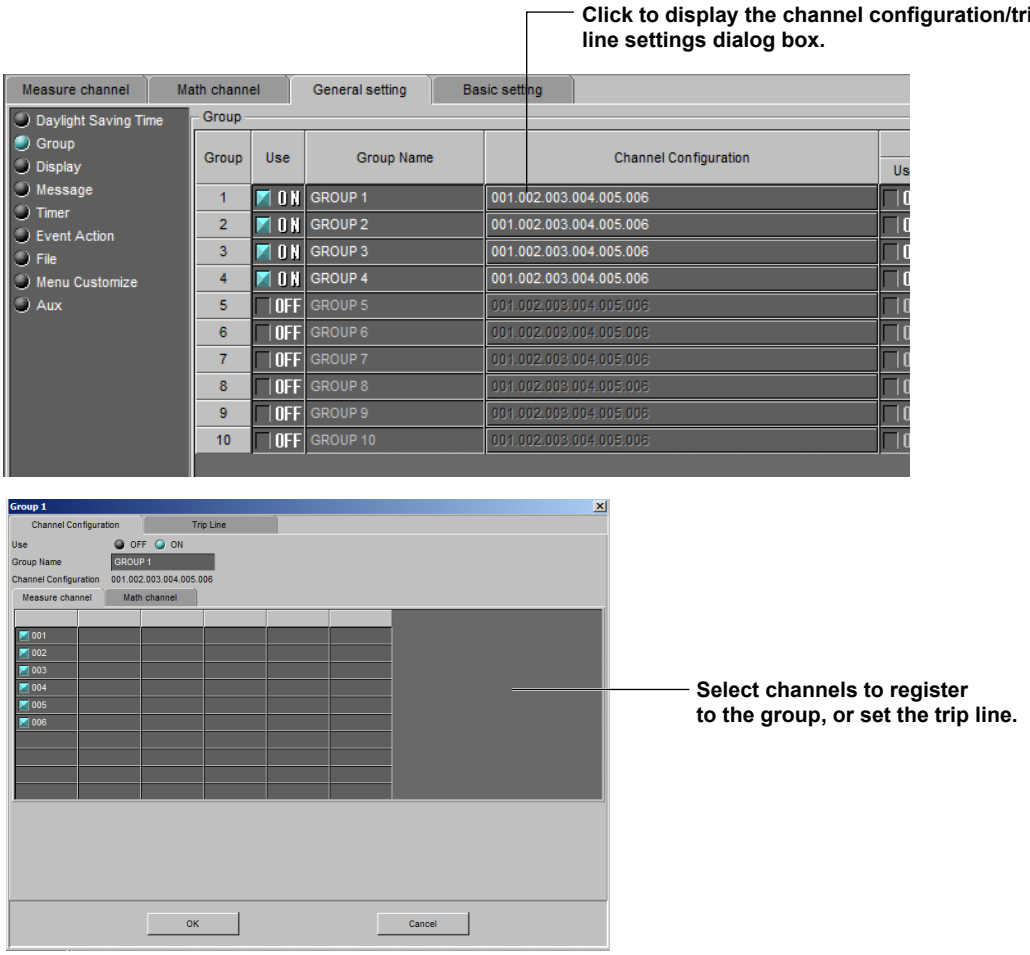
Daylight Saving Time



Start Time and End Time

Set the date and time at which to switch to daylight saving time and the date and time at which to switch to standard time.

Group



Channel Configuration

- **Use**
  Select [ON] for the display groups that you want to display. You can set up to 10 groups.
- **Group name**
  Set the group name. (up to 16 characters)
- **Channel Configuration**
  Specify a measurement channel or a computation channel. A group can contain up to 6 channels.

Note

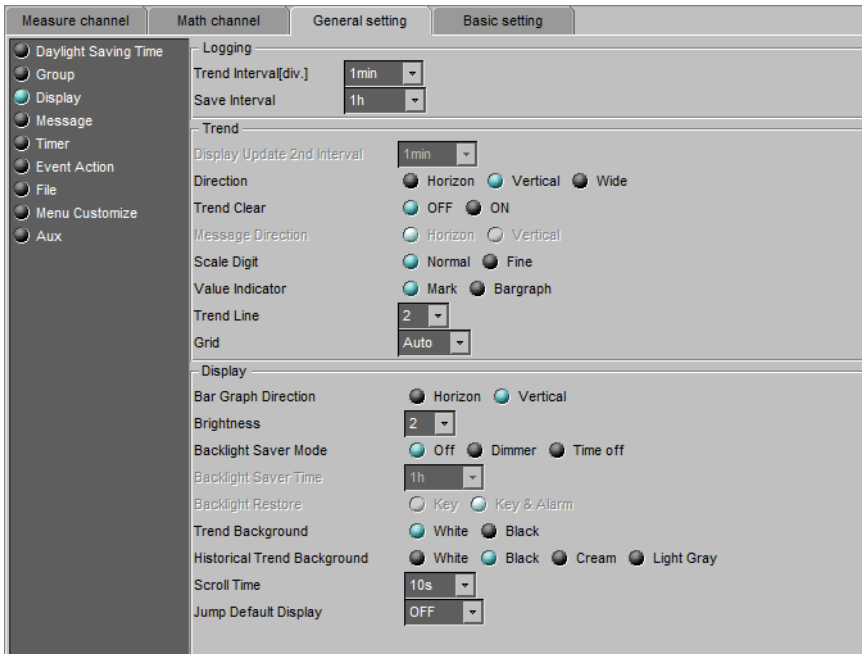
- The trend, digital, and bar graph displays are shown in the specified order.
- A channel can be assigned to multiple groups.
- The same channel cannot be assigned multiple times in a group.

Trip line

Set lines at specified positions in the waveform display range on the Trend display.

- **Use**
  Turn [ON] the trip lines you want to display.
- **Position**
  Set the position in the range of 0 to 100% of the display width.
- **Color**
  The default colors are red, green, blue, and yellow. If you want to change the color, select from the 24 available colors.
- **Trend Line**
  Set the line width of the trip line in dots (1 to 3).

Display



Logging

- **Trend interval [/div]**
  This is the trend interval. Select the time corresponding to 1 division of the time axis on the trend display from below: You cannot set a T-Y interval that corresponds to a sampling interval that is faster than the scan interval. See the table under “Save Interval” below.
- **Save Interval (when recording display data)**
  Select the size of a record data file. The recorded data is divided by the file size specified here. The available settings vary depending on the number of memory sampling channels and the T-Y interval setting.

T-Y interval	**15 s**[1]	**30 s**	**1 min**	**2 min**	**5 min**
Selectable range of auto save interval	500 ms	1 s	2 s	4 s	10 s
Selectable save interval values	10 min to 3 days	10 min to 7 days	10 min to 14 days	10 min to 14 days	10 min to 31 days
T-Y interval	**10 min**	**15 min**	**20 min**	**30 min**	**1 h**
Selectable range of auto save interval	20 s	30 s	40 s	1 min	2 min
Selectable save interval values	10 min to 31 days	10 min to 31 days	1 hour to 31 days	1 hour to 31 days	1 hour to 31 days
T-Y interval	**2 h**	**4 h**	**10 h**		
Selectable range of auto save interval	4 min	8 min	20 min		
Selectable save interval values	2 hours to 31 days	4 hours to 31 days	8 hours to 31 days		

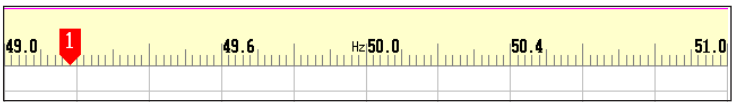
1 Selectable on the FX1002 and FX1004

Trend

- **Display Update 2nd Interval**
  Enabled when [Trend Rate Switching] is turned [ON] under [Environment] - [Detail Setting] in the [Basic Setting] tab. Select a rate from the list.
  The selectable 2nd intervals are the same as those for Trend interval.
- **Direction**
  Set the display direction of the trends to [Horizontal], [Vertical], [Wide], or [Split].
- **Trend Clear**

Settings	Description
ON	Clears the displayed waveform when the memory sampling is started.
OFF	Does not clear the waveform when the memory sampling is started.

- **Message direction**
  Set the display direction of messages to [Horizontal] or [Vertical]. When the trend is set to Vertical, the message direction is fixed to [Horizontal].
- **Scale Digit**
  Select the [Normal] or [Fine].
  Fine If the scale value is two-digit display, it can be changed to three digits. For example, if the scale range is “49.0 to 51.0,” the scale values are displayed using 3 digits as shown below.



- **Value Indicator**
  The current value is displayed as a mark or a bar graph.
- **Trend Line**
  Set the line width of the trend in dots (1 to 3).
- **Grid**
  Select the number of grids to be displayed in the waveform display area of the trend display.

Settings	Description
4 to 12	Displays a grid that divides the display width into 4 to 12 sections.
Auto	Displays the same number of grids as the number of scale divisions of the first assigned channel of the group.

Display

- **Bar Graph Direction**
  Select Bar graph direction.
- **Brightness**
  You can select a value from 1 to 8 (the default value is 2). Larger the value, brighter the display becomes.
- **Backlight Saver Mode**

Settings	Description
OFF	Disables the backlight saver.
Dimmer	Dims the display if there is no operation for a given time.
Timeoff	Turns the backlight OFF if there is no operation for a given time.

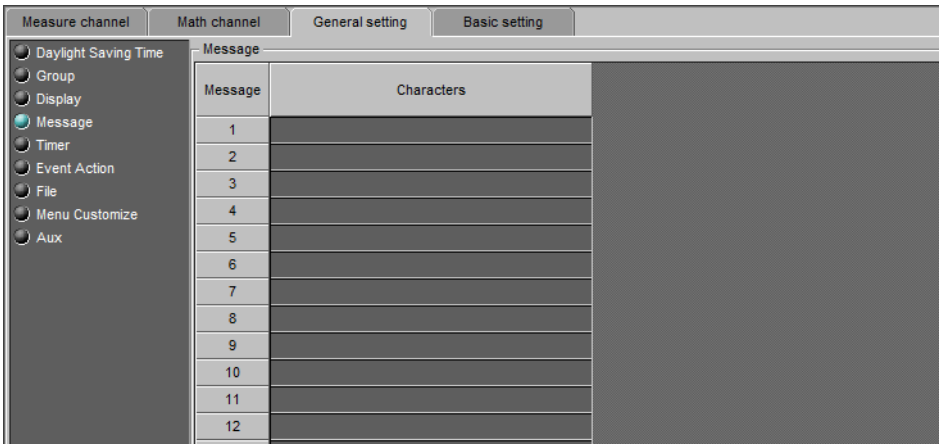
- **Backlight Saver Time**
  Select a value from 1 min to 1 h. If the specified time elapses without any key operation or alarm occurrence, the LCD backlight switches to the specified mode.
- **Backlight Restore**

Settings	Description
Key	The backlight returns to the original brightness when a key is pressed.
Key&Alarm	The backlight returns to the original brightness when a key is pressed or when an alarm occurs.

- **Trend Background**
  Set the background color of the operation screen to White (default setting) or Black.
- **Historical Trend Background**
  Select the background color of the historical trend display from the following:
  Settings: White, Black (default setting), Cream, and Lightgray
- **Scroll Time**
  Set the switching interval from the available settings between 5 s and 1 min. The groups switch in ascending order.
- **Jump Default Display**
  Returns to a preset display if there is no key operation for a specific time.

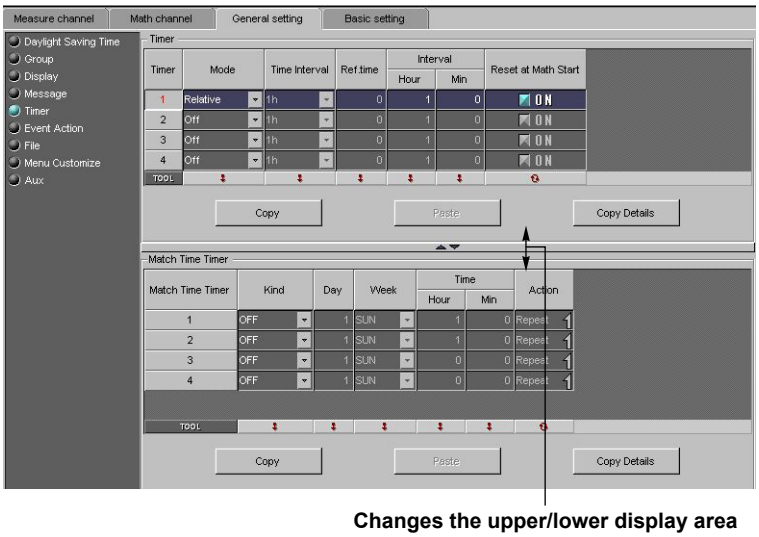
Settings	Description
1min to 1h	Time until switching the display.
OFF	Disables the function.

Message



Enter a message to be written to the group of up to 32 alphanumeric characters.

Timer



Timer used by event action. Used also in the TLOG computation of the computation function. You can use 4 timers.

When Using an Absolute Timer

- **Mode**
  Select [Absolute].
- **Time interval**
  Select the interval from the available settings between 1min to 24h.
- **Ref.time**
  Set the time in the range of hour 0 to hour 23.

When Using a Relative Timer

- **Mode**
  Select [Relative].
- **Time interval**
  Set in the range from 00:01 (1 min.) to 24:00 (24 hours).
  Hour: Set in the range from 0 to 24.
  Min: Set in the range from 0 to 59.
- **Reset at Math Start**
  ON Resets the timer when computation is started. The resetting of the timer is not considered to be a timeout. Even if the timer is used as an event, the action is not executed.

Match Time Timer

Set the time match condition used in event action. You can use 4 match time timers.

- **Kind**

  Day Set the time match condition of a day.

  Week Set the time match condition of a week.

  Month Set the time match condition of a month.

  Set the items with check marks in the following table depending on the Kind setting.

Setup Item	Kind		
	Daily	Weekly	Monthly
Day			✓
Week		✓	
Hour:Minute	✓	✓	✓

- **Day**

  Set the day.

- **Week**

  Set the day of the week.

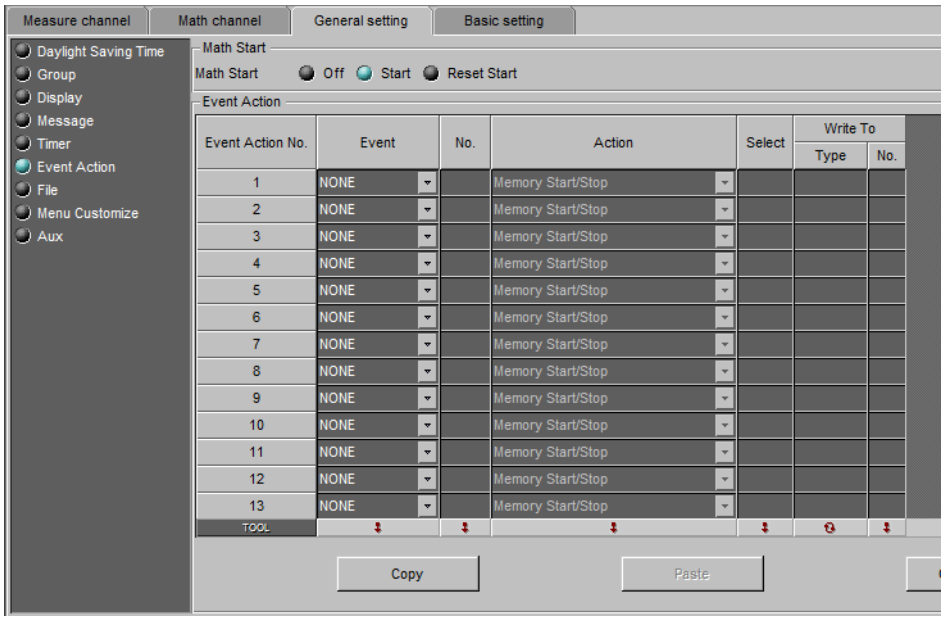
- **Hour:Minute**

  Set the time in the range of 00:00 to 23:59.

- **Timer action**

Settings	Description
Single	Executes the action once when the condition is met.
Repeat	Executes the action at every specified time.

Event Action



Math Start

Settings	Description
Off	Does not start the computation even when the START key is pressed.
Start	Starts the computation when the START key is pressed.
Reset Start	Resets the computed result up to then and starts the computation when the START key is pressed.

Event

These are the conditions that must be met for an action to be performed. You can set up to 40 event actions.

Settings	Event action description
NONE	Not use.
Remote	Select the remote control input terminal number.
Relay	Select the alarm output relay number.
Switch	Select the internal switch number.
Timer	Select the timer number.
Match Time	Select the match timer number.
Alarm	-
User Key	-

Action

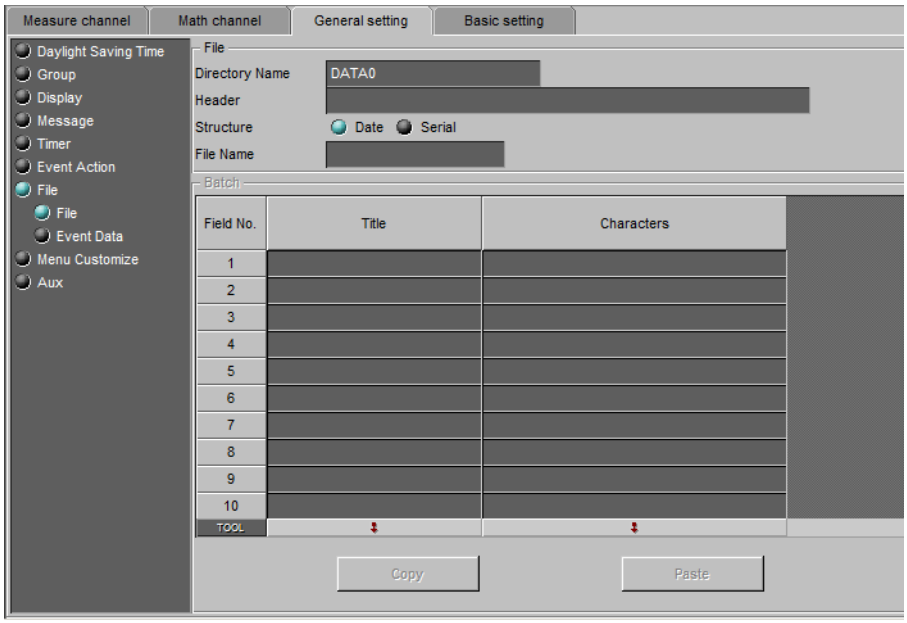
The action to be executed when an event occurs.

Settings	Description
Memory Start/Stop	-
Memory Start	-
Memory Stop	-
Trigger	Can be specified when the FX is configured to record event data.
AlarmACK	This cannot be specified when the event is set to [Relay], [Switch], or [Alarm].
Math Start/Stop[1]	-
MathStart[1]	-
MathStop[1]	-
Math Reset[1]	-
Save Display Data	Can be specified when the FX is configured to record display data.
Save Event Data	Can be specified when the FX is configured to record event data.
Message	Set the message number and the destination. Set the message destination to all groups (All) or a group number.
Snapshot	-
Display Update Interval Change	Can be specified when the function for switching between the trend update interval and the secondary update interval is enabled.
Manual Sample	-
Timer Reset	Cannot be specified when the event is set to [Timer].
Display Group Change	Specify the number of the group to be displayed.
Flag[1]	-
Time ADJUST	Can be specified only when the event is set to [Remote].
Panel Load[2]	Can be specified only when the event is set to [Remote].

1 This can only be specified for models that have the /M1, /PM1, or /PWR1 option.

2 This can only be specified when an external storage medium is connected to the FX.

File



Directory name

Set the name of the directory on the storage medium for saving the data on the external storage medium. (Up to 20 characters)
Symbols that can be used: #, %, (,), +, -, ., @, °, and _.
Strings that cannot be used: AUX, CON, PRN, NUL, CLOCK, COM1 to COM9, and LPT1 to LPT9.

Header

Set the header comment to be written to the data file (Up to 50 characters).

Structure

Sets the structure of the file name when saving data.

Settings	Description
Date	Serial number + user-assigned character string + date
Serial	Serial number + user-assigned character string
Batch	Serial number + batch name (when using the batch function)

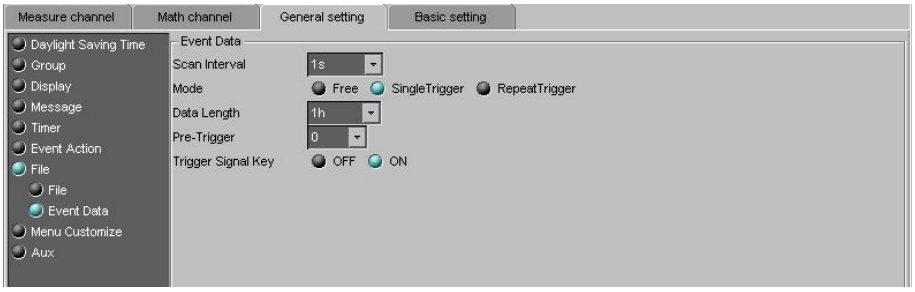
File name

Set the user-assigned section of the file name. (Up to 16 characters)
Symbols that can be used: #, %, (,), +, -, ., @, °, and _.

Field Title, Field Characters

Set text strings.
Title: Up to 20 characters. Characters: Up to 30 characters.
There are 8 fields.

Event Data



Event related settings are enabled when [Data Kind] is set to [E+D] or [Event] in [Basic Environment] under [Environment] in the [Basic Setting] tab.

Sample rate

Select the data recording interval from the available settings. See the description for “Data length” below. You cannot specify a sampling rate that is faster than the scan interval.

Mode

Settings	Description
Free	Records data continuously.
Single	Records data when the trigger condition is met.
Repeat	Records data each time the trigger condition is met.

Data length

Select the size of a record data file. The recorded data is divided by the file size specified here. The available data lengths vary depending on the number of memory sampling channels and the Sample rate setting.

Sample rate[1]	**125 ms**	**250 ms**	**500 ms**	**1 s**	**2 s**
Selectable range of data length	10 min to 1 day	10 min to 2 days	10 min to 3 days	10 min to 7 days	10 min to 14 days
Sample rate[1]	**5 s**	**10 s**	**30 s**	**1 min**	**2 min**
Selectable range of data length	10 min to 31 days	10 min to 31 days	1 hour to 31 days	1 hour to 31 days	1 hour to 31 days
Sample rate[1]	**5 min**	**10 min**			
Selectable range of data length	1 hour to 31 days	1 hour to 31 days			

1 You cannot choose an interval that is faster than the scan interval.

Pre-Trigger

Specify the range when recording data before the trigger condition is met. Select the range as a percentage of the data length from 0, 5, 25, 50, 75, 95, and 100%. If you do not want to record the data existing before the trigger condition is met, select 0%.

Trigger Signal Key

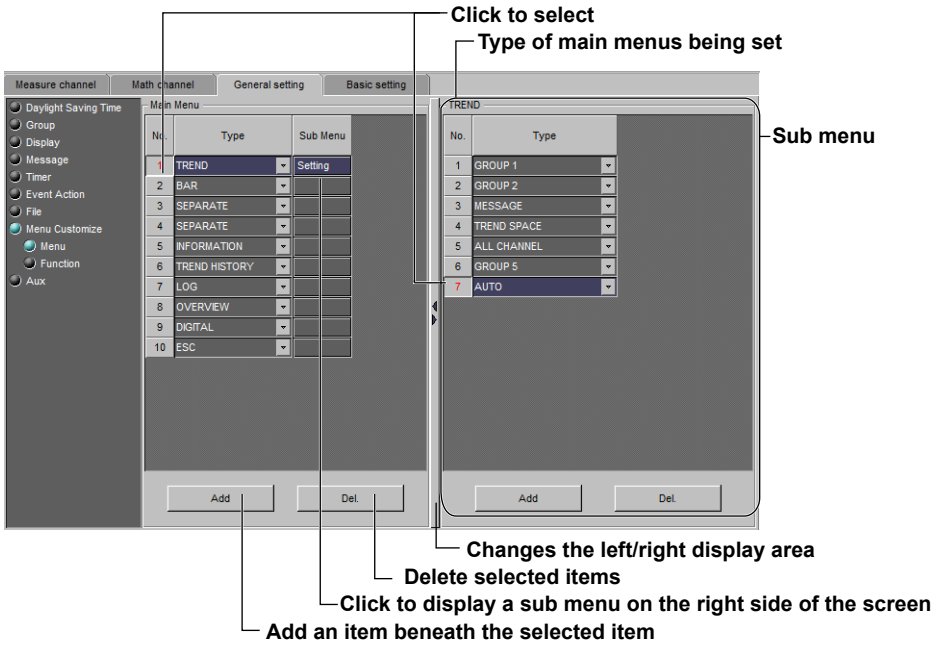
Select [ON] if you want to activate the trigger using key operation.

Custom Menu

You can show or hide items on the menu that appears when you press the FUNC key and on the display selection menu, which appears when you press the DISP/ENTER key.

Main Menu

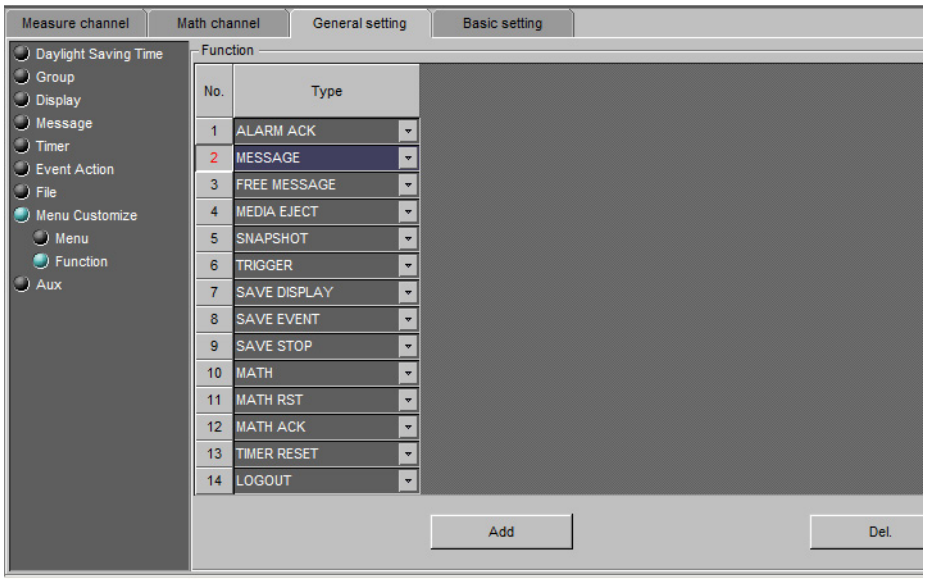
The display selection menu appears when the DISP/ENTER key is pressed.



For details on the menu, see section 5.16 in the FX User's Manual.

Function

The FUNC key menu appears when the FUNC key is pressed.



For information about the menu, see section 4.1 in the FX User's Manual.

Aux

Power

- **VT ratio**
  Specify a value between 1.0 and 6000.0. The decimal place is fixed.
- **Point**
  Set the CT ratio's decimal place to 0, 1, or 2. This number represents the number of digits after the decimal point.
- **CT ratio**
  The setting range varies depending on the decimal place.

Setting Range	Decimal Place
10000 to 32000	0
1000.0 to 9999.9	1
0.05 to 999.99	2

- **Low-cut power**
  Specify a value between 0.05 and 20.00. The decimal place is fixed.

Note

Set the VT ratio and CT ratio so that they meet the following condition.

- Secondary rated power × VT ratio × CT ratio < 10 GW.

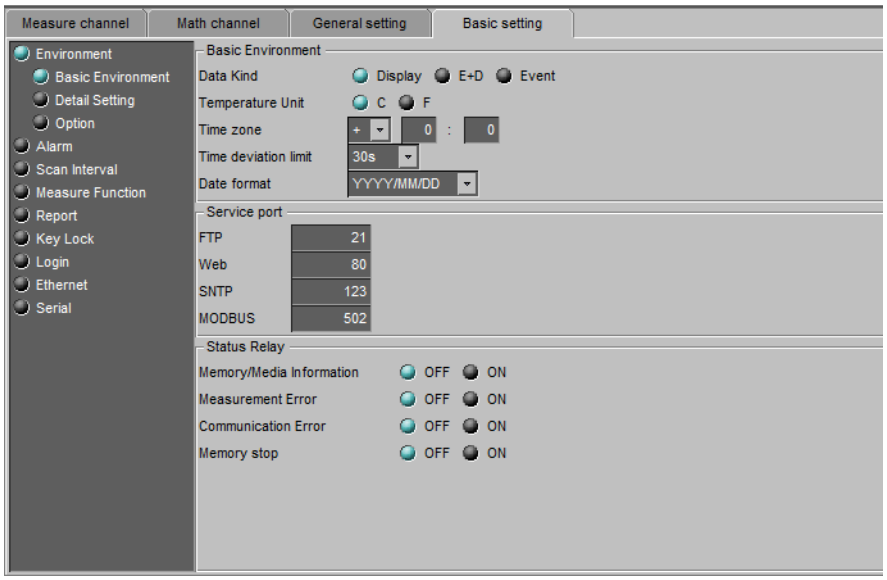
Phase and Wire System	Input Voltage	Secondary Rated Power (W)
1P2W	120	100
	240	200
1P3W	240	200
3P3W	120	200
	240	400

2.6 Entering Basic Settings

The items that you can configure vary depending on the system configuration and the settings.

Environment

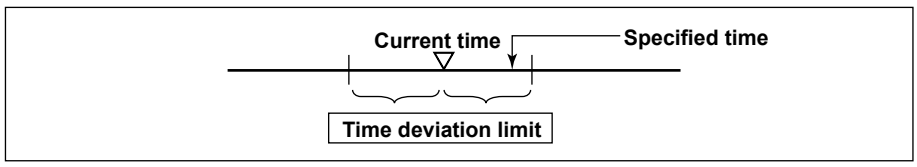
Basic Environment



- **Data Kind**

Settings	Description
Display	Records display data.
E+D	Records display data and event data. You cannot select [E+D] when [Trend Rate Switching] under [Environment] - [Detail Setting] under the [Basic setting] tab is set to [ON].
Event	Records event data.

- **Temperature Unit**
  Select C or F.
- **Time zone**
  Set the time zone of the region in which the FX will be used in terms of the time difference from GMT.
- **Time deviation limit**



When the time deviation between the time on the FX and the specified time is within ±(the value specified here), the time on the FX is gradually corrected. Otherwise, the clock is corrected immediately.
Select from 10 s to 5 min. Select [OFF] to disables the function.

Example: If [Time deviation limit] is set to 10s and the time on the FX is 10 hours 21 minutes 15 seconds, the time on the FX is gradually corrected if the specified time is between 10 hours 21 minutes 5 seconds and 10 hours 21 minutes 25 seconds.

- **Date format**

Settings	Display Example
Y/M/D	2011/11/30
M/D/Y	11/30/2011
D/M/Y	30/11/2011
D.M.Y	30.11.2011

Applied Range

The format is applied to the date displayed on the screen. It does not change the date format on the setup screen of the date/time, the date in the output data via communications, the date saved along with the data, and the date used in the data file names.

- **Service port**

The following table indicates the number of simultaneous uses (number of users that can use the function simultaneously), the maximum number of connections, and the port number for each function.

Function	Maximum Number of Connections	Number of Simultaneous Uses		Port No.
		Administrator	User	
FTP server	2	2	2[1]	21/tcp[2]
Web server (HTTP)	1	–	–	80/tcp[2]
SNTP server	–	–	–	123/udp[2]
Modbus server	2	–	–	502/tcp[2]

1 There are user limitations. For details, see the FX1000 Communication Interface Manual (IM 04L21B01-17EN).

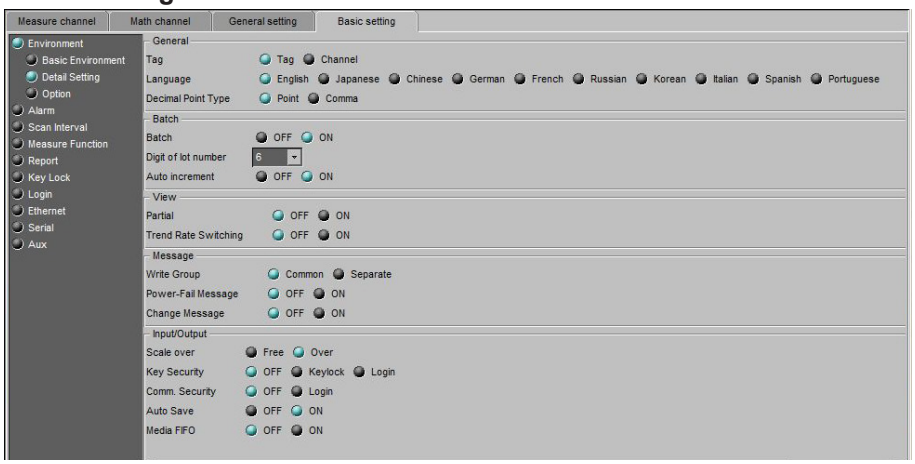
2 The default port number. You can set the value in the range of 1 to 65535. Use the default port number unless there is a special reason not to do so.

- **Status Relay Details**

Memory/Media Information, Measurement Error, Communication Error, Memory Stop

The relay contact output is turned on when an item that is set to [ON] occurs.

Detail Setting



- **Tag**

Settings	Description
Tag	Displays tags. Channel numbers are displayed for channels that do not have tags assigned to them.
Channel	Displays channel numbers.

- **Language**
  Select the display language
- **Decimal Point Type**
  You can set the decimal point type for the display and files saved in text format. You can select [Point] or [Comma].
- **Batch**
  Select [ON] to use the batch function.
- **Digit of lot number**
  Select the number of digits of the lot number from 4, 6, or 8. Select [OFF] to disable the lot number.
- **Auto increment**
  ON Automatically sets the lot number of the next measurement to “the lot number of the current measurement + 1.”
- **Partial**
  Turn Partial [ON] (partially expand) or [OFF] (do not partially expand).
- **Trend Rate Switching**
  ON Enables the function that switches the trend interval while the memory sampling is in progress. The “Second interval [/div]” item is displayed in the setting mode.
  - When [Trend Rate Switching] is set to [ON], you cannot set [Data Kind] under [Environment] - [Basic Environment] in the [Basic setting] tab to [E+D].
- **Write Group**

Settings	Description
Common	Write the message to all groups.
Separate	Write the message to the displayed group.

- **Power-Fail Message**

  ON A message is written when the FX recovers from a power failure while memory sampling is in progress.

- **Change Message**

  ON Writes the time the interval is switched and the new trend interval as a message when the trend interval is switched.

- **Scale over**

Settings	Description
Free	The value is set to –over range if the value is less than –30000 and +over range if the value is greater than 30000 excluding the decimal point. The value is displayed as –Over and +Over, respectively.
Over	The value is set to –over range if the value is less than –5% of the scale and +over range if the value is greater than 105%. The value is displayed as –Over and +Over, respectively.

Example: If the scale is 0.0 to 200.0, a value less than –10.0 results in a –over range, and a value greater than 210.0 results in a +over range.

Note

For computations such as TLOG, CLOG, and report, the handling of the scale over-range value can be set in advance.

- **Key Security**

Settings	Description
Login	Enables only registered users to operate the FX using keys. The [User registration] is displayed in the [Basic Setting] tab.
Keylock	Enables the key lock function. Set the key lock function in the [Basic Setting] tab.
OFF	Disables the security functions.

- **Comm. Security**

Settings	Description
Login	Enables only registered users to operate the FX via communications. The [User registration] is displayed in the basic setting mode menu.
OFF	Disables the security functions.

- **Auto Save**

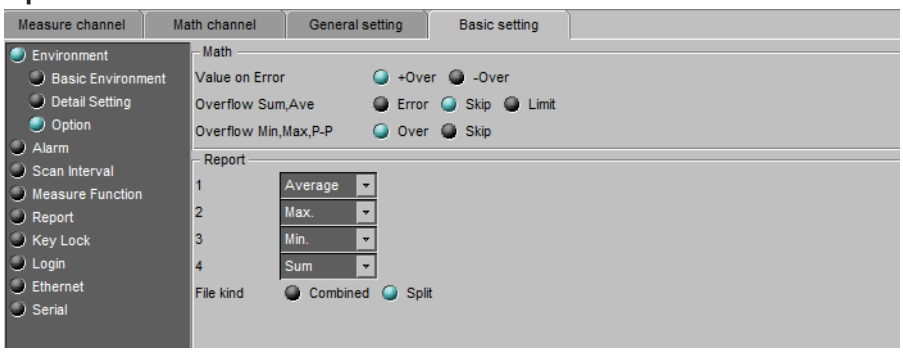
Settings	Description
ON	Automatically saves the measured data to the CF card.
OFF	Does not automatically save the data. Save the measured data manually to the CF card or USB flash memory (/USB1 option).

- **Media FIFO**

  This is valid only when [Auto Save] is [ON].

Settings	Description
ON	If there is no more free space on the CF card, the oldest file is deleted, and the newest file is saved.
OFF	If there is no more free space on the CF card, the measured data is not saved to the CF card.

Option



- **Value on Error**
  Specify whether to set the display for a computation error to [+Over] or [–Over].
- **Overflow Sum, Ave**
  Specify how to handle overflow data when it is detected in the SUM or AVE computation of TLOG or CLOG. This setting is also applied to report generation.

Settings	Description
Error	Sets the computed result to computation error.
Skip	Discards the overflow data and continues the computation.
Limit	Uses a limit value in place of the overflow data and continues the computation.

- **Overflow Min, Max, P-P**
  Specify how to handle overflow data when it is detected in the MAX, MIN, or P-P computation of TLOG or CLOG. This setting is also applied to report generation.

Settings	Description
Over	Uses the overflow data as-is.
Skip	Discards the overflow data and continues the computation.

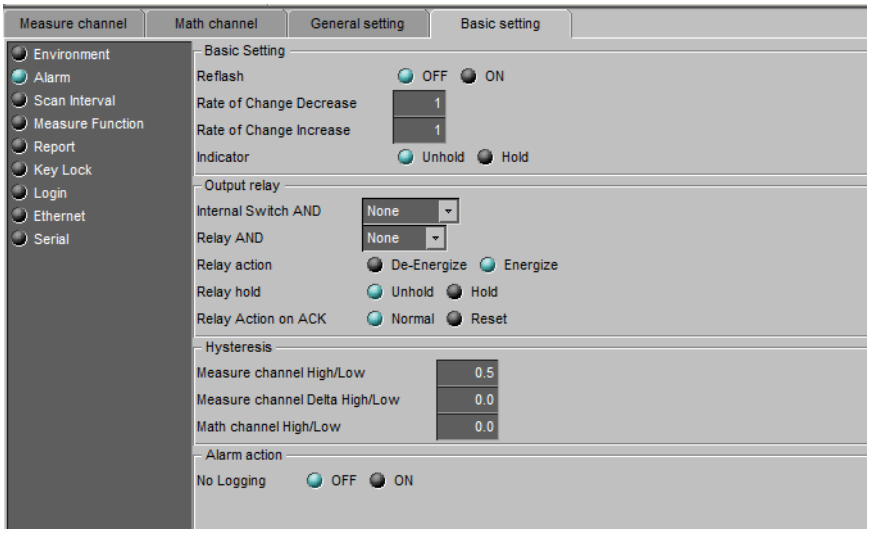
- **Report (1 to 4)**
  Select the type of data to output as reports.

Settings	Description
OFF	Does not output reports. You cannot set Report 1 to [OFF].
Ave	Outputs the average value.
Max	Outputs the maximum value.
Min	Outputs the minimum value.
Sum	Outputs the sum value.
Instant	Outputs the instantaneous value.

- **File kind**
  Specify the method used to create report files.

Settings	Description
Split	Saves each type of report to a separate file.
Combined	Saves the report data of two types in a single file.

Alarm



Basic Setting

- **Reflash**

  To set the reflash operation on the alarm output relay, select [ON]. The reflash function is set on the first three output relays.

Settings	Description
Off	Reflash is not used.
On	Reflash is used. The relays are deactivated for approximately 500 ms.

- **Rate of Change Decrease**

  Set the interval for the rate-of-change calculation of the low limit on rate-of-change alarm in terms of the number of sampled data points (1 to 32). The actual interval is obtained by multiplying the value specified here by the scan interval.

- **Rate of Change Increase**

  Set the interval for the rate-of-change calculation of the high limit on rate-of-change alarm in the same manner as the interval for the low limit on rate-of-change alarm.

- **Hold**

  You can choose to make the alarm displays behave in the following ways.

Settings	Description
Unhold	Clears the alarm indication when the alarm condition is released (returns to normal condition).
Hold	Holds the alarm indication until an alarm acknowledge operation is performed.

Output relay

- **Internal Switch AND**

  Select the internal switches that are to operate using AND logic. Set the range of internal switches (from the first internal switch) to take the AND logic. All subsequent switches will be set to OR logic.

- **Relay AND**
  Select the relays that are to operate using AND logic. Set the range of relays (from the first alarm relay) to take the AND logic. All subsequent relays will be set to OR logic. Available settings are [None], [I01] (I01 only), [I01-I02] (I01 and I02), [I01-I03] (I01 to I03), etc. Only alarm output relays that are installed are valid.

- **Relay action**
  Select whether the alarm output relay is energized or de-energized when an alarm occurs. The setting applies to all alarm output relays.

- **Relay hold**
  You can choose to make the alarm output relays behave in the following ways. This setting applies to all relays.

Settings	Description
Unhold	Turns the output relay OFF when the alarm condition is released (returns to normal condition).
Hold	Holds the output relay at ON until an alarm acknowledge operation is performed.

- **Relay Action on ACK**

Settings	Description
Normal	The relay output is deactivated when the alarm ACK operation is executed. If the condition for activating the alarm output relay is met in the next scan interval, the relay output is activated. This operation is valid only when the alarm output relay is set to [Hold].
Reset	The relay output is deactivated when the alarm ACK operation is executed. If a new condition for activating the alarm output relay, the relay is activated.

Note

When reflash is turned ON, the operation of the first three output relays is set to nonhold. Specifying Hold produces no effect.

Hysteresis

- **Measure channel High/Low**
  Sets the hysteresis width of the alarm occurrence/release of the high/low limit alarm specified on measurement channels.
  Selectable range: 0.0% to 5.0% of the span or scaling width
- **Measure channel Delta High/Low**
  Sets the hysteresis width of the alarm occurrence/release of the difference high/low limit alarm specified on measurement channels.
  Selectable range: 0.0% to 5.0% of the span
- **Math channel High/Low**
  Sets the hysteresis width of the alarm occurrence/release of the high/low limit alarm specified on computation and external input channels.
  Selectable range: 0.0% to 5.0% of the measurement span

Alarm action

- **No Logging**
  Select [ON] to hide alarm indication. The [Detect] setting is enabled in the [Measure channel], [Math channel] tab(s).

  This function disables the alarm indicator and the logging of alarm events to the alarm summary.

Scan Interval

Scan interval

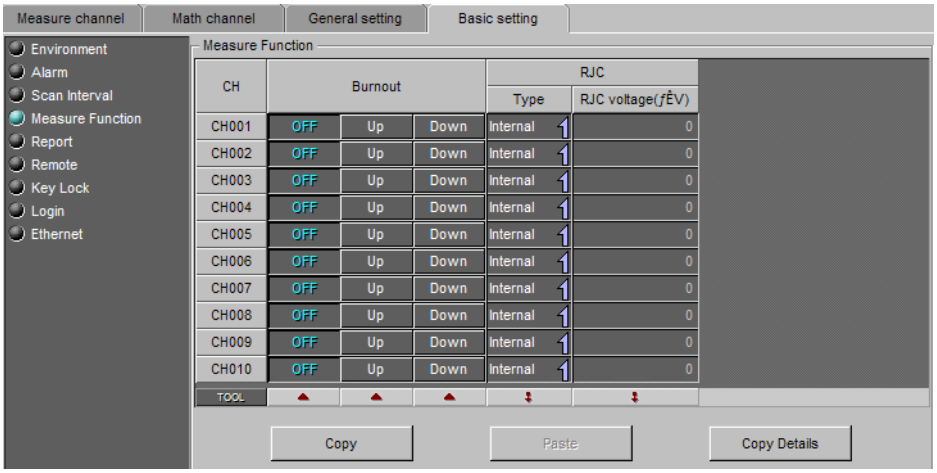
Select the scan interval.

A/D integrate

Select the A/D integration time as necessary. Only the selectable settings are displayed.

Settings	Description
Auto	The FX automatically detects the power supply frequency and sets the integration time to 16.7 ms and 20 ms for 60 Hz and 50 Hz, respectively. Fixed to 20 ms on /P1 models that use the 24 VDC power supply.
50Hz	Sets the integration time to 20 ms.
60Hz	Sets the integration time to 16.7 ms.
100ms	Sets the integration time to 100 ms (when the scan interval is 2 s or 5 s).

Measure Function



Burnout

Thermocouple input

Settings	Description
OFF	Sensor disconnections are not detected.
UP	When the sensor burns out, the measured result is set to +over range. The measured value displays “Burnout.” For 1-5V input, the FX assumes that the sensor has burned out when the measured value exceeds the scale upper limit by 10% of the scale width. (Example: When the measured value is greater than 110 when the scale is from 0 to 100)
DOWN	When the sensor burns out, the measured result is set to –over range. The measured value displays “Burnout.” For 1-5V input, the FX assumes that the sensor has burned out when the measured value falls below the scale lower limit by 5% of the scale width. (Example: When the measured value is less than –5 when the scale is from 0 to 100)

RJC

- **Mode**

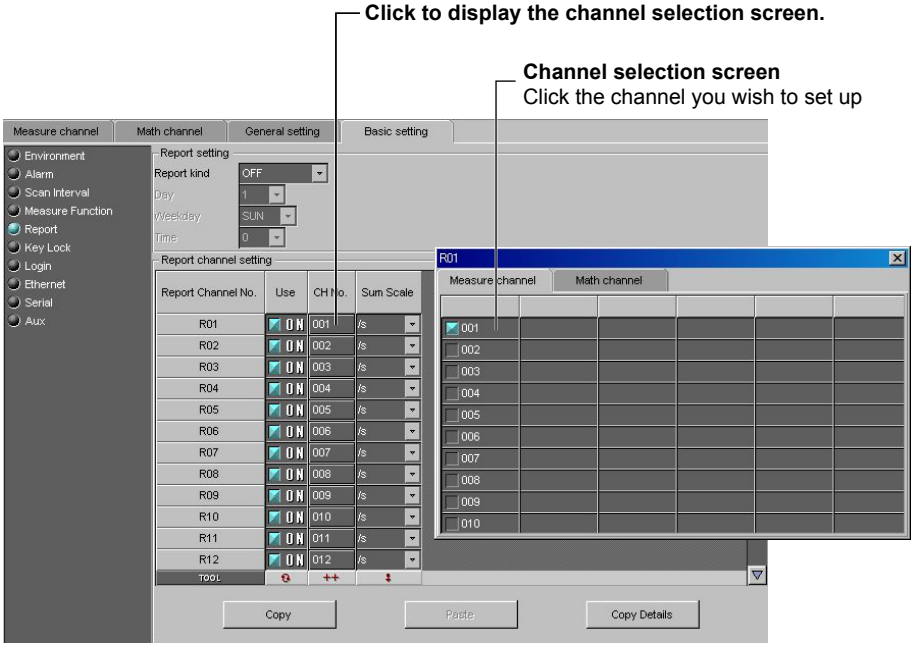
  Sets the reference junction compensation method of the thermocouple input. Select [Internal] or [External].

Settings	Description
Internal	Uses the reference junction compensation function of the FX.
External	Uses an external reference junction compensation function. When set to [External], [Volt] is displayed.

- **RJC voltage (µV)**

  The compensation voltage to be added to the input. Set the value in the range of –20000 µV to 20000 µV.

Report



Report setting

- **Report kind**

  Select the type of report to be created.

Settings	Description
OFF	Do not create a report.
Hour	Creates hourly reports.
Day	Creates daily reports.
Hour+Day	Creates hourly and daily reports.
Day+Week	Creates daily and weekly reports.
Day+Month	Creates daily and monthly reports.

- **Day, Week day, and Time**

  Set the date or day of the week and the time when the report is to be created. The specified date/time is when the report file is divided. Set the values in the range indicated below. Items with a dash are invalid.

Report Type	Day	Week day	Time
Hour	-	-	0 to 23
Day	1 to 28*	-	0 to 23
Hour+Day	-	-	0 to 23
Day+Week	-	SUN to SAT	0 to 23
Day+Month	1 to 28*	-	0 to 23

* You cannot specify 29, 30, or 31.

Report channel setting

- **Use**

  Select [ON] for the report channels to be used.

- **CH No.**

  Set the channel to assign to the report channel. All channels can be assigned, but reports are not created for channels set to [Skip] or [OFF] even if they are assigned. In the stacked bar graph display, report data is displayed in the following groups. However, only channels that have the same unit as the first group in the channel are displayed.

No.	1	2	3	4
Report Groups	R01 to R06	R07 to R12	R13 to R18	R19 to R24

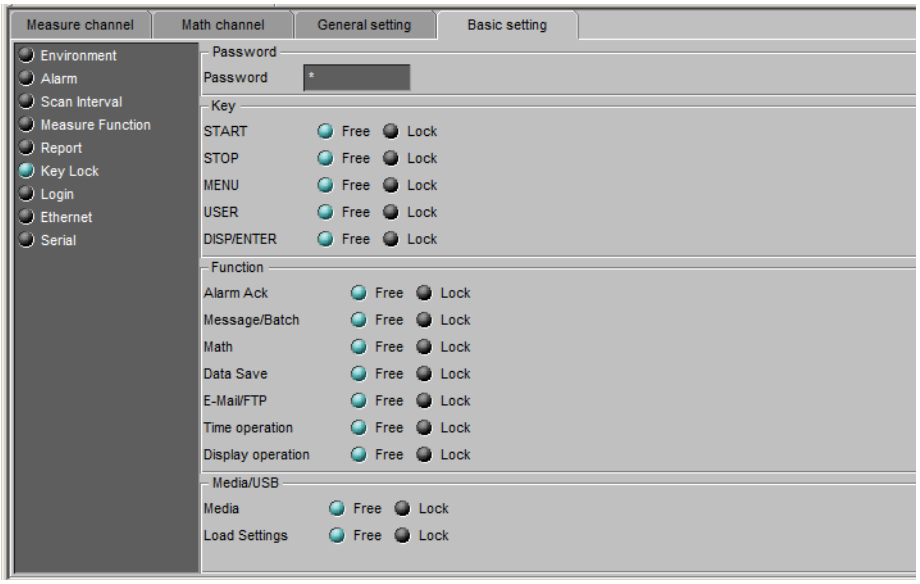
Note

You cannot create reports for channels that are set to Log scale (/LG1 option). An error will be returned as the result of report computations on channels that are set to Log scale.

- **Sum Scale**

  Set the sum scale to [/s] to [/day] to match the unit of the measured value.
  Example: If the unit of the measured value is "m^3/min," select [/min].
  If you select [OFF], the measured data is summed as-is once per scan interval.

Key Lock



Enabled when [Key Security] is set to [Keylock] under [Environment] - [Detail Setting] in the [Basic Setting] tab.

Password

The password used to release the key lock. The password is displayed as a string of asterisks. (Use up to eight characters.)

Key, Function, Media/USB

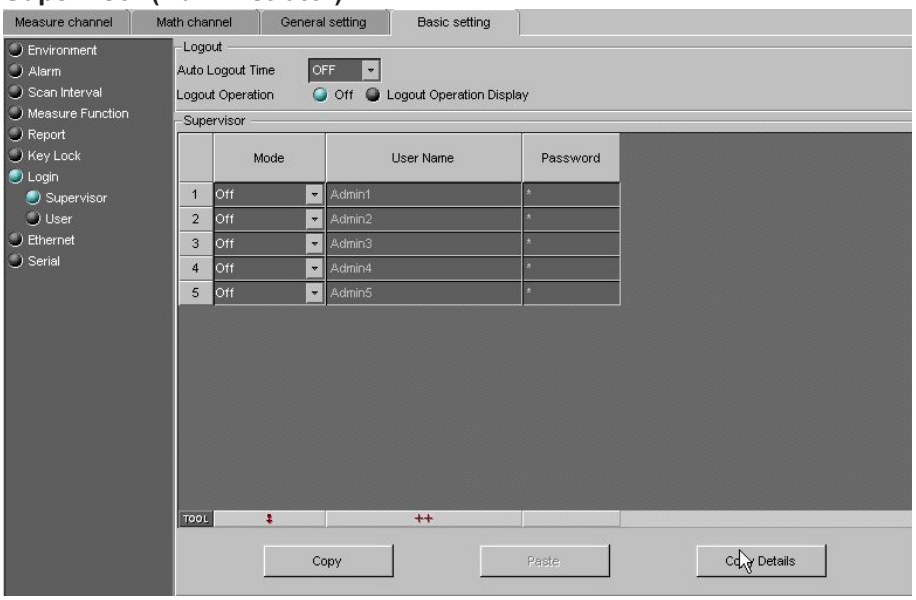
Select whether or not to disable each item.

Settings	Description
Free	Key lock not applied.
Lock	Disables the operation.

Login

You can set the [Login] when [Login] is selected as [Key Security] or [Comm. Security] under [Environment] - [Detail Setting] in the [Basic Setting] tab.

Supervisor (Administrator)



- **Auto Logout Time**

Settings	Description
OFF	Does not log out until the logout operation is executed.
1min to 10min	Automatically logs out when there is no key operation for a specified time.

- **Logout Operation**

Settings	Description
OFF	Only login operation is available.
Logout Operation Display	Allows the user to switch the operation screen in addition to the login operation.

- **Mode**

  The choices differ depending on the selected contents of [Key Security] and [Comm. Security] under [Environment] - [Detail Setting] in the [Basic Setting] tab.

Settings	Description
OFF	Not register.
Key	Log into the FX using keys.
Comm	Log into the FX via communications.
Web	Log into the operator page and monitor page of the FX using a Web browser.
Key+Comm	Log into the FX using keys and via communications.

- **User Name**

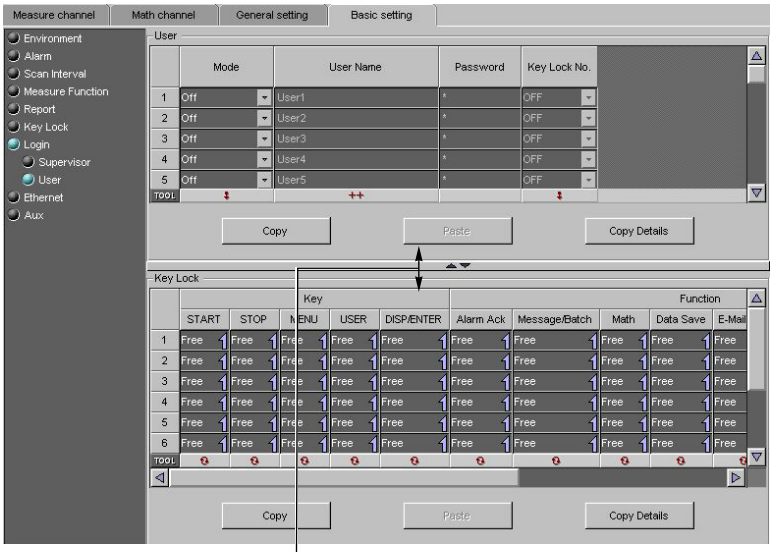
  Set the user name. (Up to 20 characters)
  You cannot register user names that are already registered.
  You cannot register “quit” or a user name containing all spaces.

- **Password**

  Set the password. (Up to 8 characters.)
  The entered password is displayed as a string of asterisks.
  You cannot register a character string that contains spaces or a password containing all spaces.

User

Up to 30 names can be registered.



- **Mode**

  The available settings vary depending on the [Security] setting.

Settings	Description
OFF	Not register.
Key	Log into the FX using keys.
Comm	Log into the FX via communications.
Web	Log into the monitor page of the FX using a Web browser.
Key+Comm	Log into the FX using keys and via communications.

- **User Name, Password**

  Same as the supervisor settings.

- **Key Lock No.**

Settings	Description
OFF	No limitations on the operation.
1 to 10	Registration number of the operation limitation.

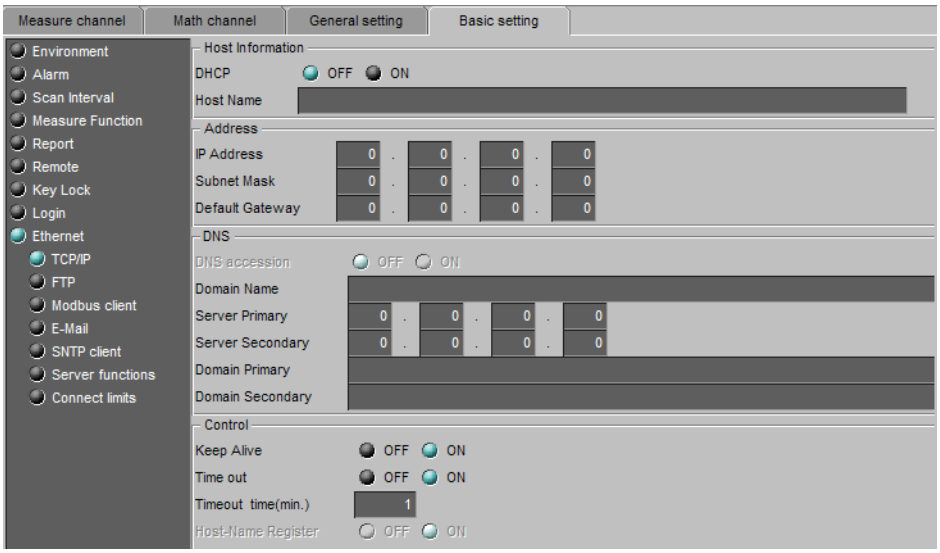
- **Key, Function, Media/USB**

  Select whether or not to disable each item.

Settings	Description
Free	Key lock not applied.
Lock	Disables the operation.

Ethernet

TCP/IP



The settings vary depending on how the IP address is acquired.
Consult with your network administrator for the network parameters such as the IP address, subnet mask, default gateway, and DNS.

When using a fixed IP address

- **DHCP**
  Set [DHCP] to [OFF].
- **Host Name**
  Set the FX's host name using up to 64 alphanumeric characters. You do not have to set this parameter.
- **IP Address**
  Set the IP address to assign to the FX.
- **Subnet Mask**
  Set the subnet mask according to the system or network to which the FX belongs.
- **Default Gateway**
  Set the IP address of the gateway.
- **Domain Name**
  Set the network domain name that the FX belongs to using up to 64 characters. You do not have to set this parameter.
- **Server Primary, Server Secondary**
  Register up to two IP addresses for the primary and secondary DNS servers.
- **Domain Primary, Domain Secondary**
  Set up to two domain suffixes: primary and secondary.

When obtaining the IP address from DHCP

- **DHCP**
  Select [ON].
- **Host Name**
  Use up to 64 alphanumeric characters to set the FX host name.
- **DNS accession**
  To automatically obtain the DNS server address, select [ON]. Otherwise, select [OFF]. If you select [OFF], you must set the IP address of the DNS server.

- **Domain Name**
  Set the network domain name that the FX belongs to using up to 64 characters. This is enabled when “DNS accession” is set to [Not].
- **Server Primary, Server Secondary**
  Register up to two IP addresses for the primary and secondary DNS servers.
- **Domain Primary, Domain Secondary**
  Set up to two domain suffixes: primary and secondary.

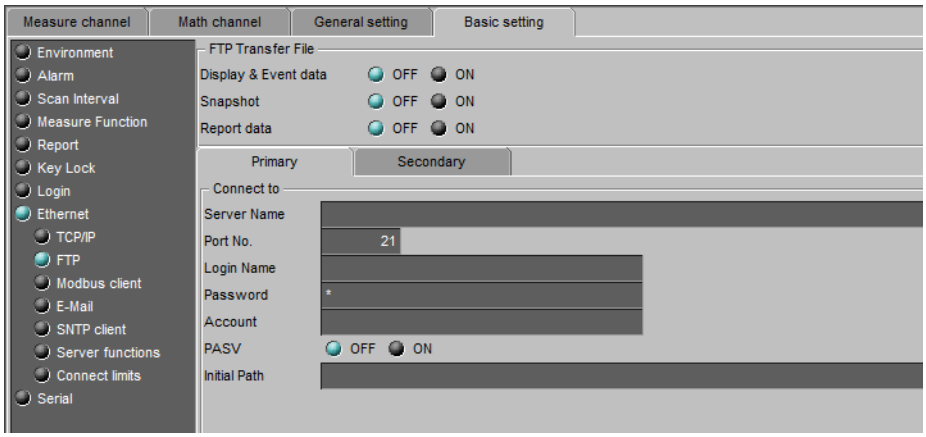
Control

- **Keep Alive**
  To disconnect when there is no response to the test packets that are periodically sent, select [ON]. Otherwise, select [OFF].
- **Time out**
  To use the application timeout function, select [ON]. Otherwise, select [OFF]. If you select [ON], a [Timeout time] is displayed.
- **Timeout value (min.)**
  Set the timeout value between 1 and 120 (minutes).
- **Host-Name Register**
  To automatically register the host name, select [ON].

Checking the communication status

The Ethernet communication status can be confirmed with the LED lamp that is provided on the Ethernet connector on the FX rear panel or the [Ethernet link] that is shown at the upper right of the basic setting screen.

FTP



FTP Transfer File

Data files that are set to [ON] are automatically transferred to the FTP destination.

File Type	Description
Display data file	Data files are automatically transferred at each file save interval.
Event data file	Files are automatically transferred when the data length of data is recorded.
Report file	Data files are automatically transferred every time a report is created.
Snapshot data file	The files are automatically transferred when a snapshot is executed.*

* Indicates snapshot using the FUNC key, communication command (EV2 command), USER key, or remote control function.

Setting the FTP connection destination

Consult your network administrator when setting parameters such as the primary/ secondary FTP servers, port number, login name, password, account, and availability of the PASV mode.

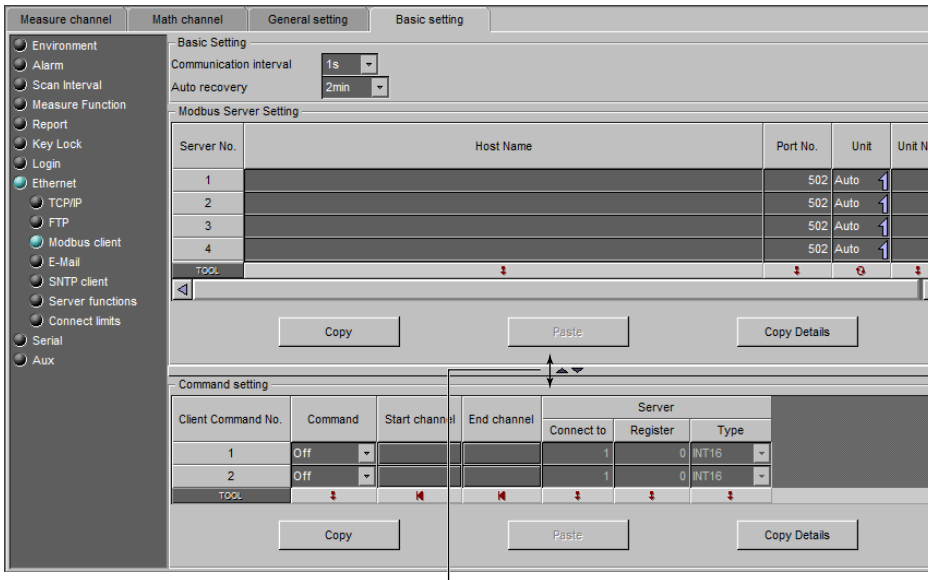
- **Primary, Secondary**
  You can specify two destination FTP servers, [Primary] and [Secondary]. If the primary FTP server is down, the file is transferred to the secondary FTP server.
- **Server Name**
  Enter the name of the file transfer destination FTP server using up to 64 alphanumeric characters.
  - If the DNS is used, you can set the host name as a server name.
  - You can also set the IP address. In this case, the DNS is not required.
- **Port No.**
  Enter the port number of the file transfer destination FTP server in the range of 1 to 65535. The default value is 21.
- **Login Name**
  Enter the login name for accessing the FTP server using up to 32 alphanumeric characters.
- **Password**
  Enter the password for accessing the FTP server using up to 32 alphanumeric characters. The password is displayed as a string of asterisks.
- **Account**
  Enter the account (ID) for accessing the FTP server using up to 32 alphanumeric characters.

- **PASV**
  Select [ON] when using the FX behind a firewall that requires the passive mode. The default setting is [OFF].
- **Initial Path**
  Enter the directory of the file transfer destination using up to 64 alphanumeric characters. The delimiter for directories varies depending on the implementation of the destination FTP server.
  Example: When transferring files to the “data” directory in the “home” directory of an FTP server on a UNIX file system.
  /home/data

Note

If the file transfer to both primary and secondary destinations fails, the FX aborts the file transfer. When the connection recovers, the FX transfers the data that could not to be transferred in addition to the new data file. However, since the data that is transferred resides in the internal memory of the FX, if the data is overwritten, the data that could not be transferred is lost.

MODBUS Client



Basic Setting

- **Communication interval**
  Set the read cycle to 1s, 2s, 5s, or 10s.
- **Auto recovery**
  Set the interval for retrying the connection when it is interrupted for some reason.
  Select OFF, 10s, 20s, 30s, 1min, 2min, 5min, 10min, 20min, 30min, or 1h.

Modbus Server setting

- **Server No.**
  Select from 1 to 16 for the server registration numbers to be configured.
- **Host Name**
  Set the destination Modbus server name using up to 64 alphanumeric characters.
  - If the DNS is used, you can set the host name as a server name.
  - You can also set the IP address. In this case, the DNS is not required.
- **Port No.**
  Enter the port number in the range of 0 to 65535 for the selected server. The default value is 502.
- **Unit**
  Select [Auto] if the unit number of the destination server is not required; Otherwise, select [Fixed]. If you select [Fixed], the [Unit No.] item is displayed.
- **Unit No.**
  Enter a fixed unit number in the range of 0 to 255.

Command setting

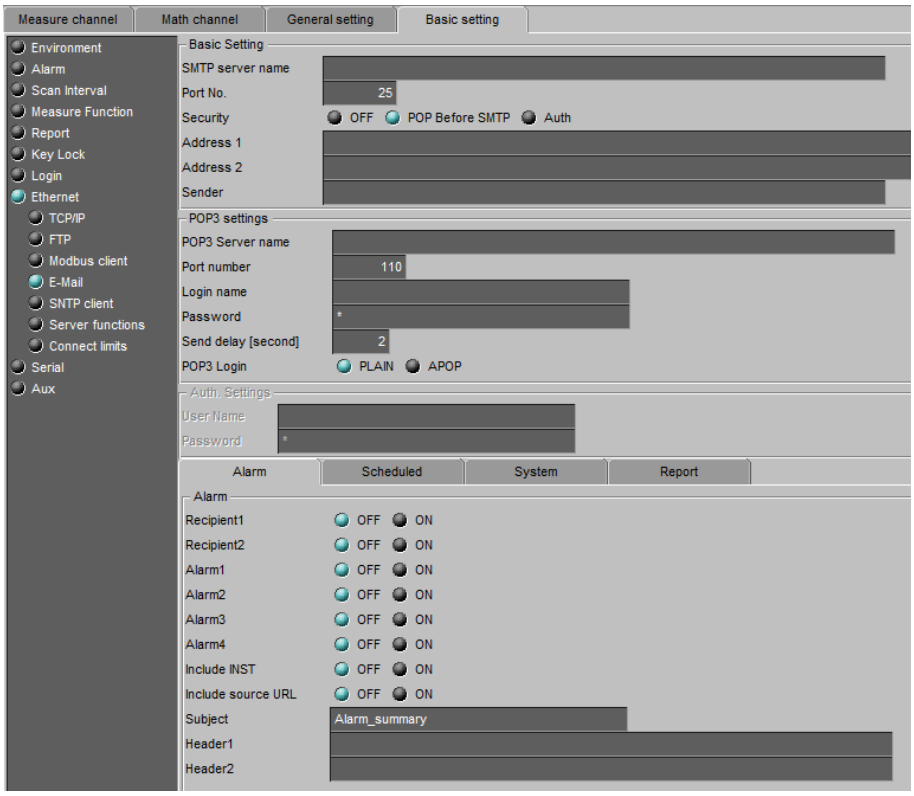
- **Command**
  Set the command type.

Settings	Description
R-Math	Read to the communication input data (32-bit floating point type) from the server.
Write	Write the measurement channel (16-bit signed integer type) to the server.
W-Math	Write the computation channel (32-bit signed integer type) to the server.

You can only select [R-Math] or [W-Math] on models that have the /M1, /PM1, or /PWR1 option.

- **Start channel and End channel (FX channels)**
  Enter the first and last channel numbers of input/output. The channel numbers that you can specify vary depending on the command type and are shown below. However, the total number of channels that you can specify varies depending on the model.
  R-Math: C01 to C24, Write: 1 to 12, W-Math: 101 to 124
- **Connected to (server number)**
  Select the server number from 1 to 16.
- **Register**
  Set the register number of the server.
  You can specify an input register in the range of 30001 to 39999 or 300001 to 365536.
  You can specify a hold register in the range of 40001 to 49999 or 400001 to 465536.
  The register numbers you can specify vary depending on the command type. See section 6.3 in the FX1000 Communication Interface User's Manual, IM 04L21B01-17EN.
- **Type**
  Select INT16, UINT16, INT32_B, INT32_L, UINT32_B, UINT32_L, FLOAT_B, or FLOAT_L.
  The types that you can specify vary depending on the type of command. See section 6.3 in the FX1000 Communication Interface User's Manual, IM 04L21B01-17EN.

E-mail



Set the SMTP server and mail recipient addresses.

Basic Setting

- **SMTP server name**
  Enter the host name or IP address of the SMTP server.
- **Port No.**
  Unless specified otherwise, set the number to the default value. The default value is 25.
- **Security**
  Select [POP before SMTP] if you need to enable POP before SMTP. To enable authenticated e-mail transmission (Authentication SMTP), select [Auth].
- **Address 1, Address 2**
  Enter the e-mail address. Multiple e-mail addresses can be entered in the box of one recipient. When entering multiple addresses, delimit each address with a space. Up to 150 characters can be entered.
- **Sender**
  Enter the sender e-mail address. You can enter up to 64 characters.

POP3 settings

- **POP3 Server name**
  Enter the POP3 server host name or IP address.
- **Port number**
  Use the default setting unless you need to change it. The default value is 110.
- **Login name**
  Enter the POP3 server login name.
- **Password**
  Enter the POP3 server login password using up to 32 characters. The password is displayed as a string of asterisks.

- **Send delay [second]**
  Set the delay between POP3 server authentication and transmission to a value from 0 to 10 seconds.
- **POP3 Login**
  To encrypt the password when logging into the POP3 server, select APOP. To send it in plain text, select PLAIN.

Auth. Settings

To enable support for authenticated e-mail transmission (Authentication SMTP), set a user name and password to use for authentication.

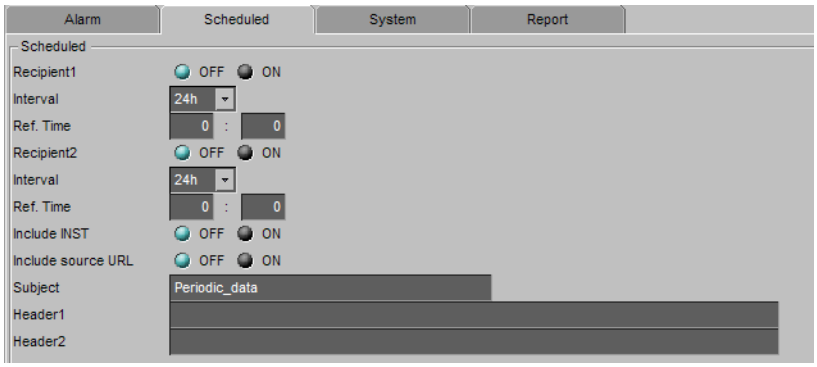
- **User name**
  Enter the user name. You can enter up to 32 characters.
- **Password**
  Enter the password. You can enter up to 32 characters. The password is displayed as a string of asterisks.

Alarm

Specify the settings for sending e-mail when alarms occur.

- **Recipient1 and Recipient2**
  Set the e-mail recipients. For Recipient1 and Recipient2, select [ON] to send e-mail or [OFF] to not send e-mail.
- **Active alarms**
  Sends an e-mail when an alarm occurs. You can select [ON] (send e-mail) or [OFF] (not send e-mail) for alarms 1 to 4.
- **Include INST**
  Select [ON] to attach instantaneous value data to e-mail. The data that is attached to an e-mail is the instantaneous value that is measured at the time the e-mail is transmitted.
- **Include source URL**
  Select [ON] to attach the source URL. Attach the URL when the Web server is enabled.
- **Subject**
  Enter the subject of the e-mail using up to 32 alphanumeric characters. The default setting is Alarm_summary.
- **Header1, Header2**
  Enter header 1 and header 2 using up to 64 characters.

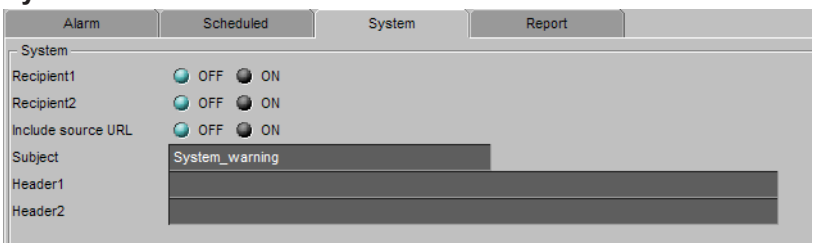
Scheduled



Specify the settings for sending e-mail at scheduled times.

- **Recipient1**
  Set the e-mail recipients. For Recipient1 and Recipient2, select [ON] to send e-mail or [OFF] to not send e-mail.
- **Interval**
  Select the interval for sending e-mail to Recipient1 and Recipient2 from 1, 2, 3, 4, 6, 8, 12, and 24 hours.
- **Ref. time**
  Enter the time used as a reference for sending the e-mail at the specified interval to Recipient1 and Recipient2.
- **Include INST, Include source URL, Subject, and Header**
  See the explanation of alarm mail. The default subject is Periodic_data.

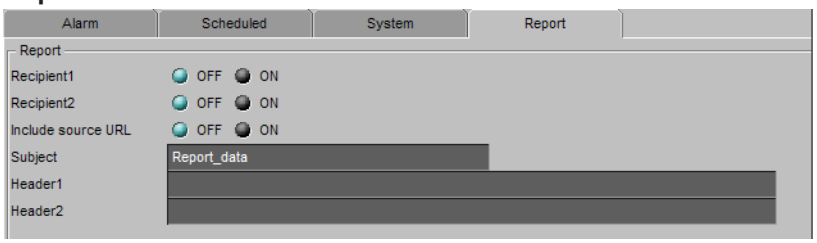
System



Specify the settings for sending e-mail when the FX recovers from a power failure, at memory end, and when an error occurs.

- **Recipient1 and Recipient2**
  Set the e-mail recipients. For Recipient1 and Recipient2, select [ON] to send e-mail or [OFF] to not send e-mail.
- **Include source URL, Subject, and Header**
  These items are the same as the e-mail that is sent when an alarm occurs. The default subject is System_warning.

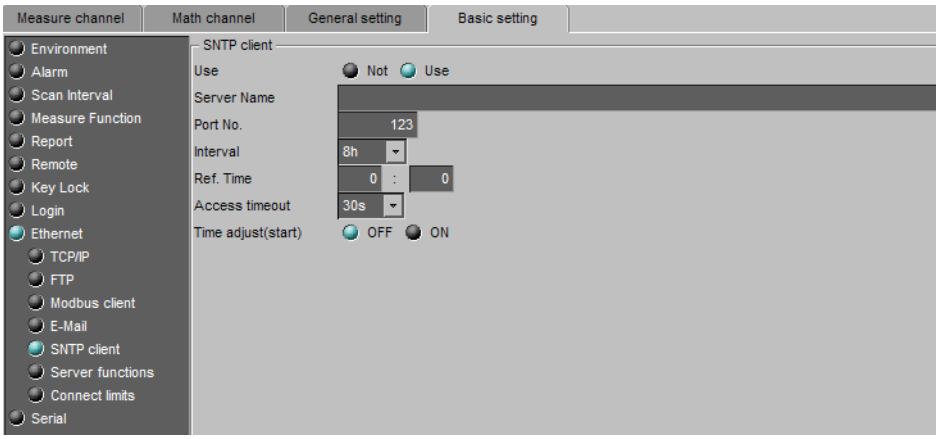
Report



Specify the settings for sending e-mail when reports are created.

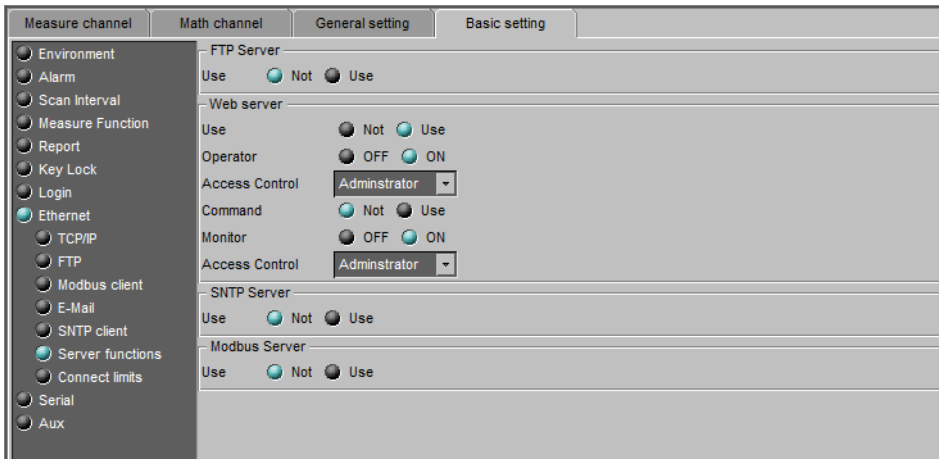
- **Recipient1 and Recipient2**
  Specify the recipients. For Recipient1 and Recipient2, select On to send e-mail or OFF to not send e-mail.
- **Include source URL, Subject, and Header**
  These items are the same as the e-mail that is sent when an alarm occurs. The default subject is Report_data.

SNTP Client



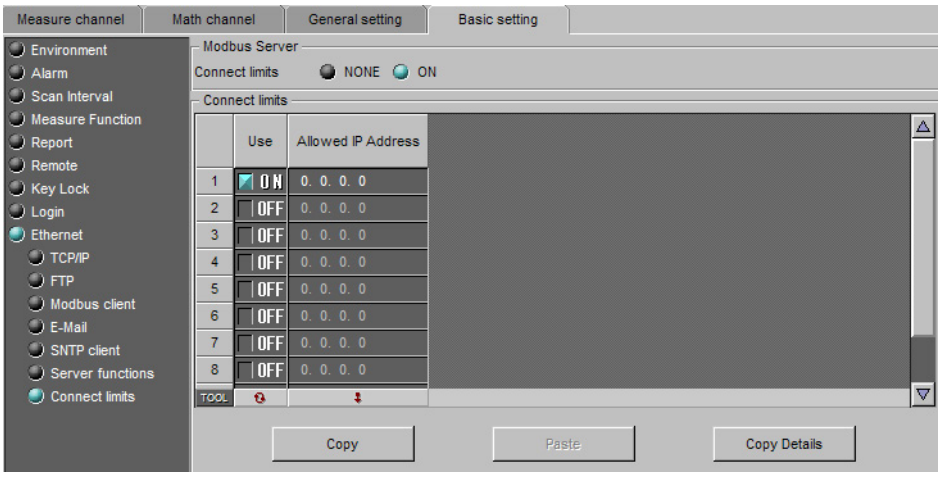
- **Use**
  Select [Use] to use the SNTP client function; Otherwise, select [Not]. If you select [Use], the SNTP client settings are displayed.
- **Server Name**
  Set the SNTP server name using up to 64 alphanumeric characters.
  - If the DNS is used, you can set the host name as a server name.
  - You can also set the IP address. In this case, the DNS is not required.
- **Port No.**
  Enter the port number of the SNTP server in the range of 1 to 65535. The default value is 123.
- **Access Interval**
  Set the time interval for synchronizing the time with the server to OFF, 1, 8, 12, or 24h. If you select OFF, you can synchronize the time manually by operating soft keys. The time is not synchronized if the difference in the time between the FX and the server is greater than or equal to 10 minutes.
- **Ref. Time**
  Set the reference time for making queries.
- **Access timeout**
  Set the time to wait for the response from the SNTP server when querying the time to 10, 30, 90s.
- **Time adjust (start)**
  Select [On] to synchronize the time using SNTP when memory start is executed; Otherwise, select [OFF].

Server Function



- **FTP Server**
  Select [Use] or [Not] (don't use).
- **Web server**
  For the Web item under Server, select [Use] or [Not] (don't use).
  - **Operator**
    To set the operator page, select [ON].
  - **Operator Access Control**
    To use access control, select [ON]. You must enter a user name and password to display the operator page. You must select [Login] as [Key Security] or [Comm. Security] under [Environment] - [Detail Setting] in the [Basic Setting] tab, and register users under the [User Registration].
  - **Command**
    To write messages, select [ON]; Otherwise, select [OFF].
  - **Monitor**
    To display the monitor page on a browser, select [ON]; otherwise, select [OFF].
  - **Monitor Access Control**
    Same as the Operator Access Control.
- **SNTP Server**
  select [Use] or [Not] (don't use).
- **Modbus Server**
  select [Use] or [Not] (don't use).

Connect limits

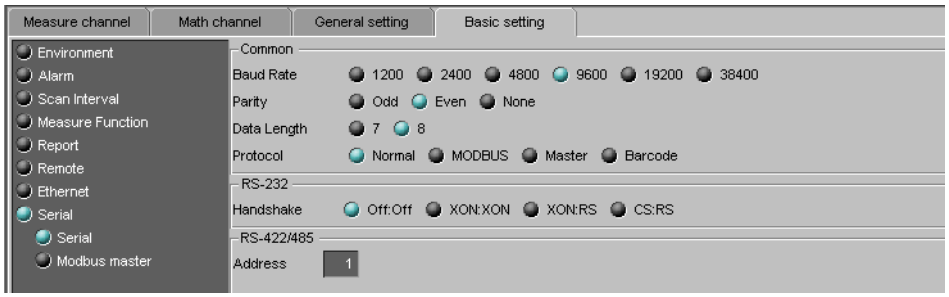


Modbus Server

- **Connect limits**
  Select [ON] to place connection limits.
- **Allowed IP Address**
  If you want to only allow certain IP addresses to connect to the FX Modbus server, set [Use] to [ON] and enter IP addresses (in the range of 0.0.0.0 to 255.255.255.255) in the [Allowed IP Address] boxes. You cannot enter host names.
  Only the IP addresses specified here can connect to the FX Modbus server.

Serial

Serial



For RS-232

- **Baud Rate**
  Select 1200, 2400, 4800, 9600, 19200, or 38400 (bps).
- **Parity**
  Set the parity check method to Odd, Even, or None.
- **Data length**
  Select 7 or 8 (bits). To output the data in binary format, select 8.
- **Handshaking**
  Select Off:Off, XON:XON, XON:RS, or CS:RS.
- **Address**
  For Modbus protocol, enter a value in the range of 1 to 99. For a general purpose communication protocol, this value is not set.
- **Protocol**

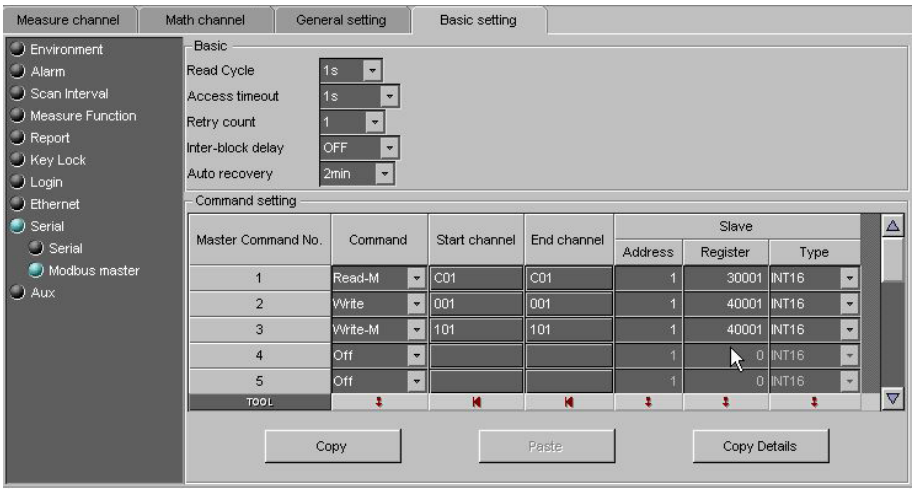
Settings	Description
Normal	General purpose communication protocol
Modbus	Modbus slave
Master	Modbus master*

* If you select Modbus master, you need to configure the Modbus master settings. See the next page.

For RS-422/485

- **Baud rate**
  Select 1200, 2400, 4800, 9600, 19200, or 38400 (bps).
- **Data length**
  Select 7 or 8 (bits). To output the data in binary format, select 8.
- **Parity**
  Set the parity check method to Odd, Even, or None.
- **Handshaking**
  Not specified.
- **Address**
  Select a number from 1 to 99.
- **Protocol**
  This is the same as with the RS-232.

Modbus master



Modbus master settings are enabled when you set [Protocol] to [Master] under [Serial] - [Serial] in the [Basic Setting] tab.

Basic setting

- **Read cycle**
  Set the read cycle to 1s, 2s, 5s, or 10s.
- **Timeout**
  Set the command timeout value to 125ms, 250ms, 500ms, 1s, 2s, 5s, 10s, or 1min.
- **Retrials**
  Set the number of retrials when there is no response from the slave. Select OFF, 1, 2, 3, 4, 5, 10, or 20.
- **Inter-block delay**
  Set the inter-block delay to OFF, 5ms, 10ms, 15ms, 45ms, or 100ms.
- **Auto recovery**
  Set the auto recovery time from communication halt. Select OFF, 1min, 2min, 5min, 10min, 20min, 30min, or 1h.

Command setting

- **Command**
  Set the transmitted command type.

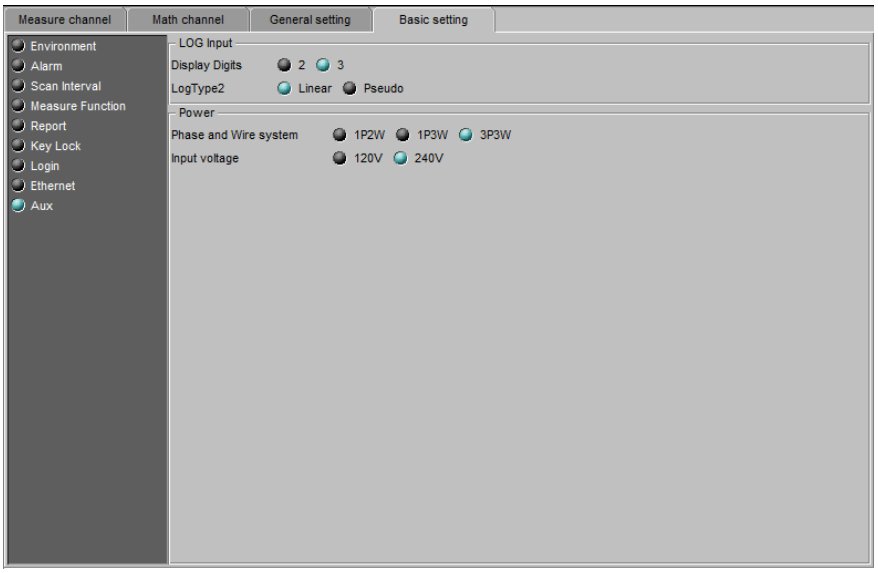
Settings	Description
R-Math	Read to the communication input channel (32-bit floating point type) from the slave.
Write	Write the measurement channel (16-bit signed integer type) to the slave.
W-Math	Write the computation channel (32-bit signed integer type) to the slave.

You can only select [R-Math] or [W-Math] on models that have the /M1, /PM1, or /PWR1 option.

- **Start channel/End channel (master channel numbers)**
  Enter the first and last channel numbers of input/output. The channel numbers that you can specify vary depending on the command type and are shown below. However, the total number of channels that you can specify varies depending on the model.
  R-Math: C01 to C24, Write: 1 to 12, W-Math: 101 to 124
- **Address**
  Enter the address of the slave device in the range of 1 to 247.

- **Register**
  Set the register number of the server.
  For an input register, select in the range of 30001 to 39999 and 300001 to 365536.
  You can specify a hold register in the range of 40001 to 49999 or 400001 to 465536.
  The register numbers you can specify vary depending on the command type. See section 6.3 in the FX1000 Communication Interface User's Manual, IM 04L21B01-17EN.
- **Type**
  Select INT16, UINT16, INT32_B, INT32_L, UINT32_B, UINT32_L, FLOAT_B, or FLOAT_L.
  The type you can specify vary depending on the command type. See section 6.3 in the FX1000 Communication Interface User's Manual, IM 04L21B01-17EN.

Aux



Log Input

- **Display Digits**
  This setting is applied to any channels that are set to [LogType1] or [LogType2]. You can set the number of digits in the mantissa of digital values to 2 or 3.
  Example: If the number of mantissa display digits is 2, “1.2E+02.” If the number of mantissa display digits is 3, “1.23E+02.”
- **LogType2**
  This setting is applied to channels that are set to [LogType2]. If you set the channel to input that is linear on a logarithmic scale, select [Linear]. If you set the channel to pseudo logs, select [Pseudo].

Note

The setting of [LogType2] (Log Linear Input or Pseudo Log Input) is available if the FX1000 firmware version is R1.11 or later.

Power

- **Phase and Wire system**
  You can set the phase and wire system to [1P2W] (single-phase two-wire system), [1P3W] (single-phase three-wire system), or [3P3W] (three-phase three-wire system).
- **Input voltage**
  When you have set the phase and wiring system to a value other than [1P3W], you can set the rated input voltage to [120V] or [240V]. When you have set the phase and wiring system to [1P3W], the rated input voltage is fixed to [240V].

2.7 Sending the Setup Data to the FX

This can only be performed on FXs that have a communication interface (/C2, /C3, or /C7 option). You cannot send data while the FX is performing memory sampling or math computations.

Setup Data That Is Sent

Address Setup Data

When settings that deal with communication (hereinafter referred to as “address settings”), such as IP addresses, are changed, the data for those settings is sent separately from other setup data. A FX that receives address setup data restarts automatically and begins operating with the data that has been sent.
The following items are address settings:

- The [TCP/IP] and [Server functions] settings under [Ethernet].
- The [Serial] settings under [Serial].

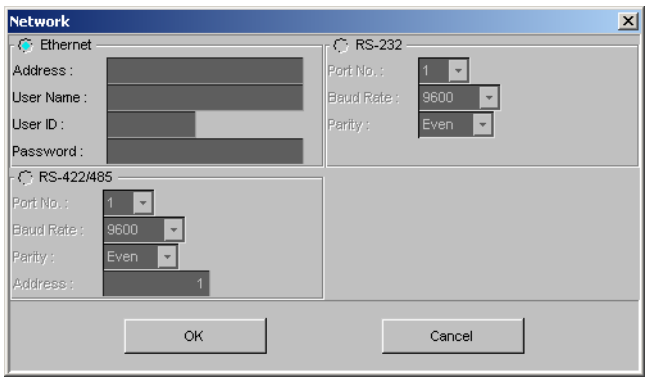
Setup Data Other Than the Address Setup Data

Other setup data is sent together.

Sending Address Setup Data

1. Select [Comm.] - [Partial Transfer] - [Address Settings] from the menu bar.
The [Network] dialog box appears.

2. Enter the parameters, and click the [OK] button.



The [Store] dialog box appears.

3. Click [OK].
Data transfer starts. A message appears to indicate when data transfer has stopped. Click [OK] to close the message. The data that you send is enabled after the FX restarts.

Note

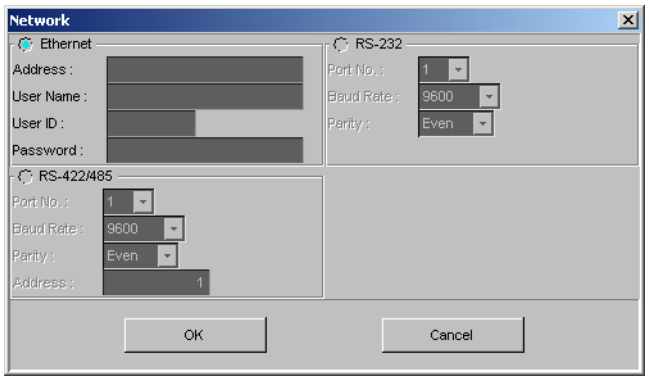
After you change the address, the address that is sent is recorded as the retry destination. The next time you open the [Network] dialog box, the address appears as the initial value.

Sending Setup Data Other Than the Address Setup Data

1. Click the [Send Data] button, or select [Comm.] - [Send Setting] from the menu bar.

The [Network] dialog box appears.

2. Enter the parameters, and click the [OK] button.



The [Store] dialog box appears.

3. Click [OK].

Data transfer starts. A message appears to indicate when data transfer has stopped. Click [OK] to close the message. The settings that you sent are applied.

2.8 Saving the Setup Data

1. Click the Save button or choose [File] - [Save], or [File] - [Save As].
   If you choose [File] - [Save as], the [Save As] dialog box appears.

2. Enter a destination file name and location and click the [Save] button.

Save
The previous file (*.PDL) is overwritten.

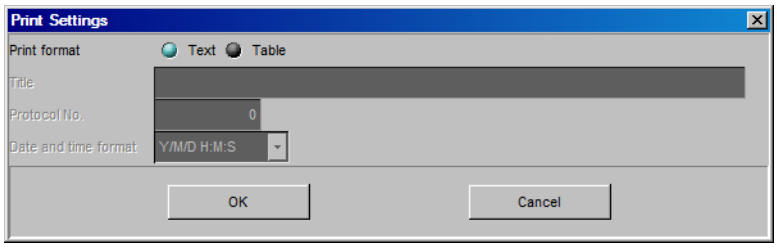
Save As
The setup data is saved to a file with the specified file name at the specified destination.

2.9 Printing Setup Data

Print Format Settings

You can set the print format of the setup data to text or table format.

1. Select [File] - [Print Format Settings] from the menu.
The [Print Settings] dialog box appears.



2. Configure the various settings.

Item	Setting	Description	Default
Print format	Text	Only text is printed.	Text
	Table	The data is printed in a preset format.	

The following settings only need to be configured when the print format is [Table].

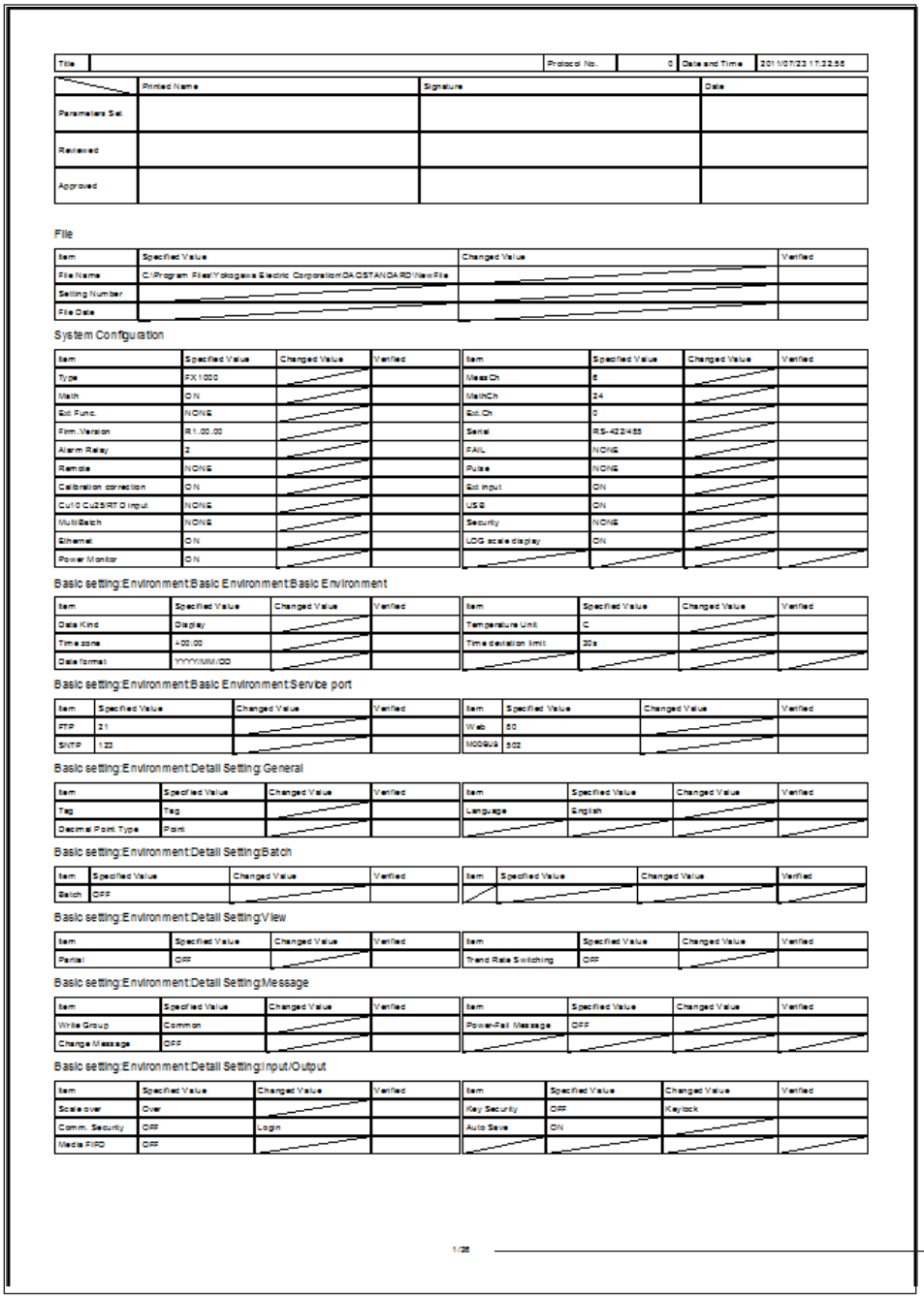
Item	Input Value/Option		Default
Title	Enter a character string of up to 128 characters in length.		Nothing is printed.
Protocol No.	Specify an integer from 0 to 2147483647.		0
Date and time format	Year/Month/Day Hour: Minute:Second	Example: 2010/04/25 12:34:56	✓
	Month/Day/Year Hour: Minute:Second	Example: 04/25/2010 12:34:56	
	Day/Month/Year Hour: Minute:Second	Example: 25/04/2010 12:34:56	
	Day.Month.Year Hour: Minute:Second	Example: 25.04.2010 12:34:56	
	Year-Month-DayTHour: Minute:Second	Example: 2010-04-25T12:34:56	

Note

The print setting information is held while Hardware Configurator is open.

Print Example (Table)

This is an example of what the first printed page looks like.



Title		Protocol No.	0	Date and Time	2011/07/23 17:32:55

	Printed Name	Signature	Date
Parameters Set			
Reviewed			
Approved			

File

Item	Specified Value	Changed Value	Verified
File Name	C:\Program Files\Yokogawa Electric Corporation\DAQSTANDARD\New File		
Setting Number			
File Date			

System Configuration

Item	Specified Value	Changed Value	Verified	Item	Specified Value	Changed Value	Verified
Type	FX1000			MeasCh	6		
Math	ON			MathCh	24		
Ext Func.	NONE			Ext.Ch	0		
Firm.Version	R1.00.00			Serial	RS-422/485		
Alarm Relay	2			FAIL	NONE		
Remote	NONE			Pulse	NONE		
Calibration correction	ON			Ext input	ON		
Cu10 Cu25/RT D input	NONE			USB	ON		
Multi Batch	NONE			Security	NONE		
Ethernet	ON			LOG scale display	ON		
Power Monitor	ON						

Basic setting:Environment:Basic Environment:Basic Environment

Item	Specified Value	Changed Value	Verified	Item	Specified Value	Changed Value	Verified
Data Kind	Display			Temperature Unit	C		
Time zone	+00:00			Time deviation limit	30s		
Date format	YYYY/MM/DD						

Basic setting:Environment:Basic Environment:Service port

Item	Specified Value	Changed Value	Verified	Item	Specified Value	Changed Value	Verified
FTP	21			Web	80		
SNTP	123			MODBUS	502		

Basic setting:Environment:Detail Setting:General

Item	Specified Value	Changed Value	Verified	Item	Specified Value	Changed Value	Verified
Tag	Tag			Language	English		
Decimal Point Type	Point						

Basic setting:Environment:Detail Setting:Batch

Item	Specified Value	Changed Value	Verified	Item	Specified Value	Changed Value	Verified
Batch	OFF						

Basic setting:Environment:Detail Setting:View

Item	Specified Value	Changed Value	Verified	Item	Specified Value	Changed Value	Verified
Partial	OFF			Trend Rate Switching	OFF		

Basic setting:Environment:Detail Setting:Message

Item	Specified Value	Changed Value	Verified	Item	Specified Value	Changed Value	Verified
Write Group	Common			Power-Fail Message	OFF		
Change Message	OFF						

Basic setting:Environment:Detail Setting:Input/Output

Item	Specified Value	Changed Value	Verified	Item	Specified Value	Changed Value	Verified
Scale over	Over			Key Security	OFF	Keylock	
Comm. Security	OFF	Login		Auto Save	ON		
Media FIFO	OFF						

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Header

Setup file

System configuration on the recorder

Setup items

Footer (page number)

Header
The header contains the title, protocol number, date, and signature.

Setup File
- **Settings**

Item	Description
File Name	The name of the setup file that is being edited. The full path is printed. The name of a newly created file is “NewFile.”
Setting Number	Not used. A diagonal line is drawn through this cell.
File Date	Not used. A diagonal line is drawn through this cell.

- **Changed Value**
  The last file name, setting number, and file date that were loaded when you selected [Load Changed Settings].

Specified Values and Changed Values
There are specified value and changed value columns for the system configuration and setup items. The setting values are the values at the time when one of the following operations was last performed (the same as the settings that are recovered when you select [File] - [Restore Original]).
- [File] - [New]
- [File] - [Open]
- [File] - [Save]
- [File] - [Save As]
- [Comm.] - [Receive Setting]
- [Comm.] - [Send Setting]
- [Comm.] - [Partial Transfer]
- [System] - [System Configuration]

The changed values are the last values that have been set for each item. If a value has not been changed, a diagonal line is drawn through its cell.

Note

Items that cannot be set are not printed. Also, an item whose “Specified Value” is not printed is not printed even if the settings are changed so that it can be set.
Example: When [Data Kind] is set to [Display], [Scan Interval] and [Data Length], which are event data settings, are not printed. Even if you change [Data Kind] to [Event] and set [Scan Interval] and [Data Length], these items are not printed.

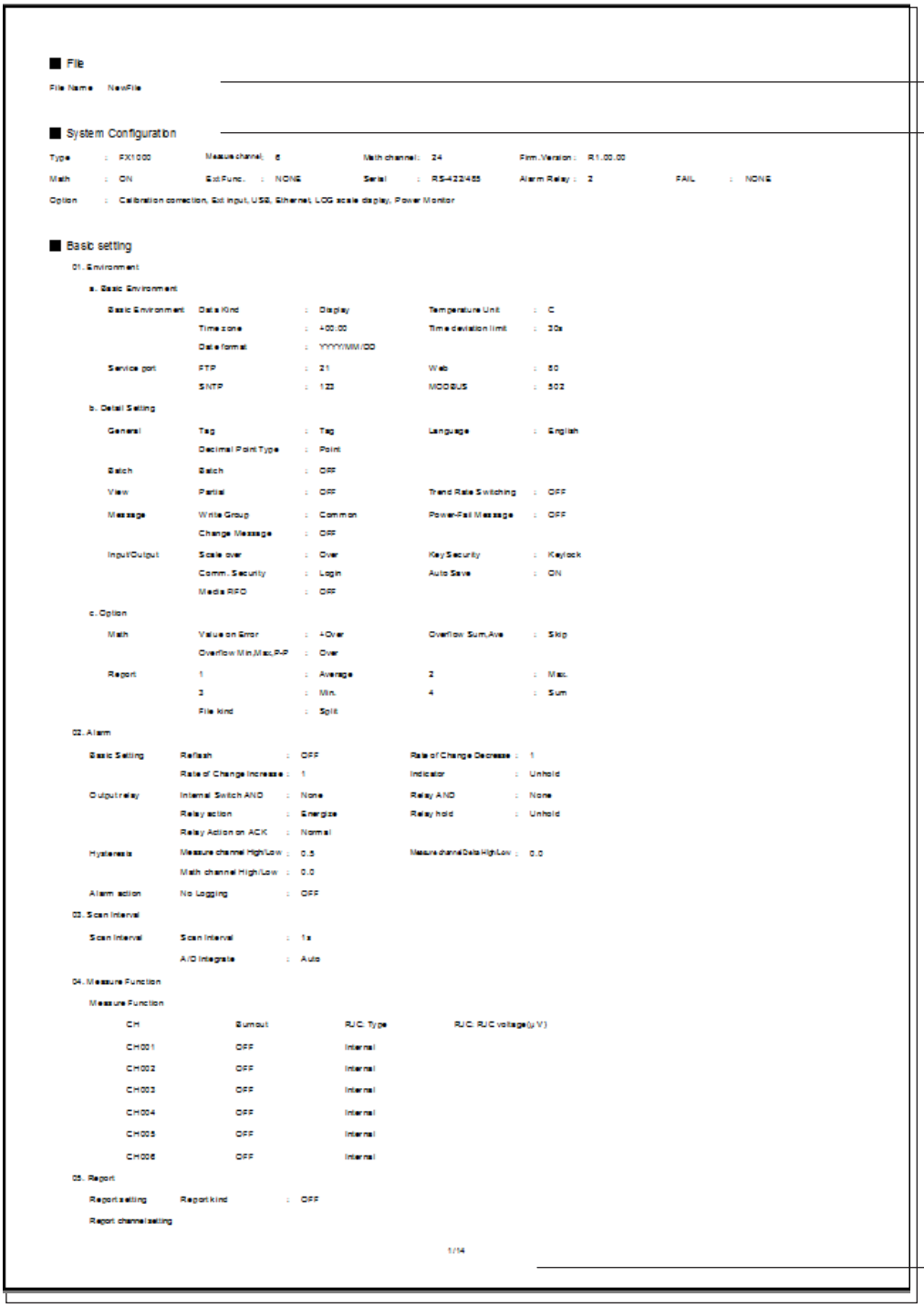
System Configuration
The system configuration of the setup file. The device name, firmware version number, and options are printed.

Setup Items
The settings for each setup item.

Footer
The page number.

Print Example (Text)

This is an example of what the first printed page looks like.



■ File

File Name : NewFile

■ System Configuration

Type : FX1000 Measure channel : 6 Math channel : 24 Firm.Version : R1.00.00

Math : ON Ext.Func. : NONE Serial : RS-422/485 Alarm Relay : 2 FAIL : NONE

Option : Calibration correction, Ext input, USB, Ethernet, LOG scale display, Power Monitor

■ Basic setting

01. Environment

a. Basic Environment

Basic Environment	Date Kind	: Display	Temperature Unit	: C	
	Time zone	: +00:00	Time deviation limit	: 30s	
	Date format	: YYYY/MM/DD			
Service port	FTP	: 21	Web	: 80	
	SNTP	: 123	MODBUS	: 502	

b. Detail Setting

General	Tag	: Tag	Language	: English	
	Decimal Point Type	: Point			
Batch	Batch	: OFF			
View	Partial	: OFF	Trend Rate Switching	: OFF	
Message	Write Group	: Common	Power-Fail Message	: OFF	
	Change Message	: OFF			
Input/Output	Scale over	: Over	Key Security	: Keylock	
	Comm. Security	: Login	Auto Save	: ON	
	Media RFO	: OFF			

c. Option

Math	Value on Error	: +Over	Overflow Sum,Ave	: Skip	
	Overflow Min,Max,P-P	: Over			
Report	1	: Average	2	: Max.	
	3	: Min.	4	: Sum	
	File kind	: Split			

02. Alarm

Basic Setting	Reflash	: OFF	Rate of Change Decrease	: 1	
	Rate of Change Increase	: 1	Indicator	: Unhold	
Output relay	Internal Switch AND	: None	Relay AND	: None	
	Relay action	: Energize	Relay hold	: Unhold	
	Relay Action on ACK	: Normal			
Hysteresis	Measure channel High/Low	: 0.5	Measure channel Data High/Low	: 0.0	
	Math channel High/Low	: 0.0			
Alarm action	No Logging	: OFF			

03. Scan Interval

Scan Interval	Scan Interval	: 1s
	A/D Integrate	: Auto

04. Measure Function

Measure Function

CH	Burnout	R/C. Type	R/C. R/C voltage(μV)
CH001	OFF	Internal	
CH002	OFF	Internal	
CH003	OFF	Internal	
CH004	OFF	Internal	
CH005	OFF	Internal	
CH006	OFF	Internal	

05. Report

Report setting	Report kind	: OFF
Report channel setting		

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File name

System configuration on the recorder

Setup items

Page number

Print Setup

1. Select [File] - [Print Setting].
2. Set the printer, paper and orientation.

Note

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

Print Preview

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

Printing

1. Click the [Print] button, or choose [File] - [Print] from the menu bar.
   The [Print] dialog box appears.
2. Click the [OK] button.
   The setup data is printed. For an example of what the printed setup data looks like, see “Print Example (Text)” on the previous page.

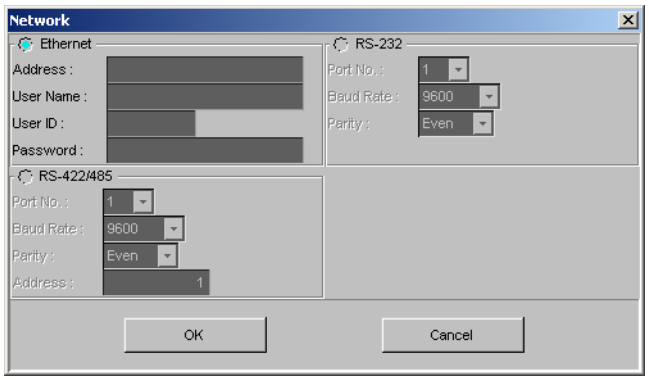
2.10 Starting and Stopping Measurement on the FX

This can only be performed on FXs that have a communication interface (/C2, /C3, or /C7 option). From this software, you can start and stop the FX and display FX hardware information.

Starting and Stopping Measurement

1. Select [Comm.] - [Action] - [Memory&Math Start]/[Memory&Math Stop] from the menu bar.
   The [Network] dialog box appears.

2. Enter the parameters, and click the [OK] button.



   The [Command] dialog box appears.

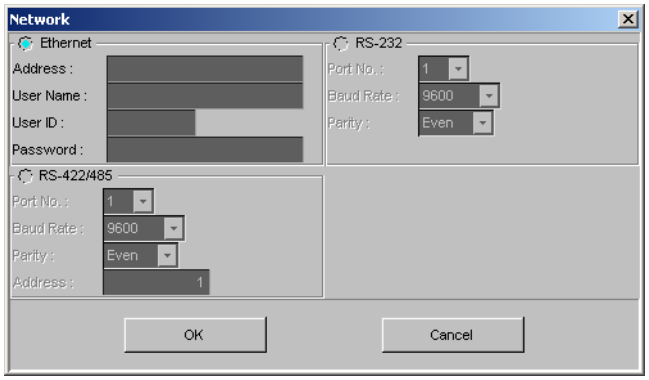
3. Click [OK].
   Recording on the FX starts or stops.

2.11 Viewing the FX Information

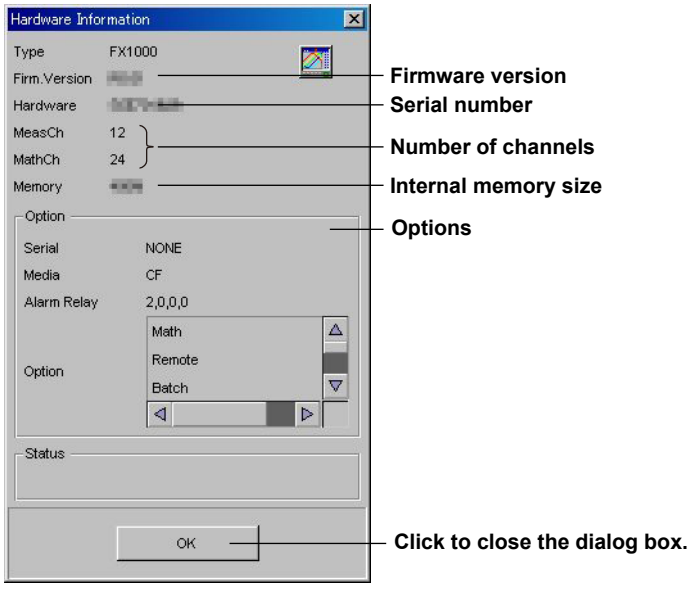
Displaying FX Hardware Information

1. Select [Comm.] - [Action] - [Hardware Info] from the menu bar.
   The [Network] dialog box appears.

2. Enter the parameters, and click the [OK] button.



The [Hardware Information] dialog box appears.



2.12 Characters That Can Be Used

List of Input Types

Type	Allowed Characters		Item
	Alphanumeric characters	Symbol	
Arbitrary string	Yes	Yes	Tag, group
	Yes	No	Batch field title/characters, file header, mail header
Alphanumeric	Yes	Yes	Unit, user name, password, expressions, accounts
Machine address	Yes	Disallowed	Host name, domain name, server name, and domain suffix
E-mail address	Yes	Disallowed	Transfer destination, transfer source
Subject	Yes	Disallowed	Mail title
File path name	Yes	Disallowed	File name, directory name,initial path

[Yes] and [Disallowed] indicate availability.
“Disallowed” in the symbol box indicates some disallowed characters are present even though input was possible.
The following characters cannot be used in a file path: * + . /
Expressions are defined by the grammar.

Allowed alphanumeric characters and symbols expressed with a single byte are as follows.

Table of Character Codes

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

(SP) means “space.”
“°” is used to indicate the temperature in degrees. Input, output and indicated using “ ^.”

Blank Page

3.1 Troubleshooting

Warning Message List

Code	Message
W3435	System configuration has been changed. The input configuration and data will be initialized. Continue?
W6035	Contains invalid data. Open this setting?
W6033	Start Memory sampling/Math.
W6034	Stop Memory sampling/Math.
W6038	Initialize current settings.
W6039	Hardware and software configurations don't match. Continue sending data?
W6041	Send Setting to Connecting Hardware.
W6042	Receive Setting from Connecting Hardware.
W6043	The edited settings will be lost. Are you sure you want to continue?

Error List

Code	Message	Corrective Action
E0401	Communication Error.	Check the communication settings.
E6001	Failed to make file.	Check the free space in the directory.
E6002	Failed to open file.	Try to load the file again. If still not possible, the file may be damaged. Select another file.
E6003	Unreadable file.	Select another file.
E6004	Communication impossible while media in use.	Execute the operation after data has been saved to the medium.
E6005	Now sampling & calculating. Can't store settings.	Stop memory sampling and calculations (computation).
E6006	Now sampling. Can't store settings.	Stop memory sampling.
E6007	Now calculating. Can't store settings.	Stop calculations (computation).

Message

Code	Message
M6063	Sending finished.
M6064	Receiving finished.

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