Introduction
This manual explains how to use DAQSTANDARD Hardware Configurator. Please read this manual carefully before operating the software to ensure its correct use.

Notes
• The contents of this manual are subject to change without prior notice.
• Every effort has been made in the preparation of this manual to ensure accuracy. However, if any questions arise or errors are found in this manual, please inform the nearest Yokogawa sales representative office.
• Copying or reproduction by any means of all or any part of the contents of this manual without permission is strictly prohibited.
• Yokogawa will not accept any responsibility for damage caused directly or indirectly as result of use of this software.
• Before installing the software, check that your PC is not infected by a virus.
• Log onto Windows as an administrator.

Copyright
Yokogawa holds the copyright to the software provided.

Trademarks
• Microsoft and Windows are registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
• Adobe and Acrobat are registered trademarks or trademarks of Adobe Systems Incorporated.
• Company and product names that appear in this manual are registered trademarks or trademarks of their respective holders.
• The company and product names used in this manual are not accompanied by the registered trademark or trademark symbols (® and ™).

Revisions
1st Edition: November 2011
2nd Edition: September 2012
3rd Edition: January 2013
4th Edition: October 2015
5th Edition: July 2017
Software License Agreement

NOTICE - PLEASE READ CAREFULLY BEFORE USE

Thank you very much for selecting the software of Yokogawa Electric Corporation (hereinafter called "Yokogawa").

By installing the Yokogawa Software Program, you acknowledge that you understand and fully agree to the "Terms and Conditions of the Software License" (hereinafter called "Terms and Conditions") which is written in the documentation and separately attached. Accordingly, the Terms and Conditions bind you.

Yokogawa hereby grants you permission to use the Yokogawa Software Program on the conditions that you agree to the Terms and Conditions before you install it in or onto a computer.

IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS, PLEASE DO NOT INSTALL AND USE THE YOKOGAWA SOFTWARE PROGRAM.

Terms and Conditions of the Software License

Yokogawa Electric Corporation, a Japanese corporation (hereinafter called "Yokogawa"), grants permission to use this Licensed Software (as defined below) to you on the conditions that you agree to the terms and conditions stipulated in Article 1 hereof. You, as the Licensee (hereinafter called "Licensee"), shall agree to the following terms and conditions on the software license (hereinafter called the "Agreement") when the Licensed Software is installed by the Licensee.

Article 1 (Scope)

1.1 This Agreement applies to below Licensed Software delivered by Yokogawa (hereinafter called the "Licensed Software").

(1) Licensed Software Name: DASSTANDARD for FX1000 (Model FXA120)

This Agreement applies to the updates and upgrades of the Licensed Software, if Yokogawa provides such updates or upgrades of the Licensed Software to the Licensee.

1.2 The Licensed Software includes all applicable programs and documentation, without limitation, all proprietary technology, algorithms, a factor, invariant, process and/or other know-how contained therein.

Article 2 (Grant of License)

2.1 Yokogawa hereby grants to Licensee a non-exclusive, non-transferable royalty-free right to use the Licensed Software solely for your Licensee’s internal operation use.

2.2 The Licensee is, unless otherwise agreed upon in writing by Yokogawa, not entitled to change, sell, distribute, transfer, or sublicense the Licensed Software.

2.3 The Licensed Software shall not be copied in part or in whole except for keeping one (1) copy for back-up purpose. The Licensee shall secure or supervise the copy of the Licensed Software by the Licensee itself with great, strict, and due care.

2.4 The Licensed Software remains the exclusive property of Yokogawa and, if any, those of third parties from whom Yokogawa is sublicensed (hereinafter such third party’s software is called “Third Party Software”, which may include any software program made or coded by affiliates of Yokogawa). In no event shall the Licensee dump, reverse assemble, reverse compile, or reverse engineer the Licensed Software so that the Licensee may translate the Licensed Software into other programs or change it into a man-readable form from the source code of the Licensed Software. Unless otherwise separately agreed upon by Yokogawa, Yokogawa shall not provide the Licensee the source code for the Licensed Software.

2.5 The Licensed Software and its related documentation inclusive of its ownership of copyright shall be the proprietary property of Yokogawa or a third party who grants Yokogawa the rights. In no event shall the Licensee transfer, lease, sublicense, or assign any rights relating to the Licensed Software.

2.6 Yokogawa may use or add copy protection in or onto the Licensed Software. In no event shall, regardless of the purpose, the Licensee remove or attempt to remove such copy protection.

2.7 The Licensed Software may include the Third Party Software. In the case that Yokogawa is granted permission to sublicense to third parties by any licensors (sub-licensor) of the Third Party Software under different terms and conditions than those stipulated in this Agreement, the Licensee shall observe such terms and conditions of which Yokogawa notifies the Licensee in writing separately.

2.8 In no event shall the Licensee modify, remove or delete a copyright notice of Yokogawa and its licensor contained in the Licensed Software, including any copy thereof.

Article 3 (Restriction of Specific Use)

3.1 The Licensed Software shall not be intended specifically to be designed, developed, constructed, manufactured, distributed or maintained for the purpose of the following events:

a) Operation of any aviation, vessel, or support of those operations from the ground;

b) Operation of nuclear products, its facilities and/or radiation apparatus;

c) Operation of nuclear weapons, chemical weapons and/or biological weapons, or railroad;

d) Operation of medical instrumentation directly utilized for humankind or the human body.

3.2 Even if the Licensee uses the Licensed Software for the purposes in the preceding Paragraph 3.1, Yokogawa has no liability to or responsibility for any claims or damages arising out of the use or operations of the Licensed Software, and the Licensee agrees, on its own responsibility, to solve and settle the claims and damages and to defend, indemnify or hold Yokogawa totally harmless, from or against any liabilities, losses, damages and expenses (including fees for recalling the Products and reasonable attorney’s fees and court costs), or claims arising out of and related to the above-said claims and damages.

Article 4 (Warranty)

4.1 The Licensee shall agree that the Licensed Software shall be provided to the Licensee on an "as is" basis when delivered. To the extent that the Licensed Software is provided by the medium and damage to the medium of the Licensed Software, attributable to Yokogawa is found, Yokogawa agrees to replace, free of charge, any Licensed Software on condition that the defective Licensed Software shall be returned to Yokogawa’s specified authorized service facility within 12 month from the delivery of Yokogawa after opening the Package at the Licensee’s expense. As the Licensed Software is provided to the Licensee on an "as is" basis when delivered, in no event shall Yokogawa warrant that any information on or in the Licensed Software, including without limitation, data on computer programs and program listings, be completely accurate, correct, reliable, or the most updated.

4.2 Notwithstanding the preceding Paragraph 4.1, when Third Party Software is included in the Licensed Software, the warranty period and related conditions that apply shall be those established by the provider of the third party software.
Software License Agreement

4.3 When Yokogawa decides in its own judgement that it is necessary, Yokogawa may from time to time provide the Licensee with Release Upgrades specified by Yokogawa (hereinafter called “Release Upgrades”).

4.4 Notwithstanding the preceding Paragraph 4.3, in no event shall Yokogawa provide Updates where the Licensee or any third party conducted renovation or improvement of the Licensed Software.

4.5 Correction of nonconformity in the manner and for the period of time provided above shall be the Licensee’s sole and exclusive remedy for any failure of Yokogawa to comply with its obligations and shall constitute fulfillment of all liabilities of Yokogawa and any third party licensing the Third Party Software to Yokogawa (including any liability for direct, indirect, special, incidental or consequential damages) whether in warranty, contract, tort (including negligence but excluding willful conduct or gross negligence by Yokogawa) or otherwise with respect to or arising out of the use of the Licensed Software.

4.6 THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF QUALITY AND PERFORMANCE, WRITTEN, ORAL, OR IMPLIED, AND ALL OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY YOKOGAWA AND ALL THIRD PARTIES LICENSING THIRD PARTY SOFTWARE TO YOKOGAWA.

Article 5 (Infringement)

5.1 If and when any third party should demand injunction, initiate a law suit, or demand compensation for damages against the Licensee under patent right (including utility model right, design patent, and trade mark), copyright, and any other rights relating to any of the Licensed Software, the Licensee shall promptly notify Yokogawa in writing to that effect.

5.2 In the case of the preceding Paragraph 5.1, the Licensee shall assign to Yokogawa all of the rights to defend the Licensee and to negotiate with the claiming party. Furthermore, the Licensee shall provide Yokogawa with necessary information or any other assistance for Yokogawa’s defense and negotiation. If and when such a claim should be attributable to Yokogawa, subject to the written notice to Yokogawa stated in the preceding Paragraph 5.1, Yokogawa shall defend the Licensee and negotiate with the claiming party at Yokogawa’s cost and expense and be responsible for the final settlement or judgment granted to the claiming party in the preceding Paragraph 5.1.

5.3 When any assertion or allegation of the infringement of the third party’s rights defined in Paragraph 5.1 is made, or when at Yokogawa’s judgment there is possibility of such assertion or allegation, Yokogawa, at its own discretion, may take any of the following countermeasures at Yokogawa’s cost and expense.
   a) To acquire the necessary right from a third party which has lawful ownership of the right so that the Licensee will be able to continue to use the Licensed Software;
   b) To replace the Licensed Software with an alternative one which avoids the infringement; or
   c) To remodel the Licensed Software so that the Licensed Software can avoid the infringement of such third party’s right.

5.4 If and when Yokogawa fails to take either of the countermeasures as set forth in the preceding subparagraphs of Paragraph 5.3, Yokogawa may terminate this Agreement. Except for the foregoing, in no event shall Yokogawa be liable for any damages whatsoever (including any liability for direct, indirect, special, incidental or consequential damages) whether in warranty, contract, tort (including negligence but excluding willful conduct or gross negligence by Yokogawa).

THE FOREGOING PARAGRAPHS STATE THE ENTIRE LIABILITY OF YOKOGAWA AND ANY THIRD PARTY LICENSING THIRD PARTY SOFTWARE TO YOKOGAWA WITH RESPECT TO INFRINGEMENT OF THE INTELLECTUAL PROPERTY RIGHTS INCLUDING BUT NOT LIMITED TO, PATENT AND COPYRIGHT.

Article 6 (Liabilities)

6.1 If and when Licensee suffers damage due to reasons attributable to Yokogawa and Licensed Software provided to the Licensee under this Agreement, Yokogawa shall follow the provisions of this Agreement. Provided, however, in no event shall Yokogawa be liable for any damages whatsoever (including any liability for direct, indirect, special, incidental or consequential damages) whether in warranty, contract, tort. If the Licensed Software delivered by Yokogawa is altered, modified or combined with other software or is otherwise made different from Yokogawa’s General Specifications, basic specifications, functional specifications or manuals without Yokogawa’s prior written consent, Yokogawa shall be exempted from its obligations and liabilities under this Agreement or by law.

6.2 All causes of action against Yokogawa arising out of or relating to this Agreement or the performance or breach hereof shall expire unless Yokogawa is notified of the claim within one (1) year of its occurrence.

6.3 In no event, regardless of cause, shall Yokogawa assume responsibility for or be liable for penalties or penalty clauses in any contracts between the Licensee and its customers.

Article 7 (Limit of Export)

Unless otherwise agreed by Yokogawa, the Licensee shall not directly or indirectly export or transfer the Licensed Software to any countries other than those where Yokogawa permits export in advance.

Article 8 (Term)

This Agreement shall become effective on the date when the Licensee receives the Licensed Software and continues in effect unless or until terminated as provided herein, or the Licensee ceases using the Licensed Software by itself or with Yokogawa’s thirty (30) days prior written notice to the Licensee. When aforesaid termination or cease is occurred, the Licensee shall immediately destroy and/or eliminate the Licensed Software and related documents without retaining any copies or extracts thereof. However, upon specifically instructed by Yokogawa, they shall be returned to Yokogawa or its designated third party.

Article 9 (Injunction for Use)

During the term of this Agreement, Yokogawa may, at its own discretion, demand injunction against the Licensee in case that Yokogawa deems that the Licensed Software is used improperly or under severer environments other than those where Yokogawa has first approved, or any other condition which Yokogawa may not permit.

Article 10 (Termination)

Yokogawa, at its sole discretion, may terminate this Agreement without any notice or reminder to the Licensee if the Licensee violates or fails to perform this Agreement. However, Articles 5, 6, and 11 shall survive even after the termination.

Article 11 (Jurisdiction)

Any dispute, controversies, or differences between the parties hereto as to interpretation or execution of this Agreement shall be resolved amicably through negotiation between the parties upon the basis of mutual trust. Should the parties fail to agree within ninety (90) days after notice from one of the parties to the other, both parties hereby irrevocably submit to the exclusive jurisdiction of the Tokyo District Court (main office) in Japan for settlement of the dispute to the fullest extent allowed by applicable law.

Article 12 (Governing Law)

This Agreement shall be governed by and construed in accordance with the laws of Japan. The Licensee expressly agrees to waive absolutely and irrevocably and to the fullest extent permissible under applicable law any rights against the laws of Japan which may have pursuant to the Licensee’s local law.

Article 13 (Severability)

In the event that any provision hereof is declared or found to be illegal by any court or tribunal of competent jurisdiction, such provision shall be null and void with respect to the jurisdiction of that court or tribunal and all the remaining provisions hereof shall remain in full force and effect.

End of document
How to Use This Manual

Structure of the Manual

This manual consists of the following three chapters and index.

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

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Described in This Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX1000</td>
<td>Up to firmware version R1.2x. In the explanations in this manual, this is referred to as the &quot;FX.&quot;</td>
</tr>
<tr>
<td>DAQSTANDARD for FX1000</td>
<td>Up to version R9.04.xx.</td>
</tr>
<tr>
<td>Hardware Configurator</td>
<td></td>
</tr>
</tbody>
</table>

Revision History

<table>
<thead>
<tr>
<th>Edition</th>
<th>Additions and Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New edition</td>
</tr>
<tr>
<td>2</td>
<td>Revised for upgrade to 9.02 Release: (Added) Italian, Spanish, Portuguese, Russian, and Korean as display language. Improvements to descriptions.</td>
</tr>
<tr>
<td>3</td>
<td>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.</td>
</tr>
<tr>
<td>4</td>
<td>Revised for upgrade to 9.04 Release: (Added) Models with an SD card slot. Power monitor (PWR5 option).</td>
</tr>
<tr>
<td>5</td>
<td>Changes to the operating environment (Support for Windows Vista is terminated.)</td>
</tr>
</tbody>
</table>
Chapter 1  Before using DAQSTANDARD
1.1 Overview of DAQSTANDARD ......................................................................... 1-1
  DAQSTANDARD Software Package .................................................................. 1-1
  About Hardware Configurator ........................................................................... 1-1
1.2 PC System Requirements ............................................................................... 1-2
  Operating System (OS) ..................................................................................... 1-2
1.3 Starting/Exiting the Software ......................................................................... 1-3
1.4 Menu Bar and ToolBar .................................................................................. 1-4
  Menu Bar ........................................................................................................... 1-4
  Toolbar ................................................................................................................ 1-5
1.5 Displaying the Version Information ............................................................... 1-6
  Procedure ......................................................................................................... 1-6

Chapter 2  Configuring the FX1000
2.1 Displaying Setup Data .................................................................................... 2-1
  Loading Setup Data from the FX ...................................................................... 2-1
  Creating Setup Data by Configuring a New System ......................................... 2-2
  Loading Existing Setup Data ............................................................................ 2-3
2.2 Setting and Checking the System Configuration and Initializing Setup Data ................................................................................................................. 2-4
  Changing/Checking the System Configuration ................................................ 2-4
  Initializing the Setup Data ................................................................................ 2-4
2.3 Setting the Measurement Channels ............................................................... 2-5
  Input Type (Mode and Range/Type) .................................................................. 2-6
  Linear Scaling (SCALE) ..................................................................................... 2-7
  Difference Computation (DELTA) .................................................................... 2-7
  Ref. CH ............................................................................................................... 2-7
  Square Root ....................................................................................................... 2-7
  Unit ....................................................................................................................... 2-7
  Log Scale (LogType1 and LogType2) ................................................................ 2-8
  Low-cut (Can be set when the mode is 1-5V and when the mode is VOLT with square root (SQRT) selected.) ................................................................. 2-8
  Low-cut value (Can be set when the mode is VOLT with square root (SQRT) selected.) ................................................................. 2-8
  Calibration Correction ....................................................................................... 2-9
  Alarm ..................................................................................................................... 2-10
  Alarm delay ........................................................................................................ 2-10
  Moving Average ............................................................................................... 2-11
  Tag ......................................................................................................................... 2-11
  Memory Sampling .............................................................................................. 2-11
  Zone (Zone L and U) ......................................................................................... 2-11
  Graph .................................................................................................................... 2-11
  Partial (Partial Expanded Display) .................................................................... 2-12
  Color (Display Color) ....................................................................................... 2-12
  Green Band ......................................................................................................... 2-12
  Alarm Mark ........................................................................................................ 2-13
  Copying and Pasting Setup Data ...................................................................... 2-13
  Setting One Channel at a Time ...................................................................... 2-14
Chapter 3  Troubleshooting

3.1  Troubleshooting ................................................................. 3-1

Index
1.1 Overview of DAQSTANDARD

DAQSTANDARD Software Package
DAQSTANDARD consists of the following two software applications.
• Data Viewer
• Hardware Configurator
  This manual explains the Hardware Configurator.

• Data 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, SD 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 7, Windows 8.1 or Windows 10.

**CPU and Main Memory**
Pentium 4, 3 GHz or faster Intel x64 or x86 processor; 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).

**Mouse**
A mouse supported by the OS.

**Keyboard**
A keyboard supported by the OS.

**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)**

<table>
<thead>
<tr>
<th>OS</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 7</td>
<td>Home Premium, SP1 (32- or 64-bit edition)</td>
</tr>
<tr>
<td></td>
<td>Professional, SP1 (32- or 64-bit edition)</td>
</tr>
<tr>
<td>Windows 8.1</td>
<td>(32- or 64-bit edition) (Supports the desktop mode)</td>
</tr>
<tr>
<td></td>
<td>Pro (32- or 64-bit edition) (Supports the desktop mode)</td>
</tr>
<tr>
<td>Windows 10</td>
<td>Home (32-bit, 64-bit editions)</td>
</tr>
<tr>
<td></td>
<td>Pro (32-bit, 64-bit editions)</td>
</tr>
</tbody>
</table>

**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=GMT0" 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.
- Adobe Reader is necessary to view manuals.
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.
### Menu Bar and ToolBar

**Menu Bar**

Only the menu items that can be selected are available.

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

* 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

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

   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


<table>
<thead>
<tr>
<th>Item</th>
<th>Setting</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel</td>
<td>2CH</td>
<td>FX1002</td>
</tr>
<tr>
<td></td>
<td>4CH</td>
<td>FX1004</td>
</tr>
<tr>
<td></td>
<td>6CH</td>
<td>FX1006</td>
</tr>
<tr>
<td></td>
<td>8CH</td>
<td>FX1008</td>
</tr>
<tr>
<td></td>
<td>10CH</td>
<td>FX1010</td>
</tr>
<tr>
<td></td>
<td>12CH</td>
<td>FX1012</td>
</tr>
<tr>
<td>Firm.Version</td>
<td>(Version number)</td>
<td>FX firmware version</td>
</tr>
<tr>
<td>Math</td>
<td>ON</td>
<td>/M1 option</td>
</tr>
<tr>
<td>Serial</td>
<td>RS-232</td>
<td>/C2 option</td>
</tr>
<tr>
<td></td>
<td>RS-422/485</td>
<td>/C3 option</td>
</tr>
<tr>
<td>Media</td>
<td>NONE</td>
<td>No CF card slot/SD card slot</td>
</tr>
<tr>
<td></td>
<td>CF</td>
<td>CF card slot present</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>SD card slot present</td>
</tr>
<tr>
<td>Alarm Relay</td>
<td>2 Point</td>
<td>/A1 option</td>
</tr>
<tr>
<td></td>
<td>4 Point</td>
<td>/A2 option</td>
</tr>
<tr>
<td></td>
<td>6 Point</td>
<td>/A3 option</td>
</tr>
<tr>
<td></td>
<td>12 Point</td>
<td>/A4A option</td>
</tr>
<tr>
<td>FAIL</td>
<td>FAIL and status output relays</td>
<td>/F1 option</td>
</tr>
<tr>
<td>Remote</td>
<td>R1 option</td>
<td></td>
</tr>
<tr>
<td>Pulse</td>
<td>PM1 option</td>
<td></td>
</tr>
<tr>
<td>Calibration correction</td>
<td>CC1 option</td>
<td></td>
</tr>
<tr>
<td>Ext input</td>
<td>N3F option</td>
<td></td>
</tr>
<tr>
<td>USB</td>
<td>/USB1 option</td>
<td></td>
</tr>
<tr>
<td>Ethernet</td>
<td>/C7 option</td>
<td></td>
</tr>
<tr>
<td>LOG scale display</td>
<td>/LG1 option</td>
<td></td>
</tr>
<tr>
<td>Power Monitor</td>
<td>/PWR1 or /PWR5 option</td>
<td></td>
</tr>
</tbody>
</table>

* 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.

   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

   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.

- Drag to select a range of channels.
- Click to toggle the selection of all channels ON and OFF.
- Click and select from the list
- Click the text box to enter a number
- Buttons for configuring the selected channels 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.

- Double-click the channel number when you want to configure the settings for each channel separately.
  (A screen for setting the corresponding channel will be displayed.)
- Click this to display the color settings screen.
- Click this to display the calibration correction setting screen.
- Click this to toggle ON and OFF.
- Click this to switch the display.
2.3 Setting the Measurement Channels

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.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Delta, Scaling, and Square Root</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DELTA</td>
</tr>
<tr>
<td>SKIP</td>
<td>No</td>
</tr>
<tr>
<td>VOLT</td>
<td>Yes</td>
</tr>
<tr>
<td>TC</td>
<td>Yes</td>
</tr>
<tr>
<td>RTD</td>
<td>Yes</td>
</tr>
<tr>
<td>DI</td>
<td>Yes</td>
</tr>
<tr>
<td>1-5 V</td>
<td>No</td>
</tr>
</tbody>
</table>

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].
2.3 Setting the Measurement Channels

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.
### 2.3 Setting the Measurement Channels

#### 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.

<table>
<thead>
<tr>
<th>Type</th>
<th>Item</th>
<th>Setting</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>LogType1</td>
<td>Lower limit</td>
<td>1.00 to 9.99</td>
<td></td>
</tr>
<tr>
<td>(lower limit &lt; upper limit)</td>
<td>mantissa</td>
<td>Integer between –15 and 15</td>
<td>The lower limit mantissa must be 1.00.</td>
</tr>
<tr>
<td></td>
<td>Lower limit</td>
<td>Integer between –15 and 15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>exponent</td>
<td>1 ≤</td>
<td>upper limit – lower limit</td>
</tr>
<tr>
<td></td>
<td>Upper limit</td>
<td>Integer between –15 and 15</td>
<td>The lower limit mantissa must be 1.00.</td>
</tr>
<tr>
<td></td>
<td>mantissa</td>
<td>1.00 to 9.99</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper limit</td>
<td>Integer between –15 and 15</td>
<td>The lower limit mantissa must be a value other than 1.00.</td>
</tr>
<tr>
<td></td>
<td>exponent</td>
<td>2 ≤</td>
<td>upper limit – lower limit</td>
</tr>
<tr>
<td>LogType2</td>
<td>Lower limit</td>
<td>1.00 to 9.99</td>
<td></td>
</tr>
<tr>
<td>(lower limit ≠ upper limit)</td>
<td>mantissa</td>
<td>Integer between –15 and 15</td>
<td>The lower limit mantissa must be 1.00.</td>
</tr>
<tr>
<td></td>
<td>exponent</td>
<td>1 ≤</td>
<td>upper limit – lower limit</td>
</tr>
<tr>
<td></td>
<td>Upper limit</td>
<td>Integer between –15 and 15</td>
<td>The lower limit mantissa must be a value other than 1.00.</td>
</tr>
<tr>
<td></td>
<td>mantissa</td>
<td>Cannot be set</td>
<td>This is the same value as the lower limit mantissa.</td>
</tr>
<tr>
<td></td>
<td>exponent</td>
<td>1 ≤</td>
<td>upper limit – lower limit</td>
</tr>
</tbody>
</table>

**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.

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.
2.3 Setting the Measurement Channels

**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.
2.3 Setting the Measurement Channels

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 6 V. 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)

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside</td>
<td>Displays the area inside using the color band.</td>
</tr>
<tr>
<td>Outside</td>
<td>Displays the area outside using the color band.</td>
</tr>
<tr>
<td>OFF</td>
<td>Disables the function.</td>
</tr>
</tbody>
</table>

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].
**2.3 Setting the Measurement Channels**

### Alarm Mark

**Mark kind**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm</td>
<td>Indicates green under normal conditions and red when an alarm is activated.</td>
</tr>
<tr>
<td>Fixed</td>
<td>Displays a fixed color.</td>
</tr>
</tbody>
</table>

**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.

### 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.
2.3 Setting the Measurement Channels

Setting One Channel at a Time

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

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.

Click this when you want to configure the settings for each channel separately.

- Turns the computation ON and OFF
- Shows or hides the constants

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.
2.4 Setting the Computation Channels

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 “m³/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**

<table>
<thead>
<tr>
<th>Measure channel</th>
<th>Math channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daylight Saving Time</td>
<td>Use</td>
<td>Hot</td>
<td>Hot</td>
</tr>
<tr>
<td>Start Time</td>
<td>Mon</td>
<td>2nd</td>
<td>SUN</td>
</tr>
<tr>
<td>End Time</td>
<td>NOW</td>
<td>Wed</td>
<td>SAT</td>
</tr>
</tbody>
</table>

**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

Click to display the channel configuration/trip line settings dialog box.

Select channels to register to the group, or set the trip line.

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.
2.5 Entering General Settings

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.

<table>
<thead>
<tr>
<th>T-Y interval</th>
<th>15 s¹</th>
<th>30 s</th>
<th>1 min</th>
<th>2 min</th>
<th>5 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selectable range of auto save interval</td>
<td>500 ms</td>
<td>1 s</td>
<td>2 s</td>
<td>4 s</td>
<td>10 s</td>
</tr>
<tr>
<td>Selectable save interval values</td>
<td>10 min to 3 days</td>
<td>10 min to 7 days</td>
<td>10 min to 14 days</td>
<td>10 min to 14 days</td>
<td>10 min to 31 days</td>
</tr>
<tr>
<td>T-Y interval</td>
<td>10 min</td>
<td>15 min</td>
<td>20 min</td>
<td>30 min</td>
<td>1 h</td>
</tr>
<tr>
<td>Selectable range of auto save interval</td>
<td>20 s</td>
<td>30 s</td>
<td>40 s</td>
<td>1 min</td>
<td>2 min</td>
</tr>
<tr>
<td>Selectable save interval values</td>
<td>10 min to 31 days</td>
<td>10 min to 31 days</td>
<td>1 hour to 31 days</td>
<td>1 hour to 31 days</td>
<td>1 hour to 31 days</td>
</tr>
<tr>
<td>T-Y interval</td>
<td>2 h</td>
<td>4 h</td>
<td>10 h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selectable range of auto save interval</td>
<td>4 min</td>
<td>8 min</td>
<td>20 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selectable save interval values</td>
<td>2 hours to 31 days</td>
<td>4 hours to 31 days</td>
<td>8 hours to 31 days</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Selectable on the FX1002 and FX1004

2.5 Entering General Settings
2.5 Entering General Settings

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**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>Clears the displayed waveform when the memory sampling is started.</td>
</tr>
<tr>
<td>OFF</td>
<td>Does not clear the waveform when the memory sampling is started.</td>
</tr>
</tbody>
</table>

- **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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 to 12</td>
<td>Displays a grid that divides the display width into 4 to 12 sections.</td>
</tr>
<tr>
<td>Auto</td>
<td>Displays the same number of grids as the number of scale divisions of the first assigned channel of the group.</td>
</tr>
</tbody>
</table>
2.5 Entering General Settings

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.

<table>
<thead>
<tr>
<th>Message</th>
<th>Characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>
Timer

Changes the upper/lower display area

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.
2.5 Entering General Settings

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.

<table>
<thead>
<tr>
<th>Setup Item</th>
<th>Kind</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Daily</td>
</tr>
<tr>
<td>Day</td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>✔️</td>
</tr>
<tr>
<td>Hour:Minute</td>
<td>✔️</td>
</tr>
</tbody>
</table>

- **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**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>Executes the action once when the condition is met.</td>
</tr>
<tr>
<td>Repeat</td>
<td>Executes the action at every specified time.</td>
</tr>
</tbody>
</table>
2.5 Entering General Settings

Event Action

Math Start

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Does not start the computation even when the START key is pressed.</td>
</tr>
<tr>
<td>Start</td>
<td>Starts the computation when the START key is pressed.</td>
</tr>
<tr>
<td>Reset Start</td>
<td>Resets the computed result up to then and starts the computation when the START key is pressed.</td>
</tr>
</tbody>
</table>

Event

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

<table>
<thead>
<tr>
<th>Settings</th>
<th>Event action description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>Not use.</td>
</tr>
<tr>
<td>Remote</td>
<td>Select the remote control input terminal number.</td>
</tr>
<tr>
<td>Relay</td>
<td>Select the alarm output relay number.</td>
</tr>
<tr>
<td>Switch</td>
<td>Select the internal switch number.</td>
</tr>
<tr>
<td>Timer</td>
<td>Select the timer number.</td>
</tr>
<tr>
<td>Match Time</td>
<td>Select the match timer number.</td>
</tr>
<tr>
<td>Alarm</td>
<td>-</td>
</tr>
<tr>
<td>User Key</td>
<td>-</td>
</tr>
</tbody>
</table>
## 2.5 Entering General Settings

### Action

The action to be executed when an event occurs.

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

\(^1\) This can only be specified for models that have the /M1, /PM1, /PWR1, or /PWR5 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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Serial number + user-assigned character string + date</td>
</tr>
<tr>
<td>Serial</td>
<td>Serial number + user-assigned character string</td>
</tr>
<tr>
<td>Batch</td>
<td>Serial number + batch name (when using the batch function)</td>
</tr>
</tbody>
</table>

**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.
2.5 Entering General Settings

Event Data


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

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free</td>
<td>Records data continuously.</td>
</tr>
<tr>
<td>Single</td>
<td>Records data when the trigger condition is met.</td>
</tr>
<tr>
<td>Repeat</td>
<td>Records data each time the trigger condition is met.</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Sample rate</th>
<th>125 ms</th>
<th>250 ms</th>
<th>500 ms</th>
<th>1 s</th>
<th>2 s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selectable range of data length</td>
<td>10 min to 1 day</td>
<td>10 min to 2 days</td>
<td>10 min to 3 days</td>
<td>10 min to 7 days</td>
<td>10 min to 14 days</td>
</tr>
<tr>
<td>Sample rate</td>
<td>5 s</td>
<td>10 s</td>
<td>30 s</td>
<td>1 min</td>
<td>2 min</td>
</tr>
<tr>
<td>Selectable range of data length</td>
<td>10 min to 31 days</td>
<td>10 min to 31 days</td>
<td>1 hour to 31 days</td>
<td>1 hour to 31 days</td>
<td>1 hour to 31 days</td>
</tr>
<tr>
<td>Sample rate</td>
<td>5 min</td>
<td>10 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selectable range of data length</td>
<td>1 hour to 31 days</td>
<td>1 hour to 31 days</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
2.5 Entering General Settings

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.
  
<table>
<thead>
<tr>
<th>Setting Range</th>
<th>Decimal Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>10000 to 32000</td>
<td>0</td>
</tr>
<tr>
<td>1000.0 to 9999.9</td>
<td>1</td>
</tr>
<tr>
<td>0.05 to 999.99</td>
<td>2</td>
</tr>
</tbody>
</table>

• 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.

<table>
<thead>
<tr>
<th>Phase and Wire System</th>
<th>Input Voltage</th>
<th>Secondary Rated Power (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1P2W</td>
<td>120</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>200</td>
</tr>
<tr>
<td>1P3W</td>
<td>240</td>
<td>200</td>
</tr>
<tr>
<td>3P3W</td>
<td>120</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>400</td>
</tr>
</tbody>
</table>
2.6 Entering Basic Settings

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

Environment

Basic Environment

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>Records display data.</td>
</tr>
<tr>
<td>E+D</td>
<td>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].</td>
</tr>
<tr>
<td>Event</td>
<td>Records event data.</td>
</tr>
</tbody>
</table>

- **Data Kind**

  - **Display**
  - **E+D**
  - **Event**

- **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.
2.6 Entering Basic Settings

- Date format

<table>
<thead>
<tr>
<th>Settings</th>
<th>Display Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y/M/D</td>
<td>2011/11/30</td>
</tr>
<tr>
<td>M/D/Y</td>
<td>11/30/2011</td>
</tr>
<tr>
<td>D/M/Y</td>
<td>30/11/2011</td>
</tr>
<tr>
<td>D.M.Y</td>
<td>30.11.2011</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Function</th>
<th>Maximum Number of Connections</th>
<th>Number of Simultaneous Uses</th>
<th>Port No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator</td>
<td>2</td>
<td>2†</td>
<td>21/tcp²</td>
</tr>
<tr>
<td>User</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTP server</td>
<td>2</td>
<td>2</td>
<td>21/tcp²</td>
</tr>
<tr>
<td>Web server (HTTP)</td>
<td>1</td>
<td>–</td>
<td>80/tcp²</td>
</tr>
<tr>
<td>SNTP server</td>
<td>–</td>
<td>–</td>
<td>123/udp²</td>
</tr>
<tr>
<td>Modbus server</td>
<td>2</td>
<td>–</td>
<td>502/tcp²</td>
</tr>
</tbody>
</table>

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.
2.6 Entering Basic Settings

Detail Setting

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tag</td>
<td>Displays tags. Channel numbers are displayed for channels that do not have tags assigned to them.</td>
</tr>
<tr>
<td>Channel</td>
<td>Displays channel numbers.</td>
</tr>
</tbody>
</table>

- **Tag**
  - **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**
      - **Common** Write the message to all groups.
      - **Separate** Write the message to the displayed group.
2.6 Entering Basic Settings

- **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**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free</td>
<td>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.</td>
</tr>
<tr>
<td>Over</td>
<td>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.</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Login</td>
<td>Enables only registered users to operate the FX using keys. The [User registration] is displayed in the [Basic Setting] tab.</td>
</tr>
<tr>
<td>Keylock</td>
<td>Enables the key lock function. Set the key lock function in the [Basic Setting] tab.</td>
</tr>
<tr>
<td>OFF</td>
<td>Disables the security functions.</td>
</tr>
</tbody>
</table>

- **Comm. Security**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Login</td>
<td>Enables only registered users to operate the FX via communications. The [User registration] is displayed in the basic setting mode menu.</td>
</tr>
<tr>
<td>OFF</td>
<td>Disables the security functions.</td>
</tr>
</tbody>
</table>

- **Auto Save**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>Automatically saves the measured data to the CF card/SD card.</td>
</tr>
<tr>
<td>OFF</td>
<td>Does not automatically save the data. Save the measured data manually to the CF card/SD card or USB flash memory (/USB1 option).</td>
</tr>
</tbody>
</table>

- **Media FIFO**

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

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>If there is no more free space on the CF card/SD card, the oldest file is deleted, and the newest file is saved.</td>
</tr>
<tr>
<td>OFF</td>
<td>If there is no more free space on the CF card/SD card, the measured data is not saved to the CF card/SD card.</td>
</tr>
</tbody>
</table>
### 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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error</td>
<td>Sets the computed result to computation error.</td>
</tr>
<tr>
<td>Skip</td>
<td>Discards the overflow data and continues the computation.</td>
</tr>
<tr>
<td>Limit</td>
<td>Uses a limit value in place of the overflow data and continues the computation.</td>
</tr>
</tbody>
</table>

#### 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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over</td>
<td>Uses the overflow data as-is.</td>
</tr>
<tr>
<td>Skip</td>
<td>Discards the overflow data and continues the computation.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Does not output reports. You cannot set Report 1 to [OFF].</td>
</tr>
<tr>
<td>Ave</td>
<td>Outputs the average value.</td>
</tr>
<tr>
<td>Max</td>
<td>Outputs the maximum value.</td>
</tr>
<tr>
<td>Min</td>
<td>Outputs the minimum value.</td>
</tr>
<tr>
<td>Sum</td>
<td>Outputs the sum value.</td>
</tr>
<tr>
<td>Instant</td>
<td>Outputs the instantaneous value.</td>
</tr>
</tbody>
</table>

#### File kind
Specify the method used to create report files.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split</td>
<td>Saves each type of report to a separate file.</td>
</tr>
<tr>
<td>Combined</td>
<td>Saves the report data of two types in a single file.</td>
</tr>
</tbody>
</table>
2.6 Entering Basic Settings

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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Reflash is not used.</td>
</tr>
<tr>
<td>On</td>
<td>Reflash is used. The relays are deactivated for approximately 500 ms.</td>
</tr>
</tbody>
</table>

• 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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unhold</td>
<td>Clears the alarm indication when the alarm condition is released (returns to normal condition).</td>
</tr>
<tr>
<td>Hold</td>
<td>Holds the alarm indication until an alarm acknowledge operation is performed.</td>
</tr>
</tbody>
</table>

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.
2.6 Entering Basic Settings

- **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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unhold</td>
<td>Turns the output relay OFF when the alarm condition is released (returns to normal condition).</td>
</tr>
<tr>
<td>Hold</td>
<td>Holds the output relay at ON until an alarm acknowledge operation is performed.</td>
</tr>
</tbody>
</table>

- **Relay Action on ACK**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>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].</td>
</tr>
<tr>
<td>Reset</td>
<td>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.</td>
</tr>
</tbody>
</table>

**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.
### 2.6 Entering Basic Settings

**Scan Interval**

Select the scan interval.

**A/D Integrate**

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

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto</td>
<td>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.</td>
</tr>
<tr>
<td>50Hz</td>
<td>Sets the integration time to 20 ms.</td>
</tr>
<tr>
<td>60Hz</td>
<td>Sets the integration time to 16.7 ms.</td>
</tr>
<tr>
<td>100ms</td>
<td>Sets the integration time to 100 ms (when the scan interval is 2 s or 5 s).</td>
</tr>
</tbody>
</table>
Measure Function

Burnout
Thermocouple input

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Sensor disconnections are not detected.</td>
</tr>
<tr>
<td>UP</td>
<td>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)</td>
</tr>
<tr>
<td>DOWN</td>
<td>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)</td>
</tr>
</tbody>
</table>

RJC

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

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>Uses the reference junction compensation function of the FX.</td>
</tr>
<tr>
<td>External</td>
<td>Uses an external reference junction compensation function. When set to [External], [Volt] is displayed.</td>
</tr>
</tbody>
</table>

- **RJC voltage (µV)**
  The compensation voltage to be added to the input. Set the value in the range of –20000 µV to 20000 µV.
2.6 Entering Basic Settings

Report

Click to display the channel selection screen.

Channel selection screen
Click the channel you wish to set up

Report setting

• Report kind

Select the type of report to be created.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Do not create a report.</td>
</tr>
<tr>
<td>Hour</td>
<td>Creates hourly reports.</td>
</tr>
<tr>
<td>Day</td>
<td>Creates daily reports.</td>
</tr>
<tr>
<td>Hour+Day</td>
<td>Creates hourly and daily reports.</td>
</tr>
<tr>
<td>Day+Week</td>
<td>Creates daily and weekly reports.</td>
</tr>
<tr>
<td>Day+Month</td>
<td>Creates daily and monthly reports.</td>
</tr>
</tbody>
</table>

• 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.

<table>
<thead>
<tr>
<th>Report Type</th>
<th>Day</th>
<th>Week day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hour</td>
<td>-</td>
<td>-</td>
<td>0 to 23</td>
</tr>
<tr>
<td>Day</td>
<td>1 to 28*</td>
<td>-</td>
<td>0 to 23</td>
</tr>
<tr>
<td>Hour+Day</td>
<td>-</td>
<td>-</td>
<td>0 to 23</td>
</tr>
<tr>
<td>Day+Week</td>
<td>-</td>
<td>SUN to SAT</td>
<td>0 to 23</td>
</tr>
<tr>
<td>Day+Month</td>
<td>1 to 28*</td>
<td>-</td>
<td>0 to 23</td>
</tr>
</tbody>
</table>

* 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.

<table>
<thead>
<tr>
<th>No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Report Groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R01 to R06</td>
<td>R07 to R12</td>
<td>R13 to R18</td>
<td>R19 to R24</td>
</tr>
</tbody>
</table>
2.6 Entering Basic Settings

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 "m³/min," select [min]. If you select [OFF], the measured data is summed as-is once per scan interval.
2.6 Entering Basic Settings

**Key Lock**


**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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free</td>
<td>Key lock not applied.</td>
</tr>
<tr>
<td>Lock</td>
<td>Disables the operation.</td>
</tr>
</tbody>
</table>
Login


**Supervisor (Administrator)**

<table>
<thead>
<tr>
<th>Mode</th>
<th>User Name</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Admin1</td>
<td></td>
</tr>
<tr>
<td>Off</td>
<td>Admin2</td>
<td></td>
</tr>
<tr>
<td>Off</td>
<td>Admin3</td>
<td></td>
</tr>
<tr>
<td>Off</td>
<td>Admin4</td>
<td></td>
</tr>
</tbody>
</table>

- **Auto Logout Time**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Does not log out until the logout operation is executed.</td>
</tr>
<tr>
<td>1min to 10min</td>
<td>Automatically logs out when there is no key operation for a specified time.</td>
</tr>
</tbody>
</table>

- **Logout Operation**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Only login operation is available.</td>
</tr>
<tr>
<td>Login Operation Display</td>
<td>Allows the user to switch the operation screen in addition to the login operation.</td>
</tr>
</tbody>
</table>

- **Mode**


<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Not register.</td>
</tr>
<tr>
<td>Key</td>
<td>Log into the FX using keys.</td>
</tr>
<tr>
<td>Comm</td>
<td>Log into the FX via communications.</td>
</tr>
<tr>
<td>Web</td>
<td>Log into the operator page and monitor page of the FX using a Web browser.</td>
</tr>
<tr>
<td>Key+Comm</td>
<td>Log into the FX using keys and via communications.</td>
</tr>
</tbody>
</table>

- **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.

Changes the upper/lower display area

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

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Not register.</td>
</tr>
<tr>
<td>Key</td>
<td>Log into the FX using keys.</td>
</tr>
<tr>
<td>Comm</td>
<td>Log into the FX via communications.</td>
</tr>
<tr>
<td>Web</td>
<td>Log into the monitor page of the FX using a Web browser.</td>
</tr>
<tr>
<td>Key+Comm</td>
<td>Log into the FX using keys and via communications.</td>
</tr>
</tbody>
</table>

- **User Name, Password**
  Same as the supervisor settings.

- **Key Lock No.**
  Select whether or not to disable each item.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>No limitations on the operation.</td>
</tr>
<tr>
<td>1 to 10</td>
<td>Registration number of the operation limitation.</td>
</tr>
</tbody>
</table>

- **Key, Function, Media/USB**
  Select whether or not to disable each item.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free</td>
<td>Key lock not applied.</td>
</tr>
<tr>
<td>Lock</td>
<td>Disables the operation.</td>
</tr>
</tbody>
</table>
2.6 Entering Basic Settings

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.
2.6 Entering Basic Settings

- **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

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

<table>
<thead>
<tr>
<th>File Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display data file</td>
<td>Data files are automatically transferred at each file save interval.</td>
</tr>
<tr>
<td>Event data file</td>
<td>Files are automatically transferred when the data length of data is recorded.</td>
</tr>
<tr>
<td>Report file</td>
<td>Data files are automatically transferred every time a report is created.</td>
</tr>
<tr>
<td>Snapshot data file</td>
<td>The files are automatically transferred when a snapshot is executed.*</td>
</tr>
</tbody>
</table>

* 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.
2.6 Entering Basic Settings

- **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.
### 2.6 Entering Basic Settings

#### MODBUS Client

![Image of MODBUS Client settings](image)

**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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-Math</td>
<td>Read to the communication input data (32-bit floating point type) from the server.</td>
</tr>
<tr>
<td>Write</td>
<td>Write the measurement channel (16-bit signed integer type) to the server.</td>
</tr>
<tr>
<td>W-Math</td>
<td>Write the computation channel (32-bit signed integer type) to the server.</td>
</tr>
</tbody>
</table>

You can only select [R-Math] or [W-Math] on models that have the /M1, /PM1, /PWR1, or /PWR5 option.
2.6 Entering Basic Settings

- **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.
2.6 Entering Basic Settings

- **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.
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.
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.
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.
2.6 Entering Basic Settings

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).
2.6 Entering Basic Settings

Connect limits

- Select [ON] to place connection limits.
- Allow ed 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.

Modbus Server
2.6 Entering Basic Settings

Serial

<table>
<thead>
<tr>
<th>Mode</th>
<th>Channel</th>
<th>Measurement</th>
<th>Math channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial</td>
<td>RS-232</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Serial</td>
<td>RS-422/485</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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**
<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>General purpose communication protocol</td>
</tr>
<tr>
<td>Modbus</td>
<td>Modbus slave</td>
</tr>
<tr>
<td>Master</td>
<td>Modbus master*</td>
</tr>
</tbody>
</table>

  * 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.

**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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-Math</td>
<td>Read to the communication input channel (32-bit floating point type) from the slave.</td>
</tr>
<tr>
<td>Write</td>
<td>Write the measurement channel (16-bit signed integer type) to the slave.</td>
</tr>
<tr>
<td>W-Math</td>
<td>Write the computation channel (32-bit signed integer type) to the slave.</td>
</tr>
</tbody>
</table>

You can only select [R-Math] or [W-Math] on models that have the /M1, /PM1, /PWR1, or /PWR5 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.
2.6 Entering Basic Settings

**Aux**

![Auxiliary Configuration Menu]

**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


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

The [Store] dialog box appears.
The address sets the current address of the FX.

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.
### 2.7 Sending the Setup Data to the FX

#### 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.

   ![Network Dialog Box]

   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.

The [Print Settings] dialog box appears.

2. Configure the various settings.

<table>
<thead>
<tr>
<th>Item</th>
<th>Setting</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print format</td>
<td>Text</td>
<td>Only text is printed.</td>
<td>Text</td>
</tr>
<tr>
<td></td>
<td>Table</td>
<td>The data is printed in a preset format.</td>
<td></td>
</tr>
</tbody>
</table>

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

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

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.

<table>
<thead>
<tr>
<th>Print Example (Table)</th>
<th>Table Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Header</td>
<td>Setup file</td>
</tr>
<tr>
<td>System configuration</td>
<td>on the recorder</td>
</tr>
<tr>
<td>Setup items</td>
<td></td>
</tr>
<tr>
<td>Footer (page number)</td>
<td></td>
</tr>
</tbody>
</table>
2.9 Printing Setup Data

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

Setup File
• Settings

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

• 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 name
System configuration on the recorder
Setup items
Page number
2.9 Printing Setup Data

**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**

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

   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


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

The [Hardware Information] dialog box appears.

- **Firmware version**
- **Serial number**
- **Number of channels**
- **Internal memory size**
- **Options**

Click to close the dialog box.
### 2.12 Characters That Can Be Used

#### List of Input Types

<table>
<thead>
<tr>
<th>Type</th>
<th>Allowed Characters</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alphanumeric characters</td>
<td>Symbol</td>
</tr>
<tr>
<td>Arbitrary string</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Alphanumeric</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Machine address</td>
<td>Yes</td>
<td>Disallowed</td>
</tr>
<tr>
<td>E-mail address</td>
<td>Yes</td>
<td>Disallowed</td>
</tr>
<tr>
<td>Subject</td>
<td>Yes</td>
<td>Disallowed</td>
</tr>
<tr>
<td>File path name</td>
<td>Yes</td>
<td>Disallowed</td>
</tr>
</tbody>
</table>

[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

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

(SP) means “space.”

“°” is used to indicate the temperature in degrees. Input, output and indicated using “^.”
## 3.1 Troubleshooting

### Warning Message List

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

### Error List

<table>
<thead>
<tr>
<th>Code</th>
<th>Message</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>E0401</td>
<td>Communication Error.</td>
<td>• Check the communication settings.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Make sure that the release number of this software is compatible to the connected device.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="https://y-link.yokogawa.com/software/dl00003220-en.html">https://y-link.yokogawa.com/software/dl00003220-en.html</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If a login is required for communicating with the device, you need to specify the user information. Check the user name, user ID, and password for the device, and enter them.</td>
</tr>
<tr>
<td>E6001</td>
<td>Failed to make file.</td>
<td>Check the free space in the directory.</td>
</tr>
<tr>
<td>E6002</td>
<td>Failed to open file.</td>
<td>Try to load the file again. If still not possible, the file may be damaged. Select another file.</td>
</tr>
<tr>
<td>E6003</td>
<td>Unreadable file.</td>
<td>Select another file.</td>
</tr>
<tr>
<td>E6004</td>
<td>Communication impossible while media in use.</td>
<td>Execute the operation after data has been saved to the medium.</td>
</tr>
<tr>
<td>E6005</td>
<td>Now sampling &amp; calculating. Can’t store settings.</td>
<td>Stop memory sampling and calculations (computation).</td>
</tr>
<tr>
<td>E6006</td>
<td>Now sampling. Can’t store settings.</td>
<td>Stop memory sampling.</td>
</tr>
</tbody>
</table>

### Message

<table>
<thead>
<tr>
<th>Code</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6063</td>
<td>Sending finished.</td>
</tr>
<tr>
<td>M6064</td>
<td>Receiving finished.</td>
</tr>
<tr>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Absolute timer</td>
<td>2-25</td>
</tr>
<tr>
<td>Access timeout</td>
<td>2-58</td>
</tr>
<tr>
<td>Action</td>
<td>2-28</td>
</tr>
<tr>
<td>Active alarms</td>
<td>2-54</td>
</tr>
<tr>
<td>Address</td>
<td>2-53, 2-62</td>
</tr>
<tr>
<td>Address setup data</td>
<td>2-65</td>
</tr>
<tr>
<td>A/D integration time</td>
<td>2-40</td>
</tr>
<tr>
<td>Alarm</td>
<td>2-10</td>
</tr>
<tr>
<td>Alarm delay</td>
<td>2-10</td>
</tr>
<tr>
<td>Alarm indication</td>
<td>2-38</td>
</tr>
<tr>
<td>Alarm mark</td>
<td>2-13</td>
</tr>
<tr>
<td>Alarm no logging</td>
<td>2-39</td>
</tr>
<tr>
<td>Alarm output relay</td>
<td>2-39</td>
</tr>
<tr>
<td>Authenticated email transmission</td>
<td>2-53</td>
</tr>
<tr>
<td>Authentication SMTP</td>
<td>2-53</td>
</tr>
<tr>
<td>Auto increment</td>
<td>2-35</td>
</tr>
<tr>
<td>Auto recovery</td>
<td>2-62</td>
</tr>
<tr>
<td>Auto save</td>
<td>2-36</td>
</tr>
<tr>
<td>Background color</td>
<td>2-23</td>
</tr>
<tr>
<td>Backlight saver</td>
<td>2-23</td>
</tr>
<tr>
<td>Bar graph direction</td>
<td>2-23</td>
</tr>
<tr>
<td>Basic environment</td>
<td>2-33</td>
</tr>
<tr>
<td>Batch</td>
<td>2-35</td>
</tr>
<tr>
<td>Baud rate</td>
<td>2-61</td>
</tr>
<tr>
<td>Boundary</td>
<td>2-12</td>
</tr>
<tr>
<td>Burnout</td>
<td>2-41</td>
</tr>
<tr>
<td>Changed values</td>
<td>2-70</td>
</tr>
<tr>
<td>Change message</td>
<td>2-36</td>
</tr>
<tr>
<td>Changing the system configuration</td>
<td>2-4</td>
</tr>
<tr>
<td>Channel configuration</td>
<td>2-19</td>
</tr>
<tr>
<td>Characters that can be used</td>
<td>2-75</td>
</tr>
<tr>
<td>Checking the system configuration</td>
<td>2-4</td>
</tr>
<tr>
<td>Color band on the scale</td>
<td>2-12</td>
</tr>
<tr>
<td>Color of the alarm point marks</td>
<td>2-13</td>
</tr>
<tr>
<td>Command setting</td>
<td>2-51, 2-62</td>
</tr>
<tr>
<td>Command type</td>
<td>2-51, 2-62</td>
</tr>
<tr>
<td>Comm. security</td>
<td>2-36</td>
</tr>
<tr>
<td>Computation channel, setting one channel at a time</td>
<td>2-17</td>
</tr>
<tr>
<td>Computation error</td>
<td>2-37</td>
</tr>
<tr>
<td>Connection limits</td>
<td>2-60</td>
</tr>
<tr>
<td>Constants</td>
<td>2-16</td>
</tr>
<tr>
<td>Conventions</td>
<td>2-14</td>
</tr>
<tr>
<td>Creating hardware setup data</td>
<td>2-5</td>
</tr>
<tr>
<td>Creating setup data</td>
<td>2-2</td>
</tr>
<tr>
<td>CT ratio</td>
<td>2-32</td>
</tr>
<tr>
<td>Current value display</td>
<td>2-22</td>
</tr>
<tr>
<td>Customizing the display selection menus</td>
<td>2-31</td>
</tr>
<tr>
<td>Customizing the FUNC key menus</td>
<td>2-31</td>
</tr>
<tr>
<td>Custom menu</td>
<td>2-31</td>
</tr>
<tr>
<td>Daylight saving time</td>
<td>2-18</td>
</tr>
<tr>
<td>Decimal place</td>
<td>2-7</td>
</tr>
<tr>
<td>Decimal point type</td>
<td>2-35</td>
</tr>
<tr>
<td>Default gateway</td>
<td>2-47</td>
</tr>
<tr>
<td>Detail setting</td>
<td>2-35</td>
</tr>
<tr>
<td>DHCP</td>
<td>2-47</td>
</tr>
<tr>
<td>Difference computation</td>
<td>2-7</td>
</tr>
<tr>
<td>Differential input</td>
<td>2-7</td>
</tr>
<tr>
<td>Directory name</td>
<td>2-29</td>
</tr>
<tr>
<td>Display color</td>
<td>2-12</td>
</tr>
<tr>
<td>Display Digits</td>
<td>2-64</td>
</tr>
<tr>
<td>Display direction (messages)</td>
<td>2-22</td>
</tr>
<tr>
<td>Display direction (trend)</td>
<td>2-22</td>
</tr>
<tr>
<td>Display span</td>
<td>2-16</td>
</tr>
<tr>
<td>Display zone</td>
<td>2-11</td>
</tr>
<tr>
<td>DNS accession</td>
<td>2-47</td>
</tr>
<tr>
<td>Domain name</td>
<td>2-47, 2-48</td>
</tr>
<tr>
<td>Domain primary</td>
<td>2-47</td>
</tr>
<tr>
<td>Domain secondary</td>
<td>2-47, 2-48</td>
</tr>
<tr>
<td>Domain suffix search order</td>
<td>2-48</td>
</tr>
<tr>
<td>Ethernet</td>
<td>2-47</td>
</tr>
<tr>
<td>Event action</td>
<td>2-27</td>
</tr>
<tr>
<td>Event date</td>
<td>2-30</td>
</tr>
<tr>
<td>Exiting</td>
<td>1-3</td>
</tr>
<tr>
<td>Exponent</td>
<td>2-8</td>
</tr>
<tr>
<td>File kind</td>
<td>2-37</td>
</tr>
<tr>
<td>First/last (client channel)</td>
<td>2-52</td>
</tr>
<tr>
<td>First/last (master channel numbers)</td>
<td>2-62</td>
</tr>
<tr>
<td>Fixed (alarm mark)</td>
<td>2-13</td>
</tr>
<tr>
<td>Fixed IP address</td>
<td>2-47</td>
</tr>
<tr>
<td>Free (event data)</td>
<td>2-30</td>
</tr>
<tr>
<td>FTP connection destination, setting of</td>
<td>2-49</td>
</tr>
<tr>
<td>FTP server</td>
<td>2-23, 2-34</td>
</tr>
<tr>
<td>FTP transfer file</td>
<td>2-49</td>
</tr>
<tr>
<td>Graph</td>
<td>2-11</td>
</tr>
<tr>
<td>Green band</td>
<td>2-12</td>
</tr>
<tr>
<td>Group</td>
<td>2-19</td>
</tr>
<tr>
<td>Handshaking</td>
<td>2-61</td>
</tr>
<tr>
<td>Hardware</td>
<td>1-2</td>
</tr>
<tr>
<td>Hardware Configurator</td>
<td>1-1</td>
</tr>
<tr>
<td>Hardware information</td>
<td>2-74</td>
</tr>
<tr>
<td>Header</td>
<td>2-54, 2-55, 2-56, 2-57</td>
</tr>
<tr>
<td>Host name</td>
<td>2-47, 2-51</td>
</tr>
<tr>
<td>Host-name register</td>
<td>2-48</td>
</tr>
<tr>
<td>HTTP server</td>
<td>2-34</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>2-39</td>
</tr>
</tbody>
</table>

**Index**

**A**
- Absolute timer | 2-25
- Access timeout | 2-58
- Action | 2-28
- Active alarms | 2-54
- Address | 2-53, 2-62
- Address setup data | 2-65
- A/D integration time | 2-40
- Alarm | 2-10
- Alarm delay | 2-10
- Alarm indication | 2-38
- Alarm mark | 2-13
- Alarm no logging | 2-39
- Alarm output relay | 2-39
- Authenticated email transmission | 2-53
- Authentication SMTP | 2-53
- Auto increment | 2-35
- Auto recovery | 2-62
- Auto save | 2-36

**B**
- Background color | 2-23
- Backlight saver | 2-23
- Bar graph direction | 2-23
- Basic environment | 2-33
- Batch | 2-35
- Baud rate | 2-61
- Boundary | 2-12
- Burnout | 2-41

**C**
- Changed values | 2-70
- Change message | 2-36
- Changing the system configuration | 2-4
- Channel configuration | 2-19
- Characters that can be used | 2-75
- Checking the system configuration | 2-4
- Color band on the scale | 2-12
- Color of the alarm point marks | 2-13
- Command setting | 2-51, 2-62
- Command type | 2-51, 2-62
- Comm. security | 2-36
- Computation channel, setting one channel at a time | 2-17
- Computation error | 2-37
- Connection limits | 2-60
- Constants | 2-16
- Conventions | 2-14
- Creating hardware setup data | 2-5
- Creating setup data | 2-2
- CT ratio | 2-32
- Current value display | 2-22
- Customizing the display selection menus | 2-31
- Customizing the FUNC key menus | 2-31
- Custom menu | 2-31
- Daylight saving time | 2-18
- Decimal place | 2-7
- Decimal point type | 2-35
- Default gateway | 2-47
- Detail setting | 2-35
- DHCP | 2-47
- Difference computation | 2-7
- Differential input | 2-7
- Directory name | 2-29
- Display color | 2-12
- Display Digits | 2-64
- Display direction (messages) | 2-22
- Display direction (trend) | 2-22
- Display span | 2-16
- Display zone | 2-11
- DNS accession | 2-47
- Domain name | 2-47, 2-48
- Domain primary | 2-47
- Domain secondary | 2-47, 2-48
- Domain suffix search order | 2-48
- Ethernet | 2-47
- Event action | 2-27
- Event date | 2-30
- Exiting | 1-3
- Exponent | 2-8

**F**
- File kind | 2-37
- First/last (client channel) | 2-52
- First/last (master channel numbers) | 2-62
- Fixed (alarm mark) | 2-13
- Fixed IP address | 2-47
- Free (event data) | 2-30
- FTP connection destination, setting of | 2-49
- FTP server | 2-23, 2-34
- FTP transfer file | 2-49

**G**
- Graph | 2-11
- Green band | 2-12
- Group | 2-19

**H**
- Handshaking | 2-61
- Hardware | 1-2
- Hardware Configurator | 1-1
- Hardware information | 2-74
- Header | 2-54, 2-55, 2-56, 2-57
- Host name | 2-47, 2-51
- Host-name register | 2-48
- HTTP server | 2-34
- Hysteresis | 2-39
Index

I
images ........................................................................ iv
include instantaneous value ........................................... 2-54, 2-55
include source URL ...................................................... 2-54, 2-55, 2-56, 2-57
initializing the setup data .............................................. 2-4
initial path ...................................................................... 2-50
input type ...................................................................... 2-6
inter-block delay ............................................................ 2-62
internal switch .............................................................. 2-38
interval ........................................................................ 2-55
interval (rate-of-change alarm) ........................................ 2-38
IP address ...................................................................... 2-47
K
keep alive ...................................................................... 2-48
key lock ........................................................................ 2-44, 2-46
key security .................................................................... 2-36
L
language ........................................................................ 2-35
line width of the trend .................................................. 2-22
Load Changed Settings .................................................. 2-2
loading existing setup data .......................................... 2-3
loading setup data ...................................................... 2-1
login name .................................................................... 2-49
Log Scale (LogType1, LogType2) .................................... 2-8
low-cut ........................................................................ 2-8
Low-cut power .............................................................. 2-32
M
mantissa ........................................................................ 2-8
manual ......................................................................... 1-5
match time timer ......................................................... 2-26
math start ...................................................................... 2-27
measurement start/stop ............................................... 2-73
media FIFO...................................................................... 2-36
memory sampling ....................................................... 2-11
menu bar ........................................................................ 1-4
message ....................................................................... 2-21, 2-24
message to all groups .................................................. 2-35
Misc. Setting .................................................................. 2-64
modbus client ............................................................... 2-51
modbus master ............................................................. 2-62
modbus server ............................................................. 2-34
mode ............................................................................. 2-6
monitor page ............................................................... 2-59
moving average ........................................................... 2-11
N
no logging ..................................................................... 2-39
O
operating system ........................................................ 1-2
operator page ............................................................... 2-59
overflow ........................................................................ 2-37
overflow data ............................................................... 2-37
P
parity ............................................................................ 2-61
partial .......................................................................... 2-35
partial expanded display ............................................. 2-12
password ....................................................................... 2-12
password (login function) ............................................ 2-45
paste ............................................................................ 2-13
PASV mode ................................................................... 2-50
phase and wire system ................................................. 2-64
POP3 ............................................................................. 2-53
POP3 login .................................................................... 2-54
port number .................................................................. 2-34, 2-49, 2-51, 2-53
Power ........................................................................... 2-64
power-fail message ...................................................... 2-36
preset display .............................................................. 2-23
printer setup ................................................................. 2-72
print example (table) .................................................... 2-69
print example (text) ...................................................... 2-71
print format settings .................................................... 2-68
printing setup data ...................................................... 2-72
print preview ............................................................... 2-72
products covered in this manual .................................. iv
protocol ........................................................................ 2-61
R
range ........................................................................... 2-6
read cycle ..................................................................... 2-62
recipient ................................................................. 2-54, 2-55, 2-56, 2-57
reference channel ........................................................ 2-7
refine ........................................................................... 2-38
ref. time ....................................................................... 2-55
register ........................................................................ 2-52, 2-63
relative timer ............................................................... 2-25
relay ............................................................................. 2-10
relay action ................................................................. 2-39
report .......................................................................... 2-37, 2-42
report groups ............................................................... 2-42
report kind ..................................................................... 2-42
report settings (e-mail) ............................................... 2-57
restore .......................................................................... 1-5
retrials ......................................................................... 2-62
revision history ........................................................... iv
RJC ................................................................................. 2-41
rolling average ........................................................... 2-16
RS-232 settings ........................................................... 2-61
RS-422/485 ................................................................. 2-61
S
save interval .................................................................. 2-21
saving the setup data .................................................. 2-67
scale over ................................................................. 2-36, 2-39
scale upper ................................................................... 2-7
scan interval ............................................................... 2-40
scheduled settings (e-mail) .......................................... 2-55
screen display ............................................................. 2-19
sender .......................................................................... 2-53
sending setup data ...................................................... 2-65
sending the setup data ................................................ 2-65
serial communication .................................................. 2-61
server number ........................................................... 2-51
server primary ........................................................... 2-47, 2-48
server secondary ......................................................... 2-47, 2-48
server (server number) ............................................... 2-52
service port ............................................................... 2-34
setting one channel at a time ........................................ 2-14
setup data other than the address setup data .................. 2-65
SMTP server name ..................................................... 2-53
SNTP server ............................................................... 2-34
span ............................................................................. 2-16
span upper .................................................................... 2-6
specified values ......................................................... 2-70
square root ................................................................. 2-7
starting ................................................................. 1-3
status relay ............................................................... 2-34
structure of the file name ............................................ 2-29
subject ................................................................. 2-54, 2-55, 2-56, 2-57
V
viewing the changed settings ....................................... 2-7
<table>
<thead>
<tr>
<th><strong>Index</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>subnet mask ......................................................... 2-47</td>
</tr>
<tr>
<td>system configuration ................................................. 2-4, 2-70</td>
</tr>
<tr>
<td>system setting (e-mail) .................................................. 2-56</td>
</tr>
<tr>
<td><strong>T</strong></td>
</tr>
<tr>
<td>tag ................................................................. 2-11, 2-35</td>
</tr>
<tr>
<td>temperature unit .......................................................... 2-33</td>
</tr>
<tr>
<td>time adjust on start action .............................................. 2-58</td>
</tr>
<tr>
<td>time deviation limit ....................................................... 2-33</td>
</tr>
<tr>
<td>timeout (command timeout) ............................................... 2-62</td>
</tr>
<tr>
<td>timeout function .......................................................... 2-48</td>
</tr>
<tr>
<td>timer ................................................................. 2-25</td>
</tr>
<tr>
<td>timer action ................................................................... 2-26</td>
</tr>
<tr>
<td>time zone ..................................................................... 2-33</td>
</tr>
<tr>
<td>TLOG computation .......................................................... 2-16</td>
</tr>
<tr>
<td>trademarks ..................................................................... 1</td>
</tr>
<tr>
<td>trip line ........................................................................ 2-20</td>
</tr>
<tr>
<td><strong>U</strong></td>
</tr>
<tr>
<td>unit ........................................................................ 2-16, 2-51</td>
</tr>
<tr>
<td>unit no. .......................................................................... 2-51</td>
</tr>
<tr>
<td>user registration ............................................................ 2-45</td>
</tr>
<tr>
<td>user's manual ................................................................. 1-4</td>
</tr>
<tr>
<td><strong>V</strong></td>
</tr>
<tr>
<td>value ........................................................................ 2-10</td>
</tr>
<tr>
<td>value on error ................................................................... 2-37</td>
</tr>
<tr>
<td>version .......................................................................... 1-6</td>
</tr>
<tr>
<td>version information .......................................................... 1-6</td>
</tr>
<tr>
<td>VT ratio .......................................................................... 2-32</td>
</tr>
<tr>
<td><strong>W</strong></td>
</tr>
<tr>
<td>web server ...................................................................... 2-59</td>
</tr>
<tr>
<td><strong>Z</strong></td>
</tr>
<tr>
<td>zone ........................................................................ 2-11</td>
</tr>
</tbody>
</table>