User's
Manual

SMARTDAC+

SMARTDAC+ STANDARD
Hardware Configurator
User's Manual

YOKOGAWA
Yokogawa Electric Corporation

IM 04L61B01-02EN
17th Edition

Introduction

This manual explains how to use SMARTDAC+ STANDARD Hardware Configurator. To ensure correct use, please read this manual thoroughly before beginning operation.
For details on the functions related to SMARTDAC+ series options, see also the manual for the options.

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the software's performance and functions.
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End of document

How to Use This Manual

Structure of the Manual

This manual contains the following six chapters.

Chapter	Title and Description
1	**Before Using the Product** Provides an overview of Hardware Configurator. It also explains the PC system requirements, how to start the software, the screen configuration, and the menus.
2	**Creating Setup Data** Explains how to display, create, edit, save, and print setup data as well as how to control the main unit using this software.
3	**Connecting to the Main Unit** Explains how to receive and send setup data as well as how to control the main unit using this software.
4	**Creating Setup Data for GX/GP/GMs with the Advanced Security Function (/AS)** Explains how to display, create, edit, and save configuration files (.GSL extension) for GX/GP/GMs with the advanced security function (/AS) as well as how to control the GX/GP/GM from this software.
5	**Program Pattern Settings for GX/GP/GMs with the Program Control Function (/PG)** Explains settings of GX/GP/GM program patterns with the loop control function (PID control module) and program control function (option, /PG).
6	**Troubleshooting** Provides a list of errors and messages.

Scope of This Manual

This manual does not explain the basic operations of your PC's operating system. For this information, read the Windows user's guide or related materials.

Conventions Used in This Manual

Unit	
K	Denotes 1024. Example: 768K (file size)
k	Denotes 1000.
Notes	
	*Improper handling or use can lead to injury to the user or damage to the instrument.* This symbol appears on the instrument to indicate that the user must refer to the user's manual for special instructions. The same symbol appears in the corresponding place in the user's manual to identify those instructions. In the manual, the symbol is used in conjunction with the word "WARNING" or "CAUTION."
WARNING	Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.
CAUTION	Calls attention to actions or conditions that could cause light injury to the user or cause damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.
Note	Calls attention to information that is important for the proper operation of the instrument.
Reference Item	
▶	Reference to related operation or explanation is indicated after this mark. Example: ▶ section 4.1
Conventions Used in the Procedural Explanations	
Bold characters	Indicates character strings that appear on the screen. Example: **Volt**
Procedure	Carry out the procedure according to the step numbers. All procedures are written under the assumption that you are starting operation at the beginning of the procedure, so you may not need to carry out all the steps in a procedure when you are changing the settings.
Explanation	The explanation section describes limitations and related information about the operation.

Images

The images used in this manual may differ from those that actually appear in the software. Such differences do not affect the procedural explanation.

Products That This Manual Covers

Product		Version
Paperless Recorders	GX10-1/GP10-1 GX20-1/GX20-2 GP20-1/GP20-2	Release number 5 and later. Up to firmware version R5.03.xx. In the explanations in this manual, these are referred to as the “Main unit” or “GX/GP.”
Data Aqcuisition System	GM10-1/GM10-2	Release number 5 and later. Up to firmware version R5.03.xx. In the explanations in this manual, these are referred to as the “Main unit” or “GM.”
SMARTDAC+ STANDARD	Hardware Configurator	Up to R5.03.xx.

Note: When there is no need to distinguish between GX/GP and GM, “main unit” is used collectively to refer to them.

Revision History

Edition	Software Ver.	Explanation
1	R1.01	New edition
2	R1.02	Modified for version R1.02.xx. Added descriptions for the GX10, GP10, and GP20. Modified system requirements (support for IE9) and added descriptions for the multilingual display feature. Improvements to descriptions.
3	R1.03	Modified for version R1.03.xx. Improvements to descriptions.
4	R2.01	Modified to support setup data for GX/GP firmware version R2.01.xx (release number 2). • Hardware models GX20-2 and GP20-2, I/O Base Unit (Expandable I/O), and the new mA module, DIO module, and IO module added to GX/GP R2. • GX/GP advanced security function (/AS) • New menus (Read comparison source, Load Changed Settings, and Validation print window) Modified system requirements (support for Windows 8.1, IE10, and IE11). Modified for functional and user-interface improvements. Improvements to descriptions.
5	R2.02	Modified to support GM10-1/GM10-2. • Modified to support the GM10 system configuration. • Added descriptions for Bluetooth communication and USB communication with the main unit. • Added “Reconfiguration” to the description of the main unit operation. Other improvements to descriptions. Modified to support GX/GP firmware version R2.02.01. • Modified to support the “Pulse” input range for DI module. • Added “DARWIN” to the Receiver - Function of the serial communication..
6	R2.03	Modified to support GM firmware version R2.03.01. • GM advanced security option (/AS) • Added descriptions for the communication port detection function that is available when serial communication, USB communication, or Bluetooth communication is selected.
7	R3.01	Modified to support setup data for GX/GP/GM firmware version R3.01.xx (release number 3). Hardware and options that were added in GX/GP/GM R3 • Pulse input module (GX90XP-10-11) • Aero space heat treatment (/AH) • Multi-batch function (/BT) • OPC-UA server (/E3) • SLMP communication (/E4).

Edition	Software Ver.	Explanation
8	R4.01	Modified to support setup data for GX/GP/GM firmware version R4.01.xx (release number 4). Hardware and options that were added in GX/GP/GM R4. • New modules (Analog output, High-speed AI, 4-wire RTD, PID control.) • Program control function (/PG) • Logic math function (/MT) • Measurement modes (High-speed AI , Dual interval)
9	R4.02	Modified to support setup data for GX/GP/GM firmware version R4.02.xx (release number 4). Hardware and options that were added in GX/GP/GM. • Calibration correction for communication channels
10	R4.03	Modified to support setup data for GX/GP/GM firmware version R4.03.xx (release number 4). Hardware and options that were added in GX/GP/GM. • High withstand voltage AI module (GX90XA-10-V1)
11	R4.06	Modified to support setup data for GX/GP/GM firmware version R4.03.xx (release number 4). Functions added to the hardware configurator. • Added descriptions for the editing segment time by the ramp method function.
12	R4.07	Modified to support setup data for GX/GP/GM firmware version R4.07.xx (release number 4). Functions added to the hardware configurator. • Functional enhancement to support data integrity. • Enhancement to the difference display function of validation printing.
13	R4.08	Modified to support setup data for GX/GP firmware version R4.08.xx (release number 4), GM firmware version R4.07.xx (release number 4). Functions added to the hardware configurator. • Future pen function
14	R4.09	Modified to support setup data for GX/GP firmware version R4.09.xx (release number 4), GM firmware version R4.09.xx (release number 4). Functions added to the hardware configurator. • Added number of previous passwords to password policy (/AS option).
15	R5.01	Modified to support setup data for GX/GP/GM firmware version R5.01.xx (release number 5). Functions added to the hardware configurator. • Equipment/quality prediction Change PC system requirements. (Support Windows 11, Microsoft Edge. Delete the Internet Explorer)
16	R5.02	Modified to support setup data for GX/GP/GM firmware version R5.02.xx (release number 5). Functions added to the hardware configurator. • NW module settings (PROFINET module).
17	R5.03	Modified to support setup data for GX/GP/GM firmware version R5.03.xx (release number 5). Functions added to the hardware configurator. • Cross realm authentication function.

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Download the latest version of the Hardware configurator from the following URL:
www.smartdacplus.com/software/en/

Download the latest manuals of the Hardware configurator, and GX/GP from the following URL: www.smartdacplus.com/manual/en/

Related Manuals

Manual Name	Manual No.
Model GX10/GX20/GP10/GP20 Paperless Recorder First Step Guide	IM 04L51B01-02EN
Model GX10/GX20/GP10/GP20 Paperless Recorder User's Manual	IM 04L51B01-01EN
Model GX10/GX20/GP10/GP20 Advanced Security Function (/AS) User's Manual	IM 04L51B01-05EN
Data Acquisition System GM First Step Guide	IM 04L55B01-02EN
Data Acquisition System GM User's Manual	IM 04L55B01-01EN
Data Acquisition System GM Advanced Security Function (/AS) User's Manual	IM 04L55B01-05EN
GX10/GX20/GP10/GP20/GM10 Multi-batch Function (/BT) User's Manual	IM 04L51B01-03EN
GX10/GX20/GP10/GP20/GM10 OPC-UA server (/E3) User's Manual	IM 04L51B01-20EN
GX10/GX20/GP10/GP20/GM10 SLMP Communication (/E4) User's Manual	IM 04L51B01-21EN
GX10/GX20/GP10/GP20/GM10/GX90NW PROFINET Communication User's Manual	IM 04L51B01-22EN
Model GX10/GX20/GP10/GP20/GM10 Loop Control Function, Program Control Function (/PG) User's Manual	IM 04L51B01-31EN
Data Acquisition System GM Integration Bar Graph Function (/WH) User's Manual	IM 04L55B01-07EN

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Contents

Chapter 3 Connecting to the Main Unit

Chapter 4 Setup Data for GX/GP/GM with Advanced Security Function (/AS)

Chapter 5 Program Pattern Setting for GX/GP/GMs with the Program Control Function (/PG)

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1.1 Overview of Hardware Configurator

1.1.1 Hardware Configurator Features

SMARTDAC+ STANDARD Hardware Configurator is a PC software application for creating setup data for the GX/GP Paperless Recorder and GM Data Acquisition System.
You can use it to create, edit, save, and print setup data.
You can also use it to exchange data with a GX/GP or GM and control it via communication.

Web-based Offline Application

You can use a Web browser (Microsoft Edge, Google Chrome) on your PC to create and edit setup data.
You only need this software and a browser; you do not have to configure communication parameters.

Creating and Editing Setup Data

You can create new setup data by specifying the model and options.
You can also edit existing setup data.

Loading Changed Settings into Setup Data

You can load the settings from a separate file and apply them to the current setup data.

Saving and Loading Setup Data

You can save the data that you create to your PC and load configuration files that have been saved on your PC.

Sending and Receiving Setup Data

You can send setup data to and receive data from a main unit via communication.

Printing Setup Data

You can print setup data.

Loading Comparison Source and Validation Printing [1]

You can load a reference configuration file or a program pattern [2] and display a window for comparing and verifying the current setup data against the reference. The displayed screen can be printed and used for validation.

Controlling Main Unit

You can start and stop recording or computing on a main unit via communication.

Retrieving Information from Main Unit

You can retrieve information from a main unit via communication.

Program Pattern Setting [2]

You can display, edit, or save program pattern files of GX/GP/GM with the PID control module and program control function (option, /PG). These program pattern files can be sent to or received from a main unit.

1 The two sets of setup data that are compared must be of the same system configuration.
2 Program pattern is used on GX/GP/GM with the PID control module and program control function (option, /PG). You can set a program pattern from the “Program pattern tab of the Hardware Configurator” or “Program Pattern Setting”.

1.1.2 Installation and Version Updating

Download the latest installer from YOKOGAWA's website to install and update the software. From the **Help** tab, you can view the software version information and access the link to the website.

Note

- Before installing the software, check that your PC is not infected by a virus.
- Close all other software applications before installing this software.
- To reinstall the software, uninstall the current software first.
- The “Countries/regions except Japan” selection dialog box appears during installation. Select the country that you will use the software in.
- As this software uses a Web browser, a default value is set for the HTTP port number in advance. If the default port number is used, this software is started using a non-used port in 34443-65535. The default port numbers for the “Hardware Configurator” and “Program pattern setting” are as follows.
  Hardware Configurator: 34443
  Program pattern setting: 34503

1.2 PC System Requirements

1.2.1 Hardware

PC

A PC running Windows 10, or Windows 11.

CPU and Main Memory

PC Configuration	Requirements	
CPU	Windows 10	Core2 Duo E6300 or faster x64 or x86 processor.
	Windows 11	Core-i5 or faster and 8th generation later Intel processor, 8GB or more
Memory	Windows 10	2GB or more.
	Windows 11	8GB or more.
Hard Disk	Windows 10	Free space of at least 100 MB
	Windows 11	Free space of at least 64 GB.
Mouse	A mouse compatible with the OS.	
Display	A display that is compatible with the OS	
Communication port	Ethernet port compatible with the OS and TCP/IP protocol.	
Printer	A printer compatible with your Windows system (a printer driver for the OS is required)	

1.2.2 Operating System

OS	Edition	Service pack	32-bit/64-bit
Windows10	Home		32- or 64-bit edition
	Pro		32- or 64-bit edition
	Enterprise		32- or 64-bit edition
	Enterprise LTSB		32- or 64-bit edition
	Enterprise LTSC		32- or 64-bit edition
Windows11	Home		64-bit edition
	Pro		64-bit edition
	Enterprise		64-bit edition

- Yokogawa will also stop supporting OSs that Microsoft Corporation no longer supports.

1.2.3 Web Browser

Compatible Browser
Microsoft Edge, Google Chrome

Note

- Microsoft Edge is only supported when based on Chromium.
- Launching using Internet Explorer and Internet Explorer Mode (Microsoft Edge) is not guaranteed.

1.2.4 Display Languages

Language	System Environment
Japanese	A web browser and an OS support Japanese characters.
English	A web browser and an OS support English characters.
German	A web browser and an OS support German characters.
French	A web browser and an OS support French characters.
Chinese	A web browser and an OS support Simplified Chinese characters.
Russian	A web browser and an OS support Cyrillic characters.
Korean	A web browser and an OS support Korean characters.
Italian	A web browser and an OS support Italian characters.
Traditional Chinese	A web browser and an OS support Traditional Chinese characters.

1.2.5 Other Operating Conditions

To view the user's manual of this software, you need to use Adobe Acrobat Reader by Adobe Systems (the latest version is recommended).

1.2.6 Security Measures

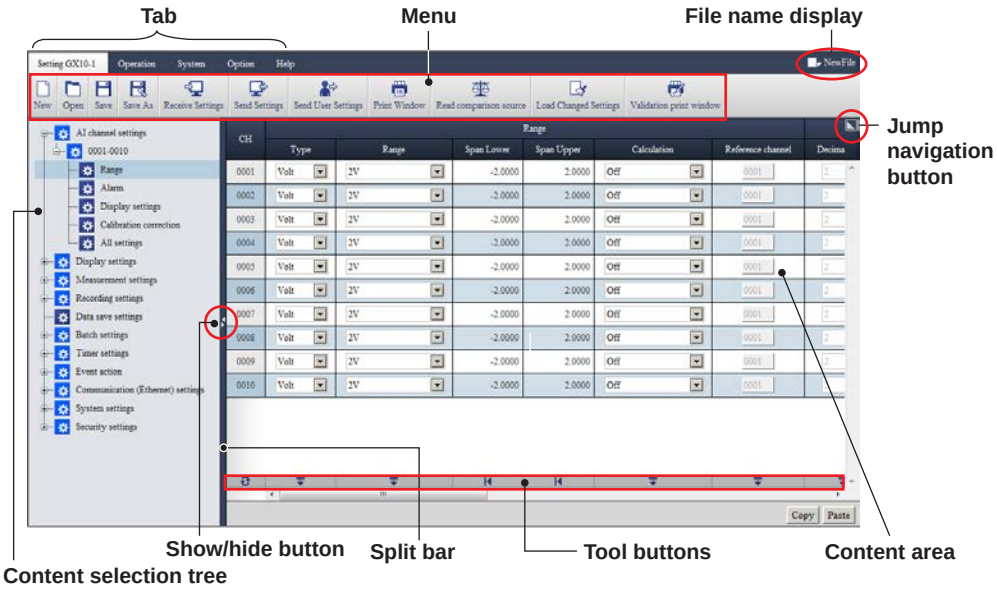
To deal with security threats, we recommend that you take security measures.

- Apply restrictions to PC network connections.
  We recommend that you use an isolated network.
- Manage external media properly.
  Prevent malware intrusion through external media, unauthorized file operations on external media, and information leakage due to misplacement.
- Set a strong password and manage it properly.
  Use a password that is at least eight characters in length, and include three types of characters from uppercase letters, lowercase letters, numbers, and symbols. Change the password regularly.
- Install antivirus software.
  This software has been verified to work on a PC running McAfee VirusScan Enterprise Ver. 4.8.0.887.

1.3 Window and Menus

1.3.1 Window and Menu Configuration

Hardware Configurator's menu consists of the tab, menu, and file name display area, as shown below.



Tab and Menu

The menu is tabular. Click a tab to activate it, and the menu will switch accordingly. Double-click a tab to hide or display the menu bar. The following table shows the menu items and their descriptions.

Tab	Menu	What You Can Do
Setting [1] GX10-1 GX20-1 GX20-2 GP10-1 GP20-1 GP20-2 GM10-1 GM10-2	New	Create a new configuration file. Open a system configuration setting dialog for creating a new configuration file.
	Open	Load a configuration file from a PC.
	Save	Overwrite the file.
	Save As	Save a new file to the PC.
	Receive Settings	Receive the GX/GP setup data.
	Send Settings	Send the current setup data to the GX/GP.
	Send User Settings	Send only the user settings to the GX/GP via communication.
	Print Window	Open a window used to print setup data.
	Read comparison source	Load the comparison source data for comparing the setup data.
	Load Changed Settings	Load the settings from a separate configuration file and apply them to the data that is currently displayed.
	Validation print window	Display the window for printing validation information.

Tab	Menu	What You Can Do
Operation [1]	Start Recording	Start recording of a main unit.
	Stop Recording	Stop recording of a main unit.
	Start Computing	Start computation of a main unit.
	Stop Computing	Stop computation of a main unit.
	Run Control	Start control of a main unit.
	Stop Control	Stop control of a main unit.
	Run Program Control	Start program control of a main unit.
	Reset Program Control	Stop program control of a main unit.
	Hardware Info.	Receive and display the GX/GP/GM status and option information.
	Reconfiguraton	Reconfigure the GM system.
System	System Config.	View and change the system configuration.
	Initialize	Initialize the current setup data.
Option	Display Option	Specify the display option (Language, Date format, Decimal Point Type) of Hardware Configurator.
	Setting Option [3]	Specify the setting option (Segment time editing method) of Hardware Configurator.
	Port No.	Specify the port number of Hardware Configurator.
Help	Instruction Manual [2]	View the user's manual.*
	Version	View the Hardware Configurator version.
	Web to update	Visit the Website to download the latest version of Hardware Configurator.

1 From this tab, you can expand, save, and send/receive program pattern files of GX/GP/GM with the PID control module and program control function (option, /PG). For details of program pattern setting, read Chapter 5.
2 If the language displayed in the browser is English, Japanese, or Chinese, the user's manual in the corresponding language will be displayed. If another language is displayed, the English user's manual will be displayed.
3 Appears on models with the program control (/PG) option when one or more PID modules are configured.

File Name Display

The configuration file name is displayed in this area.
A specific file name or "New File" will be displayed.

A specific file name will be displayed under the following conditions.
- When a specific file is loaded and displayed.
- When a file is saved using the Save As command.

"New File" will be displayed under the following conditions.
- When Hardware Configurator starts.
- When you click **New**.
- When a connection is established with a main unit and the setup is received.

Content Selection Tree

The content selection tree is used to select the items (edit items) you want to edit.
When you click an item in the content selection tree, the items displayed in the content area (right side) change accordingly.

Content Area

The content area displays setup item details.
It displays the settings for the item selected in the content selection tree.
Immediately after Hardware Configurator starts, this area shows channel settings. If there are no channel settings, this area shows display settings.

Split Bar

You can use the split bar to change the window layout.
Drag the split bar to change the panel width of the content selection tree area and content area. Click the show/hide button in the center to show and hide the content selection tree.

Show/hide Button

You can use this button to show or hide the Content Selection Tree.

Copy and Paste Buttons

The Copy and Paste buttons are used to copy and paste settings when you edit setup items.
Operation: ▶ **Copying the Selected Range and Pasting**

Jump Navigation Button

You can use this button to jump to the specified setup item.
Operation: ▶ **Using the Jump Function**

Tool Buttons

You can use the tool buttons to collectively edit items according to the function assigned to each button.
Operation: ▶ **Editing Using Tool Buttons**

1.3.2 Menu Operation and Basic Workflow

The basic procedure for using Hardware Configurator is shown below.
For more details, see chapter 2, “Creating Setup Data.”

Procedure

1. Start Hardware Configurator.
2. Click a tab (**Setting**, **Operation**, **System**, or **Option**).
3. Select a menu item (**New**, **Open**, **Start Recording**, **Stop Recording**, etc.).
4. Perform operations in the displayed dialog box.
5. To edit settings, select a title in the content selection tree. Edit the displayed settings.
6. Process the configuration file that you created or edited by selecting appropriate commands (**Save, Send Settings**, etc.) from the tab and menu.
7. Close Hardware Configurator.

1.3.3 Control Setting and Program Pattern Setting

On SMARTDAC+ Hardware Configurator (R4.01 or later), you can create settings of the loop control function (PID control module: GX90UT-02-11) and program control function (option, /PG) of GX/GP/GM.

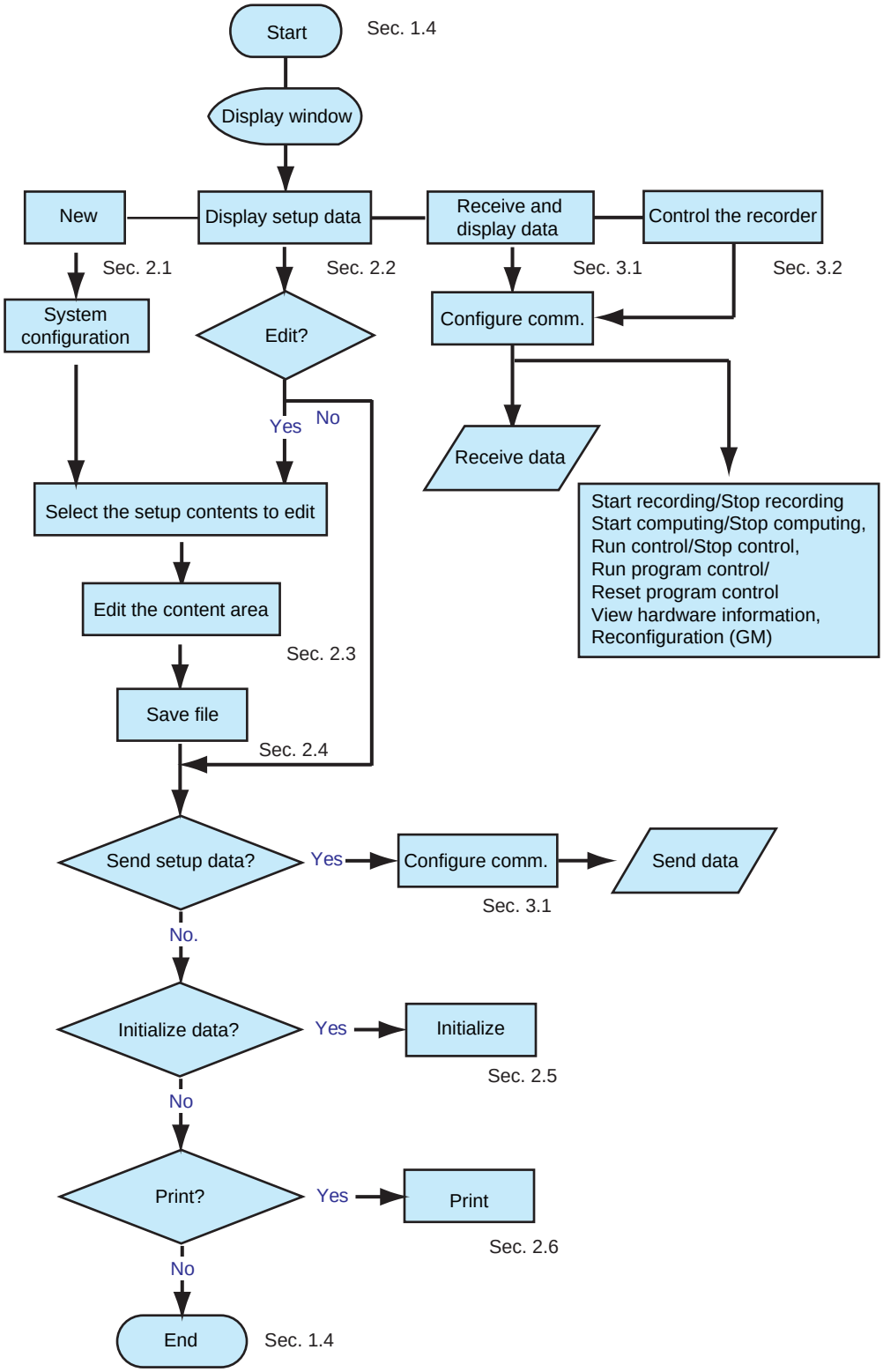
- For the details of the control function, read the following user’s manuals.
  “Model GX10/GX20/GP10/GP20/GM10 Loop Control Function, Program Control Function (/PG) User’s Manual” (IM 04L51B01-31EN)

To configure control settings on the Hardware Configurator, you need to specify “PID control module” and “Program control” in System Config.: ▶ **2.1.1 Creating a File in Accordance with System Configuration**

For details of program pattern setting, see **Chapter 5 Program Pattern Setting for GX/GP/GMs with the Program Control Function (/PG)**.

1.3.4 Workflow

The features and workflow of Hardware Configurator are illustrated below.



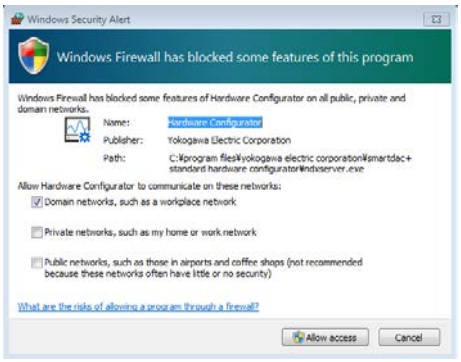
1.4 Starting and Closing Hardware Configurator

1.4.1 Starting the Software

Procedure

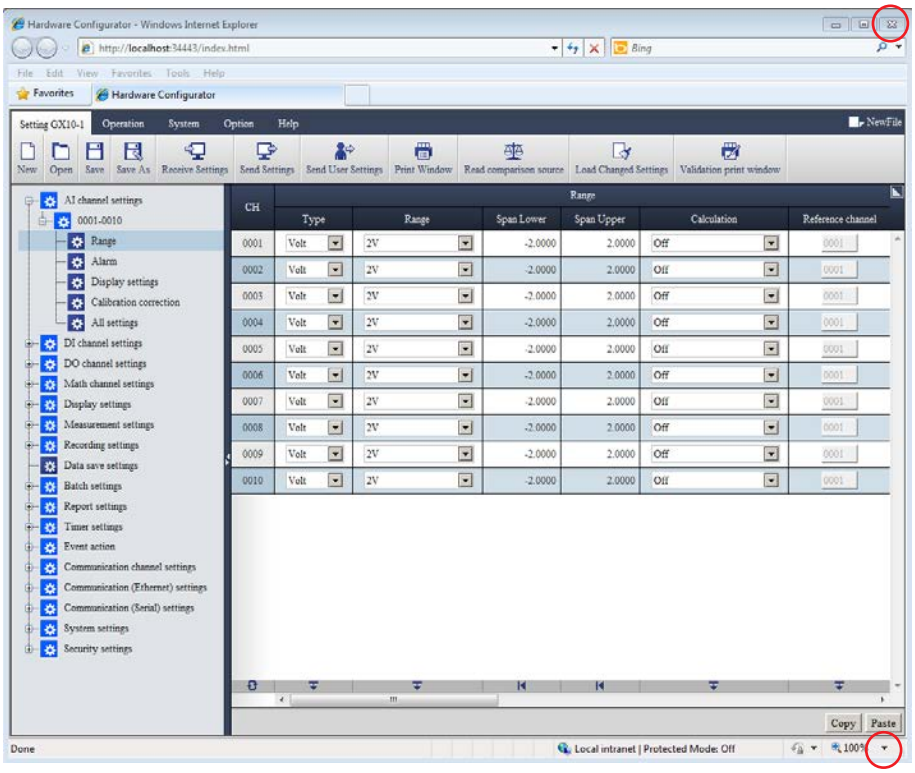
1 From the **Start** menu, select **All Programs** - **SMARTDAC+ STANDARD** - **Hardware Configurator**.

The first time Hardware Configurator starts after installation, the Windows Security Alert dialog box appears (the figure below is the Windows 7 screen capture). Click "Allow access."



Hardware Configurator starts, and the following window appears.

Close button



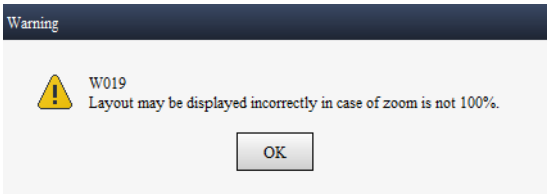
Zoom Level button

Note

- The default settings are the system configuration of the GX10.

Edge, Chrome Zoom Level

Set the browser zoom level (on the **View** menu, or in the lower-right corner) to 100%. Otherwise, the layout may appear crooked.
If the following message appears when you start the software, click OK. Then, to select 100% on the browser.



System Configuration on the First Startup

The following table shows the system configuration (**System** tab > **System Config**) that is used the first time the software is started. Before creating a configuration file, use **System Config** to align the software configuration with the GX/GP configuration.

Details on system configuration: ▶ **2.1 Creating New Setup Data**

Item	Value
Model	GX10/GP10
Version	(The most recent version will be displayed.)
Module	AI module
Option	No options

Running Multiple Instances

You can run multiple instances of this software (version R2.01.01 and later).
To do so, repeat step 1 on the previous page.
The first instance starts with the port number that was in use when the software was closed the previous time.
The subsequent instances start with unused ports in the range of 34443 to 65535.

Note

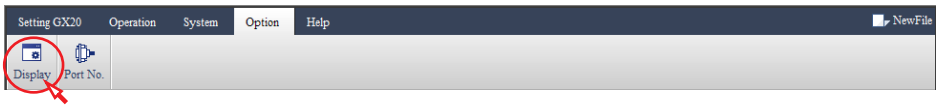
To change the port number to a different number after starting the software, follow the procedure in **1.4.3 Specifying the HTTP port number.**

1.4.2 Setting the Display Language, Date Format, Decimal Point Type, and Universal Viewer Difference Display Search Destination, Browser Type

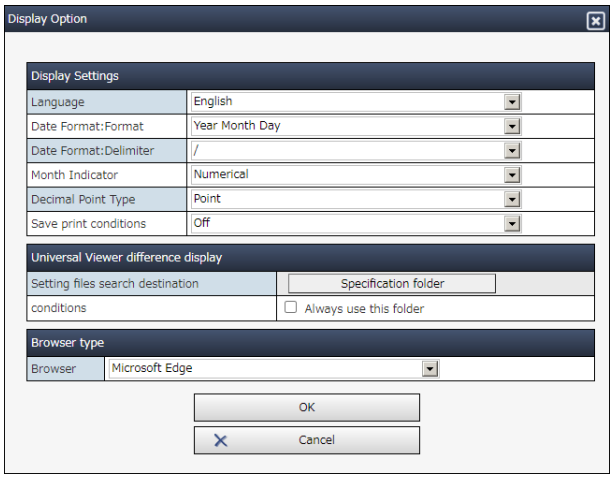
You can set the display language to English, Japanese, German, French, Chinese, Russian, Korean, Italian or Traditional Chinese. In addition, you can select the date format and decimal point type for printing according to the selected language.

Procedure

1. Click **Option** tab.
2. Click **Display**.



The **Display Option** dialog box appears.



3. Click **Language** arrow, and select from the list.
4. If necessary, select the **Date Format** and **Decimal Point Type**. The available options are shown in the following table.

Item	Available Format
Date Format: Format	[Month Day Year], [Year Month Day], [Day Month Year]
Date Format: Delimiter	[/] (Slash), [.] (Period), [-] (Dash)
Month Indicator	[Numerical], [Charactors]
Decimal Point Type	[Point], [Comma]
Save print conditions	[Off], [On]

5. Click **OK**.

Note

- The Date Format and the Decimal Point Type are applied only to the Print window and Validation print window.
- If Language is set to Japanese, Korean, Chinese, or Traditional Chinese Month Indicator is fixed to Numerical.

Save print conditions

When this is set to On, the print conditions that are in effect when the software is closed are restored the next time the software starts. The print conditions are saved independently for Print Window and Validation print window.

Note

Print conditions are not held on the validation print window displayed using the Universal Viewer difference display function.

Universal Viewer Difference Display

When using the Universal Viewer difference display function, you can set the setup file (.GSL) search destination in advance. If you set the search destination in advance, you will not need to select it every time.

- For details on the Universal Viewer difference display function and how to set the search destination, see section **4.3 Universal Viewer Difference Display Function (software version R4.07 and later) on page 4-8.**
- For the difference display, see section **2.6.2 Validation Print**

Browser Type

Sets the activation browser.
The installed browsers appear as options.
The default browser is Microsoft Edge.
The selected browser is used from the next launch.

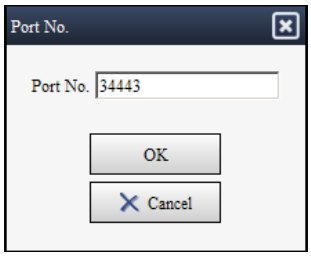
1.4.3 Specifying the HTTP port number

You can specify the HTTP port number for using the Web browser from this software.
The default HTTP port numbers are “34443” for the “Hardware Configurator” and “34503” for the “Program pattern setting”. To change the port number to a different number, follow the procedure below.

Procedure

1. Click **Option** tab.
2. Click **Port No.**

The Port No. dialog box appears.



3. Enter the port number (in the range of 34443 to 65535).

Note

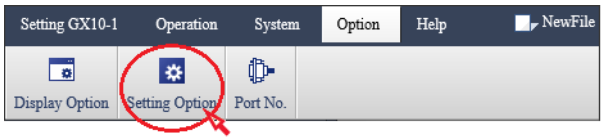
To activate the new port number, restart the software.
The software will continue to use the old port number until you restart the software.

1.4.4 Specifying the editing type of the setting

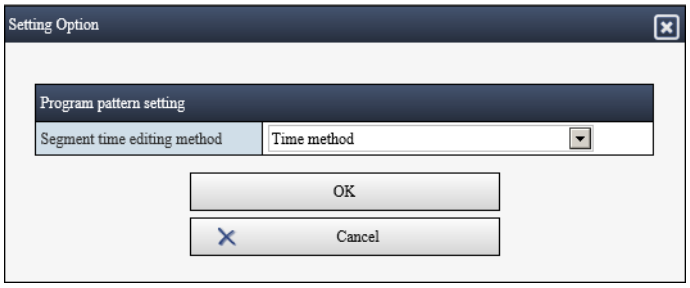
You can configure which options are available to select for the segment time editing method in the program pattern setting screen (time method only, or time or ramp method).

Procedure

1. Click **Option** tab.
2. Click **Setting Option** *.
   * Appears on models with the program control (/PG) option when one or more PID modules are configured.



The Setting Option dialog box appears.



3. Click **Segment time editing method** arrow, and select from the list.

Item	Available Format
Segment time editing method	[Time method] [Select time or ramp method]

4. Click **OK**.

Explanation

Segment time editing method

Set whether to enable selection of the segment time editing method for each pattern number.

For the difference between the time method and the ramp method, see section **5.9 Editing the program pattern by using the ramp method (Software version R4.06 and later) on page 5-28.**

1.4.5 Closing the Software

Procedure

1. Close browser by clicking the **Close** button or close by **browers's** menu.

Note

If you change the setup data, the changes are stored and will appear the next time you start the software.

Blank

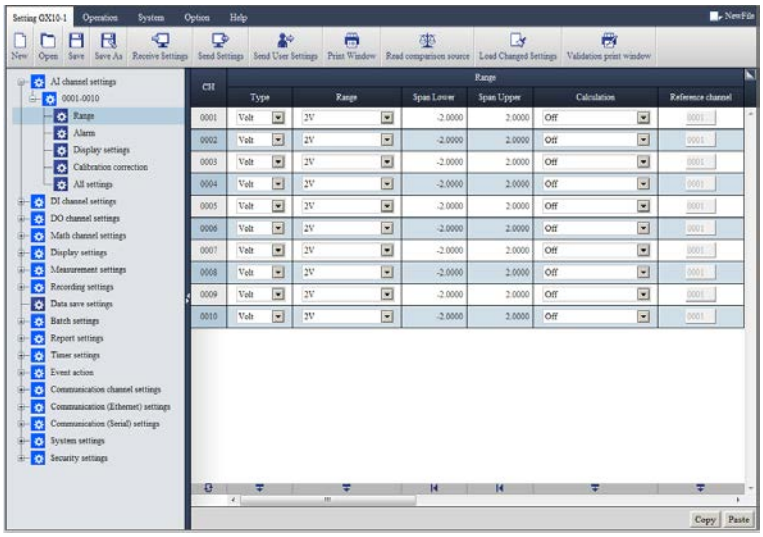
2.1 Creating New Setup Data

2.1.1 Creating a File in Accordance with System Configuration

This section explains how to use SMARTDAC+ STANDARD Hardware Configurator to create a new data file for configuring various GX/GP functions. Before editing channel or display settings, first create a file in accordance with system configuration of the main unit.

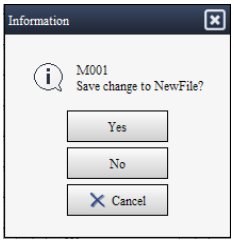
Procedure

1 Start Hardware Configurator.
The setup window appears.

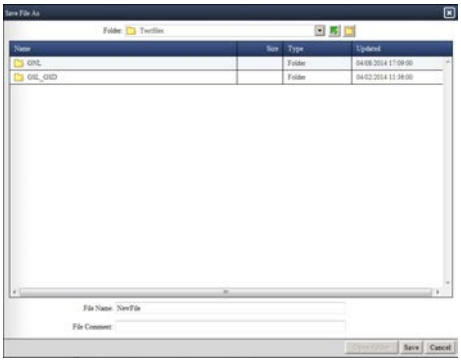


2 Click **Setting** tab and then **New**.

A confirmation message is displayed for saving the file that is currently displayed.



3 To save the file, click **Yes**; otherwise, click **No**.
If you click **Yes**, a dialog box for saving the file (see the figure below) appears.
How to save files: ▶ 2.4 Saving Setup Data

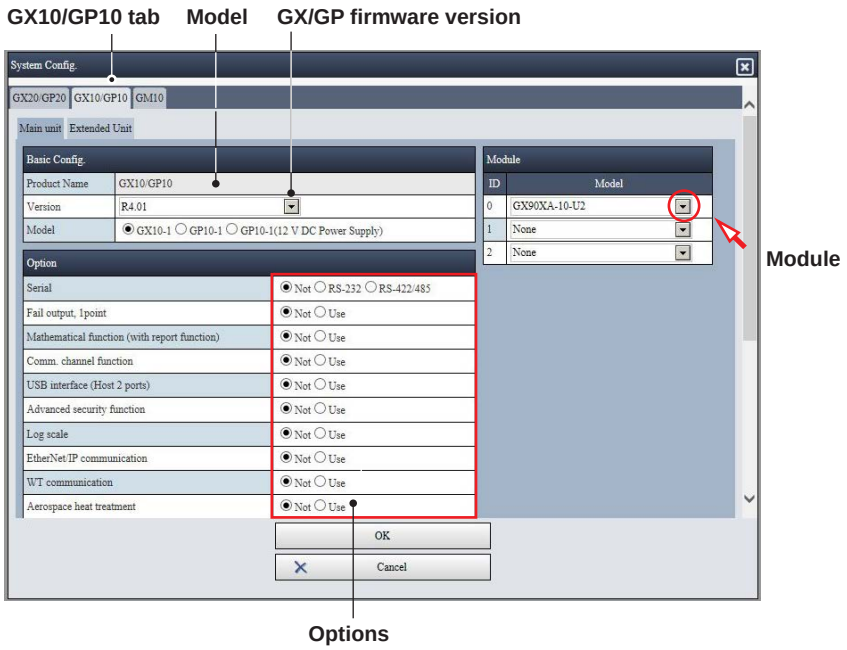


If you select **No**, the System Config. dialog box, shown in step 4, appears.

Note

- When creating a configuration file, first set system configuration in accordance with the main unit. You can also display the **System Config.** setting screen from **System** tab - **System Config**.
- If you change **System Config.**, the setup items that you have edited up to that point will be initialized.

4 Set the system configuration for GX/GP main unit.

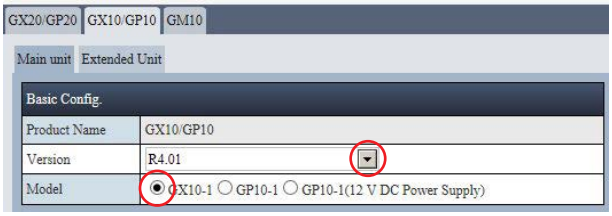


Note

If you change the system configuration, the setup items that you have edited up to that point will be initialized. To save these items, click **Yes** in step 2.

5 Click the **GX10/GP10**, **GX20/GP20, or GM10** tab depending on the main unit that you are using.

6 Under **Basic Config.**, set the **Product Name**, **Version**, and **Model**.



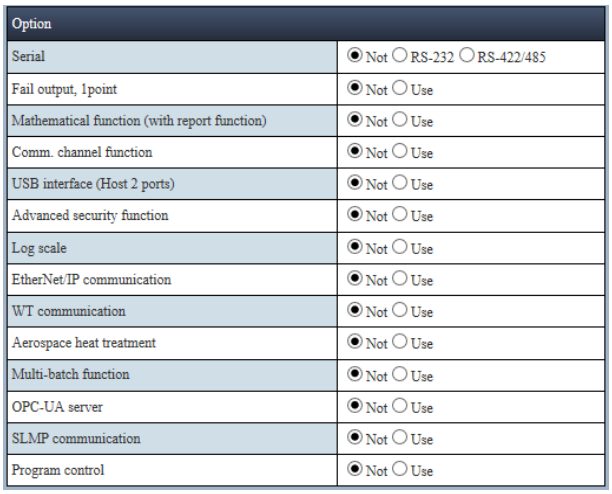
The following table shows the **Basic Config.** settings of each tab page.

Tab	Item	Displayed value	Initial value
GX10/GP10	Product Name	GX10/GP10	GX10/GP10
	Version (Note)	R5.03, R5.02, R5.01, R4.09, R4.08, R4.07, R4.06, R4.04, R4.03, R4.02, R4.01, R3.02, R3.01, R2.02, R2.01, R1.03, R1.02	R5.03
	Model	GX10-1, GP10-1 (12V DC Power Supply)	GX10-1
GX20/GP20	Product Name	GX20/GP20	GX20/GP20
	Version	R5.03, R5.02, R5.01, R4.09, R4.08, R4.07, R4.06, R4.04, R4.03, R4.02, R4.01, R3.02, R3.01, R2.02, R2.01, R1.03, R1.02, R1.01	R5.03
	Model	GX20-1, GX20-2, GP20-1, GP20-2	GX20-1
GM10	Product Name	GM10	GM10
	Version	R5.03, R5.02, R5.01, R4.09, R4.07, R4.06, R4.05, R4.04, R4.03, R4.02, R4.01, R3.02, R3.01, R2.03, R2.02	R5.03
	Model	GM10-1, GM10-2	GM10-1

Note

From Hardware Configurator R4.01.01, the last two digits (hereafter sub revision) in the firmware version of a main unit are no longer displayed. However, if it is received from a main unit or a configuration file created by the main unit is read, the sub revision is displayed without omission. (Example: R4.01.01).

7 Set the items under **Option**.



Option	
Serial	◉ Not ○ RS-232 ○ RS-422/485
Fail output, 1point	◉ Not ○ Use
Mathematical function (with report function)	◉ Not ○ Use
Comm. channel function	◉ Not ○ Use
USB interface (Host 2 ports)	◉ Not ○ Use
Advanced security function	◉ Not ○ Use
Log scale	◉ Not ○ Use
EtherNet/IP communication	◉ Not ○ Use
WT communication	◉ Not ○ Use
Aerospace heat treatment	◉ Not ○ Use
Multi-batch function	◉ Not ○ Use
OPC-UA server	◉ Not ○ Use
SLMP communication	◉ Not ○ Use
Program control	◉ Not ○ Use

The types of options that appear vary depending on the main unit and the firmware version. The following table shows the available options for different firmware versions.

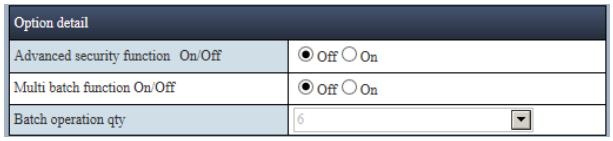
Option	GX/GP		GM	
	Initial value	Firmware Version and Availability	Initial value	Firmware Version and Availability
Serial	Not	Displayed on R1.01.01 or later.	Not	Displayed on R2.02.01 or later.
Fail output, 1 point	Not	Displayed on R1.01.01 or later.		
Mathmatical function (lwith report function)	Not	Displayed on R1.01.01 or later.	Not	Displayed on R2.02.01 or later.
Comm. channel function	Not	Displayed for R1.01.01 and later. For R2.01.01 and later, this option is fixed to Use when WT communication is set to Use.	Not	Displayed for R2.02.01 and later. This option is fixed to Use when WT communication is set to Use.
USB interface (Host 2 ports)	Not	Displayed on R1.01.01 or later.		
Advanced security function (Part 11)	Not	Displayed on R2.01.01 or later.	Not	Displayed on R2.03.01 or later.
Log scale	Not	Displayed on R2.01.01 or later.	Not	Displayed on R2.02.01 or later.
EtherNet/IP communication	Not	Displayed on R2.01.01 or later.	Not	Displayed on R2.02.01 or later.
WT communication	Not	Displayed on R2.01.01 or later.	Not	Displayed on R2.02.01 or later.
Bluetooth			Not	Displayed on R2.02.01 or later.
Aerospace heat treatment	Not	Displayed on R3.01.01 or later.	Not	Displayed on R3.01.01 or later.
Multi-batch function (Note)	Not	Displayed on R3.01.01 or later.	Not	Displayed on R3.01.01 or later.
OPC-UA server	Not	Displayed on R3.01.01 or later.	Not	Displayed on R3.01.01 or later.
SLMP communication	Not	Displayed on R3.01.01 or later.	Not	Displayed on R3.01.01 or later.
Program control	Not	Displayed on R4.01.01 or later.	Not	Displayed on R4.01.01 or later.
Integration bar graph function			Not	Displayed on R4.06.01 or later.

Diagonal lines mean that the main unit does not have those options.

Note

- Advanced security function corresponds to the GX/GP/GM's advanced security function (/AS).
- Multi batch function corresponds to the GX/GP/GM's multi batch function (/BT).
- Program control corresponds to the GX/GP/GM's program control function (/PG).

8 In the option settings, if you set the advanced security function or multi batch function to “Use,” choose whether to enable or disable the function in **Option detail**.

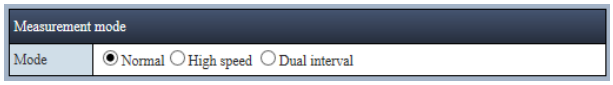


Item	Options	Initial Value	Description
Advanced security function On/Off	On, Off	Off	On a GX/GP/GM with the advanced security function (/AS), to enable the function, select On.
Multi batch function On/Off	On, Off	Off	On a GX/GP/GM with the multi batch function (/BT), to enable the function, select On.
Batch operation qty	GX10-1 GX20-1 GM10-1 2 to 6	6	If you set the function to On, you can click ▼ to select the number of batches.
	GX20-2 GM10-2 2 to 12	12	

Note

You cannot enable the advanced security function (/AS) and multi batch function (/BT) by sending settings from the Hardware Configurator software. In this step, choose whether to enable or disable the functions to create settings by taking system status in relation to the recorder main unit into account.

9 Select a measurement mode.
However, you cannot choose **High speed** or **Dual interval** if you set the advanced security function or multi batch function to enabled in step 8.

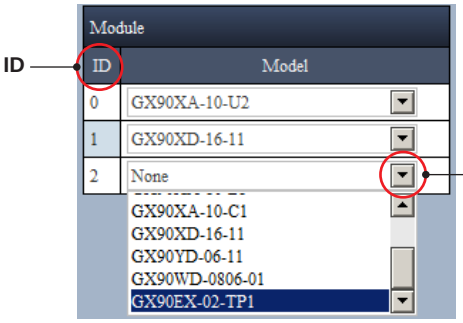


Note

For details of each optional function, see the following user’s manuals.
You can download the latest manuals from the YOKOGAWA website (www.smartdacplus.com/manual/en/).

- Advanced Security Function User’s Manual — IM 04L51B01-05EN (for GX/GP), IM 04L55B01-05EN (for GM)
- Multi-batch Function User’s Manual — IM 04L51B01-03EN (for all models)
- OPC-UA Server User’s Manual — IM 04L51B01-20EN (for all models)
- SLMP Communication User’s Manual — IM 04L51B01-21EN (for all models)
- Loop Control Function, Program Control Function (/PG) User’s Manual — IM 04L51B01-31EN (for all models)

10 Set the items under **Module**. Select IO modules, IO expansion module ,Network module.
The figure below shows an example of the GX10/GP10 tab.



Tab	Number of Displayed IDs (Slot Numbers)	Model
GX10/GP10	0 to 2	Selectable modules are displayed depending on the Version of the main unit (see the separate table).
GX20/GP20	0 to 9	
GM10	0 to 9	

When an IO expansion module (GX90EX-02-TP1) is in use
- GX10/GP10 can only be set for ID = 2.
- GX20/GP20 can only be set for ID = 9.
- GM10 can be set to any ID from 0 to 6. However, other modules cannot be set after the IO expansion module. (IO expansion modules do not appear in the selection list for ID = 7 to 9.)

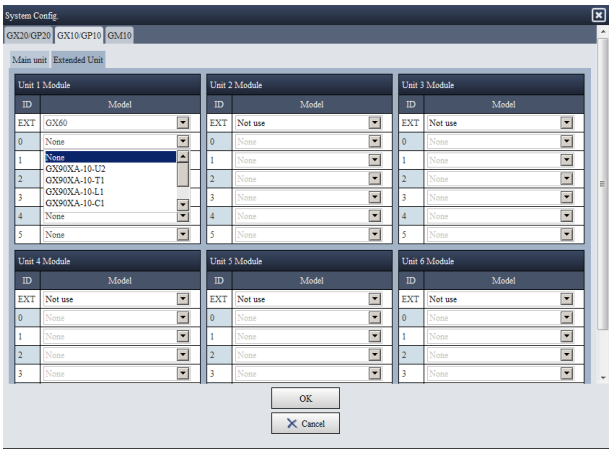
When a Network module (GX90NW-02-PN) is in use
- GX10/GP10 can only be set for ID = 2. However, it cannot be set when GP10-1 (supply voltage 12 V DC) is selected.
- GX20/GP20 can only be set for ID = 9.
- GM10 can be set to any ID from 0 to 9. However, other modules cannot be set after the network module.

The **Model** of each module is displayed according to the main unit **Version**. For a list of available IO module names, see the table below.

Firmware version		Description
GX/GP	GM	
R1.01.01 or later.	R2.02.01 or later.	No module is attached.
R1.01.01 or later.	R2.02.01 or later.	AI module (Universal)
R1.03.01 or later.	R2.02.01 or later.	AI module (Electromagnetic relay)
R2.01.01 or later.	R2.02.01 or later.	AI module (Current)
R2.01.01 or later.	R2.02.01 or later.	AI module (Low voltage type)
R1.01.01 or later.	R2.02.01 or later.	DI module
R1.01.01 or later.	R2.02.01 or later.	DO module
R2.01.01 or later.	R2.02.01 or later.	DIO module
R2.01.01 or later.	R2.02.01 or later.	I/O expansion module
R3.01.01 or later.	R3.01.01 or later.	Pulse input module
R3.02.01 or later.	R3.02.01 or later	AO module
R4.01.01 or later	R4.01.01 or later	AI module (High-speed universal type)
R4.01.01 or later	R4.01.01 or later	AI module (4-wire RTD/resistance type)
R4.01.01 or later	R4.01.01 or later	PID control module
R4.03.01 or later.	R4.03.01 or later.	AI module (High withstand voltage type)
R5.02.01 or later.	R5.02.01 or later.	Network module (PROFINET)

11 If an I/O base unit is installed, configure the modules. Click **Extended Unit** to display the page. The **Extended Unit** tab is to the right of the **Main Unit** tab.

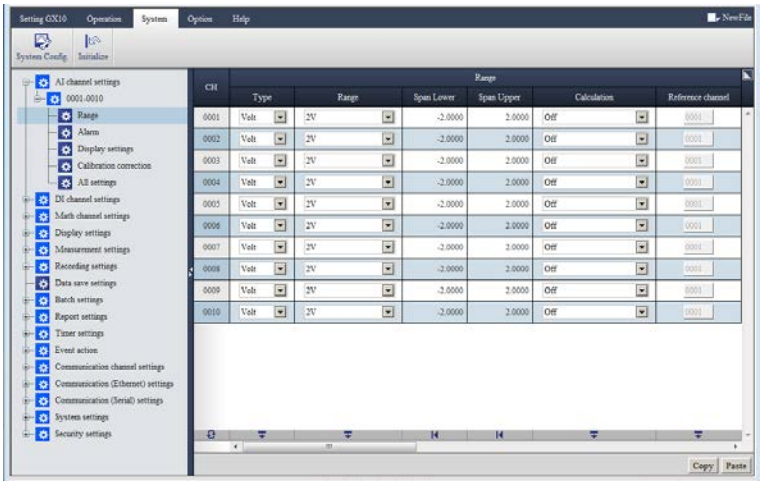
12 Select the module configuration from Unit1 to Unit6 under **Extended Unit**.



The following table shows the available models. If the IO expansion module is not set to the main unit (Module on the Main unit tab), the item will be unselectable.

ID	Module	Initial value	Description
EXT	GX60/Not use or GX90EX-02-TP1/Not use	Not use	Base unit model (fixed) Displays “GX90EX-02-TP1” on the GM tab.
0 - 5	None GX90XA-10-U2 GX90XA-10-T1 GX90XA-10-L1 GX90XA-04-H0 GX90XA-10-V1 GX90XA-10-C1 GX90XA-06-R1 GX90XD-16-11 GX90XP-10-11 GX90YA-04-C1 GX90YD-06-11 GX90WD-0806-01 GX90UT-02-11	None	Installed module

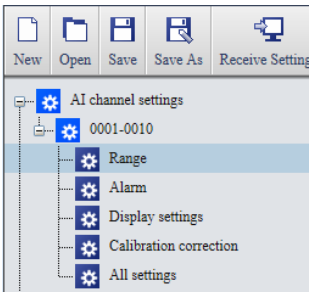
13 After you set the items, click **OK**.
The system configuration is loaded, and setup items based on the configuration are created.



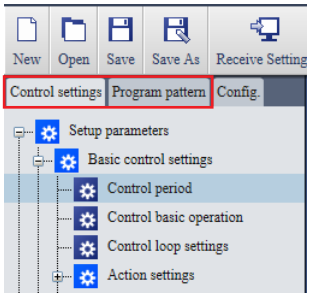
If you enable the PID control module (GX90UT) and program control function (option, /PG) in the setting of system configuration, the **Control setting** and **Program pattern** tabs are displayed.

- PID control module enabled: Displays the Control setting tab.
- PID control module + Program control function (/PG) enabled: Displays the Control setting + Program pattern tabs.

Even if the program control function is set to “Use”, the Program pattern tab is not displayed unless the PID control module is attached.

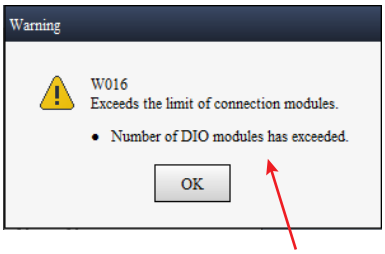


Without control function



With control function

However, if the number of modules exceeds the limit, the following warning will appear. Correct the module settings according to the auxiliary message.



Auxiliary message

Limit to the number of modules and number of channels: ▶ **Module Configuration Limitations**
Message details: ▶ **“Warning Messages”** and **“W016 Auxiliary Messages”**

14 Edit the setup items in the new window to create the setup data.

How to edit setup items: ▶ **2.3 Editing Setup Data**
Program pattern setting: ▶ **Chapter 5 Program Pattern Setting for GX/GP/GMs with the Program Control Function (/PG)**

Operation complete

Module Configuration Limitations

In the Module settings of the Main unit and Extended Unit tabs, select modules so that the following limits are not exceeded. If you click **OK** when a limit is exceeded, a message will appear. If a message appears, correct the number of modules or channels specified by the message.

Message details:▶ **"Warning Messages" and "W016 Auxiliary Messages"**

Number of channels for each module

Module		Model	Number of channels (per module)
AI module	Universal	GX90XA-10-U2	10
	Solid state relay	GX90XA-10-T1	10
	Current	GX90XA-10-C1	10
	Low withstand voltage	GX90XA-10-L1	10
	High withstand voltage	GX90XA-10-V1	10
	High-speed universal	GX90XA-04-H0	4
	4-wire RTD/resistance	GX90XA-06-R1	6
DI module		GX90XD-16-11	16
DO module		GX90YD-06-11	6
DIO module		GX90WD-0806-01	8 inputs, 6 outputs
Pulse input module		GX90XP-10-11	10
AO module		GX90YA-04-C1	4
PID control module		GX90UT-02-11	8 inputs, 18 outputs

Limit to the entire system

Limit to the number of IO modules in the entire system

Model	Limitation
GX10-1	Up to ten IO modules in the entire system
GP10-1	
GX20-1	
GP20-1	
GX20-2	Up to forty-five IO modules in the entire system
GP20-2	
GM10-1	Up to ten IO modules in the entire system
GM10-2	Up to forty-two IO modules in the entire system

Limit to the number of DO/DIO modules in the entire system (Including the PID control module)

Model	Limitation
GX10-1	Up to ten DO/DIO modules in the entire system The PID control module is included as DO in the limited number shown above.
GP10-1	
GX20-1	
GP20-1	
GX20-2	
GP20-2	
GM10-1	
GM10-2	

Limit to the number of PID control modules in the entire system [1]

Model	Limitation
GX10-1	Up to three modules in the entire system
GP10-1	
GX20-1	
GP20-1	
GX20-2	Up to ten modules in the entire system
GP20-2	
GM10-1	Up to three modules in the entire system
GM10-2	Up to ten modules in the entire system

1 If GX90YD or GX90WD (DO/DIO module) is set along with the module, up to 10 modules can be set.

Limit to the number of IO channels in the entire system

Model	Limitation
GX10-1	Up to 100 IO channels in the entire system
GP10-1	
GX20-1	
GP20-1	
GX20-2	Up to 500 IO channels in the entire system
GP20-2	
GM10-1	Up to 100 IO channels in the entire system
GM10-2	Up to 500 IO channels in the entire system

Note

- "In the entire system" means the total number of modules or the total number of channels specified on the Main unit and Extended Unit tabs of this software.

Limit to the main unit or units

Limit to the IO expansion module (GX90EX-02-TP1) of the main unit

Model	Limitation
GX10-1	On the Main unit tab, the module can only be set to ID = 2.
GP10-1	
GX20-1	On the Main unit tab, the module can only be set to ID = 9.
GP20-1	
GX20-2	
GP20-2	
GM10-1	On the Main unit tab, a single module can be set in the range ID = 0 to 6. IO expansion modules do not appear in the selection list for 7 to 9. In addition, the ID to which an IO expansion module is assigned is considered to be the end, and other modules cannot be set to later IDs.
GM10-2	

Limit to the EMR module (GX90XA-10-T1) of the main unit

Model	Limitation
GX10-1	No limit. EMR modules can be set to any ID.
GP10-1	
GX20-1	
GP20-1	
GX20-2	
GP20-2	
GM10-1	On the Main unit tab, a module can be set in the range ID = 0 to 7. EMR modules do not appear in the selection list for 8 or 9. In addition, only up to eight modules including an EMR module can be set.
GM10-2	

Limit to the High-speed AI module (High-speed universal type: GX90XA-04-H0) of the main unit

Model	Limitation
GX10-1	No limit. High-speed AI modules can be set to any ID.
GP10-1	
GX20-1	
GP20-1	
GX20-2	
GP20-2	
GM10-1	On the Main unit tab, a module can be set in the range ID = 0 to 7. High-speed AI modules do not appear in the selection list for 8 or 9. Only up to eight modules can be set. In addition, only up to seven modules can be set when in combination with an AO module.
GM10-2	

Limit to the nework module (GX90NW-02-PN) of the main unit

Model	Limitation
GX10-1	On the Main unit tab, the module can only be set to ID = 2. You can mount either the GX90UT or GX90YA. It cannot be set when GP10-1 (supply voltage 12 V DC) is selected.
GP10-1	
GX20-1	On the Main unit tab, the module can only be set to ID = 9. When including the GX90UT, you can mount up to 7 modules including the GX90NW. When including the GX90XA-10-T1, you can mount up to 8 modules including the GX90NW.
GP20-1	
GX20-2	
GP20-2	
GM10-1	On the Main unit tab, a single module can be set in the range ID = 0 to 9. In addition, the ID to which a network module is assigned is considered to be the end, and other modules cannot be set to later IDs. Refer to “Limitations about module attachment on GM”
GM10-2	

Note

“Module of the main unit” means the total number of modules specified on the Main unit tab of this software.

Limit to the number of modules per unit

Model	Limitation
GX10-1	• DIO module Only one module in a unit. • AO module For GX10-1 and GP10-1: Only one module per unit. Other than the above (including an extended unit): Up to two modules per unit. However, if a PID control module is connected, the number of modules that can be implemented on each unit is limited.
GP10-1	
GX20-1	
GP20-1	
GX20-2	
GP20-2	
GM10-1	
GM10-2	

Limit to the number of modules of each unit if a PID control module (GX90UT-02-11) is installed

Model	Limitation
GX10-1	There is no limitation. However, for GP10-1 12 V DC Power Supply model, it is up to two modules per unit.
GP10-1	
GX20-1	
GP20-1	
GX20-2	Up to eight modules per unit.
GP20-2	
GM10-1	Up to five modules per unit.
GM10-2	

Limit to the number of IO channels of each unit

Model	Limitation
GX10-1	Up to 100 channels per unit.
GP10-1	
GX20-1	
GP20-1	
GX20-2	
GP20-2	
GM10-1	
GM10-2	

Note

- “A unit” refers to the main unit or an extended unit.

Limitations according to measurement mode

The following are limitations of module setting generated by selection of measurement mode.

- When **High speed** is selected, modules other than DI, DIO, high speed AI, and network module cannot be set.
- When **Dual interval** is selected, the PID control module cannot be set.

Limitations about module attachment on GM

For GM, there are the following limitations concerning module attachment depending on the type and combination of modules. If the message W016 “There is a module that exceeds connection limitations” is displayed, check the position (slot=ID) and number of the attached modules.

Limitation (on GM main unit only)			Message
1	High speed AI module cannot be attached to slot 8 or 9.		(No message) (High speed AI module are not listed on slot 8 and 9 .)
2	High speed AI module is attached to any slot from 0 to 7.	In addition, AO module is attached to any slot from 7 to 9.	One of the following auxiliary messages is displayed along with W016 “There is a module that exceeds connection limitations”. • Exceeded the number of High-speed AI modules which can be set. • Exceeded the number of AO modules which can be set. • Exceeded the number of IO modules which can be set.
3	AO module is attached to any slot from 0 to 9.	In addition, high speed AI module is attached to slot 7.	Same as above.
4	PID control module cannot be attached to slot from 5 to 9.		(No message) (PID module is not listed on the slot from 5 to 9.)
5	EMR module is attached to any slot from 0 to 7.	In addition, an IO module is attached to slot 8 or 9.	One of the following auxiliary messages is displayed along with W016 “There is a module that exceeds connection limitations”. • Exceeded the number of EMR modules which can be set. • Exceeded the number of IO modules which can be set.
6	High speed AI module is attached to any slot from 0 to 7.	In addition, an IO module is attached to slot 8 or 9.	One of the following auxiliary messages is displayed along with W016 “There is a module that exceeds connection limitations”. • Exceeded the number of High-speed AI modules which can be set • Exceeded the number of IO modules which can be set.
7	High speed AI module is attached to any slot from 0 to 7. In addition, AO module is attached to any slot from 0 to 9.	an IO module is attached to slot from 7 to 9.	One of the following auxiliary messages is displayed along with W016 “There is a module that exceeds connection limitations”. • Exceeded the number of High-speed AI modules which can be set. • Exceeded the number of AO modules which can be set. • Exceeded the number of IO modules which can be set.
8	PID control module is attached to any slot from 0 to 4.	In addition, an IO module or IO expandable module is attached to slot from 5 to 9. Note: I/O expansion module can be attached only to slot from 0 to 6.	One of the following auxiliary messages is displayed along with W016 “There is a module that exceeds connection limitations”. • Exceeded the number of PID control modules which can be set. • Exceeded the number of IO modules which can be set. • Exceeded the number of IO expansion modules which can be set. Note 1: An IO module other than I/O expansion module does not satisfy a condition. Example: AI module is attached to slot 9 while PID module is attached. Note 2: I/O expansion module does not satisfy a condition. Example: I/O expansion module is attached to slot 5 while PID module is attached.
9	AI or AO module is attached to any slot from 0 to 5.	In addition, network module is attached to slot 6 or 9.	One of the following auxiliary messages is displayed along with W016 “There is a module that exceeds connection limitations”. • It is not satisfied with restriction for PROFINET module.

2.2 Displaying Setup Data

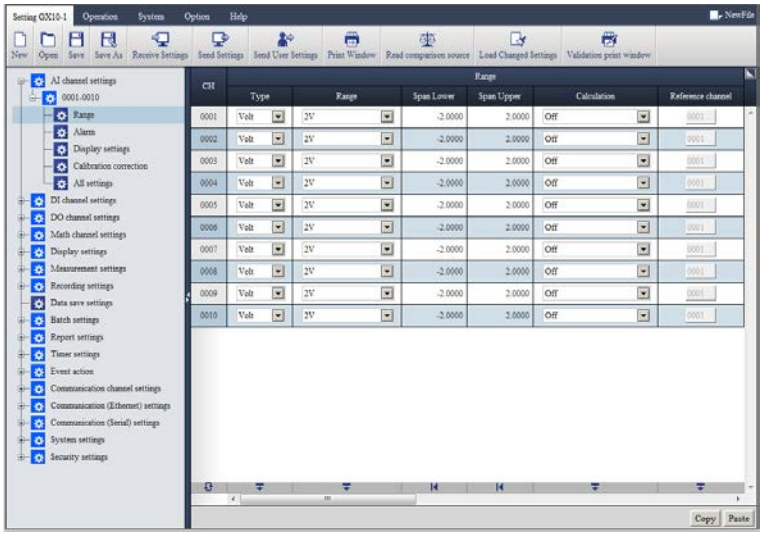
2.2.1 Opening a File

This section explains how to load and display an existing configuration file that has been saved to a PC.

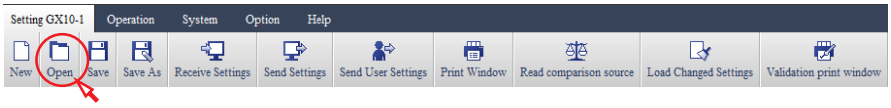
Opening a Configuration file Containing a Program Pattern (GX/GP/GM with the Program Control Function) : ▶ 2.2.4

Procedure

1 Start Hardware Configurator.
The setup window appears.

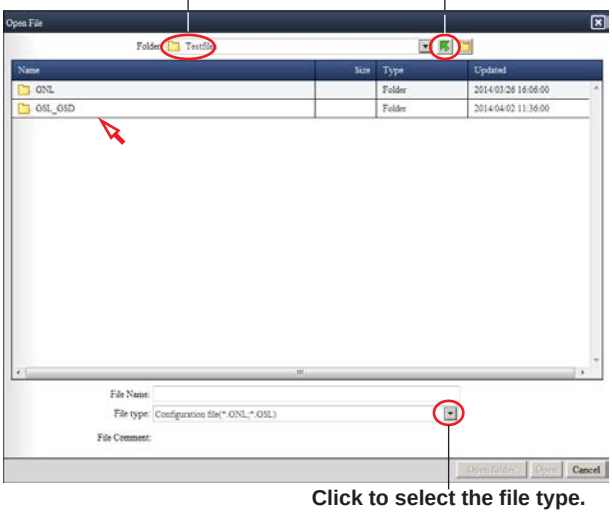


2 Click **Setting** tab and then **Open**.

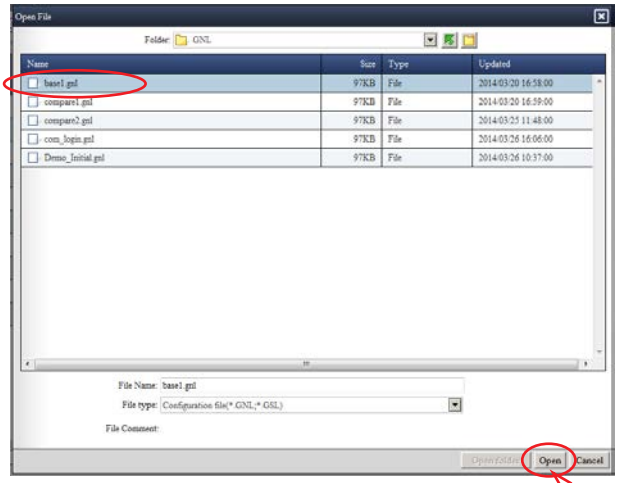


The **Open File** dialog box* appears.

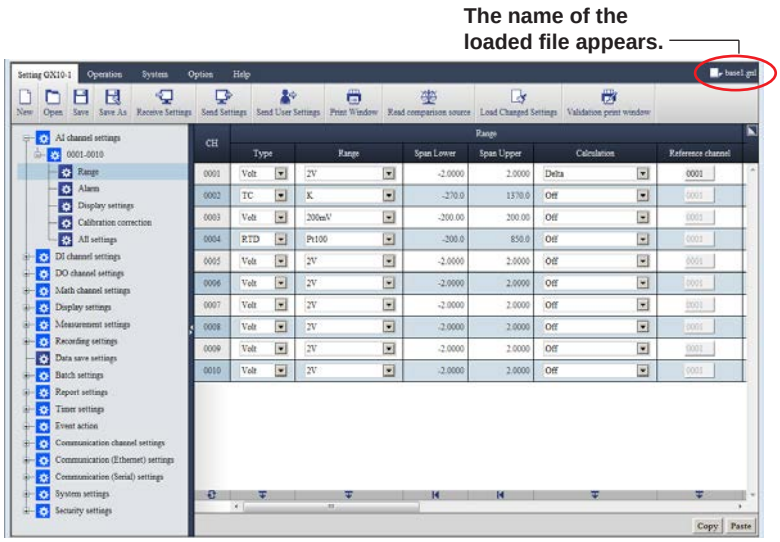
* To display the setup data of a measurement data file (*.GSE or *.GSD), change the file type.



3 Select the configuration file that you want to open, and click **Open**.



The data is loaded.



Note

- In the case of a configuration file of a GX/GP/GM with the advanced security function (/AS), authentication is necessary to display the Security settings. For details, see section **"4.2 User Authentication"**
- A configuration file (.GSL extension) of a GX/GP/GM with the advanced security function (/AS) cannot be overwritten after it is displayed and edited.
- If you specify a measurement data file, the configuration file data in the file will be loaded.
- The maximum file path length (including the file name) is 256 characters. If this limit is exceeded, an error will occur. Pay attention to the hierarchical depth and file name length.

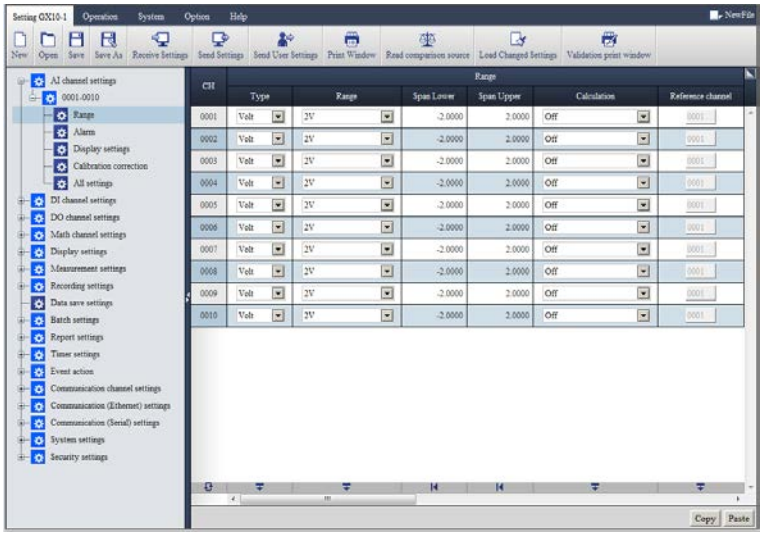
2.2.2 Opening the Comparison Source File

This software has a validation print function, which can be used to compare and print settings, for verifying setup data. You can use the **Read comparison source** to load a reference comparison source file. The difference between the files can be verified on the **Validation print window**.

Opening a File Containing Comparison Source of a Program Pattern (GX/GP/GM with the Program Control Function) : ▶ 2.2.5

Procedure

1 Start Hardware Configurator.
The setup window appears.

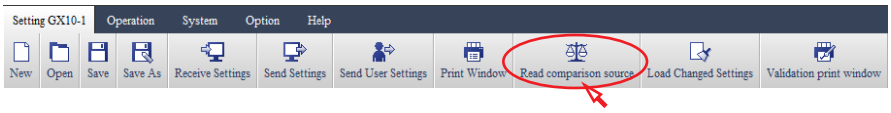


2 Before loading the comparison source configuration file, open the target configuration file that you want to compare.
How to open a file: ▶ 2.2.1 Opening a File

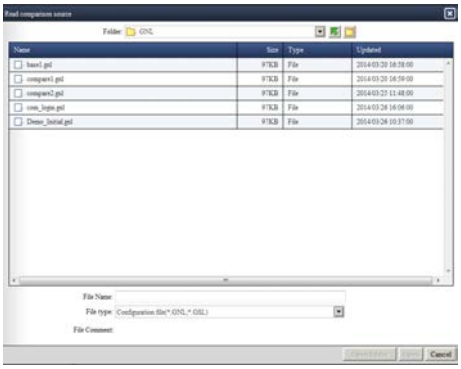
Note

Make sure that the system configuration in the configuration file that is currently displayed is the same as that in the comparison source file. If they are not the same, you will not be able to load the comparison source file.
Setting the system configuration: ▶ "Step 4" on page 2-2

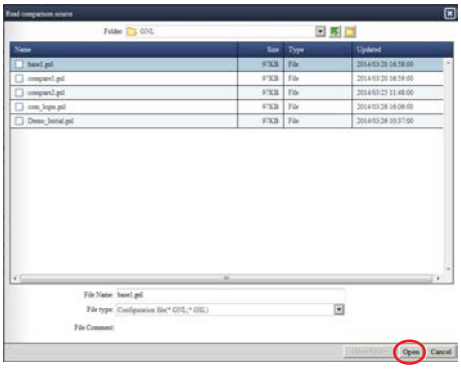
3 Click **Setting** tab and then **Read comparison source**.



The **Read comparison source** dialog box appears.

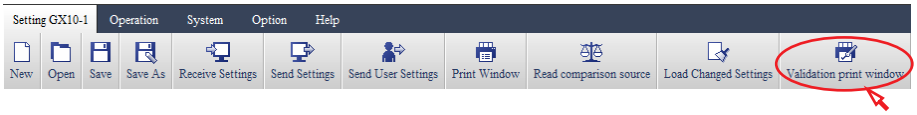


4 Select the comparison source file, and click **Open**.

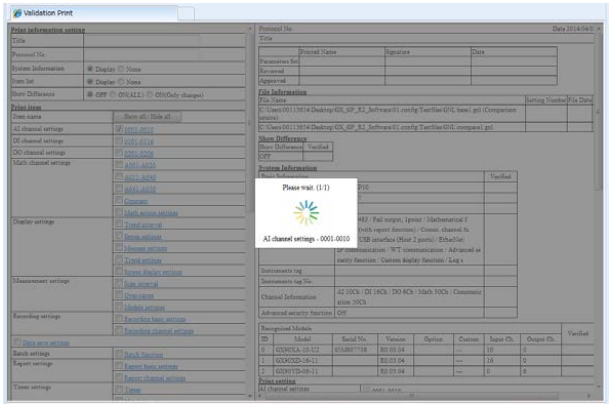


When the comparison source file is loaded, two file names will appear in the upper right of the window.
The left is the name of the configuration file that is currently displayed, and the right is the name of the comparison source file.

5 Click **Setting** tab and then **Validation print window**.

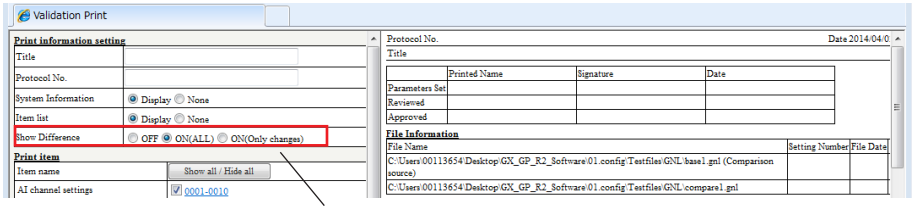


A separate window opens, and the window for printing is loaded.



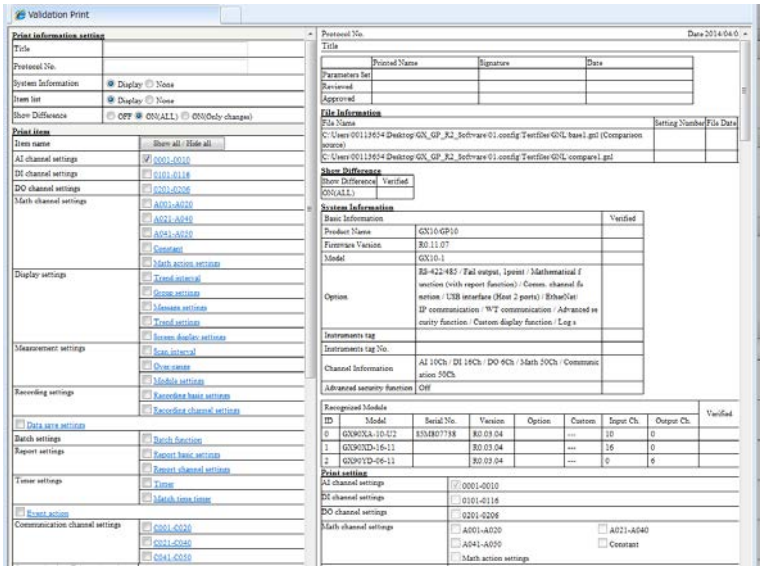
The **Validation print** window appears.

6 On the left side of the **Validation print window**, click **ON(ALL)** of **Show Difference**.



"Show Difference"
Whether to include the difference

You can view the differences in the setup data in the print content on the right.



For detailed information about “Validation print window”: ▶ 2.6.2 Validation Print

Note

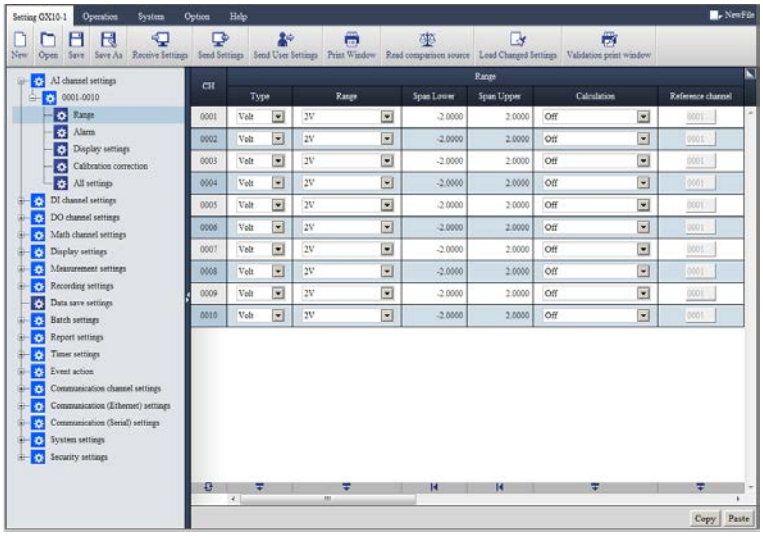
The comparison source data is cleared when you perform any of the following operations.
- A new file with different system information is opened.
- Settings with different system information are received from the GX/GP.
- The system configuration is changed.
- A new file is created.

2.2.3 Opening an Update Source File

You can use the **Load Changed Settings** to load the setup data from a separate file and apply them to the current setup data. (The system configuration is not updated.)

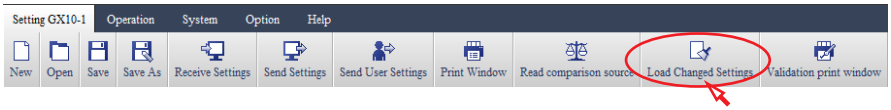
Procedure

1 Start Hardware Configurator.
The setup window appears.

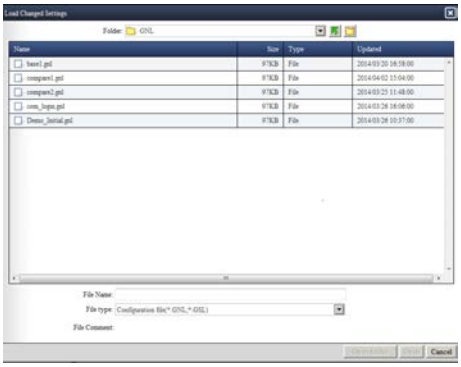


2 Open the target configuration file that you want to change.
How to open a file: ▶ 2.2.1 Opening a File

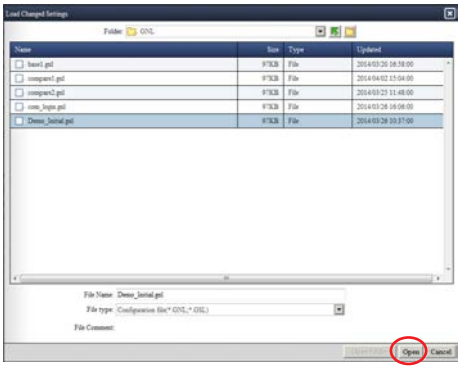
3 Click the **Setting** tab and then **Load Changed Settings**.



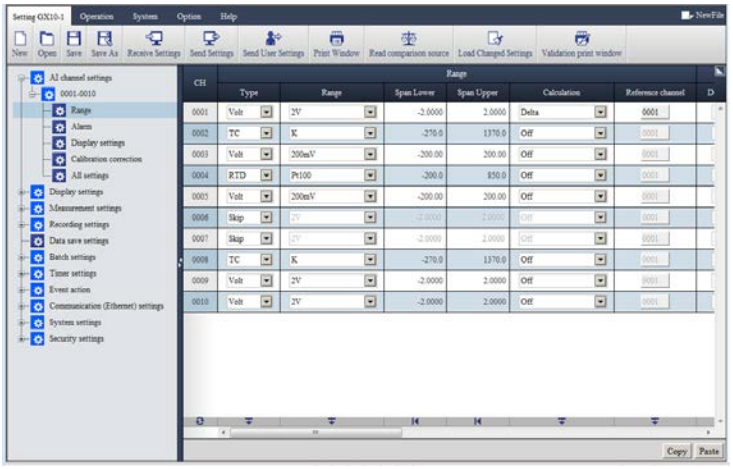
The **Load Changed Settings** dialog box appears.



4 Select the update source file, and click **Open**.



The update source data is loaded, and the current setup data is changed.



5 If necessary, edit and save the changed data.
How to save a configuration file: ▶ **2.4 Saving Setup Data**

Note

Using the **Load Changed Settings** menu changes only the settings. It does not change the system configuration or the file name.

2.2.4 Opening a Configuration File Containing a Program Pattern (GX/GP/GM with the Program Control Function)

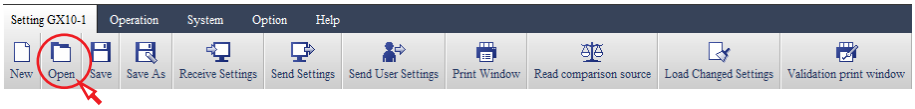
This section describes operations for opening a configuration file containing a program pattern of GX/GP/GM with the program control function (option, /PG). On the “Hardware Configurator”, you can open a file in the following methods.

- Opening a configuration file and a program pattern file together.
- Opening a configuration file only.

Using the “Program Pattern Setting”, you can edit a pattern by opening only a program pattern file.
: ▶ **Chapter 5 Program Pattern Setting for GX/GP/GMs with the Program Control Function (/PG)**

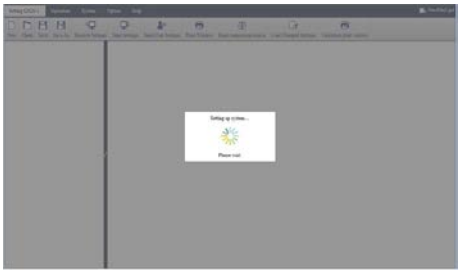
Procedure

1 Click **Setting** tab and then **Open**.



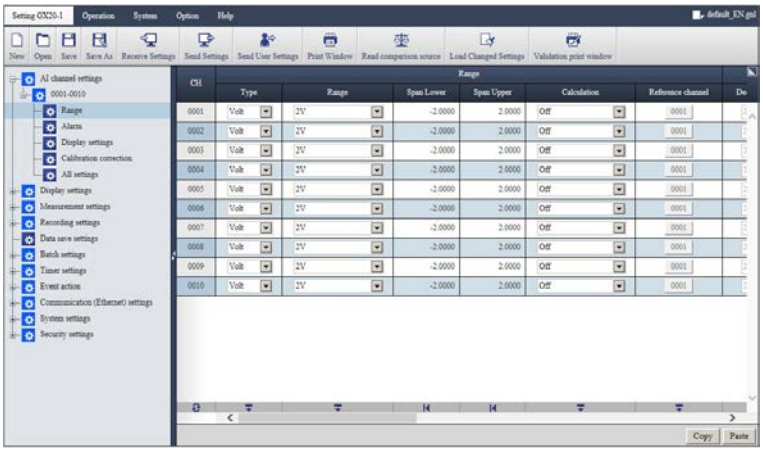
The **Open File** dialog box appears.

2 Select a configuration file, and click **Open**.
First, expand the setting.



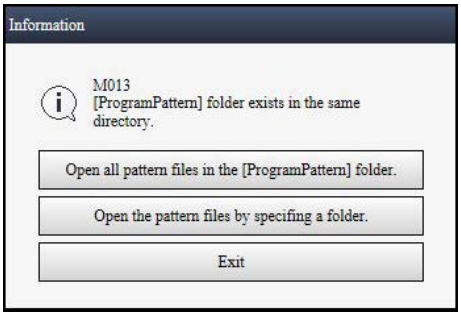
The **Open pattern file by specifying a folder** dialog box appears.

However, in the following cases, “only settings” are displayed and operation is completed.
- The opened configuration file does not contain the program control function (/PG) or PID control module.



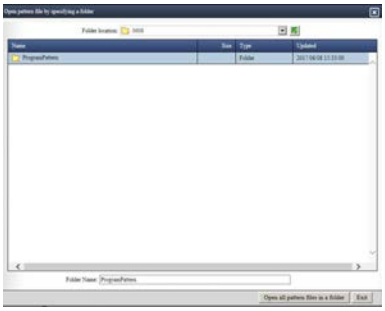
Continue to the next page.

If there is a folder named “ProgramPattern” (see Note) under the folder from which the configuration file was opened on your PC, the following dialog box appears. Choose whether to open **ProgramPattern** folder or specify and open a folder.

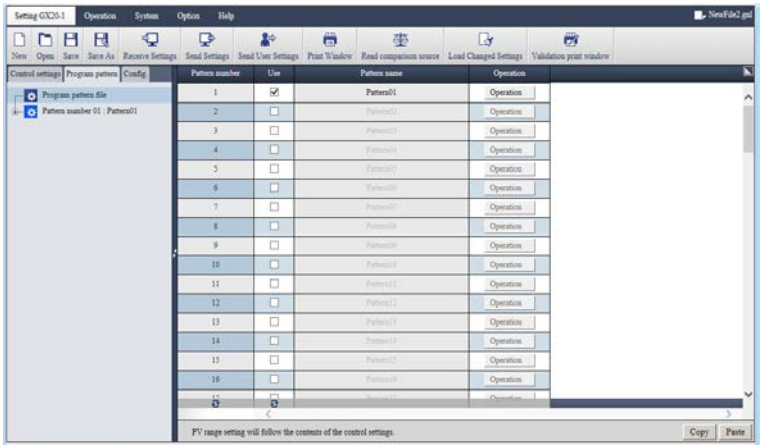


- If **Open all pattern files in the [ProgramPattern] folder.** is chosen: The program patterns are read and expanded from the folder, and operation is completed.
- If **Open the pattern files by specifying a folder.** is chosen: A dialog box for specifying a folder appears. (To Step 3)

3 Specify a folder (Note) and open program patterns contained in the folder.
Note: The folder is clicked and a line is selected.



Expand the program patterns in the folder and complete operation.



Note

If a program pattern is already shown on the Setting screen of the Hardware Configurator when another program pattern is expanded on the screen, the former pattern is deleted, and the new setting and program pattern are reflected on the screen of Setting software. If a pattern does not match system/PV range of setting, it is corrected to match them. After correction, a pattern number for the corrected pattern is notified by a message (W028).
Related item: **Example for the corrected pattern**

2.2.5 Opening a Comparison Source of a Program Pattern (GX/GP/GM with the Program Control Function)

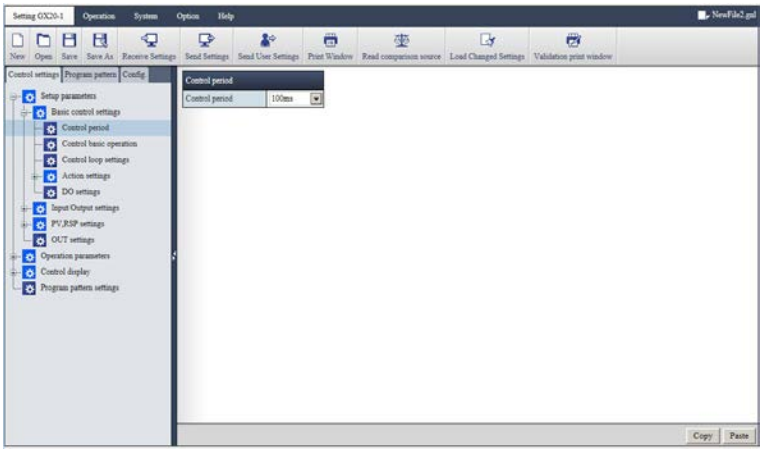
This software has a validation print function, which can be used to compare and print settings, for verifying setup data. You can use the **Read comparison source** to load a reference comparison source file. The difference between the files can be verified on the **Validation print window**.

Related item : ▶ **"Opening the Comparison Source File" on page 2-14**

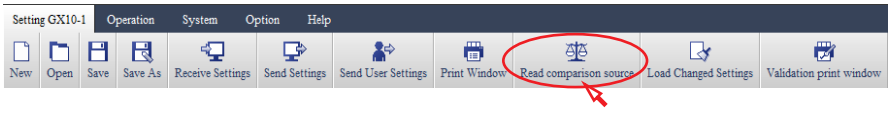
By opening a configuration file containing a program pattern of GX/GP/GM with the program control function (option, /PG) and then executing Read comparison source, you can compare program patterns.

Procedure

1 Before reading a comparison source setup file, open a configuration file containing a program pattern that is to be compared with the file.

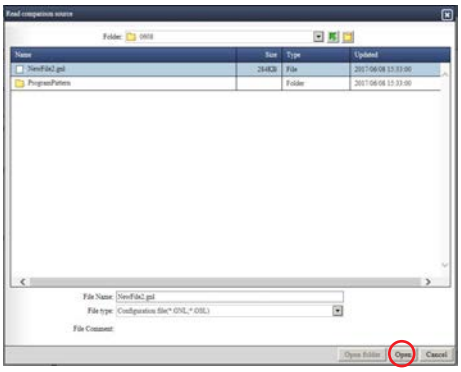


2 Click **Setting** tab and then **Read comparison source**.



The **Read comparison source** dialog box appears.

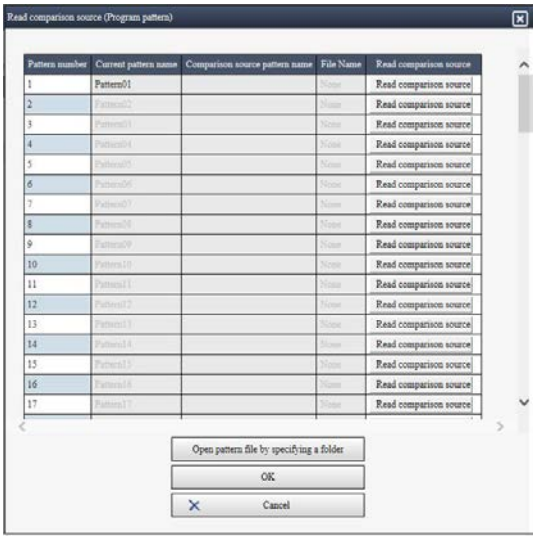
3 Select a comparison source file (*.GNL), and click **Open**.



The **Read comparison source program pattern** dialog box appears.

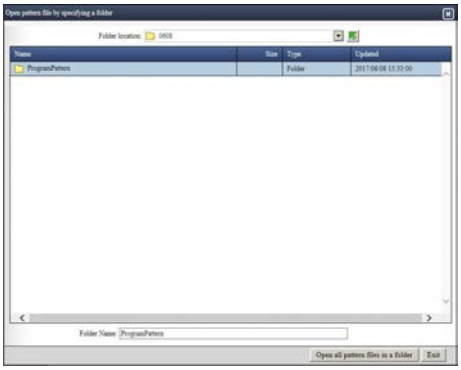
Continue to the next page

4 Click **Open the pattern files by specifying a folder**.



The dialog box for specifying a folder appears.

5 Specify the **ProgramPattern** folder, then click **Open all patern files in a folder**.



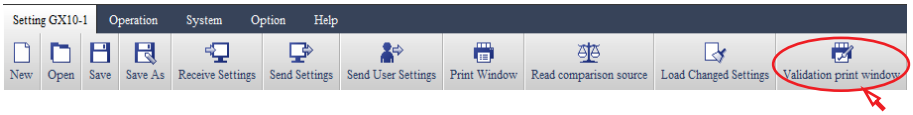
All program patterns in the folder are read and the names are listed.

6 Select a comparison source pattern file of a program pattern (*.GPT), and click **Read comparison source** located on the right side of the file name.

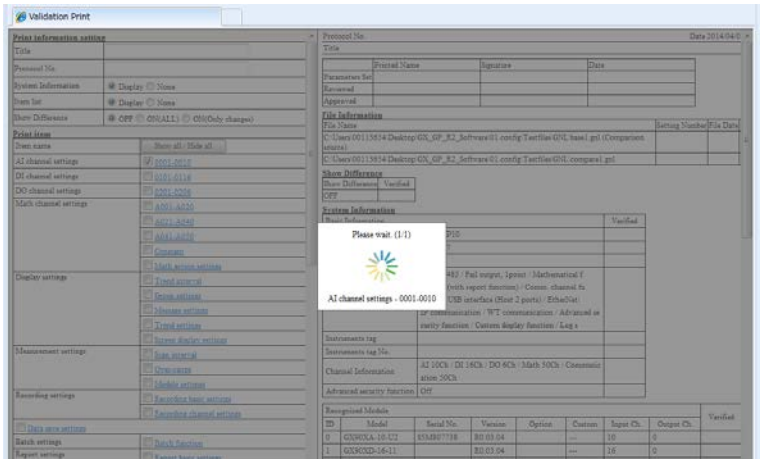
Pattern number	Current pattern name	Comparison source pattern name	File Name	Read comparison source
1	Pattern01	Pattern01	ProgPat01.GPT	Read comparison source
2	Pattern02		None	Read comparison source
3	Pattern03		None	Read comparison source

The comparison source program pattern file is read.

7 Click **Setting** tab and then **Validation print window**.

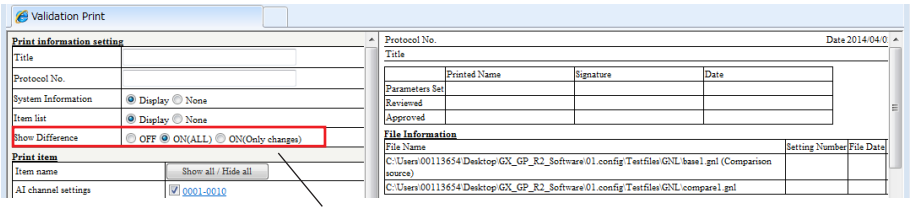


A separate window opens, and the window for printing is loaded.



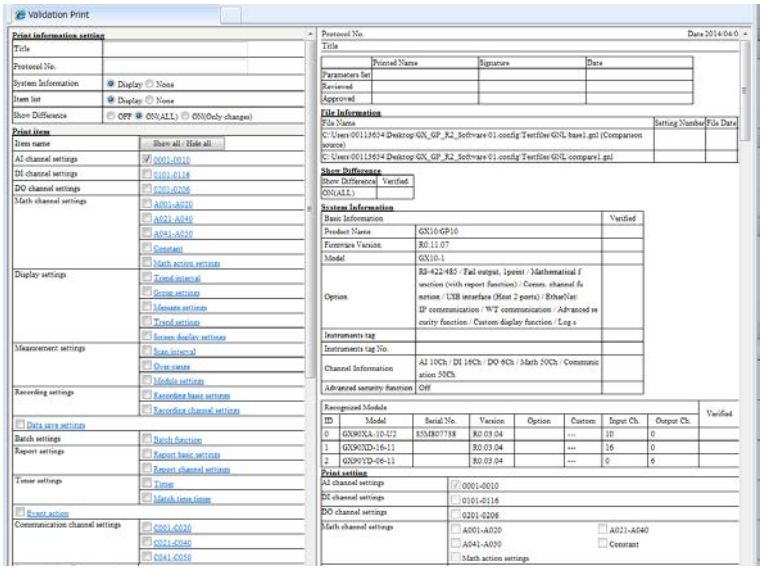
The Validation print window appears.

8 On the left side of the **Validation print window**, click **ON(ALL)** of **Show Difference**.



"Show Difference"
Whether to include the difference

You can view the differences in the setup data in the print content on the right.



For detailed information about "Validation print window": ▶ **2.6.2 Validation Print**

2.3 Editing Setup Data

2.3.1 Basic Operation

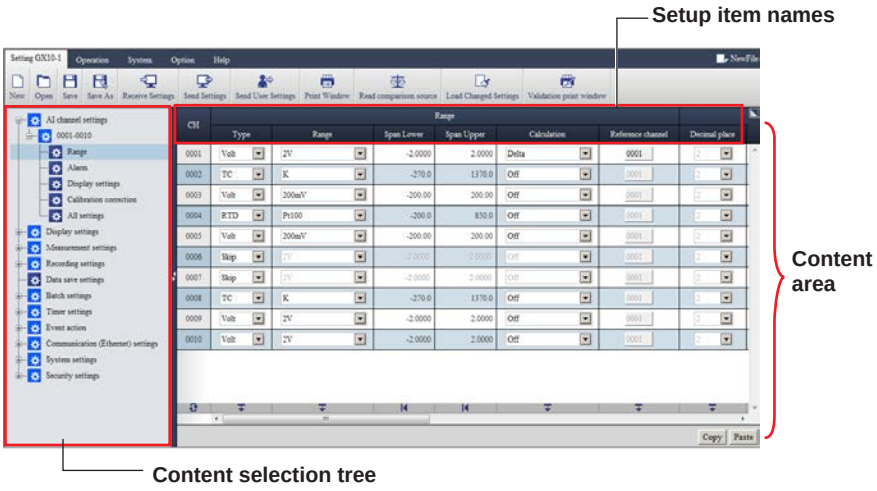
This section explains how to use Hardware Configurator to edit GX/GP's or GM's setup data. The setup data editing and display features are the same as those of the Web application on the main unit itself.
In addition, the setup items of this software are the same as those on the main unit. Therefore, this section will only cover typical operations and the unique features of this software.

Setup item details: ▶ Chapter 1 "Configuring the GX/GP" in the *GX10/GX20/GP10/GP20 Paperless Recorder User's Manual* (IM 04L51B01-01EN).
▶ Chapter 2 "Configuring the GM" in the *Data Acquisition System GM User's Manual* (IM 04L55B01-01EN).

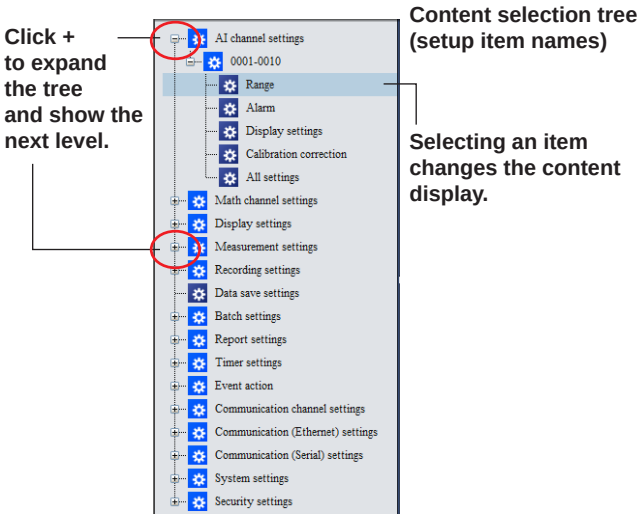
Editing the Setup Data (*.GSL) of a GX/GP/GM with the Advanced Security Function (/AS)
Be sure to also read the precautions provided in **"Chapter 4 Setup Data for GX/GP/GM with Advanced Security Function (/AS)"**

Procedure

1 Display the file that you want to edit on the **Setting** tab.



2 From the content selection tree, which is on the left side of the window, select the name of the setup item you want to edit. (This example will show how to set DI channels.)



When you select a title, the setup items appear in the content area, which is on the right.

The channel settings content can be shown in Range, Alarm, Display settings, and Calibration correction groups. If you select All settings, all the setup items are displayed in the content area.

Items are displayed by each selected group.

3 Edit the channel settings.
Edit the setup items in the content area.

Channel number
1 line = 1 channel

Scroll right to view more setup items.

CH	Range					
	Type	Span Lower	Span Upper	Calculation	Reference channel	Decimal place
0101	DI	0	1	Off	0001	2
0102	DI	0	1	Off	0001	2
0103	DI	0	1	Off	0001	2
0104	DI	0	1	Off	0001	2
0105	DI	0	1	Off	0001	2
0106	DI	0	1	Off	0001	2
0107	DI	0	1	Off	0001	2
0108	DI	0	1	Off	0001	2
0109	DI	0	1	Off	0001	2
0110	DI	0	1	Off	0001	2

Note

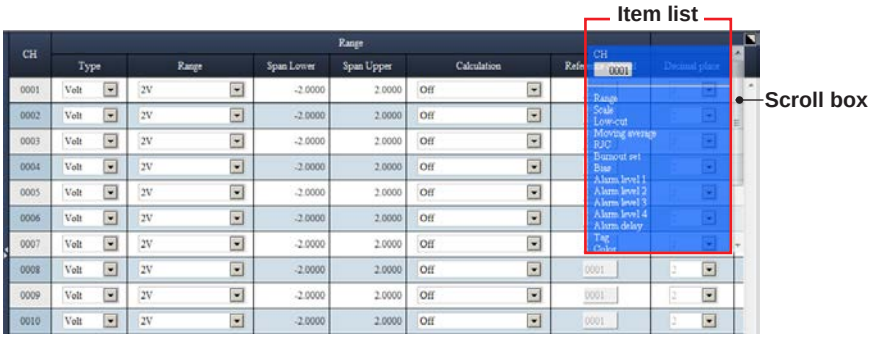
The items and available settings that appear in the configuration window vary depending on the hardware system configuration. If an item that you want to edit does not appear, check the option and module configuration.
How to set the system configuration: ▶ 2.1 Creating New Setup Data

Using the Jump Function

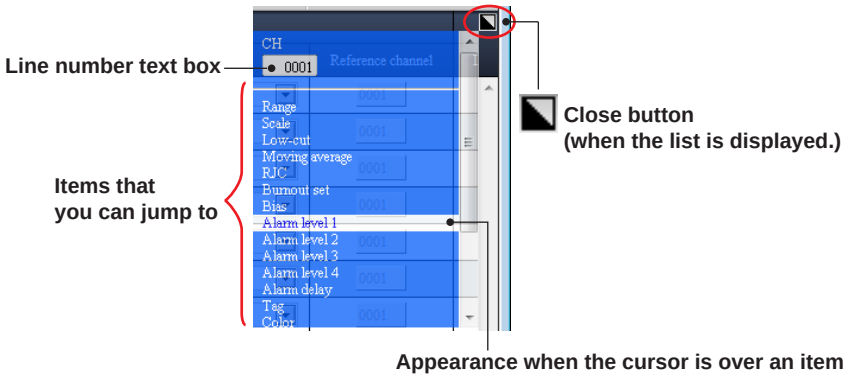
On setting edit windows in table format (e.g., channel setting window), you can jump to a specific position in the window.

1 Click ◥ button in the upper right corner of the window.

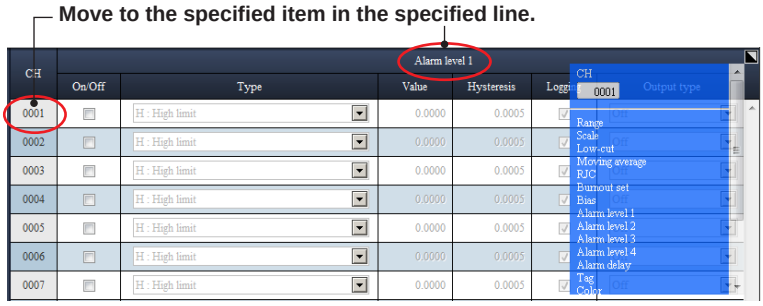
A list of items that you can jump to appears. If the list is long, a scroll bar appears.



2 In the line number text box, enter the channel line number that you want to move to. The default value is the line number of the first line.



3 Select and click the jump destination item name on the list.



You can move to the specified setup item in the specified line.

4 To close the list, click the ◥ Close button in the upper right of the window.

Note

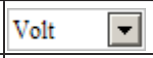
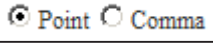
- If the line number text box is empty or the specified line number does not exist, the line will remain the same and only a horizontal movement will be made.
- The setup items that appear in the list are the parent title of each setup item. For example, Alarm level 1 will be displayed but not Value or Hysteresis.

2.3.2 Editing and Manipulating Values

From the content selection tree, select the title of the setup item that you want to edit, and edit the setup items that appear. Values are entered using the input controls and dialog boxes described below.

Input Controls

The following input controls are available.

Control Type	Display Example	Setup Procedure
Text box	-2.0000	Enter text or numbers.
Check box		When the check box is selected, the setting is “On” or enabled.
List box		Click the arrow, and select from the list that appears.
Option buttons		Click to select.

Dialog Boxes

The following dialog boxes are available. For details on how to use each dialog box, see the Operation Example in the table.

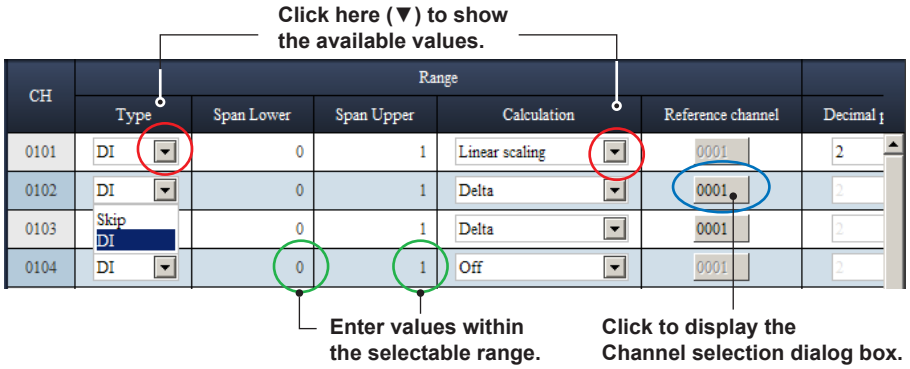
Dialog Box Type	Display Example		Setup Procedure
Channel selection button	Operation 1 Step 1, 2	Configure a specific channel such as an I/O channel.	To configure a specific channel such as an I/O channel, click a channel number to specify the channel you want.
Color selection	Operation 1 Step 3, 4	Select the display color of alarm marks and the like.	Click a color on the color selection palette in the dialog box. You can also enter the RGB values to specify any color.
Channel selection string	Operation 2	Specify multiple channels such as when editing a display group.	When specifying multiple channels such as when editing a display group, click a channel number button to add the channel to the channel configuration. The added channel is displayed as a character string.
Data selection	Operation 3	Specify internal switches and the like.	When specifying the internal switch or other item, click the displayed character string such as the switch number. (Same as channel selection.)
Special dialog box (calibration correction)	Operation 4	Use calibration correction.	A dialog box for editing calibration correction values. Enter the correction value directly.
Calculation expression input	Operation 5	Enter calculation expressions.	A dialog box for entering calculation expressions. Set calculation expressions by selecting operators and channels from the lists that appear.

How to Use the Different Dialog Boxes

Operation 1

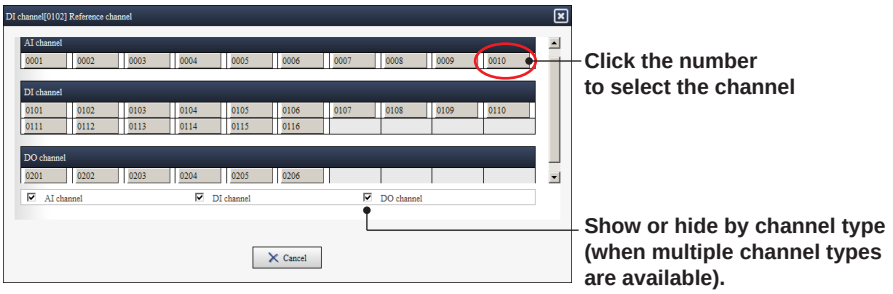
Channel selection button, Color selection

1 Set the channel range.
This example shows how to set the reference channel for difference computation. Click the channel number under Reference channel.



The **Channel selection** dialog box appears.

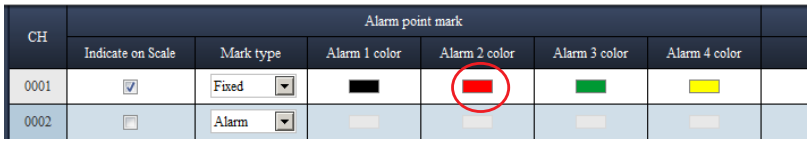
2 Click the channel number under Reference channel.



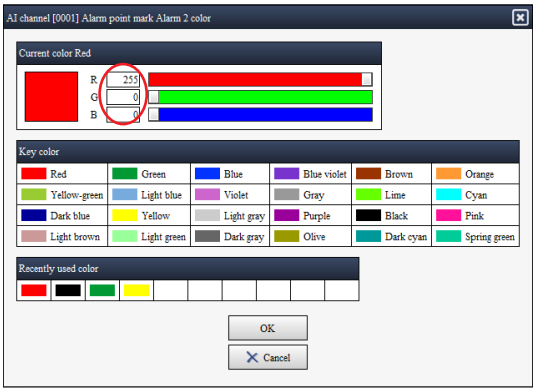
Clicking a number applies the output destination and closes the dialog box.

3 Scroll to the right, and set all necessary items.

4 If you want to change the alarm mark color, click a color.



The color selection dialog box appears.



5 To create a color, enter values in the Current color boxes. To use a key color, select the color, and click **OK**.

The selected color is applied.

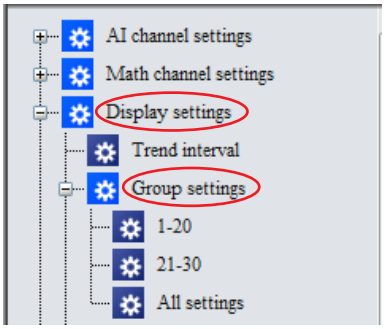
Operation 2

Channel selection string

This example shows how to assign channels to group 1.

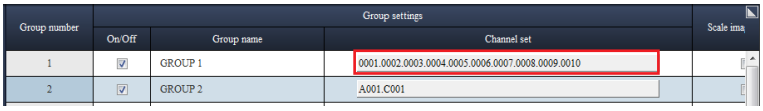
1 On the content selection tree, click **Display settings** and then **Group settings**.

2 From the list of group numbers under **Group settings**, select the group numbers that you want to display. Here, select **1-20** (groups 1 to 20).



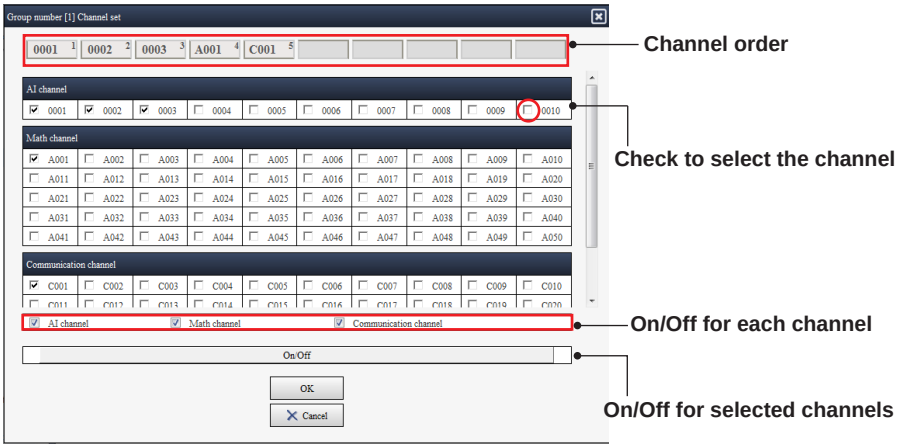
The **Group settings** dialog box appears.

3 Click **Channel set** of **Group number** 1.



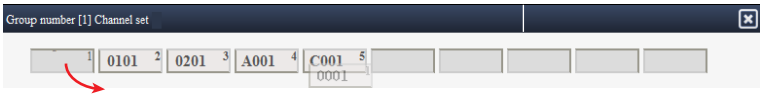
The **Group number [1] Channel set** dialog box appears.

4 Select the check boxes of the channels that you want to include in group 1. To exclude a channel from group 1, clear the check box.



The selected channels are listed at the top area of the window.

5 The channel numbers at the top area of the window can be dragged to change their order.



If you drop the first number “0001” on the fifth number “C001,”

“0001” is moved there, and other channels are shifted to the left.

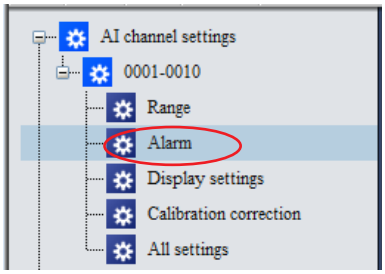
6 Click **OK**.
The channel numbers selected under Channel set are applied.

Operation 3

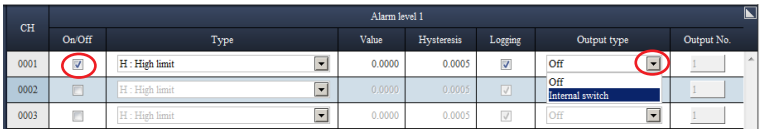
Data selection

This example shows how to set the alarm output destination.

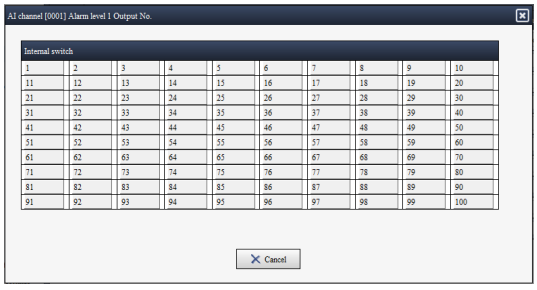
1 On the content selection tree, click **Alarm**.



2 Under **Alarm Level 1**, select the **On/Off** check box of channel 1. Here, set **Output type** to **Internal switch**.



3 Click **Output No.**
The **Output No.** dialog box appears.



4 Select the output Internal switch number.
The selected switch number is applied, and the setup window returns.

Note

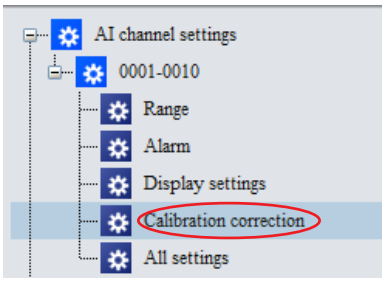
- When the maximum number of selectable channels is reached, you will no longer be able to select additional channels.
- On dialog boxes that show check boxes and option buttons, you can select a range.
  How to select a range: ▶ 2.3.4 Selecting a Range and Copying and Pasting

Operation 4

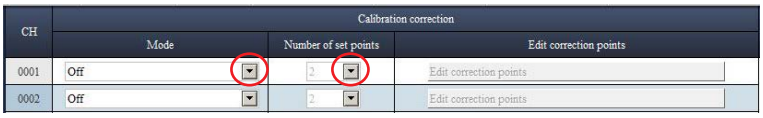
Calibration Correction

This example shows how to edit Calibration correction under AI channel settings.

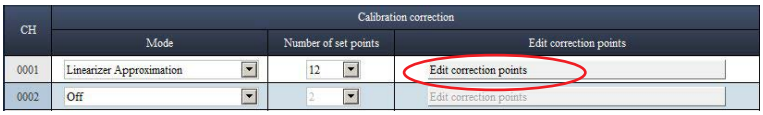
1 On the content selection tree, click **Calibration correction**.



2 Set the **Mode** and **Number of set points**.

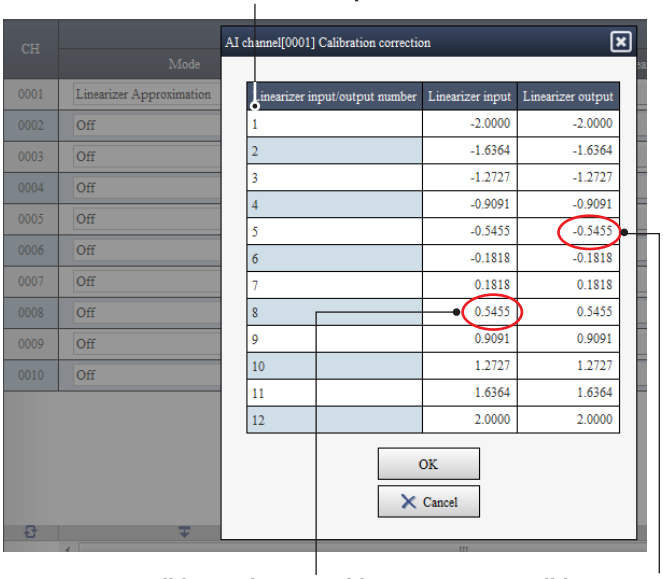


3 Under Calibration correction, click **Edit correction points**.



The **Calibration correction** dialog box appears.

Calibration correction set points



Editing an input position causes the value to be checked against the upper and lower limits and the value to be corrected.

Editing an output position causes the value to be checked against the upper and lower limits.

Note

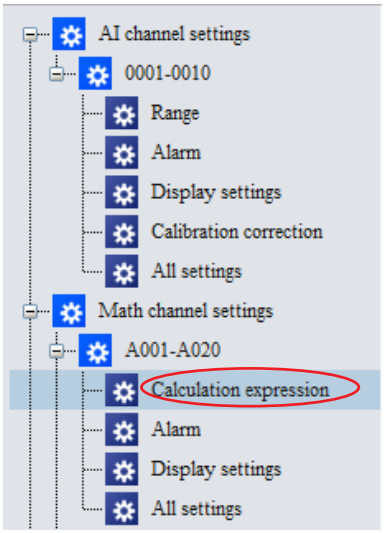
If you enter a value in any input position in the Calibration correction dialog box, the value is checked against the upper and lower limits and against the values of other positions and corrected. If you enter a value in any output position, the value is only checked against the upper and lower limits. For details on calibration correction, see the main unit's *User's Manual* (IM 04L51B01-01EN, or IM 04L55B01-01EN).

Operation 5

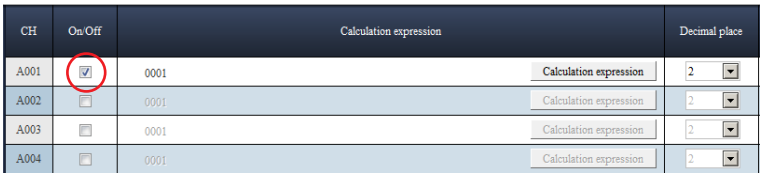
Calculation expression input

This example shows how to set a calculation expression in a math channel using the appropriate dialog boxes.

1 On the content selection tree, click **Math channel settings** and then **Calculation expression**.

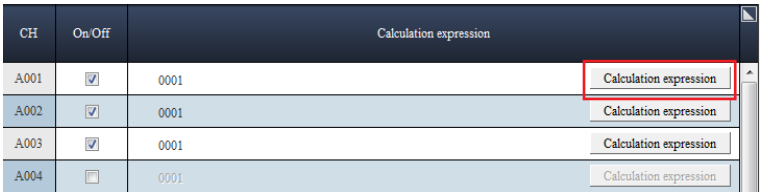


2 Select the **On/Off** check box of the channel that you want to set a calculation expression in.



The Calculation expression button becomes available.

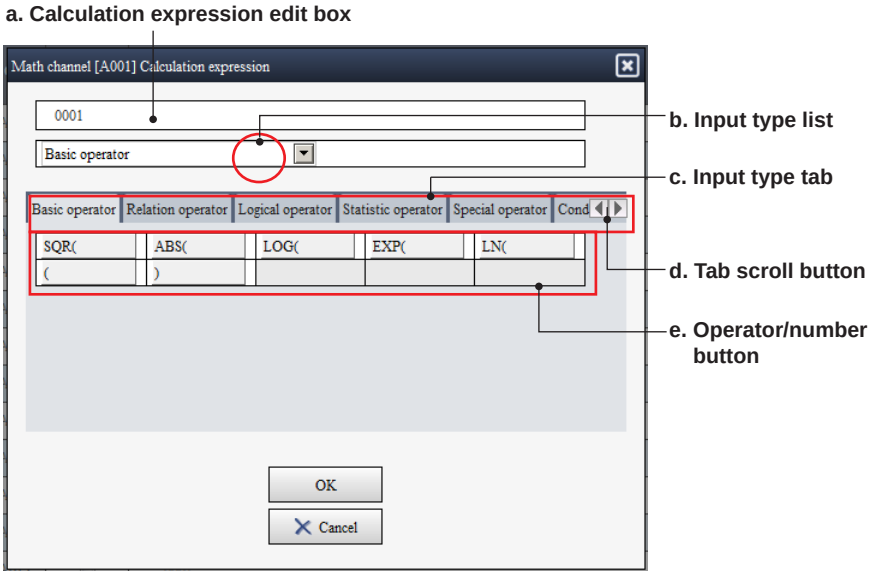
3 Click **Calculation expression**.



A **Calculation expression** dialog box appears. (Continued on the next page)

Note

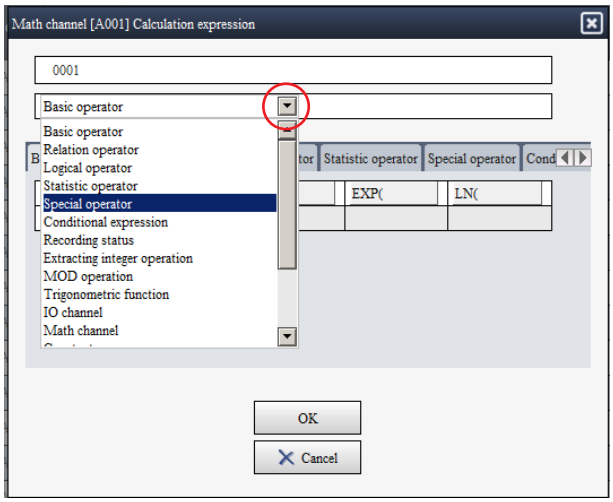
You can also directly enter the expression (text) in Calculation expression of the setup window without using the dialog box.



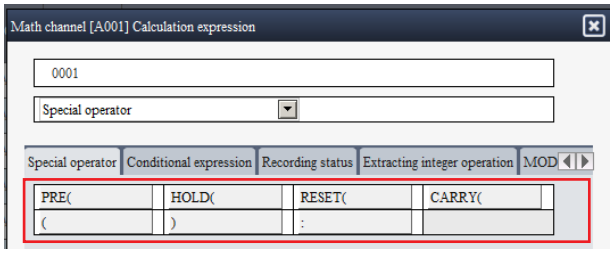
The table below shows the details for the items.

Item	Description
a. Calculation expression edit box	The box for entering the calculation expression. You can directly enter text.
b. Input type list	The items in the list are the same as those of “c”, Input type tab. The list name that you select here becomes the tab name.
c. Input type tab	Tab pages containing operators, numbers, and the like used in calculation expressions. They are grouped by input type. Clicking a tab displays the operators and numbers for the input type in area “e.”
d. Tab scroll button	Click to scroll the tab position horizontally.
e. Operator/number button	Click to add the text shown on the button to the end of the “a” text string.

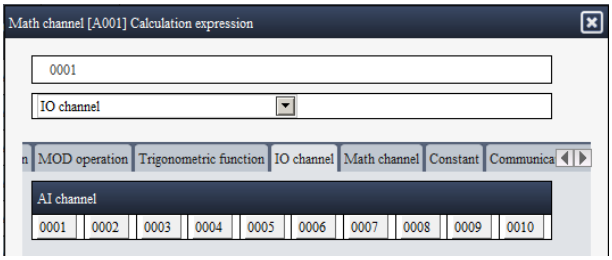
4 Enter the calculation expression in the calculation expression edit box. Click the Input type list arrow, and select the operator or channel that you want to display.



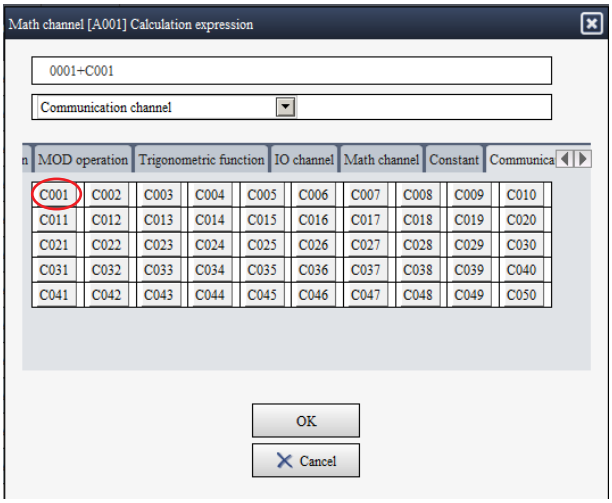
The selected operator is displayed.



You can also select the Input type tab to display in a similar manner.
In addition, clicking the channel list or tab displays channels.

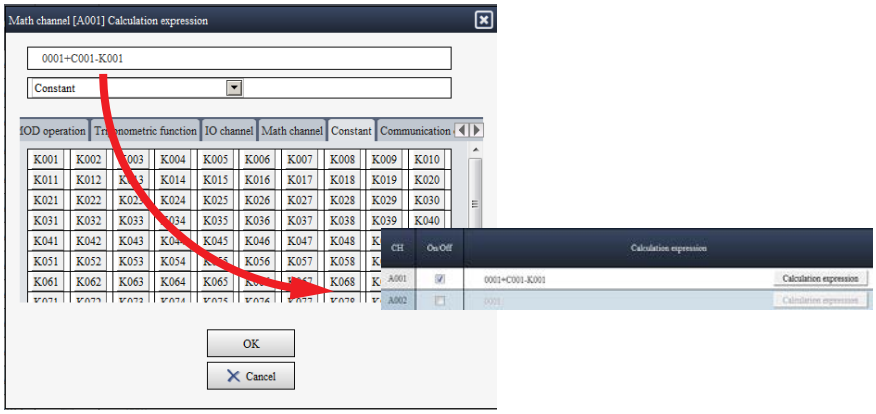


5 Click the operator or channel that you want to enter in the calculation expression.



The appropriate characters are added at the cursor position.

6 When you are finished entering the calculation expression, click **OK**.

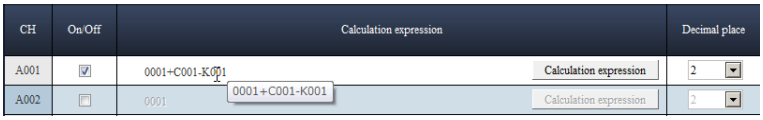


The dialog box closes, and the entered expression appears in **Calculation expression** in the setup window.

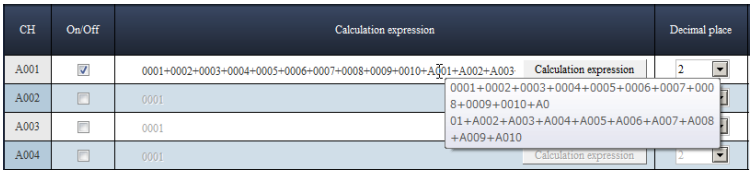
If the Calculation Expression Overflows

If the calculation expression is too long, it will not fit in the edit box.
In such a case, moving the cursor over the calculation expression in the setup window will show the entire expression in a pop-up.

- Pop-up display when the entered calculation expression fits in the edit box



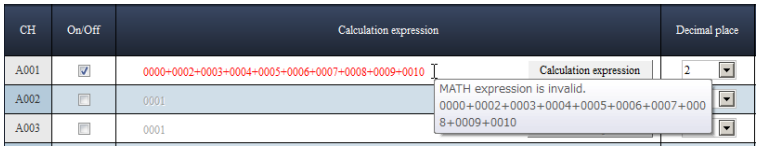
- Pop-up display when the entered calculation expression does not fit in the edit box



If an Invalid Calculation Expression Is Entered

If an invalid calculation expression is entered, the expression is displayed in red. The pop-up will display an error message and the entire calculation expression.

- Error message in the first line and the entire expression in the subsequent lines



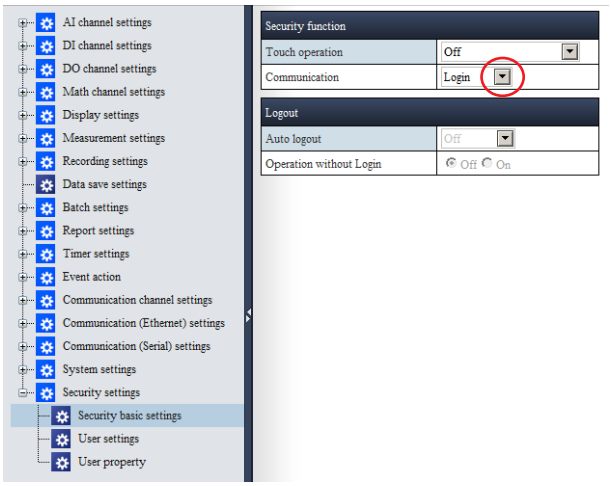
Note

- The calculation expression that appears in the pop-up are updated when you finish entering the calculation expression. It is not updated while you are entering the calculation expression (while the cursor is in the text box).
- The pop-up does not appear in the calculation expression text box of the dialog box.

2.3.3 How to Register Users

This example shows how to register users when Advanced security function (/AS) is set to Off.

1 From the content selection tree, select **Security settings** - **Security basic settings**, and set **Security settings**.
Set **Login** to **Communication**.
User settings and User property are added to the tree content.



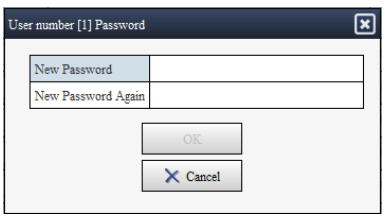
2 From the contents selection tree, select Security settings - User settings.

3 Register the user information for each user number.
User level of **User number** 1 is fixed to **Admin**. Register new users from the second user.

The first user is fixed to Admin. **Select the mode.** **Click to register a password.**

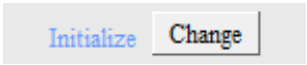
User number	User level	Mode	User name	Password
1	Admin	Touch operation + Communication	User01	***** Change
2	User	Touch operation + Communication	User02	***** Change
3	Off	Touch operation + Communication	User03	***** Change
4	Off	Touch operation + Communication	User04	***** Change
5	Off	Touch operation + Communication	User05	***** Change

To register a password, click **Change**.

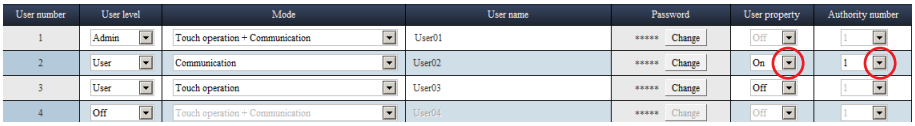


If you change a password, the concealed characters (asterisks) will turn blue.

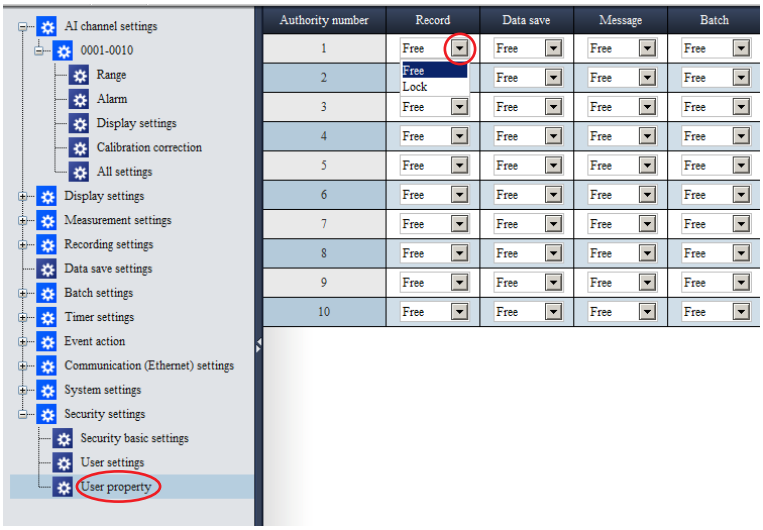
If you change the user name, the corresponding password will be initialized.
In this case, “Initialize will appear in blue.



4 To set **User property** *, select **On** and assign an **Authority number**.



* Limits are set using **Security settings** > **User property**. To restrict an operation, change **Free** to **Lock**.



Note

- Only Admin can be registered in user number 1.
- Make a note of the administrator password, and do not lose it.
- Enter the password using up to 20 characters. Single quotations, semicolons, and spaces are not allowed.
- You can set User property only when the User level is User.

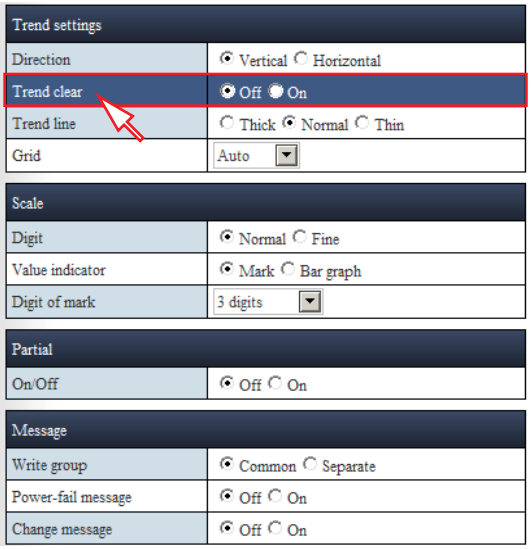
2.3.4 Selecting a Range and Copying and Pasting

This software enables you to select a range of setup items to edit them, copy them, and paste them.
This section explains how to select a range of items and how to use the Copy, Paste, and Tool buttons.

Selecting a Range

Procedure

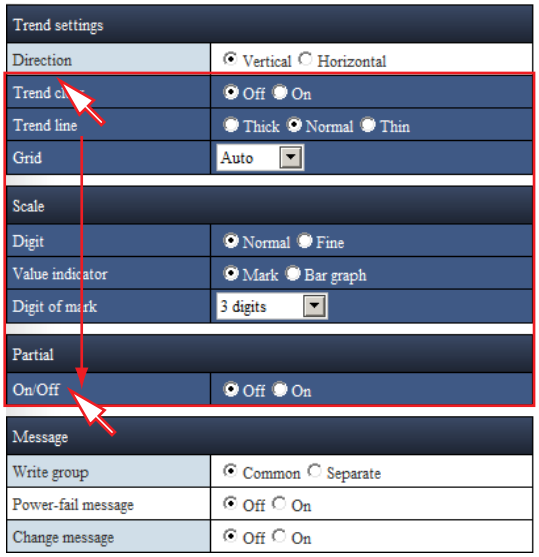
1 To select a line, click an item name.
The example below is for **Display settings** - **Trend settings** - **List type**.



Click the line name.

The line is selected.

2 To select multiple lines, drag the cursor and release the mouse at the last line you want to select.



Drag across the line names to select multiple lines.

Multiple lines are selected.

Note

When selecting a range, you cannot select multiple lines one by one. You cannot select columns individually.

Copying the Selected Range and Pasting

Procedure

1 To copy the selected range, click the **Copy** button, which is located in the lower right of the window. You can also press Ctrl+C on the keyboard.
When the range is copied to the Clipboard, the color of the range changes as shown below.

2 You can paste the contents of the Clipboard to an Excel spreadsheet or a text file. The figure below shows an example in which the contents are copied to cell A1 of an Excel spreadsheet.
When pasting to an Excel spreadsheet, check the format of the cell that you are pasting to.

	A	B	C
1	Trend clear	Off	
2	Trend line	Normal	
3	Grid	Auto	
4	Digit	Normal	
5	Value indicator	Mark	
6	Digit of mark	3 digits	
7	On/Off	Off	
8			

3 The pasted contents can be edit on Excel or a text editor.

	A	B
1	Direction	Horizontal
2	Trend clear	Off
3	Trend line	Normal
4	Grid	Auto

→

	A	B
1	Direction	Vertical
2	Trend clear	On
3	Trend line	Thin
4	Grid	5

Edit the values in the B column in Excel.

4 The edit contents can be pasted back to the setup items. Copy the edit results from the Excel spreadsheet. Copy not just the values but also the item names in row A.

	A	B
1	Direction	Vertical
2	Trend clear	On
3	Trend line	Thin
4	Grid	5
5		

5 Select the paste range in the configuration window. Make the paste range the same as the range of the copied data (the number of lines).

6 Paste the data. Click the **Paste** button, which is located in the lower right of the window. You can also press Ctrl+V on the keyboard.

The edit results from the Excel spreadsheet is pasted to the configuration window.

Note

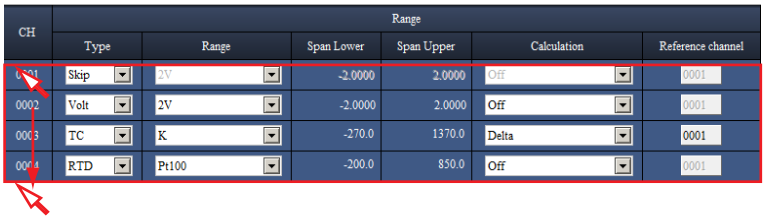
- Depending on the format of the Excel cells that you are pasting to, the values may change when you paste the contents from the Clipboard. For example, if the format is set to **Number**, “0001” will change to “1”. You can prevent pasted values from being automatically corrected by setting **Number** to **Text** in the Format Cells dialog box of the Excel sheet that you want to paste to.
- If the values cannot be pasted as they are to the Excel sheet even with the settings above, we recommend that you use a text editor for copying and pasting.
- If the values that you edit with Excel or a text editor are outside the setting range, when you paste the data back to the configuration window of the software, the values will be corrected in the same way as when you enter values directly.

Selecting a Range of Channels Whose Types Are Different and Copying and Pasting Them

The example below is an AI channel configuration window.

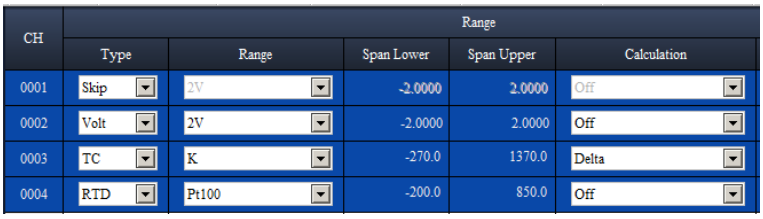
Procedure

1 Select a range of channels as shown below.



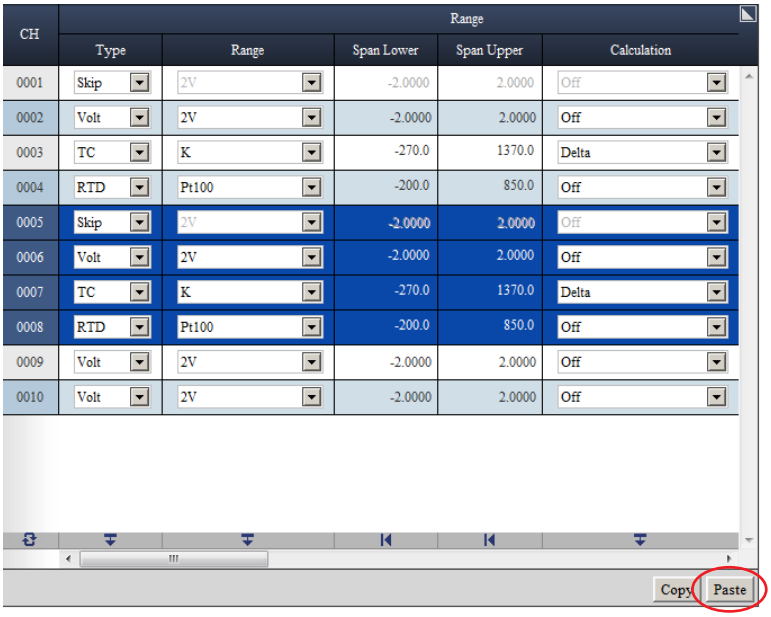
Click the name of the line to select the entire line.
Drag down to select multiple lines.

2 Copy the channel information (lines).



Press Ctrl+C, or click Copy to copy the cells.

3 Paste to different channels.



Select the cells to paste to. Press Ctrl+V, or click Paste to paste to the cells.

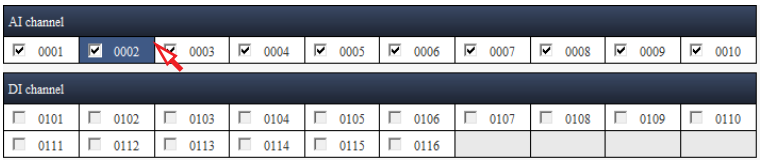
Note

In Chrome, you cannot use the Paste button. To paste, press Ctrl + V on the keyboard, or select Paste from the browser's menu.

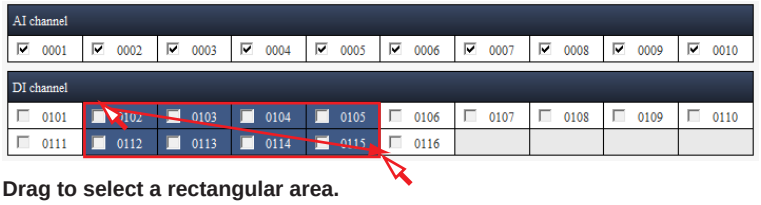
The example below shows the configuration window that appears when you select **Display settings** - **Group settings** - **Channel set**.

Procedure

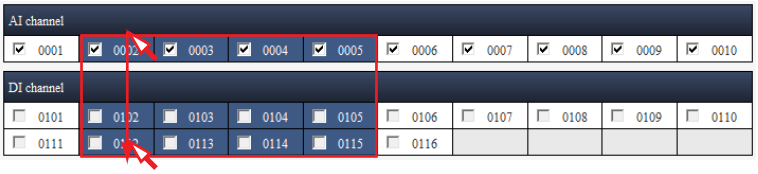
1 Select a range of channels as shown below.



Click a label in a cell to select a single cell.



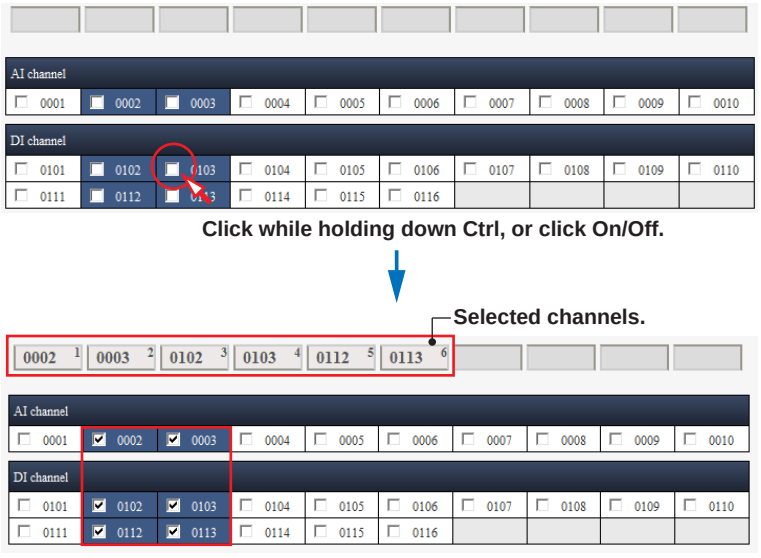
Drag to select a rectangular area.



Selection can be made across different setup item blocks.

2 While holding down Ctrl, click any of the check boxes in the selected range, or click the **On/Off** button to select or clear all the check boxes in the selected range.

Check boxes in the selected range will be On at once.

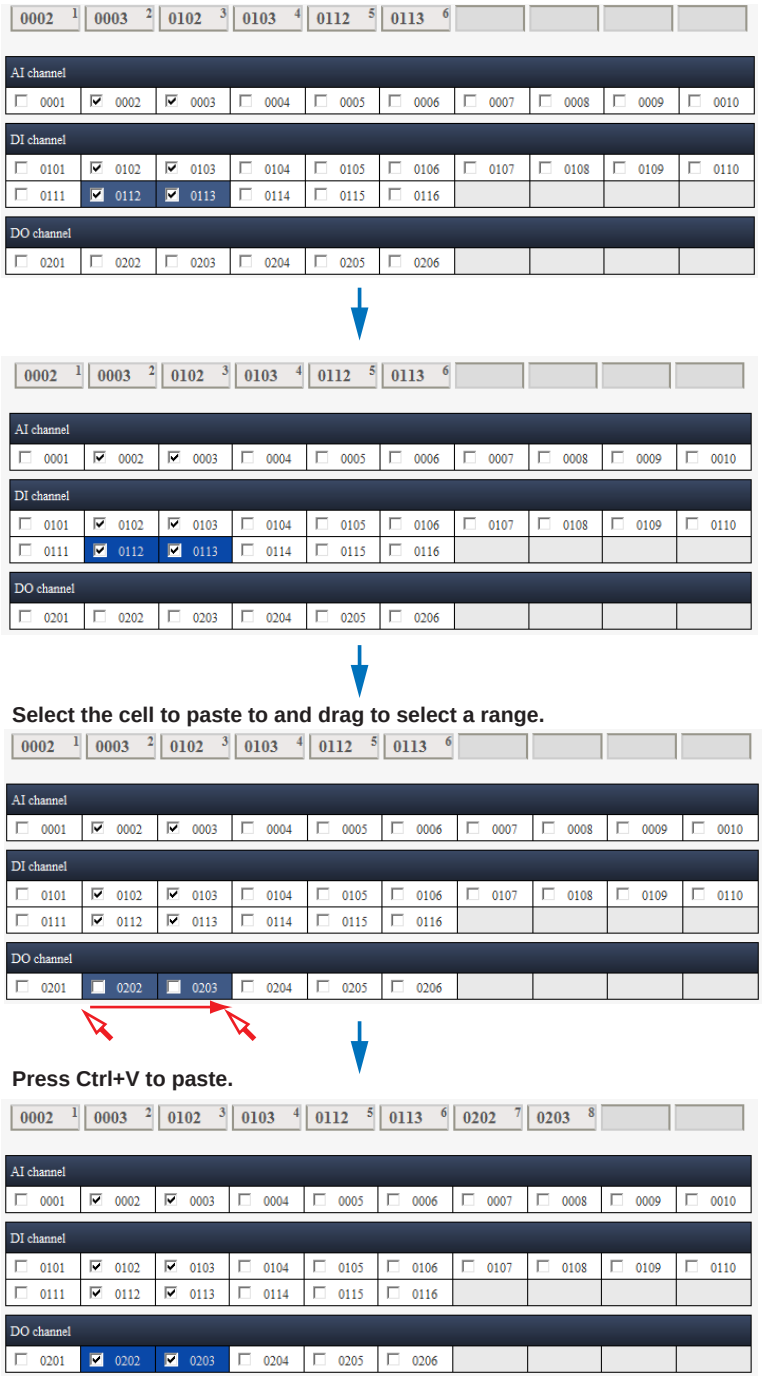


Click while holding down Ctrl, or click On/Off.

Click again to clear all the check boxes.

3 The contents in the selected range can be pasted to other cells.

Select the cells to copy from, and press Ctrl+C to copy.



Select the cell to paste to and drag to select a range.

Press Ctrl+V to paste.

Note

- When you attempt to copy and paste values, browser may show the message “Do you want to allow this webpage to access your clipboard?” Click **Allow** access to enable the copy and paste feature of this software. If you click **Don’t allow**, you will not be able to use the copy and paste feature.
- If the cells whose check box is selected (on) reaches the maximum selectable number, cells whose check boxes are unselected become unavailable, and you will not be able to paste to them. You cannot paste to cells that do not have check boxes.
- Pasting is not possible to character strings that cannot be edited or passwords (concealed character strings).
- When option buttons or list boxes are selected, only the selected character strings can be copied and pasted.

Explanation

The configuration windows of this software can be classified into three window types. First is the list type, as in the **Trend settings** window. Second is the table type, as in the **AI channel settings** window. Third is the check box sheet type, as in the **Channel set** window of **Group settings**. The table below shows the differences in how you edit items for each window type.

Window Type	Selectable Range	Selection Method	Selection Cancellation Method	Limitations
List type	• By lines. • Multiple lines across different setup items can be selected.	Click the name of the line to select the entire line. Drag across the names of lines to select multiple lines.	Click a location other than a line name and within the setup item edit area.	Multiple lines cannot be selected one by one. Columns cannot be selected individually.
Table type	• One or multiple lines.	Click the name of the line to select the entire line. Drag across the names of lines to select multiple lines.	Click a location other than the line name.	If you click a cell in a different line, the selection of previously selected cells will be cleared.
Check box sheet type	• By cells. • A rectangular region can be selected.	Click a label in a cell to select a single cell. Drag the cursor diagonally to select a rectangular area. Selection can be made across different setup item blocks.	Click an area within the check sheet without holding the Ctrl key.	If the cells that are On reaches the maximum selectable number, cells whose check boxes are not selected become unavailable.

Editing Using Tool Buttons

On table type configuration windows, you can use the tool buttons that are shown at the bottom of each table. Each tool button is assigned a function. You can use them to edit items collectively.

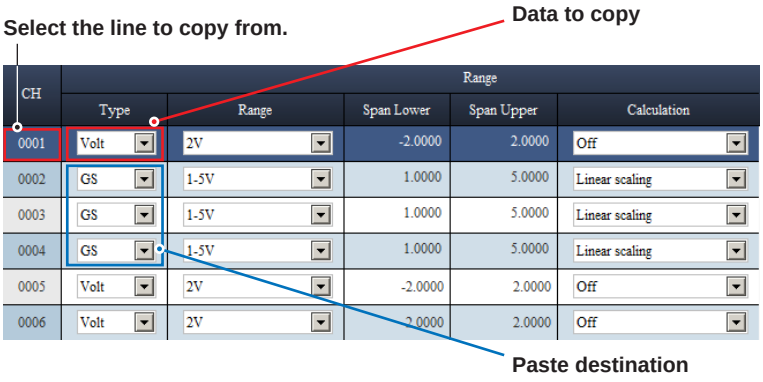
The available types of tool buttons are **Initialize**, **Paste to all lines**, **Increment**, **Minimize/ Maximize**, and **Change all**.

Tool button types and functions: ▶ See the **table on the next page**.

In the operation example below, the **Paste to all tool** button is used to set the **Type** of all selected channels to the same value.

Procedure

1 On the table type configuration window (the AI channel settings configuration window in this example), select the lines that contain the data that you want to copy.
CH0001 is selected.

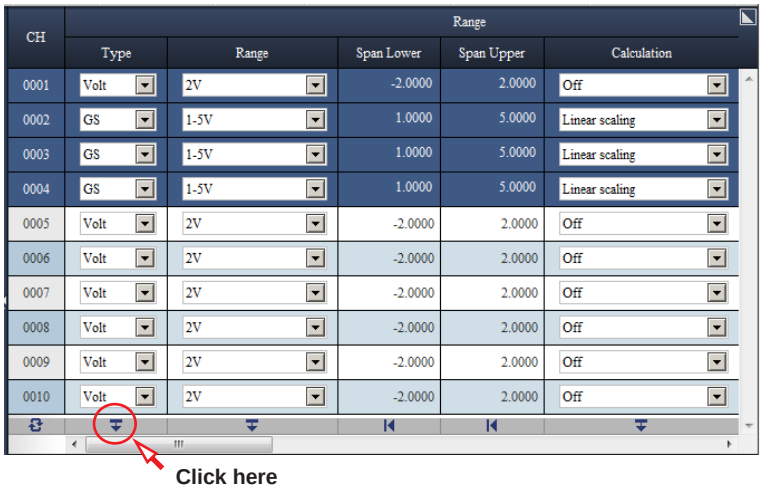


CH	Range				
	Type	Range	Span Lower	Span Upper	Calculation
0001	Volt	2V	-2.0000	2.0000	Off
0002	GS	1-5V	1.0000	5.0000	Linear scaling
0003	GS	1-5V	1.0000	5.0000	Linear scaling
0004	GS	1-5V	1.0000	5.0000	Linear scaling
0005	Volt	2V	-2.0000	2.0000	Off
0006	Volt	2V	-2.0000	2.0000	Off

2 Drag the cursor to the last line that you want to assign the same type.
CH0001 to CH0004 are selected.

CH	Range				
	Type	Range	Span Lower	Span Upper	Calculation
0001	Volt	2V	-2.0000	2.0000	Off
0002	GS	1-5V	1.0000	5.0000	Linear scaling
0003	GS	1-5V	1.0000	5.0000	Linear scaling
0004	GS	1-5V	1.0000	5.0000	Linear scaling
0005	Volt	2V	-2.0000	2.0000	Off
0006	Volt	2V	-2.0000	2.0000	Off

3 Click the **Past to all** button on the tool bar.



CH	Range				
	Type	Range	Span Lower	Span Upper	Calculation
0001	Volt	2V	-2.0000	2.0000	Off
0002	GS	1-5V	1.0000	5.0000	Linear scaling
0003	GS	1-5V	1.0000	5.0000	Linear scaling
0004	GS	1-5V	1.0000	5.0000	Linear scaling
0005	Volt	2V	-2.0000	2.0000	Off
0006	Volt	2V	-2.0000	2.0000	Off
0007	Volt	2V	-2.0000	2.0000	Off
0008	Volt	2V	-2.0000	2.0000	Off
0009	Volt	2V	-2.0000	2.0000	Off
0010	Volt	2V	-2.0000	2.0000	Off

The type of CH0002 to CH0004 is set to **Volt**.

CH	Range				
	Type	Range	Span Lower	Span Upper	Calculation
0001	Volt	2V	-2.0000	2.0000	Off
0002	Volt	2V	1.0000	2.0000	Linear scaling
0003	Volt	2V	1.0000	2.0000	Linear scaling
0004	Volt	2V	1.0000	2.0000	Linear scaling
0005	Volt	2V	-2.0000	2.0000	Off
0006	Volt	2V	-2.0000	2.0000	Off

Note

- When you use the tool button to paste data, the values are automatically corrected in the same way as when you enter values directly.
- Tool buttons are unavailable when no cells are selected (except for the **Change all** button).

The table below shows the different tool button types and their functions.

Button	Icon	Function
Past to all		Pastes the value in the first selected line to all other lines.
Increment		• For numeric input Pastes numbers to all selected lines by auto-incrementing the least significant digit, based on the number in the first selected line. • For character string input Pastes the character string of the first line appended with auto-incremented sequence numbers to all selected lines. If the character string of the first selected line ends with a number, this number will be used as the first sequence number. If the character string of the first selected line ends with a character, the sequence number 1 is appended to the character string of the first selected line.
Initialize		Initializes the values of the selected lines to their defaults.
Minimize		Sets the values of the selected lines to their minimum values.
Maximize		Sets the values of the selected lines to their maximum values.
Change all		• For check boxes Switches the check box values of the selected lines at once. If all the check boxes of the selected lines are selected, they are cleared. If they are cleared, they are selected. • For line name columns Selects or unselects all lines in the table.

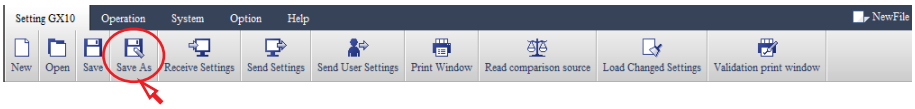
2.4 Saving Setup Data

2.4.1 Saving a Setup Data

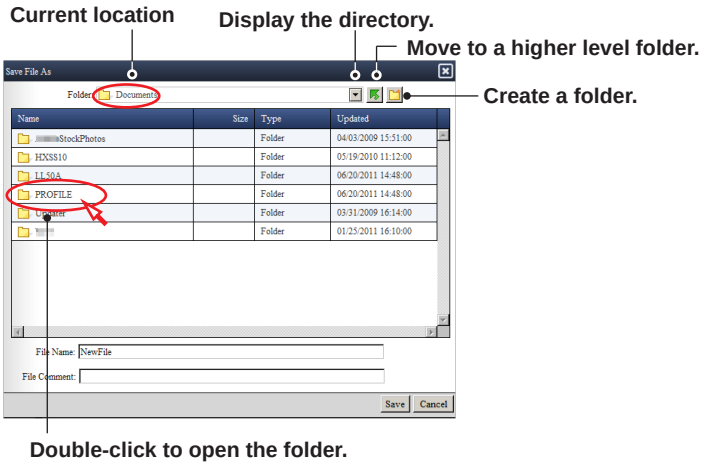
This section explains how to save a configuration file to your PC.
Saving a Configuration File Containing a Program Pattern (GX/GP/GM with the program control function): ▶ 2.4.2

Procedure

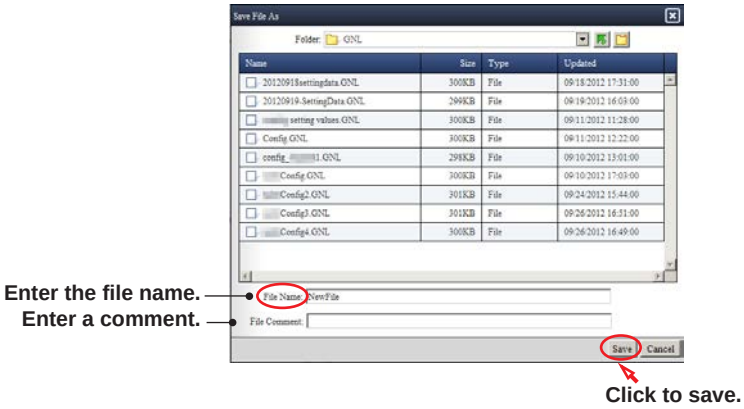
1 Click **Setting** tab and then **Save As**.



The **Save As** dialog box* appears.
*: The subsequent times you open the dialog box, The first time you open this dialog box, Folder will be set to My Documents. Folder will show the last location that you opened or save to.



2 Specify the folder to save to, enter the file name, and click **Save**.



If a file with the same name exists in the folder, an overwrite confirmation message will appear. Click **OK** or **Cancel**.
If you click **OK**, the configuration file (.GNL, or .GSL extension) will be saved to the specified folder.

Note

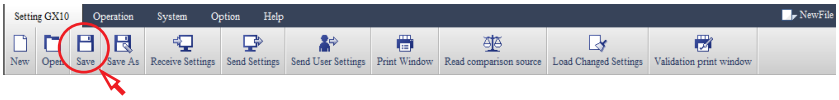
- The GX/GP cannot load configuration files whose names contain non-alphabet characters (such as Japanese and Korean). Therefore, if you need to load such files in the GX/GP, do not use non-alphabetic characters.
- The maximum file path length (including the file name) is 256 characters. If this limit is exceeded, an error will occur. Pay attention to the hierarchical depth and file name length.
- The following characters cannot be used in file names or folder names.

Prohibited characters	Name
/	Slash
> <	Inequality signs
:	Colon
?	Question mark
"	Double quotation
'	Single quotation
\	Backslash
*	Asterisk
|	Pipe
;	Semicolon

- You can enter up to 50 characters for the comment.

Save

Click **Setting** tab and then **Save** to save the edited contents to the current file.
If the file has not been saved yet, clicking **Save** will result in the same operation as clicking **Save As**.



A configuration file (.GSL extension) saved with GX/GP/GM with the advanced security function (/AS) cannot be overwritten. Save it to a new file (using Save As).

2.4.2 Saving a Configuration File Containing a Program Pattern (GX/GP/GM with the program control function)

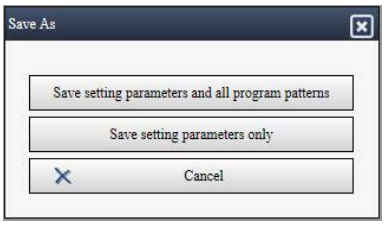
This section describes operations for saving a configuration file containing a program pattern of GX/GP/GM with the program control function (option, /PG).
On the “Hardware Configurator”, you can save a file in the following methods.

- Saving a configuration file and a program pattern file together.
- Saving a configuration file only.
  Using the “Program Pattern Setting”, you can save a program pattern file only.: ▶ Chapter 5

Procedure

1 Click the **Setting** tab and then **Save As**.

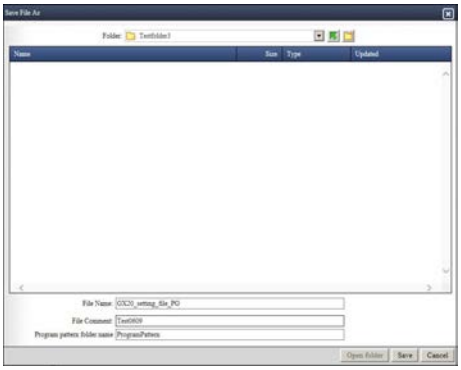
If there is no program pattern on the screen, you can save it using the same procedure as 2.4.1.
If there is a program pattern, the following dialog appears.



2 Choose a saving method.
Save setting parameters only: Proceeds to the dialog for saving only the settings. The procedure is the same as 2.4.1.
Save setting parameters and all program patterns: Proceeds to the dialog for saving settings and program patterns (pattern number 01-99) together (Step 3).

3 Specify a saving location. Enter “Configuration file name” and “Program pattern folder name”, and click **Save**.

The default value of the Program pattern folder name is ProgramPattern. Some characters cannot be entered for a folder name. (See Note in the next page)



A folder containing a configuration file (*.GNL) and a program pattern file is saved.

Operation complete

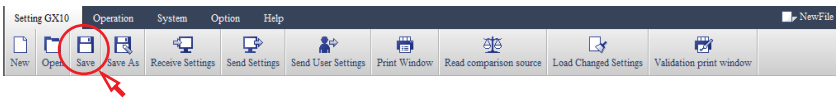
Note

- If there is a program pattern folder with the same name in the saving location, an overwrite confirmation message (W005) appears. If you click Cancel, the folder is not overwritten.
- The following table shows the limitations of characters that can be entered for a program pattern folder name. If a character outside the range is entered, an error (E017) is shown, and the folder cannot be saved.

Limitations	Range	
Number of characters	You can enter up to 32 characters.	
Prohibited characters	/	Slash
	> <	Inequality
	:	Colon
	?	Question mark
	“	Double quotation marks
	‘	Single quotation marks
	\	Backslash
	*	Asterisk
	|	Vertical bar (pipe)
	;	Semi-colon
Prohibited words	AUX, CON, PRN, NUL CLOCK$, CLOCK COM0, COM1, COM2, COM3, COM4, COM5, COM6, COM7, COM8, COM9 LPT0, LPT1, LPT2, LPT3, LPT4, LPT5, LPT6, LPT7, LPT8, LPT9	
Other limitations	You cannot begin/end the name of folder with a space or a point. Additionally, a blank name is not available.	
Path length	Up to 256 characters including the folder name.	

Save

If you click **Save** to save a configuration file containing a program pattern, the program pattern folder is overwritten as well as the existing configuration file.



Overwrite of the program pattern folder is executed if one of the following is applicable.
- The program pattern folder for which **Save As** was executed the last time
- The program pattern folder opened by choosing **Open** and specifying the folder name.

If a configuration file has never been saved yet (NewFile is shown at the upper right of the screen), even if **Save** is clicked, the procedure is the same as saving a new file.

2.5 Initializing Setup Data

If you change the setup data on this software, the changes are stored and will appear the next time you start the software. If you want to view or change the current system configuration, follow the procedure in section 2.5.1.
If you do not want to change the current system configuration but initialize the setting value only, follow the procedure in section 2.5.2.

Note

If you change the system configuration, the current setup data will be initialized. If you want to save the setup data that is currently displayed, save the file before changing the system configuration.

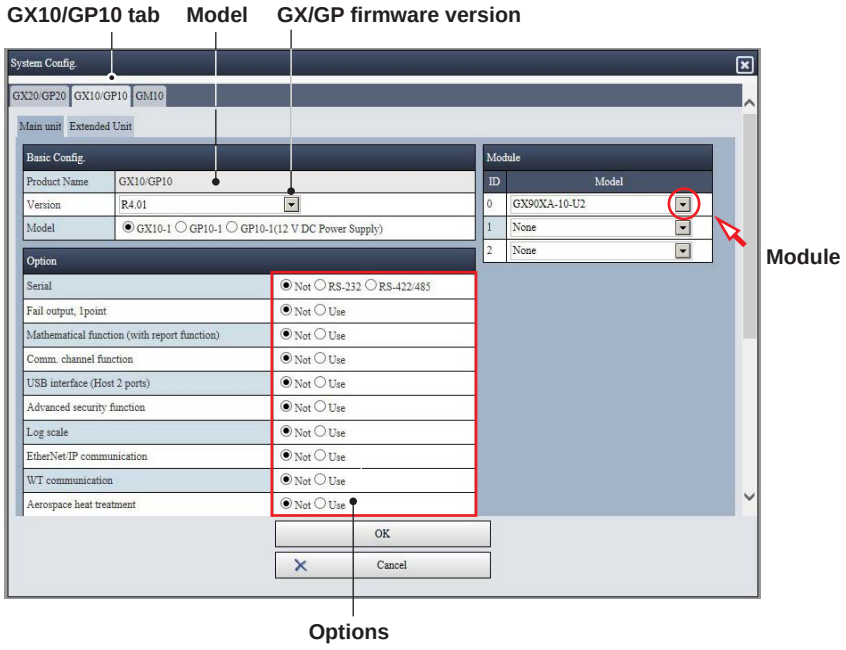
2.5.1 Viewing and Changing the System Configuration

Procedure

1 Click **System** tab and then **System Config**.

The **System Config.** dialog box appears, showing the current system configuration.

2 If you just want to view the system configuration and not change it, click **Cancel**.
To change it, select the option or module that you want to change.
How to set the System Config dialog box: ▶**2.1.1 Creating a File in Accordance with System Configuration**



3 After you set the items, click **OK**.
The system is reconfigured, and the setup items for the new system configuration will appear.

2.5.2 Initializing Setup Data

Procedure

1. Click **System** tab and then **Initialize**.

The initialization confirmation dialog box appears.

2. Click **OK** to initialize.
Initialization will take place.

2.6 Printing Setup Data

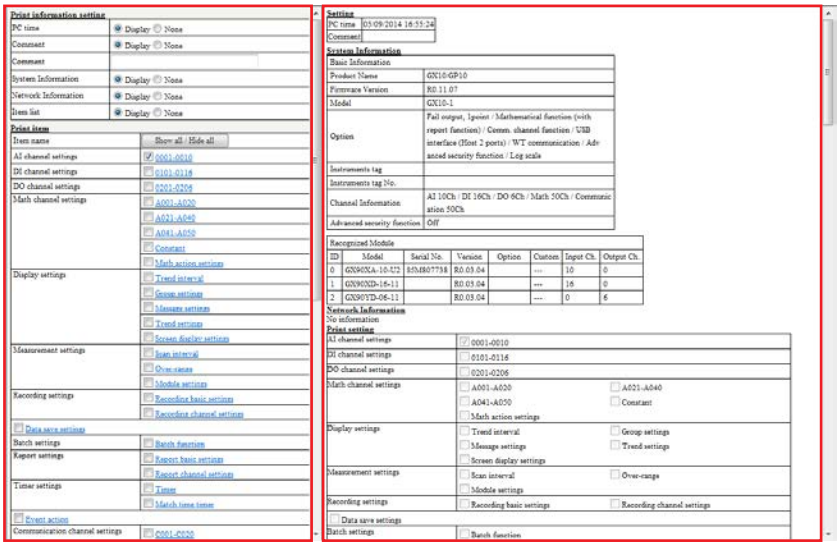
You can display the current system configuration data and setting data in a separate window and print them as a form. You can select what items to print.

2.6.1 Setting the Print Options

Procedure

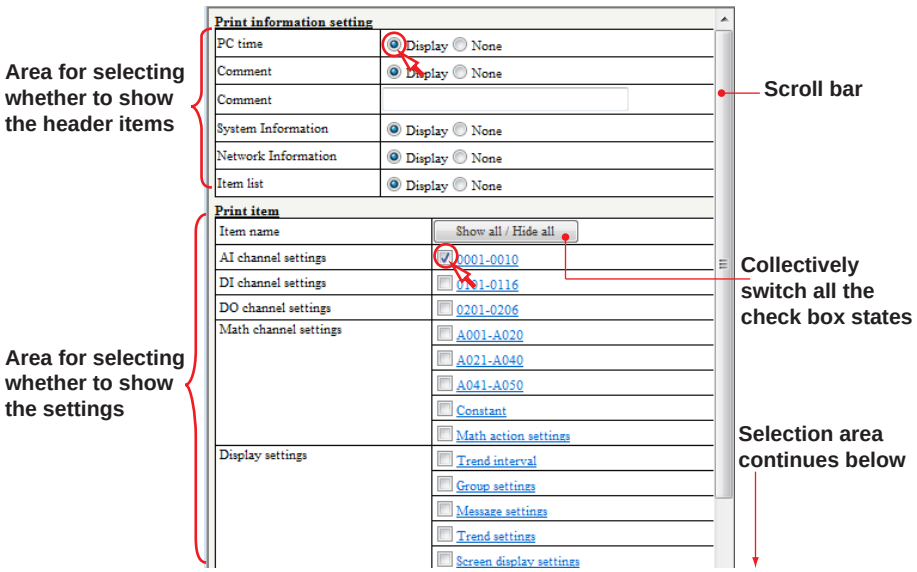
1 Click **Setting** tab and then **Print Window**.

A separate window for printing opens.
The window is divided into the print setting area (left half) and display area (right half).



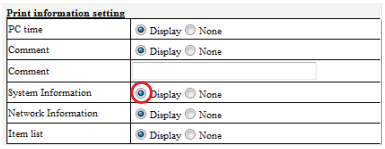
Area for setting print conditions **Area for displaying the content to be printed**

2 In the print setting area (left half), select which items to print.
For each item that you want to print, select Display or select the check box. For the items that you do not want to print, select None or clear the check box.

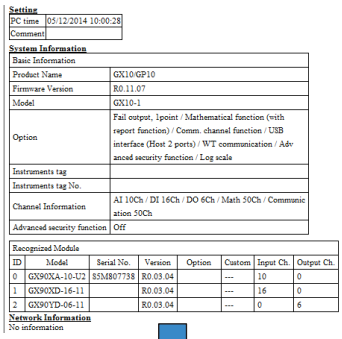


The selections that you make are applied immediately to the window.
In the example shown below, an header item is changed.

Before changing the setting area

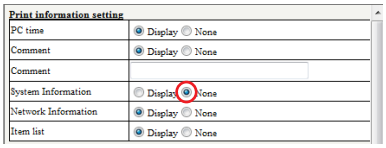


Before changing the display area

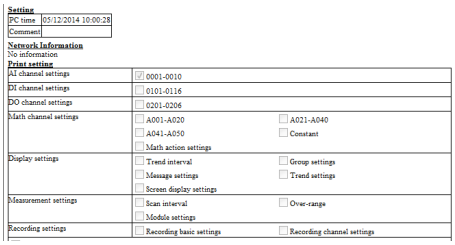


System Information is set to None

After changing the setting area

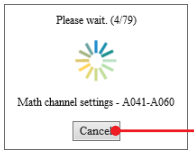


After changing the display area



The System Information area is gone, and the AI channel settings have been shifted up.

Waiting



Display area

If you click Cancel while waiting for the changes to be applied to the display, the changes will be canceled.
If you click Display Update, the print content will be re-displayed according to the settings in the setting area.

3 When you have selected all the items that you want to print, click **Print** on the Web browser's menu.
The Web browser's Print dialog box appears.

4 Click **OK**.
The setup data will be printed.

Note

- In the user settings of security settings, User ID and Password are printed with concealed characters (asterisks).
- If you change settings while the Print window is displayed, to apply the changes to the window from the browser's menu.
- To set the page number, click Page Setup on the browser's menu.
- Configure the printer settings in accordance with your PC system.
- When printing, if the layout appears broken at the page switching point, print in the IE mode of Microsoft Edge.

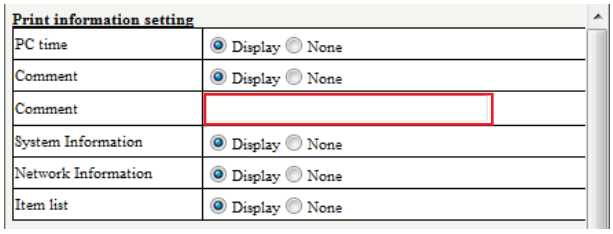
Explanation

This section explains the print settings shown on the left side of the window.

Print information setting

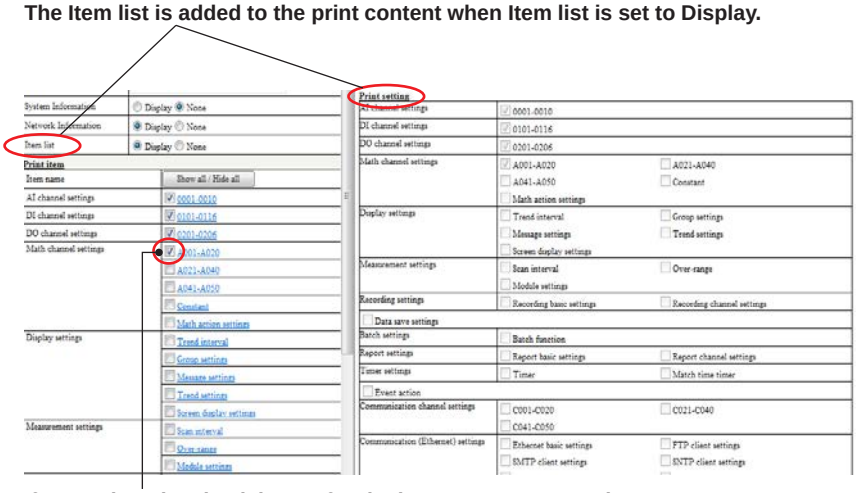
The settings in this area specifies the printing of header items. The default values of all items are set to Display.
Changing an item to None clears the title and information from the display area on the right.

• In the Comment box, you can directly enter a comment (text). When Comment is set to Display, this text is displayed.



• If Item list is set to Display, a list of settings to be printed is printed in the header area. This list reflects the items selected in Print item describe below.

The Item list is added to the print content when Item list is set to Display.

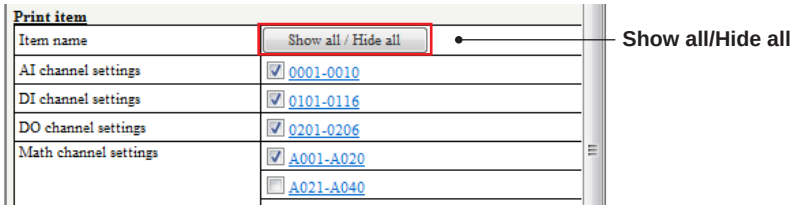


If you select the check boxes for the items you want to print, they are reflected in the Print item list.

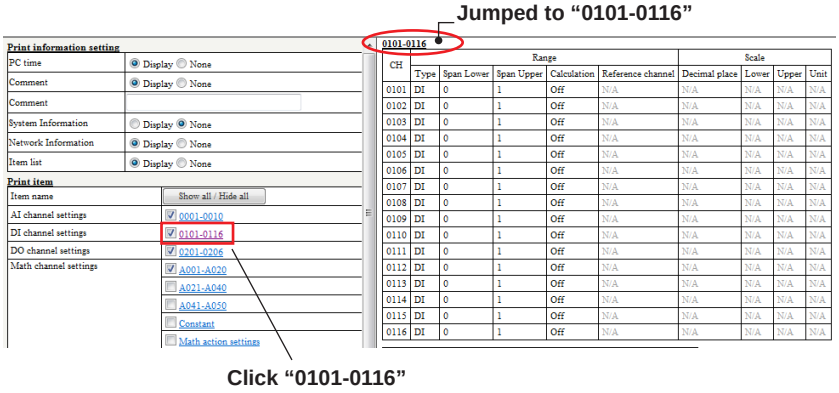
Print item

Select the check boxes of the items to specify the settings to be printed.
By default, only the first item (e.g., AI channel settings) is selected. The check box conditions when you close the window are retained for the next time.

- Click **Show all/Hide** all to collectively select or clear all the Print item check boxes.



- Clicking a title of the settings under Print item moves the display area on the right to the corresponding title.



2.6.2 Validation Print

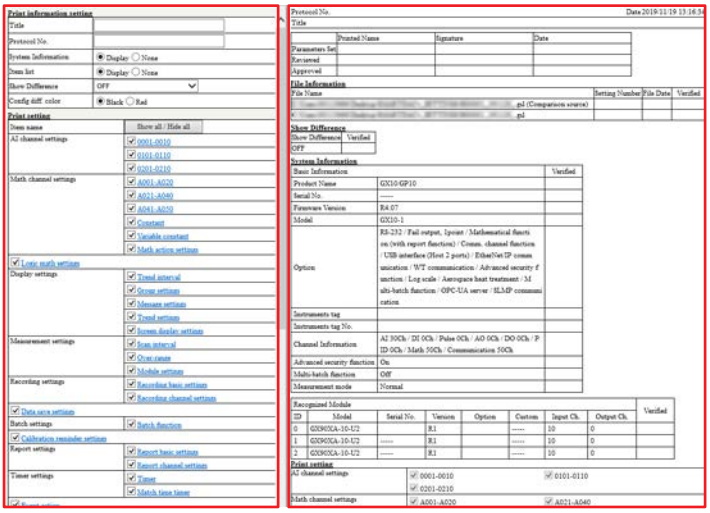
The Validation print window is used to compare the setup data that you created to a setup data reference.
You can use the **Read comparison source** to load a comparison source file, compare the differences, and print them.

Loading the Comparison Source File: ▶ **2.2.2 Opening the Comparison Source File**
Loading the Comparison Program Pattern File: ▶ **2.5 Opening a Comparison Source of a Program Pattern (GX/GP/GM with the Program Control Function)**

Procedure

1 Click **Setting** tab and then **Validation print window**.

A separate window for printing opens.

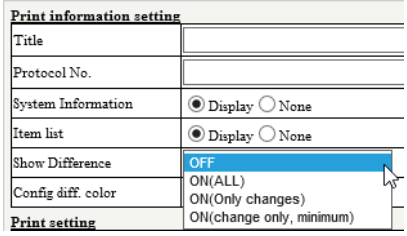


Area for setting print conditions

Area for displaying the content to be printed

2 In the print setting area shown on the left side of the window, select which items to print.
For the items that you want to print, select Display or select the check boxes. For the items that you do not want to print, select None or clear the check boxes.

3 If you want to display and print the differences between two files, under Print information setting, set Show Difference to anything other than OFF.



You can view the differences in the setup data in the print content on the right.

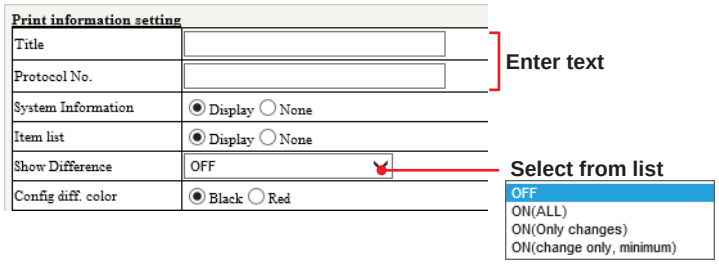
The procedure to set the print conditions is the same as that described in section **2.6.1 Setting the Print Options**."

Explanation

This section explains the setting area shown on the left side of the Validation print window.

Print information setting

The settings in this area specifies the printing of header items.



Item	Selectable Range/Options	
Title	Text input (up to 64 characters)	The entered text is reflected in the header of the print display area.
Protocol No.	Text input (up to 32 characters)	Same as above
System Information	Display, None	Selecting Display shows the item in the display area on the right.
Item list	Display, None	Selecting Display prints a list of the print item settings in the header area. The items in this list are the same as those selected under Print item.
Show Difference (Note)	None	The difference is not displayed.
	ON (All)	Items that are different and those that are not are both displayed (printed).
	ON (Only changes)	The details of only the items that are different are displayed (printed). For items that are not different, only their titles are displayed.
	ON (change only, minimum)	The details of only the items that are different are displayed (printed). Tables that are not different are not displayed.
Config diff color	Black, Red	Set the Config diff. color to black or red.

Note

- Show Difference is valid only when a comparison source file has been specified.
- If Show Difference is set to ON (ALL), the comparison source settings are printed with strikethroughs. Items that are the same are printed in the same manner as normal printing.
  Display example: Difference display color is red

0001-0010

CH	Range						Scale				Verified
	Type	Range	Span Lower	Span Upper	Calculation	Reference channel	Decimal place	Lower	Upper	Unit	
0001	Volt	6V	1.000	5.000	Linear scaling	N/A	1	0.0	2000.0	℃	
0002	Volt	6V	-6.000	6.000	Linear scaling	N/A	1	0.0	1000.0	℃	
0003	Volt	6V	-6.000	6.000	Linear scaling	N/A	1	0.0	1000.0	℃	
0004	RTD	Pt100	0.0	200.0	Off	N/A	N/A	N/A	N/A	N/A	
0005	RTD	Pt100	0.0	200.0	Off	N/A	N/A	N/A	N/A	N/A	
0006	Volt	~~6V~~ 2V	~~-6.000~~ -2.0000	~~6.000~~ 2.0000	~~Linear scaling~~ Off	N/A	~~1~~ N/A	~~0.0~~ N/A	~~1000.0~~ N/A	~~℃~~ N/A	
0007	Volt	~~6V~~ 2V	~~-6.000~~ -2.0000	~~6.000~~ 2.0000	~~Linear scaling~~ Off	N/A	~~1~~ N/A	~~0.0~~ N/A	~~1000.0~~ N/A	~~℃~~ N/A	
0008	Volt	2V	-2.0000	2.0000	Off	N/A	N/A	N/A	N/A	N/A	
0009	Volt	2V	-2.0000	2.0000	Off	N/A	N/A	N/A	N/A	N/A	
0010	Volt	2V	-2.0000	2.0000	Off	N/A	N/A	N/A	N/A	N/A	

- If Show Difference is set to ON (Only changes), only the lines with changes are printed as shown below. If all the items under a title have not changed, “No change” is printed under the title.
  Display example: Difference display color is red

0001-0010

CH	Range						Scale				Verified
	Type	Range	Span Lower	Span Upper	Calculation	Reference channel	Decimal place	Lower	Upper	Unit	
0006	Volt	~~6V~~ 2V	~~-6.000~~ -2.0000	~~6.000~~ 2.0000	~~Linear scaling~~ Off	N/A	~~1~~ N/A	~~0.0~~ N/A	~~1000.0~~ N/A	~~℃~~ N/A	
0007	Volt	~~6V~~ 2V	~~-6.000~~ -2.0000	~~6.000~~ 2.0000	~~Linear scaling~~ Off	N/A	~~1~~ N/A	~~0.0~~ N/A	~~1000.0~~ N/A	~~℃~~ N/A	

Print Item

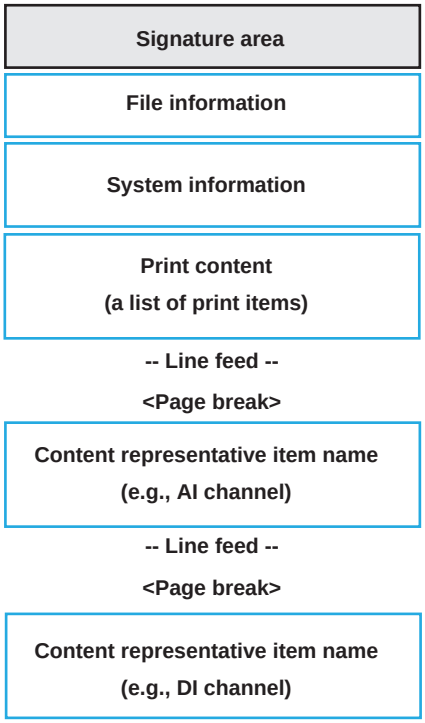
Select the check boxes for the items to specify the settings to be printed.
The procedure is the same as that described in **"Print item" on page 2-56**.

Note

When Show Difference is set to On (change only, minimum), the check boxes for settings that are not different are fixed to off.

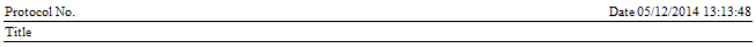
Print Contents

The following figure shows the structure of the print content shown on the right side of the Validation print window.
Of the item that are printed, those that are different from normal printing are described below.



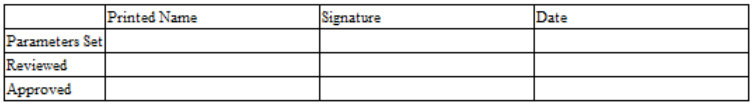
Header

The header displays the title and protocol number entered under Print information setting and the PC timestamp of when the Validation print window was displayed. The timestamp is displayed in the format specified in the Display menu. The header appears at the top of each page in the print preview and in the actual print.



Signature

The signature area is printed at the top of validation and for each content item name (e.g., AI channel settings, DI channel settings).
If the print item name is set to Hide all, it is only displayed at the top of validation. If all the settings under an item have not changed, only the item name and signature area are displayed.



	Printed Name	Signature	Date
Parameters Set			
Reviewed			
Approved			

File Name

The file path, Setting Number, File Date, and Verified are displayed in a table.
The following figure is for when Show Difference is set to Display. The top line is the comparison source file.

File Information

File Name	Setting Number	File Date	Verified
C:\Users\ Desktop\GX_GP_R2_Software\01.config\Testfiles\GNL\compare1.gnl (Comparison source)			
C:\Users\ Desktop\GX_GP_R2_Software\01.config\Testfiles\GNL\base1.gnl			

Show Difference

Show Difference	Verified
ON(Only changes)	

System Information

Displays the GX/GP system information. In the case of validation, a confirmation column is added to the right of the table.

System Information

Basic Information		Verified
Product Name	GX10/GP10	
Firmware Version	R0.11.07	
Model	GX10-1	
Option	RS-422/485 / Fail output, 1point / Mathematical function (with report function) / Comm. channel function / USB interface (Host 2 ports) / EtherNet/IP communication / WT communication / Advanced security function / Custom display function / Log s	
Instruments tag		
Instruments tag No.		
Channel Information	AI 10Ch / DI 16Ch / DO 6Ch / Math 50Ch / Communication 50Ch	
Advanced security function	Off	

Recognized Module								Verified
ID	Model	Serial No.	Version	Option	Custom	Input Ch.	Output Ch.	
0	GX90XA-10-U2		R		---	10	0	
1	GX90XD-16-11		R		---	16	0	
2	GX90YD-06-11		R		---	0	6	

Print Item

The settings of the items selected under Print item are printed. In the case of validation, a confirmation column is added to the right of the table. The following figure is for when Show Difference is set to ON (Only changes).

0001-0010

CH	Range						Scale				Verified
	Type	Range	Span Lower	Span Upper	Calculation	Reference channel	Decimal place	Lower	Upper	Unit	
0001	Volt	2V	-2.0000	2.0000	~~Delta~~ Off	~~0001~~ N/A	N/A	N/A	N/A	N/A	
0005	Volt	~~200mV~~ 2V	~~-200.00~~ -2.0000	~~200.00~~ 2.0000	Off	N/A	N/A	N/A	N/A	N/A	
0006	~~Skip~~ Volt	~~N/A~~ 2V	~~N/A~~ -2.0000	~~N/A~~ 2.0000	~~N/A~~ Off	N/A	N/A	N/A	N/A	N/A	
0007	~~Skip~~ Volt	~~N/A~~ 2V	~~N/A~~ -2.0000	~~N/A~~ 2.0000	~~N/A~~ Off	N/A	N/A	N/A	N/A	N/A	
0008	~~TC~~ Volt	~~K~~ 2V	~~-270.0~~ -2.0000	~~1370.0~~ 2.0000	Off	N/A	N/A	N/A	N/A	N/A	

Security Settings

In the user settings of security settings, User name, User ID, and Password are left empty in the print.

- Difference display example for when the advanced security function (/AS) is not available or is set to Off

Security settings

	Printed Name	Signature	Date
Parameters Set			
Reviewed			
Approved			

Security basic settings

Security function		Verified
Communication	~~Off~~ Login	

User settings

User number	User level	Mode	User name	Password	User property	Authority number	Verified
1	~~N/A~~ Admin	~~N/A~~ Touch operation + Communication			N/A	N/A	
2	~~N/A~~ User	~~N/A~~ Touch operation + Communication			~~N/A~~ Off	N/A	
3	~~N/A~~ User	~~N/A~~ Touch operation			~~N/A~~ Off	N/A	
4	~~N/A~~ Off	N/A			N/A	N/A	

- Difference display example for when the advanced security function (/AS) is set to On

Security settings

	Printed Name	Signature	Date
Parameters Set			
Reviewed			
Approved			

Security basic settings

No change

User settings

User number	User level	Mode	User name	User ID	Password	Password expiration	Verified
4	~~User~~ Off	~~Touch operation + Communication~~ N/A				~~Off~~ N/A	

User number	User property	Authority number	Sign in property	Authority of sign in	Verified
4	~~Off~~ N/A	N/A	~~Off~~ N/A	N/A	

User property

No change

Sign in settings

Data file transfer		Verified
FTP transfer timing	~~Sign in~~ Data save	

Sign in property

No change

Note

Even if items in the comparison source data are set to off, some of them are displayed in the show difference window when the print setting is set to on.
In such a case, the difference is displayed by assuming the comparison source data to be invalid (N/A). The following figure is a display example for Batch text.

Batch text

Text field number	Title of field	Characters	Verified
1	~~N/A~~ abcdefg	~~N/A~~ 0123456789	
2	~~N/A~~ hijklmn	~~N/A~~ 9876543210	
3	~~N/A~~	~~N/A~~	

Note

- If you change settings while the Validation print window is displayed, to apply the changes to the window from the browser's menu.
- To set the page number, click **Print - Pages** on the browser's menu.
- Configure the printer settings in accordance with your PC system.
- When printing, if the layout appears broken at the page switching point, print in the IE mode of Microsoft Edge.

Blank

3.1 Receiving and Sending Setup Data

You can connect to a GX/GP or GM and receive setup data from it and send setup data to it.

Before Sending or Receiving Setup Data

- Some operations are limited by the status of the connected main unit.
  Limitation on **Operation** tab depending on the main unit status: ▶ **"Tables" on page 3-23**
- Before exchanging setup data with the main unit, check the system configuration. If the configuration between the main unit and the software is not the same, settings may not be set properly.
  System configuration: ▶ **"" on page 3-23**
- Before sending or receiving setup data, we recommend that you reconfigure the main unit. Reconfiguration allows modules installed in the main unit to be detected and the system configuration to be confirmed.
- If a GM is connected, reconfiguration can be performed from this software. With a GX/GP, reconfiguration is possible only from the main unit screen.
  Reconfiguring GM: ▶ **"Performing Reconfiguration (When the connected device is a GM)" on page 3-20**
- You cannot change the setting (On/Off) of the advanced security function (option, /AS), multi batch function (option, /BT), and "Measurement mode" by sending settings from the Hardware Configurator software.

Sending and Receiving Security Settings and Data

- If on the recorder, Security settings - Basic settings - Communication is set to Login, send data using an administrator user name. Otherwise, a portion of the data such as security settings will not be applied to the recorder.
- Whether setup data can be sent or received depends on the security settings as shown in the following table.

The GX/GP/GMs Security settings	Settings That Are Sent and Received			
	General settings (other than security settings)		Security settings	
	Reception	Transmission	Reception	Transmission
Security settings - Basic settings - Communication: Off	Yes	Yes	Yes	Yes
User level: Admin	Yes	Yes	Yes	Yes
User level: User, and User property not set [1]	Yes	Yes	Yes [1]	No [1]
User level: User, and User property and Setting operation are set to Lock [2]	Yes	No [2]	Yes	No [2]

1 If general settings can be sent but not security settings, "W013: Failed to set any settings." will be displayed at the time of data transmission.
2 If both general and security settings cannot be sent, "W014: Permission denied" will be displayed at the time of data transmission.

Note

Receiving and sending when the advanced security function (/AS) is On: ▶

3.1.1 Receiving Setup Data

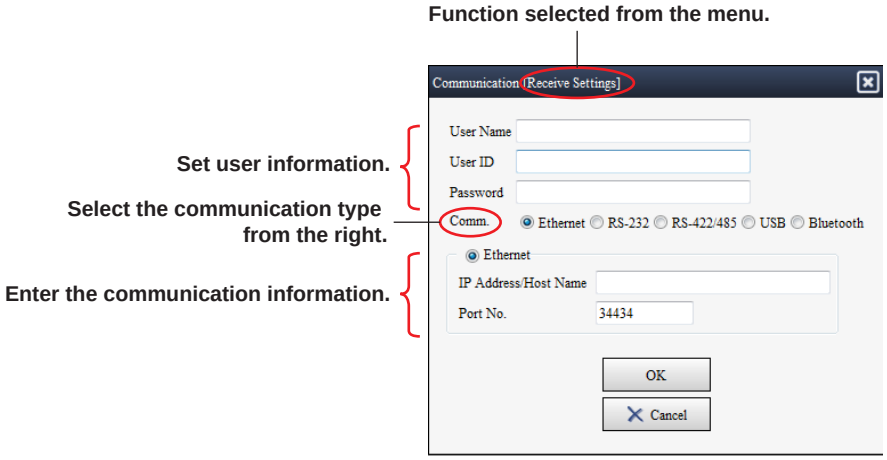
You can receive the current setup data from the main unit.

Receiving a Configuration File Containing Program Patterns (GX/GP/GM with the Program Control Function) : ▶ 3.1.5

Procedure

1 Click the **Setting** tab and then **Receive Settings**.

A Communication dialog box appears.

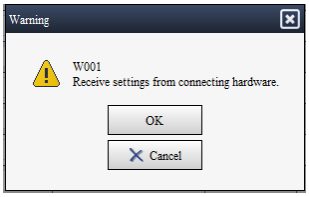


Note

If the GX/GP/GM's Security settings - Basic settings - Communication is set to Login, you need to specify the user information. If set to Off, you only need to enter the communication information to establish a connection. For details on security settings, see the main unit user's manual (GX/GP: IM 04L51B01-01EN, GM: IM 04L55B01-01EN).

2 Enter the communication information for connecting to the main unit.
See **"Explanation" on page 3-3** for the details.

3 Enter the information, and click **OK**.
A confirmation message for receiving data appears.



4 To start receiving, click **OK**.
Settings are received from the recorder and displayed. The file name display shows "NewFile."

Explanation

The items in the Communication dialog box are described below.

User Name and Password

Enter the user information to log in to the recorder via communication. You do not have to enter this information if the main unit's Security settings > Communication is set to Off. If the main unit's Security settings - Communication is set to Login, enter the user name and password registered in the main unit. When logging in for the first time, enter the default password.*
The subsequent times, the user name that you entered previously will appear, so you will only need to enter the password.

- You can enter up to 20 characters. If you exceed this limit, the exceeded portion will be cut.
- The characters that you can enter are ASCII characters other than single quotation, semicolon, or space.

* The default password is the password that you use when you log in for the first time. It is provided in the main unit user's manual.

User ID

If the advanced security function (/AS) is enabled, use the user ID in combination with the user name and password shown above. You must enter the user ID if the main unit's advanced security function (/AS) is set to On, Security settings > Communication is set to Login, and User ID is in use.

User authentication when the advanced security function is On: ▶ **"Operation of Setting software"**

Comm.

Select the communication type from Ethernet, serial communication (RS-232 or RS-422/485), USB, or Bluetooth.

- USB can be used only when the main unit is GM.
- Bluetooth can be used only when the main unit is a GM with the /C8 option.

Ethernet

IP address and host name that you enter will be stored and will appear the next time you open the dialog box.

- You can enter up to 128 characters. If you exceed this limit, the exceeded portion will be cut.
- The characters that you can enter are the alphabet (A to Z, a to z), numbers (0 to 9), hyphens, and dots.

The port number is the port number of the recorder that you want to connect to. If you have changed the recorder port number, enter that port number.

- Default value: 34434 (selectable range: 1 to 65535)

RS-232, RS-422/485

Set the RS-232 and RS-422/485 parameters from the **Port No.**, **Baud rate**, and **Parity** lists. (Enter the RS-422/485 address in the **Address** box.) These values are also stored and will appear the next time you open this dialog box.

Communication	Setup Item	Default Value	Selectable Range
RS-232 **RS-422/485**	Port No.	The first number in the port number list in the selectable range.	A list of available COM port numbers is displayed.* If none are available, COM1 to COM20 is displayed.
	Baud rate	9600	9600/19200/38400/57600/115200 bps
	Parity	EVEN	ODD/EVEN/NONE
RS-422/485	Address	1	1 to 99

* "Available COM port numbers" are the numbers of ports recognized by Windows Device Manager (PC).

USB

This setting is for connecting through a USB cable. Select the **Port No**.

- Selectable range: A list of available COM port numbers.
- Default value: The first number in the port number list in the selectable range.

Specify the COM port number for USB Serial Port.

Note

- If your PC is connected to the Internet, the appropreate USB driver is downloaded automatically.
- If you make USB connection for the first time in the environment without Internet, install the driver to your PC beforehand. Check the download link for the driver at **our website**.

Bluetooth (GM)

This setting is for Bluetooth communication. Select the Port No.
To check the COM port number of the GM you want to connect to, see “Checking the COM Port for Bluetooth Connection (Windows 7 example),” explained later.

- Selectable range: A list of available COM port numbers.
- Default value: The first number in the port number list in the selectable range.

Enter the password for Bluetooth if the main unit’s Bluetooth connection password is set to On. This is not necessary if it is set to Off. (See the Note below.)

- Default value: 1234

Note

Note the following points when you connect GM to your PC via Bluetooth.

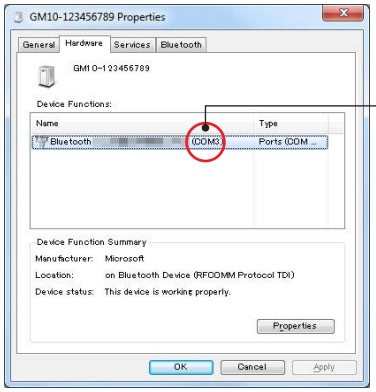
- The GM’s Bluetooth connection password is set to on by default. If you connect for the first time, you need to enter the default password (1234).
- Press the USER1 key of the GM for 3 seconds. “BT” LED (orange) is lit to indicate the GM is ready for the connection. If it does not lit, the Bluetooth function is off.
- Bluetooth driver may be necessary depending on the PC. For details, refer to the instruction manual of your PC or the Bluetooth interface.

Checking the COM Port for Bluetooth Connection (Windows 7 example)

The following procedure assumes that the GM has already been added as a Bluetooth device on the PC (the GM and PC are already communicating through a Bluetooth connection). Use it as a reference when checking the COM port number of the GM you want to connect.

Procedure

1. Click the Windows Start button, and on the start menu, click **Devices and Printers**.
   The GM appears under Devices.
2. Right-click the GM icon, and click **Properties**.
   The Properties window appears.
3. Click the **Hardware** tab.
4. Check the COM port number shown in the **Name** column under **Device Functions**.



Note

- USB and Bluetooth connections are handled as serial communication inside the PC. When the appropriate driver is installed in the PC and the PC is connected to a GM, the connection appears as a COM port in the Windows Device Manager.
- If you change the COM port number from Windows Device Manager, restart the PC. Otherwise, the new setting may not take effect.
- The serial communication parameters in this software are fixed at 8-bit data lengths and 1-bit stop bit.

COM Port When Serial Communication, USB, or Bluetooth Is Selected

If you set the communication type to serial communication, USB, or Bluetooth, available COM port numbers are detected and displayed in in the Port No. list. If available ports are not detected, COM1 to COM20 are displayed in the list (software version R2.03 and later).
The following are possible reasons why ports may not detected.

- The ports that you want to use is disabled in Windows Device Manager.
- The driver for the relevant connection type is not installed in the PC.

The method to check ports and drivers varies depending on the PC or operating system that you are using.
For details, see the PC or interface user's manual, support website, or the like.

3.1.2 Sending Setup Data

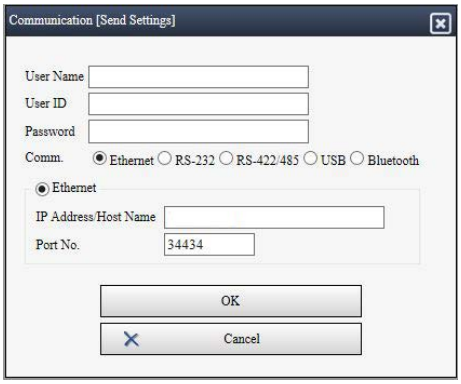
You can send the current setup data to the main unit. This is not possible if the recorder is recording. To send or receive setup data to/from the main unit, check system configuration of the main unit, and reconfigure it as necessary. For details, see **"Before Sending or Receiving Setup Data" on page 3-1.**

Sending a Configuration File Containing Program Patterns (GX/GP/GM with the Program Control Function): ▶ **3.1.6**

Procedure

1 Click the **Setting** tab and then **Send Settings**.

A dialog box for entering communication information appears.



2 Enter the information, and click **OK**.
Items in the Communication dialog box: ▶ **"Explanation (Communication dialog box)" on page 3-3**

3 To start sending, click **OK**.
The setup data will be sent.

Note

- If the Security settings - Basic settings - Communication is set to Login, only registered users will be able to send data.
- If you change the GX/GP's (firmware version R1.xx.xx) **Security settings** - **Basic settings** - **Communication** from **Off** to **Login** and send setup data, be sure to follow the procedure in **3.1.4 Changing the GX/GP's Security Settings (GX/GP with firmware version R1.xx.xx)**
- If settings are sent from Hardware Configurator when the Web application is monitoring data (e.g., trend monitor), the setting changes may not be communicated properly to the Web application. In such a case, restart the Web application (Internet Explorer).

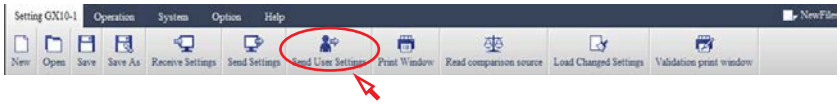
3.1.3 Sending User Settings

You can send only the user settings to the main unit via communication. You can perform this operation even when the recorder is recording or computing.

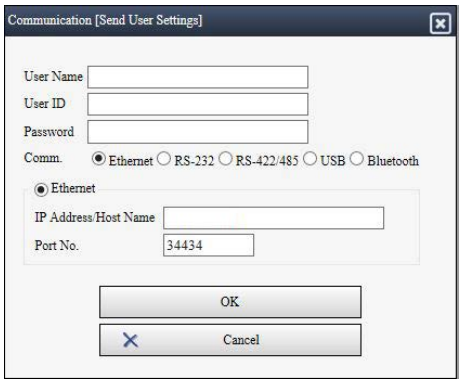
Details on user settings: ▶ GX/GP: Section 1.9 in the *Models GX10/GX20/GP10/GP20 Paperless Recorder User's Manual* (IM 04L51B01-01EN), GM: Section 2.22 in the *Data Acquisition System GM User's Manual* (IM04L55B01-01EN).

Procedure

1 Click **Setting** tab and then **Send User Settings**.



A dialog box for entering communication information appears.



2 Enter the information, and click **OK**.

Items in the Communication dialog box: ▶ **"Explanation (Communication dialog box)" on page 3-3**

3 To start sending, click **OK**.

The setup data will be sent.

Note

If you are logged in and you change the user information and send it to the GX/GP with firmware version R1.xx.xx, errors will occur when you send subsequent setup commands. To change your user information in the GX/GP from the software via communication, be sure to follow the procedure in **"Changing User Information in the GX/GP via Communication"** of **section 2.5.4**.

3.1.4 Changing the GX/GP's Security Settings (GX/GP with firmware version R1.xx.xx)

The procedure described in this section is necessary if you are using GX/GP firmware version R1.xx.xx. If you are using R2.xx.xx or later, you can set the login function according to section **3.1.2 Sending Setup Data** and send user information according to section **3.1.3 Sending User Settings**.
You can download the latest firmware from the **YOKOGAWA website**.

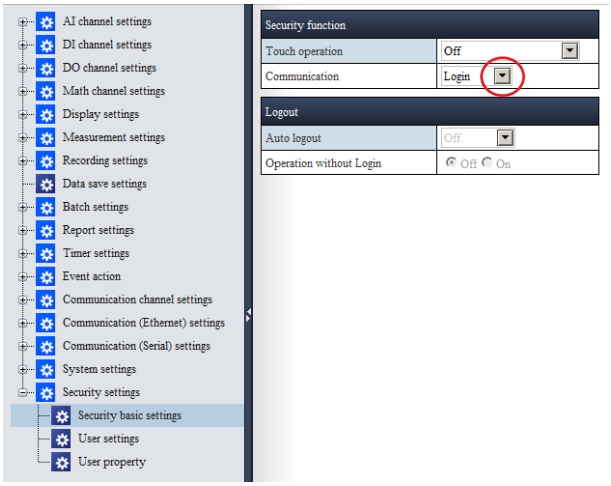
Changing the GX/GP Communication Login Function from Off to Login

The procedure below is for enabling the GX/GP communication login function from Hardware Configurator. Follow the procedure below to change the GX/GP's Security settings - Basic settings - Communication from Off to Login from the software via communication. This allows only registered users to access the GX/GP via communication.

To change the GX/GP communication login function from Login to Off: ▶ **3.1.2 Sending Setup Data**

Procedure

1 From the content selection tree, select **Security settings** - **Security basic settings**, and set **Communication** under **Security function** to **Login**.
User settings and User property are added to the tree content.

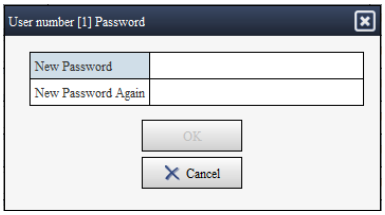


2 From the contents selection tree, select **Security settings** - **User settings**, and register a user.

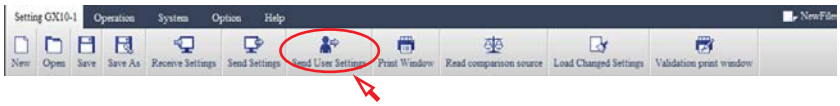
The first user is fixed to Admin. **Select the mode.** **Click to register a password.**

User number	User level	Mode	User name	Password
1	Admin	Touch operation + Communication	User01	***** Change
2	User	Touch operation + Communication	User02	***** Change
3	Off	Touch operation + Communication	User03	***** Change
4	Off	Touch operation + Communication	User04	***** Change
5	Off	Touch operation + Communication	User05	***** Change

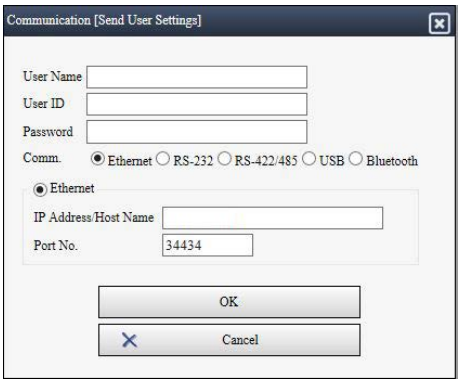
To register a password, click **Change**.



3 Click **Send User Settings** to send the user information.



A Communication dialog box appears.



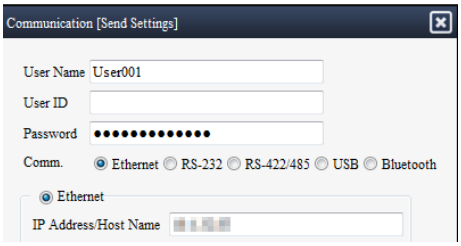
4 Enter the information, and click **OK**.
The user information will be sent.

5 Click **Send Settings**.

A Communication dialog box appears.

6 A dialog box for entering communication information appears. From the user settings sent in step 3, enter the **User Name** and **Password** for the **Admin** user level.

User Name and Password for the Admin user level



7 Click **OK** to send the settings.
The setup data will be sent.

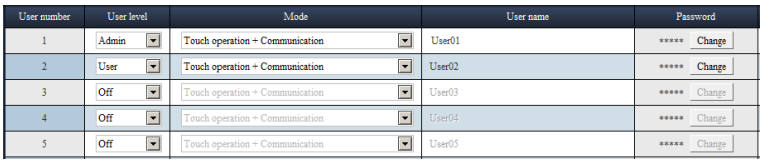
Changing User Information in the GX/GP via Communication

Follow the procedure below to change the user information of a logged-in user from this software.

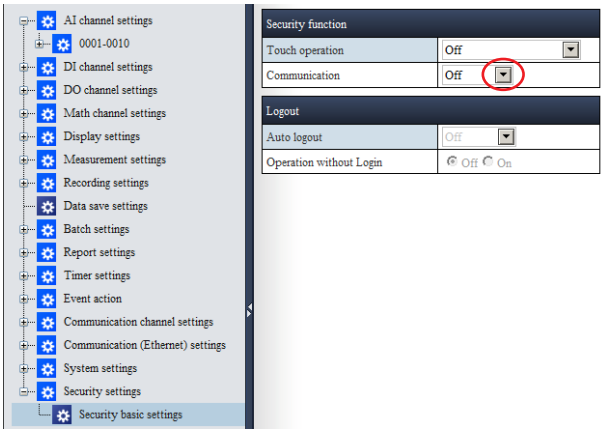
How to change the user information of other users (excluding your own): ▶ **3.1.2 Sending Setup Data, or 3.1.3 Sending User Settings**

1 From the contents selection tree, select **Security settings** - **User settings**.

2 Change the user registration information, such as the user name and password.



3 From the content selection tree, select **Security settings** - **Security basic settings**, and set **Communication** under **Security function** to **Off**.

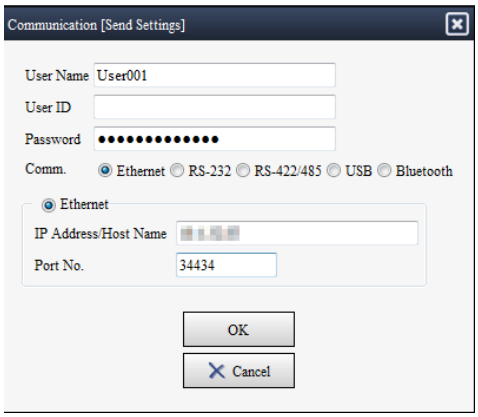


4 For this step, use the user name and password for the Admin user level that were valid before you edited them in step 1.
Click **Send Settings**.

A Communication dialog box appears.

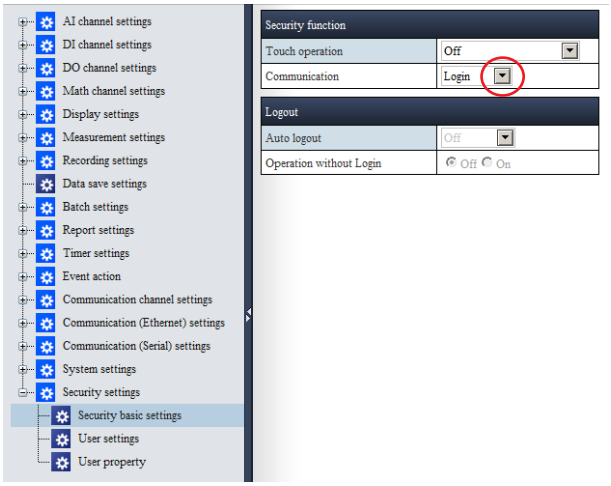
5 Enter the old Admin user level information.

User Name and Password for the old Admin user level



The GX/GP's **Security settings** - **Basic settings** - **Communication** is set to **Off**. At the same time, the user information edited in step 1 is set in the GX/GP.

6 From the content selection tree, select **Security settings** - **Security basic settings**, and change **Communication** under **Security function** to **Login**.



7 Enter the user name and password for the Admin user level that you edited in step 1, and click **Send Settings** again.

The GX/GP's **Security settings** - **Basic settings** - **Communication** returns to Login.
This completes the updating of the user information.

3.1.5 Receiving a Program Pattern Configuration File (GX/GP/GM with the Program Control Function)

You can receive from the main unit a configuration file containing program patterns of GX/GP/GM with the program control function (option, /PG).
On the “Hardware Configurator”, you can receive a file in the following methods.

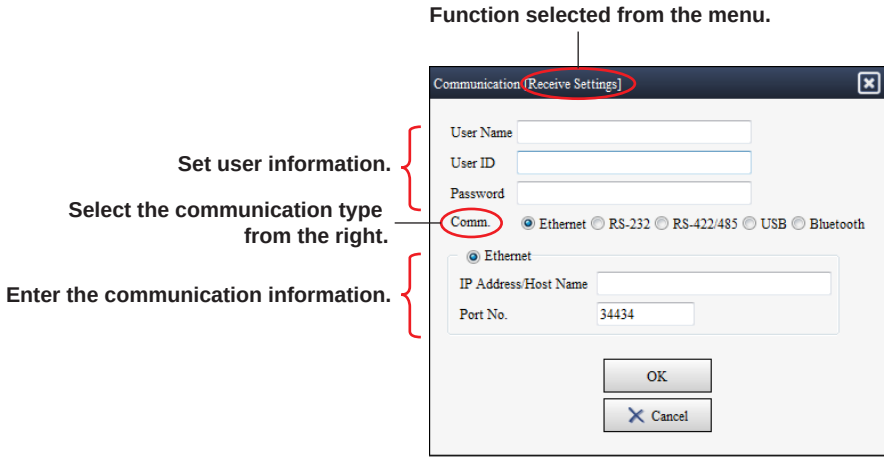
- Receiving a configuration file and a program pattern file together.
- Receiving a configuration file only.

Using the “Program Pattern Setting”, you can receive a program pattern file only. ▶ **“Operation of Setting software” on page 3-23**

Procedure

1 Click the **Setting** tab and then **Receive Settings**.

A Communication dialog box appears.



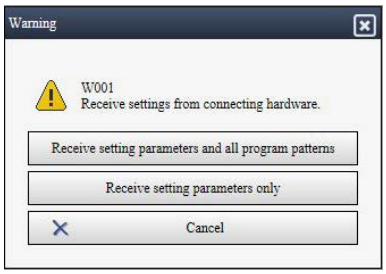
Note

If the GX/GP/GM’s Security settings - Basic settings - Communication is set to Login, you need to specify the user information. If set to Off, you only need to enter the communication information to establish a connection. For details on security settings, see the main unit user’s manual (GX/GP: IM 04L51B01-01EN, GM: IM 04L55B01-01EN).

2 Enter the communication information for connecting to the main unit.
See **“Explanation” on page 3-3** for the details.

3 Enter the information, and click **OK**.
A message is displayed to confirm received contents.

4 Choose a receiving method.



Choose **Receive setting parameters only** to receive only the settings
Choose **Receive setting parameters and all program patterns** to receive the settings and program patterns (pattern number 01-99).

Note

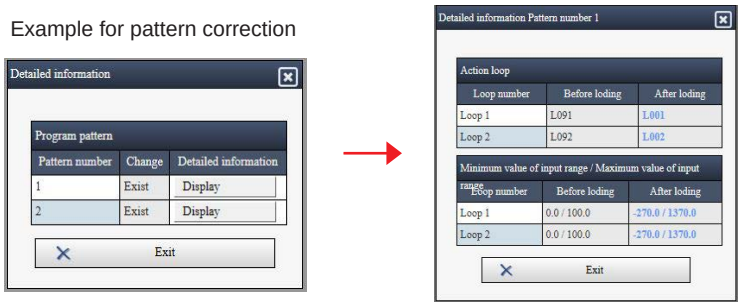
If you choose Receive setting parameters and all program patterns and a program pattern is displayed on the setting screen, the program pattern is overwritten with the received program pattern.

Explanation

The following shows details of the “File receiving method” described in the above dialog box. Clicking each button operates the Hardware Configurator as described in the table below.

Button	Operation result
Receive setting parameters and all program patterns	Collectively receives settings and program patterns (pattern number 01-99) of the main unit, and expands them on the setting screen of the Hardware Configurator. If a program pattern is shown on the Setting screen at this point, the pattern is deleted. Instead, the received settings and program patterns are reflected on the screen of Setting software. Configuration of the program pattern number 01 to 99 of the main unit are reproduced on the screen.
Receive setting parameters only	Receives only settings from the main unit and expands them on the setting screen of the Hardware Configurator. If there are program patterns displayed on the setting screen, those not matching System/PV Range of received settings are corrected to match System/PV Range. (They are not deleted.) After correction, a pattern number for the corrected pattern is notified by a message (W028). By clicking Detailed information, you can check changed items in the dialog box.

Example for pattern correction



Cancel	Close the dialog box

Note

If the main unit is in the following conditions, program patterns cannot be received. An error message (E021) is displayed.

- Other setting software is receiving program patterns.
- On the main unit screen of GX/GP, the setting screen for the program pattern is opened.

3.1.6 Sending a Program Pattern Configuration File (GX/GP/GM with the Program Control Function)

You can send to the main unit a configuration file containing program patterns of GX/GP/GM with the program control function (option, /PG). On the “Hardware Configurator”, you can send a file in the following methods.

- Sending a configuration file and a program pattern file together.
- Sending a configuration file only.

Using the “Program Pattern Setting”, you can send only a program pattern file.: ▶ **“Operation of Setting software” on page 3-23**

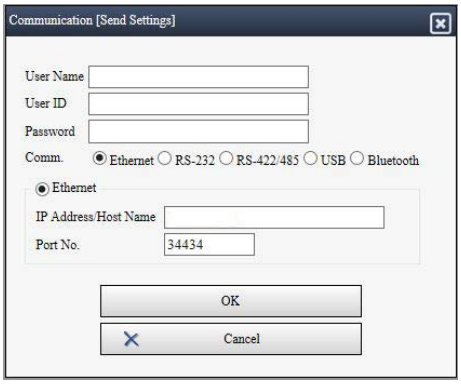
Note

- On the Hardware Configurator, "Send Settings" cannot be performed if the main unit is Recording/Computing/Running control/Running program control. However, using Program Pattern Setting software, you can send only program patterns even when the main unit is Recording/Computing. For details of sending only program patterns, read **“Operation of Setting software”**.
- To send or receive setup data to/from the main unit, check system configuration of the main unit, and reconfigure it as necessary.

Procedure

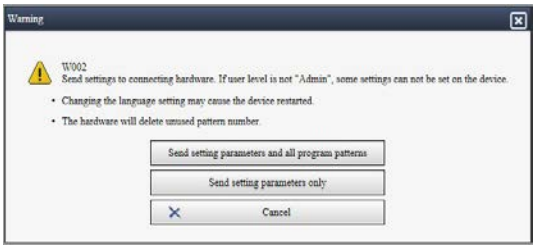
1 Click the **Setting** tab and then **Send Settings**.

A Communication dialog box appears.

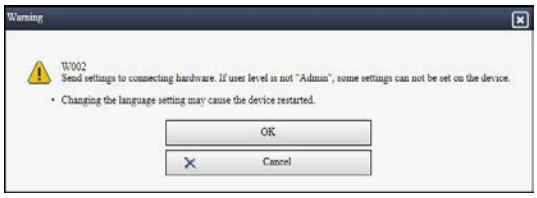


2 Enter the communication information for connecting to the main unit.
See **“Explanation” on page 3-3** for the details.

3 Enter the information, and click **OK**.
A message is displayed to confirm sent contents. (To Step 4).



If the connected main unit is not equipped with the program control function (option, /PG) or the program control function is not enabled on the Setting software, a different message is displayed. (It is determined that there is no program pattern on the receiver and sender.) Click OK to send settings only.



4 Choose a sending method.

- Choose **Send setting parameters only** to send the settings only.
- Choose **Send setting parameters and all program patterns** to send the settings and program patterns (pattern number 01-99).

Note

If you fail to send program pattern setting, an error message (E029) and the numbers of the program patterns that could not be reflected are shown.

- The pattern numbers shown in this case are the pattern number used on the “Hardware Configurator’s screen”.
- “The program patterns that could not be reflected” means there are differences between the following items on the main unit and the settings: the location of the PID control module, location of decimal place in PV range, lower limit, upper limit.

3.2 Controlling the Main Unit

You can use this software to start and stop the recording and computing function, and display the hardware information of the main unit.

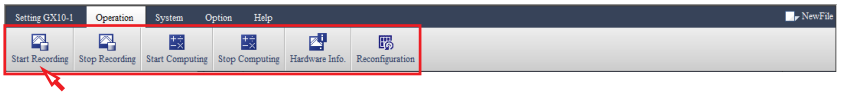
* Computation is an option.

3.2.1 Starting and Stopping Recording and Computing

Procedure

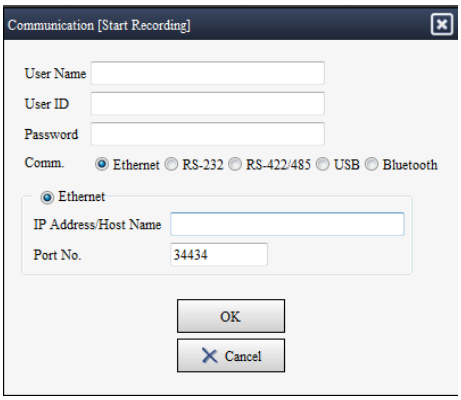
1 Click **Operation** tab and then **Start Recording**, **Stop Recording**, **Start Computing**, or **Stop Computing**.

If the main unit has the multi batch function (/BT): See “Note” below.



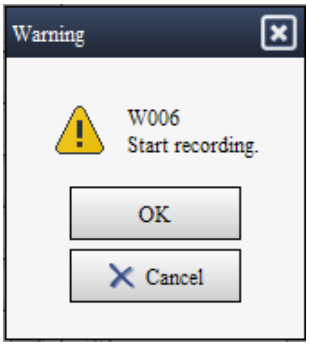
A Communication dialog box appears.

When you select a command on the Operation tab, a dialog box for setting communication parameters first appears. For details on the settings of the Communication dialog box, see the procedure in section **3.1.1 Receiving Setup Data**. If the main unit’s Security settings - Basic settings - Communication is set to **Login**, enter the user name and password registered in the main unit.



2 Enter the information, and click **OK**.

A confirmation message for starting or stopping appears.



3 To execute the operation, click **OK**.

The recorder will start or stop recording or computing.

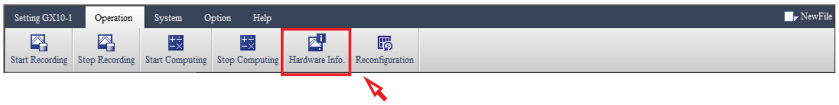
Note

If you click Start Recording or Start Computing when the multi batch function is enabled (On), recording and computing of all batches will start. Likewise, if you click Stop Recording or Stop Computing, recording and computing of all batches will stop. You cannot start or stop each batch separately.

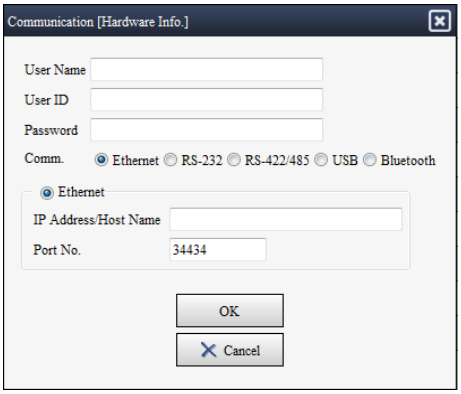
3.2.2 Viewing the Hardware Information

Procedure

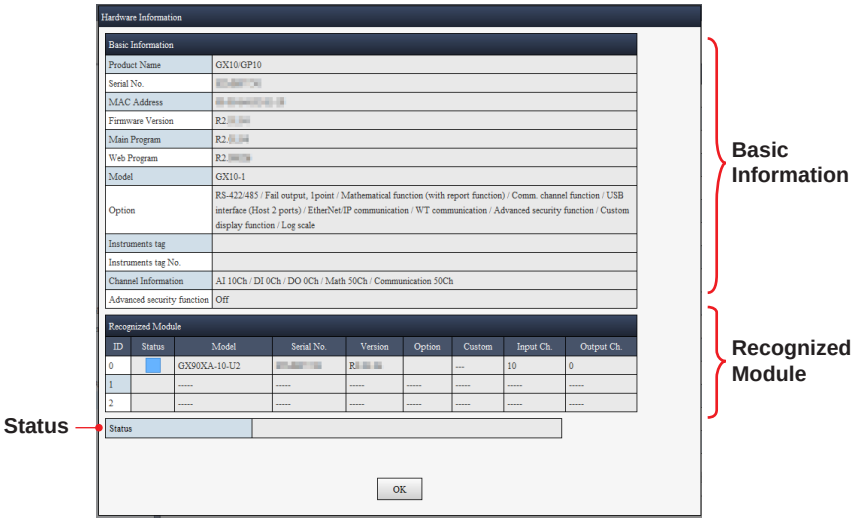
1 Click **Operation** tab and then **Hardware Info.**



A Communication dialog box appears.



2 Enter the information, and click **OK**.



The Hardware Information dialog box appears.
About displayed Information: ▶ **"Explanation" on page 3-18**

3 After you confirm, click **OK**.
Dialog box will close.

Explanation

The Hardware Information dialog box shows the following information.

Basic Information

- Product name: “GX20/GP20”, “GX10/GP10”, or “GM10”
- Serial No.
- MAC address
- Firmware version
- Model: GX20-1, GX10-1, GP20-1, GP20-2, GM10-1, GM10-2
- Option: The options detected by the recorder are listed in order.

Option		Displayed Characters
Serial communication interface	/C2	RS-232
	/C3	RS-422/485
VGA output	/D5	VGA output
Fail output	/FL	Fail output, 1point
Mathematical function with report function	/MT	Mathematical function (with report function)
Communication channel functions	/MC	Communication channel function
24 V DC/AC power supply	/P1	24VDC/AC power supply
USB interface (Host 2 ports)	/UH	USB interface (Host 2 ports)
Pre-installed modules	/Uxx0	Model pre-installed with analog (universal) input module
	/CRxx	Model pre-installed with digital output module(s) and/or digital input module(s)
EtherNet/IP communication	/E1	EtherNet/IP communication
WT communication	/E2	WT communication
Advanced security function	/AS	Advanced security function
Custom display function	/CG	Custom display function
LOG scale	/LG	Log scale
Bluetooth (GM only)	/CB	Bluetooth
Aerospace heat treatment	/AH	Aerospace heat treatment
Multi-batch function	/BT	Multi-batch function
OPC-UA server	/E3	OPC-UA server
SLMP communication	/E4	SLMP communication
Program control function	/PG	Program Control

- Instruments tag: Displays the instruments tag assigned to the GX/GP.
- Instruments tag No.: Displays the instruments tag number assigned to the GX/GP.
- Channel Information: Displays the number of AI, DI, DO, math, communication, and pulse channels.
- Advanced security function: Displays the status (On or Off) of the advanced security function (/AS) if the options is installed.
- IP Address: Displays the IP address of the main unit. When the GM’s DHCP is set to On, you can check the IP address that has been obtained automatically by connecting through a communication interface other than Ethernet.
- BD address: The Bluetooth BD address is displayed if the connected device is a GM with a Bluetooth option.
- Multi-buch function: If the main unit has the multi batch function (/BT), the state (Off or On) is displayed.
- Multi operation qty: If the multi batch function on the connected device is enabled (On), the number of batches is displayed.
- Measurement mode: Displays the measurement mode currently selected (Standard, High speed, or Dual interval)

Recognized Module

- ID:
  GX20, GP20: 0 to 9
  GX10, GX20: 0 to 2
  GM10: 0 to 9
- Status: Displays the recorder output status by icons and tooltips.

Display	Description (text appears on each tooltip)
None	No information
Light blue	GOOD
Yellow	WARNING
Red	ERROR
Blue(?)	INVALID
Yellow(!)	UNMATCH

- Model: Model name of the module. “-----” if it does not exist.
- Serial No.
- Version: Module firmware version
- Option
- Custom: Customization information. “-----” if it is standard.
- Input Ch.: Number of input channels
- Output Ch.: Number of output channels

Status

Display	Status	Note
Recording	The recorder is recording.	If the multi batch function (/BT) is enabled and any of the batches is recording, “Recording” is displayed.
Computing	The recorder is computing.	
Accessing Media	The recorder is accessing a storage medium.	
Running control (Lxxx)	Displayed when a loop is in RUN status. (Lxxx): Loop number	
Running program control (xx)	Displayed if there is any pattern number in the process of program control. (xx): Running pattern number	

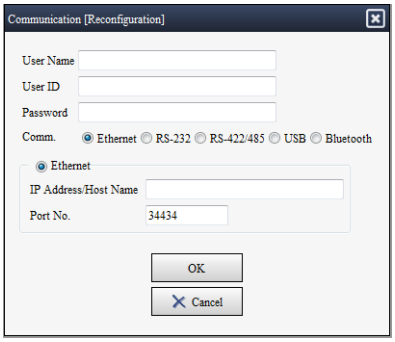
3.2.3 Performing Reconfiguration (When the connected device is a GM)

Reconfiguration of a GM can be performed from this software.
There are limitations to users that can perform reconfiguration. Note that reconfiguration of a GX/GP is not possible through communication from this software. (See Note.)

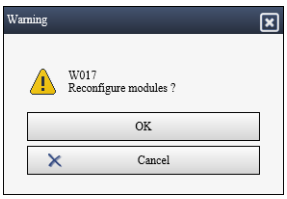
Procedure

1 Click **Operation** tab and then **Reconfiguration**.

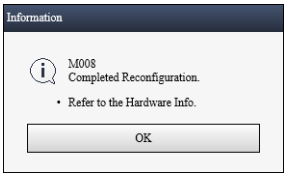
A Communication dialog box appears.



2 Enter the information, and click **OK**.
When a connection is established with the GM, a reconfiguration confirmation message appears.



3 Click **OK**.
When the reconfiguration is complete, a message appears.



View the reconfiguration results: ▶ **3.2.2 Viewing the Hardware Information**

Note

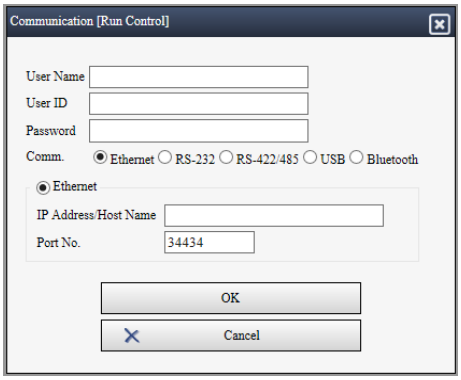
- If user permission is set on the GM main unit, only the following users can perform reconfiguration.
  – Admin users
  – SecondAdmin users whose Reconfiguration of Admin property is set to Free
  – Users whose System operation of User property is set to Free
- If you do not have permission to perform reconfiguration or if the main unit is not in a condition to be reconfigured, the error message “E021 This function is not possible at this time” appears.
  Related topic:
- Reconfiguration of a GX/GP is not possible through communication from this software.
  Reconfigure a GX/GP from the main unit screen.
  Operation: “Reconfiguring the GX/GP” on *GX10/GX20/GP10/GP20 Paperless Recorder First Step Guide* (IM 04L51B01-02EN).

3.2.4 Starting/Stopping Control (GX/GP/GM with the PID control module)

You can start or stop loop control of the main unit (individual loop or all loops). Even when the main unit is being controlled, you can suspend the control from the Hardware Configurator, send settings, and then resume control.

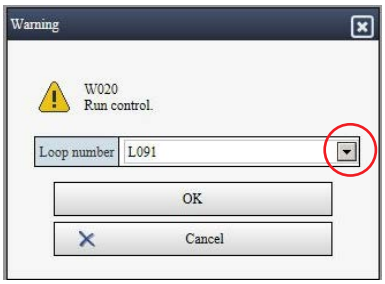
1 Select the **Operation** tab and then **Run Control** (or **Stop Control**)

A **Communication** dialog box appears.

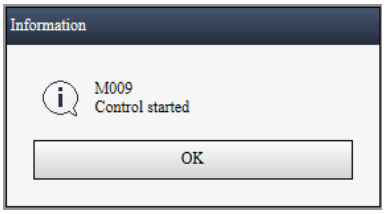


2 Enter the communication information for connecting to the main unit.
See **"Explanation" on page 3-3** for the details.
The operation dialog box appears.

3 Select a loop from the list of loop numbers, and click **OK.**



A dialog box for starting (or stopping) the specified loop appears.



Note

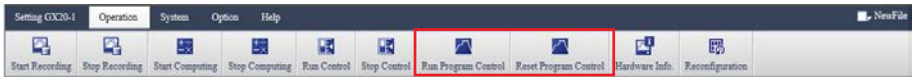
- A loop in PROGRAM status cannot run.
  - A loop that was run by program control is placed in PROGRAM status after program control is stopped.
- A loop in PROGRAM status cannot be stopped by individual loop specification.
  - Individual loop specification means specifying "Lxxx (Running control)".
  - A loop running by program control is placed in PROGRAM status unless it is changed to LOCAL status via the GX screen or WEB application.
- If you perform "Stop all control loops" during program control, program control is stopped.

3.2.5 Starting/Stopping Program Control (GX/GP/GM with the Program Control Function)

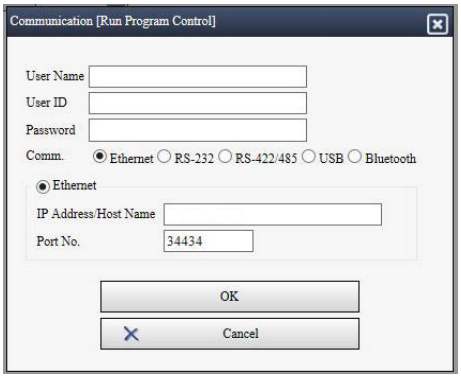
You can start and stop program control on the main unit. Even when the main unit is in the process of program control, you can suspend the controlled pattern from the Hardware Configurator, send settings, and then resume operation of the suspended pattern.

1 Receive “Hardware Info.” from the main unit and check the pattern number in the process of program control in advance.
Checking method: ▶ **“Viewing the Hardware Information” on page 3-17**

2 Select the **Operation** tab and then **Run Program Control** (or **Reset Program Control**).



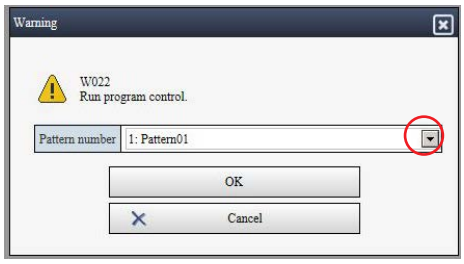
A **Communication** dialog box appears.



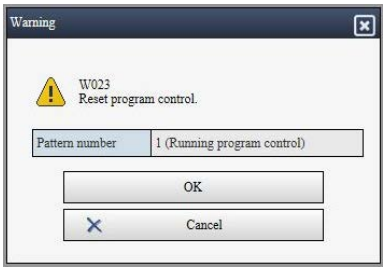
3 Enter the communication information for connecting to the main unit.
See **“Explanation” on page 3-3** for the details.
The operation dialog box appears.

4 Select a program pattern number from the list, and click **OK**.

To “Stop” a pattern, check the pattern number in the process of program control, and click **OK**.



Run program control



Reset program control

A dialog box for starting (or stopping) operation of the specified pattern appears.

Note

- If you attempt to **Run Program Control** on the main unit for which program control is already started, an error message (E021) and the pattern number in the process of program control are displayed.
- If you attempt to **Reset Program Control** on the main unit for which program control is already stopped, an error message (E021) is displayed.

3.2.6 About Limitations on Operations by the Status of GX/GP/GM

Limitation is placed on sending and receiving of settings and using the Operation menu depending on the status of the connected main unit. The following table shows the relationship between the status of main unit and availability of operations in each status.

GX/GP

GX/GP Status / Operation of Setting software	Recording	Computation	Running control	Running program control	Reconfiguration[3]	A/D calibration Encryption Update
Receive Settings	Yes	Yes	Yes	Yes	Yes[1]	No
Send Settings	No	No	No	No	Yes[1]	No
Send User Settings	Yes	Yes	Yes	Yes	Yes	No
Start Recording	Yes[2]	Yes	Yes	Yes	No	No
Stop Recording	Yes	Yes	Yes	Yes	No	No
Start Computing	Yes	Yes[2]	Yes	Yes	No	No
Stop Computing	Yes	Yes	Yes	Yes	No	No
Run Control	Yes	Yes	Yes[2]	Yes[3]	No	No
Stop Control	Yes	Yes	Yes	Yes[3]	See 4	No
Run Program Control	Yes	Yes	Yes	No	No	No
Reset Program Control	Yes	Yes	Yes	Yes	See 4	No
Hardware Info.	Yes	Yes	Yes	Yes	Yes[1]	No
Reconfiguration[3]	No	No	No	No	No	No

Yes: Operation is possible. No: Operation is not possible (an error message will appear).

1 May be executed in a condition in which module configuration has not been confirmed. If this happens, the settings and hardware information will be different from the actual.
2 The recording, computing, running control, or running program continues because it is already in progress. (Nothing happens even if start is executed.)
3 Reconfiguration of a GX/GP is not possible from this software.
4 You cannot start or stop control on loops in the process of program control.
5 You cannot reconfigure the main unit during control or program control.

GM

GM Status / Operation of Setting software	Recording	Computation	Running control	Running program control	Reconfiguration[1]	A/D calibration Encryption Update
Receive Settings	Yes	Yes	Yes	Yes	No	No
Send Settings	No	No	No	No	No	No
Send User Settings	Yes	Yes	Yes	Yes	No	No
Start Recording	Yes[1]	Yes	Yes	Yes	No	No
Stop Recording	Yes	Yes	Yes	Yes	No	No
Start Computing	Yes	Yes[2]	Yes	Yes	No	No
Stop Computing	Yes	Yes	Yes	Yes	No	No
Run Control	Yes	Yes	Yes[2]	Yes[3]	No	No
Stop Control	Yes	Yes	Yes	Yes[3]	See 4	No
Run Program Control	Yes	Yes	Yes	No	No	No
Reset Program Control	Yes	Yes	Yes	Yes	See 4	No
Hardware Info.	Yes	Yes	Yes	Yes	No[1]	No
Reconfiguration[1]	No	No	No	No	No	No

Yes: Operation is possible. No: Operation is not possible (an error message will appear).

1 Operation from this software is not possible when the GM is reconfiguring.
2 The recording, computing, running control, or running program continues because it is already in progress. (Nothing happens even if start is executed.)
3 You cannot start or stop control on loops in the process of program control.
4 You cannot reconfigure the main unit during control or program control.

Blank

4.1 Operation

This chapter explains how to use configuration files (.GSL extension)* for GX/GP/GM with the advanced security function (/AS).

* Refers to configuration files that have been created on GX/GP/GM with the advanced security function (/AS) enabled. It also includes setup data created with Advanced security function On/Off under System config set to On in this software.

Note

For details on how to use and configure the advanced security function (/AS), see the *Advanced Security Function (/AS) User's Manual* (GX/GP: IM 04L51B01-05EN, GM: IM 04L55B01-05EN).

4.1.1 Creating Setup Data

For the procedure, see section **4.3**

4.1.2 Displaying Setup Data

You can load an existing configuration file (*.GSL) or measurement data file (*.GSE, *GSD) from a PC and display the settings.
For the procedure, see section **2.2 Displaying Setup Data**
To display Security settings including user settings, authentication is required. For details, see section **4.2 User Authentication**

4.1.3 Editing Setup Data

For the procedure, see section **2.3 Editing Setup Data**
To edit Security settings including user settings, authentication is required. For the procedure, see section **4.2 User Authentication**

Note the following points when you edit settings with the advanced security function set to On. If you make a mistake in the settings, you may no longer be able to log in to the GX/GP/GM.

1. When using the password management function (KDC)
   - For Certification key under Communication (Ethernet) settings > KDC client settings, be particularly careful when entering Host principal and the password of the host user.
   - Be sure to include users that are registered on the KDC server side in the User settings of the GX/GP and GM.
   - Store the root user password in safe keeping.
   - If you forget or lose it, you will not be able to set Login back to Off in an emergency (such as when you can no longer log in due to an KDC setting error).
   - You can use the root user also to log in via communication from this software.
2. If On/Off under Security basic settings > User ID is changed, the User ID and Password in user settings are initialized.
3. If On/Off under Security basic settings > Password management is changed, the User ID and Password in user settings are initialized.
4. If Security basic settings > Password management is set to On, the User name setting is not shown in this software.

4.1.4 Saving Setup Data

For the procedure, see section **2.4 Saving Setup Data**
Note that overwriting is not possible.

4.1.5 Receiving and Sending Setup Data

For the procedure, see section **3.1.1 Receiving Setup Data** and section **3.1.2 Sending Setup Data**

Note

Before sending settings, check that an SD memory card is installed in the main unit. If the advanced security function is enabled, settings will not be sent if an SD memory card is not available.

Sending and Receiving on the Advanced Security Function

Even if the advanced security function is enabled, if the main unit's Security settings - Basic settings - Communication is set to **Off**, you can connect without entering the user information (user name and password).
Whether setup data can be sent or received depends on the security settings.
If the advanced security function is enabled, it is as shown in the following table.

Security settings - Basic settings of the main unit (The advanced security function: On)		Settings That Are Sent and Received			
		General settings (other than security settings)		Security settings	
		Reception	Transmission	Reception	Transmission
Touch operation and Communication are both set to Off		Yes	Yes	Yes	Yes
Touch operation is set to Login, and Communication is set to Off (Note)		Yes	No	Yes	No
Touch operation and Communication are both set to Login or Touch operation is set to Off and Communication is set to Login	Admin	Yes	Yes	Yes	Yes
	SecondAdmin No restrictions on administrator privileges, no restrictions on user privileges (Note)	Yes	Yes	Yes	Yes
	SecondAdmin Restrictions on administrator privileges, restrictions on user privileges (Note)	Yes	No	Yes	No
	User User property not set	Yes	Yes	Yes	No
	User User property and Setting operation are set to Lock	Yes	No	Yes	No
	Monitor	Yes	No	Yes	No

Note

- If the main unit is the GM, the only login type is **Communication**.
- For the GX/GP whose advanced security function is set to **On**, **Touch operation** is set to **Login**, and **Communication** is set to **Off**, **Send Settings** is not possible from this software. (**Receive Settings** is possible.) If you want to apply the settings edited with this software to the main unit, save the configuration file from the software. Then, log in to the main unit using touch operation, and load the file.
- Second administrators (SecondAdmin users) send only the items set to Free in the security settings of Admin property even if the connection destination is set to Setting operation Lock.
- Second administrators (SecondAdmin users) cannot send the following settings.

Admin property		Settings that cannot be sent
Item	Setting	
Basic settings	Lock	Security basic settings
User settings	Lock	User settings Even when User settings are set to Free, settings are not sent to users set to Admin.
Admin property	Lock	Administrator privileges
User property	Lock	User privileges Web content selection for Communication (Ethernet) settings
Sign in settings	Lock	Sign in settings
Sign in property	Lock	Sign in privileges
Other than the above items	Free	Bluetooth password for Communication (Bluetooth) settings

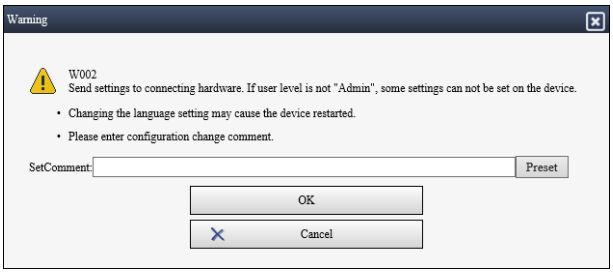
4.1.6 Configuration changes comment (Software version R4.07 and later)

When sending setup data or user settings, you can enter a configuration change comment. This function is valid when the main unit at the transmission destination is release number 4 (version R4.07 or later), the advanced security function is enabled, and the following conditions are true.

When sending settings: On the setting screen of this software, [System settings]-[Setting file]-[Configuration changes comment] is On.

When sending user settings: [System settings]-[Setting file]-[[Configuration changes comment] is On.

- For the procedure to send setup data, see section **3.1.2 Sending Setup Data**. For the procedure to send user settings, see section **3.1.3 Sending User Settings**.
- In the above procedure, if you click **OK** in the Communication dialog box, the following dialog box appears. When you enter a configuration change comment and click **OK**, the data is sent to the main unit. (If a comment is not entered, an error occurs, and data cannot be sent.)



Item	Description
SetComment (Configuration change comment)	1 to 50 characters (a string containing only spaces is not allowed)
Preset button	Displays a list of preset comments. The list displays the comments currently specified on this software using Setting file > Preset comments.

Preset comments

To set a preset comment, click Setting tab, System settings, and then Setting file.

Setup Item	Selectable Range or Options	Default Value
1 to 10	Character string (up to 50 characters)	Comment01 to Comment10

4.1.7 Starting and Stopping Recording and Computing

For the procedure, see section **3.2.1 Starting and Stopping Recording and Computing, 3.2.2 Viewing the Hardware Information, or 3.2.3 Performing Reconfiguration (When the connected device is a GM).**

Even if the advanced security function is enabled, if the main unit's Security settings - Basic settings - Communication is set to **Off**, you can connect without entering the user information (user name and password).

If the main unit's Security settings - Basic settings - Communication is set to **Login**, enter the user name and password registered in the main unit.

However, depending on the user level, there are limitations to controlling the main unit from this software.

- When the user level is **SecondAdmin**
  If **User property** - **Record** is set to **Lock**, Start Recording and Stop Recording are not available.
  If **User property** - **Math** is set to **Lock**, Start Computing and Stop Computing are not available.
  If **Admin property** - **Reconfiguration** is set to **Lock**, Reconfiguration is not available.

  ▶ For details on privileges, see the GX/GP, GM, and advanced security function (/AS) user's manuals.

- When the user level is **User**
  If **User property** - **Record** is set to **Lock**, Start Recording and Stop Recording are not available.
  If **User property** - **Math** is set to **Lock**, Start Computing and Stop Computing are not available.
  If **User property** - **System operation** is set to **Lock**, Reconfiguration is not available.

- When the user level is **Monitor**
  Only acquiring and viewing **Hardware Information** is possible. Other main unit operations are not possible.

4.1.8 Initializing Setup Data

Only the settings that are being edited are initialized.

For the procedure, see section **2.5 Initializing Setup Data**

4.1.9 Printing Setup Data

You can print setup data.

However, if the advanced security function is enabled, User name, User ID, and Password are printed with concealed characters (asterisks).

For the procedure, see section **2.6 Printing Setup Data**

Printing Validation Data

You can load a reference configuration file, compare with the current setup data, and print the results.

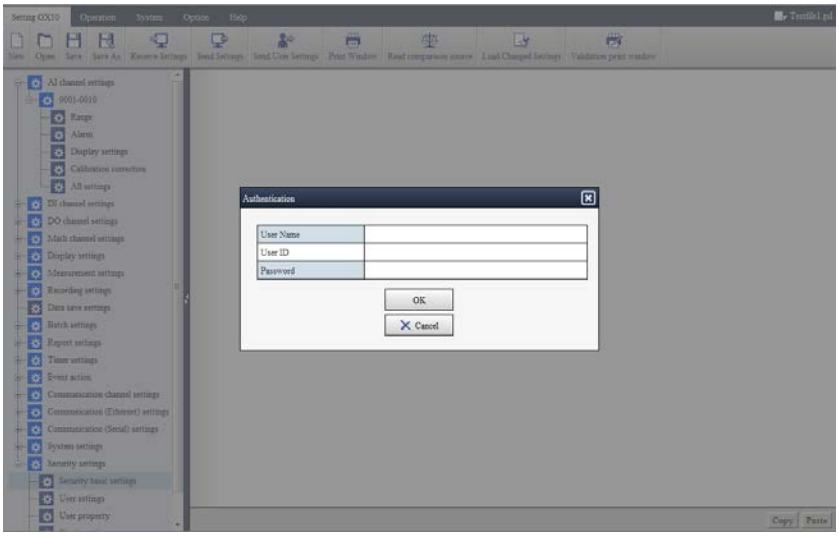
For instructions on how to load a reference file, see **2.2.2 Opening the Comparison Source File**

For information on how to configure validation printing, see section **2.6.2 Validation Print**

4.2 User Authentication

If the security function is in use in a system configuration where the advanced security function (/AS) is enabled, attempting to display the content under Security settings may trigger User authentication.
This section explains user authentication.

The following figure is an example of a window for when you select Security basic settings in a condition in which authentication is assumed to occur.



4.2.1 When User Authentication Occurs

When you open a configuration file or execute Receive Settings, a User authentication dialog box appears if all the following conditions are met.

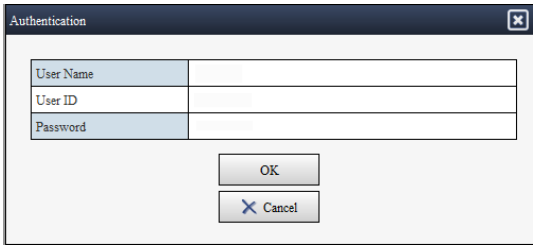
1. In System config, Advanced security function On/Off is set to On.

2. Under Security basic settings - Security function, Touch operation or Communication is set to Login.

3. An item belonging to Security settings is selected for displaying.
   - Security basic settings
   - User settings
   - Admin property
   - User property
   - Sign in settings
   - Sign in property

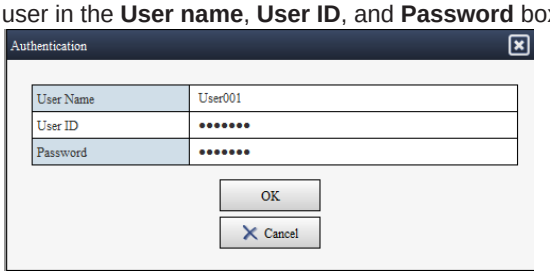
4.2.2 Entering Information in the User Authentication Dialog Box

This section describes the procedure to perform when a User authentication dialog box appears. If authentication is successful, you will be able to display and edit the items in Security settings.



Procedure

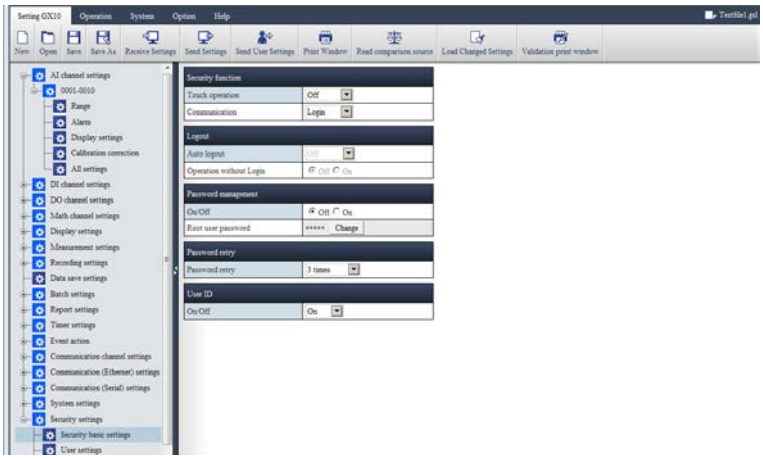
1 When a User authentication dialog box appears, enter the information of an “Admin or SecondAdmin” user in the **User name**, **User ID**, and **Password** boxes.



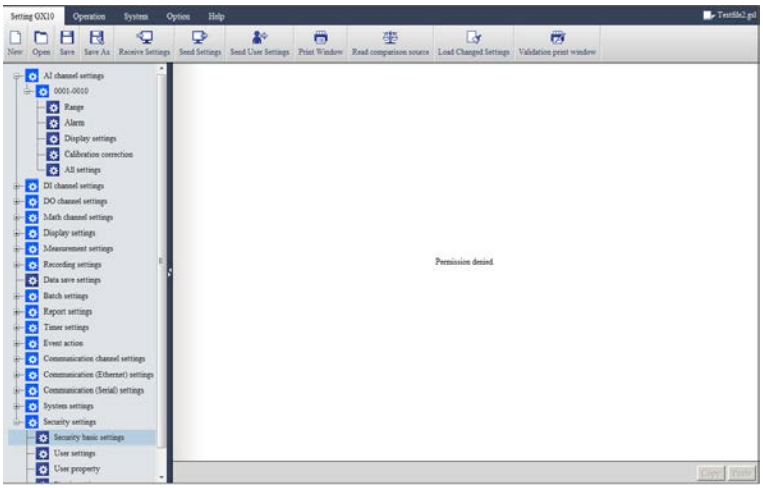
Note

- The “Admin or SecondAdmin” user refers to an “Admin or SecondAdmin” user in the user settings within the setup data that is opened.
- SecondAdmin users can only enter the setting screens whose [Admin property]-[Security settings] is set to Free. The content of Admin property is based on the setting information in the setup data.
- In some cases, User ID and Password may not appear. (See the explanation on the next page.)

2 Click **OK**.
The dialog box closes, and authentication takes place.
If the entered user information matches that of any “Admin” user in the setup data, the selected settings will appear.



If authentication fails, the message “Permission denied” will appear in the content area.



3 To retry authentication, select other items under Security settings.
A User authentication dialog box will appear.

Explanation

The items in the User authentication dialog box are described below.

User name

Enter the user name of an “Admin or SecondAdmin” user in the user settings within the setup data.

User ID

Enter the user ID of an “Admin or SecondAdmin” user in the user settings within the setup data. The text that you enter will not be displayed. This is displayed only when Security basic settings > User ID is set to On in the setup data.

Password

Enter the password of an “Admin or SecondAdmin” user in the user settings within the setup data. The text that you enter will not be displayed. This is displayed only when Security basic settings > Password management is set to Off in the setup data.

Note

- Authentication will be successful when the information entered in the dialog box matches the user information (User name, User ID, and Password) of an “Admin” user in the user settings within the setup data.
- Once authentication is successful, you can display various security settings without authentication until the conditions for triggering authentication described earlier are met again.
- If user authentication fails, an error will appear. There is no limit on the number of times you can fail.

4.3 Universal Viewer Difference Display Function (software version R4.07 and later)

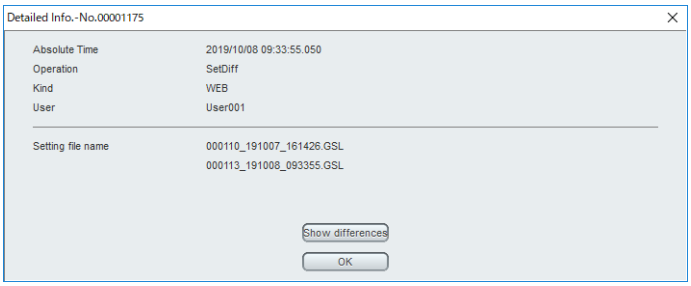
This function is used to display recording data on Universal Viewer and from the operation log list of that data, display the differences in the setup data.

- This function can be used on Hardware Configurator with software version R4.07 or later and Universal Viewer with software version R3.08 or later.
  ▶ For details on Universal Viewer, read the SMARTDAC+ Standard Universal Viewer User's Manual (IM 04L61B01-01EN).
- This function is valid on setup files of GX/GP or GM with release number 4 (version 4.07) and later.

Procedure

1 On Universal Viewer, open a recording data file (*.GSD/*.GSE), and display the operation log list.

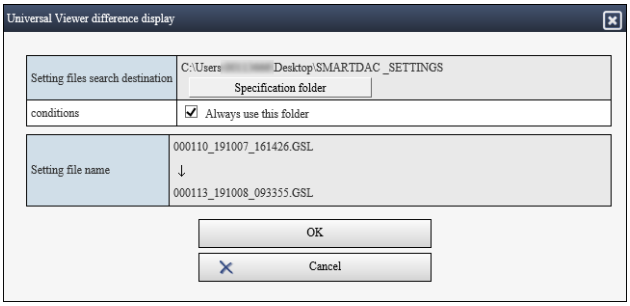
2 Display the detailed information of the setting differences (click Display of the detailed information).
The Detailed info. dialog box appears.



Note

After changing the settings for the first time after updating the main unit firmware, the file name before the change is blank.

3 Click **Show Differences**.
Hardware Configurator starts, and the Universal Viewer difference display dialog box appears.



4 Click **Specification folder** to select a folder containing the configuration file.
If you select the Always use this folder check box, this step can be omitted the next time.

5 Click **OK**.
A validation print window (difference display) is displayed in a separate window.

▶ For details on the validation print window, see section **2.6.2 Validation Print**.

Explanation

Setup File Search Destination

Specify the folder in which to search for the configuration files (.GSL) you want to show the differences of.

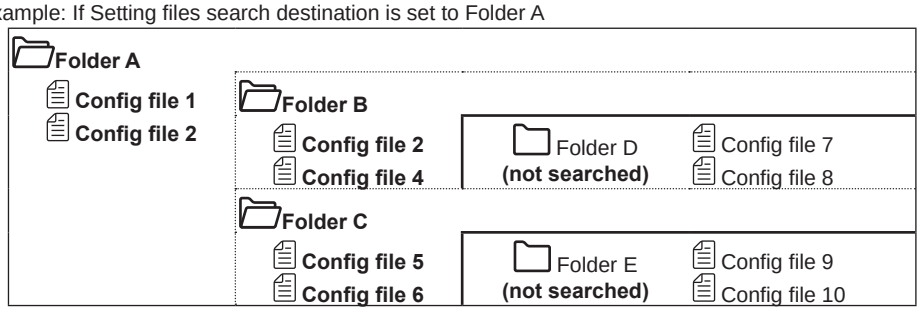
• Search for the configuration file (.GSL) before change (comparison source) and the file after change. Searching is not possible if these two files are not available or the files are not appropriate.

Searchable folders (search destinations)

• Identified folders (reading is allowed) in the PC in which Hardware Configurator is installed
• In the specified folder or its subfolder

Note

File search is performed down to the subfolder of the specified folder.
Example: If Setting files search destination is set to Folder A



When [Folder A] is specified, subfolders [Folder B] and [Folder C] are also searched, so configuration files 1 to 6 will be found. Since [Folder D] and [Folder E] are sub-sub folders, they are not searched.
If the configuration files in the PC are placed as shown in the above example by the main unit FTP client function or the like, it is convenient to specify the parent folder of the folder in which the configuration files are placed (Folder A in this example) so that you do not have to specify the folder every time.

Conditions

Select this check box to use this folder as the configuration file search destination.
• When this check box is selected, this dialog box will not be displayed. The validation print window (difference display) will be displayed instead.
• When this check box is not selected, you will need to specify the search destination folder every time.

Setting file name

The configuration file (.GSL) before change (comparison source) is displayed in the top row, and the configuration file (.GSL) after change is displayed in the bottom row.

About the Difference Display

The Validation Print (Configuration difference display) that appears by using the Universal Viewer difference display function is displayed with the following initial conditions.

Item	Description
Title	Blank
Protocol No.	Blank
System infomation	None
Item list	None
Show Dirrerence	ON (change only, minimum)
Config diff. color	Red
Print setting	All on* * Settings that are not different are set to off according to the difference display setting (ON (Only changes, minimum) and the like).

The above print display conditions can be changed after the difference display is shown.

Note

The differences are not displayed if the search result of the configuration files (before change (comparison source) and after change) is as follows:
- The files are not found in the searchable folders.
- The files are found, but one of the files is corrupt.
- The files are found, but the device serial numbers do not match.
- The files are found, but the device systems do not match.

The device systems will not match with the following configuration files.
- Configuration before updating the main unit firmware and configuration after updating
- Configuration before changing the main unit's I/O module configuration and configuration after changing (before reconfiguration and after reconfiguration)
- Unmatched main unit option configuration
- Configuration before changing the multi batch settings and after changing of the multi batch function (/BT option)

The following cases are not considered a device system mismatch.
- I/O module serial numbers are not matched.
- I/O module serial versions are not matched.

For this reason, differences can be displayed between a configuration before replacing a module and a configuration after replacing and activating the new module (as a result of a module failure or the like).

Note

When difference display is executed, the configuration file after the change is loaded and displayed on the setting screen. This is also true when the difference display is canceled.

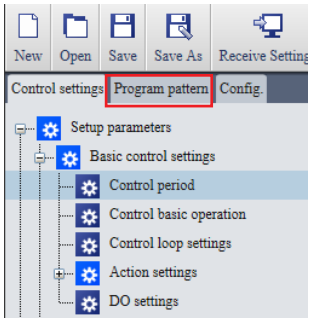
5.1 Program Pattern Setting

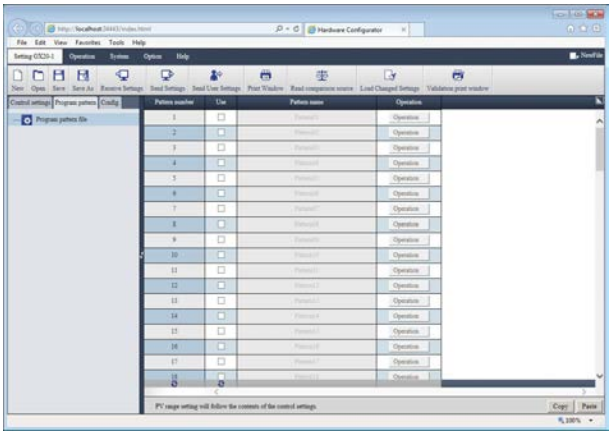
5.1.1 Overview

This chapter explains “Program pattern setting” [1] of GX/GP/GM with the PID control module and program control function (option, /PG).

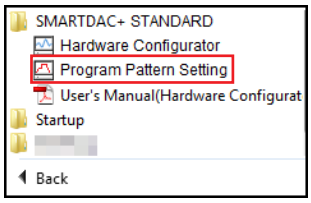
1 For details of control functions and each setting item of GX/GP/GM, read “Model GX10/GX20/GP10/GP20/GM10 Loop Control Function, Program Control Function (/PG) User’s Manual (IM 04L51B01-31EN)”.

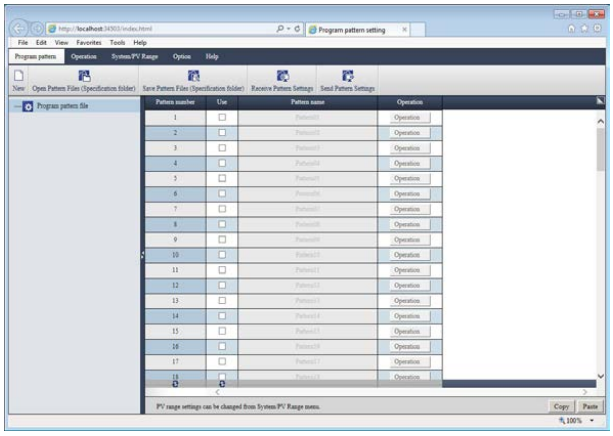
SMARTDAC+ Hardware Configurator supports the loop control function and program control function for GX/GP/GM from R4.01. Therefore, if you enable the PID control module (GX90UT-02-11) and program control function (option, /PG) in system configuration of the connected main unit, the Program Pattern tab is added on the Setting screen. On this tab, you can create, display, edit, save, and send/receive program patterns to/from the main unit. You can edit the segment time by using the ramp method (software version R4.06 and later). For details, see section **5.9 Editing the program pattern by using the ramp method (Software version R4.06 and later) on page 5-28**.





When you install Hardware Configurator (R4.01 or later), Program pattern setting is installed simultaneously by default.





The “Program pattern tab” of the Hardware Configurator and “Program Pattern Setting” have almost the same configuration and features. On the “Hardware Configurator”, you can configure program patterns as well as the setting of main unit. In contrast, the “Program Pattern Setting” is designed so that users can easily set and edit only program patterns. To open, save, or send/receive not only program patterns but a configuration file at the same time, operate “Hardware Configurator”.

5.1.2 Operating Environment

The required PC system environment is the same as that for the Hardware Configurator.

▶ **"PC System Requirements" on page 1-3**

5.1.3 Other Operating Conditions, Security Measures

Same as the Hardware Configurator. Read the following sections.

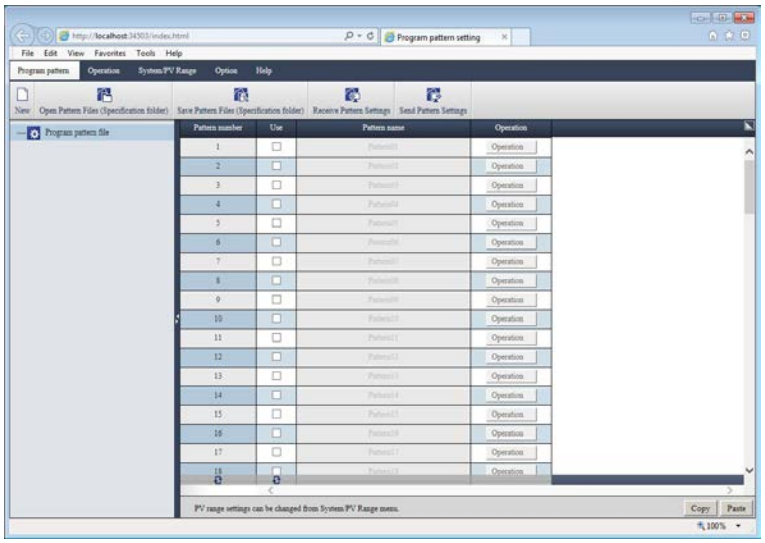
▶ **"Other Operating Conditions", "Security Measures" on page 1-4**

5.1.4 Starting the Software

Procedure

1 From Start menu, select All Programs - SMARTDAC+ STANDARD - Program pattern setting.

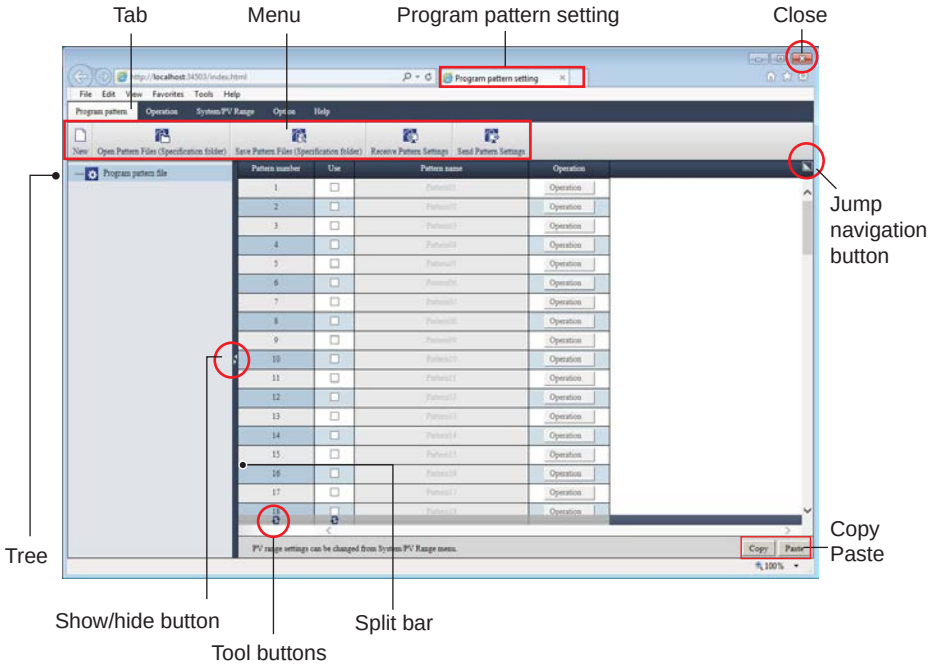
Program pattern setting starts, and the following window appears.



5.1.5 Window and Menu Configuration

The screen structure of the Program Pattern Setting is the same as the Hardware Configurator. It consists of tabs, menus, and file name display area, as shown in the figure below.
The split bar and buttons can be used in the same way as the Hardware Configurator. See the following page for details.

About the split bar and buttons for display change, copy and paste, and jump display: ▶ page 1-6

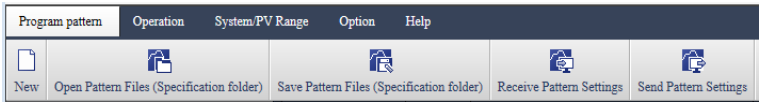


Note

With the “Program Pattern Setting”

- The “File Name” on the upper right of the screen is not displayed.
- Sending/receiving of settings (GNL) and expansion/saving of files are not possible.
- There are no setting screen displays other than program pattern setting.

The structure of tabs and menus of the Program Pattern Setting are shown in the figure below.



Tab	Menu	What You Can Do
Program pattern	New	Creates a new program pattern file. Opens a System/PV Range dialog box for creating a new program pattern file
	Open Pattern Files (Specification folder)	Specifies a folder and expands program pattern files collectively.
	Save Pattern Files (Specification folder)	Specifies a folder and saves program pattern files collectively.
	Receive Pattern Settings	Receives program pattern settings collectively from the main unit.
	Send Pattern Settings	Sends program pattern settings collectively to the main unit.

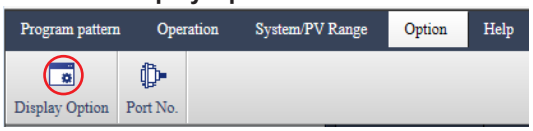
Tab	Menu	What You Can Do
Operation	Start Recording	Starts recording of the main unit.
	Stop Recording	Stops recording of the main unit.
	Start Computing	Start computation of a main unit.
	Stop Computing	Stop computation of a main unit.
	Run Control	Start control of a main unit.
	Stop Control	Stop control of a main unit.
	Run Program Control	Start program control of a main unit.
	Reset Program Control	Stop program control of a main unit.
	Hardware Info.	Receive and display the GX/GP/GM status and option information.
	Reconfiguration	Reconfigure the GM system.
	Delete All Patterns	Initializes all program patterns in the main unit.
System/PV Range	System/PV Range	Configures system configuration and PV range required for configuring program patterns.
	Initialize	Initializes program patterns in the software.
Option	Display Option	Specify the display language of Program pattern setting..
	Setting Option	Specify the setting option (Segment time editing method) of Hardware Configurator.
	Port No.	Specify the port number of Program pattern setting.
Help	Instruction Manual	View the user's manual.
	Version	View the Program pattern setting's version.
	Web to update	Visit the Website to download the latest version of Hardware Configurator (including Program pattern setting).

5.1.6 Setting the Display Language

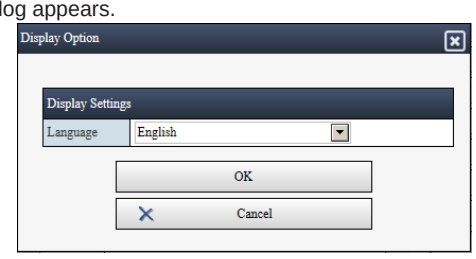
You can set the display language to English, Japanese, German, French, Chinese, Russian or Korean. With the Program Pattern Setting, data display format and the decimal point type cannot be set.

Procedure

1 Click **Option** tab and then **Display Option**.



Display Option dialog appears.



3 Click **Language** arrow, and select from the list.

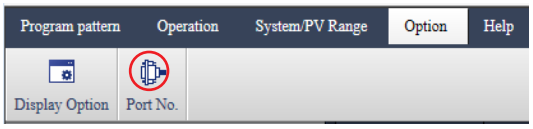
4 Click **OK.**

5.1.7 Specifying the HTTP port number

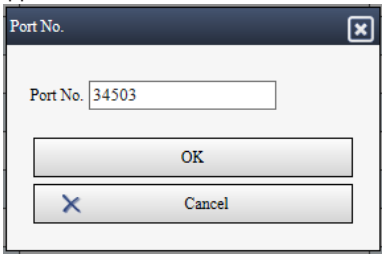
You can specify the HTTP port number for using the Web browser from this software.
The default HTTP port number is "34503" for the "Program pattern setting". To change the port number to a different number, follow the procedure below.

Procedure

1. Click **Option** tab.
2. Click **Port No.**



The **Port No.** dialog box appears.



3. Enter the port number (in the range of 34443 to 65535).

Note

To activate the new port number, restart the software.
The software will continue to use the old port number until you restart the software.

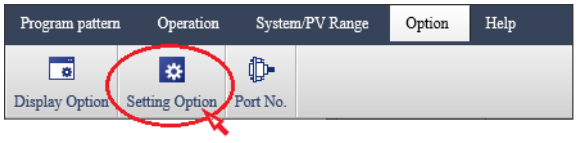
5.1.8 Specifying the editing type of the setting

You can configure which options are available to select for the segment time editing method in the program pattern setting screen (time method only, or time or ramp method).

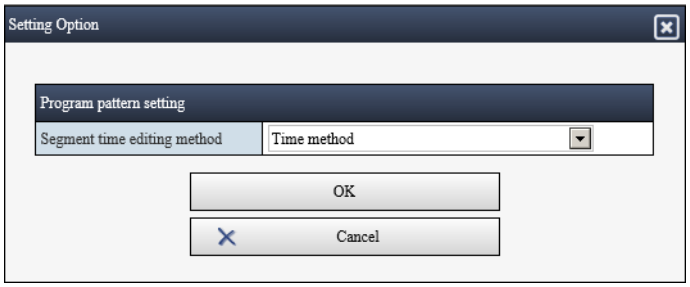
For details, see section **1.4.4 Specifying the editing type of the setting on page 1-13**.
For the segment time editing method, see section **5.9 Editing the program pattern by using the ramp method (Software version R4.06 and later) on page 5-28.**

Procedure

1. Click **Option** tab.
2. Click **Setting Option**.



The Setting Option dialog box appears.



3 Click **Segment time editing method** arrow, and select from the list.

4 Click **OK**.

5.1.9 Closing the Software

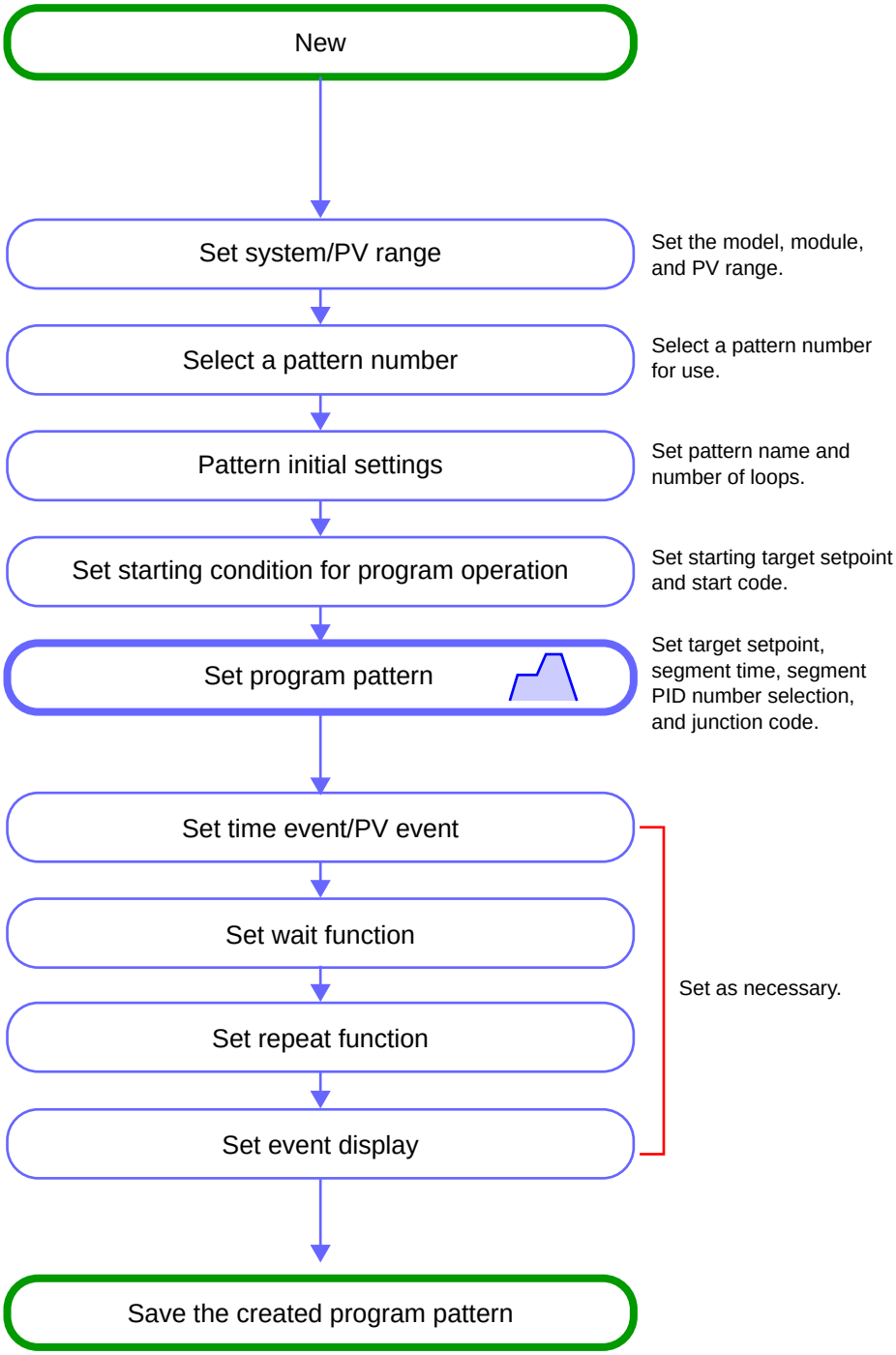
Procedure

1 Close browser by clicking the **Close** button or close by browser's menu.

Operation complete

5.2 Creating a New Program Pattern File

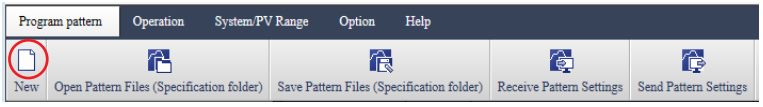
The following shows the operation flow for creating a program pattern file.



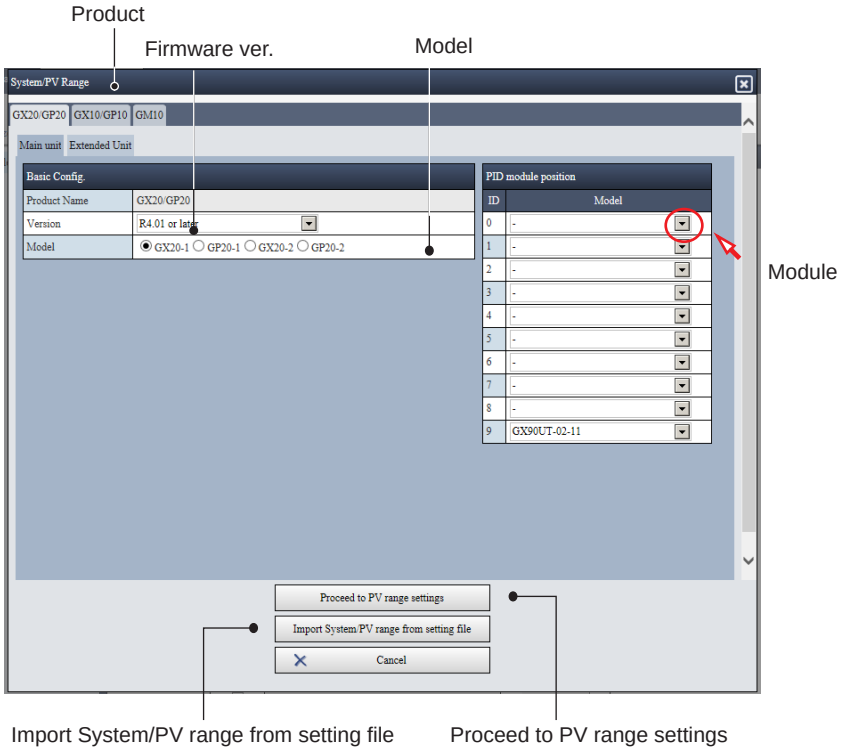
To create a program pattern file, a dialog box for configuring “System Config.” and “PV range” of the program pattern are opened.

Procedure

1 Click the Program pattern tab and then New.



The System/PV Range dialog box opens.



2 Set system/PV range.

▶ Go to step 2 on the next page.

- For details of the method of setting system/PV range, see the next section “5.3.1 Setting System/PV Range”
- For the procedure of creating program patterns according to the flow, refer to “5.4 Example of Program Pattern Setting”.

5.3 Setting PV Range of the Program Pattern

From the System/PV Range tab, you can display or change the settings that are used as master settings on the Program Pattern Setting. The “System Config.” of the Program Pattern Setting contains only the settings required for creating program patterns.

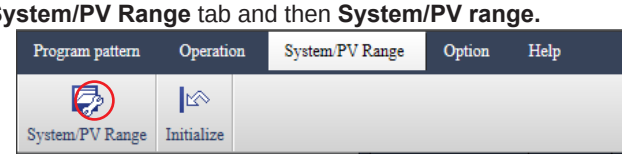
Note

- When setting system configuration and PV range on the Hardware Configurator
  System configuration: **System** tab > **System Config.**: ▶ page 2-1
  PV range: **Control settings** tab > **Setup parameters** > **PV/RSP settings** > **Control PV input range**
- For details of control settings and control PV range, read the following user’s manual.
  “Model GX10/GX20/GP10/GP20/GM10 Loop Control Function, Program Control Function (/PG) User’s Manual (IM 04L51B01-31EN)”

5.3.1 Setting System/PV Range

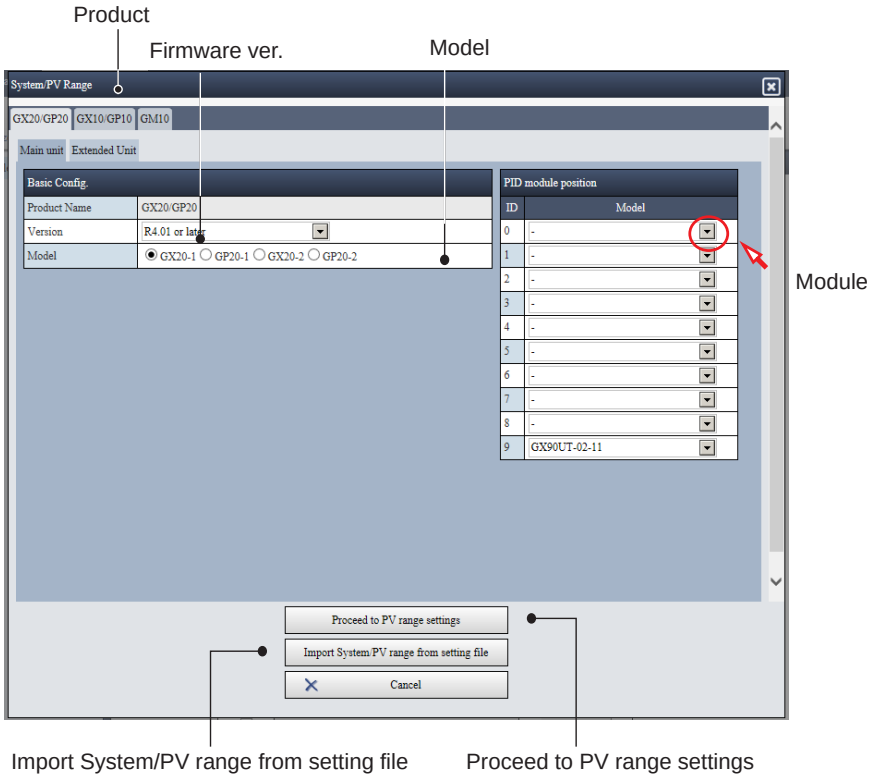
Procedure

1 Click the **System/PV Range** tab and then **System/PV range.**



The **System/PV Range** dialog box appears
When New is clicked in a program pattern, the System/PV Range dialog box appears in the same way.

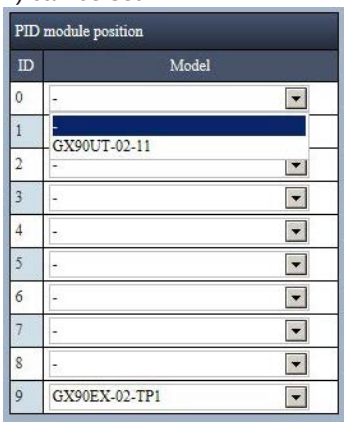
2 Select a tab of the product name.



3 Select a model.

Tab	Model	Number of Control Loop
GX20/GP20	GX20-1, GP20-1, GX20-2, GP20-2	-1 model: 10 loops -2 model: 20 loops
GX10/GP10	GX10-1, GP10-1, GP10-1 (12VDC Power Supply)	
GM10	GM10-1, GM10-2	

4 Set the location of PID module.
In the Program Pattern Setting, only PID module (GX90UT-02-11) and expansion module (GX90EX-02-TP1) can be set.



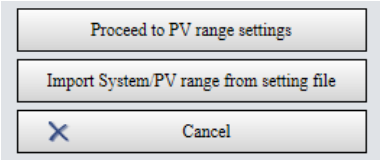
Tab	Number of ID (Slot number)
GX10/GP10	0 to 2
GX20/GP20	0 to 9
GM10	0 to 9 You cannot choose PID module for the main unit slot 5 to 9 of GM. Also, you cannot choose I/O expansion module for 7 to 9.

If you are using an I/O expansion module (GX90EX-02-TP1)

- GX10/GP10 can only be set to “2” of “ID”
- GX20/GP20 can only be set to “9” of “ID”
- With GM10, it can be set to “0” to “6” of “ID”. However, you cannot set other modules after the I/O expansion module.

Related items and details :▶ **“Module Configuration Limitations” on page 2-8**

5 Set PV range. Click **Proceed to PV range settings** or **Import System/PV range from the setting file**.



- When choosing **Proceed to PV range settings**
  The **System/PV Range** dialog box opens.
- When choosing **Import System/PV range from the setting file**
  The **Open File** dialog box appears. When a file is selected and opened, range settings are read on the **System/PV Range** window.

Regardless of which options are selected, a warning message may appear depending on the position of attached module, etc. (See Note)

Note

You can configure PV range settings on the Program Pattern Setting in the following methods.

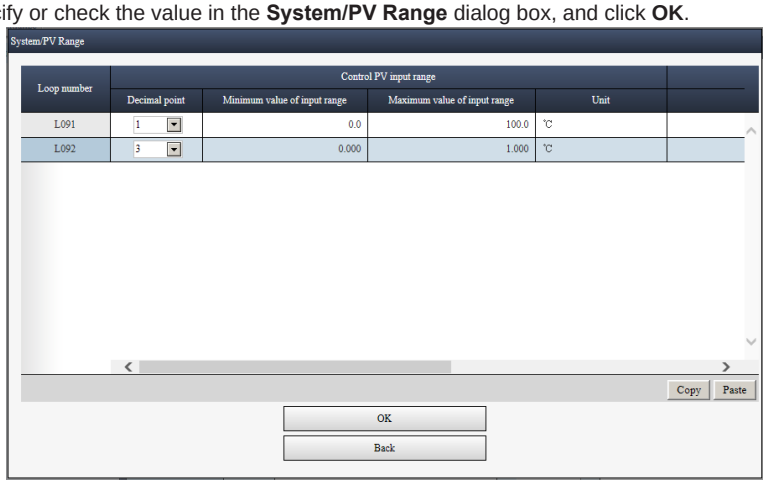
- Specify values on a dialog box
- Read PV range from an existing file
- Read PV range by receiving program patterns from the main unit : ▶ **"5.7 Receiving and Sending Program Patterns"**

To specify values in the window in step 5, choose Proceed to PV range settings. However, if you click Proceed to PV range settings while there is no PID control module, a message (W031) is displayed, and you cannot proceed to PV range setting.

To read PV range from a configuration file, choose Retrieve system/PV range from configuration file. Note that the following types of files cannot be correctly read.

- Configuration files below R4.01 cause a read error (E003).
- When files applicable to the following are read, they are opened in the initial state.
  - A configuration file without the program control function
  - A configuration file without a PID control module
  - A configuration file containing a system that cannot coexist with the program control function (advanced security function, high-speed/dual measurement mode)

6 Specify or check the value in the **System/PV Range** dialog box, and click **OK**.



The displayed PV range setting is applied.

Operation complete

Note

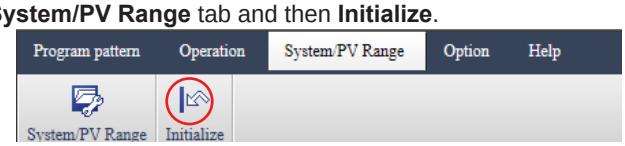
Even though a configuration file is read, if PV range cannot be read for a loop, the initial value is input.

5.3.2 Initializing Setup Data

Initialize all values in the Program Pattern Setting (on PC).

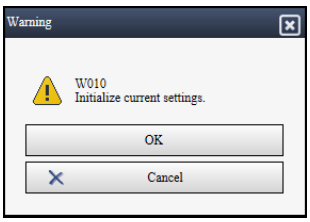
Initialize all program patterns in the main unit: ▶ **"Deleting All Patterns" on page 5-27**

1 Click the **System/PV Range** tab and then **Initialize**.



A confirmation message (W010) is displayed.

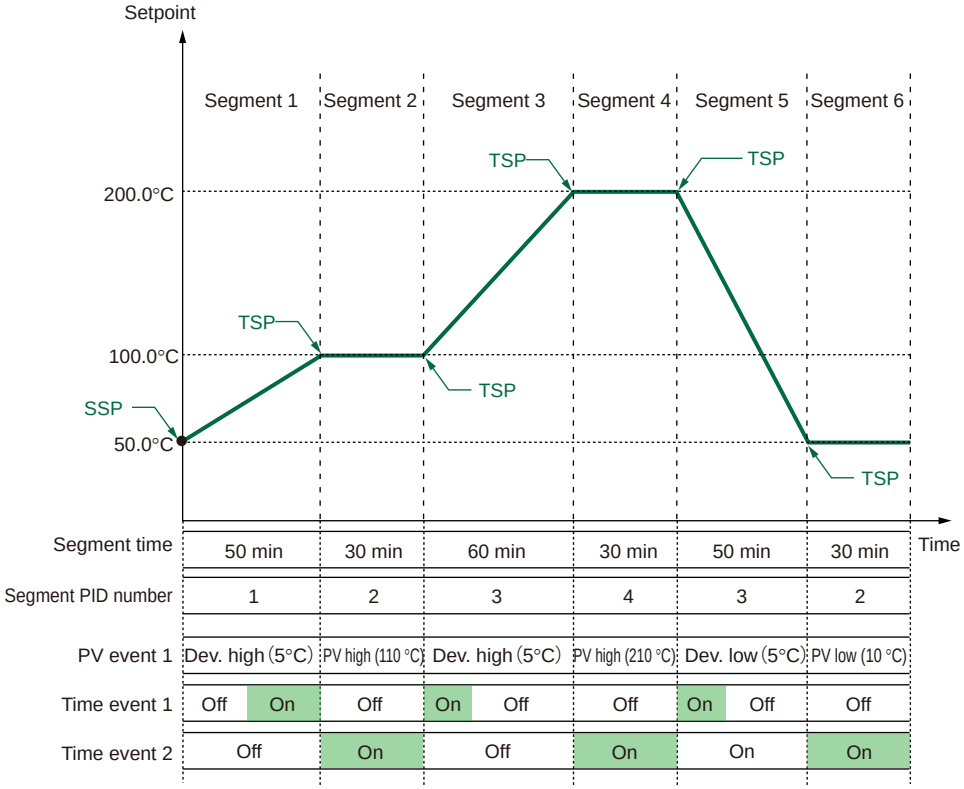
2 Click **OK**.



All pattern numbers are set to Not use, and all setting values are returned to initial values.

5.4 Program Pattern Example

This section explains how to set the program pattern shown in the following figure. The explanation is given only for Loop 1, but other loops can be set in the same way as well.



SSP: Starting target setpoint
TSP: Target setpoint

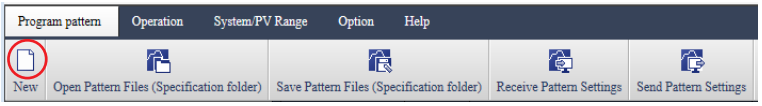
Set the target setpoint and segment time for segments 1 to 6 as follows:
(1) The operation start temperature is 50.0°C. The temperature is increased to 100.0°C over 50 minutes.
(2) When the temperature reaches 100.0°C, this temperature is maintained for 30 minutes.
(3) The temperature is increased to 200.0°C over 60 minutes.
(4) When the temperature reaches 200.0°C, this temperature is maintained for 30 minutes.
(5) The temperature is decreased to 50.0°C over 50 minutes.
(6) When the temperature reaches 50.0°C, this temperature is maintained for 30 minutes.
Segment PID number and junction code are set for each segment.
PV event and time event are set after setting the program pattern.
For the segment time editing by using the ramp method, see section **5.9 Editing the program pattern by using the ramp method (Software version R4.06 and later) on page 5-28.**

Note

- Before creating program patterns, be sure to check the control PV input range and decimal place. Changing these after you create patterns will cause the values in the program patterns to be changed. (The patterns' range and scale ratios will be changed.)
- The time axis of each loop set in a program pattern will be the same.
- Each program pattern is assigned to a single loop. You cannot set the same loop number to a single program pattern.
- When you are creating a program, if you change the segment time to 00:00:00 in the middle and save it, the program pattern after this segment will be discarded.

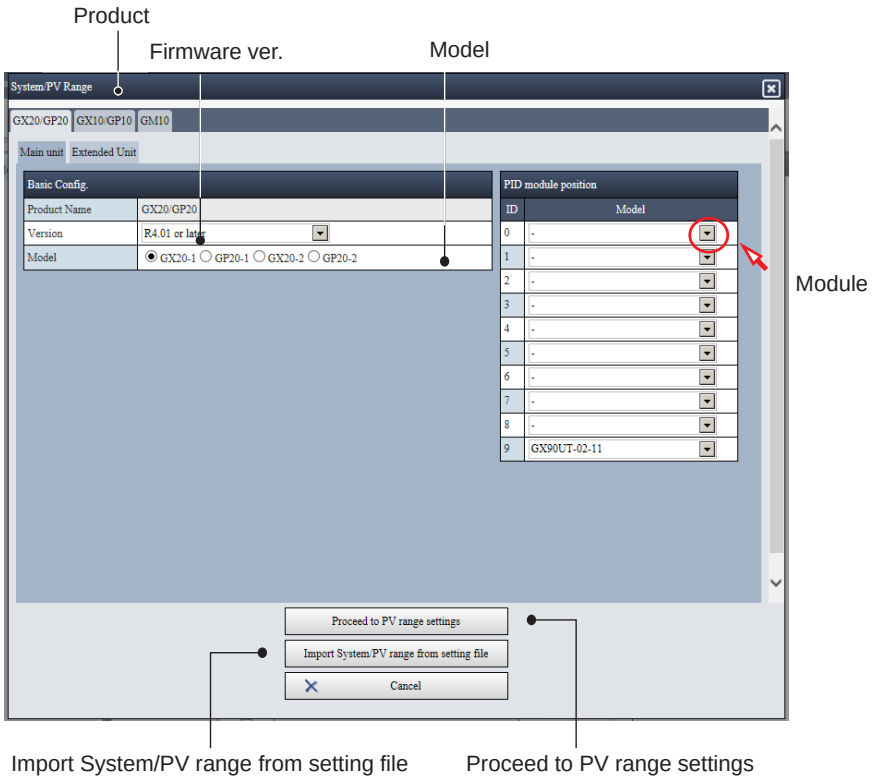
Procedure

1 Click the Program pattern tab and then New.



2 Set system/PV range.

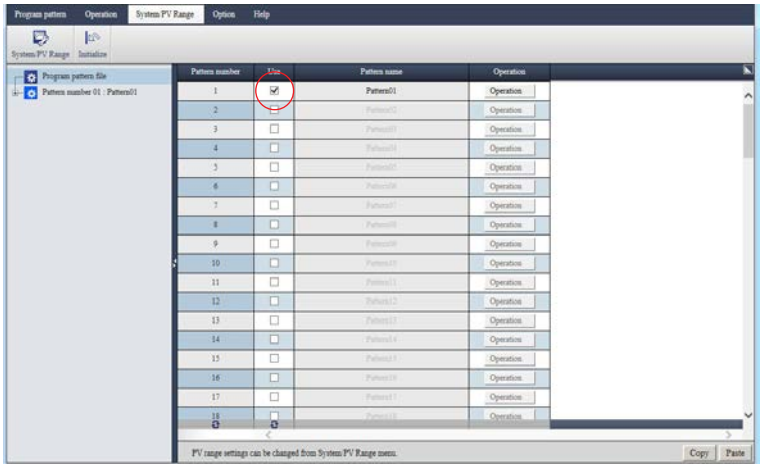
How to set system/PV range.: ▶ **"Setting PV Range of the Program Pattern" on page 5-9**



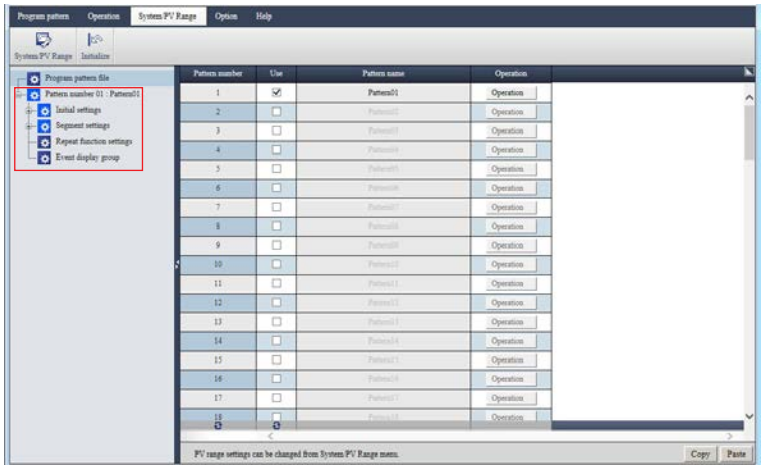
Note

- In the Program Pattern Setting, this "System/PV Range" is used as master settings. The master settings are the same for all program patterns (program pattern number 1-99). You cannot set individual master settings for each program pattern number.
- Be sure to check control PV range and decimal place before creating a pattern. If they are changed during creation of a program pattern, it may cause the pattern to collapse.
- If PV range is changed during creation of a program pattern, although it is not deleted and remains on the screen of the Program Pattern Setting, it may be corrected in accordance with the System/PV Range after the change. A message (W028) is displayed after correction.
  Related item: ▶ **"Example for the corrected pattern" on page 3-13**

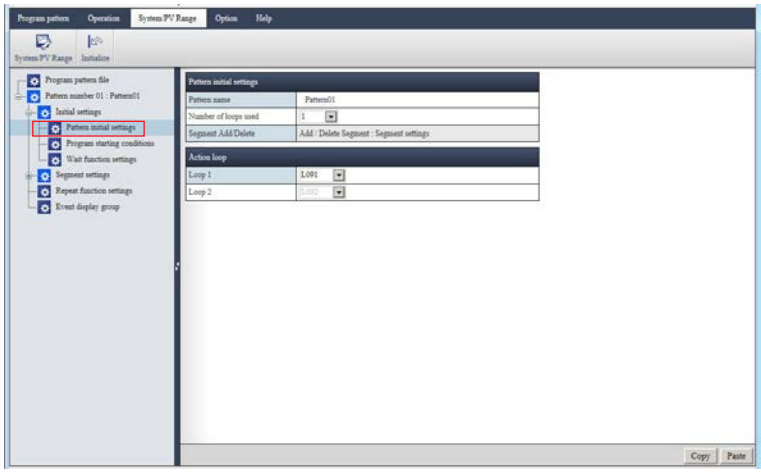
3 Check **"Use"** on the program pattern number for use.
The pattern number is displayed in the tree.



4 Click **Pattern number**.
The setting items for the program pattern are displayed.



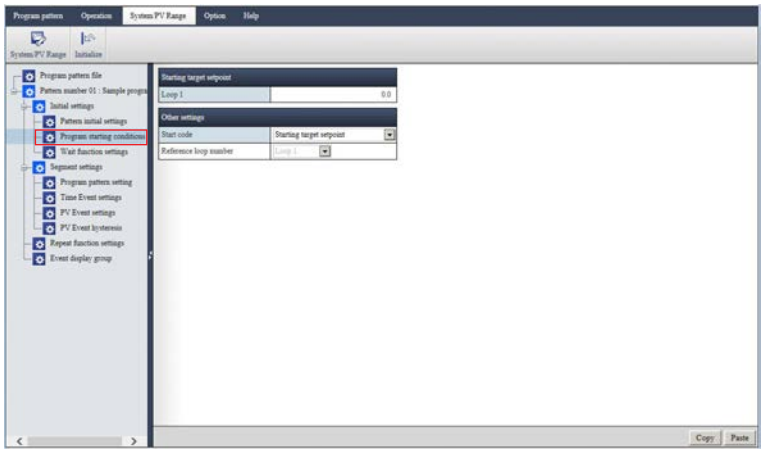
5 Click **Initial settings** and then **Pattern initial settings**.
Pattern initial settings and **Action loop** are displayed.



6 Configure settings as per the setting table.

Setting items	Description
Pattern name	Sample program
Number of loops used	1
Segment Add/Delete	L091 (Main unit, Slot 09, Loop 1)

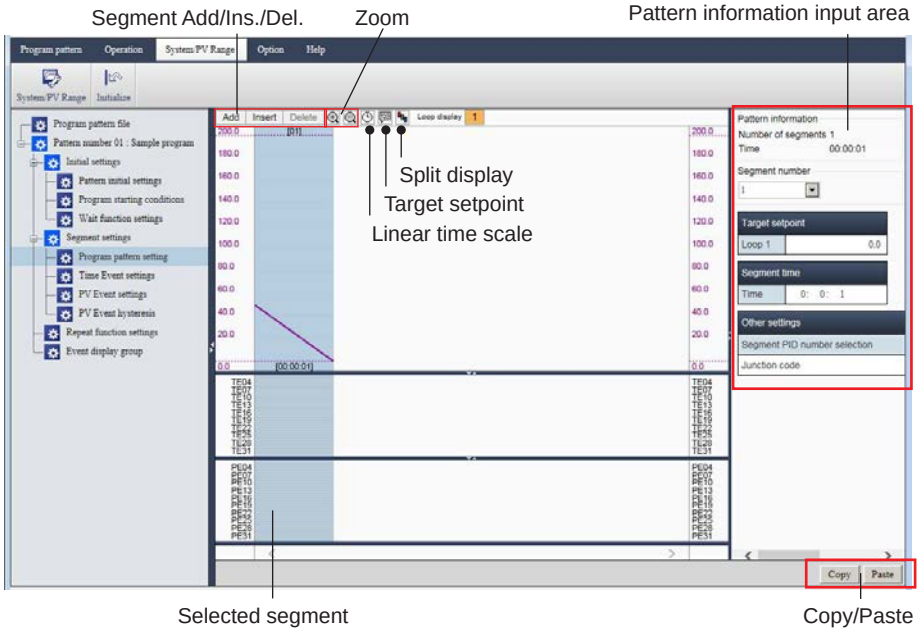
7 Click **Program starting conditions**.
Starting target setpoint and **Other settings** are appears.



8 Configure settings as per the setting table.

Setting items	Menu (tree)	Description
Starting target setpoint	Initial settings > Program starting condition	50.0 °C
Start code	Initial settings > Program starting condition	Starting target setpoint

9 Click **Segment settings** and then **Program pattern setting.**



- Clicking the segment display selects the segment (background color turns blue) and the setting input field for the segment is displayed in the setting input section.
- The segment display can show only one segment at a time. You cannot choose more than one segment.
- The section for entering values can be edited using copy and paste.

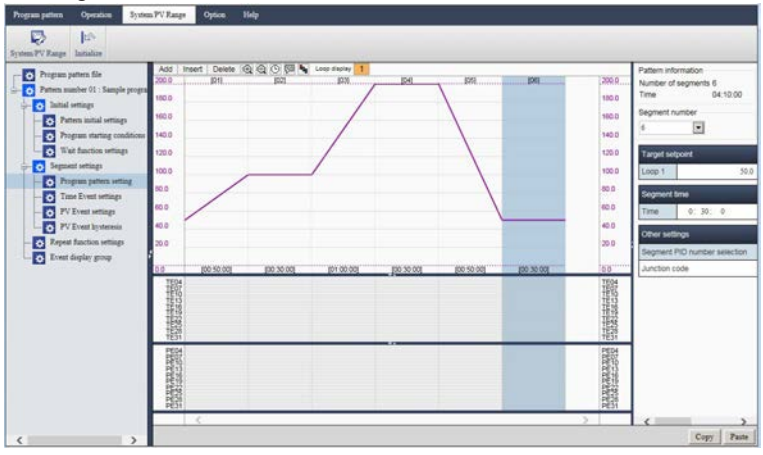
Operation buttons on the segment setting screen

Buttons and Tooltips		Description
Add	Add	Adds a new segment after the last segment. The added segment takes over only the target setpoints for each loop that are set for the last segment. Initial values are used for other settings.
Insert	Insert	Inserts a new segment in the location of the currently selected segment. The added segment takes over the settings of the last segment.
Delete	Delete	Deletes the currently selected segment.
	Zoom in/out	Enlarges and shrinks the time axis.
	Display in linear time scale	The time axis changes to equal interval or actual time ratio.
	Target setpoint	Displays the target setpoint of the selected segment.
	Split display	Splits the pattern vertically.
Loop display 1 2	Loop display	Displays the pattern of the clicked loop number. Up to 20 loops can be displayed.

10 Set the setup items (i.e. Segment number, Target setpoint, Segment time) according to the following table.

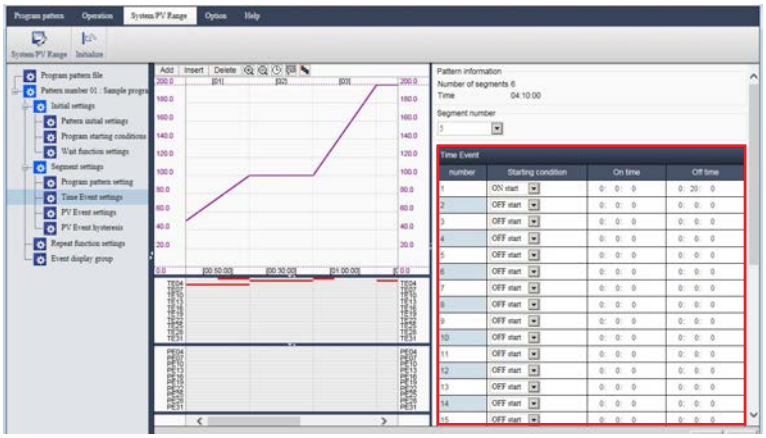
Segment	Setup Item	Value
1	Target setpoint	100.0°C
	Segment time	00:50:00
	Segment PID number selection	1
	Junction code	Switching for continuation
2	Target setpoint	100.0°C
	Segment time	00:30:00
	Segment PID number selection	2
	Junction code	Switching for continuation
3	Target setpoint	200.0°C
	Segment time	01:00:00
	Segment PID number selection	3
	Junction code	Switching for continuation
4	Target setpoint	200.0°C
	Segment time	00:30:00
	Segment PID number selection	4
	Junction code	Switching for continuation
5	Target setpoint	50.0°C
	Segment time	00:50:00
	Segment PID number selection	3
	Junction code	Switching for continuation
6	Target setpoint	50.0°C
	Segment time	00:30:00
	Segment PID number selection	2
	Junction code	Switching for continuation

To add a segment, click **Add**



The basic pattern is created.

11 Set time event. Click **Time event settings**.
The setting screen in table format is displayed on the right side



Note

When entering values in the table, you can easily do it by copying and pasting values. The editing operation can be done in the same way as the Hardware Configurator software.
Editing operation: ▶ **"Editing and Manipulating Values" on page 2-27**

12 Set the setup items according to the following table.

Segment	Time event	Setup item	Value
1	Time event 1	Start Condition	OFF start
		On time	00:25:00
		Off time	00:00:00
	Time event 2	Start Condition	OFF start
		On time	00:00:00
		Off time	00:00:00
2	Time event 1	Start Condition	OFF start
		On time	00:00:00
		Off time	00:00:00
	Time event 2	Start Condition	ON start
		On time	00:00:00
		Off time	00:00:00
3	Time event 1	Start Condition	ON start
		On time	00:00:00
		Off time	00:20:00
	Time event 2	Start Condition	OFF start
		On time	00:00:00
		Off time	00:00:00
4	Time event 1	Start Condition	OFF start
		On time	00:00:00
		Off time	00:00:00
	Time event 2	Start Condition	ON start
		On time	00:00:00
		Off time	00:00:00
5	Time event 1	Start Condition	ON start
		On time	00:00:00
		Off time	00:20:00
	Time event 2	Start Condition	OFF start
		On time	00:00:00
		Off time	00:00:00
6	Time event 1	Start Condition	OFF start
		On time	00:00:00
		Off time	00:00:00
	Time event 2	Start Condition	ON start
		On time	00:00:00
		Off time	00:00:00

13 You can also set PV event and event display group as necessary.

Segment	PV event	Setup item	Value
1	PV event 1	Loop number	Loop 1
		Type	DVH: Deviation high limit
		Value	5.0°C
2	PV event 1	Loop number	Loop 1
		Type	PVH: PV high limit
		Value	110.0°C
3	PV event 1	Loop number	Loop 1
		Type	DVH: Deviation high limit
		Value	5.0°C
4	PV event 1	Loop number	Loop 1
		Type	PVH: PV high limit
		Value	210.0°C
5	PV event 1	Loop number	Loop 1
		Type	DVL: Deviation low limit
		Value	-5.0°C
6	PV event 1	Loop number	Loop 1
		Type	PVL: PV low
		Value	10.0°C

Event display	Setup item	Value
1	Display	On
	Event type	PV event
	Event number	1
2	Display	On
	Event type	Time event
	Event number	1
3	Display	On
	Event type	Time event
	Event number	2

14 When the pattern is created, save the file by selecting **Save pattern files** under the **Program pattern** tab on the menu bar.
A folder is created and a program pattern file (*.GPT) is saved.

Operation complete

Note

For details of the setting items required for creating a program pattern and details of the control function, read the following user's manual.
"Model GX10/GX20/GP10/GP20/GM10 Loop Control Function, Program Control Function (/PG) User's Manual (IM 04L51B01-31EN)"

5.5 Opening a Program Pattern File

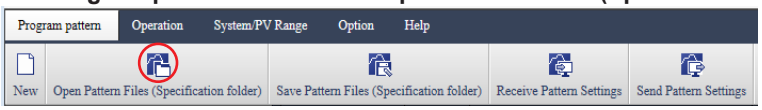
This section describes operations required for expanding program pattern files (*.GPT) collectively by specifying a folder containing the program patterns on your PC. You can edit the patterns by setting any values for system/PV range regardless of the settings in the configuration file.

Opening a configuration file (GNL) containing program patterns on the Hardware Configurator:
▶ **Section 2.2.4 on page 2-19**

For the operation of the ramp method, see secton **5.9 Editing the program pattern by using the ramp method (Software version R4.06 and later) on page 5-28**

Procedure

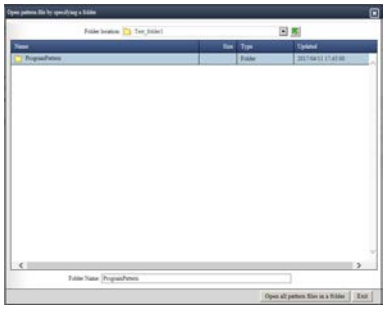
1 Click the **Program pattern** tab and then **Open Pattern Files (Specification folder).**



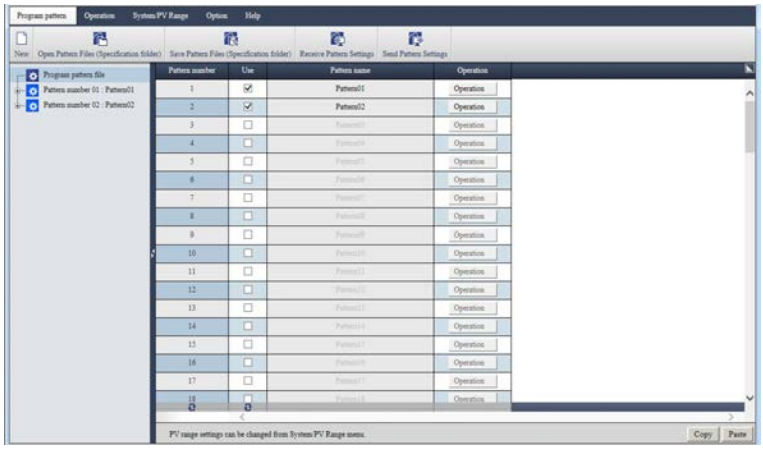
The **Open pattern files by specifying a folder.** dialog box appears.

2 Specify a folder (Note) and open program patterns contained in the folder.

Note: The folder is clicked and a line is selected.



Expand the program patterns in the folder and complete operation.
If there is any program pattern displayed on the screen, it is deleted, and System/PV Range is also replaced.



Operation complete

Note

- When program patterns are expanded on the screen, the system/PV range settings of the program pattern that is read first are used as new system/PV range settings.
- If there is a pattern in the selected folder that does not match System/PV Range, it is corrected to match them. After correction, the pattern number for the corrected pattern is notified by a message (W028). : ▶ **"Example for the corrected pattern" on page 3-13**

5.6 Saving a Program Pattern File

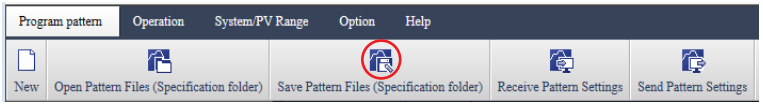
This section describes operations to save program pattern files (*.GPT) collectively by specifying a folder.

Saving a configuration file containing program patterns on the Hardware Configurator: ▶ **Section 2.4.2 on page 2-49**

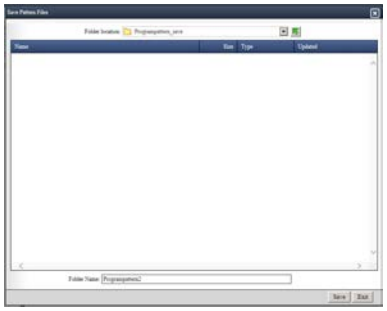
For the operation of the ramp method, see secton **5.9 Editing the program pattern by using the ramp method (Software version R4.06 and later) on page 5-28**

Procedure

1 Click the **Program pattern** tab and the **Save Pattern Files (Specification folder)**.



2 Specify a saving location. Enter “Program pattern folder name”, and click Save.
The default value of the Program pattern folder name is ProgramPattern. Some characters cannot be entered for a folder name. (See Note)



A folder containing the program pattern file is saved.

Operation complete

Note

- If there is a program pattern folder with the same name in the saving location, an overwrite confirmation message (W005) appears. If you click Cancel, the folder is not overwritten.
- The following table shows the limitations of characters that can be entered for a program pattern folder name. If a character outside the range is entered, an error (E017) is shown, and the folder cannot be saved.

Limitations	Range	
Number of characters	You can enter up to 32 characters.	
Prohibited characters	/	Slash
	> <	Inequality
	:	Colon
	?	Question mark
	“	Double quotation marks
	‘	Single quotation marks
	\	Backslash
	*	Asterisk
	|	Vertical bar (pipe)
	;	Semi-colon
Prohibited words	AUX, CON, PRN, NUL CLOCK$, CLOCK COM0, COM1, COM2, COM3, COM4, COM5, COM6, COM7, COM8, COM9 LPT0, LPT1, LPT2, LPT3, LPT4, LPT5, LPT6, LPT7, LPT8, LPT9	
Other limitations	You cannot begin/end the name of folder with a space or a point. Additionally, a blank name is not available.	
Path length	Up to 256 characters including the folder name.	

5.7 Receiving and Sending Program Patterns

You can receive and send (Note) program patterns to/from the GX/GP/GM with the program control function (option, /PG) by connecting GX/GP/GM via communication.

Note: There are some limitations on sending patterns in the process of program control. See the description later.

5.7.1 Receiving Program Patterns

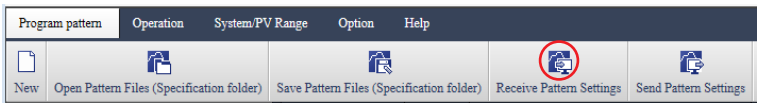
With the Program Pattern Setting, you can receive program patterns only. To receive settings at the same time, use the Hardware Configurator.

Receiving a configuration file containing program patterns on the Hardware Configurator: ▶ **Section 3.1.5 on page 3-12**

For the operation of the ramp method, see secton **5.9 Editing the program pattern by using the ramp method (Software version R4.06 and later) on page 5-28.**

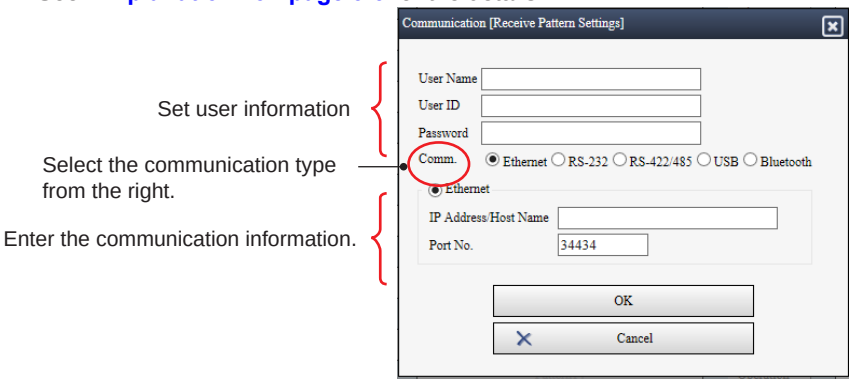
Procedure

1 Click the **Program pattern** tab and the **Receive Pattern Settings**.



Communication dialog box appears.

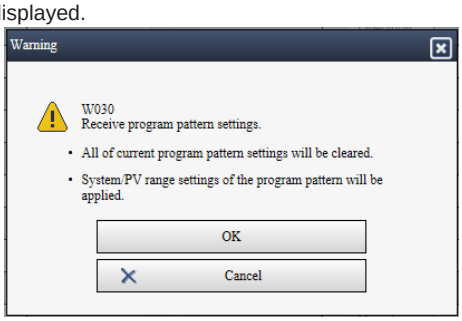
2 Enter the communication information for connecting to the main unit.
See **"Explanation" on page 3-3** for the details.



Note

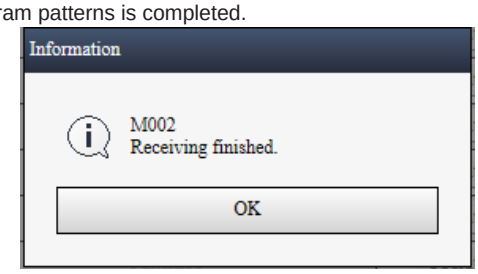
If the GX/GP/GM's Security settings - Basic settings - Communication is set to Login, you need to specify the user information. If set to Off, you only need to enter the communication information to establish a connection. For details on security settings, see the main unit user's manual (GX/GP: IM 04L51B01-01EN, GM: IM 04L55B01-01EN).

3 Click **OK**.
If the “Program control function (/PG)” of the connected main unit is enabled, the following message (W030) is displayed.



If the program control function (/PG) of the connected main unit is disabled (or it is not equipped with the option), an error (E021) is displayed.

4 Click **OK**.
The receipt of program patterns is completed.



Note

- If a program pattern is already displayed on the setting screen when a program pattern is received, the former program pattern is overwritten with the received program pattern.
- When program patterns are expanded on the screen, the system/PV range settings of the program pattern that is read first are used as new system/PV range settings.
- If there is a pattern in the selected folder that does not match System/PV Range, it is corrected to match them. After correction, the pattern number for the corrected pattern is notified by a message (W028).
  Related item: ▶ **“Example for the corrected pattern” on page 3-13**

5.7.2 Sending Program Patterns

With the Program Pattern Setting, you can send program patterns only. To send settings at the same time, use the Hardware Configurator.

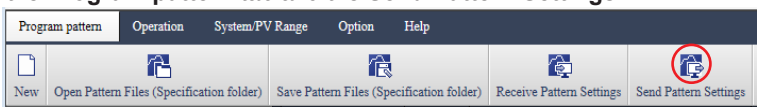
Sending a configuration file containing program patterns on the Hardware Configurator :▶ **“Sending a Program Pattern Configuration File (GX/GP/GM with the Program Control Function)” on page 3-14**
For the operation of the ramp method, see secton **5.9 Editing the program pattern by using the ramp method (Software version R4.06 and later) on page 5-28**

Before Sending Program Patterns

- You cannot send program patterns to pattern numbers in the process of program control on the main unit.
- When sending program patterns, even if pattern numbers that are not used (Off) in the “Program pattern file” screen on the software are sent to the main unit, they are not reflected. Patterns that are used on the main unit (On) are retained. (If patterns are sent from the Hardware Configurator, sending results are reflected on the main unit.)
- Before sending patterns, you can initialize program patterns that already exist in the main unit.: ▶ **“Deleting All Patterns” on page 5-27**

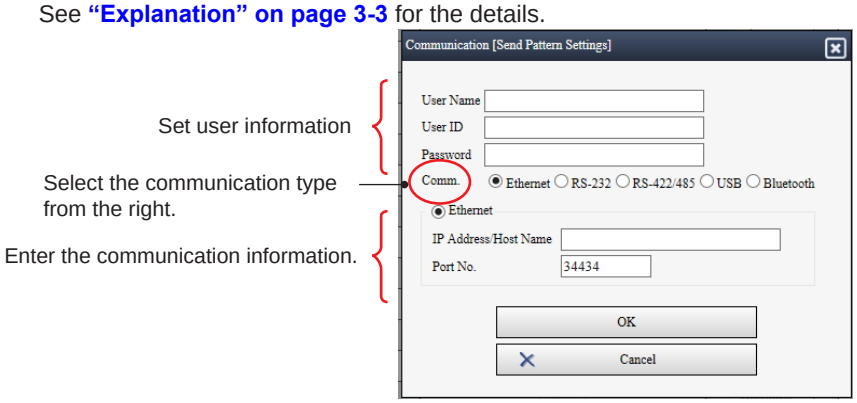
Procedure

1 Click the **Program pattern** tab and the **Send Pattern Settings**.



Communication dialog box appears.

2 Enter the communication information for connecting to the main unit.
See **“Explanation” on page 3-3** for the details.



Note

If the GX/GP/GM’s Security settings - Basic settings - Communication is set to Login, you need to specify the user information. If set to Off, you only need to enter the communication information to establish a connection.

3 Click **OK**.
If the program control function (/PG) of the connected main unit is enabled, program patterns are sent.

Note

If the program control function (/PG) of the connected main unit is disabled (or it is not equipped with the option), an error (E021) is displayed.

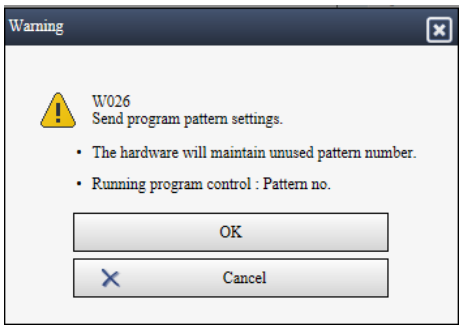
Explanation

When using Send Pattern Settings from the Program Pattern Configurator, you can send patterns without limitations even when the main unit is Recording or Computing.
However, when the main unit is Running control or Running program control, the following limitations apply.

- When the main unit is Running control
  If the loop included in the pattern setting subject to sending is not associated with the pattern in process of program operation, it can be sent without limitations.
- When the main unit is in process of program operation
  You cannot send program patterns to pattern numbers in the process of program control on the main unit. (You can send program patterns to pattern numbers that are not under program control.) You cannot change the status of patterns that are used (On) on the main unit to Not use (Off) from software. The pattern numbers that failed to be sent are shown by the following message (W011).

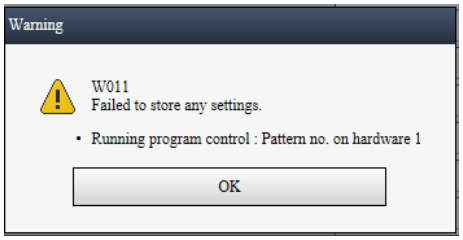
The message may be different depending on the sending condition. The following are examples.

- If a pattern under program control is included in the connected main unit (W026)



The first line of this message means that the pattern number not used on the program pattern file screen (Use Off) on software will not be reflected even if it is sent to the main unit. The second line means that the pattern is not sent because the pattern number is under program control.

- If a program pattern sent to the main unit could not be reflected because its System/PV Range did not match that of the main unit (W011).



The second line of this message means that the pattern could not be sent because the pattern number is under program control.

5.8 Controlling the Main Unit

You can operate GX/GP/GM with the program control function (option, /PG) from the Operation tab. The structure and functions of the Operation tab are almost the same as those of the Hardware Configurator software. A unique function of Program Pattern Setting is “Delete All Patterns”.

5.8.1 Starting and Stopping Recording/Computing

You can start and stop recording or computing on the main unit via communication. The operation method is the same as the Hardware Configurator. Read the following sections.

▶ **3.2.1 Starting and Stopping Recording and Computing**

5.8.2 Starting and Stopping Control

You can operate the control of the main unit. The operation method is the same as the Hardware Configurator. Read the following sections.

▶ **3.2.4 Starting/Stopping Control (GX/GP/GM with the PID control module)**

5.8.3 Starting and Stopping Program Control

You can start and stop program control on the main unit. The operation method is the same as the Hardware Configurator. Read the following sections.

▶ **3.2.5 Starting/Stopping Program Control (GX/GP/GM with the Program Control Function)**

5.8.4 Viewing the Hardware Information

You can retrieve the hardware information from the main unit. The operation method is the same as the Hardware Configurator. Read the following sections.

▶ **3.2.2 Viewing the Hardware Information**

5.8.5 Performing Reconfiguration (GM only)

You can reconfigure the GM from this software. The operation method is the same as the Hardware Configurator. Read the following sections.

▶ **3.2.3 Performing Reconfiguration (When the connected device is a GM)**

5.8.6 Deleting All Patterns

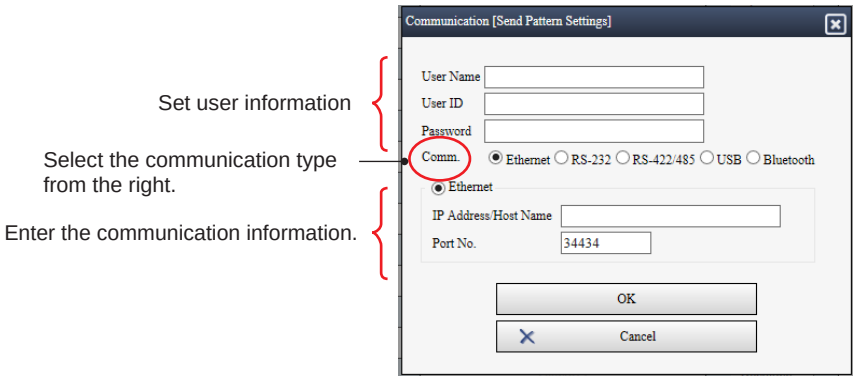
This section describes operations for initializing all program patterns by connecting with GX/GP/GM with the program control function (option, /PG) from the Program Pattern Setting via communication. By deleting all program patterns with this function, you can “Send Pattern Settings” while the main unit is in a clean slate.

Procedure

1 Click the **Program pattern** tab and the **Delete All Patterns**.

Communication dialog box appears.

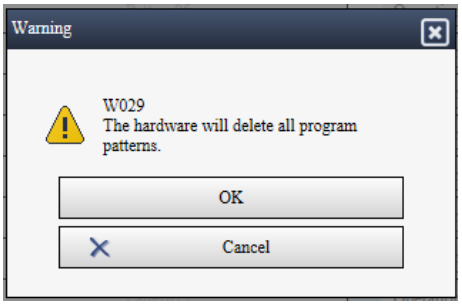
2 Enter the communication information for connecting to the main unit.
See **“Explanation” on page 3-3** for the details.



Note

If the GX/GP/GM’s Security settings - Basic settings - Communication is set to Login, you need to specify the user information. If set to Off, you only need to enter the communication information to establish a connection.

3 Click **OK**.
If the program control function (/PG) of the connected main unit is enabled and all program controls are stopped, the following dialog box appears.



4 Click **OK** to delete all program patterns.
All program patterns (pattern number 1-99) loaded on the main unit are deleted.

Operation complete

5.9 Editing the program pattern by using the ramp method (Software version R4.06 and later)

With the function, “Editing the segment time by the ramp method,” you can set the segment time from the ramp value of the loop.

You can save the edited ramp information as a program pattern file (*.GPTR) unique to Hardware Configurator. You can load saved GPTR files to Hardware Configurator.

You can also send the program pattern settings including the segment time that you edit with the ramp method.

The functions described below are enabled when the segment time editing method is “Select time or ramp method” on the setting option.

Note

The functions, “Editing the segment time by ramp method” and “Saving the ramp information” are unique to Hardware Configurator. Please note that the ramp information is not saved in the GX/GP or GM.

5.9.1 Setting the Segment Time Editing Method

You can set the segment time editing method for each pattern number.

Procedure

Pattern number X > **Initial settings** > **Pattern initial settings**
(Where “X” is number of the pattern to set.)

Explanation

Pattern initial settings

Setup Item	Selectable Range or Options	Default value
Segment time editing method*	Time or ramp method	Time method

* Appears when the display option is set to “Select time or ramp method.”

Segment time editing method

You can set the segment time editing method for each pattern number.

Options	Description
Time method	Use to enter the segment time manually.
Ramp method	Use to set the segment time by the ramp information. Select Ramp/Soak for each segment.

If you change the segment time editing method to the ramp method, the segment time of pattern number X will be reconfigured. Since warning message (W040) will be displayed before the change, if you want to keep the time method, click Cancel.

5.9.2 Setting the Segment Time

Procedure

Pattern number X > **Segment settings** > **Program pattern settings**
(Where “X” is number of the pattern to set.)

Explanation

Ramp/Soak [1]

Setup Item	Selectable Range or Options	Default value
Ramp/Soak	Ramp, Soak	Depending on conditions [2]

1 Appears when the segment time editing method of the pattern number X is set to “Ramp method.”
2 See below.

Ramp/Soak

Sets Ramp/Soak for each segment number.

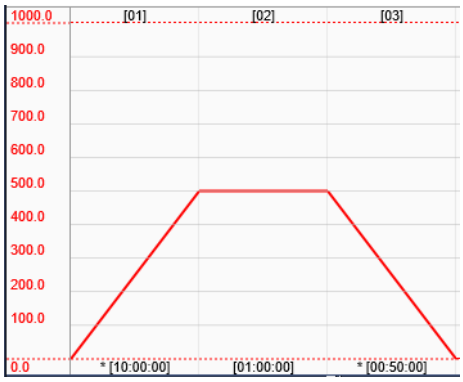
Options	Description
Ramp	Use to calculate the segment time automatically. With this method, you enter a maximum rate (ramp) for reaching a setpoint, and the software sets the segment time to that of the slowest loop. If loops with different PV ranges are set, loop 1 is used as the basis for calculating the segment time.
Soak	Set all loops to the soak state.

When a segment is created, if the starting settings and target setpoints of all loops are the same, the default value of Ramp/Soak is Soak. Otherwise, it is Ramp.

If you change the Ramp/Soak setting, the next segment will be changed to Ramp.

Segments set to Ramp remain so even if all loops are in the soak state due to changing the target setpoint.

In the segment time display, the program adds an asterisk (*) to segments that are set to Ramp.



Segment time

Setup Item	Selectable Range or Options	Default value
Ramp-rate time unit [1, 2]	Hour, Minute	Hour
Maximum ramp [1, 2]	1 digit to 100% of the PV range width of loop 1.	Depending on conditions. [4]
Time [3]	00:00:01 to 99:59:59	Depending on conditions. [4]

1 Appears when the segment time editing method is set to “Ramp method.”
2 It can be set when Ramp/Soak is set to Ramp.
3 It can be set when Ramp/Soak is set to Soak.
4 See below.

Ramp-rate time unit

Select the time unit of the maximum ramp.

Options	Description
Hour	The time unit of the maximum ramp is an hour.
Minute	The time unit of the maximum ramp is a minute.

For example, when the maximum ramp is set to 10.0 °C, the ramp value is 10.0 °C per minute if “Ramp-rate time unit” is set to Minute.

Maximum ramp

Set the ramp value per the time unit within a range of 1 digit of loop 1 to width 100% of the PV range of loop 1.
For example, when the PV range of loop 1 is set to “-200.0 °C to 1200.0 °C,” the selectable range of the maximum ramp is 0.1 to 1400.0 °C.

If there is a ramp segment prior to segment number X, the default value of the maximum ramp takes the value of that previous segment. Otherwise, the default value is 1 digit of the range of the maximum ramp.

Segment time for Ramp

The segment time is set automatically based on the maximum ramp and the target setpoint for each loop. For details, see “Ramp/Soak” in section 5.9.2, “Setting the Segment Time.”

As a result of the time calculation, there may be loops that do not reach the target setpoint by the segment time upper limit (99: 59: 59). In this case, message (W041) appears, and the target setpoint of the relevant loops change to the value at time 99:59:59.
The initial value of the segment time depends on the initial value of the maximum ramp.

Segment time for Soak

Enter the segment time manually.
The initial value of the segment time is 00: 00: 01.

5.9.3 Saving Setup Data

This section explains how to save a configuration file to your PC.

Pattern numbers for which the “Segment time editing method” is set to “Ramp method” are saved as program pattern files (*.GPTR) that include the ramp information along with the standard program pattern files (*.GPT).

For instructions, see section **5.6 Saving a Program Pattern File on page 5-21**.

Note

- The GPTR file is a unique file format for Hardware Configurator. The GPTR file cannot be loaded on the GX/GP or GM.
- If you want to load the program pattern settings that are edited by the ramp method on the GX/GP or GM, use the GPT file that is saved along with the GPTR file.

5.9.4 Displaying Setup Data

You can open multiple program pattern files (*.GPT or *.GPTR) by specifying a folder containing the program patterns on your PC.

The following table describes opening files for each “Segment time editing method” display option, by file format.

Display option for the Segment time editing method	GPTR files	GPT files
Time method	Loaded as the time method [1]	Loaded as the time method
Select time method or ramp method	Ramp information [2] at time of saving is loaded	Loaded as the time method

1 The ramp information is not loaded.
2 “Ramp information” refers to the following settings.
- Segment time editing method (ramp or time method).
- Ramp/Soak for each segment.
- Ramp-rate time unit and maximum ramp of the segment that is set to Ramp.

If there are the GPT files and the GPTR files with the same name in a specified folder, the GPTR files are loaded.

For instructions, see section **5.5 Opening a Program Pattern File on page 5-20.**

5.9.5 Sending Setup Data

You can send the current program pattern settings to the GX/GP or GM.

For instructions, see section **5.7.2 Sending Program Patterns on page 5-24**.

Note

The ramp information is unique to Hardware Configurator. After sending the settings from Hardware Configurator, the GX/GP or GM does not keep the ramp information. See messages W001, W025 and W030.

5.9.6 Receiving Setup Data

You can receive the program pattern settings that are saved on the GX/GP or GM.

For instructions, see section **5.7.1 Receiving Program Patterns on page 5-22**.

Note

The ramp information is unique to Hardware Configurator. After receiving the settings from the GX/GP or GM, the settings are set up as the time method. See messages W002 and W026.

Blank

6.1 Errors and Messages

Message

Code	Message	Description and Corrective Action
None	The current password has expired. Input the new password.	This message appears if the password has not been changed from its default value or if the password has expired. To continue operation, change the password.
M001	Save changes to xxx?	File name confirmation.
M002	Receiving finished.	Reception completed successfully.
M003	Sending finished.	Transmission completed successfully.
M004	Recording started.	The recorder started recording.
M005	Recording stopped.	The recorder stopped recording.
M006	Computing started.	The recorder started computing.
M007	Computing stopped.	The recorder stopped computing.
M008	Completed Reconfiguration.	Main unit reconfiguration completed successfully.
M008 Auxiliary Messages	Refer to the Hardware Info.	You can view the results (current hardware information) of reconfiguration performed according to **3.2.2 Viewing the Hardware Information**.
M009	Control started.	The main unit started control operation.
M010	Control stopped.	The main unit stopped control operation.
M011	Program control started.	The main unit started program control operation.
M012	Program control reset.	The main unit stopped program control operation.
M013	[ProgramPattern] folder exists in the same directory.	This message appears if there is a folder whose name is the same as the pattern file folder (ProgramPattern) on the same directory on your PC.
M014	Executed successfully.	This message appears when processing is normally performed.
M015	To paste, please press Ctrl + v or paste from the browser menu.	Appears when you select the Paste button on the screen in Edge or Chrome.

Warning Messages

Code	Message	Description and Corrective Action
No code	Input value is invalid. It is returned before the change.	An invalid value may have been entered in a setup item. Check the settings below. • User name of user registration (when a duplicate user name is entered)
W001	Receive settings from connecting hardware.	Reception confirmation. To continue, click **OK**. To cancel, click **Cancel**.
W001 Auxiliary Messages	• Only the time method is supported for reading the segment time.	Hardware Configurator loads the settings as the time method because the GX/GP or GM does not keep the ramp information.
W002	Send settings to connecting hardware. If user level is not “Admin”, some settings can not be set on the device.	Transmission confirmation. To continue, click **OK**. To cancel, click **Cancel**.
W002 Auxiliary Messages 1	The hardware will delete unused pattern number.	This message appears when a user attempts to send settings from setting software on which the program pattern setting function is enabled to GX/GP/GM on which the PID control module and program control function are enabled.
W002 Auxiliary Messages 2	• Settings will be converted to the time method. No ramp settings will be sent.	After sending the settings from Hardware Configurator, the ramp information is not applied to the GX/GP or GM because the GX/GP or GM does not keep the ramp information.
W002 Auxiliary Messages 3	• Please enter a configuration change comment.	This message appears when the device is R4.07 or later, the advanced security function is on, and configuration change comment is on.
W003	Hardware and software configurations don't match. Continue sending data?	Transmission confirmation. To continue, click **OK**. To cancel, click **Cancel**.
W004	System configuration has been changed. The input configuration and data will be initialized. Continue?	If you change the system configuration, the displayed setup data will be initialized. To continue changing, click **OK**. To cancel, click **Cancel**.

Code	Message	Description and Corrective Action
W005	Overwrite the file?	Confirmation for overwriting a file with the same name. To continue, click **OK**. To cancel, click **Cancel**.
W005 Auxiliary Messages	• File Name: • Program pattern folder name	This message appears only when a user attempts to save both the settings and program patterns. • File name: Displayed if a configuration file name is subject to be overwritten. • Program pattern folder name: Displayed if a program pattern folder name is subject to be overwritten.
W006	Start recording.	Recording start confirmation. To continue, click **OK**. To cancel, click **Cancel**.
W007	Stop recording.	Recording stop confirmation. To continue, click **OK**. To cancel, click **Cancel**.
W008	Start computing.	Computing start confirmation. To continue, click **OK**. To cancel, click **Cancel**.
W009	Stop computing.	Computing stop confirmation. To continue, click **OK**. To cancel, click **Cancel**.
W010	Initialize current settings.	Initialization confirmation. To continue, click **OK**. To cancel, click **Cancel**.
W011	Failed to store any settings.	Some of the setup data have not been applied to the recorder due to differences in the system configuration. Check the system settings.
W011 Auxiliary Messages	• Pattern number xx • Pattern number xx	The program pattern numbers that could not be sent to the main unit and those running on the main unit are displayed.
W012	Number of channels is over the maximum value.	The module configuration setting exceeds the maximum number of channels. Check the modules and the maximum number of channels, and reconfigure.
W013	Failed to set any settings.	Some of the setup data have not been applied to the software. Check the system configuration or user level.
W014	Permission denied.	You do not have permission to send settings. Increase the user level, or grant permissions to allow it.
W015	All extended units settings will be discarded. OK?	This message appears when in system configuration, an IO expansion module of the GX/GP is changed from specified to not specified. To proceed with the change, click OK.
W016	Exceed the module limit.	In the system configuration, the unit and module configuration or the number of channels is exceeding the upper limit. Check the number of modules or channels specified by the auxiliary message, which is described in a separate table.
Refer to the following table for the auxiliary messages of W016.		
W017	Reconfigure modules ?	This message appears when you try to perform reconfiguration.
W018	Chattering filter may not function. Please update module to R1.04.01 or later.	This message appears in the pulse input setting of the GX/GP with DI module. The module version R1.04.01 or later is the supported version for the pulse input. Check the version of DI module on a GX/GP.
W020	Run control.	A confirmation message for starting loop control. You can start control operation on the main unit by choosing a loop number or “Run all control loops”. Select OK to start, and Cancel to cancel operation.
W021	Stop control.	A confirmation message for stopping loop control. You can stop control operation on the main unit by choosing a loop number.
W022	Run program control.	A confirmation message for starting program control. You can start program control on the main unit by choosing a program pattern number.
W023	Reset program control.	A confirmation message for stopping program control. Displays the pattern number under program control. Click OK to stop program control.
W024	Are you sure you want to clear the pattern settings in this pattern no?	Displayed when the existing pattern is deleted and a new pattern is read.
W025	Receive program pattern settings.	A confirmation message for receiving program patterns. You can receive a program pattern on the main unit by choosing program pattern numbers.

Code	Message	Description and Corrective Action
W025 Auxiliary Messages	• Only the time method is supported for reading the segment time.	See message W001.
W026	Send program pattern settings.	A confirmation message for receiving program patterns. You can send program control on the main unit by choosing program pattern numbers.
W026 Auxiliary Messages 1	The hardware will maintain unused pattern number.	Displayed when program patterns are sent to the main unit. Pattern settings are not sent to “pattern numbers under program control” that are shown in this message.
W026 Auxiliary Messages 2	• Settings will be converted to the time method. No ramp settings will be sent.	See message W002.
W027	Initialize program pattern settings.	A confirmation message for initializing a program pattern file. Click OK to continue and Cancel to cancel operation.
W027 Auxiliary Messages	• Pattern number xx	Displays the pattern numbers to be initialized.
W028	Program pattern settings has been adjusted.	Displayed when a program pattern is corrected by operations such as changes to system configuration or PV range.
W028 Auxiliary Messages	• Pattern number xx	Displays the corrected pattern number.
W029	The hardware will delete all program patterns.	Click OK to delete all program patterns loaded in the main unit.
W030	Receive program pattern settings.	Click OK to receive program patterns from the main unit.
W030 Auxiliary Messages 1	• All of current program pattern settings will be cleared. • System/PV range settings of the program pattern will be applied.	The system/PV range settings of currently loaded program patterns are all deleted and changed.
W030 Auxiliary Messages 2	• Only the time method is supported for reading the segment time.	See message W001.
W031	• Configure one or more PID control modules.	Displayed if the user attempts to set PV range while a PID control module is not attached to the main unit.
W032	Duplicated loop number.	Displayed if the user attempts to set a loop number that is already set for another loop. The value that the user attempted to change returns to the original value.
W033	Exceeded maximum PID group number.	If you specify a value exceeding the minimum number of PID groups when choosing the segment PID number on the Program Pattern Setting, this message is displayed as a warning.
W034	If segment time is set to 0, this segment will be deleted.	A confirmation message for deleting a segment. Click OK to delete a segment for which 0:0:0 is entered for Segment time. If it is canceled, segment time does not change to 0, and it returns to the original value.
W034 Auxiliary Messages	• All subseqent segments will be also deleted.	If there is a segment after “Segment for which 0:0:0 is set for Segment time”, this auxiliary message is displayed.
W035	System configuration has been changed.	Displayed if the user changes system configuration and proceeds to PV range settings on the Program Pattern Setting. Even if system configuration is changed, pattern setting is not initialized.
W036	Reconfigure pattern data related to control loops (Starting target setpoint, wait settings, and segment settings)	Displayed if the loop number of an action loop is changed in “Pattern initial settings” of the Program Pattern Setting.
W040	OK to change the segment editing method to the ramp method?	Displayed when you change from the time method to the ramp method. Click OK to change to the ramp method. The segment time is reconfigured with the ramp method. Click Cancel to keep the time method. The segment time is not reconfigured. However, when the number of segments is 1 and the segment time is 1 second, this message is not displayed, as it was handled at initial setup.
W040 Auxiliary Messages	• The currently set segment time will be reconfigured.	Displays the operation after changing.

Code	Message	Description and Corrective Action
W041	Since the loops below cannot reach the setpoint within the segment time, the final segment value will be used.	As a result of the time calculation, there may be loops that do not reach the target setpoint by the segment time upper limit (99: 59: 59). In this case, message (W041) appears, and the target setpoints of the relevant loops change to the value at time 99:59:59.
W041 Auxiliary Messages	• Segment number xx • Loop xx	Displays the changed segment and loop numbers.
W042	The change of browser type is reflected when starting next time.	Changes to the browser take effect once the application is closed and re-launched.
W043	The selected channel is not enabled. Please check the channel settings.	Check whether any of the following conditions apply for the selected channel: - Range: Skip or use: Specifies an Off channel - Specifies the channel number for which the LOG computation is performed on the AI channel

W016 Auxiliary Messages

Depending on the condition, warning W016 is accompanied by an auxiliary message from the following table. (The number shown in the No. column is not displayed.) For module limitations, also refer to “Module Configuration Limitations” on page 2-8 of this document.

No.	Message	Description and Corrective Action
1	Exceeded the number of IO modules which can be set.	The total number of IO modules installed in the entire system (Main unit tab and Extended Unit tab) exceeds the upper limit. Check the number of IO modules specified under Module. • GX/GP10, GX/GP20-1, GM10-1: Up to 10 • GM10-1: Up to 42 • GX/GP20-2, GM10-2: Up to 45
2	Exceeded the number of DO modules which can be set.	The total number of DO/DIO modules installed in the entire system (Main unit tab and Extended Unit tab) exceeds the upper limit. Check the number of DO/DIO modules specified under Module. Up to 10 DI/DIO modules are allowed in the system. This limitation counts the PID control module as a DO module.
3	Exceeded the number of IO channels which can be set.	The total number of channels of the IO modules installed in the entire system (Main unit tab and Extended Unit tab) exceeds the upper limit. Check the number of channels of IO modules specified under Module. For GX/GP10, GX/GP20-1, and GM10-1, up to 100 channels can be set in the entire system. For GX/GP20-2 and GM10-2, up to 500 channels can be set in the entire system.
4	Exceeded the number of IO expansion modules which can be set.	This message appears in relation to GM module settings. There are multiple IO expansion modules selected under Module on the Main unit tab. Set only a single IO expansion module in the range ID = 0 to 6. Or, under Module on the Main unit tab, there is a module selected after the IO expansion module. Other modules cannot be set after the IO expansion module.
5	Exceeded the number of EMR modules which can be set.	This message appears in relation to GM module settings. There are 9 or 10 IO modules including an EMR module selected under Module on the Main unit tab. When an EMR is installed, only up to eight IO modules (including the EMR) can be installed.
6	Exceeded the number of DIO modules which can be set.	In the entire system (Main unit tab and Extended Unit tab), there is a unit in which multiple DIO modules are installed. Check the number of DIO modules in each unit.
7	Exceeded the number of AO modules which can be set.	The total number of AO modules attached in the entire system (Main unit tab and Extended Unit tab) exceeds the upper limit. Check the number of AO modules selected in Module.
8	Exceeded the number of High-speed AI modules which can be set.	The total number of attached high speed AI modules exceeds the upper limit. The limit value varies by the model or combination with the AO module. Check the number of modules selected in Module.

No.	Message	Description and Corrective Action
9	Exceeded the number of PID control modules which can be set.	The total number of PID control modules attached in the entire system (Main unit tab and Extended Unit tab) exceeds the upper limit. Check the number of PID control modules selected in Module.
10	System includes unavailable modules when Advanced security function is On.	If the advanced security function is enabled, a PID control module cannot be used. Set the advanced security function to disabled, or change the setting of the PID control module to Not use.
11	System includes unavailable modules when Measurement mode is High speed.	When High speed is selected in Measurement mode, modules other than the high speed AI module and DI/DIO modules cannot be used. As the I/O expansion module also cannot be used, extended unit configuration is not available in high speed mode.
12	System includes unavailable modules when Measurement mode is High speed.	When **High Speed** is selected, only DI, DIO, high speed AI, and network modules can be set.
13	System includes unavailable modules when Measurement mode is Dual interval.	When “Dual interval” is selected in Measurement mode, the PID control module cannot be used.
14	It is not satisfied with restriction for PROFINET module.	If “GX90NW-02-PN” is specified, there are restrictions on the number of connections and module combinations. Check whether you are within any restrictions.

Error Messages

Code	Message	Description and Corrective Action
E001	Communication error occurred.	Communication error occurred with the recorder. Check communication parameters (such as IP addresses and port numbers), network cables, and settings on the recorder. Moreover, if the version of the Hardware configurator is old, and the firmware version of the main unit is not supported, E001 occurs. Check the versions and update if it is old. You can download the latest version from the **Help** - **Web to update**.
E002	Failed to save the file.	Failed to save the file. Check the folder and file properties.
E003	Failed to read the file.	Cannot open the file. Check the file name.
E003 Auxiliary Message 1	• No pattern	There are no program pattern files in the specified folder.
E003 Auxiliary Message 2	• Configuration file Rx.xx.xx	The version of the configuration file read by selecting Retrieve system/PV range from configuration file in System/PV Range dialog of the Program Pattern Setting does not support this feature. (The version of the configuration file with which the user attempted to read system/PV range settings on the Program Pattern Setting is below R4).
E003 Auxiliary Message 3	• Configuration file xxxx	This message appears when configuration file loading fails with the following operations. • Open (.GNL, .GSL) • Load comparison source (.GNL, .GSL) • Load either by opening the file after change or by loading the file before change (comparison source) on the Universe Viewer difference display function
E003 Auxiliary Message 4	• No setting files.	This message appears when there are no configuration files in the search destination folder or its subfolders in the Universal Viewer difference display function.
E003 Auxiliary Message 5	• The specified file does not exist. (Setting file name : xxxx)	This message appears when there are configuration files but the specified configuration file before change and configuration file after change are missing in the Universal Viewer difference display function. This message appears when either of the files is missing or both are missing.
E003 Auxiliary Message 6	• The specified file does not exist. (Hardware information : Serial No. xxxx)	This message appears when there is a configuration file before change and a configuration file after change made with the Universal Viewer difference display function, but there are no files with device serial numbers that match.
E005	Now recording. Can't store settings.	Execution is not possible during recording. Try again after stopping the recording.
E006	Now computing. Can't store settings.	Execution is not possible during computing. Try again after stopping the computation.
E007	The file is read-only.	Attempting to save to a read-only file. Make the file writable, or save to a different file.

Code	Message	Description and Corrective Action
E008	Access to the file is denied.	Check the access privileges to the file. Check whether the file system limit has been exceeded.
E009	The disk is full.	Check the free space in the save destination.
E010	The directory is full.	Check the number of files in the save destination.
E011	The file is invalid.	A file format error. Likewise, E011 occurs if the version of the Hardware Configurator is old and does not support the firmware version of the main unit. The latest version of this software can be downloaded by selecting the Help tab and then Web to update.
E012	Sharing violation occurred.	The file is already opened in another application. Close the file.
E013	Error occurred.	An error other than those above (001 to 012) occurred.
E014	The directory does not exist.	The directory may have been deleted.
E015	PDF file reader is not installed.	Install Adobe Acrobat Reader.
E016	The directory already exists.	Check whether the path and folder name have been specified correctly.
E017	Bad file path is specified.	The file path length has exceeded the limit (256 characters), or an invalid character has been used. Shorten the file path, or correct the file name.
E017 Auxiliary Message	Program pattern folder name	The program folder name exceeds the character limits of E017 (described above) or an an unusable character is used.
E018	Failed to open program files.	This error occurs when a browser other than the browser started by this software was used to access the software was refreshed consecutively. Close all browsers, and restart Hardware Configurator.
E019	Please delete temporary internet files from the browser, close the browser and restart the application.	This error occurs when temporary internet files affect the software. Delete temporary files in browser, then restart Hardware Configurator.
E020	Login inputs are incorrect.	Enter a valid user name and password in the communication condition dialog box. Enter the User ID only on devices whose /AS function is enabled. There is no need to enter it on devices whose /AS function is disabled or those that do not have the function. If the GX/GP firmware version is R1.xx.xx, this message appears when the user logged in changes his or her own user information and sends it or when the user sends setup data that changes the “Security setting > basic settings > communication” setting on the GX/GP from Off to Login. In these cases, resend the command with the new valid user name and password.
E021	This function is not possible at this time.	The following conditions may be causing the message to be displayed. • The main unit does not have the optional function required for the operation. • The main unit is sending or receiving settings or is in a condition in which the operation cannot be executed (e.g., recording, computation, or control in progress). (Operation limitations depending on the main unit conditions: **page 3-23**) • The GX/GP advanced security function is enabled, the Touch operation is set to Login, and communication is set to Off. • The user does not have permission to perform the main unit operation.
E022	Failed to open due to difference in system configuration.	You are trying to use Read comparison source to open a file whose system configuration is different from the settings that are currently displayed. Differences can be shown only when the system configurations match. Select a file whose system configuration matches the settings that are currently displayed.
E023	Failed to overwrite due to advanced security file.	An advanced security file with the same name already exists. Save to a different name, or delete the file first before saving.
E024	Cannot execute. Hardware reconfiguration in progress.	Sending and receiving settings and operating the main unit are not possible on a GM that is reconfiguring.

Code	Message	Description and Corrective Action
E025	This operation is not permitted in this mode.	Sending and receiving settings and operating the main unit are not possible when the main unit is in a mode that does not allow normal operation (such as A/D calibration, Encryption, and Update.) Wait until the main unit returns to normal operation mode. If you need to force the main unit back to normal operation mode, follow the procedure below. However, note that if another user is operating through the Web application, for example, the operation results may be disposed because the operation will be terminated. •If a Web connection can be established with the main unit, return the main unit to normal operation mode using the Web application. •If a Web connection cannot be established with the main unit, restart the main unit. (Start in normal operation mode.)
E026	Cannot execute to GX/GP.	Reconfigure a GX/GP from the main unit screen.
E027	Now running control. This function cannot be executed at this time.	On the Hardware Configurator software, when the main unit is under control operation (at least one loop is in RUN status), settings cannot be sent.
E028	Now running program control. This function cannot be executed at this time.	On the Hardware Configurator software, when the main unit is under program control operation (at least one pattern is under program control), settings cannot be sent.
E029	Failed to send program pattern settings.	The sent program pattern setting does not match the current setting of the main unit. The location of the PID control module, decimal place, lower limit, or upper limit of PV range set on the main unit is different from the settings.
E029 Auxiliary Message	• Check PID module position, PV range settings. • Pattern number xx	An auxiliary message for E029. Displays the (software) pattern number that failed to be sent and is not reflected on the main unit.
E030	The input numerical value exceeds the set range.	In Dual interval measurement mode, the limited number of channels that can be set to measurement group 1 with a measurement interval of 50ms or below on the report channel setting screen is exceeded.
E031	No configuration change comment has been entered.	This message appears when a configuration change comment input is displayed at the time of sending a configuration, but an attempt is made to send it without entering a comment.
E032	Media not recognized.	This message appears when an SD card is not installed in the main unit and an attempt is made to perform the following operations on the main unit with the advanced security function set to on. • Configuration transmission • Reconfiguration (GM only)
E033	No supported browsers are installed.	The software cannot be launched because no compatible browser is installed. Please check your operating environment and install a browser.

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