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Revisions

1st Edition : March 2010
2nd Edition : June 2010
3rd Edition : November 2010
4th Edition : January 2014
5th Edition : July 2017
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How to Use This Manual

Structure of the Manual

This manual consists of the following seven 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>Setup Data on DX1000/DX2000 Models with the /AS1 Advanced Security Option</td>
<td>Explains how setup data is sent and received on DX1000/DX2000 models with the /AS1 advanced security option.</td>
</tr>
<tr>
<td>3</td>
<td>Configuring the DX1000/DX2000</td>
<td>Explains how to configure the DX1000/DX2000 measurement conditions and other settings.</td>
</tr>
<tr>
<td>4</td>
<td>Configuring the MV1000/MV2000</td>
<td>Explains how to configure the MV1000/MV2000 measurement conditions and other settings.</td>
</tr>
<tr>
<td>5</td>
<td>Configuring the CX1000/CX2000</td>
<td>Explains how to configure the CX1000/CX2000 measurement conditions and other settings.</td>
</tr>
<tr>
<td>6</td>
<td>Configuring the DX100/DX200/DX200C/MV100/MV200</td>
<td>Explains how to configure the DX100/DX200/DX200C/MV100/MV200 measurement conditions and other settings.</td>
</tr>
<tr>
<td>7</td>
<td>Troubleshooting</td>
<td>Gives a list of error messages and corrective measures.</td>
</tr>
<tr>
<td></td>
<td>Index</td>
<td>Gives a list of important terms used in this manual.</td>
</tr>
</tbody>
</table>

Range of Explanation in 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>DX1000/DX1000N/DX2000</td>
<td>Up to release number 4 (firmware version 4.1x)</td>
</tr>
<tr>
<td></td>
<td>Described as DX1000/DX2000 in this manual.</td>
</tr>
<tr>
<td>MV1000/MV2000</td>
<td>Up to release number 1 (firmware’s version 1.0x).</td>
</tr>
<tr>
<td>CX1000/CX2000</td>
<td>Up to style number S3.</td>
</tr>
<tr>
<td>DX100/DX200/DX200C</td>
<td>Up to style number S4.</td>
</tr>
<tr>
<td>MV100/MV200</td>
<td>Up to style number S4.</td>
</tr>
<tr>
<td>DAQSTANDARD</td>
<td>Up to firmware’s version R8.2x.</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>Revised for release number 4 of the DX1000/DX1000N/DX2000. This manual was created through the division of the fifth edition of the conventional DAQSTANDARD user's manual (IM04L41B01-61E) into different manuals for each software application.</td>
</tr>
<tr>
<td>2</td>
<td>Changes to the operating environment (support for Windows 7). Improvements to descriptions.</td>
</tr>
<tr>
<td>3</td>
<td>Changes to the operating environment (Support for Windows XP SP2 is terminated). Improvements to descriptions.</td>
</tr>
<tr>
<td>4</td>
<td>Changes to the operating environment (Support for Windows 2000 is terminated, and support for Windows 8). Improvements to descriptions.</td>
</tr>
<tr>
<td>5</td>
<td>License free. Changes to the operating environment (Support for Windows XP and Vista are terminated).</td>
</tr>
</tbody>
</table>
## Contents

Terms and Conditions of the Software License......................................................................................... ii
How to Use This Manual.............................................................................................................................. iv

### 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 and Tool Bars .......................................................................................................................... 1-4
   - Menu Bar ....................................................................................................................................... 1-4
   - Toolbar .......................................................................................................................................... 1-5

1.5 Printing Setup Data .......................................................................................................................... 1-6
   - Print Format Settings (Only on the DX1000/DX2000 and MV1000/MV2000) .............................. 1-6
   - Print Example (Table) ...................................................................................................................... 1-7
   - Print Example (Text) ......................................................................................................................... 1-9
   - Print Setup ..................................................................................................................................... 1-10
   - Print Preview .................................................................................................................................. 1-10
   - Printing ......................................................................................................................................... 1-10

1.6 Displaying the Version Information ................................................................................................ 1-11
   - Procedure ...................................................................................................................................... 1-11

### Chapter 2  Setup Data on DX1000/DX2000 Models with the /AS1 Advanced Security Option

2.1 Explanation of Operations ................................................................................................................. 2-1
   - Displaying Setup Data ...................................................................................................................... 2-1
   - Creating Setup Data .......................................................................................................................... 2-1
   - Saving Setup Data and Applying It on the DX .................................................................................. 2-1
   - Printing Setup Data .......................................................................................................................... 2-2
   - Starting and Stopping Measurement on the DX1000/DX2000 and Checking the DX1000/
     DX2000 Hardware Information ......................................................................................................... 2-2
   - Connecting to the DX ....................................................................................................................... 2-2

2.2 Displaying Setup Data ....................................................................................................................... 2-3
   - To Load Setup Data from the DX1000/DX2000 .............................................................................. 2-3
   - Creating Setup Data by Configuring a New System ....................................................................... 2-4
   - Loading Existing Setup Data .......................................................................................................... 2-5

### Chapter 3  Configuring the DX1000/DX2000

3.1 Starting the Hardware Configurator ................................................................................................. 3-1
   - To Load Setup Data from the DX1000/DX2000 .............................................................................. 3-1
   - Creating Setup Data by Configuring a New System ....................................................................... 3-2
   - Loading Existing Setup Data .......................................................................................................... 3-2

3.2 Setting and Checking the System Configuration and Initializing Setup Data .................................. 3-3
   - Changing/Checking the System Configuration .............................................................................. 3-3
   - Initializing the Setup Data .............................................................................................................. 3-4

3.3 Setting the Measurement Channels, Ext. Channels ........................................................................ 3-5
   - Input Type (Mode and Range/Type) .............................................................................................. 3-7
   - Linear Scaling (SCALE) .................................................................................................................. 3-7
   - Difference Computation (DELTA) ................................................................................................. 3-8
   - Ref. CH .......................................................................................................................................... 3-8
### Contents

- **Square Root** ................................................................. 3-8
- **Unit** ........................................................................... 3-8
- **Low-cut** (Can be set when the mode is 1-5V, and when the mode is VOLT with square root (SQRT) selected.) .. 3-8
- **Low-cut value** (Can be set when the mode is VOLT with square root (SQRT) selected.) . 3-8
- **Calibration Correction** .................................................. 3-9
- **Alarm** ........................................................................ 3-10
- **Detect** ......................................................................... 3-10
- **Moving Average** ......................................................... 3-11
- **Tag and Tag No.** ........................................................... 3-11
- **Memory Sampling** ........................................................ 3-11
- **Zone (Zone L and U)** ..................................................... 3-11
- **Graph** .......................................................................... 3-11
- **Partial (Partial Expanded Display)** ................................. 3-12
- **Color (Display Color)** ................................................... 3-12
- **Green Band** ................................................................ 3-12
- **Alarm Mark** .................................................................. 3-12
- **Copying and Pasting Setup Data** ..................................... 3-13
- **Setting One Channel at a Time** ...................................... 3-14

#### 3.4 Setting the Computation Channels

- **Turning Computation ON/OFF** ...................................... 3-16
- **Entering Expressions** ..................................................... 3-16
- **Span (Display Span) and Point** ....................................... 3-16
- **Unit** ............................................................................ 3-16
- **TLOG (TLOG Computation)** .......................................... 3-16
- **Alarm and Tag** ............................................................... 3-16
- **Rolling Average** ............................................................. 3-17
- **Memory Smpling, Zone, Graph, Partial, Color, Green Band, and Alarm Mark** .... 3-17
- **Constant** ...................................................................... 3-17
- **Copying and Pasting Setup Data** ..................................... 3-17
- **Setting One Computation Channel at a Time** .................... 3-18

#### 3.5 Entering General Settings

- **Daylight Saving Time** .................................................... 3-19
- **Group** ......................................................................... 3-20
- **Display** ........................................................................ 3-22
- **View Group** ................................................................ 3-25
- **Message** ...................................................................... 3-26
- **Comment (Release number 3 or later)** ............................ 3-27
- **Annunciator (Release number 3 or later)** ......................... 3-28
- **Timer** .......................................................................... 3-29
- **Manual Sample** ............................................................. 3-31
- **Event Action** ................................................................. 3-32
- **File** .............................................................................. 3-34
- **Event Data** .................................................................. 3-36
- **Custom Menu** ............................................................... 3-37
- **Web Report (Release number 3 or later)** ......................... 3-38

#### 3.6 Entering Basic Settings

- **Environment** ............................................................... 3-39
- **Alarm** .......................................................................... 3-47
- **Scan Interval** ............................................................... 3-50
- **Measure Function** ....................................................... 3-51
- **Report** ........................................................................ 3-52
- **Remote (Release number 3 or later)** ................................ 3-53
- **Key Lock** .................................................................... 3-54
- **Login** .......................................................................... 3-55
- **Ethernet** ..................................................................... 3-57
Chapter 4 Configuring the MV1000/MV2000

4.1 Starting the Hardware Configurator .................................................. 4-1
   To Load Setup Data from the MV1000/MV2000 .................................... 4-1
   Creating Setup Data by Configuring a New System ............................... 4-2
   Loading Existing Setup Data .................................................................. 4-2

4.2 Setting and Checking the System Configuration and Initializing Setup Data .............................................. 4-3
   Changing/Checking the System Configuration ........................................ 4-3
   Initializing the Setup Data ...................................................................... 4-4

4.3 Setting the Measurement Channels, Ext. Channels ................................ 4-5
   Input Type (Mode and Range/Type) ......................................................... 4-7
   Linear Scaling (SCALE) ........................................................................... 4-7
   Difference Computation (DELTA) .......................................................... 4-7
   Ref. CH .................................................................................................. 4-7
   Square Root .......................................................................................... 4-7
   Unit ......................................................................................................... 4-7
   Low-cut (Can be set when the mode is 1-5V, and when the mode is VOLT with square root (SQRT) selected.).......................... 4-8
   Low-cut value (Can be set when the mode is VOLT with square root (SQRT) selected.).......................... 4-8
   Calibration Correction ............................................................................ 4-8
   Alarm ....................................................................................................... 4-9
   Detect ...................................................................................................... 4-9
   Moving Average ...................................................................................... 4-10
   Tag ......................................................................................................... 4-10
   Memory Sampling .................................................................................. 4-10
   Display Zone (Zone L and U) ................................................................. 4-10
   Graph ..................................................................................................... 4-10
   Partial (Partial Expanded Display) .......................................................... 4-11
   Color (Display Color) .............................................................................. 4-11
   Green Band ............................................................................................ 4-11
   Alarm Mark ............................................................................................ 4-12
   Copying and Pasting Setup Data ............................................................. 4-12
   Setting One Channel at a Time ............................................................... 4-13

4.4 Setting the Computation Channels ........................................................ 4-14
   Use (Turning ON/OFF Computation) ....................................................... 4-15
   Entering Expressions .............................................................................. 4-15
   Span (Display Span) and Point ............................................................... 4-15
   Unit ......................................................................................................... 4-15
   TLOG (TLOG Computation) .................................................................. 4-15
   Alarm and Tag ....................................................................................... 4-15
   Rolling Average ..................................................................................... 4-16
   Memory Smpling, Zone, Graph, Partial, Color, Green Band, and Alarm Mark ....................................................... 4-16
Chapter 5  Configuring the CX1000/CX2000

5.1 Starting the Hardware Configurator, the Hardware Configurator Window, and System
  Configuration Settings ................................................. 5-1
  Starting the Hardware Configurator ................................. 5-1
  Loading Setup Data from the CX ................................. 5-2
  Creating Setup Data by Configuring a New System ................. 5-3
  Loading Existing Setup Data ...................................... 5-4

5.2 Setting and Checking the System Configuration and Initializing Setup Data ............... 5-5
  Entering and Checking System Settings .......................... 5-5
  Initializing the Setup Data ....................................... 5-6

5.3 Control Function Basic Settings .................................. 5-7
  Control Action ....................................................... 5-7
  Internal Loop ............................................................ 5-8
  DI/DO/SW-Regist (Contact Input) .................................. 5-11
  Control Input Channel (When PV/SP Computation Is ON, and with CX Style Number S3 or Later) .................. 5-12
  Control Relay ......................................................... 5-13
  External Loop ......................................................... 5-14

5.4 Control Function General Settings .................................. 5-18
  Control Input ......................................................... 5-18
  Analog Retransmission .............................................. 5-21
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Related</td>
<td>5-24</td>
</tr>
<tr>
<td>Linearize (When PV/SP Computation Is OFF)</td>
<td>5-25</td>
</tr>
<tr>
<td>Control Function Settings</td>
<td>5-26</td>
</tr>
<tr>
<td>Control Groups</td>
<td>5-26</td>
</tr>
<tr>
<td>PV Event Hysteresis (Style 2 or earlier)</td>
<td>5-27</td>
</tr>
<tr>
<td>DIO Operation Monitoring Function (CX Style Number S3 or Later)</td>
<td>5-28</td>
</tr>
<tr>
<td>DIO Labels (CX Style Number S3 or Later)</td>
<td>5-29</td>
</tr>
<tr>
<td>Logic Computation (CX Style Number S3 or Later)</td>
<td>5-29</td>
</tr>
<tr>
<td>Control Input Channel (CX Style Number S3 or Later)</td>
<td>5-30</td>
</tr>
<tr>
<td>5.5 Control Channel Settings (Internal/External)</td>
<td>5-32</td>
</tr>
<tr>
<td>5.6 Program Control Related Setup Operations</td>
<td>5-34</td>
</tr>
<tr>
<td>Turn ON/OFF Program Control</td>
<td>5-34</td>
</tr>
<tr>
<td>Initial Program Patterns</td>
<td>5-35</td>
</tr>
<tr>
<td>Program Pattern Setting (Segment setting)</td>
<td>5-37</td>
</tr>
<tr>
<td>PV Event (CX Style Number S3 or Later)</td>
<td>5-41</td>
</tr>
<tr>
<td>Event Output Setting (PV event-relay output/Time event-relay output/Program pattern end signal)</td>
<td>5-41</td>
</tr>
<tr>
<td>AUX (Automatic Message, Display Position, Operation Display Automatic Switching)</td>
<td>5-43</td>
</tr>
<tr>
<td>5.7 Measurement Function Basic Settings</td>
<td>5-44</td>
</tr>
<tr>
<td>Alarm/Relay/Remote</td>
<td>5-44</td>
</tr>
<tr>
<td>Scan Interval/Memory</td>
<td>5-45</td>
</tr>
<tr>
<td>Channel (Setting the Burnout and RJC)</td>
<td>5-47</td>
</tr>
<tr>
<td>Key Lock/Login</td>
<td>5-48</td>
</tr>
<tr>
<td>Timer (Option)</td>
<td>5-49</td>
</tr>
<tr>
<td>Report (Creating Hourly/Daily/Weekly/Monthly Reports, Setting Available When the Computation Function Option is Active)</td>
<td>5-50</td>
</tr>
<tr>
<td>Tag, Memory Alarm Time, Displayed Language, and Partial Expanded Display Settings</td>
<td>5-51</td>
</tr>
<tr>
<td>Temperature Unit</td>
<td>5-52</td>
</tr>
<tr>
<td>Time Zone</td>
<td>5-52</td>
</tr>
<tr>
<td>5.8 Measurement Channels Settings</td>
<td>5-53</td>
</tr>
<tr>
<td>Input Type (Mode and Range/Type)</td>
<td>5-54</td>
</tr>
<tr>
<td>Difference Computation and Reference</td>
<td>5-54</td>
</tr>
<tr>
<td>Square Root</td>
<td>5-54</td>
</tr>
<tr>
<td>Display Span</td>
<td>5-54</td>
</tr>
<tr>
<td>Scale</td>
<td>5-54</td>
</tr>
<tr>
<td>Alarm</td>
<td>5-55</td>
</tr>
<tr>
<td>Alarm Delay</td>
<td>5-55</td>
</tr>
<tr>
<td>Moving Average</td>
<td>5-55</td>
</tr>
<tr>
<td>Tag</td>
<td>5-55</td>
</tr>
<tr>
<td>Zone</td>
<td>5-55</td>
</tr>
<tr>
<td>Graph</td>
<td>5-56</td>
</tr>
<tr>
<td>Partial</td>
<td>5-56</td>
</tr>
<tr>
<td>Display Color</td>
<td>5-56</td>
</tr>
<tr>
<td>Copying and Pasting Setup Data</td>
<td>5-57</td>
</tr>
<tr>
<td>Setting One Channel at a Time</td>
<td>5-57</td>
</tr>
<tr>
<td>5.9 Computation Channel Settings</td>
<td>5-58</td>
</tr>
<tr>
<td>Computation ON/OFF</td>
<td>5-58</td>
</tr>
<tr>
<td>Expression</td>
<td>5-58</td>
</tr>
<tr>
<td>Display Span</td>
<td>5-58</td>
</tr>
<tr>
<td>Alarm and Tag</td>
<td>5-59</td>
</tr>
<tr>
<td>TLOG Computation</td>
<td>5-59</td>
</tr>
<tr>
<td>Rolling Average</td>
<td>5-59</td>
</tr>
<tr>
<td>Zone, Graph, Partial, and Color</td>
<td>5-59</td>
</tr>
<tr>
<td>Constants</td>
<td>5-59</td>
</tr>
<tr>
<td>Setting One Computation Channel at a Time</td>
<td>5-60</td>
</tr>
</tbody>
</table>
Chapter 6 Configuring the DX100/DX200/DX200C/MV100/MV200

6.1 Starting the Configurator ................................................................. 6-1
  Starting the Hardware Configurator .................................................. 6-1
  Loading the Setup Data from the DX/MV ........................................ 6-2
  Creating Setup Data by Configuring a New System .......................... 6-3
  Loading Preexisting Setup Data ...................................................... 6-3

6.2 Setting the Measurement Channels .............................................. 6-4
  Input Type (Mode and Range/Type) ................................................... 6-5
  Difference Computation and Reference ......................................... 6-5
  Display Span .................................................................................. 6-5
  Scale ............................................................................................ 6-5
  Square Root .................................................................................. 6-5
  Alarm ........................................................................................... 6-6
  Input Filter and Moving Average ................................................... 6-6
  Tag ............................................................................................... 6-6
  Display Zone ................................................................................ 6-6
  Graph ........................................................................................... 6-7
  Partial Expanded Display ............................................................... 6-7
  Display Color .............................................................................. 6-7
  Copying and Pasting Setup Data .................................................... 6-7

6.3 Setting the Computation Channels .............................................. 6-9
  Turning ON/OFF Computation ...................................................... 6-9
  Expression .................................................................................... 6-9
  Display Span ................................................................................ 6-9
  Alarm and Tag ............................................................................. 6-10
  TLOG Computation ..................................................................... 6-10
  Rolling Average .......................................................................... 6-10
  Display Zone, Graph, Partial Expansion, and Color ....................... 6-10
  Constant ...................................................................................... 6-10
  Setting One Computation Channel at a Time ................................ 6-11
  Copying and Pasting Setup Data .................................................... 6-11
Contents

6.4 Configuring the Settings ................................................................. 6-12
  Screen Display ............................................................................. 6-12
  Message/File .............................................................................. 6-13
  Group/Trip Line .......................................................................... 6-14
  Setting the View Group (DX200, DX200C, MV200 Only) ............. 6-15
  USER Key (DX100, DX200, DX200C, and MV200 Only), Dayliht Saving, Batch (Option /BT1, Style Number S2 or Later) .......... 6-15
6.5 Configuring the Setup Mode ......................................................... 6-16
  Alarm/Relay/Remote .................................................................. 6-16
  Scan Interval/Memory ................................................................. 6-17
  Channel (Setting the Burnout and RJC) ....................................... 6-18
  Key Lock/Login ........................................................................... 6-19
  Timer (Option /M1) ..................................................................... 6-20
  Report (Creating Hourly/Daily/Weekly/Monthly Reports, Option /M1) .............................................................. 6-21
  Setting the Temperature Unit, Tag/Channel Display, Memory Alarm Time, Displayed Language, Partial Expanded Display, Batch (Option /BT1, Style Number S2 or Later) and Time Zone ........................................... 6-22
  Network ....................................................................................... 6-23
6.6 Adjusting the Setup Data (Checking the Data) ......................... 6-26
6.7 Sending the Setup Data to the DX/MV .................................... 6-27
6.8 Checking the System Configuration and Initializing Setup Data .............................................................. 6-28
  Checking the System Configuration ......................................... 6-28
  Initializing the Setup Data .......................................................... 6-28
6.9 Saving the Setup Data ............................................................... 6-29
6.10 Printing the Setup Data ............................................................ 6-30
6.11 Starting and Stopping Measurement on the DX/MV, Checking the DX/MV Hardware Information ............................................. 6-31
6.12 Characters that can be Used ..................................................... 6-32

Chapter 7 Troubleshooting

7.1 Troubleshooting ....................................................................... 7-1

Index
1.1 Overview of DAQSTANDARD

DAQSTANDARD Software Package

DAQSTANDARD consists of the following three software applications.

- **Viewer**
- **Hardware Configurator**
- **DX-P Hardware Configurator**

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

- **Hardware Configurator**
  Hardware Configurator is a software application for creating setup data for the recorder. It can send setup files that you have created to the recorder and save them to storage media. It can be used with the following recorders: the DX1000, DX1000N, DX2000, DX100, DX200, CX1000, CX2000, MV1000, MV2000, MV100, and MV200.

- **DX-P Hardware Configurator**
  DX-P Hardware Configurator is a software application for creating setup data for the DX100P/DX200P recorder. It can send setup files that you have created to the recorder and save them to storage media.

About Hardware Configurator

**Creating Setup Data**

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

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

**Configuring the Recorder**

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

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

**Printing Setup Data**

You can print setup data.

**Recorder Information Acquisition**

You can acquire the recorder’s device information through communication.
1.2 PC System Requirements

Hardware

Personal Computer
A computer which runs on Windows 7, Windows 8.1, or Windows 10.

CPU and Main Memory
- 32-bit edition: Intel Pentium 4, 3 GHz or faster x64 or x86 processor; 2 GB or more of memory
- 64-bit edition: Intel x64 processor that is equivalent to Intel Pentium 4, 3 GHz or faster; 2 GB or more of memory

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

Mouse
A mouse supported by Windows.

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

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

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

Operating System (OS)

<table>
<thead>
<tr>
<th>OS</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 7</td>
<td>Home Premium 32-bit and 64-bit editions</td>
</tr>
<tr>
<td></td>
<td>Professional 32-bit and 64-bit editions</td>
</tr>
<tr>
<td>Windows 8.1</td>
<td>32-bit and 64-bit editions (Supports the desktop mode)</td>
</tr>
<tr>
<td></td>
<td>Pro 32-bit and 64-bit editions (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.
1.3 Starting/Exiting the Software

Starting

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

Hardware Configurator starts, and the following window appears.

Exiting

To exit Hardware Configurator, select [File] - [Exit], or click the [X] button.
## 1.4 Menu and Tool Bars

### Menu Bar

The menu bar is the same for all recorders. 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></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 DX1000/DX2000 and MV1000/MV2000.</td>
</tr>
<tr>
<td>Math Channels</td>
<td></td>
</tr>
<tr>
<td>Ext. Channels</td>
<td></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></td>
</tr>
<tr>
<td>SET (Regular)</td>
<td>(Submenu)</td>
</tr>
<tr>
<td>SETUP (Basic)</td>
<td>(Submenu)</td>
</tr>
<tr>
<td>Initialize</td>
<td></td>
</tr>
<tr>
<td><strong>Control Setting</strong></td>
<td></td>
</tr>
<tr>
<td>SET (Regular)</td>
<td>(Submenu)</td>
</tr>
<tr>
<td>SETUP (Basic)</td>
<td>(Submenu)</td>
</tr>
<tr>
<td>Program Pattern Setting</td>
<td>(Submenu)</td>
</tr>
<tr>
<td><strong>System</strong></td>
<td></td>
</tr>
<tr>
<td>System Configuration</td>
<td>Set the setup data system configuration.</td>
</tr>
<tr>
<td>Data Adjustment</td>
<td>Checks the setup data consistency.</td>
</tr>
<tr>
<td><strong>View</strong></td>
<td></td>
</tr>
<tr>
<td>Standard Toolbar</td>
<td>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>Shows or hides the data adjustment dialog.</td>
</tr>
<tr>
<td><strong>Help</strong></td>
<td></td>
</tr>
<tr>
<td>About</td>
<td>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>
Before using DAQSTANDARD

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]

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
The toolbar is the same for all recorders. Only the icons of tools that can be used are available.

Version information
Check the data consistency
Send data
Receive data
Print
Save
Open
New
1.5 Printing Setup Data

Print Format Settings (Only on the DX1000/DX2000 and MV1000/MV2000)

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

   The [Print Settings] dialog box appears.

![Print Settings dialog box]

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></td>
<td>Nothing is printed.</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/THour: 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>Title</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
<th>Title</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
<td></td>
<td></td>
<td>Name</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
<td>Date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
<td></td>
<td>Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print</td>
<td></td>
<td></td>
<td></td>
<td>Print</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

System Configuration

<table>
<thead>
<tr>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
<td></td>
<td></td>
<td>Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
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<td>Date</td>
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<tr>
<td>Time</td>
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<tr>
<td>Print</td>
<td></td>
<td></td>
<td></td>
<td>Print</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Basic setting Environment/Basic Environment/Basic Environment

<table>
<thead>
<tr>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
<td>Date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
<td></td>
<td>Time</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Print</td>
<td></td>
<td></td>
<td></td>
<td>Print</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Basic setting Environment/Basic Setting/General

<table>
<thead>
<tr>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
<td>Date</td>
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</tr>
<tr>
<td>Time</td>
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<td>Time</td>
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<td></td>
</tr>
<tr>
<td>Print</td>
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<td></td>
<td>Print</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Basic setting Environment/Detail Setting/Switch

<table>
<thead>
<tr>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
<td>Date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
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<td>Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print</td>
<td></td>
<td></td>
<td></td>
<td>Print</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Basic setting Environment/Detail Setting/Message

<table>
<thead>
<tr>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
<td>Date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
<td></td>
<td>Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print</td>
<td></td>
<td></td>
<td></td>
<td>Print</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Basic setting Environment/Detail Setting/Port/Output

<table>
<thead>
<tr>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
<th>Item</th>
<th>Specified Value</th>
<th>Changed Value</th>
<th>Verify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
<td>Date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
<td></td>
<td>Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print</td>
<td></td>
<td></td>
<td></td>
<td>Print</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Footer (page number)
1.5 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 &quot;NewFile.&quot;</td>
</tr>
<tr>
<td>Setting Number*</td>
<td>The ID number of the setup file that is being edited. If there is no ID number or if the file has been newly created, a diagonal line is drawn through this cell.</td>
</tr>
<tr>
<td>File Date*</td>
<td>The date when the setup file that is being edited was created. If there is not creation date information or if the file has been newly created, a diagonal line is drawn through this cell.</td>
</tr>
</tbody>
</table>

* These items only appear for files that were created on a DX with the /AS1 advanced security option (files with .pel, .dsd, and .dse extensions).

- **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.

<table>
<thead>
<tr>
<th>File</th>
<th>File Name</th>
<th>SysFile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Configuration</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>CI3000</td>
<td></td>
</tr>
<tr>
<td>S/N</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>Option</td>
<td>Security</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Setup items</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Page number</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

1.5 Printing Setup Data

Before using DAQSTANDARD
### 1.5 Printing Setup Data

#### Print Setup

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

   ![Print Setup Dialog Box]

2. Set the printer, paper and orientation.

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

#### Print Preview

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

#### Printing

1. Click the [Print] button, or choose [File] - [Print] from the menu bar.

   ![Print Dialog Box]

   The [Print] dialog box appears.

2. Click the [OK] button.

   The setup data is printed. For an example of what the printed setup data looks like, see “Print Example (Text)” on the previous page.
1.6 Displaying the Version Information

Procedure


2. Click [OK] to close the [About] dialog box.
2.1 Explanation of Operations

This chapter explains operations relating to the setup data (.PEL extension) of DX1000/DX2000s with the /AS1 advanced security option.

Displaying Setup Data

You can display existing setup data using one of the following methods:

- Open the viewer, and view the setup data within the measured data.
  For the operating procedure, see the DAQSTANDARD Viewer User’s Manual (IM04L41A01-63EN).
- Display the setup data within the measured data.
  See section 2.2.
- Display the data of a saved setup file.
  See section 2.2.
- Use communication to receive and display the DX settings.
  See section 2.2.

Note
You cannot display or change [Login] items.

Creating Setup Data

See sections 3.2 and later in chapter 3.

Saving Setup Data and Applying It on the DX

You can use one of the following methods to apply setup data on the DX:

- Save the setup data to a file and load it using the DX.
  For the procedure for saving setup data, see section 3.8. For instructions on how to load setup data, see section 6.9 in the User’s Manual (IM04L41B01-01E or IM04L42B01-01E).
- Use communication to send the setup data to the DX.
  See section 3.7.

Note
For [Login] items, the initial values are output when you create new setup data, and the original values are output when you use existing setup data.
2.1 Explanation of Operations

Printing Setup Data
You can print setup data. For the operating procedure, see section 1.5.

**Note**
[Login] items are not printed.

Starting and Stopping Measurement on the DX1000/DX2000 and Checking the DX1000/DX2000 Hardware Information
From this software, you can start and stop measurement on the DX1000/DX2000 and display DX1000/DX2000 hardware information. For the operating procedure, see section 3.10.

Connecting to the DX
The conditions for establishing a connection with the DX are listed in the table below.

**Ethernet**
You need to log in to the DX monitoring or setting function as an administrator or user who has been registered on the DX. The connection is automatically closed after you execute the operations.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Connected Function</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receive setup data</td>
<td>Monitoring function</td>
<td>Administrators and users</td>
</tr>
<tr>
<td>Send setup data</td>
<td>Setting function</td>
<td>Administrators</td>
</tr>
<tr>
<td>Send address settings (see section 3.3)</td>
<td>Setting function</td>
<td>Administrators</td>
</tr>
<tr>
<td>Acquire hardware information</td>
<td>Monitoring function</td>
<td>Administrators and users</td>
</tr>
<tr>
<td>Start or stop recording</td>
<td>Setting function</td>
<td>Administrators</td>
</tr>
</tbody>
</table>

* User’s who have permission to log in through communication.

For information about the monitoring function, setting function, administrators, users, and simultaneous login limitations, see section 1.3 in the Advanced Security Function (IAS1) User’s Manual (IM 04L41B01-05EN).

Invalid User
When a user is prompted for a password, if he or she tries to log in with the wrong password consecutively for the number of times specified by the password retry frequency setting, that user is made invalid, and will be unable to perform operations. The invalid user status is released when an administrator sets the password of an invalid user to the default value.

Serial Communication
You can only use serial communication to output data from the DX.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receive setup data</td>
<td>You can perform this operation without logging in.</td>
</tr>
<tr>
<td>Send setup data</td>
<td>You cannot perform this operation.</td>
</tr>
<tr>
<td>Send address settings</td>
<td>You cannot perform this operation.</td>
</tr>
<tr>
<td>Acquire hardware information</td>
<td>You can perform this operation without logging in.</td>
</tr>
<tr>
<td>Start or stop recording</td>
<td>You cannot perform this operation.</td>
</tr>
</tbody>
</table>
2.2 Displaying Setup Data

To Load Setup Data from the DX1000/DX2000

Use communication to receive and display the DX settings.

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

2. Enter all the parameters for [Ethernet], and click the [OK] button.
   For information about the connection conditions, see section 2.1.

   ![Network Dialog Box]

If the [Receive Data] dialog box appears, proceed to step 4.
If the current password has expired and you are prompted to change it, proceed to step 3.

3. Enter the new password into the [New password] and [Re-type new password] boxes, and click the [OK] button.
   The [Receive Data] dialog box appears.

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

   ![Receive Data Dialog Box]
Creating Setup Data by Configuring a New System


The [System Configuration] dialog box appears.
Click the [DXAdvanced] tab.

2. Configure all the settings on the [DXAdvanced] tab, and then click the [OK] button.
The DX1000/DX2000 setting screen is displayed.
2.2 Displaying Setup Data

Loading Existing Setup Data
Load and display existing setup data.

1. Click the [Open] button, or select [File] - [Open] from the menu bar.

   ![Open dialog box](image)

   The [Open] dialog box appears.

2. Select a setup data file (.PEL extension) or measured data file (.DSD or .DSE extension), and click [Open].

   ![Open dialog box](image)

   The setup data is loaded and displayed.

   **Note**
   If you specify a measured data file, the setup file contained within it is loaded.
3.1 Starting the Harware Configurator

The Hardware Configurator can transmit and receive the setup data, change the setup data, and create new setup data. For information about the settings on DXs with the /AS1 advanced security option, see section 2.2. The setting screen may differ from your actual screen.

To Load Setup Data from the DX1000/DX2000

Before performing the following procedure, please make sure that the communication method and parameters are correct. (For details, see section 2.3, “Setting the Communication Method.”)

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

   ![Network dialog box](image)

   The [Network] dialog box appears.

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

   ![Receive Data dialog box](image)

   The [Receive Data] dialog box appears.

2. Click the [OK] button.

   The software receives the setup data from the DX and displays it.
Creating Setup Data by Configuring a New System

1. Click the [New] button, or choose [File] - [New] from the menu bar.

   The [System Configuration] dialog box opens.

   Click the [DXAdvanced] tab.

   Enter all settings on the [DXAdvanced] tab, then click the [OK] button. The DX1000/DX2000 setting screen is displayed.

Loading Existing Setup Data

1. Click the [Open] button, or choose [File] - [Open] from the menu bar.

   The [Open] dialog box is displayed.

   Select a setup data file (with the .PDL extension).
3.2 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 DX1000/DX2000.

Normally, a system is set up according to the specifications of the DX1000/DX2000 to be set up.


The [System Configuration] dialog box opens. Click the [DXAdvanced] tab.

2. Change the various settings according to the DX1000/DX2000 that you will connect to (blue and brown items are selected, gray items are cleared).

The settings in the Option group differ depending on the model and options of the instrument.

For example, for the DX1000, or for the DX2000 with eight channels or fewer, the external function item cannot be selected. If [Pulse] is selected (blue), the [Math] and [Remote] items are disabled.

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.
3.2 Setting and Checking the System Configuration and Initializing Setup 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.
### 3.3 Setting the Measurement Channels, Ext. Channels

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

- **Drag to select a range**
- **Turn all channels ON/OFF**
- **Click and select from the list**
- **Click the text box to enter a number**

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** to display a dialog box to set one channel at a time ([001] dialog box, for example). (In the [Math channel] and [Ext channel] tabs, dialog box for each channel is displayed.)

- **Click to display the color settings screen.**
- **Click to display the calibration correction setting screen.**
- **Click to toggle ON and OFF.**
- **Click to change the display.**
Enter external input channel settings in the same manner as those of the measurement channel items. Also note that this measurement channel setting screen is only one example; your actual screen may vary.

- Select this tab
- Double-click to set the channel
- Select the input mode
- Difference computation
- Scaling
- Square root
- Select the reference channel for the difference computation
- Set the computation
- Enter the scale
- Set the scale unit
- Set the low cut
- Select the alarm type
- Enter the alarm value
- Select the relay number
- Select ON/OFF
- Set the value to the minimum value possible
- Set the value to the maximum value possible
- Enter the alarm delay time
- Enter the sampling count
- Enter the display zone
- Select the graph setting
- Turn ON/OFF the partial expanded display
- Enter the tag
- Enter the tag number
- All ON or OFF
- Select the channel display color
- Set the green band
- Select the mark type
- Click here to set the calibration correction (see page 3-9)
Correspondence between difference computation, scaling, and square root computation ([DELTA], [SCALE], and [SQRT]) is as follows.

<table>
<thead>
<tr>
<th>Mode</th>
<th>OFF</th>
<th>DELTA</th>
<th>SCALE</th>
<th>SQRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIP</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>VOLT (voltage)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>TC (thermocouple)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>RTD (resistance temperature detector)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>DI (voltage level/contact input)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>1-5 V</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

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

The following input types have been added in release number 3.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Input Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC</td>
<td>Type XK</td>
<td>XK GOST, /N3 option</td>
</tr>
<tr>
<td>RTD</td>
<td>Pt100G</td>
<td>Pt100GOST, /N3 option</td>
</tr>
<tr>
<td></td>
<td>Cu100G</td>
<td>Cu100GOST, /N3 option</td>
</tr>
<tr>
<td></td>
<td>Cu50G</td>
<td>Cu50GOST, /N3 option</td>
</tr>
<tr>
<td></td>
<td>Cu10G</td>
<td>Cu10GOST, /N3 option</td>
</tr>
<tr>
<td></td>
<td>Pt46G</td>
<td>Pt46GOST, /N3 option</td>
</tr>
</tbody>
</table>

The following input types have been added in release number 4.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Input Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTD</td>
<td>Pt200W</td>
<td>Pt200 (WEED), /N3 option</td>
</tr>
</tbody>
</table>

- **Span L, Span U**
  - Input range. The selectable range is displayed on the screen.
  - The selectable range for Type N has been expanded (from –270.0 to 1300.0°C) in release number 3.

**Note**
- You cannot set the same value to [Span L] and [Span U].
- When the [Mode] is [1-5V] or [Sqrt], [Span L] must be less than [Span U].

**Linear Scaling (SCALE)**

Converts the unit to obtain the measured value.

- **Scale L, Scale U**
  - Input range after converting the unit. The selectable range is from –30000 to 30000.

- **Point**
  - Set the number of digits to the right the decimal to four digits or less (0 to 4).

**Note**
- The DX 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.

**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.

**Unit**

Enter the unit using up to six characters.

**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.

![Diagram of low-cut function](image.png)
3.3 Setting the Measurement Channels, Ext. Channels

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**
  - –30000 to 30000 (the decimal place is the same setting as the scale value)

- **Other channels**
  - Value in the measurable range of the selected range
  - Example: –2.0000 to 2.0000 for 2 V range
3.3 Setting the Measurement Channels, Ext. Channels

Alarm

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

Type
Select H, L, h, I, R, r, T or t. The selectable alarms vary depending on the input mode and computation type. For details, see chapter 3 in the User’s Manual IM04L41B01-01E or IM04L42B01-01E.

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

Alarm delay
• Time
Set the alarm delay time to an integer value from 1 to 3600 s. On DXs with the /AS1 advanced security option, you can set the delay time to a value from 1 to 3600 seconds or 1 to 24 hours. 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.

• Unit (Only on DXs with the /AS1 advanced security option)
Set the unit of the alarm delay time. You can select seconds or hours.

Note

DX1000/DX2000 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.

Alarm Relay
To output relays, select the output relay number. 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.
Moving Average
To use the moving average, select the sampling count [Times] (2 to 400).

Tag and Tag No.
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.

**Release number 2 or earlier**
You can enter tags using up to 16 characters.

**Release number 3 or later**
You can enter tags using up to 32 characters.
You can enter tag numbers using up to 16 characters. You can specify whether or not to use tag numbers by setting [Tag No.] under [Environment] - [Detail Setting] in the [Basic setting] tab.

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 User's Manual IM04L41B01-01E or IM04L42B01-01E.

**Scale display position**
Select the scale display position on the trend display from 1 to 10 for the DX2000 or from 1 to 6 for the DX1000. 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.
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 on the trend display.

**Bar display position**
Select [Normal], [Center], [Lower]¹, or [Upper]¹.

¹ [Lower] and [Upper] can only be selected with DX main unit firmware version 2.0x or later.

**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**
For the DX1000/DX2000, this is when [Partial] is turned [ON] under [Detail Setting] in the [Basic Setting] tab.

---

**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.

**Alarm Mark**
Displays marks indicating the values of the high and low limit alarms, delay high and low limit alarms, and difference high and low limit alarms. This setting is common with the bar graph display.

**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>
3.3 Setting the Measurement Channels, Ext. Channels

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. If you select [AUTO], alarm point marks are displayed using the specified alarm display colors (by accessing [Basic setting] > [Alarm] > [Alarm display]; release number 3 or later).

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.
   Click the [X] button to close the item selection dialog box.

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.
3.3 Setting the Measurement Channels, Ext. Channels

Setting One Channel at a Time

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

2. The channel setting dialog box opens.

For Ext channels

The items in the measurement channel tab and Ext. 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.
3.4 Setting the Computation Channels

- Double-click when setting each channel
- Turn ON/OFF computation
- Select this tab
- Enter the expression
- Select the number of digits to the right the decimal
- Set the display span
- Enter the unit
- Enter the constant used in the expression
- Turn ON/OFF all at once
- Set the TLOG computation
- Set the rolling average
- Select the alarm type
- Enter the alarm value
- Select the relay number
- Select ON/OFF
- Enter the tag
- Enter the tag number
- Display zone
- Enter the alarm delay time
- Enter the tag
- Enter the tag number
- Display zone
- Set the graph
- Turn ON/OFF the partial expanded display
- Select the channel display color
- Set the green band
- Select the mark type
- Turn ON/OFF scale display
- Select the mark color
3.4 Setting the Computation Channels

Turning Computation ON/OFF
Set whether or not to perform computation for each computation 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 DX1000/DX2000 User’s Manual.

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 type
Select Timer or MatchTimeTimer.

Timer
Select the number of the timer or match time timer (release number 3 or later) 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].
OFF: Sums as-is the measured data per scan interval.

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

Alarm and Tag
The settings are the same as the measurement channels. For details, see section 3.3, “Setting the Measurement Channel, Ext. Channel.”
3.4 Setting the Computation 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

DX1000/DX2000 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 Smpling, Zone, Graph, Partial, Color, Green Band, and Alarm Mark
The settings are the same as the measurement channels. For details, see section 3.3, “Setting the Measurement Channel, Ext. Channel.”

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

Copying and Pasting Setup Data
3.4 Setting the Computation Channels

Setting One Computation 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.
3.5 Entering General Settings

Daylight Saving Time

Start Time and End Time
Set the date and time at which to switch to daylight saving time and the date and time at which to switch to standard time.
3.5 Entering General Settings

Group

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

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

[Batch 1], [Batch 2], and Other Similar Tabs (Release number 3 or later)

When the multi batch function (/BT2 option) is enabled, select the appropriate batch tab.

Channel Configuration

- **Use**
  Select [ON] for the display groups that you want to display. The number of groups is as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>Multi Batch Function (/BT2 option)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disabled or not installed</td>
</tr>
<tr>
<td>DX1000</td>
<td>10</td>
</tr>
<tr>
<td>DX2000</td>
<td>36</td>
</tr>
</tbody>
</table>

- **Group name**
  Set the group name. (up to 16 characters)

- **Channel Configuration**
  Set up to 10 channels (DX2000) or 6 channels (DX1000) from measurement channels, computation channels (/M1 and /PM1 options), and external input channels (/MC1 option, DX2000).

  **Note**
  - The trend, digital, and bar graph displays are shown in the specified order.
  - A channel can be assigned to multiple groups.
  - The same channel cannot be assigned multiple times in a group.
Trip line
Set lines at specified positions in the waveform display range on the Trend display.

- **Use**
  Turn [ON] the trip lines you want to display.

- **Position**
  Set the position in the range of 0 to 100% of the display width.

- **Color**
  The default colors are red, green, blue, and yellow. If you want to change the color, select from the 24 available colors.

- **Trend Line**
  Set the line width of the trip line in dots (1 to 3).
### Display

#### Logging

- **Trend interval [/div]**
  Select the time corresponding to 1 division of the time axis on the trend display from below. You cannot specify a trend interval that is faster than the scan interval. See the table under “Save Interval” below.

  - 15s*, 30s, 1min, 2min, 5min, 10min, 15min, 20min, 30min, 1h, 2h, 4h, and 10h

- **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 Trend interval setting.

<table>
<thead>
<tr>
<th>Trend interval</th>
<th>5 s*1</th>
<th>10 s*2</th>
<th>15 s*2</th>
<th>30 s</th>
<th>1 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selectable range of auto save interval</td>
<td>10 min to 12 hours</td>
<td>10 min to 3 days</td>
<td>10 min to 30 min</td>
<td>10 min to 1 day</td>
<td>10 min to 3 days</td>
</tr>
<tr>
<td>Trend interval</td>
<td>2 min</td>
<td>5 min</td>
<td>10 min</td>
<td>15 min</td>
<td>20 min</td>
</tr>
<tr>
<td>Selectable range of auto save interval</td>
<td>10 min to 14 days</td>
<td>10 min to 31 days</td>
<td>10 min to 31 days</td>
<td>10 min to 31 days</td>
<td>1 hour to 1 day</td>
</tr>
<tr>
<td>Trend interval</td>
<td>30 min</td>
<td>1 h</td>
<td>2 h</td>
<td>4 h</td>
<td>10 h</td>
</tr>
<tr>
<td>Selectable range of auto save interval</td>
<td>1 hour to 31 days</td>
<td>1 hour to 31 days</td>
<td>2 hours to 31 days</td>
<td>4 hours to 31 days</td>
<td>8 hours to 31 days</td>
</tr>
</tbody>
</table>

  *1 Selectable on the DX1002, DX1002N, DX1004, DX1004N, DX2004, and DX2008 (release number 3 or later).
  *2 Selectable in fast sampling mode on the DX1006, DX1006N, DX1012, DX1012N, DX2010, DX2020, DX2030, DX2040, and DX2048 (release number 3 or later).

- **Circular Time Per revolution [/rev]**
  Select the time of revolution from [20min]* to [4week].

  *For release number 2 or earlier, this can only be specified on the DX2004 and DX2008. For release numbers 3 and later, in addition to the DX2004 and DX2008, this can also be specified in the fast sampling modes of the DX2010, DX2020, DX2030, DX2040, and DX2048.
3.5 Entering General Settings

• Circular Save Interval
Select the size of a record data file. The recorded data is divided by the file size specified here. The available settings vary in the range of [10min] to [31day] depending on the number of memory sampling channels and the [Time Per revolution] setting.

• Circular Offset Time
The time at the reference position on the circle can be offset in unit of an hour up to 23 hours. The available settings vary depending on the [Time Per revolution] setting.

Trend
• Display Update 2nd Interval
Enabled when [Trend Rate Switching] is turned [ON] under [Environment] - [Detail Setting] in the [Basic Setting] tab. Select a rate from the list. The selectable 2nd intervals are the same as those for Trend interval.

• Direction
Set the display direction of the trends to [Horizontal], [Vertical], [Wide], or [Split].

• Trend Clear
Settings | Description
--- | ---
ON | Clears the displayed waveform when the memory sampling is started.
OFF | Does not clear the waveform when the memory sampling is started.

This is fixed at [ON] if you are using the multi batch function (BT2 option; release number 3 or later). You can set the multi batch function by setting [Batch operation qty] under [Environment] - [Detail Setting] in the [Basic settings] tab.

• 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.

| 49.0 | 49.6 | 50.0 | 50.4 | 51.0 |

• Value Indicator
The current value is displayed as a mark or a bar graph.

• Full Circle Action
Settings | Description
--- | ---
Allclear | Clears the entire waveform when one revolution of waveform is recorded and continues the recording of the next revolution.
Divclear | Clears one division of the old waveform when the remaining amount of waveform to be recorded falls to one division and continues the recording.

• Trend Line
Set the line width of the trend in dots (1 to 3).

• Grid
Select the number of grids to be displayed in the waveform display area of the trend display.

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

Display
- **Bar Graph DIRECTION**
  Select Bar graph direction.

- **Brightness**
  Select a value from 1 to 6 (2 by default). Larger the value, brighter the display becomes.

- **Backlight Save Mode**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Disables the backlight saver.</td>
</tr>
<tr>
<td>Dimmer</td>
<td>Dims the display if there is no operation for a given time.</td>
</tr>
<tr>
<td>Timeoff</td>
<td>Turns the backlight OFF if there is no operation for a given time.</td>
</tr>
</tbody>
</table>

- **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**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key</td>
<td>The backlight returns to the original brightness when a key is pressed.</td>
</tr>
<tr>
<td>Key&amp;Alarm</td>
<td>The backlight returns to the original brightness when a key is pressed or when an alarm occurs.</td>
</tr>
</tbody>
</table>

- **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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1min to 1h</td>
<td>Time until switching the display.</td>
</tr>
<tr>
<td>OFF</td>
<td>Disables the function.</td>
</tr>
</tbody>
</table>

FAVORITE Key action (Release number 3 or later)

- **Action**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>The historical trend of the currently displayed data appears when you press the favorite key.</td>
</tr>
<tr>
<td>Favorite</td>
<td>The displays that have been registered to the favorite key appear when you press the favorite key. Select Favorite when you want to register displays to the favorite key and use the key to switch between the displays.</td>
</tr>
</tbody>
</table>

- **Group display**
  This setting is valid when [Action] is set to [Favorite].

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>Of the displays that have been registered to the favorite key, those that display groups (the trend, digital, bar graph, and historical trend displays) are displayed using the currently displayed group.</td>
</tr>
<tr>
<td>Saved</td>
<td>Registered displays are displayed using the display groups that were selected when they were registered.</td>
</tr>
</tbody>
</table>

- **Time axis zoom**
  This setting is valid when [Action] is set to [Favorite].

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>Historical trend displays that have been registered to the favorite key are displayed using the current time axis zoom.</td>
</tr>
<tr>
<td>Saved</td>
<td>Historical trends are displayed using the time axis zooms that they were registered with.</td>
</tr>
</tbody>
</table>
View Group

Set the screens that will be displayed in the 4 panel display. This function is for the DX2000 only.

With revision R7.21 or later, you can open a settings dialog box for any view group by double-clicking its number.

[Batch 1], [Batch 2], and Other Similar Tabs (Release number 3 or later)
When the multi batch function (/BT2 option) is enabled, select the appropriate batch tab.

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

View Kind
The view group is made up of four screens. Select the type of screen to display in each screen.
You can also select the COLUMN BAR, Annunciator display, and EVENT SWITCH screens (release number 3 or later).

View Group
Up to four view groups can be registered. Specify the group to display. If you select COLUMN BAR, specify the COLUMN BAR group.
3.5 Entering General Settings

**Message**

Enter a message to be written to the group of up to 32 alphanumeric characters.
3.5 Entering General Settings

Comment (Release number 3 or later)

Click a number to open a comment text details dialog box.
Change the values in the [Comment txt field no] boxes to display the registered character strings.
Set the Comment text field numbers for all lines, and click OK.

Comment text fields
- **Number and Text info**
  
  You can register text strings to Text info boxes.
  
  Text string: You can enter up to 32 characters.

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of comment text fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX1000</td>
<td>100</td>
</tr>
<tr>
<td>DX2000</td>
<td>200</td>
</tr>
</tbody>
</table>

Comment text block
- **Number and Line**

  You can register text strings to Comment text blocks. Register comments to comment text blocks by combining up to 5 comment text fields. Set the comment text fields that you want to register in the Line boxes.

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of comment text blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX1000</td>
<td>50</td>
</tr>
<tr>
<td>DX2000</td>
<td>100</td>
</tr>
</tbody>
</table>
3.5 Entering General Settings

Annunciator (Release number 3 or later)

These settings are activated when the annunciator mode is set to [ON] (by accessing [Basic Setting] - [Alarm] - [Alarm action] - [Annunciator mode]).

Number
The position of the annunciator window.

<table>
<thead>
<tr>
<th>Model</th>
<th>Displayed Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX1000</td>
<td>24 or less</td>
</tr>
<tr>
<td>DX2000</td>
<td>80 or less</td>
</tr>
</tbody>
</table>

Use
Set the annunciator position that you want to use to [ON].
Starting with 1, consecutively set all annunciator positions that you want to use to [ON].
After a position has been set to [OFF], all of the positions after it will also be turned off even if they are set to [ON].

CH No. and Level
You can assign alarms to annunciator windows by specifying channel numbers and alarm levels.
You can set [Level] to [1], [2], [3], [4], or [All]. If you select [All], all of the alarms in the specified channel are assigned to the specified window.

Comment txt block No.
You can select a text string (label) to display in the annunciator window by selecting a comment text block number.
Timer

Timer used by event action. Used also in the TLOG computation of the computation function. The table below shows the number of timers supported by the DX1000 and DX2000.

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Timers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models without the multi batch function (/BT2 option)</td>
<td>4</td>
</tr>
<tr>
<td>Models with the multi batch function (/BT2 option; release number 3 or later)</td>
<td>12</td>
</tr>
</tbody>
</table>

When Using an Absolute Timer

- **Mode**
  - Select [Absolute].
- **Time interval**
  - Select the interval from the available settings between 1 min to 24 h.
- **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.
3.5 Entering General Settings

**Match Time Timer**
Set the time match condition used in event action. You can set the time condition that is used by the event action function. The table below shows the number of match time timers supported by the DX1000 and DX2000.

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Match Time Timers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models without the multi batch function (/BT2 option)</td>
<td>4</td>
</tr>
<tr>
<td>Models with the multi batch function (/BT2 option; release number 3 or later)</td>
<td>12</td>
</tr>
</tbody>
</table>

- **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.
  - Year  Set the yearly time match conditions (release number 3 or later).

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>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Day</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Week</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Hour:Minute</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

- **Month**
  Set the month (release number 3 or later).

- **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>
Manual Sample

On a DX2000 with the external input channel (/MC1) option, specify the channel that will be manually sampled. On all other models, all channels will be manually sampled so this setting is not necessary.

Click to display a channel selection dialog box.

Channel selection dialog box

Fill and increment by 1 starting from the top of the selection

Turn ON/OFF all in the selection at once

Drag to select a range

Manual sample number

001 to 120. The instantaneous values are output in this order.

Manual Sample

- **Use**
  Select On when assigning a channel to the manual sample number.

- **CH No.**
  Enter a channel number of a measurement channel, computation channel (/M1 and /PM1 options), or external input channel (/MC1 option).
Event Action

<table>
<thead>
<tr>
<th>Event Action No.</th>
<th>You can set up to 40.</th>
</tr>
</thead>
</table>

### 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

The condition to execute the action.

<table>
<thead>
<tr>
<th>Settings</th>
<th>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>Relay off</td>
<td>Select the alarm output relay number.</td>
</tr>
<tr>
<td>Switch</td>
<td>Select the internal switch number.</td>
</tr>
<tr>
<td>Switch off</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>Alarm off</td>
<td>-</td>
</tr>
<tr>
<td>User Key</td>
<td>-</td>
</tr>
<tr>
<td>Level¹</td>
<td>Select the event level switch number.</td>
</tr>
<tr>
<td>Level switch off²</td>
<td>Select the event level switch number.</td>
</tr>
<tr>
<td>Edge¹</td>
<td>Select the event edge switch number.</td>
</tr>
</tbody>
</table>

¹ Available in release numbers 3 and later.
² Available in release numbers 4 and later.
### 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>Can be specified when the DX is configured to record event data.</td>
</tr>
<tr>
<td>Memory Start</td>
<td></td>
</tr>
<tr>
<td>Memory Stop</td>
<td></td>
</tr>
<tr>
<td>Trigger *2</td>
<td>Can be specified when the DX is configured to record event data.</td>
</tr>
<tr>
<td>AlarmACK</td>
<td>Cannot be specified when the event is set to [Relay], [Switch], or [Alarm].</td>
</tr>
<tr>
<td>Math Start/Stop</td>
<td>Can be specified on /M1 and /PM1 options.</td>
</tr>
<tr>
<td>MathStart</td>
<td>Can be specified on /M1 and /PM1 options.</td>
</tr>
<tr>
<td>MathStop</td>
<td>Can be specified on /M1 and /PM1 options.</td>
</tr>
<tr>
<td>Math Reset</td>
<td>Can be specified on /M1 and /PM1 options.</td>
</tr>
<tr>
<td>Save Display Data</td>
<td>Can be specified when the DX is configured to record display data.</td>
</tr>
<tr>
<td>Save Event Data</td>
<td>Can be specified when the DX 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</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</td>
<td>Can be specified on /M1 and /PM1 options.</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>
<tr>
<td>Alarm Display Reset *1</td>
<td>You can specify this when the annunciator sequence is set to use the “ISA-M” annunciator and the event is set to [Remote], [User Key], or [Edge].</td>
</tr>
<tr>
<td>Comment Display *1</td>
<td>Specify the comment text block number to display.</td>
</tr>
<tr>
<td>Favorite Display *1</td>
<td>Choose which registered display to switch to. Set [Action] to [Key] or [Select].</td>
</tr>
</tbody>
</table>

*1  Available in release numbers 3 and later.  
*2  Cannot be selected on DXs with the IAS1 advanced security option.

When the multi batch function (/BT2 option; release number 3 or later) is enabled, specify the target batch group when you set the action to any of the settings below.

<table>
<thead>
<tr>
<th>Settings that require the designation of a specific batch group</th>
<th>Memory Start/Stop</th>
<th>Memory Start</th>
<th>Memory Stop</th>
<th>Math Reset</th>
<th>Save Display Data</th>
<th>Save Event Data</th>
<th>Message</th>
<th>Display Group Change</th>
</tr>
</thead>
</table>
3.5 Entering General Settings

File

When the multi batch function (/BT2 option; release 3 or later) is disabled

When the multi batch function (/BT2 option; release 3 or later) is enabled

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.
When the multi batch function (/BT2 option; release 3 or later) is enabled, set the [Header], [Structure], [File Name], [Title], and [Characters] items for each batch group.

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>
3.5 Entering General Settings

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. When the multi batch function (/BT2 option; release number 3 or later) is enabled, select the appropriate batch tab.
Title: Up to 20 characters. Characters: Up to 30 characters.
The number of fields that you can use is 24 for release number 3 or later and 8 for release number 2 or earlier.

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>

You can only select [Free] if you are using the multi batch function (/BT2 option; release number 3 or later). You can set the multi batch function by setting [Batch operation qty] under [Environment] - [Detail Setting] in the [Basic setting] tab. You can only select [Free] on DXs with the /AS1 advanced security option (release numbers 4 and later).

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 rate¹</th>
<th>25 ms²</th>
<th>125 ms</th>
<th>250 ms</th>
<th>500 ms</th>
<th>1 s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selectable range of data length</td>
<td>10 min to 4 hours</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>
</tr>
<tr>
<td>Sample rate¹</td>
<td>2 s</td>
<td>5 s</td>
<td>10 s</td>
<td>30 s</td>
<td>1 min</td>
</tr>
<tr>
<td>Selectable range of data length</td>
<td>10 min to 14 days</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>
</tr>
<tr>
<td>Sample rate¹</td>
<td>2 min</td>
<td>5 min</td>
<td>10 min</td>
<td>15 min*³</td>
<td>20 min*³</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>1 hour to 31 days</td>
<td>1 hour to 31 days</td>
<td>1 hour to 31 days</td>
</tr>
<tr>
<td>Sample rate¹</td>
<td>30 min*³</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selectable range of data length</td>
<td>1 hour to 31 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*¹ You cannot choose an interval that is faster than the scan interval.
*³ Release number 3 or later.

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 information about the menu, see section 5.17 in the DX1000 User’s Manual or section 5.18 in the DX2000 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 DX1000/DX2000 User’s Manual.
Web Report (Release number 3 or later)

These settings affect how report data in the internal memory is displayed on the operator and monitor pages. You can create 10 report layouts. You can register up to 10 items to display in each layout.

You can display reports on the operator or monitor page by specifying the report layout and report data.

**Web Report**

- **Use and Title**
  
  Set [Use] to [ON], and enter a report layout name of 64 characters or less in the [Title] box.

- **Item**
  
  The number of registered items appears in this column. Click an [Item] box to display the [Item] setting area under the slider. [Setting] appears in the Web Report [Item] box whose Item setting area is displayed.

**Item**

- **Use**
  
  Set [Use] to [ON].

- **Channel, Type, and Name**
  
  Set the report channel number (for example R01) in the [Channel] box.
  
  Set the type of computation (Max., Min., Ave., Sum, or Instant) in the Type box.
  
  Enter the item name in the [Name] box using up to 16 characters.
3.6 Entering Basic Settings

Environment

<table>
<thead>
<tr>
<th>Measure channel</th>
<th>Math channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date Kind</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature Unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time zone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time deviation limit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Event type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status Relays</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitor/WinInfo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MeasurementErr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CommErr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Memory stop</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEL relay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status relay</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Data Kind**
  
<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>Records display data.</td>
</tr>
<tr>
<td>Event</td>
<td>Records event data.</td>
</tr>
</tbody>
</table>

- **Temperature Unit**
  Select C or F.

- **Time zone**
  Set the time zone of the region in which the DX will be used in terms of the time difference from GMT. A negative value indicates that the local time is behind the GMT.

- **Time deviation limit**

  When the time deviation between the time on the DX and the specified time is within ±(the value specified here), the time on the DX is gradually corrected. Otherwise, the clock is corrected immediately. Note that time is not corrected on DXs with the Advanced security function (/AS1 option) when the specified time is over the time deviation limit. (Firmware version numbers 4.11 and later)

  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 DX is 10 hours 21 minutes 15 seconds, the time on the DX is gradually corrected if the specified time is between 10 hours 21 minutes 5 seconds and 10 hours 21 minutes 25 seconds.
3.6 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>2005/11/30</td>
</tr>
<tr>
<td>M/D/Y</td>
<td>11/30/2005</td>
</tr>
<tr>
<td>D/M/Y</td>
<td>30/11/2005</td>
</tr>
<tr>
<td>D.M.Y</td>
<td>30.11.2005</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.

- **1st weekday (Release number 3 or later)**

This setting specifies how to display the calendar that you use to search past measured data. You can set the first day of the week to Sunday or Monday.

- **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></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web server (HTTP)</td>
<td>1</td>
<td>–</td>
<td>80/tcp³</td>
</tr>
<tr>
<td>SNTP server</td>
<td>–</td>
<td></td>
<td>123/udp³</td>
</tr>
<tr>
<td>Modbus server</td>
<td>2</td>
<td>–</td>
<td>502/tcp³</td>
</tr>
<tr>
<td>Instrument information server</td>
<td>–</td>
<td>–</td>
<td>34264/udp²</td>
</tr>
</tbody>
</table>

*1 There are user limitations. For details, see the DX1000/DX1000N/DX2000 Communication interface User’s Manual (IM04L41B01-01E).

*2 The port number is fixed.

*3 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**

In the [System Configuration] screen, if [FAIL] is set to [FAIL/Alarm relay] (/F2 option) or [FAIL/Status relay] (/F1 option), the [Status Relay] setting items are displayed.

**Fail Relay, Status Relay (Release numbers 4 and later)**

For this function, there are relays labeled “FAIL” and “Status” on the rear panel. You can assign operations to these two relays. On a relay that has been set to “Status relay,” you must also set the DX status that will be relayed.

On DXs without the /AS1 advanced security (/AS1 option)

The relays can be set to [Fail] or [Status relay].

On DXs with the /AS1 advanced security (/AS1 option):

The relays can be set to [Fail], [Status relay], [Mem. sample], [Invalid user], or [Login].

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

The relay contact output is turned on when an item that is set to [ON] occurs. [Alarm] is available in release numbers 3 and later.
### Detail Setting

<table>
<thead>
<tr>
<th>Measure channel</th>
<th>Math channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>General</td>
<td></td>
</tr>
<tr>
<td>TA2000</td>
<td></td>
<td>Tag</td>
<td>Tag Channel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tag No.</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Language</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remote controller ID</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decimal Point Type</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manual display</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Switch</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blotch operation</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enhancement</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- View</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trend Type</td>
<td>TV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trend Rate Switching</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Message</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Meta Group</td>
<td>Comm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Password Message</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change Message</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Input/Output</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scale over</td>
<td>Price</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Login</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comm Security</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multi Login</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Password management</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Audio Save</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Merge FSO</td>
<td>OFF</td>
</tr>
</tbody>
</table>

### Tag

- **Tag**
  - **Settings**
    - Tag: Displays tags or tag numbers. Channel numbers are displayed for channels that do not have tags or tag numbers assigned to them.
    - Channel: Displays channel numbers.
  - **Description**
    - Tag No. (Release number 3 or later)
      - Select [ON] to use tag numbers.
    - Language
      - Select the display language
    - Remote controller ID
      - Select the remote controller ID from 0 to 31. When not using the remote control terminal, select [OFF].
    - Decimal Point Type (Release number 3 or later)
      - You can set the decimal point type for the display and files saved in text format. You can select [Point] or [Comma].
    - Menu display (Release number 3 or later)
      - To display [Basic setting mode] (menu item for switching to basic setting mode) in the setting mode menu, select [ON].
3.6 Entering Basic Settings

- **Batch**
  Batch (when the multi batch function is not installed)
  Select [ON] to use the batch function.
  Batch operation qty (when the /BT2 multi batch function is installed; release number 3 or later)
  Specify the number of batches to use.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Disables the multi batch function and the batch function.</td>
</tr>
<tr>
<td>1</td>
<td>Enables the single batch function.</td>
</tr>
<tr>
<td>2 or higher</td>
<td>Enables the multi batch function. The table below shows the number of batches supported by the DX1000 and DX2000.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Batches Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX1000</td>
<td>2 to 6</td>
</tr>
<tr>
<td>DX2000 (release number 3)</td>
<td>2 to 6 (standard memory model)</td>
</tr>
<tr>
<td></td>
<td>2 to 12 (large memory model)</td>
</tr>
<tr>
<td>DX2000 (release number 4)</td>
<td>2 to 12</td>
</tr>
</tbody>
</table>

- **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.”

- **Trend Type**
  Function for the DX2000 only.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Y</td>
<td>A trend display with a linear time axis</td>
</tr>
<tr>
<td>Circular</td>
<td>A trend display with a circular time axis</td>
</tr>
</tbody>
</table>

- **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].
  - This setting is fixed at [OFF] if you set [Batch operation qty] to [2] or higher on models with the multi batch function (/BT2 option; release number 3 or later).

- **Write Group**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common</td>
<td>Write the message to all groups.</td>
</tr>
<tr>
<td>Separate</td>
<td>Write the message to the displayed group.</td>
</tr>
</tbody>
</table>

- **Power-Fail Message**
  ON  A message is written when the DX 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. On DXs with the /AS1 advanced security option, a message is written even when the setting mode setup items are changed during memory sampling.
3.6 Entering Basic Settings

- **Scale over**

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

  **Example:** If the scale is 0.0 to 200.0, the value is set to –over range if the value is less than –10.0 of the scale and +over range if the value is greater than 210.0.

  **Note**

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

- **Key Security**

  **Settings** | **Description**  
  ---|---  
  Login | Enables only registered users to operate the DX using keys. The [User registration] is displayed in the [Basic Setting] tab. The Key Security setting is fixed at [Login] on DXs with the /AS1 advanced security option.  
  Keylock | Enables the key lock function. Set the key lock function in the [Basic Setting] tab. This option cannot be selected on DXs with the /AS1 advanced security option.  
  OFF | Disables the security functions. This option cannot be selected on DXs with the /AS1 advanced security option.

- **Comm. Security**

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

- **Multi Login (Only on DXs with the /AS1 advanced security option)**

  **Settings** | **Description**  
  ---|---  
  On | The multi-login function is used. At the same time, one user can log in through key operations, one through an Ethernet connection (connection to the setting function), and one through serial communication.  
  Off | The multi-login function is not used. Users cannot log in simultaneously through key operations, Ethernet (connection to the setting function), or serial communication (LL command).

- **Password Management (Only on DXs with the /AS1 advanced security option)**

  To perform password management using a KDC server on the Ethernet, select [On]. You will have to set the [Ethernet communication] - [Password management] item.

- **Auto Save**

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

- **Media FIFO**

  You can select this with DX main unit firmware version 2.0x or later. This is valid only when [Auto Save] is [ON].

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

• **Value on Error**
  Specify whether to set the display for a computation error to [+Over] or [–Over].

• **Overflow Sum, Ave**
  Specify how to handle overflow data when it is detected in the SUM or AVE computation of TLOG or CLOG. This setting is also applied to report generation.

<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>
<tr>
<td>Separate2</td>
<td>Saves a collection of reports, such as the hourly reports for a day or the daily reports for a month, to a file (release numbers 4 and later).</td>
</tr>
</tbody>
</table>

• **Template Function (Release numbers 4 and later)**
  You can create report templates in XML spreadsheet format and use them to automatically create custom report files. To use templates, select [ON]. This setting is fixed at [OFF] when [File kind] is set to [Separate2].
• Set Calibration (Release numbers 4 and later)
  To use calibration management, select [ON].
  **Notification**
  You can specify how many days before the calibration due date you want to display
  the calibration notification screen. You can set the number of days to a value between
  1 and 10.
  **Renotification**
  You can specify the period at which to display the calibration notification screen. The
  calibration notification screen will continue to appear until calibration is completed.

• Signature (Only on DXs with the /AS1 advanced security option)
  **Process Type**
  Set the process type to choose what kind of collection of measured data can be
  signed.

  **Setting**  **Description**
  Continuous  You can sign each individual measured data file.
  Batch  You can sign a collection of all the measured data files from the start to stop
  of a recording. However, you can only sign a file from the DX when the file
  covers the measured data of an entire recording, from start to stop.

  **Sign from Recorder**
  Set the signature privilege range for DX key operations.

  **Setting**  **Description**
  Off  You cannot sign files from the DX.
  Signature1  You can sign files from the DX using the Signature1 privileges.
  Signature1+2  You can sign files from the DX using the Signature1 and Signature2
  privileges.
  Signature1+2+3  You can sign files from the DX using the Signature1, Signature2, and
  Signature3 privileges.

  **Memory Stop at Signature**
  You can configure this setting so that a screen for making a signature (historical trend
  display) appears when recording stops (memory stop).

  **Setting**  **Description**
  On  The historical trend display appears automatically at memory stop.
  Off  The display does not change at memory stop.

  **Note**
  You cannot set [Memory stop at signature] when:
  •  [Sign from recorder] is set to [Off].
  Even when [Memory stop at signature] is set to [On], the historical trend display will not appear
  when:
  •  The process type is [Batch] and the measured data is divided into multiple files.
  •  A user without signature privileges performs memory stop.
  •  The multi batch function (/BT2 option) is being used and batch overview mode is enabled.
3.6 Entering Basic Settings

FTP Transfer at Signing
You can transfer measured data files (display or event data files) to an FTP server after you sign them. You need to configure the FTP client settings so that display and event data are transferred.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>Measured display and event data files are only transferred to an FTP server after they are signed. Also, the [Transfer wait time] settings are invalid; transfer is executed immediately.</td>
</tr>
<tr>
<td>Off</td>
<td>Measured data files are not transferred to an FTP server after they are signed.</td>
</tr>
</tbody>
</table>
Alarm

3.6 Entering Basic Settings

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>On¹</td>
<td>Reflash is used. The relays are deactivated for approximately 500 ms.</td>
</tr>
<tr>
<td>500ms²</td>
<td>Reflash is used. The relays are deactivated for approximately 500 ms.</td>
</tr>
<tr>
<td>1s²</td>
<td>Reflash is used. The relays are deactivated for approximately 1 s.</td>
</tr>
<tr>
<td>2s²</td>
<td>Reflash is used. The relays are deactivated for approximately 2 s.</td>
</tr>
</tbody>
</table>

¹ Release numbers 3 and earlier
² Release numbers 4 and later.

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. When you use the alarm annunciator function (release number 3 or later), the setting follows the annunciator sequence.

<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>

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.
3.6 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.

Note
When reflash is turned ON, the operation of the first three output relays is fixed to OR logic. Specifying AND produces no effect.

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. When you use the alarm annunciator function (release number 3 or later), the setting follows the annunciator sequence.

<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
You can use this setting on DX firmware version 2.0x or later. When you use the alarm annunciator function (release number 3 or later), the setting follows the annunciator sequence.

<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.

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, Ext 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, Ext channel tab(s).
  This function disables the alarm indicator and the logging of alarm events to the alarm summary. It also disables the display of alarms by the alarm annunciator (release number 3 or later).

- **Annunciator mode and Sequence (Release number 3 or later)**
  To use the annunciator function, select [ON] and set the sequence.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISA-A-4</td>
<td>A no lock-in sequence.</td>
</tr>
<tr>
<td>ISA-A</td>
<td>A lock-in sequence.</td>
</tr>
<tr>
<td>ISA-M</td>
<td>A double lock-in sequence.</td>
</tr>
</tbody>
</table>

- **Time off color (Release number 3 or later)**
  The annunciator window display color when no alarms are activated. You can select [White] or [Green].

Alarm display (Release number 3 or later)

- **Level**
  When multiple alarms occur, the DX gives higher priority to the display of alarms with higher levels.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&gt;2&gt;3&gt;4</td>
<td>The order of alarm level preference, from highest to lowest preference, is 1, 2, 3, 4.</td>
</tr>
<tr>
<td>1&gt;4&gt;2&gt;3</td>
<td>The order of alarm level preference, from highest to lowest preference, is 1, 4, 2, 3.</td>
</tr>
<tr>
<td>1&gt;4&gt;3&gt;2</td>
<td>The order of alarm level preference, from highest to lowest preference, is 1, 4, 3, 2.</td>
</tr>
</tbody>
</table>

- **Alarm 1, Alarm 2, Alarm 3, and Alarm 4**
  You can set the alarm color for each alarm level. It is easy to understand what processes are taking place when alarms occur if you associate an alarm’s color with its level. This setting applies to all channels.
3.6 Entering Basic Settings

Scan Interval

Scan interval
Select the scan interval. You cannot select fast sampling mode (125 ms) on the following models:

• Models equipped with external input channels (/MC1 option)
• Models with the multi batch function (/BT2 option; release number 3 or later)

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 DX 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>
<tr>
<td>600Hz</td>
<td>The A/D integration time for fast sampling mode. You cannot change this value. You cannot use fast sampling mode on models with the external input channel (/MC1 option). You cannot use fast sampling mode when the multi batch function (/BT2 option) is being used.</td>
</tr>
</tbody>
</table>
Measure Function

Burnout

<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 DX 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 DX 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 DX.</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.
3.6 Entering Basic Settings

Report

Click to display the channel selection screen.
Channel selection screen
Click the channel you wish to set up

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, Weekday, and Time (hour)
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 No.
The report is output in order by this number.

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>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R01 to R06</td>
<td>R07 to R12</td>
<td>R13 to R18</td>
<td>R19 to R24</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>R01 to R10</td>
<td>R11 to R20</td>
<td>R21 to R30</td>
<td>R31 to R40</td>
<td>R41 to R50</td>
<td>R51 to R60</td>
</tr>
</tbody>
</table>

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].

OFF Sums as-is the measured data per scan interval.
Remote (Release number 3 or later)

Number
Remote control terminal numbers. The number of settings that appears corresponds to the number of remote control terminals.

Remote Input
Specify an operation for each remote control terminal.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.O</td>
<td>The remote signal rises when the contact input switches from open to closed, and it falls when the contact input switches from closed to open.</td>
</tr>
<tr>
<td>N.C</td>
<td>The remote signal rises when the contact input switches from closed to open, and it falls when the contact input switches from open to closed.</td>
</tr>
</tbody>
</table>
3.6 Entering Basic Settings

Key Lock

Enabled when [Key Security] is set to [Keylock] under [Environment] - [Detail Setting] in the [Basic Setting] tab. This function is not available on DXs with the /AS1 advanced security option.

Password
The password used to release the key lock. An entered password is displayed as "*******". (Up to 8 characters)

Key, Function, Media
Select whether or not to disable each item. [Load Settings] is available in release numbers 3 and later.

<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

You cannot configure these settings on DXs with the /AS1 advanced security option.


### Supervisor (Administrator)

- **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>Logout 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 DX1000/DX2000 using keys.</td>
</tr>
<tr>
<td>Comm</td>
<td>Log into the DX1000/DX2000 via communications.</td>
</tr>
<tr>
<td>Web</td>
<td>Log into the operator page and monitor page of the DX1000/DX2000 using a Web browser.</td>
</tr>
<tr>
<td>Key+Comm</td>
<td>Log into the DX1000/DX2000 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. (Release numbers 3 and earlier: up to 8 characters. Release numbers 4 and later: up to 20 characters.)

  An entered password is displayed as “********.”
  - You cannot register the word “quit,” a character string that contains spaces, or a password containing all spaces.
3.6 Entering Basic Settings

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 DX using keys.</td>
</tr>
<tr>
<td>Comm</td>
<td>Log into the DX via communications.</td>
</tr>
<tr>
<td>Web</td>
<td>Log into the monitor page of the DX using a Web browser.</td>
</tr>
<tr>
<td>Key+Comm</td>
<td>Log into the DX using keys and via communications.</td>
</tr>
</tbody>
</table>

- User Name, Password
  Same as the supervisor settings.

- Key Lock No.

<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 lock
  Select whether or not to disable each item. [Load Settings] is available in release numbers 3 and later.

<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>
Set the IP address to a fixed IP address or obtain it automatically (DHCP). 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].

- **IP Address**
  Set the IP address to assign to the DX1000/DX2000.

- **Subnet Mask**
  Set the subnet mask according to the system or network to which the DX1000/DX2000 belongs.

- **Default Gateway**
  Set the IP address of the gateway.

- **Host Name**
  Set the DX's host name using up to 64 alphanumeric characters. You do not have to set this parameter.

- **Domain Name**
  Set the network domain name that the DX1000/DX2000 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
  Set [DHCP] to [ON].
- DNS access
  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.
- Host-Name Register
  To automatically register the host name, select [ON].
- Host Name
  Set the DX1000/DX2000's host name using up to 64 alphanumeric characters.
- Domain Name
  Set the network domain name that the DX belongs to using up to 64 characters.
- Server Primary, Server Secondary (not necessary when DNS accession is enabled)
  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.

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 time (min.)
  Set the timeout value between 1 and 120 (minutes).

Checking the communication status
The Ethernet communication status can be confirmed with the LED lamp that is provided on the Ethernet connector on the DX1000/DX2000 rear panel or the [Ethernet link] that is shown at the upper right of the basic setting screen.
FTP

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

<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. They are transferred regardless of the media storage setting.</td>
</tr>
<tr>
<td>Setting</td>
<td>This item is only available on DXs with the /AS1 advanced security option. The setup file and change settings log file that are saved when the settings have changed are automatically transferred.</td>
</tr>
</tbody>
</table>

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

• Output Directory Format (Release number 3 or later)
Set the directory output format to [MS-DOS] or [UNIX].

Transfer wait time (Release number 3 or later)
There may be cases when data cannot be transferred from the DX to the FTP server due to too many simultaneous connections to the FTP server. An example is when multiple files are created and need to be transferred at the same time from multiple DXs. By shifting the transfer time, you can avoid having too many simultaneous connections to the FTP server.

<table>
<thead>
<tr>
<th>File Type</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display data files</td>
<td>0 to 120 minutes</td>
</tr>
<tr>
<td>Event data files</td>
<td>0 to 120 minutes</td>
</tr>
<tr>
<td>Report files</td>
<td>0 to 120 minutes</td>
</tr>
</tbody>
</table>
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. An entered password is displayed as "********.*

- **Account**
Enter the account (ID) for accessing the FTP server using up to 32 alphanumeric characters.

- **PASV**
Select [ON] when using the DX 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
  ```

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

Click to display the channel selection screen
Changes the upper/lower display area

Basic Setting
- **Communication interval**
  Set the read cycle to 125ms, 250ms, 500ms, 1s, 2s, 5s, or 10s.
- **Auto recovery**
  Set the interval for retrying the connection when the connection 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.
- **Port No.**
  Enter the port number in the range of 0 to 65535 for the selected server. The default value is 502.
- **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.
- **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.
3.6 Entering Basic Settings

Command setting

- **Client command No.**
  Select from 1 to 16 for the transmitted command numbers to be configured.

- **Command**
  Set the command type.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read</td>
<td>Read to the external input channel (16-bit signed integer type) from the server.</td>
</tr>
<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 measurement channel (32-bit signed integer type) to the server.</td>
</tr>
<tr>
<td>Exchange-M</td>
<td>Read to the communication input data (32-bit floating point type) from the server/write the custom display value to the server (release numbers 4 and later).</td>
</tr>
</tbody>
</table>

[Read] can be selected on DX2000s with the external input channel (/MC1 option) installed. [R-Math], [W-Mat], and [Exchange-M] can be selected on models with the computation function (/M1 option) installed.

- **Start channel/End channel (client channels)**
  Enter the first and last channel numbers of input/output. The range of channels that you can enter varies depending on the command type as follows:
  - Read: 201 to 440, R-Math: C01 to C60, Write: 1 to 48, W-Math: 101 to 160
  - Exchange-M (release numbers 4 and later): C01 to C60

- **Connected to (server number)**
  Select the server number from 1 to 16.

- **Register**
  Set the register number of the server.
  For an input register, select in the range of 30001 to 39999 and 300001 to 365536.
  For a hold register, select in the range of 40001 to 49999 and 400001 to 465536.
  The register numbers you can specify vary depending on the command type. See section 6/3 of the DX1000/DX1000N/DX2000 Communication Interface User’s Manual (IM04L41B01-17E).

- **Type**
  Select INT16, UINT16, INT32_B, INT32_L, UINT32_B, UINT32_L, FLOAT_B, or FLOAT_L.
  The register numbers you can specify vary depending on the command type. See section 6.3 of the DX1000/DX1000N/DX2000 Communication Interface User’s Manual (IM04L41B01-17E).
  In release number 3, FLOAT has been added as a data type for measurement channel data and computation channel data.
### 3.6 Entering Basic Settings

#### E-mail

Set the SMTP server and mail address.

**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 (Release number 3 or later)**
  Select [POP before SMTP] if you need to enable POP before SMTP. To enable authenticated e-mail transmission (Authentication SMTP), select [Auth] (release numbers 4 and later).

- **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 (Release number 3 or later)**

- **POP3 Server name and Port number**
  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. An entered password is displayed as "********".
3.6 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 (Release number 4 or later)**
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 "**********".

**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.

- **Send alarm action (Release number 3 or later)**
  To send an e-mail when an alarm occurs and when it is cleared, select [ON+OFF]. To only send an e-mail when an alarm occurs, select [ON].

- **Include tag/ch in Subject (Release number 3 or later)**
  Select [ON] to include a tag number in the subject. If the tag number is not set, the corresponding channel number is included.
3.6 Entering Basic Settings

Scheduled

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

- **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.

- **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 DX recovers from a power failure, at memory end, when an error occurs, and when there is an invalid user (only on DXs with the /AS1 advanced security option).

- **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.
3.6 Entering Basic Settings

Report

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

- **Recipient1 and Recipient2**
  Set 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.
3.6 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 file transfer destination 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 DX 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].
3.6 Entering Basic Settings

Server Function

- **Use**
  Select [Use] or [Not] (don't use).

- **Web server Use**
  For the Web item under Server, select [Use] or [Not] (don't use). When [Use] is selected, the Web page item is added to the basic setting mode menu.

- **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]. On DXs with the /AS1 advanced security option, perform the [Login] settings on the DX.

- **Command**
  To write messages, select [ON]; Otherwise, select [OFF]. This setting is fixed at [Not] on DXs with the /AS1 advanced security option.

- **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 Use**
  Select [Use] or [Not] (don't use).

- **Modbus Server Use**
  Select [Use] or [Not] (don't use).

- **EtherNet/IP (Release number 3 or later)**
  Select whether or not to use the DX as an EtherNet/IP server. Select [Use] or [Not] (don't use).
3.6 Entering Basic Settings

Connect limits (Release number 3 or later)

Modbus Server

- **Connect limits**
  Select [ON] to place connection limits.

- **Allowed IP Address**
  If you want to only allow certain IP addresses to connect to the DX 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 DX Modbus server.
3.6 Entering Basic Settings

Password Management (Only on DXs with the /AS1 advanced security option)

<table>
<thead>
<tr>
<th>Measure channel</th>
<th>Math channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Certification Key
- **Host Principal**
  The DX account name registered on the KDC server. You can enter up to 20 alphanumeric characters.

- **Realm Name**
  The name of the domain that contains the KDC server and the DX. You can enter up to 64 alphanumeric characters.

- **Password**
  Set the password to use to access the KDC server using up to 20 characters. The password is displayed as **********.

- **Encryption**
  Select an encryption method that the server supports from AES128, AES256, and ARC4. ARC4 (ARCFOUR) is an encryption algorithm that is compatible with RC4.

KDC Connection
You can specify a primary and a secondary KDC server.

- **KDC Server Name**
  The KDC server name. You can enter up to 64 alphanumeric characters.

- **Port No.**
  You can specify a value from 1 to 65535. If you do not specify a port number, the default port number, which is 88, is used.
Serial

For RS-232

- **Baud Rate**
  Select 1200, 2400, 4800, 9600, 19200, or 38400 (bps).

- **Parity**
  Set the parity check method to Odd, Even, or None.

- **Data length**
  Select 7 or 8 (bits). To output the data in binary format, select 8.

- **Handshaking**
  Select Off:Off, XON:XON, XON:RS, or CS:RS.

- **Address**
  For Modbus protocol, enter a value in the range of 1 to 99. For a general purpose communication protocol, this value is not set.

- **Protocol**
  
<table>
<thead>
<tr>
<th>Setting</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>
  | Barcode | The barcode protocol. This only appears on DXs with the /AS1 advanced security option.

* 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.
3.6 Entering Basic Settings

Modbus master


Basic setting

- **Read cycle**
  Set the read cycle to 125ms, 250ms, 500ms, 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

- **Master command No.**
  Select from 1 to 16 for the command numbers to be configured.

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

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read</td>
<td>Read to the external input channel (16-bit signed integer type) from the slave.</td>
</tr>
<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 measurement channel (32-bit signed integer type) to the slave.</td>
</tr>
<tr>
<td>Exchange-M</td>
<td>Read to the communication input data (32-bit floating point type) from the server/write the custom display value to the server (release numbers 4 and later).</td>
</tr>
</tbody>
</table>

[Read] can be selected on DX2000s with the external input channel (/MC1 option) installed. [R-Math], [W-Mat], and [Exchange-M] can be selected on models with the computation function (/M1 option) installed.
3.6 Entering Basic Settings

- **Start channel/End channel (master channel numbers)**
  Enter the first and last channel numbers of input/output. The range of channels that you can enter varies depending on the command type as follows:
  - Read: 201 to 440, R-Math: C01 to C60, Write: 1 to 48, W-Math: 101 to 160
  - Exchange-M (release numbers 4 and later): C01 to C60

- **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.
  - For a hold register, select in the range of 40001 to 49999 and 400001 to 465536.
  The register numbers you can specify vary depending on the command type. See section 6.3 in the DX1000/DX1000N/DX2000 Communication Interface User’s Manual.

- **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 DX1000/DX1000N/DX2000 Communication Interface User's Manual (IM04L41B01-17E).
  In release number 3, FLOAT has been added as a data type for measurement channel data and computation channel data.
Node Address
Set to a number from 0 to 125.
3.7 Sending the Setup Data to the DX1000/DX2000

You cannot send data while the DX1000/DX2000 is performing memory sampling or math computations.

**Sent Setup Data**

**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 DX 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] and [PROFIBUS-DP] 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.

If the password has expired on a DX with the /AS1 advanced security option, follow the directions in the dialog box that appears. The address sets the current address of the DX.

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 DX 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.
3.7 Sending the Setup Data to the DX1000/DX2000

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. If the password has expired on a DX with the /AS1 advanced security option, follow the directions in the dialog box that appears.

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

The [Store] dialog box appears.

3. Click [OK].

Data transfer starts. A message appears to indicate when data transfer has stopped. Click [OK] to close the message. The settings that you sent are applied.
3.8 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
On a DX1000/DX2000 without the /AS1 advanced security option:
The previous file (*.PDL) is overwritten.

On a DX1000/DX2000 with the /AS1 advanced security option:
The [Save As] dialog box appears.

Save As
Saves the setup data by specifying the save destination and file name.
3.9 Printing the Setup Data

For the operating procedure, see section 1.5.
3.10 Starting and Stopping Measurement on the DX1000/DX2000 and Checking the DX1000/DX2000 Hardware Information

From this software, you can start and stop the DX1000/DX2000 and display DX1000/DX2000 hardware information.

Starting and Stopping Measurement


![Network Dialog Box](image)

The [Network] dialog box appears.

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

![Command Dialog Box](image)

The [Command] dialog box appears. If the password has expired on a DX with the /AS1 advanced security option, follow the directions in the dialog box that appears.

3. Click [OK].

Recording on the DX starts or stops.
Displaying DX1000/DX2000 Hardware Information


   ![Network Dialog Box]

   The [Network] dialog box appears.

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

   ![Hardware Information Dialog Box]

   The [Hardware Information] dialog box appears. If the password has expired on a DX with the /AS1 advanced security option, follow the directions in the dialog box that appears.

   - **Firmware version**
   - **Serial number**
   - **Number of channels**
   - **Internal memory size**
   - **Options**
   - **Click to close the dialog box.**
### 3.11 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>Tag, group name, comment text field, Web report title/item name, tag number</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Batch field title/characters, file header, mail header</td>
</tr>
<tr>
<td>Alphanumeric</td>
<td>Yes</td>
<td>Unit, user name, password, character string account</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Expression (including &quot;[&quot; and &quot;]&quot;)</td>
</tr>
<tr>
<td>Machine address</td>
<td>Yes</td>
<td>Host name, domain name, server name, and domain suffix</td>
</tr>
<tr>
<td>E-mail address</td>
<td>Yes</td>
<td>Transfer destination, transfer source</td>
</tr>
<tr>
<td>Subject</td>
<td>Yes</td>
<td>Mail title</td>
</tr>
<tr>
<td>File path name</td>
<td>Yes</td>
<td>File name, directory name, initial path</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>0x</th>
<th>1x</th>
<th>2x</th>
<th>3x</th>
<th>4x</th>
<th>5x</th>
<th>6x</th>
<th>7x</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(SP)</td>
<td>0</td>
<td>@</td>
<td>P</td>
<td>p</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>A</td>
<td>Q</td>
<td>a</td>
<td>q</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>B</td>
<td>R</td>
<td>b</td>
<td>r</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>#</td>
<td>3</td>
<td>C</td>
<td>S</td>
<td>c</td>
<td>s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>D</td>
<td>T</td>
<td>d</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>%</td>
<td>5</td>
<td>E</td>
<td>U</td>
<td>e</td>
<td>u</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>F</td>
<td>V</td>
<td>f</td>
<td>v</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>G</td>
<td>W</td>
<td>g</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>H</td>
<td>X</td>
<td>h</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>)</td>
<td>9</td>
<td>I</td>
<td>Y</td>
<td>i</td>
<td>y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>*</td>
<td>J</td>
<td>Z</td>
<td>j</td>
<td>z</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>+</td>
<td>K</td>
<td>]</td>
<td>k</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>L</td>
<td></td>
<td>l</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>-</td>
<td>M</td>
<td>]</td>
<td>m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>.</td>
<td>N</td>
<td>*</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>/</td>
<td>O</td>
<td>_</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(SP) means "space."

"""" is the symbol for degrees (of temperature). Input, output and indicated using "^.

"[" and "]" are only allowed in expressions.
4.1 Starting the Hardware Configurator

The Hardware Configurator can transmit and receive the setup data, change the setup data, and create new setup data. The setting screen may differ from your actual screen.

To Load Setup Data from the MV1000/MV2000

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.

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

3. Click the [OK] button.

The software receives the setup data from the DX and displays it.
4.1 Starting the Hardware Configurator

Creating Setup Data by Configuring a New System

1. Click the [New] button, or choose [File] - [New] from the menu bar.

   ![Image of System Configuration dialog box]

   The [System Configuration] dialog box opens.
   Click the [MVAdvanced] tab.

2. Enter all settings on the [MVAdvanced] tab, then click the [OK] button. The MV1000/MV2000 setting screen is displayed.

Loading Existing Setup Data

1. Click the [Open] button, or choose [File] - [Open] from the menu bar.

   ![Image of Open dialog box]

   The [Open] dialog box is displayed.

2. Select a setup data file (with the .PDL extension).
4.2 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 MV1000/MV2000.

Normally, a system is set up according to the specifications of the MV1000/MV2000 to be set up.


The [System Configuration] dialog box opens.

Click the [MVAdvanced] tab.

2. Change the various settings according to the MV1000/MV2000 that you will connect to (blue and brown items are selected, gray items are cleared).

The settings in the Option group differ depending on the model and options of the instrument.

For example, for the MV1000, or for the MV2000 with eight channels or fewer, the external function item cannot be selected. If [Pulse] is selected (blue), the [Math] and [Remote] items are disabled.

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.
4.2 Setting and Checking the System Configuration and Initializing Setup 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.
4.3 Setting the Measurement Channels, Ext. Channels

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

- **Drag to select a range**
- **Turn all channels ON/OFF**
- **Click and select from the list**
- **Click the text box to enter a number**
- **Range select shortcut buttons**
- **Click the button to select the function**

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.

- **Click to display a dialog box to set one channel at a time ([001] dialog box, for example).**
  (In the [Math channel] and [Ext channel] tabs, dialog box for each channel is displayed.)
- **Click to display the color settings screen.**
- **Click to display the calibration correction setting screen.**
- **Click to toggle ON and OFF.**
- **Click to change the display.**
Enter external input channel settings in the same manner as those of the measurement channel items. Also note that this measurement channel setting screen is only one example; your actual screen may vary.

<table>
<thead>
<tr>
<th>Channel</th>
<th>Input Mode</th>
<th>Range/Type</th>
<th>Alarm Value</th>
<th>Alarm Delay</th>
<th>Display Zone</th>
<th>Graph Setting</th>
<th>Color</th>
<th>Green Band</th>
<th>Mark Type</th>
<th>Channel Display Color</th>
<th>Calibration Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOL 1</td>
<td>OFF</td>
<td>0-10 VDC</td>
<td>0.000 VDC</td>
<td>0.000 VDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>On</td>
<td>Off</td>
</tr>
<tr>
<td>VOL 2</td>
<td>OFF</td>
<td>0-10 VDC</td>
<td>0.000 VDC</td>
<td>0.000 VDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

Select the measurement channel settings as shown above. Use the settings for the measurement channel as a reference.

- **Select this tab**
- **Double-click to set the channel**
- **Select the input mode**
- **Difference computation**
- **Scaling**
- **Square root**
- **Set the span**
- **Enter the scale**
- **Select the reference channel for the difference computation**
- **Select the range/type**
- **Select the alarm type**
- **Enter the alarm value**
- **Select the relay number**
- **Select the ON/OFF**
- **Enter the low cut**
- **Enter the scale unit**
- **Set the value to the minimum value possible**
- **Set the value to the maximum value possible**
- **Enter the display zone**
- **Select the graph setting**
- **Turn ON/OFF the partial expanded display**
- **Copy the settings of the first channel in the selected range to all other channels**
- **Set the green band**
- **Select the mark type**
- **Click here to set the calibration correction (see page 6-8)**
4.3 Setting the Measurement Channels, Ext. Channels

**Input Type (Mode and Range/Type)**

Correspondence between difference computation, scaling, and square root computation (DELTA, SCALE, and SQRT) is as follows.

<table>
<thead>
<tr>
<th>Mode</th>
<th>OFF</th>
<th>DELTA</th>
<th>SCALE</th>
<th>SQRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIP</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>VOLT (voltage)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>TC (thermocouple)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>RTD (resistance temperature detector)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>DI (voltage level/contact input)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>1-5 V</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

The list for range/type changes depending on the above settings.

**Span L, Span U**

Input range. The selectable range is displayed on the screen.

*Note*
- You cannot set the same value to [Span L] and [Span U].
- When the [Mode] is [1-5V] or [Sqrt], [Span L] must be less than [Span U].

**Linear Scaling (SCALE)**

Converts the unit to obtain the measured value.

- **Scale L, Scale U**
  Input range after converting the unit. The selectable range is from –30000 to 30000.

- **Point**
  Set the number of digits to the right the decimal to four digits or less (0 to 4).

*Note*
- The MV 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.

**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.

**Unit**

Enter the unit using up to six characters.
4.3 Setting the Measurement Channels, Ext. Channels

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
  ~-30000 to 30000 (the decimal place is the same setting as the scale value)
- Other channels
  Value in the measurable range of the selected range
  Example: ~-2.0000 to 2.0000 for 2 V range
4.3 Setting the Measurement Channels, Ext. 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 MV1000/MV2000 User’s Manual (IM MV1000-01E).

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

**Alarm delay**
Set the alarm delay time to an integer between 1 and 3600 seconds. Alarm is generated when the measured value stays above or below the specified alarm value for the specified time (delay period).

**Note**

**MV1000/MV2000 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.

**Alarm Relay**
To output relays, select the output relay number. Otherwise, select [None].

**Detect**
This can be selected when [Alarm No Logging] is turned [ON] under [Detail Setting] 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.
4.3 Setting the Measurement Channels, Ext. Channels

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

**Tag**
Up to 16 characters can be entered for the tag.
You can use the tag name 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.

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

**Display 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 MV1000/MV2000 User’s Manual (IM MV1000-01E).

**Scale display position**
Select the scale display position on the trend display from 1 to 10 for the MV2000 or from 1 to 6 for the MV1000. 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.
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 on the trend display.

**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
For the MV1000/MV2000, this is when [Partial] is turned [ON] under [Detail Setting] in the [Basic Setting] tab.

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.
4.3 Setting the Measurement Channels, Ext. Channels

Alarm Mark
Displays marks indicating the values of the high and low limit alarms, delay high and low limit alarms, and difference high and low limit alarms. This setting is common with the bar graph display.

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.

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

Example of the selection screen of the setting item
This screen is displayed when clicking the [Copy Details] button
The setting item names of the channel setup screen appear.
Blue means selected, gray means cleared.

[Diagram]

Click to display the screen for selecting setting items to copy, then select the desired items.

Paste the selected settings to the specified range.

Copy the selected settings of the specified range.

1. Select the copy source channels. Click the [Copy] button.
2. Select the paste destination channels. Click the [Paste] button.
### 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 and Ext. 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.
4.4 Setting the Computation Channels

- Double-click when setting each channel
- Turn ON/OFF computation
- Select this tab
- Enter the expression
- Select the number of digits to the right the decimal
- Set the display span
- Enter the unit
- Enter the constant used in the expression
- Turn ON/OFF all at once
- Set the TLOG computation
- Set the rolling average
- Initialize

<table>
<thead>
<tr>
<th>TLOG</th>
<th>Rolling Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alarm 1</th>
<th>Alarm Relay</th>
<th>Type</th>
<th>Value</th>
<th>Alarm 2</th>
<th>Alarm Relay</th>
<th>Type</th>
<th>Value</th>
<th>Alarm 3</th>
<th>Alarm Relay</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td></td>
<td></td>
<td>0.002</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>OFF</td>
<td></td>
<td>0.003</td>
<td>T</td>
<td></td>
<td></td>
<td></td>
<td>T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td></td>
<td></td>
<td>0.002</td>
<td>T</td>
<td></td>
<td></td>
<td></td>
<td>T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td></td>
<td></td>
<td>0.002</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alarm 4</th>
<th>Alarm Relay</th>
<th>Type</th>
<th>Value</th>
<th>Alarm 4</th>
<th>Alarm Relay</th>
<th>Type</th>
<th>Value</th>
<th>Alarm 4</th>
<th>Alarm Relay</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
</table>

Set the graph

- Turn ON/OFF the partial expanded display
- Select the channel display color

Set the green band

- Turn ON/OFF scale display
- Select the mark color

Select the alarm type

- Enter the alarm value

Select the relay number

- Select the ON/OFF

Enter the alarm delay time

Display zone

Enter the tag

Set the graph

- Turn ON/OFF the partial expanded display
- Select the channel display color

Set the green band

- Turn ON/OFF scale display
- Select the mark color
4.4 Setting the Computation Channels

Use (Turning ON/OFF Computation)
Select whether or not to perform computation for each 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 MV1000/MV2000 User’s Manual.

Click the tab to display a list of that item

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 Type
Select timer or match time timer.

Timer
Select the timer number or match time timer number to use.

Sum Scale
Set the sum scale to [l/s], [l/min], [l/h] to match the unit of the measured value. Example: If the unit of the measured value is “m³/min,” select [l/min]. OFF: Sums as-is the measured data per scan interval.

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

Alarm and Tag
The settings are the same as the measurement channels. For details, see section 4.3, “Setting the Measurement Channel, Ext. Channel.”
4.4 Setting the Computation 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

MV1000/MV2000 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 Smpling, Zone, Graph, Partial, Color, Green Band, and Alarm Mark
The settings are the same as the measurement channels. For details, see section 4.3, “Setting the Measurement Channel, Ext. Channel.”

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

Copying and Pasting Setup Data
4.4 Setting the Computation Channels

Setting One Computation 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 on the Measure channel, Math channel, and Ext channel 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.
4.5 Entering General Settings

Summer Time

- **On/Off**: To switch between summer time and standard time, select [On].
- **Start Time**: Specify the date/time to switch from standard time to summer time. Set the month, the nth week, the day of the week, and the time.
- **End Time**: Specify the date/time to switch from summer time to standard time. Set the month, the nth week, the day of the week, and the 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.
4.5 Entering General Settings

Use
Turn On the groups you want to use.

Group name
Set the group name. (up to 16 characters)

Channel Configuration
Set up to 10 channels (MV2000) or 6 channels (MV1000) from measurement channels, computation channels (/M1 and /PM1 options), and external input channels (/MC1 option, MV2000).

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

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

- Use
  Turn [ON] the trip lines you want to display.

- Position
  Set the position in the range of 0 to 100% of the display width.

- Color
  The default colors are red, green, blue, and yellow. If you want to change the color, select from the 24 available colors.

- Trend Line
  Set the line width of the trip line in dots (1 to 3).

Display
4.5 Entering General Settings

Trend interval [/div]
Specify the trend/storage interval (sampling interval and recording interval) in terms of time per division on the time axis. You cannot choose a sampling interval that is faster than the scan interval. See the table under "Save Interval" below.
High-speed model: 5s, 10s, 15s, 30s, 1min, 2min, 5min, 10min, 15min, 20min, 30min, 1h, 2h, 4h, 10h
Medium-speed model**: 15s*, 30s, 1min, 2min, 5min, 10min, 15min, 20min, 30min, 1h, 2h, 4h, 10h
* Only during fast sampling mode.
** You cannot use fast sampling mode on models with the external input channel (/MC1) option.

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 Trend interval setting.

<table>
<thead>
<tr>
<th>Trend interval</th>
<th>5 s</th>
<th>10 s</th>
<th>15 s</th>
<th>30 s</th>
<th>1 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling interval</td>
<td>125 ms</td>
<td>250 ms</td>
<td>500 ms</td>
<td>1 s</td>
<td>2 s</td>
</tr>
<tr>
<td>Selectable range of auto save interval</td>
<td>10 min to 12 h</td>
<td>10 min to 1 day</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>Trend interval</td>
<td>2 min</td>
<td>5 min</td>
<td>10 min</td>
<td>15 min</td>
<td>20 min</td>
</tr>
<tr>
<td>Sampling interval</td>
<td>4 s</td>
<td>10 s</td>
<td>20 s</td>
<td>30 s</td>
<td>40 s</td>
</tr>
<tr>
<td>Selectable range of auto save interval</td>
<td>10 min to 14 days</td>
<td>10 min to 31 days</td>
<td>10 min to 31 days</td>
<td>10 min to 31 days</td>
<td>1 h to 31 days</td>
</tr>
<tr>
<td>Trend interval</td>
<td>30 min</td>
<td>1 h</td>
<td>2 h</td>
<td>4 h</td>
<td>10 h</td>
</tr>
<tr>
<td>Sampling interval</td>
<td>1 min</td>
<td>2 min</td>
<td>4 min</td>
<td>8 min</td>
<td>20 min</td>
</tr>
<tr>
<td>Selectable range of auto save interval</td>
<td>1 h to 31 days</td>
<td>1 h to 31 days</td>
<td>2 h to 31 days</td>
<td>4 h to 31 days</td>
<td>8 h to 31 days</td>
</tr>
</tbody>
</table>

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

Message direction
Set the display direction of messages to [Horizontal] or [Vertical]. When the trend is set to Vertical, the message direction is fixed to [Horizontal].

Scale Digit
Select the [Normal] or [Fine].
Fine  If the scale value is two-digit display, it can be changed to three digits. For example, if the scale range is "49.0 to 51.0," the scale values are displayed using 3 digits as shown below.

Value Indicator
The current value is displayed as a mark or a bar graph.

Trend Line
Set the line width of the trend in dots (1 to 3).
4.5 Entering General Settings

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>

Bar Graph Derection
Select Bar graph derection.

Brightness
Select a value from 1 to 6 (2 by default). Larger the value, brighter the display becomes.

Backlite Save Mode

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Disables the backlight saver.</td>
</tr>
<tr>
<td>Dimmer</td>
<td>Dims the display if there is no operation for a given time.</td>
</tr>
<tr>
<td>Timeoff</td>
<td>Turns the backlight OFF if there is no operation for a given time.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key</td>
<td>The backlight returns to the original brightness when a key is pressed.</td>
</tr>
<tr>
<td>Key&amp;Alarm</td>
<td>The backlight returns to the original brightness when a key is pressed or when an alarm occurs.</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1min to 1h</td>
<td>Time until switching the display.</td>
</tr>
<tr>
<td>OFF</td>
<td>Disables the function.</td>
</tr>
</tbody>
</table>

HISTORY Key Operation

• Operation

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>Switches to the historical trend display when the key is pressed.</td>
</tr>
<tr>
<td>Favorite</td>
<td>Switches to the favorite display that you registered when the key is pressed.</td>
</tr>
</tbody>
</table>

• Group Display

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>Displays a favorite display in the current group.</td>
</tr>
<tr>
<td>Saved</td>
<td>Displays a favorite display in the group that was selected when you registered the favorite display.</td>
</tr>
</tbody>
</table>

• Time Axis Zoom

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>Displays a favorite display at the current time axis zoom rate.</td>
</tr>
<tr>
<td>Saved</td>
<td>Displays a favorite display at the time axis zoom rate that was selected when you registered the favorite display.</td>
</tr>
</tbody>
</table>
4.5 Entering General Settings

**View Group**

Set the screens that will be displayed in the 4 panel display. This function is for the MV2000 only.

With revision R7.21 or later, you can open a settings dialog box for any view group by double-clicking its number.

- **View group number**

- **Enter the view group name**
- Select the type of views to be displayed or drag and drop the view icons

**Group Name**

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

**View Kind**

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

**View Group**

Up to four view groups can be registered.
Message

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

Timer used by event action. Used also in the TLOG computation of the computation function.

Up to four timers (1 to 4) can be set.

**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.
4.5 Entering General Settings

Match Time Timer
Set the time match condition used in event action. These timers are also used in TLOG computation of the computation function. You can set four match time timers (1 to 4).

- **Kind**
  - Daily Set the time match condition of a day.
  - Weekly Set the time match condition of a week.
  - Monthly Set the time match condition of a month.
  - Year Sets the time match condition for a year.

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

<table>
<thead>
<tr>
<th>Setup Item</th>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Day</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hour:Minute</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

- **Month, Day, Week, Hour:Minute**
  Set the month, day, and weekday. Set the time in the range of 00:00 to 23:59 for Hour:Minute.

- **Timer action**
  - Single Executes the action once when the condition is met.
  - Repeat Executes the action at every specified time.

Manual Sample

On a MV2000 with the external input channel (/MC1) option, specify the channel that will be manually sampled. On all other models, all channels will be manually sampled so this setting is not necessary.

**Manual sample number**
Select a number from 001 to 120. The instantaneous values are output in this order.

**Manual Sample**

- **Use**
  Select On when assigning a channel to the manual sample number.

- **CH No.**
  Enter a channel number of a measurement channel, computation channel (/M1 and /PM1 options), or external input channel (/MC1 option).
4.5 Entering General Settings

Event Action

<table>
<thead>
<tr>
<th>Measure channel</th>
<th>Math channel</th>
<th>Est channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Math Start</td>
<td></td>
<td>Start</td>
<td></td>
</tr>
</tbody>
</table>

**Event Action No.**
You can set up to 40.

**Event**
The condition to execute the action.

<table>
<thead>
<tr>
<th>Settings</th>
<th>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>

**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 MV is configured to record event data.</td>
</tr>
<tr>
<td>AlarmACK</td>
<td>Cannot be specified when the event is set to [Relay], [Switch], or [Alarm].</td>
</tr>
</tbody>
</table>
4.5 Entering General Settings

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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</td>
<td>Can be specified on /M1 and /PM1 options.</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</td>
<td>Can be specified only when the event is set to [Remote].</td>
</tr>
</tbody>
</table>

**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 _.

File Format

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text</td>
<td>Display data files and event data files are in text format.</td>
</tr>
<tr>
<td>Binary</td>
<td>Display data files and event data files are in binary format.</td>
</tr>
</tbody>
</table>

Field Title, Field Characters
Set the string.
Title of field: Up to 20 characters, Characters: Up to 30 characters
4.5 Entering General Settings

Event Date


Sample rate
Select the data recording interval from the available settings. 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>25 ms*</th>
<th>25 ms</th>
<th>250 ms</th>
<th>500 ms</th>
<th>1 s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selectable range of data length</td>
<td>10 min to 4 hours</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>
</tr>
<tr>
<td>Sample rate</td>
<td>2 s</td>
<td>5 s</td>
<td>10 s</td>
<td>30 s</td>
<td>1 min</td>
</tr>
<tr>
<td>Selectable range of data length</td>
<td>10 min to 14 days</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>
</tr>
<tr>
<td>Sample rate</td>
<td>2 min</td>
<td>5 min</td>
<td>10 min</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>1 hour to 31 days</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Selectable on the MV1004, MV1008 and MV2008

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 length from 0, 5, 25, 50, 75, 95, and 100%. If you do not want to record the data length from 0, 5, 25, 50, 75, 95, and 100%. If you do not want to record the data length from 0, 5, 25, 50, 75, 95, and 100%. If you do not want to record the data length from 0, 5, 25, 50, 75, 95, and 100%. If you do not want to record the data length from 0, 5, 25, 50, 75, 95, and 100%. If you do not want to record the data length from 0, 5, 25, 50, 75, 95, and 100%. If you do not want to record the data length from 0, 5, 25, 50, 75, 95, and 100%. If you do not want to record the data length from 0, 5, 25, 50, 75, 95, and 100%

Trigger Signal Key
Select [ON] if you want to activate the trigger using key operation.
4.5 Entering General Settings

Custom Menu

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

- Click to select
- Type of main menus being set
- Sub menu
- Changes the left/right display area
- Delete selected items
- Add an item beneath the selected item
- Click to display a sub menu on the right side of the screen

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

- Type of main menu
- Changes the left/right display area
- Delete selected items
- Add an item beneath the selected item
- Click to display a sub menu on the right side of the screen
4.6 Entering Basic Settings

Environment

Basic Environment

<table>
<thead>
<tr>
<th>Measure channel</th>
<th>Math channel</th>
<th>Est channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Data Kind</td>
<td>Temperature Unit</td>
<td>Time zone</td>
<td>Time deviation limit</td>
</tr>
<tr>
<td>Data Kind</td>
<td>Settings</td>
<td>Description</td>
<td>Display</td>
<td>Event</td>
</tr>
<tr>
<td>Display</td>
<td>Records display data.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Event</td>
<td>Records event data.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Data Kind**
  - **Settings**: Display, E+D, Event
  - **Description**: Display records display data. E+D records display data and event data. [E+D] cannot be selected when [Trend Rate Switching] is turned ON under [Environment] - [Basic Environment] in the [Basic Setting] tab.

- **Temperature Unit**
  - Select C or F.

- **Time zone**
  - Set the time zone of the region in which the MV will be used in terms of the time difference from GMT. A negative value indicates that the local time is behind the GMT.

- **Time deviation limit**
  - When the time deviation between the time on the MV and the specified time is within ±(the value specified here), the time on the MV 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 MV is 10 hours 21 minutes 15 seconds, the time on the MV is gradually corrected if the specified time is between 10 hours 21 minutes 0 seconds and 10 hours 21 minutes 20 seconds.

- **Date format**
  - **Settings**: Y/M/D, M/D/Y, D/M/Y, D.M.Y

  **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>FTP server</td>
<td>2</td>
<td>2*1</td>
<td>21/tcp*3</td>
</tr>
<tr>
<td>Web server (HTTP)</td>
<td>1</td>
<td>–</td>
<td>80/tcp*3</td>
</tr>
<tr>
<td>SNTP server</td>
<td>–</td>
<td>–</td>
<td>123/udp*3</td>
</tr>
<tr>
<td>Modbus server</td>
<td>2</td>
<td>–</td>
<td>502/tcp*3</td>
</tr>
<tr>
<td>Instrument information server</td>
<td>–</td>
<td>–</td>
<td>34264/udp*3</td>
</tr>
</tbody>
</table>

*1 There are user limitations. For details, see the MV1000/MV2000 Communication interface User’s Manual (IM MV1000-17E).

*2 The port number is fixed.

*3 The default port number. You can set the value in the range of 0 to 65535. Use the default port number unless there is a special reason not to do so.

• **Status Relay**

If an abnormality occurs with items turned ON, relay contact output is performed. In the [System Configuration] screen, if [FAIL] is set to [FAIL/Alarm relay] or [FAIL/Status relay], the [Status Relay] setting items are displayed.

---

**Detail Setting**

<table>
<thead>
<tr>
<th>Measure channel</th>
<th>Math channel</th>
<th>Edit channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td></td>
<td></td>
<td>General</td>
<td></td>
</tr>
<tr>
<td>Basic Environment</td>
<td></td>
<td></td>
<td>Tag</td>
<td>Tag</td>
</tr>
<tr>
<td>Option</td>
<td></td>
<td></td>
<td>Channel</td>
<td>Channel</td>
</tr>
<tr>
<td>Alarm</td>
<td></td>
<td></td>
<td>Language</td>
<td>English</td>
</tr>
<tr>
<td>Scan Interval</td>
<td></td>
<td></td>
<td>Date</td>
<td>Japanese</td>
</tr>
<tr>
<td>Measure Function</td>
<td></td>
<td></td>
<td>Time Zone</td>
<td>Chinese</td>
</tr>
<tr>
<td>Trend</td>
<td></td>
<td></td>
<td>Time Zone</td>
<td>German</td>
</tr>
<tr>
<td>Key/No.</td>
<td></td>
<td></td>
<td>Time Zone</td>
<td>French</td>
</tr>
<tr>
<td>Login</td>
<td></td>
<td></td>
<td>Time Zone</td>
<td>Korean</td>
</tr>
<tr>
<td>Bhron</td>
<td></td>
<td></td>
<td>Time Zone</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>Time Zone</td>
<td></td>
</tr>
</tbody>
</table>

- **Settings**
- **Description**

  - **Tag**
    - **Settings**: Tag, Channel
    - **Description**: Displays tags. Channel numbers are displayed for channels that do not have tags assigned.

  - **Language**
    - **Settings**: Tag, Channel
    - **Description**: Displays channel numbers.

- **Decimal Point Type**

  - **Settings**: Point, Comma
  - **Description**: Sets the decimal point to a dot. Example: 1234.56

  - **Settings**: Point, Comma
  - **Description**: Sets the decimal point to a comma. Example: 1234,56
• **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.

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

• **Power-Fail Message**
  ON  A message is written when the MV recovers from a power failure while memory sampling is in progress.

• **Change Message**
  ON  Writes the time the interval is switched and the new trend interval as a message when the trend interval is switched.

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

  **Example:**  If the scale is 0.0 to 200.0, the value is set to –over range if the value is less than –10.0 of the scale and +over range if the value is greater than 210.0.

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

• **Alarm No Logging**
  Turn ON when using the Alarm No Logging function. The [Detect] setting is enabled in the Measure channel/Math channel/Ext channel tab(s).

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

• **Comm. Security**
  **Settings**  **Description**
  **Login**  Enables only registered users to operate the MV via communications. The [User registration] is displayed in the basic setting mode menu.
  **OFF**  Disables the security functions.
4.6 Entering Basic Settings

- **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.</td>
</tr>
<tr>
<td>OFF</td>
<td>Does not automatically save the data. Save the measured data manually to the CF card or USB flash memory (/USB1 option).</td>
</tr>
</tbody>
</table>

- **Media FIFO**

You can select this with MV main unit firmware version 2.0x or later. 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, 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, the measured data is not saved to the CF card.</td>
</tr>
</tbody>
</table>

- **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 the first term 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>
4.6 Entering Basic Settings

- **File kind**
  Set this item when creating two types of reports such as daily report and monthly report.

<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>

**Alarm**

<table>
<thead>
<tr>
<th>Measure channel</th>
<th>Math channel</th>
<th>Edit channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Alarm</td>
<td>Scan Internal</td>
<td>Measure Function</td>
<td>Report</td>
</tr>
<tr>
<td>Rate of Change</td>
<td>Indicator</td>
<td>Split</td>
<td>Combined</td>
<td>Alarm</td>
</tr>
<tr>
<td>Down Increase</td>
<td>Setting</td>
<td>Rate of Change Decrease</td>
<td>Rate of Change Increase</td>
<td>Hold</td>
</tr>
<tr>
<td>Hold</td>
<td></td>
<td>Internal Switch AND</td>
<td>Relay AND</td>
<td>Relay AND</td>
</tr>
<tr>
<td>Relay action</td>
<td></td>
<td>Relay action</td>
<td>Relay action</td>
<td>Relay action</td>
</tr>
<tr>
<td>Relay field</td>
<td></td>
<td>Rate of Change Increase</td>
<td>Rate of Change Decrease</td>
<td>Hold</td>
</tr>
<tr>
<td>Relay Action on ACK</td>
<td></td>
<td>Internal Switch AND</td>
<td>Relay AND</td>
<td>Relay AND</td>
</tr>
<tr>
<td>Hold</td>
<td></td>
<td>Relay action</td>
<td>Relay action</td>
<td>Relay action</td>
</tr>
<tr>
<td>Internal Switch</td>
<td></td>
<td>Rate of Change Increase</td>
<td>Rate of Change Decrease</td>
<td>Hold</td>
</tr>
<tr>
<td>Hold</td>
<td></td>
<td>Relay field</td>
<td>Relay field</td>
<td>Relay field</td>
</tr>
<tr>
<td>Relay Action on ACK</td>
<td></td>
<td>Relay action</td>
<td>Relay action</td>
<td>Relay action</td>
</tr>
</tbody>
</table>

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

**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**
Select the alarm indication behavior from the following:

<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>

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

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

**Note**
When reflash is turned ON, the operation of the first three output relays is fixed to OR logic.Specifying AND produces no effect.

**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.
4.6 Entering Basic Settings

**Relay hold**
Select the alarm output relay behavior from below: The 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.</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.

**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, Ext 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

**Scan Interval**

**Scan interval**
Select a 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 MV 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>
<tr>
<td>600Hz</td>
<td>The A/D integration time for fast sampling mode. You cannot change this value. You cannot use fast sampling mode on models with the external input channel (/MC1) option.</td>
</tr>
</tbody>
</table>
Measure Function

**Burnout**

<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 MV 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 MV 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 MV.</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.
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 (hour)
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 No.
The report is output in order by this number.

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.

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].

OFF  Sums as-is the measured data per scan interval.
4.6 Entering Basic Settings

Key Lock


Password
The password used to release the key lock. (Up to 8 characters)

Key, Function, Media
Select whether to lock 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>
4.6 Entering Basic Settings

User Registration


Supervisor

<table>
<thead>
<tr>
<th>Measure channel</th>
<th>Math channel</th>
<th>Edit channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></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>Logout 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 MV1000/MV2000 using keys.</td>
</tr>
<tr>
<td>Comm</td>
<td>Log into the MV1000/MV2000 via communications.</td>
</tr>
<tr>
<td>Web</td>
<td>Log into the operator page and monitor page of the MV1000/MV2000 using a Web browser.</td>
</tr>
<tr>
<td>Key+Comm</td>
<td>Log into the MV1000/MV2000 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)
  An entered password is displayed as “********.”
  - You cannot register “quit” or a password containing all spaces.
4.6 Entering Basic Settings

**User**
Up to 30 names can be registered.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key</td>
<td>OFF</td>
<td>Not register.</td>
</tr>
<tr>
<td>Comm</td>
<td>Log into the MV using keys.</td>
<td></td>
</tr>
<tr>
<td>Web</td>
<td>Log into the MV via communications.</td>
<td></td>
</tr>
<tr>
<td>Key+Comm</td>
<td>Log into the MV using keys and via communications.</td>
<td></td>
</tr>
</tbody>
</table>

- **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>No limitations on the operation.</td>
</tr>
<tr>
<td>1 to 10</td>
<td>Registration number of the operation limitation.</td>
</tr>
</tbody>
</table>

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

- **Key Lock No.**
Select whether to lock 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>
Set the IP address to a fixed IP address or obtain it automatically (DHCP). 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].

- **IP Address**
  
  Set the IP address to assign to the MV1000/MV2000.

- **Subnet Mask**
  
  Set the subnet mask according to the system or network to which the MV1000/MV2000 belongs.

- **Default Gateway**
  
  Set the IP address of the gateway.

- **Host Name**
  
  Set the MV’s host name using up to 64 alphanumeric characters. You do not have to set this parameter.

- **Domain Name**
  
  Set the network domain name that the MV1000/MV2000 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.
4.6 Entering Basic Settings

When obtaining the IP address from DHCP

- **DHCP**
  Set [DHCP] to [ON].

- **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.

- **Host-Name Register**
  To automatically register the host name, select [ON].

- **Host Name**
  Set the MV1000/MV2000’s host name using up to 64 alphanumeric characters.

- **Domain Name**
  Set the network domain name that the MV belongs to using up to 64 characters.

- **Server Primary, Server Secondary (not necessary when DNS accession is enabled)**
  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.

**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 time (min.)**
  Set the timeout value between 1 and 120 (minutes).

**Checking the communication status**
The Ethernet communication status can be confirmed with the LED lamp that is provided on the Ethernet connector on the MV1000/MV2000 rear panel or the [Ethernet link] that is shown at the upper right of the basic setting screen.
4.6 Entering Basic Settings

FTP

The data files 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. They are transferred regardless of the media storage setting.</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.

- **Account**
  Enter the account (ID) for accessing the FTP server using up to 32 alphanumeric characters.

- **PASV**
  Select [ON] when using the MV behind a firewall that requires the passive mode. The default setting is [OFF].
4.6 Entering Basic Settings

- **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
```

If the file transfer to both primary and secondary destinations fails, the MV aborts the file transfer. When the connection recovers, the MV 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 MV, if the data is overwritten, the data that could not be transferred is lost.
4.6 Entering Basic Settings

MODBUS Client

Communication interval
Set the read cycle to 125ms, 250ms, 500ms, 1s, 2s, 5s, or 10s.

Auto recovery
Set the interval for retrying the connection when the connection 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.

• Port No.
  Enter the port number in the range of 0 to 65535 for the selected server. The default value is 502.

• 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.

• 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.
4.6 Entering Basic Settings

Command setting

• **Client command No.**
  Select from 1 to 16 for the transmitted command numbers to be configured.

• **Command**
  Set the command type.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read</td>
<td>Read to the external input channel (16-bit signed integer type) from the server.</td>
</tr>
<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 measurement channel (32-bit signed integer type) to the server.</td>
</tr>
</tbody>
</table>

- [Read] can be selected on MV2000s with the external input channel (/MC1 option) installed.
- [R-Math] and [W-Math] can be selected on models with the computation function (/M1 option) installed.

• **Start channel/End channel (client channels)**
  Enter the first and last channel numbers of input/output. The range of channels that you can enter varies depending on the command type as follows:
  - Read: 201 to 440, R-Math: C01 to C60, Write: 1 to 48, W-Math: 101 to 160

• **Connected to (server number)**
  Select the server number from 1 to 16.

• **Register**
  Set the register number of the server.
  For an input register, select in the range of 30001 to 39999 and 300001 to 365536.
  For a hold register, select in the range of 40001 to 49999 and 400001 to 465536.
  The register numbers you can specify vary depending on the command type. See section 6.3 of the MV1000/MV2000 Communication Interface User’s Manual (IM MV1000-17E).

• **Type**
  Select INT16, UINT16, INT32_B, INT32_L, UINT32_B, UINT32_L, FLOAT_B, or FLOAT_L.
  The register numbers you can specify vary depending on the command type. See section 6.3 of the MV1000/MV2000 Communication Interface User’s Manual (IM MV1000-17E).
4.6 Entering Basic Settings

E-mail

Set the SMTP server and mail address.

- **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**
  Enter the password. You can enter up to 32 characters.

- **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**

If you need to use POP before SMTP, specify the POP3 server.

- **POP3 Server name**
  Enter the host name or IP address of the POP3 server.

- **Port number**
  Unless specified otherwise, set the number to the default value. The default value is 110.

- **Login name**
  Enter the POP3 server login name.

- **Password**
  Enter the POP3 server login password. You can enter up to 32 characters.

- **Send delay [second]**
  Enter the wait time from POP3 server authentication until transmission. Set a value in the range of 0 to 10 (seconds).
4.6 Entering Basic Settings

- **Login method**
  To send the POP3 server login password without encryption, set POP3 Login to [PLAIN]. To send the password with encryption, set POP3 Login to [APOP].

**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 when the alarm occurred.

- **Include source URL**
  Select [ON] to attach the source URL. Attach the URL when the Web server is enabled.

- **Subject**
  Enter the subject of the e-mail using up to 32 alphanumeric characters. The default setting is Alarm_summary.

- **Header1, Header2**
  Enter header 1 and header 2 using up to 64 characters.

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

- **Recipient1 and Recipient2**
  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**
  These items are the same as the e-mail that is sent when an alarm occurs. The default subject is Periodic_data.
4.6 Entering Basic Settings

System

<table>
<thead>
<tr>
<th></th>
<th>Alarm</th>
<th>Scheduled</th>
<th>System</th>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Recipient1</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Recipient2</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Include source URL</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Subject</td>
<td>System_warning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Header1</td>
<td></td>
<td>Report_data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Header2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

- **Recipient1 and Recipient2**
  Set the e-mail recipients. For Recipient1 and Recipient2, select [ON] to send e-mail or [OFF] to not send e-mail.

- **Include source URL, Subject, and Header**
  These items are the same as the e-mail that is sent when an alarm occurs. The default subject is System_warning.

Report

<table>
<thead>
<tr>
<th></th>
<th>Alarm</th>
<th>Scheduled</th>
<th>System</th>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Recipient1</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Recipient2</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Include source URL</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Subject</td>
<td>Report_data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Header1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Header2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

- **Recipient1 and Recipient2**
  Set 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.
4.6 Entering Basic Settings

SNTP Client

<table>
<thead>
<tr>
<th>Measure channel</th>
<th>Math channel</th>
<th>List channel</th>
<th>General setting</th>
<th>Basic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scan interval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measure function</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holy Lock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel</td>
<td>TCP/IP</td>
<td>FTP</td>
<td>E-Mail</td>
<td>Serial</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNTP client</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Server Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ref. Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access timeout</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time adjust (start)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **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 file transfer destination 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 MV 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

- **Use**
  Select [Use] or [Not] (don’t use).

- **Web server Use**
  For the Web item under Server, select [Use] or [Not] (don’t use). When [Use] is selected, the Web page item is added to the basic setting mode menu.
  
  - **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 Use**
  select [Use] or [Not] (don’t use).

- **Modbus Server Use**
  select [Use] or [Not] (don’t use).
4.6 Entering Basic Settings

Serial

For RS-232

- **Baud Rate**
  Select 1200, 2400, 4800, 9600, 19200, or 38400 (bps).

- **Parity**
  Set the parity check method to Odd, Even, or None.

- **Data length**
  Select 7 or 8 (bits). To output the data in binary format, select 8.

- **Handshaking**
  Select Off:Off, XON:XON, XON:RS, or CS:RS.

- **Address**
  For Modbus protocol, enter a value in the range of 1 to 99. For a general purpose communication protocol, this value is not set.

- **Protocol**
  If Modbus master is selected, Modbus master settings must be entered.

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.
4.6 Entering Basic Settings


Basic setting

- **Read cycle**
  Set the read cycle to 125ms, 250ms, 500ms, 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

- **Master command No.**
  Select from 1 to 16 for the command numbers to be configured.

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

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read</td>
<td>Read to the external input channel (16-bit signed integer type) from the slave.</td>
</tr>
<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 measurement channel (32-bit signed integer type) to the slave.</td>
</tr>
</tbody>
</table>

[Read] can be selected on MV2000s with the external input channel (MC1 option) installed. [R-Math] and [W-Math] can be selected on models with the computation function (M1 option) installed.

- **Start channel/End channel (master channel numbers)**
  Enter the first and last channel numbers of input/output. The range of channels that you can enter varies depending on the command type as follows:
  
  **Read:** 201 to 440, R-Math: C01 to C60, Write: 1 to 48, W-Math: 101 to 160
4.6 Entering Basic Settings

- **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.
  For a hold register, select in the range of 40001 to 49999 and 400001 to 465536.
  The register numbers you can specify vary depending on the command type. See section 6.3 in the MV1000/MV2000 Communication Interface User’s Manual (IM MV1000-17E).

- **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 MV1000/MV2000 Communication Interface User’s Manual (IM MV1000-17E).
4.7 Sending the Setup Data to the MV1000/MV2000

You cannot send data while the MV1000/MV2000 is performing memory sampling or math computations.

Sent Setup Data

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. An MV 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] and [PROFIBUS-DP] settings under [Serial].

Other Setup Data

Other setup data is sent together.

Sending Address Setup Data

   The [Network] dialog box appears.

2. Enter the parameters, and click the [OK] button.
   The [Store] dialog box appears.

3. Click [OK].
   The MV starts sending setup data.
   The data that you send is enabled after the MV restarts.

Note

After you change the address, the address that is sent is recorded as the retry destination. The next time you open the [Network] dialog box, the address appears as the initial value.
### Sending Setup Data Other Than the Address Setup Data

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

   ![Network dialog box]

   The [Network] dialog box appears.

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

   ![Store 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.
4.8 Saving the Setup Data

For the operating procedure, see section 3.8. The setup file name extension is .PDL.
4.9 Printing the Setup Data

For the operating procedure, see section 1.5.
4.10 Starting and Stopping Measurement on the MV1000/MV2000, Checking the MV1000/MV2000 Hardware Information

From this software you can start and stop the MV1000/MV2000, and display MV1000/MV2000 hardware information.

For the operating procedure, see section 3.10.
4.11 Characters That Can Be Used

List of Input Types

<table>
<thead>
<tr>
<th>Type</th>
<th>Allowed Characters</th>
<th>Symbol</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbitrary string</td>
<td>Yes</td>
<td>Yes</td>
<td>Tag, group name</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Batch field title/characters, file header, mail header</td>
</tr>
<tr>
<td>Alphanumeric</td>
<td>Yes</td>
<td>Yes</td>
<td>Unit, user name, password, character string account</td>
</tr>
<tr>
<td></td>
<td>Yes (including &quot;[&quot; and &quot;]&quot;)</td>
<td>Yes</td>
<td>Expression</td>
</tr>
<tr>
<td>Machine address</td>
<td>Yes</td>
<td>Disallowed</td>
<td>Host name, domain name, server name, and domain suffix</td>
</tr>
<tr>
<td>E-mail address</td>
<td>Yes</td>
<td>Disallowed</td>
<td>Transfer destination, transfer source</td>
</tr>
<tr>
<td>Subject</td>
<td>Yes</td>
<td>Disallowed</td>
<td>Mail title</td>
</tr>
<tr>
<td>File path name</td>
<td>Yes</td>
<td>Disallowed</td>
<td>File name, directory name, initial path</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>0x</td>
<td>1x</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<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>A</td>
<td>*</td>
</tr>
<tr>
<td>B</td>
<td>+</td>
</tr>
<tr>
<td>C</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>-</td>
</tr>
<tr>
<td>E</td>
<td>.</td>
</tr>
<tr>
<td>F</td>
<td>/</td>
</tr>
</tbody>
</table>

(SP) means "space."

“ ° “ is the symbol for degrees (of temperature). Input, output and indicated using “ ^.”
5.1 Starting the Hardware Configurator, the Hardware Configurator Window, and System Configuration Settings

The Hardware Configurator can be used to transmit and receive the setup data, change the setup data, and create new setup data for a CX1000/CX2000 of style number S1-S3. The setting screen may differ from your actual screen.

Starting the Hardware Configurator

See section 1.3.
Loading Setup Data from the CX

Before performing the following procedure, make sure that the communication method and parameters are correct. For details, see section 2.3, "Setting the Communication Method."

1. Click the [Receive Data] icon, or select [Comm.] > [Receive Setting].
2. The [Network] dialog box appears.
3. Enter the parameters, and click the [OK] button.
4. Click [OK] to start receiving data.

**Note**
Do not load setup data when entering program control function settings on the CX, or when a medium is being accessed. A communications error can result.
Creating Setup Data by Configuring a New System


2. The [System Configuration] dialog box opens. Click the [CX] tab.

3. Select the appropriate items and click the [OK] button to return to the Hardware Configurator window.

For details about the settings in the [System Configuration] dialog box, see section 5.2 “Setting and Checking the System Configuration and Initializing Setup Data”.

**Note**

In the procedure for the [System Configuration] dialog box, make sure that the CX tab is selected before entering settings. If the tab other than CX is selected, the settings you enter will apply only to those instruments.
5.1 Starting the Hardware Configurator, the Hardware Configurator Window, and System Configuration Settings

Loading Existing Setup Data

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

2. The [Open] dialog box opens.

Select a file with .pcl extension and click here.

Specify the location of the setup data file and open the setup file.
5.2 Setting and Checking the System Configuration and Initializing Setup Data

Entering and Checking System Settings

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


2. The [System Configuration] dialog box opens. Click the [CX] tab.

You can enter the following settings in this dialog box.

Type
Select either CX2000 or CX1000.

Channel
Select the number of channels of the CX.
CX1000: 0 (when set to Style 2 or later), or 6 channels
CX2000: 0 (when set to Style 2 or later), 10, or 20 channels

LOOP
Select the number of loops.
CX1000: [0LOOP], [2LOOP]
CX2000: [0LOOP], [2LOOP], [4LOOP], [6LOOP]

Style
Select the CX style number.

Math Function
Select whether or not to enable the math functions (computation function).

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

Media
Select the external storage media from [FDD], [ATA], or [ZIP].
5.2 Setting and Checking the System Configuration and Initializing Setup Data

Alarm Relay
Select the type of alarm relay from [NONE], [4p+With Fail/Mem. End], [6p], or [External Loop]. If you select 2LOOP for the CX1000, the Alarm Relay is automatically set to [NONE]. The items that can be selected vary depending on the model, number of channels, and number of loops.

If you select [2LOOP] for the CX1000, the [Alarm Relay] is automatically set to [NONE].

Options
If set to a style before Style 2, the following options can be selected.

• Green Series Comm
  Select whether options are installed for communications with an external controller. This option can only be selected when [Serial] is set to [RS-232] or [RS-422/485]. Also, this option is fixed to [Green Series Comm] if [0LOOP] is selected.

• Ladder Comm
  Select whether a ladder communication option is installed. This option can only be selected when [Serial] is set to [RS-232] or [RS-422/485]. Also, this option is not available if [0LOOP] is selected.

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

Batch
Select whether a batch option is installed. This option applies to style number S3 or later.

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

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

Initializing the Setup Data

1. Select [Initialize] on the [Setting] menu.

2. The [Initialize] dialog box opens.

3. Click to complete the initialization.
5.3 Control Function Basic Settings

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

Control Action

***Image of Control Function Settings***

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

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

**Zone PID**
Turn ON or OFF.

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

**Initial PID**
Set to [Temp] or [Press+Flow].

**6/4LOOP Select (only for CX2000)**
Set to 6 or 4 loops.
This selection is only available when the [LOOP] setting in the [System Configuration] dialog box is set to [6LOOP].

**Auto Tuning**
Turn ON or OFF.

**PV/SP Computation Function (CX Style Number S3 or Later)**
Turn the PV/SP computation function ON or OFF. When ON, you can set the PV/SP equation.
5.3 Control Function Basic Settings

CLOG Error (CX Style Number S3 or Later)
Set the method for dealing with abnormalities in the channel data for CLOG, an operator for the PV/SP computation function and analog retransmission.
Error: Process as a computation error
Skip: Skip any abnormal data and complete the computation

Event Output (CX Style Number S3 or Later)
Common: Set a common event output setting for all program patterns
Separate: Set the event output for each program pattern

Internal Loop

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

LOOP
Select the loop number to which the settings apply (CX1000: 1 and 2. When 4 selected for CX2000 4/6LOOP: 1-4). Only the loop numbers for the loops specified in the system configuration settings appear in the list.

[Control Setting] Tab
Contains the control settings for internal loops.
• Control Action
  Control Mode
  Select the control mode from [Basic], [Cascade], [PVSwitching], or [Retrans] (Style 3 or later). For a loop with no control, select [OFF]. When selecting [Cascade], because of a common setting between two loops of a control output terminal block, when you set loop 1 to cascade, for example, loop 2 can also automatically be set to cascade. If you make a change such that the smallest loop number changes (other than selecting OFF), all program patterns are initialized.
  Method
  Select the switching conditions of two measurement inputs from [Range], [PVHigh], or [Signal]. You can only make this selection when [Control Mode] is set to [PVSwitching].
5.3 Control Function Basic Settings

Program Control (with the Program Control Option)
Turn program control ON or OFF for each loop. On style 2 and earlier, there is a common setting for both loops of a single control output terminal block. If you make a change such that the smallest loop number changes (other than selecting OFF), all program patterns are initialized.

PID Control Mode
Select the PID control mode from [Follow-Up] or [Fixed-point]. This setting is disabled on loops for which [Control mode] is [OFF].

- AUX
Remote Setting (Enabled When Program Control Is OFF)
When performing measurements by remote, select [Remote]. It cannot be set in the following cases.
  - For secondary measurement loop numbers when [Control Mode] is set to [Cascade].
  - With even numbered loops (when PV/SP computation function is OFF) when the number of loops is 2, 4, or 6 (4Loop is selected under 6/4Loop) and [Control Mode] is set to PV Switching.
  - When the number of loops is 6 (6 Loop is selected under 6/4 Loop) and [Control Mode] is set to [PV Switching] (when the PV/SP computation function is OFF).

Alarm Mode
Select from the following conditions for disabling the control alarm.
- ALWAYS:
  - Alarm is always enabled.
- STOP:
  - Alarm disabled when operation is stopped.
- STOP/MAN:
  - Alarm is disabled in manual operation mode or when operation is stopped.

- Output Process
When [Control Mode] is set to [Cascade], the output process settings are not available for the primary loop.

Control Output
Select the type of control output from the following:
  - Relay (time-proportional PID relay contact output)
  - Voltage-pulse (time-proportional PID voltage pulse output)
  - Current-output (continuous PID control output)
  - On/Off-control (relay contact output, not available for analog retransmission loops)

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

Analog-output Type
For the current output, select the output current range from the following:
  - [4-20mA], [0-20mA], [20-4mA], and [20-0mA].
5.3 Control Function Basic Settings

[Burnout/Tuning] Tab (When PV/SP Computation Is OFF)

- **Input Process**
  
  **Burnout**
  
  Sets the burnout action for the PV inputs of each loop. You can select [OFF], [UP], or [DOWN]. [No.2] is valid only when the control mode is set to [PVSwitching]; [Remote] is valid only when the PV input is set to remote input. This setting is invalid for PV inputs other than thermocouples and standard signals.
  
  When PV/SP computation is ON, it is set according to “Control Input Channel” on page 5-12.

  **RJC (Type, Volt (uV))**
  
  This is the reference junction compensation setting for thermocouple inputs. The setting is entered on the PV inputs of each loop. [No.2] is valid only when the control mode is set to [PVSwitching]; [Remote] is valid only when the PV input is set to remote input. This setting is invalid on the CX main unit for PV input other than thermocouples.
  
  You can select [Internal] or [External] for Type.
  
  If you select [External], set a voltage in the range from -20000 uV to 20000 uV.
  
  When PV/SP computation is ON, it is set according to “Control Input Channels” on page 5-12.

- **Tuning Setting**
  
  **Tuning item ON/OFF**
  
  Select [On] for the parameters that you want to display in the tuning window, and [Off] for other parameters.

  **ID**
  
  Select the ID of the item from the following:
  - SP (target set point), A1 (alarm 1 setting), A2 (alarm 2 setting), A3 (alarm 3 setting), A4 , P (proportional range), I (integration time), D (differentiation time), OH (upper output limit), OL (lower output limit), MR (manual reset), H (hysteresis), DR (control action direction), PO (preset output), BS1 (measured value 1 input bias), FL1 (measured value 1 input filter), BS2 (measured value 2 input bias), FL2 (measured value 2 input filter), RT (ratio setting), RBS (remote input bias), RFL (remote input filter), or W01–W36 (control computation constant).
  
  BS1, FL1, BS2, FL2, RT, RBS, RFL, and W01–W36 apply to style number S3 or later.

  **Name**
  
  Specify the name of the item using up to 6 alphanumeric characters.
Module Setting
Select the terminal blocks where you want to register contact inputs.

Style 3 or later

- [CTRL1-DI] (2 loops or more), [CTRL2-DI] (4 loops or more), [CTRL3-DI] (6 loops or more), [CTRL1-DO] (2 loops or more), [CTRL2-DO] (4 loops or more), [CTRL3-DO] (6 loops or more), [EXT1-RI] (CX2000 with extension output terminal), [EXT1-RO] (CX2000 with extension output terminal), [INT-SW1], [INT-SW2], [INT-SW3]

Style 2 or earlier

- [CTRL1-2], [CTRL3-4] (4 loops or more), [CTRL5-6] (6 loops or more), [ETXDIO] (CX2000 with extension output terminal)

Contact
For each contact input number, select the type of contact input from the following. Some items may not be available depending on the system settings and control mode. For details about the contact input settings, refer to the CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E).

- ControlStopAll
- ControlStartAll
- ControlStart/Stop
- Remote/Local
- Auto/Man
- Cascade (1-2, 3-4)
- Auto1-2 or 3-4
- Man1-2 or 3-4
- SPNumber0 to 3 bit (enter by selecting one of the options under SP Number set).
- PVSwitching
- Program Start
- ProgramStop
- Hold
- Advance
- Memory Start/Stop
- Trigger
- Alarm ACK
- Time Adjust
- Math Start/Stop
- Math Reset
- Manual Sample
- Panel1 Load to Panel3 Load
- Message1 to 8
- Snapshot
- PatternNo.Set (0-4 bits) (Register per the number selected under pattern number setting. Available when program control is ON.)
5.3 Control Function Basic Settings

SP Number Set
Select when registering to the contact input for switching the SP number.

SP No. Selection Source
When specifying input contacts of SP No. settings, select the loop number of the SP Number set to be switched. Activate or deactivate each loop number (CX1000: LOOP1 and LOOP2, CX2000: LOOP1 to LOOP6 (up to 4 loops if 4LOOP was selected under 6/4 Loop selection)).

Pattern Number Selection (When Program Control for Internal Loop is ON)
(When [Program Control] for [Internal Loop] is ON)
With program control, you can select the range of pattern numbers when switching program patterns through contact input. The pattern numbers are entered in binary according to the number of relays required as shown in the following chart.

<table>
<thead>
<tr>
<th>Pattern No.</th>
<th>No. of Relays</th>
<th>Assigned Relay(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 (1 bit)</td>
<td>D1001</td>
</tr>
<tr>
<td>1–3</td>
<td>2 (2 bits)</td>
<td>D1001, D1002</td>
</tr>
<tr>
<td>1–7</td>
<td>3 (3 bits)</td>
<td>D1001–D1003</td>
</tr>
<tr>
<td>1–15</td>
<td>4 (4 bits)</td>
<td>D1001–D1004</td>
</tr>
<tr>
<td>1–30</td>
<td>5 (5 bits)</td>
<td>D1001–D1005</td>
</tr>
</tbody>
</table>

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

Control Input Channel (When PV/SP Computation Is ON, and with CX Style Number S3 or Later)
When PV/SP computation is ON (see Control Action), set burnout and RJC (when PV/SP computation is OFF, set in “Internal Loops”).

Burnout
Turn each control input channel ON or OFF.

RJC (Type, Volt (uV))
This is the reference junction compensation setting for thermocouple inputs. Set for each control input channel. This setting is invalid on the CX main unit for PV input other than thermocouples.
You can select [Internal] or [External] for Type.
If you select [External], set a voltage in the range from -20000 uV to 20000 uV.
Control Relay

Module Setting
Select the terminal blocks where you want to register contact outputs from [CTRL1-2], [CTRL3-4], [CTRL5-6], or [EXTDIO]. [CTRL3-4], [CTRL5-6], and [EXTDIO] are available only with the CX2000 and when the number of loops is 6 or more (with 6/4 loop select, selection is not possible when set to 4 loops). EXTDIO is available with the CX2000 and when External Loop is selected for alarm relay.

FAIL ([CTRL1-2] Only)
Activates the output of a relay contact signal (FAIL signal) if a fault occurs in the CX CPU. When it is [ON] (default: [OFF]), contact output number [DO001] of control output terminal block 1 in the [Relay] (Action/Behavior) setting is automatically assigned to [De_energize/Nonhold].

Self Diagnosis ([CTRL1-2] Only)
Activates the output of a relay contact signal in the event of input burnout, an A/D converter fault, or reference junction compensation failure. When it is [ON] (default: [OFF]), contact output number [DO002] of control output terminal block 1 in the [Relay] (Action/Behavior) setting is automatically assigned to [De_energize/Nonhold].

Relay (Action/Behavior)
Set the contact output relay operating mode to [De_energize/Hold], [De_energize/Nonhold], [Energize/Hold], or [Energize/Nonhold].
External Loop

For each loop there are Basic Setting, External Loop Setting, Parameter Address Setting, and Tuning Setting items. For details on external loops, see the CX1000/CX2000 Communication Interface User’s Manual (IM04L31A01-17E).

[Basic Setting] Tab

- Control Action
  Comm. On/Off
  Select to turn the external loop function (the Green Series Comm. function) ON or OFF.
  If you select OFF, all settings below will be disabled.
- Modbus address
  Enter the Modbus address of the controller used in external loop control from 1 to 247.
- Connecting Model
  Select the type of connected UT series controller. Select [Other] when connecting to a controller other than a UT series instrument.
  The following settings vary depending on the selected instrument.

[External Loop Setting] Tab

- Control Action
  Loop Select
  Select the loop from [Loop1] or [Loop2].
  This item appears when [Connecting Model] in [Basic Setting] is set to a model capable of two-loop control (UT520, UT550, UT750, or Other).
Tag
Specify a tag using a maximum of 8 alphanumeric characters.

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

PV/SP/OUT
Set the decimal place (0-4) and units (using up to 6 alphanumeric characters) of PV, SP, and OUT.

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

Control Mode
Select the control mode from the choices below. The available modes differ depending on the connected instrument.

[SingleLoopControl], [CascadePrimaryLoop], [CascadeSecondaryLoop],
[CascadeControl], [ControlBackUp], [PVSwitching], [PVAutoSelector],
[PVHoldFunction], [2LoopControl], [GreenControl], [UniversalPVCascade],
[UniversalPVSwitching], or [UniversalPVSector].

Control Output
Select the type of control output from the choices below. This setting not available if the control mode is set to Cascade or UniversalPVCascade.

[Relay], [Voltage-pulse], [Current-output], and [On/Off-control]

Alarm
Select the type of alarm from the choices below. The alarm types that can be selected differ depending on the connected model.

[OFF], [PV-High(Energ)], [PV-Low(Energ)], [Deviation-High(Energ)], [Deviation-Low(Energ)], [Deviation-H&L(Energ)], [Dev-within-H&L(Energ)], [PV-High(Deenerg)], [PV-Low(Deenerg)], [PV-High(Deenerg/Standby)], [PV-Low(Deenerg/Standby)], [Dev-High(Deenerg/Standby)], [Dev-Low(Deenerg/Standby)], [Dev-H&L(Deenerg/Standby)], [Dev-w-H&L(Deenerg/Standby)], [PV-High(Deenerg/Standby)], [PV-Low(Deenerg/Standby)], [Timer-upward(h:m)], [Timer-downward(h:m)], [Timer-upward(m:s)], [Timer-downward(m:s)], [Sensor-grounding], [Problem-diagnostic], [FAIL-output], [SP-High], [SP-Low], [Output-High], [Output-Low], [Header-burnout1], and [Header-burnout2].
Select the parameter address settings from the following ranges.
30001 to 39999, 300001 to 365535, 40001 to 49999, 400001 to 465535.

### [Tuning Setting] Tab

- Tuning Setting
  - Tuning item ON/OFF
    - Select [On] for the parameters that you want to display in the tuning window, and [Off] for other parameters.
  - ID
    - Select the ID of the item from the choices below.
      - Internal Loop
        - SP (target set point), A1 (alarm 1 setting), A2 (alarm 2 setting), A3 (alarm 3 setting), A4 (alarm 4 setting), P (proportional range), I (integration time), D (differentiation time), OH (upper output limit), OL (lower output limit), MR (manual reset), H (hysteresis), DR (control action direction), DB (dead band), PO (preset output), ETC (others), BS1 (measured value 1 input bias), FL1 (measured value 1 input filter), BS2 (measured value 2 input bias), FL2 (measured value 2 input filter), RT (ratio setting), RBS (remote input bias), RFL (remote input filter), or W01-W36 (control computation constant)
5.3 Control Function Basic Settings

External Loops
Internal loop SP (target set point), A1 (alarm 1 setting), A2 (alarm 2 setting), A3 (alarm 3 setting), A4 (cannot select with UT320, UT321, UT350, or UT420), P (proportional range), I (integration time), D (differentiation time), OH (upper output limit), OL (lower output limit), MR (manual reset), H (hysteresis), DR (control action direction), DB (dead band), PO (preset output), or ETC (others)

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

Name
Specify the name of the item using up to 6 alphanumeric characters.

Register
Set the register address in the following ranges.
30001 to 339999, 300001 to 365535, 40001 to 49999, and 400001 to 465535.

Span (Point)
Set the parameter decimal point position.

Span (L)
Set the lower control span value between -30000 to 30000.

Span (U)
Set the upper control span value between -30000 to 30000.
5.4 Control Function General Settings

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

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

### Control Input

A different menu is displayed when PV/SP computation function in the control basic settings is turned ON or OFF.

#### When PV/SP computation function is OFF

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

<table>
<thead>
<tr>
<th>Basic</th>
<th>Odd loops</th>
<th>PV1</th>
<th>Remote</th>
<th>PVrange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cascade</td>
<td>Odd loops</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Even loops</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PVSwitching</td>
<td>Odd loops</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Even loops</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog Re-transmission (Style 3 or later)*</td>
<td>Odd loops</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Even loops</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*: With 6 loops, disabled when 6/4LOOP Select set to 6 loops.

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

The settings displayed depend on the input type, [PV1], [PV2], [Remote], and [PVrange], but the settings are the same.

#### Select the loop number

SCALE/1-5V (PV1, PV2, Remote)
Select the channel measurement mode from [Temp], [Scale], or [1-5V].

Mode (PV1, PV2, Remote)
Select a channel input mode of [VOLT], [TC], or [RTD]. When [SCALE/1-5V] is set to [1-5V], the mode is fixed [VOLT].
5.4 Control Function General Settings

Range/Type (PV1, PV2, Remote)
Select the voltage range, thermocouple, and resistive temperature detector type.

VOLT: 20mV, 60mV, 200mV, 2V, 6V, 20V, or 50V
TC: TypeK, TypeJ, TypeT, TypeB, TypeR, TypeN, TypeE, TypeL, TypeU, TypeW, PLATINEL, PR40-20, or WRe3-25
RTD: JPt100 or Pt100

When [SCALE/1-5V] is set to [1-5V], [Range/Type] is fixed to [6V].

Span (PV1, PV2, Remote)
Specify the measurement span such that the upper limit is greater than the lower limit.

Scale (PV1, PV2, Remote)
Specify the scale for each loop between -30000 and 30000, such that upper limit > lower limit, and upper limit - lower limit ≤ 30000. Set the decimal place in the range from 0 to 4. Only available when [Scale] is selected under [Scale/1-5V]. For details, refer to the CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E).

Unit (PV1, PV2, Remote)
Specify the units for each loop. Use a maximum of 6 alphanumeric characters.

Sqrt (PV1, PV2, Remote)
Select or clear the check box to turn the square root function ON or OFF. When it is ON, set [Low Cut] between 0.0% and 5.0%.

Bias (PV1, PV2, Remote)
Select the check box to turn the bias ON/OFF. When it is ON, enter the setting for EUS (-100 to 100%) of the measurement span.

Filter (PV1, PV2, Remote)
Select the check box to turn the filter ON/OFF. When it is ON, set between 1 and 120.

Ratio setting (Remote)
Turn ON when applying the designated ratio to remote measurement input. When turned ON, set the value in the range from -30000 to 30000. Set the decimal place in the range from 0 to 4. With Style 2 or earlier, the setting range is from 0.001 to 9.999.

PV Range (PV Range)
Enter the maximum value, minimum value, decimal place, and units. Set the max. and min. values between –30000 and 30000 such that max. > min., and max. - min. ≤ 30000.

PV Switching (PV Range)
Set within the input range. When setting [Method] to [Range] in the [Control Action] within the Setup tab’s internal loop item, or when setting [Method] to [PVHigh], only the upper limit is set. If you set [Method] to [Signal], the PV Switching setting is not available.

Note
When the PV/SP computation function is ON, the above settings for the input related settings are entered for each control input channel item on the Setup tab. See page 7-30 for the setting method.
When PV/SP Computation Function is ON

Enter PV or SP related settings. When the control mode is analog retransmission, the setting menu for that mode is displayed. See the next page.

PV/SP Computation Function
Select whether to enter settings for PV, PV1, PV2, or SP. Enter PV if the control mode is single loop control or cascade control, or PV1, PV2 for 2 input switching control. SP can be entered when the Setup tab’s Internal Loop > [Remote Setting] is set to [Remote].

Mode
Select ON or OFF.
ON: Activates the equation.
OFF: Assigns the following control input channels to the equation.

<table>
<thead>
<tr>
<th>Control mode</th>
<th>Single loop control</th>
<th>Cascade control</th>
<th>2 input switching control (4 loops)</th>
<th>2 input switching control (6 loops)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV</td>
<td>SP</td>
<td>PV1</td>
<td>PV2</td>
<td>SP</td>
</tr>
<tr>
<td>Loop 1</td>
<td>C01</td>
<td>C02</td>
<td>C01</td>
<td>C01</td>
</tr>
<tr>
<td>Loop 2</td>
<td>C04</td>
<td>C05</td>
<td>C04</td>
<td>C04</td>
</tr>
<tr>
<td>Loop 3</td>
<td>C06</td>
<td>C07</td>
<td>C06</td>
<td>C06</td>
</tr>
<tr>
<td>Loop 4</td>
<td>C09</td>
<td>C10</td>
<td>C09</td>
<td>C09</td>
</tr>
<tr>
<td>Loop 5</td>
<td>C03</td>
<td>C01</td>
<td>C03</td>
<td>C03</td>
</tr>
<tr>
<td>Loop 6</td>
<td>C08</td>
<td>C01</td>
<td>C08</td>
<td>C08</td>
</tr>
</tbody>
</table>

Equation
Enter the PV/SP equation. If the mode is OFF, the equation cannot be entered.

PV range (PV or PV1)
Set the maximum value, minimum value, decimal place (0–4), and units using 6 alphanumeric characters or less.
Set the max. and min. values between -30000 and 30000 such that max. > min., and max. - min. ≤ 30000.

PV1 can be set even if the mode is OFF.

Input Switching (PV1)
Set within the PV range. Set the decimal place (0–4), upper limit (U) and lower limit (L). When setting [Method] to [Range] in [Control Action] under the Setup tab’s Internal Loop item, and when setting the upper limit (U), lower limit (L), and [Method] to [PV High], only the upper limit value is set. If you set [Method] to [Signal], the PV Input Switching setting is not available. This can be set even if the [Mode] is OFF.
5.4 Control Function General Settings

Ratio (Remote)
Turns ON when a given ratio is applied to SP.
When turned ON, set the ratio in the range from 0.0001–30000. Set the decimal place in the range from 0 to 4.

Remote Bias
You can select ON or OFF to determine whether bias is applied to SP. When turned ON, set the bias value in the PV range of “EUS( -100% to 100%).”

Math Error
If a computation error occurs, specify whether to process it as a PV/SP, overrange, or underrange.

Constants
Set the constants to be used for PV/SP computation, analog retransmission, and logic computation. Constants are common for analog retransmission and logic computation.

**Analog Retransmission**

Sets the equation and output span on loops whose control mode is analog retransmission.

Mode
Select ON or OFF. ON: Activates the equation. OFF: Analog retransmission does not function.

Equation
Enter the analog retransmission equation.

Output Span
Set the maximum value, minimum value, decimal place (0–4), and units using 6 alphanumeric characters or less. Set the max. and min. values between -30000 and 30000 such that max. > min., and max. - min. ≤ 30000.

Math Error
Select whether to set to an overrange or underrange when computed results in an error.

Constants
Set the constants to be used for PV/SP computation, analog retransmission, and logic computation.
### 5.4 Control Function General Settings

#### PID/Alarm

<table>
<thead>
<tr>
<th>PID/Alarm</th>
<th>Description</th>
<th>Setting 1</th>
<th>Setting 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm</td>
<td>Specify an alarm for each loop.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Select the type of alarm from the following: [PV-High], [PV-Low], [Deviation-High], [Deviation-Low], [Deviation-H&amp;L], [Dev-within-H&amp;L], [SP-High], [SP-Low], [Output-High], and [Output-Low].</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standby</td>
<td>Turn standby ON or OFF. For details about the alarms that can be turned on or off, refer to the CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relay</td>
<td>Select the type of relay DO001 to DO006: Loop2 DO101 to DO106: Loop4 (CX2000 only) DO201 to DO206: Loop6 (with 4/6 loop selection, selection is only possible for a CX2000 set to 6 loops.) RO001-RO012: Control extension DIO (only a CX2000 with the control extension DIO) SW001-SW036: internal switches (SW001–SW018 for the CX1000, Style 3 or later)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hysteresis</td>
<td>Specify the alarm hysteresis in EUS (0.0 to 10.0%).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### PID Parameters

<table>
<thead>
<tr>
<th>PID Parameters</th>
<th>Description</th>
<th>Setting 1</th>
<th>Setting 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target setpoint</td>
<td>Specify the target setpoint in EU (0.0 to 100.0%). Set between the target setpoint’s upper and lower limits.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm value (1 to 4)</td>
<td>Set the alarm value. (The setting depends on the type of alarm.) PV and SP alarms: EU (0 to 100%) Deviation-High and Deviation-Low alarms: EUS (-100 to 100%) of the measurement span Other deviation alarms: EUS (0 to 100%) of the measurement span Output alarms: -5.0 to 105.0% of the output value</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.4 Control Function General Settings

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

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

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

Output Lower Limit
Set the output lower limit between –5.0 and 105.0% such that upper limit > lower limit.

Output Upper Limit
Set the output upper limit between –5.0 and 105.0% such that upper limit > lower limit.

Shutdown
Turn the shutdown function ON or OFF. Available when the Setup tab’s Internal Loop > Output Process > Control output setting is set to Current output, and analog retransmission is set to 4-20 mA.

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

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

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

Preset Out
Select a fixed control output value from -5.0 to 105.0% to be used when operation is stopped.

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

Note
[Relay Hysteresis (Value)] and [Relay Hysteresis (Point)] appear in PID Parameters when [Control Output] is set to [On/Off-control] under [Setup] > [Internal Loop] > [Output process]. In that case, [PID], [Output Limit], [Shutdown], and [Manual Reset] are not shown.
5.4 Control Function General Settings

Operation Related

• Operation Related
Enter internal loop control operation-related settings.

Suppressing Function
Select [OFF] or [Overshoot].

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

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

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

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

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

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

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

Switching Hysteresis
Specify the switching hysteresis value with the measurement input span EU (0.0 to
10.0%). It is not displayed when the PID number is 1 or less (or 2 or less with style
number S1).
Reference Deviation
Turn the reference deviation ON or OFF, and specify the value from 1 digit of the measurement span to EUS (100.0%). With style number S1 (system setting), it is not displayed if the PID number is 1. With style 2 or later, it is not displayed when the PID number is 2 or less.

Linearize (When PV/SP Computation Is OFF)

<table>
<thead>
<tr>
<th>Mode</th>
<th>Control Loop</th>
<th>Control (Dev)</th>
<th>Control (EUS)</th>
<th>Setting</th>
<th>Setup</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOOP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**Input**
Enter the linearize input value. (The value depends on the linearize mode.)

Biasing: Set with EU (-5.0 to 105.0%) of the measurement input span.

Approximation: Set with EU (-5.0 to 105.0%) of the measurement input span. Set between 2 and 11 points.

**Output**
Enter the linearize output value. (The value depends on the linearize mode.)

Biasing: Set with EUS (-100.0 to 100.0%) of the measurement input span.

Approximation: Set with EU (-5.0 to 105.0%) of the measurement input span.

**Note**
- With linearize bias, set so that input + output is EU(0-100%). Also, set so that linearizer input + linearizer output is greater than or equal to the previous linearizer input + linearizer output.
- Set so that linearizer approximation output is more than the previous value.
- Starting from the third point, if you set a value smaller than the previous value, all settings after that point become disabled.
- When the PV/SP computation function is ON, the above settings are entered for each control input channel item under Control Input Channel on the Setting tab. See page 5-30 for the setting method.
5.4 Control Function General Settings

Control Function Settings

<table>
<thead>
<tr>
<th>SP Tracking</th>
<th>PV Tracking</th>
<th>Target Setpoint Limiter</th>
<th>Output Velocity Lim</th>
<th>Anti-reset Windup</th>
<th>Dev Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn the target setpoint tracking ON or OFF.</td>
<td>Turn the measurement value tracking ON or OFF.</td>
<td>Specify the target setpoint limiter in the measured span’s EU (0.0–100.0%) range so that ( L &lt; U ).</td>
<td>Select or clear the check box to turn the output velocity limiter ON or OFF, and specify a value between 0.1 and 100.0%/s. This is unavailable for style number S2 or later if you set [Control Output] to [On/Off control] in the [Setup] tab for [Internal Loop].</td>
<td>Select an anti-reset windup of [Auto] or [Manual]. This is unavailable for style number S2 if you set [Control Output] to [On/Off control] in the [Setup] tab for [Internal Loop].</td>
<td>Set the deviation band of the anti-reset windup between 50.0 and 200.0%. This setting is only valid when the [Anti-reset Windup] is set to [Manual].</td>
</tr>
</tbody>
</table>

Control Groups

Set the groups to which control functions apply.

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

**Group Name**
Enter a group name using a maximum of 16 alphanumeric characters.

**KIND**
Select the loops, measurement channels, and DIO numbers (Style 3 or later) you want to assign to a group. For the CX1000, you can select 1-2 internal loops, 1-4 external loops, and 1-12 DIOs. For the CX2000, you can select 1-6 internal loops, 1-16 external loops, and 1-36 DIOs.

On the CX1000, group 1 consists of up to 4 types of control loops and measurement channels. On the CX2000, it consists of up to 6 types.
PV Event Hysteresis (Style 2 or earlier)

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

From the [Setting] tab, select [PV Event].
DIO Operation Monitoring Number
Enter an integer between 1 and 36.

DIO Operation Monitoring Function
Turns the specified DIO operation monitor number ON and OFF.

DIO Types
Select the DIO operation monitoring method.

- DI-1: Displays the input status of the specified DI. The status of the internal switches are output.
- DO-1: The status of the internal switches are output to one DO. 1 (ON) is output when the internal switches are ON, and 0 (OFF) is output when they are OFF.
- DO-2: You can output the ON and OFF statuses of the internal switches to separate DOs. 1 (ON) is output from the ON output DO when the internal switches are ON, and 0 (OFF) is output from the OFF output DO when they are OFF. 0 (OFF) is output from the ON output DO when the internal switches are OFF, and 1 (ON) is output from the OFF output DO when they are ON.
- DIO-11: The same action as the DO-1 is performed while displaying the input status of the specified DI.
- DIO-12: The same action as the DO-2 is performed while displaying the input status of the specified DI.
- DO-2P: You can output the ON and OFF statuses of the internal switches to separate DOs. A pulse signal having a 1 to 2 second pulse width is output from the ON output DO when the internal switches are ON, and from the 0 (OFF) output DO when they are OFF.
- DIO-12P: The same action as the DO-2P is performed while displaying the input status of the specified DI.

SW Number
Set the internal switches assigned to DO.

DO Number
Set the DO performing DIO operation monitoring. If the DIO type is DO-2, DIO-12, DO-2P, or DIO-12P, specify a separate DO with ON and OFF. DO numbers may not overlap with other numbers, including DIO operation monitoring numbers.
Not displayed when the DIO type is DI-1.
5.4 Control Function General Settings

DI Number
Set the DI number to perform operation monitoring.

Tag
Enter tags.
Up to 8 alphanumeric characters can be used.

Tag Comment
Enter tag comments.
Up to 8 alphanumeric characters can be used.

Operation Status Display
Set the label and display colors when displaying operation status.

DIO Labels (CX Style Number S3 or Later)

Set the DIO labels.

Logic Computation (CX Style Number S3 or Later)

Type
Select the output destination for the computed results.

Equation
Input an equation. Click the Operator button to display the operators that can be entered.

Constants
You can specify the constants used in equations.
Constants are common with PV/SP computation and analog retransmission constants.
Control Input Channel (CX Style Number S3 or Later)

When the PV/SP computation function is ON, you can set the input range and ten segment linearizer output for each channel.

**[Input Range] tab**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Range/Type</th>
<th>Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLT:</td>
<td>20mV, 60mV, 200mV, 2V, 6V, 20V, or 50V</td>
<td>Specify the measurement span such that the upper limit is greater than the lower limit.</td>
</tr>
<tr>
<td>TC:</td>
<td>TypeK, TypeJ, TypeT, TypeB, TypeS, TypeR, TypeN, TypeE, TypeL, TypeU, TypeW, PLATINEL, PR40-20, or WRe3-25</td>
<td></td>
</tr>
<tr>
<td>RTD:</td>
<td>JPt100 or Pt100</td>
<td></td>
</tr>
</tbody>
</table>

When [SCALE/1-5V] is set to [1-5V], [Range/Type] is fixed to [6V].

**Span**
Specify the measurement span such that the upper limit is greater than the lower limit.

**Scale**
Specify the scale for each loop between -30000 and 30000, such that upper limit > lower limit, and upper limit - lower limit ≤ 30000. Only available when [Scale] is selected under [SCALE/1-5V]. For details, refer to the CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E).

**Unit**
Specify the units for each loop.
Use a maximum of 6 alphanumeric characters.

**Sqrt**
Select or clear the check box to turn the square root function ON or OFF.
When it is ON, set [Low Cut] between 0.0% and 5.0%.

**Bias (PV1, Remote)**
Select the check box to turn the bias ON/OFF.
When it is ON, enter the setting for EUS (-100 to 100%) of the measurement span.
Filter (PV1, Remote)
Select the check box to turn the filter, ON/OFF.
When it is ON, set between 1s and 120s.

[Linearizer] tab

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

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

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

Note
- With linearize bias, set so that input + output is EU (0-100%). Also, set so that linearizer input + linearizer output is greater than or equal to the previous linearizer input + linearizer output.
- Set so that linearizer approximation output is more than the previous value.
- Starting from the third point, if you set a value smaller than the previous value, all settings after that point become disabled.
- When the PV/SP computation function is OFF, the above settings are entered for each loop item on the Setting tab. See page 7-25 for the setting method.
5.5 Control Channel Settings (Internal/External)

The following settings apply to the internal and external loop’s SP, PV, and OUT displays. To enter control channel settings, click the [Control(Int)] tab. Or, you can select the items by choosing [Control Setting] - [SET [Basic] Setting] - [Control Channels (Internal)].

**Tag**

Enter a tag using maximum of 16 alphanumeric characters. You can select tags instead of channel numbers to be displayed on the screen. Select whether the channel name or tag is displayed in the [Setup] tab under [Aux] > [Tag/Channel]. By selecting [Tag] in [Aux] of the [Setup] tab, you can select the tag No./tag comment or tag in the Data Monitor or Data Viewer.

**Zone**

You can select the range on the CX’s screen where each channel waveform is displayed. Set the lower and upper limits as percentages on the scale displayed. The zone setting conditions are as follows:

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

**Graph**

Div

Select the number of bar graph divisions from 4 to 12, or C10. When selecting C10, the scale of the trend display is divided into 10 or some other number of major divisions, numbered at the [0], [30], [50], [70], and [100]% marks.

**Bar graph**

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

**Scale**

When the scale is displayed in the trend display, select the scale display position. For details, refer to the CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E).
5.5 Control Channel Settings (Internal/External)

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

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

- Internal control channel
  \( PV/SP: EU (0\%) < \text{boundary value} < EU (100\%) \)
  \( OUT: EU (-5.0\%) < \text{boundary value} < EU (105.0\%) \)
  However, with OUT for analog retransmission, minimum value of span < boundary value < maximum value of span.

- External control channel
  span \( L + 1 \text{ digit} < \text{boundary value} < \text{span} \ U - 1 \text{ digit} \)
  However, when external loop is OFF, the partial expansion/reduction is also OFF.

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

Color
Click in the display color setting field to display a color selection dialog box.
You can select the display color of each channel from 16 colors.
5.6 Program Control Related Setup Operations

This section describes optional program control related operations.

**Turn ON/OFF Program Control**

Program control can be turned ON and OFF under Internal Loop in the Setup tab. Click the Setup tab then select Internal Loop from the list that appears on the left of the screen. Or, you can select the items by choosing Control Settings > Setup Basic Setting > Internal Loop.

![Program control ON/OFF diagram](image)

**Note**

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

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

**Set the start code**
Available when segments have been inserted or added under [Segment setting].

**Set the start setpoint**
Available when segments have been inserted or added under [Segment setting].

**Copy the settings** (Default setting/Segment setting)

**Paste copied pattern settings** (Default setting/Segment setting)

**Select the pattern number**

**Pattern Default setting**
Pattern name, Setting method, Start setpoint, Start code

**Enter a pattern name setting**

**Segment setting**
Program pattern, PV Event, Time Event, Repeat

**PV event hysteresis settings**

**Event output setting**

**Event display group setting**

**AUX setting**
Automatic message printout, program display position

**Select the operating loop**

**Click this tab**
Segment and event totals (cannot be set here)
The number of segments and events used with this pattern. (cannot be set here)
Set the segment setting method
Set the operating loop

**Pattern number**

**Pattern name**
Enter the pattern name using up to 16 alphanumeric characters.

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

**Start target setpoint**
Set the start SP, a starting condition, in the range of [EU (0.0% to 100.0%)] (initial value is 0%) of the measurement span. For style 3 or later, the PV event hysteresis setting for loops turned ON in operating loop designation can be entered. With style 2 or earlier, settings for loops turned ON in Program Control under Internal Loops in the Setup tab can be entered. Only the loops that are set as follows are displayed: [Setup] tab > [Internal Loop] > [Program control] to [On]. During cascade control, even-numbered loops within the same terminal block are not displayed.
5.6 Program Control Related Setup Operations

**Start code**
Select the operation start condition from the following. Note that only the possible loop conditions are displayed.
Starting target setpoint start, PV1 to PV 6 ramp-prioritized PV start, time-prioritized ramp start (not displayed for segment time ramp setting method).

**Wait action setting**
Set the wait zones for 6 (number of loops) × 5 (number of zones) (CX1000: 2 (number of loops) × 5 (number of zones)) in the range of [EUS (0.0 to 100.0%)] of the measurement span. For style 3 or later, the wait action setting for loops turned ON in operating loop designation can be entered. With style 2 or earlier, settings for loops turned ON in Program Control under Internal Loops in the Setup tab can be entered.

**Wait time**
Set the wait time in [hh:mm:ss] format (selectable range: [00:00:00] to [99:59:59]) for all the available zones. The setting applies to the same zones in each loop. Wait time cannot be set if the wait zone for all loops is set to OFF.

**Operating Loop Designation**
Set the loops to operate.
Select from loops whose program control is ON.
Program Pattern Setting (Segment setting)

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

- Select the pattern number
- Select the segment number
- Initialize the program pattern
- Insert a segment before the selected segment
- Add a segment behind the last segment
- Delete the selected segment
- Expand/reduce the selected segment along the time axis
- Display the time axis per the segment time ratio
- Display program patterns together
- Split-display the program pattern at each loop
- Start value and target value display ON/OFF
- Select current loop

5.6 Program Control Related Setup Operations
5.6 Program Control Related Setup Operations

Select the Segment
Click the [Segment No.] arrow or click the desired segment in the program pattern display screen.

Select Setpoints
Enter a program pattern for each segment.

Note
The program pattern waveform displayed on screen is not strictly accurate.

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

- Target setpoint (ramp segment only)
  Set the final SP of the ramp segment in the range of “EU (0.0% to 100.0%)” (initial value is 0%) of the measurement span. For style 3 or later, the target setpoint setting for loops turned ON in operating loop designation can be entered. With style 2 or earlier, settings for loops turned ON in Program Control under Internal Loops in the Setup tab can be entered. Only the loops that are set as follows are available: [Setup] tab > [Internal Loop] > [Control mode] to a mode other than [Off] and [Program control] to [On]. During cascade control, even-numbered loops within the same terminal block are not displayed.

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

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

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

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

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

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

• Wait action
  Set the wait action type to [Shift] or [Within]. To disable the wait action, select [Off].

• Wait zone number
  Select the wait zone number from [1] to [5]. This item is available only when [Wait action] is set to [Shift] or [Within].

**PV Event**

Set the PV Event.

  ![Click this tab](image)

• Loop
  Set the target loop number [1] to [6] of the PV event (only selectable loop numbers). Up to 16 events can be assigned. Select [Off] (initial setting) for the number of the loops to which the event is not to be assigned.

• Type
  Select the type of PV event from the following:
  PV high-limit, PV low-limit, deviation high-limit, deviation low-limit, deviation high & low limit, deviation within high & low limits, SP high-limit, SP low-limit, output high-limit, and output low-limit

• Value
  Set the value in the following range according to the type of PV event.
  PV/SP event: EU (0.0 to 100.0%) of the measurement span
  Deviation high-limit event/low-limit event: EUS (–100.0 to 100.0%) of the measurement span
  Deviation high & low limit/within high & low limits: EUS (0.0 to 100.0%) of the measurement span
  Output event: –5.0% to 105.0% of output

**PV event display**

A bar showing that the PV event was set is displayed in the upper part of the program pattern display screen.
5.6 Program Control Related Setup Operations

Time Event
Set the Time Event.

Click this tab

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

- On-time/Off-time
  Set the ON-time/Off-time of the time event in “hh:mm:ss” format. The selectable range is “00:00:00 to 99:59:59.” Make sure that Set On-time ≤ Off-time.

Time event display
At the bottom of the program pattern display screen, a bar showing setting of time events is displayed according to the specified ON and OFF times.
If time events overlap with those of other segments, or in other such cases, the specified time event may not occur. For details, see the CX1000/CX2000 User’s Manual (IM04L31A01-01E or IM04L31A01-03E).

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

Click this tab

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

- Repeat frequency
  Set the number of repetitions when the repeat function is turned ON in the range of [1] to [999].
5.6 Program Control Related Setup Operations

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

**PV Event (CX Style Number S3 or Later)**

The selectable range for the maximum value is 0.0 to 10.0.

With Style2 or earlier, set in the setting menu of the [Setting] tab.

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

You can set the PV event relay output, time event relay output, program pattern end signal, and displayed groups.

- Turn OFF/ON the relay output
- Select the number of the relay output terminal
- Relay output action (settings cannot be entered here)
5.6 Program Control Related Setup Operations

PV Event-Relay output/Time Event-Relay output/Program pattern end signal

Relay Output
Turn OFF/ON the relay output.

Number
Select the number of the relay output terminal from the following.
DO001 to 006, DO101 to 106, DO201 to 206, RO001 to 012 only (on models with the expansion DIO terminal block), SW001 to SW036 (internal switches, Style3 or later).

Action
Displays the relay output action (Energized/De-Energize) per the [Control Relay] settings on the [Setup] tab.

Event Display Group

You can select events for when groups are displayed in the CX program selection screen or program operation screen. Up to 5 events can be specified.

ON/OFF
Turns the display ON or OFF.

Kind
Select either time event or PV event.

Number
Set the event number.
5.6 Program Control Related Setup Operations

AUX (Automatic Message, Display Position, Operation Display Automatic Switching)

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

Message displays on the CX trend display screen
Display position when partitioned for each loop on the CX.
Tag display (settings cannot be entered here)
Tag comment display (settings cannot be entered here)

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

Position
On the program selection screen and program operation screen, the specified patterns and PV waveforms can be displayed in the same display frame (full display), and data can be displayed by dividing the display position per loop (split display). When using split display, select the display position number from [1] to [6] for each loop. For Style 3 or later, the position setting for loops turned ON in operating loop designation can be entered. With style 2 or earlier, only settings for loops turned ON in Program Control under Internal Loops in the Setup tab can be entered. During cascade control, even-numbered loops within the same terminal block are not available.

Operation Display Automatic Switching (Style Number S3 or Later)
When a program execution command is sent via the communication function, you can have it switch to the program operation display.
ON: Switches to the program operation display when a program execution command is sent.
OFF: Does not switch to the program operation display (default) even if a program execution command is sent.
5.7 Measurement Function Basic Settings

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

Alarm/Relay/Remote

1. Select this tab.  
   2. Click here. (Or choose the [Setting] menu - [SETUP [Basic] Setting] - [Setting].)

   Select the controlled item.

   Copy/Paste the selected range.

   Select between 1 and 15.

Alarm/Relay

Select the alarm format. The selected items are blue.

Reflash
Set whether to use the alarm relay output reflash (ON or OFF).

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

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

Alarm Relay Behavior
Select the output relay when returning from an alarm to the normal state of operation (when the alarm is released). This applies to all alarm output relays. If the measuring alarm output option is not active, this setting is invalid.

Unhold (Default): When the alarm is released, the output relay stays off.
Hold: The output relay stays on until an Alarm ACK operation is performed.

Alarm Indicator
Select the alarm indicator when returning from an alarm to the normal state of operation.

Unhold (Default): The alarm display ends when the alarm is released.
Hold: The alarm display stays on until an Alarm ACK operation performed.
Rate of Change Increase
Select the number of data samples that determines the interval of the rate of change of an upper limit alarm between [1] and [15].

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

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

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

Scan Interval/Memory
Set these parameters when the data type is [EVENT & DISP] or [EVENT].

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

Scan Interval
Select [1s] or [2s].
5.7 Measurement Function Basic Settings

Memory Sample (save method of measured/computed data)

Save
Select the save method of internal memory data to an external storage media from [Auto] or [Manual].

Manual: Inserting the external storage media into the drive and closing the cover displays a “save confirm” message, from which you can save data. When the operation is complete, remove the external storage media from the drive, so that the next set of data save operation can be performed. You can select whether to save all of the data from internal memory or only to update the data still not saved to an external storage media.

Auto: If an external storage media is always in the drive, data is saved automatically at a preset interval.

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

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

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

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

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

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

Manual Trigger
To activate triggers with keys, select [ON].

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

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

Sampling
Select the channels to be saved to the memory.
5.7 Measurement Function Basic Settings

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

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

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

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

Channel (Setting the Burnout and RJC)

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

Set to the positive side (100%).
Set to the negative side (0%).
Set the reference junction compensation to [Internal] or [External].

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

RJC Volt (uV)
This is the reference junction compensation setting for thermocouple inputs. For details, refer to the CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E).

Note
“Channel” settings cannot be entered on 0 measurement channel models. The Channel command does not appear in the menu.
Copying and Pasting Setup Data
You can copy the setup data of one channel or more to other channels. Use the following procedure to copy and paste.

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

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

Key Lock/Login

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

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

Login Setting
Use Login
To use the login, auto-logout, or user ID, select the appropriate items.

Auto Logout
Selected: If idle for ten minutes, logs out automatically. Clear: Requires the logout procedure to log out.
5.7 Measurement Function Basic Settings

User ID
Specify whether to use a user ID when logging in. User ID entry is enabled when the check box is selected.

User Setting List
User name
Use up to 16 alphanumeric characters for the user name.

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

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

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

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

Timer (Option)
Click here. (Or choose the [Setting] menu - [SETUP] [Basic Setting] - [Setting].)
Select one
Time out every time the specified time elapses.
Select the timeout interval.
Time out with the specified time as the reference.

You can set three types of timers to be used in the statistical computation. You can save the data to a TLOG file or reset the computation when the specified timeout interval elapses. This function is available only if the Computation function is installed.

For details about the types of timers and various settings, refer to the CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E).
5.7 Measurement Function Basic Settings

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

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

Set the date and time at which to create the report.

Enable (ON) or disable (OFF) the report channel settings.

Select the reference channel for the report.

**Note**

Measurement channels cannot be set for reference channels on 0 measurement channel models.

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

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

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

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

**Sum Scale**
Select whether to convert the results of the TLOG.SUM computation channels to a specified time unitary value. Select [Off], [Sec], [Min], [Hour], [Day]. This function is available only if the Computation function is installed.

For details, refer to the *CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E)*.
Copying and Pasting Setup Data
You can copy the setup data of one channel or more to other channels. Use the following procedure to copy and paste.

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

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

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

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

<table>
<thead>
<tr>
<th>Control Loop</th>
<th>Control Loop</th>
<th>Setting</th>
<th>Setup</th>
<th>Program pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm/Relay/Remote</td>
<td>Scan Interface Memory</td>
<td>Memory/Batch</td>
<td>Key lost/Log</td>
<td>Timer</td>
</tr>
<tr>
<td>Report</td>
<td>Temperature</td>
<td>Date/Time</td>
<td>Auto</td>
<td>Time Zone</td>
</tr>
<tr>
<td>Network</td>
<td>Control Action</td>
<td>Internal Loop</td>
<td>CO2/O2/SO2/Reg</td>
<td>Control Relay</td>
</tr>
<tr>
<td>External Loop</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Temperature
  - Temperature Unit: °C, °F

- Time Zone
  - GMT: 0

Aux
- Tag/Channel
- Memory Alarm
- Language
  - English, Japanese, German, French, Chinese
- Partial
  - English, Not, Use
- Batch
  - Not, Use

Tag/Channel
Select whether to use the tag name or channel number as the measurement/computation channel label.
If you select tag name, you can select the label display from tag and channel (see page 5-55).

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

Language
Select the language ([English], [Japanese], [German], [French], or [Chinese]) to be used on the CX’s display.

Note
Beware that if you configure the system after receiving setup data from the CX, the received setup data will be initialized. For information on system configuration, refer to section 3.2, “Setting and Checking the System Configuration and Initializing Setup Data.”
5.7 Measurement Function Basic Settings

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

Batch (Batch Option, Style3 or later)
Set the information to be added to data written to the CX internal memory.

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

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

Time Zone
Set the difference in time from the GMT.
For example, with Japanese time this is normally +9:00.

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

To enter measurement channel settings, click the [Meas] tab. Or, you can select the items by choosing [Setting] - [SET [Regular] Setting] - [Meas Channels]. Measurement channel settings cannot be entered on 0 channel models. The Meas Channels tab and measurement channels on and the setting menu are not shown.

<table>
<thead>
<tr>
<th>Input Mode</th>
<th>Type</th>
<th>Range/Type</th>
<th>Alarm Type</th>
<th>Relay</th>
<th>Detection</th>
<th>Value</th>
<th>Channel Display Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vol</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>0.000</td>
<td>Turquoise</td>
</tr>
<tr>
<td>A</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>0.000</td>
<td>Cyan</td>
</tr>
<tr>
<td>P</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>0.000</td>
<td>Blue</td>
</tr>
<tr>
<td>T</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>0.000</td>
<td>Red</td>
</tr>
</tbody>
</table>

- Difference computation
- Select the range/type.
- Select the reference for the difference computation.
- Specify the span.
- Select the input mode.
- Specify a scale.
- Specify the unit of the scale.
- Specify the alarm value.
- Specify a tag name.
- Specify a delay period.
- Specify a display zone.
- Select sampling count of the moving average.
- Select all at once.
- Initialize
- Turn OFF all at once.
- Copy the settings of the first channel in the selected range to all other channels.
- Turn ON all at once.
- Copy the settings of the first channel in the selected range to all other channels.
- Set the value to the maximum value possible.
- Set the value to the minimum value possible.
- Turn OFF all at once.
- Copy the settings of the first channel in the selected range to all other channels.
- Set the value to the maximum value possible.
- Set the value to the minimum value possible.
- Initialize
5.8 Measurement Channels Settings

Input Type (Mode and Range/Type)
Select one of the following from the pull-down list.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Relevant Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLT (voltage)</td>
<td>Range, span L, and span U</td>
</tr>
<tr>
<td>TC (thermocouple)</td>
<td>Type, span L, and span U</td>
</tr>
<tr>
<td>RTD (resistance temperature detector)</td>
<td>Type, span L, and span U</td>
</tr>
<tr>
<td>DI (voltage level/contact input)</td>
<td>Range, span L, and span U</td>
</tr>
<tr>
<td>SKIP (measurement/display OFF)</td>
<td>None</td>
</tr>
</tbody>
</table>

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

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

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

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

Scale

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

**Unit**
Enter the unit using up to 6 alphanumeric characters.
5.8 Measurement Channels Settings

Alarm

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

Type
Select H, L, h (dH), l (dL), R (RH), r (RL), T, or t. The selectable alarms vary depending on the input mode and computation type. For details, see section 7.2 of the CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E).

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

Relay
Select the output relay number or internal switch number for outputting to relay output or internal switches (Style 3 or later). When not outputting to relays or internal switches, select NONE.

Detect
Select whether to display alarms (ON) or not to display alarms (OFF) when they occur. When turned OFF, they are not retained in the alarm summary.

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

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

Tag
Use up to 16 alphanumeric characters to specify a tag. You can select tags instead of channel numbers to be displayed on the screen. To select whether to display channel names or tag names on the screen, select [AUX] > [Tag/Channel] on the [Setup] tab. If you select [Tag] in the [Setup] screen, you can select tag No., tag comment, or tag in the Data Monitor or Data Viewer.

Zone
You can select the range of the screen in which the waveform of each channel is displayed. Specify positions (%) on the display scale for the upper and lower limits. The conditions for setting the zones are as follows:
- Range: 0% to 100%
  The lower limit must be less than the upper limit
- The difference between the lower and upper limits must be at least 5%.
5.8 Measurement Channels Settings

Graph

Divisions
Select the number of bar graph divisions.

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

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

Partial

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

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

- Measurement channel
  When SCALE and SQRT are not used: \( \text{Span L} < \text{boundary} < \text{span U} \)
  When SCALE and SQRT are used: \( \text{Scale L} < \text{boundary} < \text{scale U} \)

- Computation channel
  \( \text{Span L} < \text{boundary} < \text{span U} \)
  For details, refer to the CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E).

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

Display Color
You can select the display color of each channel from 16 colors.
5.8 Measurement Channels Settings

Copying and Pasting Setup Data

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

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

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

Setting One Channel at a Time

1. Double-click the channel to set to open the Channel Settings dialog box.
2. Click the tab of the item to be set.
3. After setting the items, click here. Applies the settings.
4. Update according to the changes in the [Meas] sheet.

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

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

Double-click to set the channel.
Click this tab.
Turn ON/OFF the computation.
Specify on expression.
Set the display span (6 characters or less).
Specify the unit.
Specify the constant to be used in the expression.

Computation ON/OFF
Select whether to perform computation for each channel.

Expression
Enter an expression using up to 40 characters. For details about expressions, see the CX User's Manual (IM 04L31A01-01E or IM 04L31A01-03E).
Expressions cannot be used with measurement channels on 0 measurement channel models.
5.9 Computation Channel Settings

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

**Alarm and Tag**
The settings are the same as those of the measurement channels. For details, see section 5.8, “Measurement Channels Settings”.

**TLOG Computation**

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

*Sum Scale*
Set the sum scale.

**Rolling Average**

*Rolling Average Computation ON/OFF*
Select whether to compute the rolling average.

*Interval*
Select the sampling interval when rolling average is activated.

*Times (Number of Samples)*
Select the number of samples (number of data points used to compute the rolling average).

**Zone, Graph, Partial, and Color**
The setting method is the same as that of the measurement channels. For details, see section 5.8, “Measurement Channels Settings.”

**Constants**
You can set constants to be used in the expression. Up to 12 constants (CX1000) or up to 30 constants (CX2000) can be specified.
5.9 Computation Channel Settings

Setting One Computation Channel at a Time

1. Double-click the channel to set to open the Channel Settings dialog box.

2. Click the tab of the item to be set. Click here to enter the operator.

3. After setting the items, click here. Set the maximum value. Set the minimum value. Copy the first setting.

[Select Operator] dialog box

Select the operator type and click the operator button.

Operator button

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

Copying and Pasting Setup Data

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

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

You can also copy and paste specific channel items.

After selecting the copy source in step 1, click the [Copy Details] button to display the [Math Channel Copy Details] dialog box.
Check whether the items you want to copy/paste are selected.
5.10 Display Settings

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

Display

Select the display format for trend and bar graphs. Select the time per division. Click this tab.

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

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

Auto Scroll Time
This is the time period used to automatically switch the displayed group. Select from [5s], [10s], [20s], [30s], or [1min].
For details about the other settings, refer to the CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E).
### Message/File

#### Message

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

#### File Header

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

#### Directory Name

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

**Note**

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

#### Manual Save

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

Group/Trip Line

Click here. (Or choose the [Setting] menu - [SET] [Regular] Setting.) Click the tab of the group to be configured. Specify a group name.

Select the channels that you want to register in the selected group (blue: ON).

Select the color of the trip line.

Turn ON/OFF the trip line display.

Set the trip line value by dragging the slider.

Set the trip line by specifying a value.

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

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

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

With regard to the trip lines set here, the first and second settings (No.1 and No. 2) refer to the trip lines in Data Monitor and Data Viewer. If you change them here, they also change in Data Monitor and Data Viewer. For details about trip line settings, refer to the CX User’s Manual (IM 04L31A01-01E or IM 04L31A01-03E).
### View Group (CX2000 Only)

#### View Groups
Up to four view groups can be registered.

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

#### View Kind
The view group consists of four views. Select the type of screen to display in each view. Overview cannot be selected on 0 measurement channel models without the calculation option installed.

#### Group
The group displayed varies depending on the type of view selected. When selecting measurement screen for the view kind, select the group from the measurement groups (Group 1 to 10). When selecting control screen for the view kind, select the group from the control groups (Group 1 to 8).
5.10 Display Settings

**User Key/Daylight Saving**

Click one. (Or choose the [Setting] menu - [SET [Regular] Setting].)

Select the function to be assigned to the User Key.

Set the time at the daylight saving time adjustment is to be enabled/disabled.

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

**Batch**

Enter the header if the option batch headers are active.

Click here. (Or choose the Setting menu > SET [Regular] Setting.)

Enter up to 16 alphanumeric characters.

Enter a number from 0 to 9999.
5.11 Network Settings

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

TCP/IP Settings

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

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

Specify the IP address
Specify these addresses when using the DNS
Enter the timeout value when turned ON

Serial Communication Settings

When using serial communications between the CX and other devices, set the parameters required for serial communications. If [MODBUS MASTER] is selected in the [Protocol] settings, you must click the [Modbus master] tab and enter [Modbus master] settings.
Modbus Master Settings

When using the CX as a Modbus master, enter the Modbus master basic and command settings. For details about the settings, refer to the CX1000/CX2000 Communication Interface User’s Manual (IM 04L31A01-17E).

FTP Settings

Using the FTP function, measurement/calculation data can be automatically transferred from the CX to the specified server as files. The FTP function can be used only with Ethernet communications. When using the FTP function, specify the destination server name, port number, and other settings in the dialog box below.

1. Click this tab.
2. Click the [Primary] or [Secondary] tab (Set both if using two (primary and secondary) FTP servers.).

Enter file transfer destination settings.
Web Server Settings

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

E-mail Transmission Settings

When using e-mail transmission, specify [SMTP server name], [Port number], [Recipient1], and other settings. The e-mail transmission function can be used only with Ethernet communications. For details about the settings, refer to the CX1000/CX2000 Communication Interface User’s Manual (IM 04L31A01-17E).

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

Auxiliary Settings

You can set the control output DO when the communication buffer recovers, internal switch status processing, and auto recovery of communication with Modbus master/temperature controllers valid for serial communications. These settings are available when serial communication is installed.

Recovery Status for Comm. Buffer
You can set the recovery operation for the control output DO/internal switch communication buffer to be performed when the power is turned ON, or when recovering to Operation Mode from Basic Setting Mode. The communication buffer is an internal region for turning the DO/internal switches ON and OFF via communications.

- **Continue**: Holds the status of the control output DO and internal switches
- **Clear**: Clears the status of the control output DO and internal switches

Modbus Master/Exp loop
You can select whether or not to automatically recover communications with modbus mice and temperature meters. If you select automatic recovery, you can also specify the recovery interval. You can select one of the following intervals: 1 min, 2 min, 5 min, 10 min, 20 min, 30 min, or 60 min.

Specifying the Memory Data Out Mode
You can only specify to output memory via Ethernet or serial communications.
5.12 Setup Data Adjustment (Data Check)

1. Click here. (Or choose the [System] menu - [Data Adjustment].)

2. If the data is not consistent, the following dialog box opens.

Click here to display the correction list.

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

Data is corrected in the following cases:
- In such cases as when values of items of the Meas/Math tab are outside the specified range.
- When an invalid character string is used.

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

Note
Perform the data check before sending the new setup data to the CX.
5.13 Sending Setup Data to the CX

You cannot send data to the CX during memory sampling.

Select [Comm.] > [Send Setting] to start sending data.

2. The [Network] dialog box appears.

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

The [Store] dialog box appears.

Click [OK] to start sending the data. A message appears to indicate when data transfer has stopped. Click [OK] to close the message.

**Note**

To enable the following network settings in the [Setup] tab, turn off and on the main unit after transmission.

- All settings in the [TCP/IP] tab
- All settings in the [Serial] tab
- All settings in the [Modbus master] tab
- All settings in the [Web] tab
5.14 Saving Setup Data

For the operating procedure, see section 3.8. The setup file name extension is .pcl.
5.15 Printing Setup Data

For the operating procedure, see section 1.5. You cannot select [Print Format Settings].
5.16 Starting and Stopping Measurement on the CX and Checking the CX Hardware Information

You can start and stop the CX, as well as display CX hardware information from the Hardware Configurator. (Start/Stop operation is only possible with memory sample and math functions. This software does not support this operation for control functions.)

Starting and Stopping Measurement
For the operating procedure, see section 3.10.

Displaying CX Hardware Information
For the operating procedure, see section 3.10.

<table>
<thead>
<tr>
<th>Recorder type</th>
<th>Firmware version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of measurement channels</td>
<td>Number of computation channels</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>Number of control loops</td>
</tr>
<tr>
<td>Serial number</td>
<td>Number of channels assigned to external loops</td>
</tr>
<tr>
<td>Optional</td>
<td></td>
</tr>
</tbody>
</table>
5.17 Usable Characters

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

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

**Note**

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

The Configurator can transmit and receive the setup data, change the setup data, and create new setup data. It can configure the following style numbers of DX and MV. The setting screen may differ from your actual screen.

<table>
<thead>
<tr>
<th>DX/MV (Style Number)</th>
<th>Style1 (S1)</th>
<th>Style2 (S2)</th>
<th>Style3 (S3)</th>
<th>Style4 (S4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DX200</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DX200C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MV100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MV200</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Starting the Hardware Configurator
See section 1.3.
6.1 Starting the Configurator

Loading the Setup Data from the DX/MV

1. Click the [Receive Data] icon, or select [Comm.] > [Receive Setting].

2. The [Network] dialog box appears.

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

   The [Receive Data] dialog box appears.

4. Click [OK] to start receiving data.
Creating Setup Data by Configuring a New System

1. Click the new file icon or select [File] - [New].
2. The [System Configuration] dialog box opens. Click the [Dx] tab.
3. Click the appropriate items and click the [OK] button to open the Configurator screen.

Batch function option is selectable when the style number is S2 or later.

Loading Preexisting Setup Data

1. Click the file open icon or select [File]-[Open].
2. The [Open] dialog box opens.

Select a file with .pnl extension and click here.

You can specify the location where the setup data file is located and open the Configurator.
6.2 Setting the Measurement Channels

Select this tab to set the channel
- Double-click to set the channel
- Select the input mode
- Difference computation
- Scale
- Square root
- Select the range/type
- Select the reference for the difference computation
- Set the span
- Set the selected range at once
- Copy the settings of the first channel in the selected range to all other channels

Enter the scale
- Enter the scale unit
- Select the alarm type
- Enter the alarm value
- Select the relay number
- Set the value to the maximum value possible
- Set the value to the minimum value possible
- Enter the delay period
- Enter the tag

Enter the display zone
- Select the graph setting
- Turn ON/OFF the partial expanded display
- Select the channel display color
- Initialize
- Set the value to the maximum value possible
- Set the value to the minimum value possible
- Turn ON/OFF at once

Enter the tag

Set the value to the minimum value possible
- Turn OFF at once
- Copy the settings of the first channel in the selected range to all other channels
6.2 Setting the Measurement Channels

Input Type (Mode and Range/Type)
Select from the list of choices from the pull-down menu.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Relevant Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLT (voltage)</td>
<td>Range, span L, and span U</td>
</tr>
<tr>
<td>TC (thermocouple)</td>
<td>Type, span L, and span U</td>
</tr>
<tr>
<td>RTD (resistance temperature detector)</td>
<td>Type, span L, and span U</td>
</tr>
<tr>
<td>DI (voltage level/contact input)</td>
<td>Range, span L, and span U</td>
</tr>
<tr>
<td>SKIP (Measurement/Display OFF)</td>
<td>None</td>
</tr>
</tbody>
</table>

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

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

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

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

Unit
Enter the unit using up to six characters.

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

**Alarm**

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

**Type**

Select H, L, h, I, R, T or t. T or t is selectable when the style number is S2 or later. The selectable alarms vary depending on the input mode and computation type. For details, see section 6.2 in the DX100/DX200/DX200C/MV100/MV200 User’s Manual.

**Alarm value**

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

**Alarm delay**

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

**Relay**

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

**Input Filter and Moving Average**

Moving average can be specified on models DX106, DX112, DX210, DX220, DX230, MV106, MV112, MV210, MV220, and MV230.

Input filter can be specified on models DX102, DX104, DX204, DX208, DX204C, DX208C, MV102, MV104, MV204, and MV208.

**Input filter**

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

**Moving average**

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

**Tag**

Up to 16 characters can be entered for the tag.

You can use the tag instead of the channel number to be displayed on the screen.

The [Setup] screen is used to select whether to display the channel number or the tag on the screen.

**Display Zone**

You can select the range of the screen in which the waveform of each channel is to be displayed.

Specify positions (%) on the display scale for the upper and lower limits.

The conditions for setting the zones are as follows:

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

Graph

Divisions
Select the number of bar graph divisions.

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

Scale
When using scale display on the trend screen, select the position to display the scale. For details related to divisions, bar graph, and scale, see section 7.10 in the DX100/DX200/DX200C/MV100/MV200 User’s Manual.

Partial Expanded Display

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

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

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

- Computation channel
  Span L < boundary < span U

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

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

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

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

2. The channel setting dialog box opens.

3. Select the tab of the item to be configured.

4. After setting the items, click here.

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.

Update according to the changes in the [Meas] sheet.
6.3 Setting the Computation Channels

Double-click when setting each channel
Select this tab
Turn ON/OFF computation
Enter the expression
Set the display span (6 characters or less)
Enter the unit
Enter the constant to be used in the expression
Select the number of digits to the right the decimal
Copy the settings of the first channel in the selected range to all other channels
Set the alarm (section 6.2)
Enter the alarm period
Enter the tag (section 6.2)
Copy the settings of the first channel in the selected range to all other channels
Display zone (section 6.2)
Set the graph (section 6.2)
Partial expansion (section 6.2)
Display color (section 6.2)

Turning ON/OFF Computation
Select whether or not to perform computation for each channel.

Expression
Enter the expression using up to 40 characters. For details related to the expression, see the DX100/DX200/DX200C/MV100/MV200 User’s Manual.
6.3 Setting the Computation Channels

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

**Alarm and Tag**
The settings are the same as the measurement channels. For details, see section 6.2,
“Setting the Measurement Channel.”

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

**Sum scale**
Set the sum scale.

**Rolling Average**
**Interval**
Select the sampling interval when rolling average is activated.

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

**Display Zone, Graph, Partial Expansion, and Color**
The settings are the same as the measurement channels. For details, see section 6.2,
“Setting the Measurement Channel.”

**Constant**
You can set constants to be used in the expression. Up to 12 and 30 constants can be
specified on the DX100/MV100 and DX200/DX200C/MV200, respectively.
6.3 Setting the Computation Channels

Setting One Computation Channel at a Time

1. Double-click the channel you wish to set.
2. The channel setting dialog box opens.
3. Select the tab of the item to be configured. Click here to enter the operator.
4. After setting the items, click here.
   - Set the maximum value.
   - Set the minimum value.
   - Copy the first setting.

<Select Operator dialog box>
Select the operator type and click the operator button

Operator button

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

Copying and Pasting Setup Data
See section 6.2, "Setting the Measurement Channel."
6.4 Configuring the Settings

Screen Display

Select this tab

Select the time per 1 division

Select the display format of the trend and bar graph

The screen saver function is activated, when there is no key operation or alarm occurrence for the specified time period.

Recover by a key operation or alarm occurrence

Recover by a key operation

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

Display update interval
You can select the display update interval from 15 sec/div¹, 30 sec/div¹, 1 min/div, 2 min/div, 5 min/div, 10 min/div, 20 min/div, 30 min/div, 1 h/div, 2 h/div, 4 h/div, and 10 h/div².

*1 Can be specified on the DX102, DX104, DX204, DX208, DX204C, DX208C, MV102, MV104, MV204, and MV208 style number S4.

*2 Can be specified on the DX and MV style number S4.

Auto save interval
The auto save interval can be specified when the [Save] is set to [Auto] (see page 8-17) and the data type is set to [DISPLAY] or [EVENT&DISP] in the memory sample section of the setup tab.

Auto scroll time
This is the time period used to automatically switch the displayed group. It can be specified when the style number of the DX or MV is S2 or later.

Scale Display Digits
Select [Normal] or [Fine].

Fine If the scale value is displayed with two digits, it can be changed to three digits.
Circular display setting (DX200C Only)

- Normal trend display
- Circular display

Set the time corresponding to one cycle on the circular display

one scale mark of the old waveform is cleared when the remaining amount of waveform reaches one scale mark

clear the entire waveform when one cycle of the waveform has been recorded.

Message/File

- Click here (also selectable from [Setting] - [SET [Regular] Setting])

Message
Up to 16 characters can be entered for the message.

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

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

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

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

**Group/Trip Line**

- Click here (also selectable from [Setting] - [SET [Regular] Setting])
- Select the tab of the group to be configured.
- Enter the group name
- Check the channels that you wish to register in the selected group (blue: ON)
- Select the color of the trip line
- Set the trip line by entering a value
- Set the trip line by dragging
- Turn ON/OFF the trip line display

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

**Number of channels**
The maximum number of channels that can be assigned to a group is 10 and 6 for DX200/DX200C/MV200 and DX100/MV100, respectively. The assigned channels are listed under [Channel Configuration].
If no channels are specified, CH01 is automatically assigned.

**Trip line**
Up to four trip lines can be set to one group.
With regard to the trip lines set here, the first and second settings (No.1 and No. 2) refer to the trip lines in the Data Monitor and Data Viewer. If you change them here, they will also change in the Data Monitor and Data Viewer.
Setting the View Group (DX200, DX200C, MV200 Only)

- **View group**
  Up to four view groups can be registered.

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

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

**USER Key (DX100, DX200, DX200C, and MV200 Only), Daylight Saving, Batch (Option /BT1, Style Number S2 or Later)**

- Click either one (also selectable from [Setting] - [SET [Regular] Setting])

  - **User Key**
    Enter up to 16 characters.
    Enter the value in the range from 0 to 9999.

  - **Daylight Saving**
    Select either one

  - **Batch**
    Enter up to 16 characters.
    Enter the value in the range from 0 to 9999.
6.5 Configuring the Setup Mode

Alarm/Relay/Remote

1. Select this tab

2. Click here (also selectable from [Setting] - [SETUP Basic Setting] - [Setting])

Alarm
Select the alarm format. The selected items become blue.

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

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

For details related to the copy/paste function, see page 6-7.
6.5 Configuring the Setup Mode

Scan Interval/Memory

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

Check the channels you wish to sample

Set these parameters when the data type is set to [EVENT & DISP] or [EVENT]

Scan interval

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

- DX102, DX104, DX204, DX208, DX204C, DX208C, MV102, MV104, MV204, and MV208: 125 ms and 250 ms
- DX106, DX112, DX210, DX220, DX230, MV106, MV112, MV220, and MV230: 1 s and 2 s

A/D Integrate

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

Memory Sample (save method of measured/computed data)

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

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

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

Note

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

Channel (Setting the Burnout and RJC)

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

- **RJC Volt (uV)**
  - When the reference junction compensation is set to [External], set the compensation value in the range from -20000 to 20000.

**Copying and pasting setup data**

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

Key Lock/Login

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

<table>
<thead>
<tr>
<th>Menu</th>
<th>Menu</th>
<th>Setting</th>
<th>Setup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm/Alarm</td>
<td>Menu</td>
<td>Menu</td>
<td>Menu</td>
</tr>
<tr>
<td>Key Lock/Log</td>
<td>Menu</td>
<td>Menu</td>
<td>Menu</td>
</tr>
<tr>
<td>Key Lock</td>
<td>Key Lock</td>
<td>Key Lock</td>
<td>Key Lock</td>
</tr>
<tr>
<td>When using login, auto logout, and user ID. Turn ON when using user settings Check when using login, auto logout, and user ID.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Setting the key lock

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

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

Setting the login

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

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

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

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

**Note**

- If there is a duplicate [User Name] that is turned ON, the user with the larger user number is turned OFF.
- If [Setup] of all users that are turned ON is set to [Disable], the [Setup] of the user with the smallest number is set to [Enable].
You can set three types of timers to be used in the statistical computation. You can have the data saved to a TLOG file or reset the computation when the specified timeout time elapses.
6.5 Configuring the Setup Mode

Report (Creating Hourly/Daily/Weekly/Monthly Reports, Option /M1)

- Click here (also selectable from [Setting] - [SETUP [Basic] Setting]-'Setting'))
- Set the date and time at which to create the report
- Report channel
  There are 30 channels and 12 channels on the DX200/DX200C/MV200 and DX100/MV100, respectively.

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

Copy
For details related to the copy/paste function, see page 6-7.
Setting the Temperature Unit, Tag/Channel Display, Memory Alarm Time, Displayed Language, Partial Expanded Display, Batch (Option /BT1, Style Number S2 or Later) and Time Zone

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

<table>
<thead>
<tr>
<th></th>
<th>Alarm/Relay/Remote</th>
<th>Scan Interval/Memory</th>
<th>Channel</th>
<th>Tag/Channel</th>
<th>Time/Tag</th>
<th>Report</th>
<th>Temperature</th>
<th>Time Zone</th>
<th>Partial Expanded Display</th>
<th>Batch</th>
<th>Tag/Channel</th>
<th>Memory Alarm</th>
<th>Language</th>
<th>Partial</th>
<th>Batch</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not</td>
<td>Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Temperature**
Select the °C or °F for the temperature unit.

**Tag/Channel**
Select whether to use the tag (see “Tag” on page 6-6) or channel number as the measurement/computation channel label.
If you select tag, you can select the label display from tag and channel (see page 6-6).

**Memory alarm time**
Free space in the internal memory is monitored, and the memory alarm relay (option /F1) can be programmed to activate some period of time before the memory is completely full. This time period is called the memory alarm time.

**Displayed language**
Select the language to be used on the display.
The types of displayed language vary depending on the style number of the DX or MV. If the style number is S2 or later, you can select German or French in addition to English and Japanese.

**Partial expanded display**
If the partial expanded display is set to [Not], the partial expanded display settings of the Meas/Math tab are void.

**Batch function (option /BT1, style number S2 or later)**
You can set the batch function when the style number of the DX or MV is S2 or later.

**Time zone (style number S4)**
Set the time difference from the GMT.
6.5 Configuring the Setup Mode

Network

Setting the TCP/IP

1. Click here (also selectable from [Setting] - [SETUP Basic Setting] - [Comm])
2. Select this tab

- **Set the IP address**
- **Set these addresses when using the DNS**
- **Enter the timeout value when turned ON**

In the case of a CONFIG file, the IP address cannot be configured. When communicating with the DX100/DX200/MV100/MV200 via Ethernet, the IP address, subnet mask, and default gateway must be set on the DX100/DX200/MV100/MV200 beforehand.

Setting the FTP

1. Select this tab.

2. Select the primary or secondary tab.

- **Select the file transfer destination**

By using the FTP function, you can automatically transfer the measured/computed data files to the specified server.
6.5 Configuring the Setup Mode

Setting the serial communication (option /C2, /C3)

Select this tab

Note
When using modbus, you must set the protocol to MODBUS or MODBUSMASTER.

Setting the Modbus Master (option /C2, /C3, style number S4)

Select this tab

Setting the web server (style number S4)

Operator page
Monitor page
6.5 Configuring the Setup Mode

Setting the E-mail (style number S4)

- **Time of transmission**
- **Alarm information**
- **Transmit e-mail message when a system error occurs**
- **Transmit e-mail message when creating a report**

<table>
<thead>
<tr>
<th>Menu</th>
<th>Math</th>
<th>Setting</th>
<th>Setup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm/Relay/Remote</td>
<td>Scan Interval/Memory</td>
<td>Channel</td>
<td>SMTP server name</td>
</tr>
<tr>
<td>Key Lock/Login</td>
<td>Timer</td>
<td>Report</td>
<td>Port number</td>
</tr>
<tr>
<td>Temperature</td>
<td>Date</td>
<td>Alarm</td>
<td>Recipient 1</td>
</tr>
<tr>
<td>Time zone</td>
<td>Network</td>
<td></td>
<td>Recipient 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sender</td>
</tr>
<tr>
<td></td>
<td></td>
<td>System</td>
<td>Scheduled</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Report</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Memory/Out</td>
</tr>
</tbody>
</table>

- **SMTP server name**
  Set the SMTP server name (up to 64 alphanumeric characters) or the IP address of the SMTP server.

- **Port number**
  Set the port number to use. The default value is [25].

- **Recipient**
  Set the transmission destination of the e-mail message using up to 150 alphanumeric characters. You can specify multiple addresses. To specify multiple addresses, delimit the addresses using spaces.

- **Sender**
  Set the e-mail address using up to 64 alphanumeric characters. If the address is not set, the first address set in the recipient box is used as the sender’s address instead.

- **Alarm**
  Transmits an e-mail messages when alarm is active/released.

- **Scheduled**
  Transmits an e-mail message when the specified time is reached.

- **System**
  Transmits an e-mail message during recovery from a power failure, when memory end is detected, or when an error related to the external storage medium and FTP client occurs.

- **Report**
  Transmits an e-mail message when report is created (only on models with the optional computation function /M1).

- **Subject, Header1, Header2**
  Subject: Set the subject of the e-mail message using up to 32 alphanumeric characters.
  Header1 and Header2: Set the string to be attached to the e-mail message using up to 64 alphanumeric characters.
6.6 Adjusting the Setup Data (Checking the Data)

1. Click here ([System] - [Data Adjustment]).

2. If the data are not consistent, the following dialog box opens.

Click here to display the correction list

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

The data are corrected in the following cases:
- When the values of the items of the Meas/Math tab are outside the range.
- When an invalid character string is used

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

Note
Perform the data check before sending the new setup data to the DX100/DX200/MV100/MV200.
6.7 Sending the Setup Data to the DX/MV

1. Click the [Send Data] icon, or select [Comm.] > [Send Setting].
2. The [Network] dialog box appears.
3. Enter the parameters, and click the [OK] button. The [Store] dialog box appears.
4. Click [OK] to start sending the data. A message appears to indicate when data transfer has stopped. Click [OK] to close the message.

You cannot send data to the DX100/DX200/DX200C/MV100/MV200 during memory sampling.

**Note**
To enable the following network settings in the [Setup] tab, turn off and on the main unit after transmission.
- All settings in the [TCP/IP] tab
- All settings in the [Serial] tab
- All settings in the [Modbus master] tab
- All settings in the [Web] tab
6.8 Checking the System Configuration and Initializing Setup Data

Checking the System Configuration

1. Select [System] - [System Configuration].

2. The [System Configuration] dialog box opens. Click the [DX] tab.

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

Initializing the Setup Data

1. Select [Setting] - [Initialize].

2. The [initialize confirmation] dialog box opens.

3. Execute the initialization.
6.9 Saving the Setup Data

For the operating procedure, see section 3.8. The setup file name extension is .pnl.
6.10 Printing the Setup Data

For the operating procedure, see section 1.5. You cannot select [Print Format Settings].
6.11 Starting and Stopping Measurement on the DX/MV, Checking the DX/MV Hardware Information

From this software you can start and stop the DX/MV, and display DX/MV hardware information.

Starting and Stopping Measurement

For the operating procedure, see section 3.10.

Display DX/MV hardware information

For the operating procedure, see section 3.10.

![Hardware Information Table]

- Recorder type
- Firmware version
- Serial number
- Number of measurement channels
- Number of computation channels
- Memory capacity
- Optional
6.12 Characters that can be Used

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

<table>
<thead>
<tr>
<th>SP</th>
<th>#</th>
<th>%</th>
<th>(</th>
<th>)</th>
<th>*</th>
<th>+</th>
<th>-</th>
<th>.</th>
<th>/</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<td>y</td>
<td>z</td>
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<td></td>
</tr>
</tbody>
</table>

**Note**

(‘), (+), (.), and (/) cannot be used for the name of the directory where files are to be saved.
7.1 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>W3453</td>
<td>All program pattern configuration will be initialized. Continue?</td>
</tr>
<tr>
<td>W3454</td>
<td>This pattern configuration will be initialized. Continue?</td>
</tr>
<tr>
<td>W6031</td>
<td>Current value is invalid, because the value is the same with line %d.</td>
</tr>
<tr>
<td>W6035</td>
<td>Contains invalid data. Open this setting?</td>
</tr>
<tr>
<td>W6036</td>
<td>Start Memory sampling/Math.</td>
</tr>
<tr>
<td>W6037</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>
<tr>
<td></td>
<td>(note) %d is a number.</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/dl00002142-en.html">https://y-link.yokogawa.com/software/dl00002142-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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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>
<tr>
<td>E6007</td>
<td>Now calculating. Can't store settings.</td>
<td>Stop calculations (computation).</td>
</tr>
</tbody>
</table>
7.1 Troubleshooting

**Message**

<table>
<thead>
<tr>
<th>Code</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6061</td>
<td>Data can't be processed after the year 2038.</td>
</tr>
<tr>
<td>M6062</td>
<td>Any destroyed A/D converter exists. Any settings may be failed to store.</td>
</tr>
<tr>
<td>M6063</td>
<td>Sending finished.</td>
</tr>
<tr>
<td>M6064</td>
<td>Receiving finished.</td>
</tr>
<tr>
<td>Index</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td></td>
</tr>
<tr>
<td><strong>Numeric</strong></td>
<td></td>
</tr>
</tbody>
</table>

| 4 panel display | 3-25 |
| A/D integrate | 6-17 |
| A/D integration time | 3-50, 4-35 |
| absolute timer | 3-29 |
| access timeout | 3-68, 4-50 |
| action | 3-33 |
| active alarms | 3-64, 4-48 |
| address | 3-63, 3-74, 4-47, 4-54 |
| address setup data | 3-76, 4-55 |
| adjust the setup data | 5-71, 6-26 |
| administrator | 2-2 |
| advanced security option (IAS1), DX1000/DX2000 | 2-1 |
| alarm | 3-10, 4-9, 5-22, 5-44, 5-55, 5-59, 5-66, 5-6-16 |
| alarm/color/remote | 5-44 |
| alarm delay | 3-10, 4-9, 5-55, 6-6 |
| alarm indication | 3-47, 4-34 |
| alarm levels | 3-28 |
| alarm mark | 3-12, 4-12 |
| alarm no logging | 3-49, 4-32 |
| alarm output relay | 3-48, 4-34 |
| alarm value | 3-10, 4-9, 5-55, 6-6 |
| annunciator | 3-28 |
| annunciator mode | 3-49 |
| annunciator sequence | 3-49 |
| annunciator window display color | 3-49 |
| authenticated e-mail transmission | 3-63 |
| Authentication SMTP | 3-63 |
| auto increment | 3-42, 4-32 |
| auto recovery | 3-73, 4-53 |
| auto save | 3-43, 4-33 |
| auto save interval | 5-62, 6-12 |
| B |
| burnout | 5-47 |
| background color | 3-24 |
| backlight saver | 3-24 |
| barcode | 3-72 |
| bar graph | 5-56, 6-7 |
| bar graph direction | 3-24, 4-21 |
| basic environment | 3-39, 4-30 |
| basic setting mode | 3-41 |
| batch | 3-42, 4-32 |
| Batch function | 6-22 |
| Batch function | 3-42, 4-32 |
| batch header | 5-66 |
| batch tab | 3-20, 3-25 |
| baud rate | 3-72, 4-52 |
| boundary | 3-12, 4-11, 5-56, 6-7 |
| burnout | 3-51, 4-36, 6-18 |
| C |
| checking the system configuration | 5-5 |
| calibration | 3-45 |
| certification key | 3-71 |
| changed values | 1-8 |
| change message | 3-42, 4-32 |
| changing the system configuration | 3-3, 4-3 |
| channel | 5-47, 6-18 |
| channel configuration | 3-20 |
| characters that can be used | 3-52, 4-60 |
| checking the system configuration | 3-3, 4-3 |
| check the data | 6-26 |
| check the system configuration | 6-28 |
| clears the entire waveform (circular) | 3-23 |
| client command number | 3-62, 4-46 |
| color | 3-53, 5-59 |
| color band on the scale | 3-12, 4-11 |
| color of the alarm point marks | 3-13 |
| comm. security | 3-43, 4-32 |
| command setting | 3-62, 3-73, 4-46, 4-53 |
| command type | 3-62, 3-73, 4-46, 4-53 |
| comment | 3-27 |
| comment text block | 3-27 |
| comment text fields | 3-27 |
| computation channel, setting one channel at a time | 3-18, 4-17 |
| computation channel settings | 5-58 |
| computation error | 3-44, 4-33 |
| computation ON/OFF | 5-58 |
| connecting to the DX | 2-2 |
| connection limits | 3-70 |
| constants | 3-17, 4-16, 5-59, 6-10 |
| contact input | 5-11 |
| control action | 5-7 |
| control channel settings | 5-32 |
| control function basic settings | 5-7 |
| control function general settings | 5-18 |
| control function settings | 5-26 |
| control groups | 5-26 |
| control input | 5-18 |
| control relay | 5-13 |
| conventions | iv |
| convert reference unit time | 5-50 |
| convert the reference unit time | 6-21 |
| copy | 3-13, 4-12, 6-7 |
| copy and paste | 5-57 |
| creating hardware setup data | 3-5, 4-5 |
| creating new setup data | 2-4 |
| creating setup data | 2-4, 3-2, 4-2, 5-3 |
| current value display | 3-23, 4-20 |
| customizing the display selection menus | 3-37, 4-29 |
| customizing the FUNC key menus | 3-37, 4-29 |
| custom menu | 3-37, 4-29 |
| D |
| DAQSTANDARD, overview | 1-1 |
| data adjustment | 5-71, 6-26 |
| data kind | 3-39 |
| data length | 3-36, 3-72, 4-52 |
| data sheet | 3-40, 4-30 |
| daylight saving | 6-15 |
| daylight saving time | 3-19 |
| decimal place | 3-8, 4-7 |
| decimal point | 5-54, 6-5 |
| decimal point type | 3-41, 4-31 |
| default gateway | 3-57, 4-41 |
| default setting | 5-35 |
| detail setting | 3-41, 4-31 |
| detect | 5-55 |
| device information | 2-2 |
| DHCP | 3-57, 3-58, 4-41, 4-42 |
Index

difference computation ....................... 3-8, 4-7, 5-54, 6-5
differential input .................................. 3-8, 4-7
DIO operation monitoring ....................... 5-28
directory name ..................................... 3-34, 4-27
display .............................................. 5-62
display color ......................................... 3-12, 4-11, 5-56, 6-7
display direction (messages) ..................... 3-23, 4-20
display direction (trend) ......................... 3-23, 4-20
displayed language ................................. 5-51
displaying setup data .............................. 2-1
display settings ................................... 5-62
display span ......................................... 3-16, 4-15, 5-54, 5-59, 6-5, 6-10
Display update interval ......................... 6-12
display update interval ......................... 5-62
display zone ......................................... 3-11, 4-10, 5-55, 6-6
division .............................................. 5-56, 6-7
DNS accession ..................................... 3-58, 4-42
domain name ....................................... 3-57, 3-58, 4-41, 4-42
domain primary .................................... 3-57, 4-41
domain secondary .................................. 3-57, 3-58, 4-41, 4-42
domain suffix search order ...................... 3-58, 4-42
DX-P Hardware Configurator .................. 1-1

E

encryption ........................................ 3-71
eternet ............................................ 2-2, 3-57, 4-41
event action ....................................... 3-32, 4-26
event date .......................................... 3-36, 4-28
exiting ............................................. 1-3
expression ......................................... 5-58

F

FAVORITE key action ............................. 3-24
development ........................................ 5-63, 6-13
development kind .................................. 3-44, 4-34
first/last (client channels) .................... 3-62, 4-46
first/last (master channel numbers) ........... 3-74, 4-53
first day of the week ......................... 3-40
fixed (alarm mark) ............................... 3-12, 4-12
fixed IP address .................................. 3-57, 4-41
free (event data) .................................. 3-36, 4-28
FTP .............................................. 6-23
FTP connection destination, setting of ........ 3-60, 4-43
FTP server ....................................... 3-40, 4-31
FTP transfer at signing ......................... 3-46
FTP transfer file .................................. 3-59

G

graph .............................................. 3-11, 4-10, 5-32, 5-56, 5-59, 6-7
green band ......................................... 3-12, 4-11
group .............................................. 3-20, 4-19, 5-64, 6-14
group/trip line .................................... 5-64
group name ....................................... 5-64, 5-65, 6-14, 6-15

H

hardware configurator window .................. 5-1
handshaking ........................................ 3-72, 4-52
hardware .......................................... 1-2
Hardware Configurator .......................... 1-1
hardware information ......................... 3-81, 4-59, 5-75, 6-31
header ............................................ 3-64, 3-65, 3-66, 3-67, 4-48, 4-49
history key ........................................ 4-21
host-name register ................................ 3-58, 4-42
host name ........................................ 3-57, 3-58, 3-61, 4-41, 4-42, 4-45
host principal .................................... 3-71
HTTP server ....................................... 3-40, 4-31
hysteresis ......................................... 3-48, 4-35

I

input type ........................................ 5-54
internal loop ...................................... 5-8
interval ........................................... 5-59
images ............................................ 5-46
include instantaneous value .................. 3-64, 3-65, 4-48
include source URL .............................. 3-64, 3-65, 3-66, 3-67, 4-48, 4-49
initialize .......................................... 6-28
initializing the setup data .................... 3-4, 4-4, 5-5, 6-28
initial path ....................................... 3-60, 4-44
Initial program pattern ......................... 5-35
input filter ....................................... 6-6
input type ........................................ 3-7, 4-7, 6-5
instrument information server ................ 3-40, 4-31
inter-block delay .................................. 3-73, 4-53
internal switch .................................... 3-47, 4-34
interval ........................................... 3-65, 4-48, 6-10
interval (rate-of-change alarm) ............... 3-47, 4-34
invalid user ....................................... 2-2
IP address ........................................ 3-57, 3-58, 4-41, 4-42

K

KDC server name ................................ 3-71
keep alive ......................................... 5-58
key lock .......................................... 3-54, 3-56, 4-38, 5-48, 6-19
key security ..................................... 3-43, 4-32

L

language ........................................... 5-51
linearize .......................................... 5-25
login ................................................ 5-48
language .......................................... 3-41, 4-31, 6-22
line width of the trend ......................... 3-23, 4-20
Load Changed Settings ......................... 1-5
loading existing setup data ................. 2-5, 3-2, 4-2, 5-4
loading setup data .............................. 2-3, 3-1, 4-1, 5-2
login .............................................. 6-19
login name ....................................... 3-60
low-cut ........................................... 3-8, 4-8

M

manual ........................................... 1-5
manual sample .................................... 3-31, 4-25
manual save ....................................... 5-63, 6-13
master command number ....................... 3-73, 4-53
match time timer .................................. 3-30, 4-25
math start ......................................... 3-32, 4-26
measurement channels settings ............... 5-53
measurement function basic settings ........ 5-44
measurement start/stop ......................... 3-80
media FIFO ........................................ 3-43, 4-33
memory alarm time .............................. 5-51, 6-22
memory sample ................................... 5-46, 6-17
memory sampling ................................. 3-11
memory stop at signature ....................... 3-45
menu bar ........................................... 3-4
menu display ..................................... 3-41
message .......................................... 3-22, 3-26, 4-20, 4-23, 5-63, 6-13
message/file ..................................... 5-63
message to all groups ......................... 3-42, 4-32
modbus client .................................... 3-61, 4-45
modbus master .................................... 3-73, 4-53
modbus server .................................... 3-40, 4-31
mode ................................................ 3-7, 4-7, 5-54, 6-5
monitoring function ............................ 2-2
monitor page.............................................. 3-69, 4-51
moving average ........................................ 3-11, 4-10, 5-55, 6-6
N
network..................................................... 5-67, 6-23
odeName address........................................ 3-75
no logging.................................................. 3-49
number of blocks....................................... 5-46, 6-17
number of channels..................................... 5-64, 6-14
number of samples....................................... 5-59, 6-10
O
one channel setting ..................................... 5-57
one computation channel setting ...................... 5-60
operating system........................................ 1-2
operation for each remote control terminal .......... 3-53
operation related........................................ 5-24
operator.................................................... 4-17, 5-60, 6-11
operator page............................................. 3-69, 4-51
output directory format ................................. 3-59
overflow..................................................... 3-44, 4-33
overflow data............................................. 3-44, 4-33
P
parity.......................................................... 3-72, 4-52
partial........................................................ 3-42, 4-32, 5-33, 5-56, 5-59
partial expanded display............................... 3-12, 4-11, 5-51, 6-7, 6-22
password.................................................... 3-60, 3-71, 5-48, 6-19
password (login function).............................. 3-55, 4-39
password management................................... 3-43, 3-71
paste .......................................................... 3-13, 4-12, 6-7
PASV mode.................................................. 3-60, 4-43
pattern name .............................................. 5-35
pattern number.......................................... 5-35
PID............................................................. 5-22
POP3.......................................................... 3-63, 4-47
POP3 login................................................... 3-64
port number ................................................ 3-40, 3-60, 3-61, 3-63, 3-71, 4-31, 4-43, 4-45, 4-47
position ..................................................... 5-56, 6-7
power-fail message ...................................... 3-42, 4-32
pre-trigger length........................................ 5-46, 5-47, 6-17
preset display............................................. 3-24, 4-21
printer setup.............................................. 1-10
print example (table)..................................... 1-7
print example (text)....................................... 1-9
print format settings..................................... 5-38
printing setup data...................................... 1-10, 5-74
print preview.............................................. 1-10
priority to the display of alarms........................ 3-49
process type.............................................. 3-45
products covered in this manual......................... iv
PROFIBUS-DP............................................. 3-75
program control......................................... 5-34
program pattern.......................................... 5-37
program pattern end signal............................. 5-41
protocol.................................................... 3-72, 4-52
PV/SP computation function............................ 5-20
PV/SP equation.......................................... 5-20
PV event.................................................... 5-20
PV event-relay output................................... 5-41
PV event display.......................................... 5-39
PV event hysteresis....................................... 5-27
R
ramp.......................................................... 5-38
ramp-rate time unit...................................... 5-38
range ........................................................ 3-7, 4-7, 5-54, 6-5
read cycle................................................... 3-11, 5-55, 6-6
recipent..................................................... 3-64, 3-65, 3-66, 3-67, 4-48, 4-49
ref. time.................................................... 3-65, 4-48
reference channel........................................ 3-8, 4-7, 5-54, 6-5
reflash ....................................................... 3-47, 4-34
regi.......................................................... 3-62, 3-74, 4-46, 4-54
relative timer.............................................. 3-29
relay.......................................................... 3-10, 3-40, 4-9, 6-6
relay action................................................ 3-43, 4-34
relay AND.................................................. 5-44, 6-16
release number........................................... iv
remote...................................................... 5-45, 6-16
remote controller ID...................................... 3-41
remote control terminals................................. 3-53
repeat action.............................................. 5-40
repeat frequency.......................................... 5-40
report ....................................................... 3-44, 3-52, 4-33, 4-37, 5-50
report channel........................................... 5-50, 6-21
report groups............................................. 3-52
report layout.............................................. 3-38
report settings (e-mail)................................ 3-67, 4-49
report templates........................................ 3-44
restore...................................................... 1-5
retrials...................................................... 3-73, 4-53
revision history.......................................... v
RJ-45......................................................... 3-51, 4-36, 5-47, 6-18
rolling average.......................................... 3-17, 4-16, 5-59, 6-10
RS-232 settings......................................... 3-72, 4-52
RS-422/485.................................................. 3-72, 4-52
S
save .......................................................... 6-17
save interval............................................. 3-22
saving setup data........................................ 2-1
saving the setup data.................................... 3-78, 4-57, 5-73
scale ......................................................... 5-54, 6-5, 6-7
scale over................................................... 3-43, 4-32
scan interval............................................. 3-7, 4-7
scan interval/memory.................................... 5-45
scheduled settings (e-mail)............................ 3-65, 4-48
screen display........................................... 3-20, 4-18, 6-12
screen type............................................... 5-65, 6-15
segment setting method.................................. 3-35
segment shift action..................................... 5-39
segment time............................................. 5-38
segment time ramp grade setting...................... 3-35
segment time setting method......................... 5-35
send......................................................... 5-72, 6-27
sender....................................................... 3-63, 4-47
sending setup data...................................... 3-76, 4-55
sending setup data to the CX........................... 5-72
sending the setup data.................................. 3-76
serial communication.................................... 2-2, 3-72, 6-24
server (server number).................................. 3-52, 4-46
server number............................................ 3-61, 4-45
server primary............................................ 3-57, 3-58, 4-41, 4-42
server secondary........................................ 3-57, 3-58, 4-41, 4-42
service port.............................................. 3-40, 4-31
setpoints................................................... 5-38
setting function......................................... 2-2
setting one channel at a time.......................... 3-14, 4-13, 6-8
setting one computation channel at a time............ 3-56, 6-11
setting the system configuration........................ 5-5
setup....................................................... 5-49, 6-19
setup data adjustment.................................. 5-71
setup data other than the address setup data........ 3-76
Index
Index

setup mode ........................................ 6-16
signature ......................................... 3-45
sign from recorder ............................... 3-45
SMTP server name ................................ 4-47
SMTP server name .............................. 3-63
SNTP server ..................................... 3-40, 4-31
soak .................................................. 5-38
span ................................................. 3-16, 4-15
span upper ....................................... 3-7, 4-7
specified values ................................ 3-8, 4-7, 5-54, 6-5
start code ........................................ 5-36
starting ............................................ 1-3
starting and stopping measurement ........ 5-75
starting the DX Configurator ............... 6-2
Start target setpoint .......................... 5-35
status relay ...................................... 3-40, 4-31
structure of the file name .................... 3-34, 4-27
style number ...................................... iv
subject .......................................... 3-64, 3-65, 3-66, 3-67, 4-48, 4-49
subnet mask .................................... 3-57, 4-41
sum scale ........................................ 5-59, 6-10
system configuration ........................ 1-8, 3-3, 4-3, 5-1, 6-28
system setting (e-mail) ....................... 3-66, 4-49

tag ........................................ 3-11, 3-41, 4-10, 4-31, 5-32, 5-55, 5-59, 6-6, 6-22
tag no ............................................. 3-11, 3-41
tarting the hardware configurator .......... 5-1
TCP/IP .......................................... 6-23
temperature unit ................................ ii
terms and Conditions of the Software License .......... ii
time adjust on start action ................. 3-68, 4-50
time deviation limit .......................... 3-39, 4-30
Time event ...................................... 5-40
Time event-relay output ..................... 5-41
time off color .................................. 3-49
timeout (command timeout) .................. 3-73, 4-53
timeout function .............................. 3-58, 4-42
time per revolution ......................... 3-22
timer ............................................. 3-29, 4-24, 5-49, 6-10, 6-20
timer action .................................... 3-30, 4-25
time zone ......................................... 3-39, 4-30, 5-52
TLOG computation ............................ 3-16, 4-15, 5-59, 6-10
trademarks ...................................... i
transfer wait time ............................ 3-59
trend type ....................................... 3-42
trip line ......................................... 3-21, 4-19, 5-64, 6-14

u

unit .............................................. 3-16, 3-61, 4-15, 4-45
unit no ......................................... 3-61, 4-45
usable characters ............................. 5-76
user .............................................. 2-2
user's manual .................................. 1-4
user ID .......................................... 5-49, 6-19
user key ........................................ 5-66, 6-15
user name ...................................... 5-49, 6-19
user registration ............................. 3-55, 4-39

v

value on error ................................. 3-44, 4-33
version .................................... iv, 1-11
version information ......................... 1-11
Viewer ......................................... 1-1
view groups .................................. 3-25, 4-22, 5-65, 6-15