

Parameter Setting Tool

Parameter Assistant SR23 FP23

Instruction Manual

Thank you for choosing this Shimaden product.
Please read this instruction manual carefully so that you fully understood it before use.

SHIMADEN CO.,LTD.

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Introduction

This manual describes the parameter setting tool Parameter Assistant SR23 FP23.

Target Controllers

SR23 / FP23 series and SR23A / FP23A series

Related Documents

- SR23 Series Digital Controllers Instruction Manual (Detailed Edition) Various
- FP23 Series Program Controllers Instruction Manual (Detailed Edition) Various
- SR23A Series Digital Controllers Instruction Manual (Detailed Edition) Various
- FP23A Series Program Controllers Instruction Manual (Detailed Edition) Various
- Infrared Communication Adapter S5004 Instruction Manual
- S5004 USB Driver Installation Procedure

WARNING

- In order to ensure the safety of your system in the event of a malfunction or failure of this product, or in the event of a defect in a program created by the customer, please provide protection and safety circuits to ensure sufficient safety measures against personal injury or serious accident.

Handling Precautions

- Although every effort has been made to ensure the accuracy of this manual, please note that Shimaden cannot be held responsible for any damages, including indirect damages, resulting from errors or omissions in this manual or from the use of the information.
- Depending on your environment (system, etc.) and the way you use the application, correct operation may not be possible.
- Please note that Shimaden cannot guarantee the operation of the application on PCs not made by a manufacturer (e.g., self-made PCs).
- Directly modifying the “Save Folder Name”, “Save File”, or “Configuration File” created by this application may prevent the application from operating in the intended manner. Please note that Shimaden cannot guarantee operation in this case.

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1 Overview

“Parameter Assistant SR23 FP23” is a parameter setting tool for setting and managing the parameters of SR23/FP23 Series and SR23A/FP23A Series controllers using a Windows PC.

1.1 Function Overview

This application has the following functions:

1) Reading parameters via communication

The target controller parameters are read and displayed in the application.

2) Writing parameters via communication

The parameters set by the application are written to the target controller.

3) Saving/reading parameters

The parameters set by the application are saved to a data file. The saved file is also read and displayed in the application.

4) Displaying parameters

The related parameters are shown by group. For the FP23/FP23A Series, the program pattern and time signal are also displayed in a graph.

5) Print/Print Preview function

The list of parameters and the “Parameter Settings” window are printed or print previewed.

1.2 Operating Environment and Hardware Specifications

1) Supported operating system: Windows® 10

- The official name of Windows® is Microsoft® Windows® Operating System.
- Windows is a registered trademark of Microsoft Corporation in the United States.

2) Communication hardware

- Hardware that supports RS-232C or RS-485 communication methods
(When using this hardware, please also refer to the controller instruction manual (Communication Interface)).
- Infrared communication adapter S5004
(When using this hardware, please refer to the instruction manual related to S5004.)

2 Installation/Uninstallation

This section explains how to install and uninstall Parameter Assistant SR23 FP23.

2.1 Installation

- 1) Download the parameter setting tool Parameter Assistant SR23 FP23 from the Shimaden website (<http://www.shimaden.co.jp/>).
- 2) Unzip the downloaded file, then launch setup.exe in the folder that was created. Follow the instructions on the screen to proceed.

2.2 Uninstallation

Method 1: Select “ParameterAssistant_SR23_FP23” from “Applications and Features” in [Start Menu] > [Settings] > [Apps], and click the [Uninstall] button. Follow the instructions on the screen to proceed.

Method 2: Select “ParameterAssistant_SR23_FP23” from “Uninstall or change a program” in [Start Menu] > [Windows System Tools] > [Control Panel] > [Programs] > [Programs and Features], and click the “Uninstall” button. Follow the instructions on the screen to proceed.

Note that the following folders and saved files created by this application will not be deleted even after uninstalling, so please delete them separately if necessary.

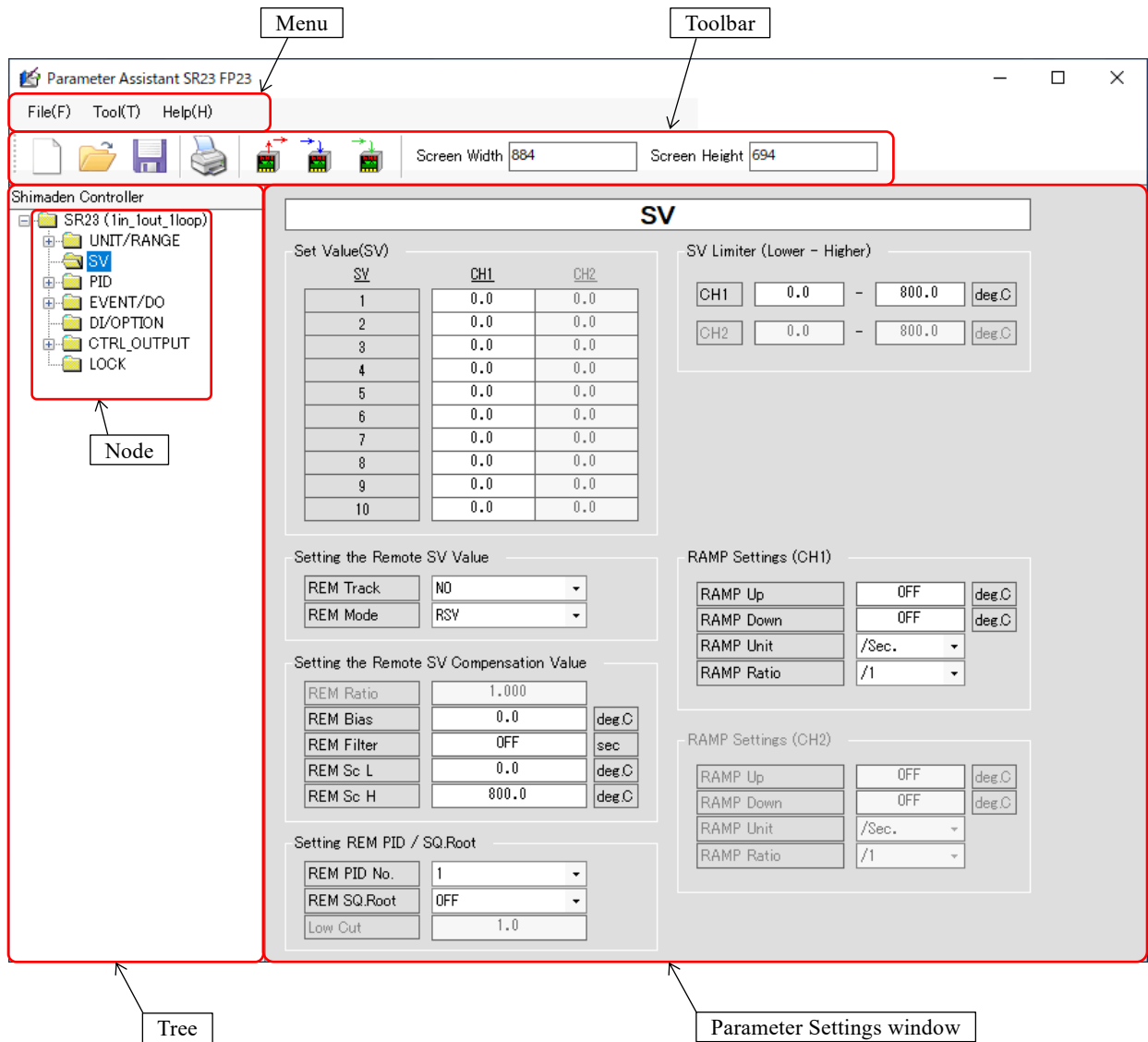
- C:\Users\[Username]\Documents\Shimaden\ParameterAssistant_SR23_FP23 folder and contents
- C:\ProgramData\Shimaden\ParameterAssistant_SR23_FP23 folder and contents other than the instruction manual files

(The ProgramData folder will not display if “hidden files” is set to “hide” in Windows.)

3 Function Description

3.1 Names of Window Components

The names of the window components of the application are shown below.

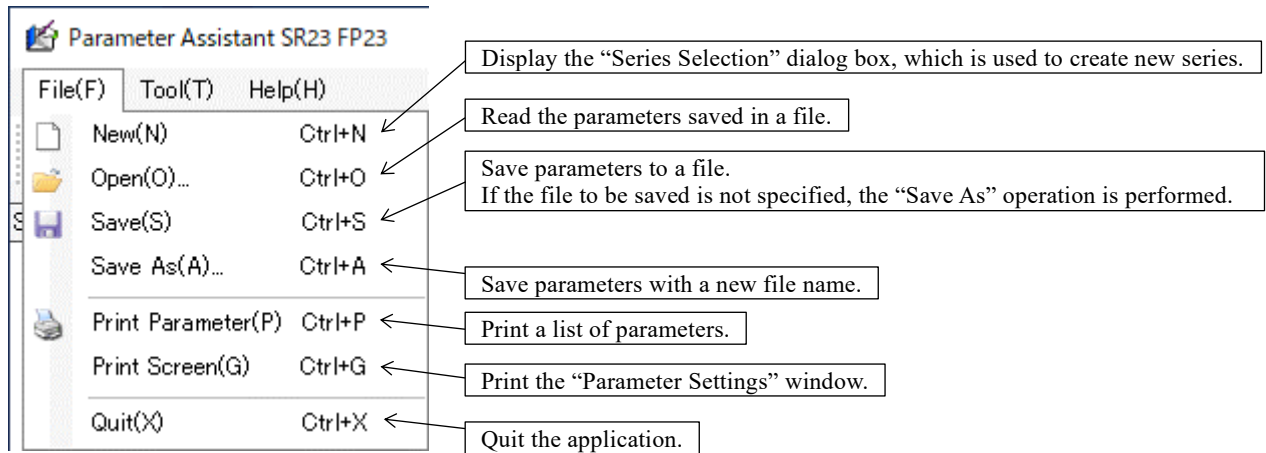


Appearance of the application

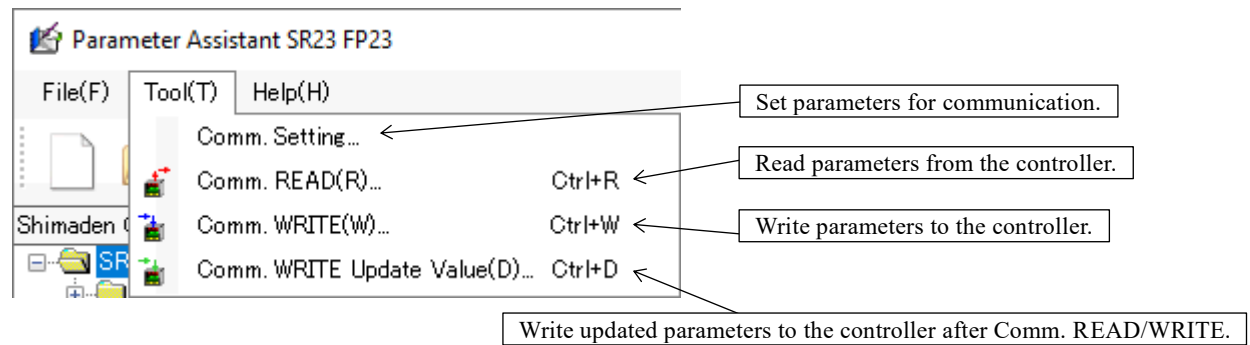
3.2 Menu

This section describes the menu functions.

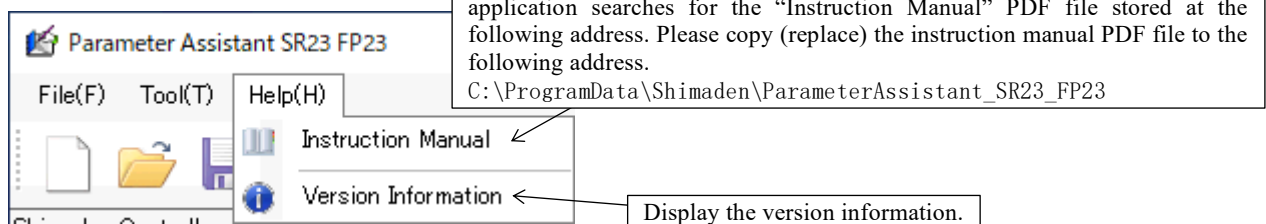
1) [File] menu



2) [Tool] menu

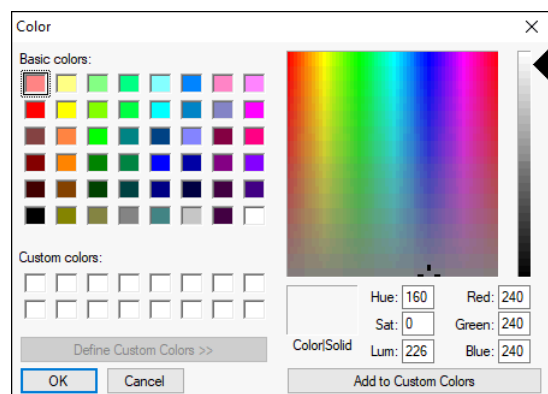


3) [Help] menu

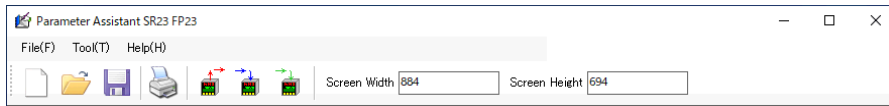


4) Menu color settings

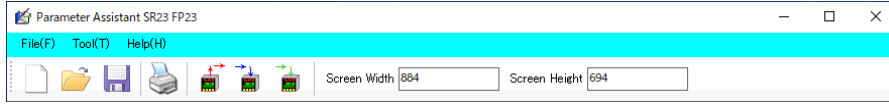
Right-click on "Menu" to display the "Color" dialog box shown on the right. In this dialog box, select a color then click the "OK" button to apply the color to the menu as shown on the next page. Clicking the "Cancel" button will close the "Color" dialog box.



Initial state










After changing the color



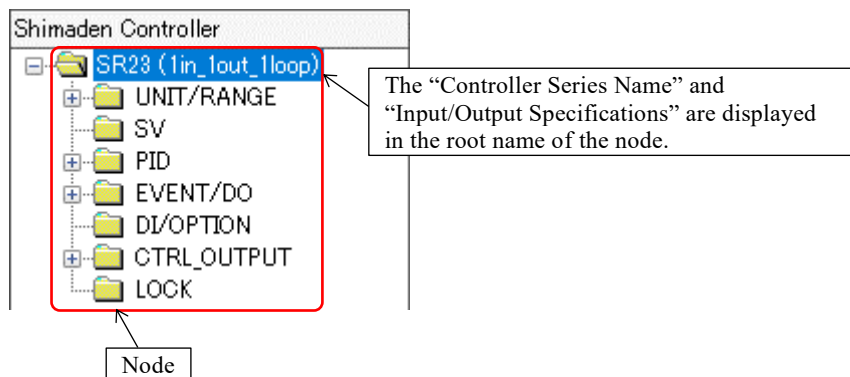
3.3 Toolbar

This section describes the functions of the toolbar icons.

Icon, etc.	Function
	[Menu] > [File] > [New]
	[Menu] > [File] > [Open]
	[Menu] > [File] > [Save]
	[Menu] > [File] > [Print Parameter]
	[Menu] > [Tool] > [Comm. READ]
	[Menu] > [Tool] > [Comm. WRITE]
	[Menu] > [Tool] > [Comm. WRITE Update Value]
Screen Width <input type="text" value="884"/>	Set the width of the application window.
Screen Height <input type="text" value="694"/>	Set the height of the application window.

3.4 Tree/Parameter Settings Window

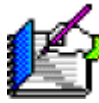
Click on a node to display the setting items for the relevant parameter in the “Parameter Settings” window. The types of nodes displayed depend on the “Controller Series Name”, “Model Code”, and “Input/Output Specifications”.



4 Flow of Operation

4.1 Start-Up

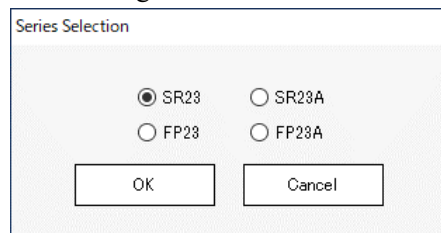
Start Parameter Assistant SR23 FP23 from “Parameter Assistant SR23 FP23” shown on the desktop or “Shimaden Soft” shown in the start menu.



Parameter Assistant SR23 FP23 icon

4.2 Selecting a Controller Series

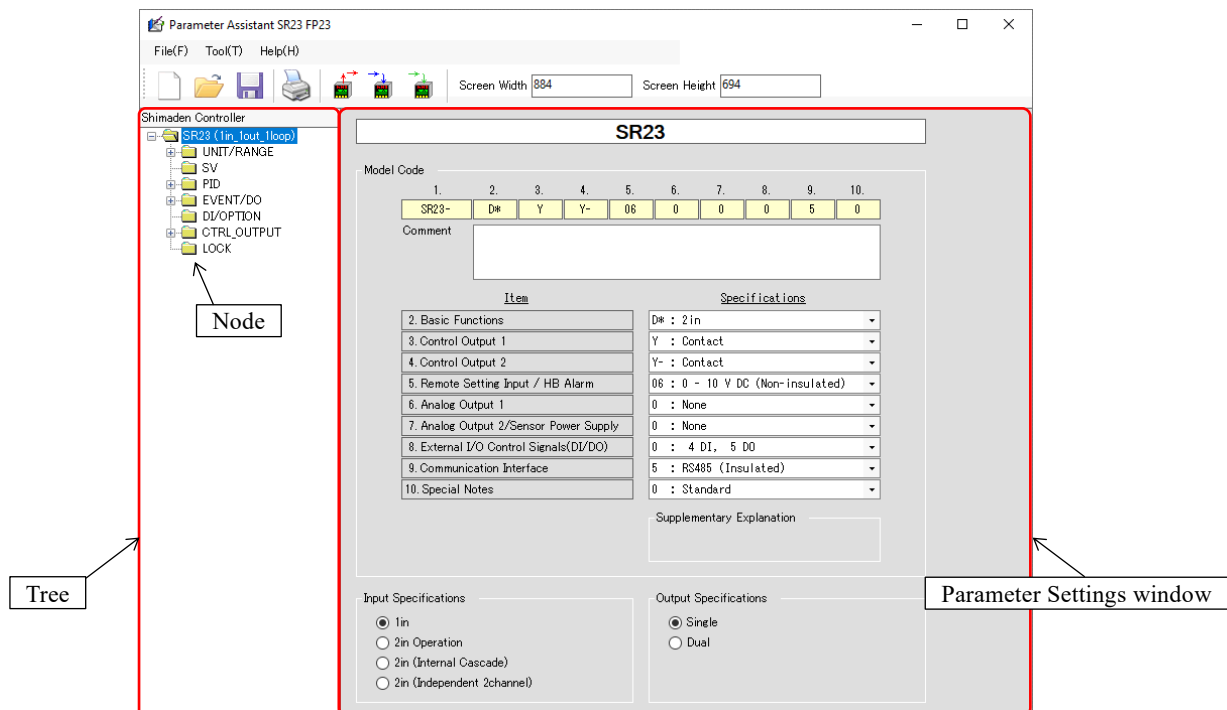
When you start the application, the following “Series Selection” dialog box appears. Select the desired controller and click the “OK” button. Clicking the “Cancel” button will close the application.



“Series Selection” dialog box

4.3 Setting Parameters

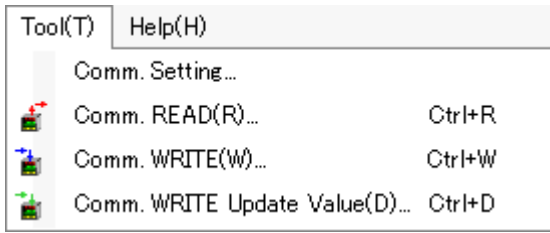
When you have selected the desired controller in the “Series Selection” dialog box, the following application window appears. Select a node in the tree to switch to the “Parameter Settings” window and set the desired parameters. For details, refer to “5. Setting Parameters”.



Application window

4.4 Communicating with the Controller

Use the “Menu” or “Toolbar” icons shown below to perform communication-related operations. For details, refer to “6. Communication”.



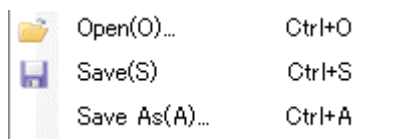
Menu related to “Communication”



Icons related to “Communication”

4.5 Opening/Saving a File

Use the “Menu” or “Toolbar” icons shown below to perform file operations.



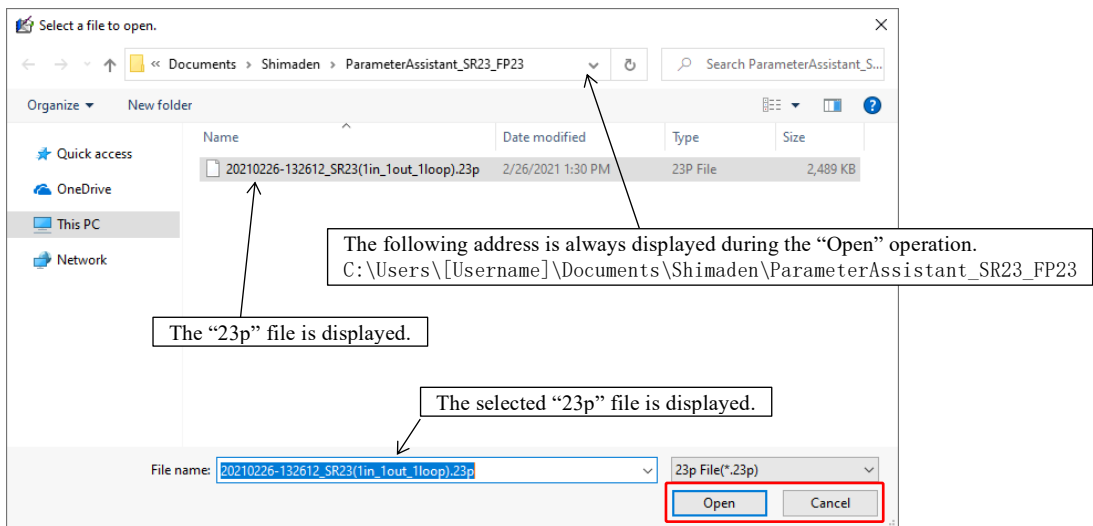
Menu related to “File Open/Save”



Icons related to “File Open/Save”

1) [Open] menu (icon)

Select “Open” to display the following dialog box. Select the “23p file” save format for the application, then click the “Open” button to read the parameters of the “23p file” and reflect them in the application. Clicking the “Cancel” button will cancel the “Open” operation.

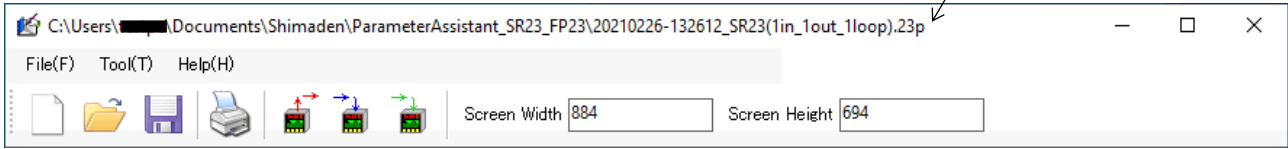


“Open” dialog box

2) [Save] menu (icon)

The first time you click “Save”, the file name to save the parameter to is not specified, so the operation becomes “Save As”. The second and subsequent times you click “Save”, the parameters are saved to the specified file name.

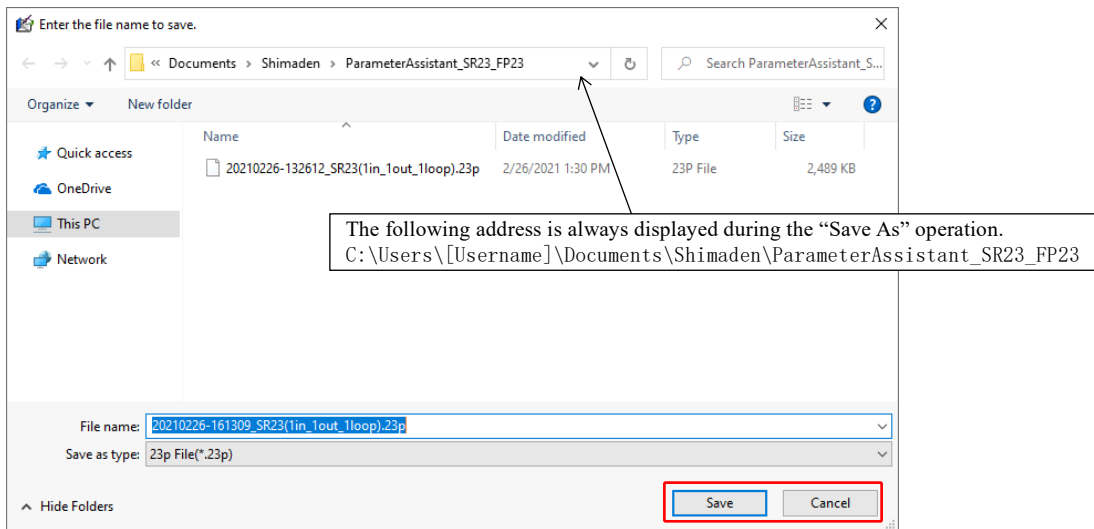
The “Address” and “Name” of the saved file are shown in the title bar.



Example of display for a saved file name

3) “Save As” menu.

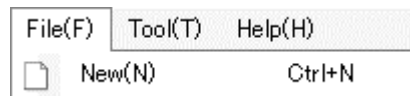
Select “Save As” to display the following dialog box. In the “File name” field, a file name created from the “Date and time”, “Series name”, and “I/O Specification” is entered as the initial value. Click the “Save” button to save the parameters to the file. Clicking the “Cancel” button will cancel the “Save As” operation.



The following address is always displayed during the “Save As” operation.
C:\Users\[Username]\Documents\Shimaden\ParameterAssistant_SR23_FP23

“Save As” dialog box

4.6 Creating a New File

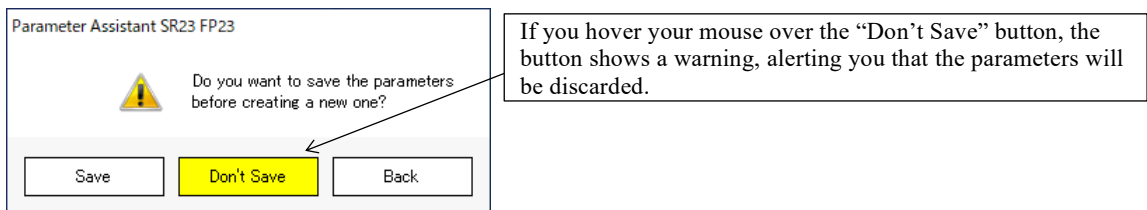


New menu



New icon

When you select the menu or toolbar icon shown above, the following “Save Confirmation” dialog box appears before the operation to create a new file begins.

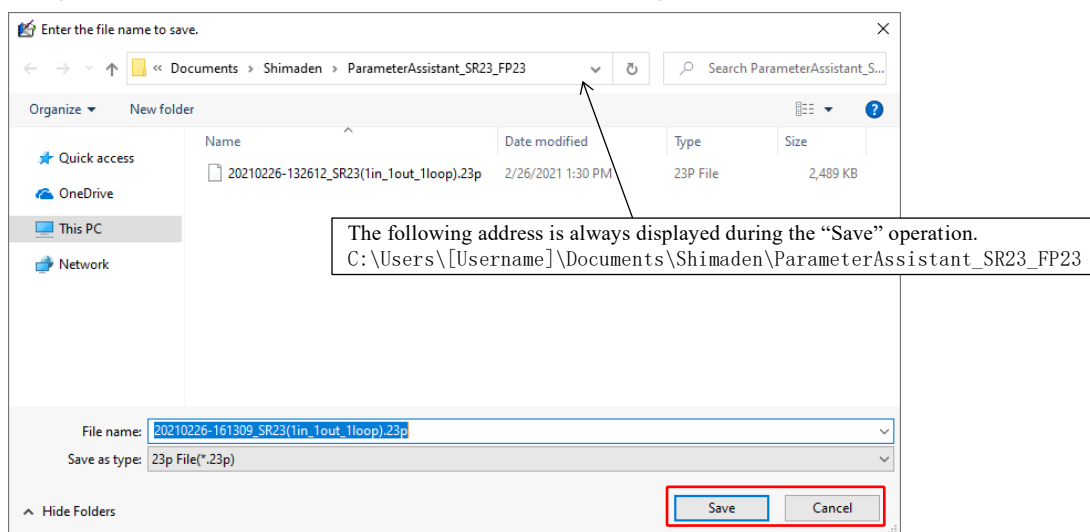


If you hover your mouse over the “Don’t Save” button, the button shows a warning, alerting you that the parameters will be discarded.

“Save confirmation” dialog box that appears before creating a new file

1) [Save] button

Click the “Save” button to display the “Save As” dialog box. In the “File name” field, a file name created from the “Date and time”, “Series name”, and “I/O Specification” is entered as the initial value. Click the “Save” button to save the parameters to a file. The “Series Selection” dialog box for creating a new series appears. Clicking the “Cancel” button will close the “Save As” dialog box.



The “Save As” dialog box that appears before creating a new file

2) [Don't Save] button

If you click the “Don't Save” button, the “Series Selection” dialog box for creating a new series will appear. The parameters will be discarded, so be careful when performing this operation.

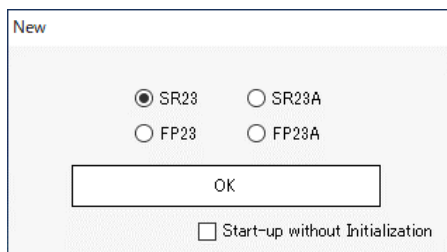
3) [Back] button

Clicking the “Back” button will cancel the “New” operation.

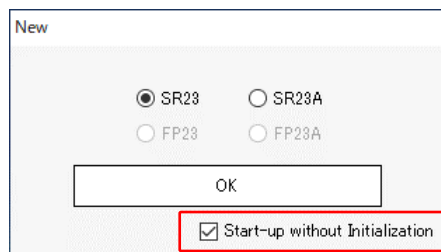
4) “Series Selection” dialog box for creating new files

After you have completed the “Save” or “Don't Save” operations described above, the application window you have been using will close. The “Series Selection” dialog box for creating a new series appears as shown below (left side). Select the desired controller and click the “OK” button to create a new application window.

In addition, if you check the “Start-up without Initialization” checkbox shown below (right side), you can migrate to a new or old version of the same series using the existing parameters (however, model codes that cannot be re-used will be left blank, so please set them separately). Note that if you select a different series and then try to check “Start-up without Initialization”, the checkbox will not change to the checked state, and when you click the “OK” button the parameters will be initialized.



“Series Selection” dialog box for creating new files

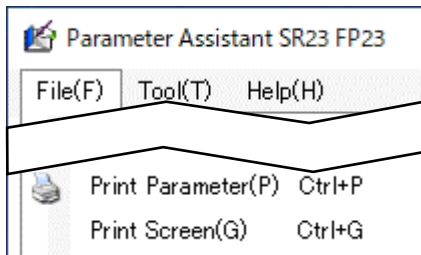


“Start-up without Initialization” checkbox checked
(Note that this checkbox is ignored when you migrate to a different series.)

Note that if you check “Start-up without Initialization” without changing the controller series, the parameters will not be initialized and will stay the same as they were before the “New” operation.

4.7 Print Parameter/Print Screen

The following menu and toolbar icons are used for printing operations. Note that if you do not have a printer driver installed on your computer, this function cannot be used.



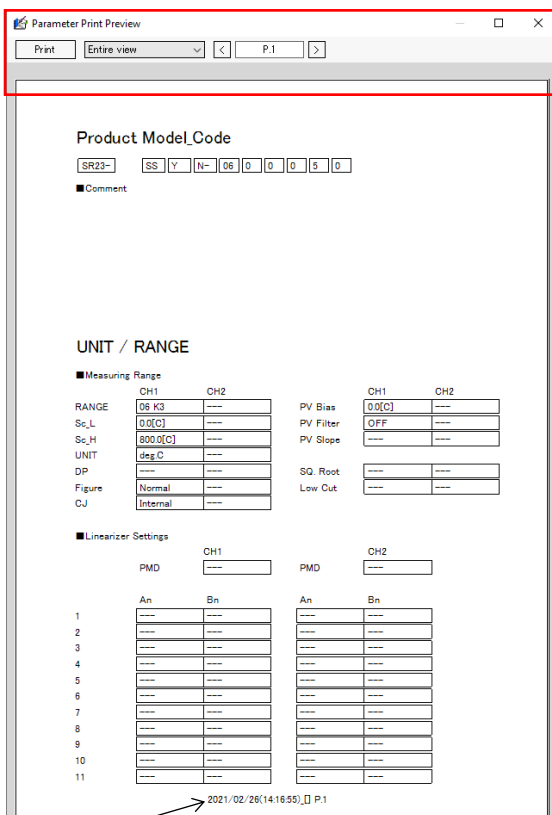
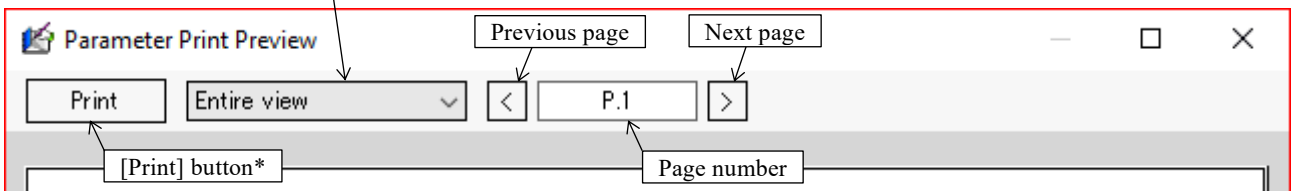
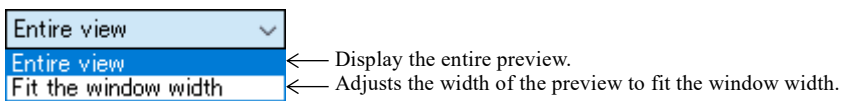
The "Print Parameter" and "Print Screen" menus



"Print Parameter" icon

1) [Print Parameter] menu (icon)

Select "Print Parameter" to display the "Parameter Print Preview" window.

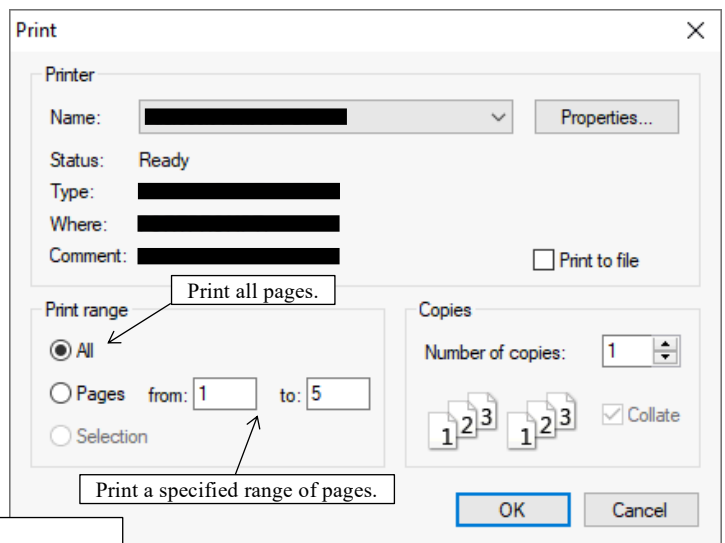


"Date/Time [Saved File Name] P. Page Number" is shown.
Note that, if the saved file does not exist, the corresponding part will be shown as [].

"Parameter Print Preview" window

[Print] button*
Click the "Print" button to display the "Print" dialog box shown below. Configure the settings then click the "OK" button. The print data is passed to the print driver. Clicking the "Cancel" button will cancel the "Print" operation.

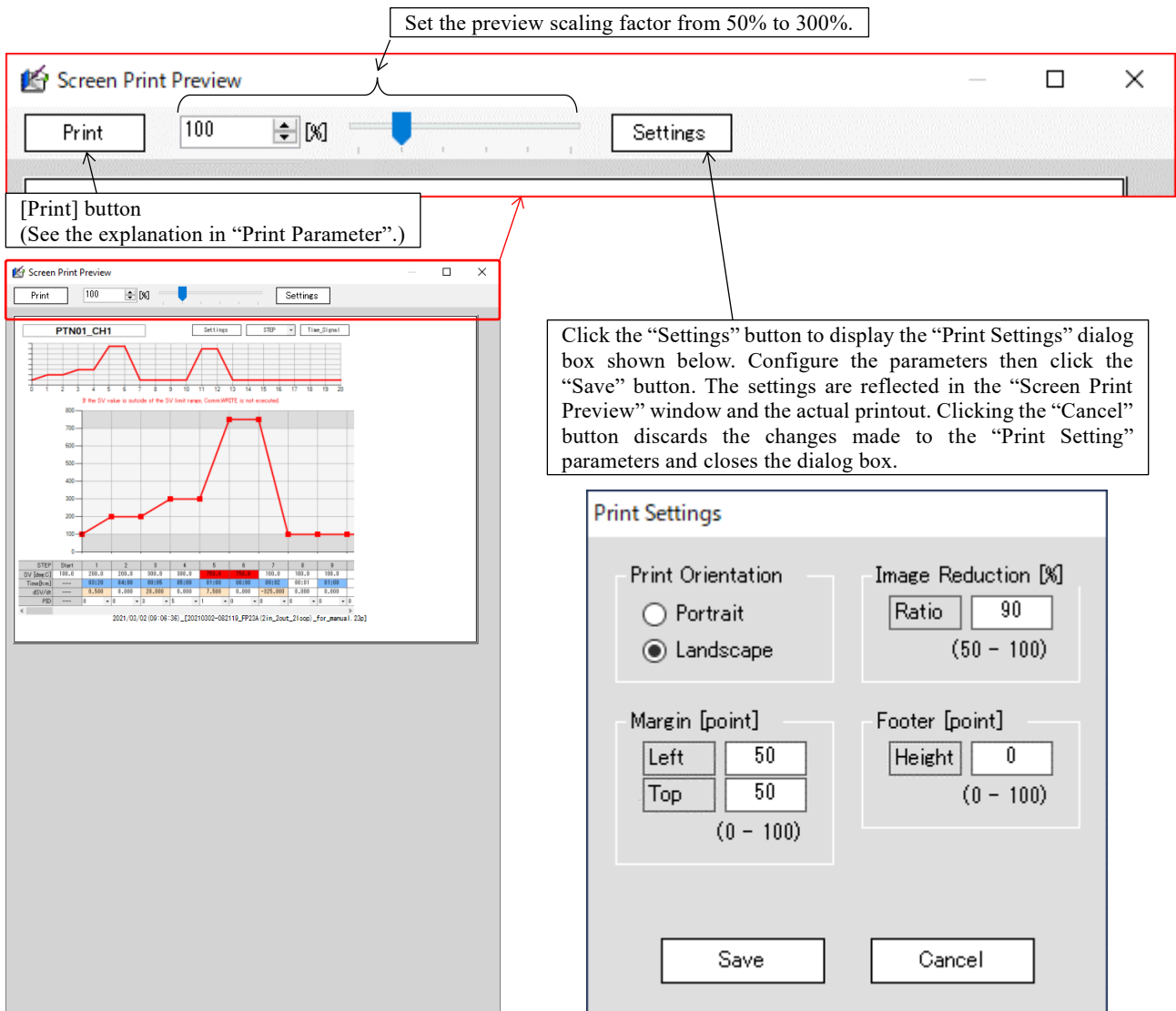
For more information on your print driver, please refer to your printer manual.



"Print" dialog box

2) [Print Screen] menu

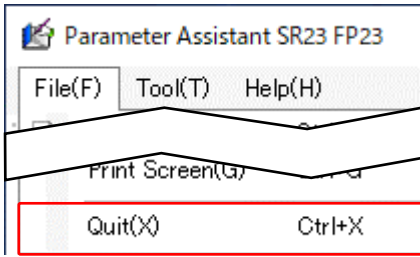
Select "Print Screen" to display the "Screen Print Preview" window shown below.



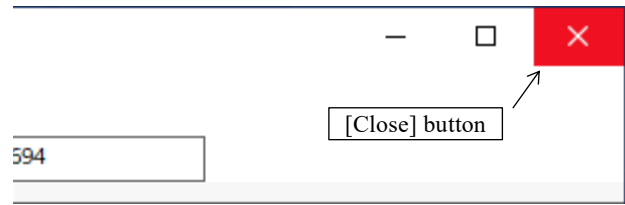
"Screen Print Preview" window
 (The "Parameter Settings" window shown in the application is captured and displayed in the "Screen Print Preview" window.)

"Print Settings" dialog box

4.8 Quitting

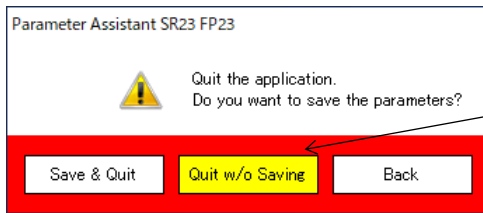


“Quit” menu



Application “Close” button

If you click the “Quit” menu item shown above or the application “Close” button, the “Save Confirmation” dialog box shown below appears before quitting.

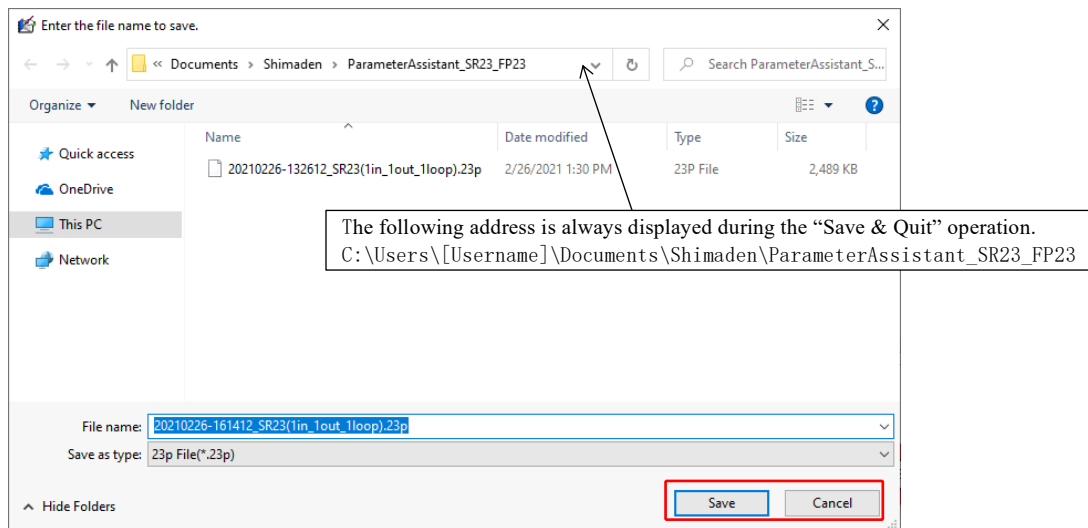


If you hover your mouse over the “Quit w/o Saving” button, the button shows a warning, alerting you that the parameters will be discarded.

“Save confirmation” dialog box that appears before quitting

1) [Save & Quit] button

Click the “Save & Quit” button to display the “Save As” dialog box. In the “File name” field, a file name created from the “Date and time”, “Series name”, and “I/O Specification” is entered as the initial value. Click the “Save” button to save the parameters to a file and quit the application. Clicking the “Cancel” button will cancel the “Save & Quit” operation.



“Save As” dialog box

2) [Quit w/o Saving] button

Clicking the “Quit w/o Saving” button will close the application. The parameters will be discarded, so be careful when performing this operation. If you hover your mouse over the button, it shows a warning, alerting you that the parameters will be discarded.

3) [Back] button

Clicking the “Back” button will cancel the “Quit” operation.

5 Setting Parameters

This section describes the “Parameter Settings” window in the application. Please refer to the instruction manual of the relevant controller for each parameter setting item. If you want to set a parameter setting item to “OFF”, enter “0”.

5.1 Model Code/Input/Output Specifications

This window is used to set the “Model Code” and “Input/Output Specifications” of the target controller. Please refer to the “Catalog of each controller” or other sources for the setting items.

This area is used to change the “Model Code”. Set the same model code as the controller to be communicated with to enable communication.

This area is used to enter a comment such as a description of the parameter value. Comments are also reflected in “Parameter Print”.

The screenshot shows the Shimaden Controller parameter settings window for the SR23A model. The left sidebar contains a tree view with folders: SR23A (2in_1out_1loop), UNIT/RANGE, SV, PID, EVENT/DO, DI/OPTION, CTRL_OUTPUT, and LOCK. The main window is titled 'SR23A' and features a 'Model Code' section with a grid of 10 digits (1-10) and a 'Comment' text box. Below this is a table with 'Item' and 'Specifications' columns. The 'Item' column lists 10 items, and the 'Specifications' column shows dropdown menus for each. At the bottom, there are 'Input Specifications' and 'Output Specifications' sections with radio button options. A 'Supplementary Explanation' text box is also present.

Item	Specifications
2. Basic Functions	D*: 2 in
3. Control Output 1	Y : Contact
4. Control Output 2	Y- : Contact
5. Remote Setting Input / HB Alarm	06 : 0 - 10 V DC (Non-insulated)
6. Analog Output 1	0 : None
7. Analog Output 2/Sensor Power Supply	0 : None
8. External I/O Control Signals(DI/DO)	0 : 4 DI, 5 DO
9. Communication Interface	5 : RS485 (Insulated)
10. Special Notes	0 : Standard

If there is a supplementary explanation in “10. Special Notes”, it is shown here. If you wish to add your own supplementary explanations, please use the comment box above.

Set the Input Specifications.

Set the Output Specifications.
This area is only shown if the output has a “Single/Dual” concept.

5.2 UNIT/RANGE Window

1) 2in Operation window

This window only appears when the input Specification is “2in Operation”. It is used to configure the “2in Operation” parameters on the controller [UNIT/RANGE] window.

This area is shown in “PV mode: DEV”.
The values cannot be changed.

2in Operation

Settings

PV Mode	DEV
SO Mode	0

DEV

Scale L	-800.0	deg.C
Scale H	800.0	deg.C

Input1

PV Bias	0.0	deg.C
PV Filter	OFF	
PV Slope	1.000	

Input2

PV Bias	0.0	deg.C
PV Filter	OFF	
PV Slope	1.000	

2) Internal Cascade Control window

This window only appears when the input Specification is “2in (Internal Cascade)”. It is used to configure the “Internal Cascade” parameters on the controller [UNIT/RANGE] window.

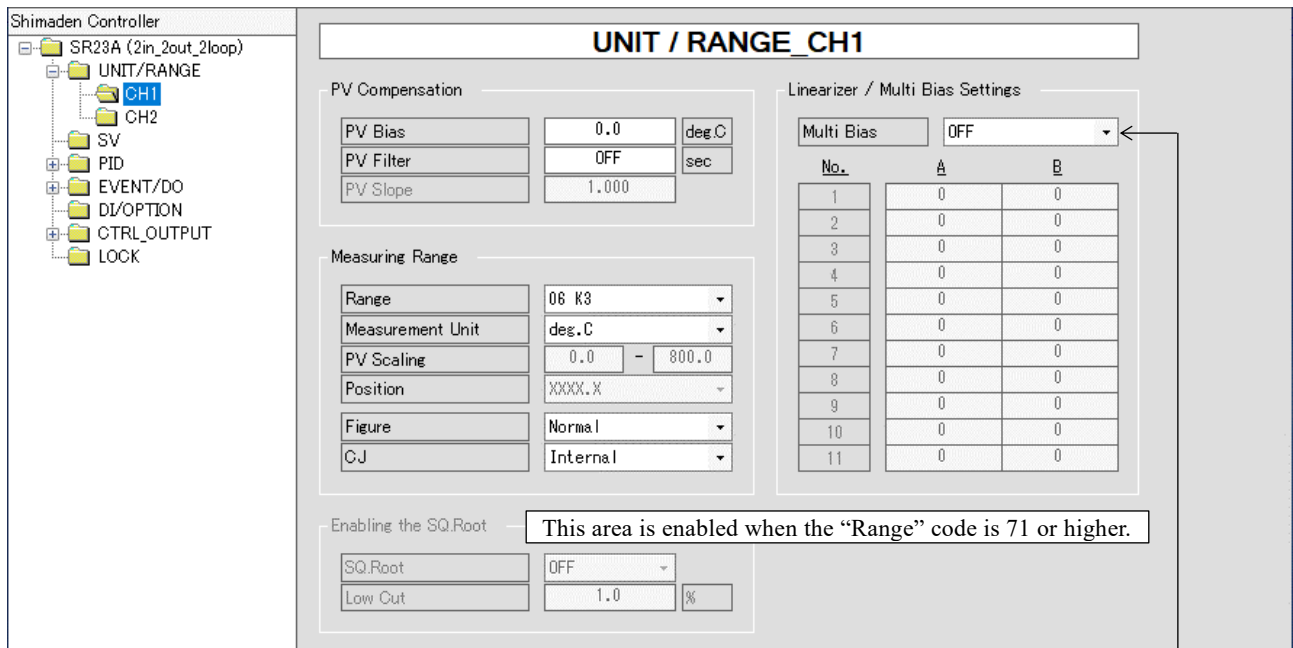
Internal Cascade Control

CASCADE Slave SV

Scale L	0.0	deg.C
Scale H	800.0	deg.C
Filter	OFF	sec

5.3 UNIT/RANGE CH Window

This window is used to configure the parameters of the controller [UNIT/RANGE] window.



Range Code	SR23 / FP23 / FP23A	SR23A
Less than 71	OFF (cannot be changed)	OFF
		PV-MBIAS(PV)
		PV-MBIAS(SV)
		RSV-MBIAS(SV) (Only shown when "HB Alarm" is not selected in the model code)
71 or higher	OFF	OFF
	ON	Linearizer
		PV-MBIAS(PV)
		PV-MBIAS(SV)
	RSV-MBIAS(SV) (Only shown when "HB Alarm" is not selected in the model code)	

5.4 SV Window

1) In the case of SR23/SR23A Series

This window is used to configure the [SV] parameters of the controller [SV] window.

Shimaden Controller

- SR23A (1in_1out_1loop)
 - UNIT/RANGE
 - SV**
 - PID
 - EVENT/DO
 - DI/OPTION
 - CTRL_OUTPUT
 - LOCK

SV

Set Value(SV)

SV	CH1	CH2
1	0.0	0.0
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
10	0.0	0.0

SV Limit (Lower - Higher)

CH1: 0.0 - 800.0 deg.C

CH2: 0.0 - 800.0 deg.C

Setting the Remote SV Value

REM Track: NO

REM Mode: RSY

Setting the Remote SV Compensation Value

REM Ratio: 1.000

REM Bias: 0.0 deg.C

REM Filter: OFF sec

REM Sc L: 0.0 deg.C

REM Sc H: 800.0 deg.C

Setting REM PID / SQ.Root

REM PID No.: 1

REM SQ.Root: OFF

Low Cut: 1.0

RAMP Settings (CH1)

RAMP Up: OFF deg.C

RAMP Down: OFF deg.C

RAMP Unit: /Sec.

RAMP Ratio: /1

RAMP Settings (CH2)

RAMP Up: OFF deg.C

RAMP Down: OFF deg.C

RAMP Unit: /Sec.

RAMP Ratio: /1

“Model Code 5” is enabled when the “Remote Setting Input” item is selected, and disabled when the “HB Alarm” item is selected.

2) In the case of FP23/FP23A Series

This window is used to configure the [SV Limit] parameters of the controller [LOCK] window.

Shimaden Controller

- FP23A (1in_1out_1loop)
 - UNIT/RANGE
 - SV**
 - PID
 - EVENT/DO
 - DI/OPTION
 - CTRL_OUTPUT
 - FIX_MODE
 - PROGRAM

SV

SV Limit (Lower - Higher)

CH1: 0.0 - 800.0 deg.C

CH2: 0.0 - 800.0 deg.C

5.5 Zone PID/Auto Tuning Window

This window is used to configure the [Zone PID/Auto Tuning] parameters of the controller [PID] window.

[Auto Tuning]

1) SR23/SR23A Series: Non-servo

1in, 2in Operation/ Output Specification: Single

	CH1		CH2	
PID Tuning Mode	Auto Tuning		Auto Tuning	
Hunting Width	0.5	%	0.5	%
AT Point	0.0	deg.C	0.0	deg.C

1in, 2in Operation/ Output Specification: Dual

	CH1		CH2	
PID Tuning Mode	Auto Tuning		Auto Tuning	
Hunting Width	0.5	%	0.5	%
AT Point	0.0	deg.C	0.0	deg.C

Internal Cascade

	CH1		CH2	
PID Tuning Mode	Auto Tuning		Auto Tuning	
Hunting Width	0.5	%	0.5	%
AT Point	0.0	deg.C	0.0	deg.C

Independent 2channel

	CH1		CH2	
PID Tuning Mode	Auto Tuning		Auto Tuning	
Hunting Width	0.5	%	0.5	%
AT Point	0.0	deg.C	0.0	deg.C

2) SR23/SR23A Series: Servo

Servo feedback: ON

	CH1		CH2	
PID Tuning Mode	Auto Tuning		Auto Tuning	
Hunting Width	0.5	%	0.5	%
AT Point	0.0	deg.C	0.0	deg.C

Servo feedback: OFF

	CH1		CH2	
PID Tuning Mode	Auto Tuning		Auto Tuning	
Hunting Width	0.5	%	0.5	%
AT Point	0.0	deg.C	0.0	deg.C

3) FP23 / FP23A Series

1in, 2in Operation

	CH1		CH2	
AT Point	0.0	deg.C	0.0	deg.C

Independent 2channel

	CH1		CH2	
AT Point	0.0	deg.C	0.0	deg.C

5.6 PID1 to 10 Window

This window is used to configure the [PID 1 to 10] parameters of the controller [PID] window.

Shimaden Controller

- SR23 (2in_2out_2loop)
 - UNIT/RANGE
 - SV
 - PID (selected)
 - PID1
 - PID2
 - PID3
 - PID4
 - PID5
 - PID6
 - PID7
 - PID8
 - PID9
 - PID10
 - EVENT/DO
 - DI/OPTION
 - CTRL_OUTPUT
 - LOCK

PID1

OUT1

Proportional Band (P)	3.0	%	Act. Hysteresis (DF)	2.0	deg.C
Integral Time (I)	120	sec	Manual Reset (MR)	0.0	%
Derivative Time (D)	30	sec	Set Value Func. (SF)	0.40	

Output Limit Value (Lower - Higher)

0.0 - 100.0 %

OUT2

Proportional Band (P)	3.0	%	Act. Hysteresis (DF)	2.0	deg.C
Integral Time (I)	120	sec	Manual Reset (MR)	0.0	%
Derivative Time (D)	30	sec	Dead Band (DB)	0.0	deg.C
			Set Value Func. (SF)	0.40	

Output Limit Value (Lower - Higher)

0.0 - 100.0 %

5.7 EV1 to DO13 Window

This window is used to configure the parameters of the controller [EVENT/DO] window.

EV1

EVENT/DO Action

Action Mode	DEV Hi	Output Characteristics	N.O.
Action Point	2500.0 deg.C	Channel	CH1
Hysteresis	2.0 deg.C	Inhibit Action	OFF
Delay Time	OFF sec	Event Action at Stand-by	OFF

These areas are enabled when the operation mode is LOGIC.

Event Logic Operations (EV1, EV2, EV3, DO1, DO2, DO3)

Logic Mode(Log MD)	AND	Input Logic(Gate1)	BUF
Assigning Input(SRC1)	None	Input Logic(Gate2)	BUF
Assigning Input(SRC2)	None		

Timers/Counters (DO4, DO5)

Assigning Input(SRC)	None	Timer[sec]	OFF
Mode(Log MD)	Timer		

The "DO count" in the model code "8. External I/O Control Signals (DI/DO)" is reflected in the number of nodes shown.

5.8 DI/OPTION Window

This window is used to configure the parameters of the controller [DI/OPTION] window.

DI / OPTION

DI

1	RUN/RST	CH1	6	None	CH1
2	None	CH1	7	None	CH1
3	None	CH1	8	None	CH1
4	None	CH1	9	None	CH1
5	None	CH1	10	None	CH1

The DI assignment is shown such that no duplicate selection can be made except for None and LOGIC.

Analog Output

This area is enabled when the model code "6, 7. Analog Output" is selected.

Output Type	PV	Analog Output1	SV	Analog Output2
Lower Limit(L)	0.0 deg.C	0.0 deg.C	0.0 deg.C	0.0 deg.C
Higher Limit(H)	800.0 deg.C	800.0 deg.C	800.0 deg.C	800.0 deg.C

HB / HL Alarms

This area is enabled when model code "5. HB Alarm" is selected.

HB Alarm Current(HBA)	OFF	A
HL Alarm Current(HLA)	OFF	A
HB / HL Alarm Mode(HBM)	Lock	
HB Detection(HB)	-	

Setting Comm.

Only shown for SR23A and FP23A.

Comm. MEM Mode	EEP	Comm. Mode Types	COM1
----------------	-----	------------------	------

RUN/RST DI Mode

Only shown for FP23A.

RUN/RST_MODE	Edge	Edge
--------------	------	------

5.9 Servo Operation Settings Screen

This window is shown when model code “2. Basic Functions” is set to “Servo”, and is used to configure the “servo-related” parameters on the controller [CTRL OUT] window.

SERVO

Setting Servo Operations

Servo Feedback	ON	
Servo Dead Band	2.0	%
Motor Action Time	60	sec
Servo Action on Startup	Close	

External Input Opening Value Preset

No.	Value
P1	0
P2	0
P3	0
P4	0
P5	0
P6	0
P7	0

5.10 CTRL OUT Window

This window is used to configure the “output related” parameters of the controller [CTRL OUT] window.

Model code “2. Basic Functions” differs depending on whether the controller is “Non-servo/Servo”.

1) Non-servo

OUT1

Control Output Settings

Action Characteristics	Reverse	
Output at Standby	0.0	%
Output at Input Error	0.0	%
Proportional Cycle	30	sec
Output Change Rate Limiter	OFF	%/sec

[SR23 / SR23A Series]
Output at Standby

[FP23 / FP23A Series]
Output at Reset

2) Servo

OUT1

Control Output Settings

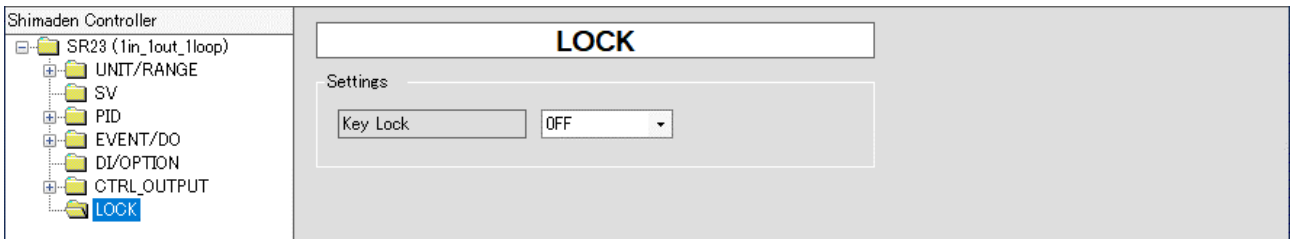
Action Characteristics	Reverse	
Output at Standby	Preset1	
Output at Input Error	Stop	
Output at Feedback POT.ERR	Stop	
Output Change Rate Limiter	OFF	%/sec

[SR23 / SR23A Series]
Output at Standby

[FP23 / FP23A Series]
Output at Reset

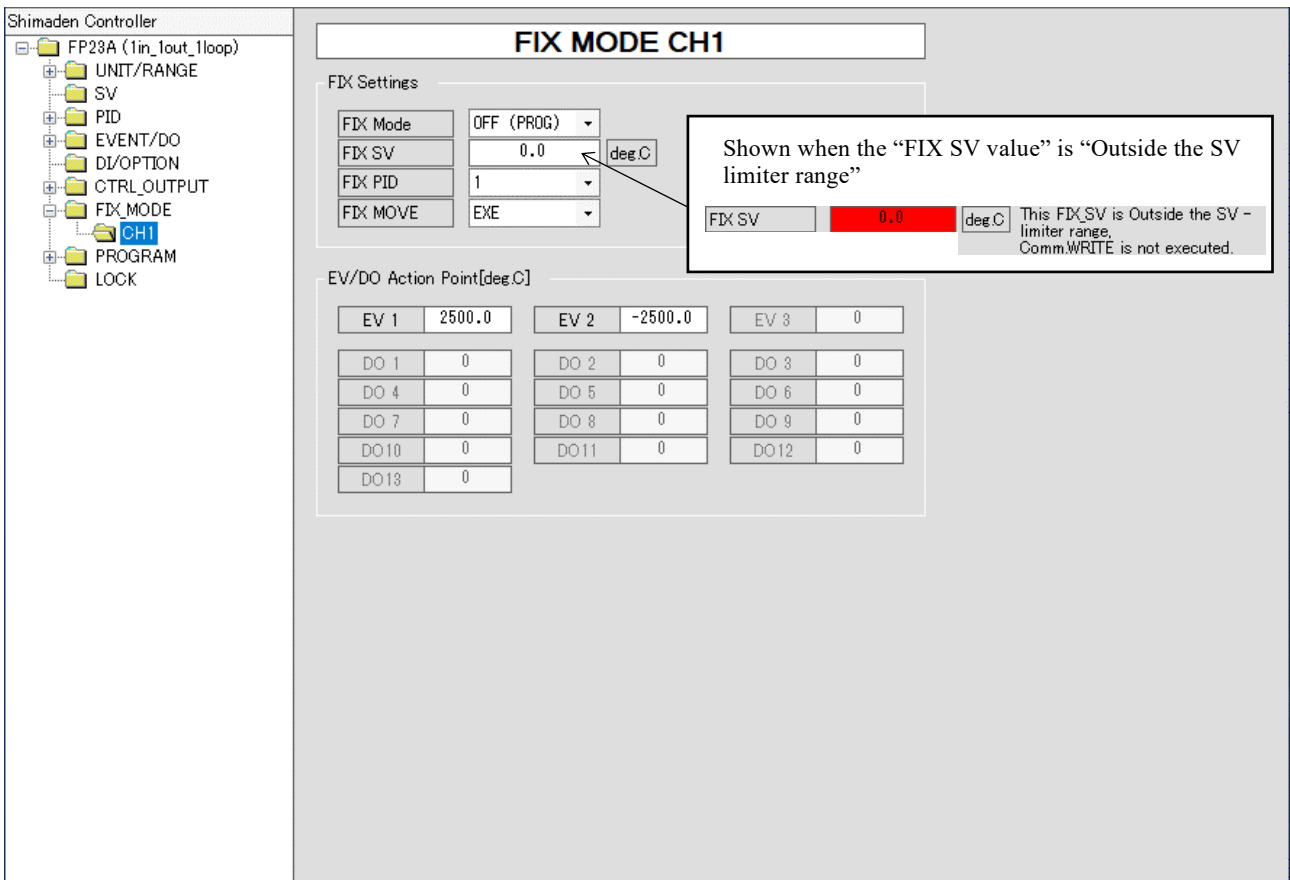
5.11 LOCK Window

This window is used to configure the [KLOCK] parameters of the controller [LOCK] window.



5.12 FIX MODE Window (only shown for FP23/FP23A Series)

This window is used to configure the “FIX related” parameters of the controller [CTRL EXEC] window.



5.13 Batch Settings Window (only shown for FP23/FP23A Series)

1) Step Count Display

This area is used to batch set the “Step Count” in the application window [PROGRAM] > [CH*] > [PTN_**].

2) Time Chart Comment

This area is used to batch set comments in the application window [PROGRAM] > [CH*] > [PTN_**] > [Time Chart].

The screenshot shows the Shimaden Controller interface. On the left is a tree view of the system configuration, with 'PROGRAM' selected. The main window is titled 'PROGRAM' and is split into two sections:

- Step Count Display:** A table with 20 rows. The first column is 'Pattern No.', the second is 'CH1', and the third is 'CH2'. The values for CH1 are 20 for pattern 1 and 0 for patterns 2 through 20. CH2 values are all 0.
- Time Chart Comment:** Two columns labeled 'CH1' and 'CH2', each with 20 rows for entering text comments.

Pattern No.	CH1	CH2
1	20	
2	0	
3	0	
4	0	
5	0	
6	0	
7	0	
8	0	
9	0	
10	0	
11	0	
12	0	
13	0	
14	0	
15	0	
16	0	
17	0	
18	0	
19	0	
20	0	

*: Indicates an arbitrary single character.

5.14 Pattern-Related Parameters Window (only shown for FP23/FP23A Series)

This window is used to configure the pattern-related parameters of the controller [LOCK] and [CTRL EXEC] windows.

The window of the corresponding controller is shown in the title of each group box.

The screenshot displays the Shimaden Controller software interface. On the left is a tree view of the controller's structure, including folders for UNIT/RANGE, SV, PID, EVENT/DO, DI/OPTION, CTRL_OUTPUT, FDX_MODE, and PROGRAM. Under PROGRAM, there is a sub-folder CH1, which contains 20 pattern folders (PTN_01 to PTN_20) and a LOCK folder. The main area shows the configuration for CH1, divided into three sections:

- Program Initial Settings (LOCK):** Contains several parameter fields:
 - Num. of Patterns: 20
 - Time Unit: H/M
 - Delay Time[H:M]: 00:00
 - Input Error Mode: HLD
 - POWER ON: RESET
 - Advance Mode: Step
 - Advance Time[H:M]: 00:00
 - PEND FDX Setting: OFF
- CTRL_EXEC:** Contains one parameter field:
 - Start Pattern No.: 1
- PTN Link (CTRL_EXEC):** Contains an 'Exe. Count' field set to 0 and a table with 20 rows. Each row has a 'No.' column (1-20) and a 'Pattern' column, all containing the value 0.

5.15 Pattern-Related Settings Window (only shown for FP23/FP23A Series)

This window is used to configure the non-time signal parameters of the controller [PROGRAM] window.

How to operate the “Settings”, “STEP” and “Time Signal” buttons

- Left click : Apply only to the corresponding PTN node
- Right-click : Batch apply to all PTN nodes

Display the Time Signal window.

Display the STEP window.
(After the window appears, this button changes to the STEP window/TIME window switching button.)

Display the Settings window.

The screenshot shows the Shimaden Controller interface. On the left is a tree view under 'FP23A (2in_2out_2loop)' with folders for 'UNIT/RANGE', 'SV', 'PID', 'EVENT/DO', 'DI/OPTION', 'CTRL_OUTPUT', 'FIX_MODE', and 'PROGRAM'. Under 'PROGRAM', there are two channels: 'CH1' and 'CH2'. 'CH1' contains PTN nodes PTN_01 through PTN_10, and 'CH2' also contains PTN nodes PTN_01 through PTN_10. 'PTN_01' in 'CH1' is selected. The main window displays 'PTN01_CH1' settings. At the top right are buttons for 'Settings', 'STEP', and 'Time_Signal'. The 'Settings' button is highlighted. Below the buttons are callout boxes: 'Display the Settings window.' points to the 'Settings' button; 'Display the STEP window. (After the window appears, this button changes to the STEP window/TIME window switching button.)' points to the 'STEP' button; 'Display the Time Signal window.' points to the 'Time_Signal' button. The main settings area has sections: 'PTN Related' with 'Number of Steps' (20), 'Start Step No.' (1), and 'PTN Reps' (1); 'Step Loop' with 'Start Step No.' (1), 'End Step No.' (1), and 'Count of Loop Reps' (1); 'Guarantee Soak' with 'Zone' (OFF) and 'Time' (00:00); and 'EV/DO Action Point[deg.C]' with a table of EV and DO values. A callout box points to the 'Number of Steps' field: 'This value is also reflected in the graph on the STEP screen.'

Right-click on the selected PTN node to display the following menu.

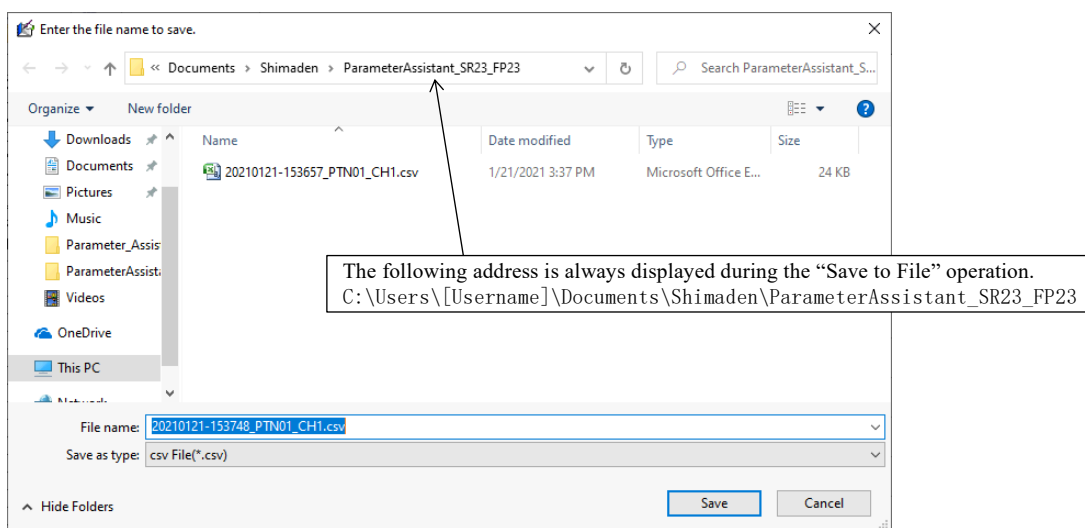
Copy	}	You can copy and paste PTN parameters. After copying, the “Paste” menu changes to “Paste (PTN**_CH*)” and the information that was copied is added.
Paste		
Save to File ...	}	You can “Save to File” and “Open from File” for PTN parameters. A detailed explanation is provided on the next page.
Open from File ...		
PTN Initialization	→	Reset the PTN parameters to their initial state.

Copy menu

*: Indicates an arbitrary single character.

1) [Save to File] menu

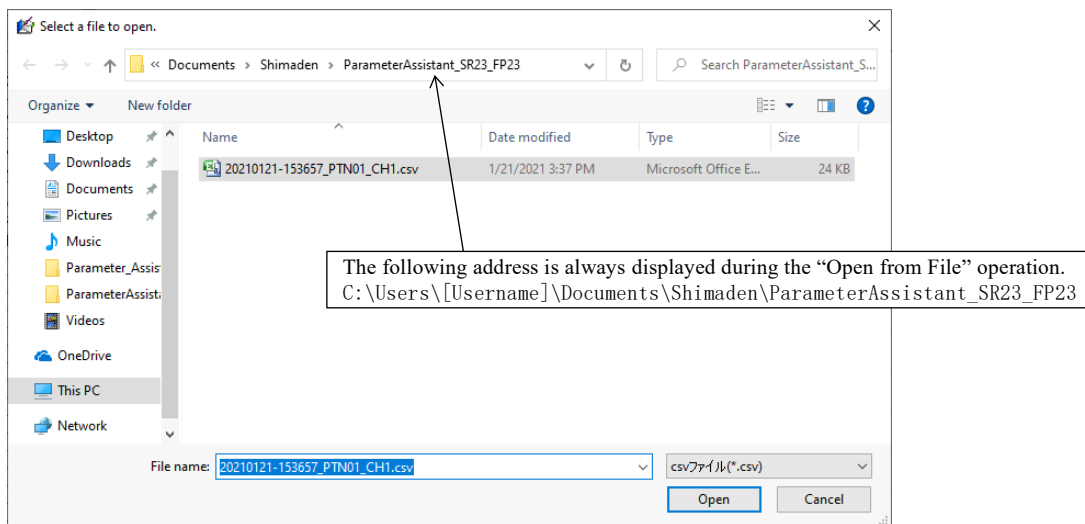
Select the “Save to File” menu to display the “Save to File” dialog box. In the “File name” field, a file name created from the “Date and time”, “PTN name”, and “CH name” is entered as the initial value. Click the “Save” button to save the PTN parameters to the file. Clicking the “Cancel” button will cancel the “Save to File” operation.



“Save to File” dialog box

2) [Open from File] menu

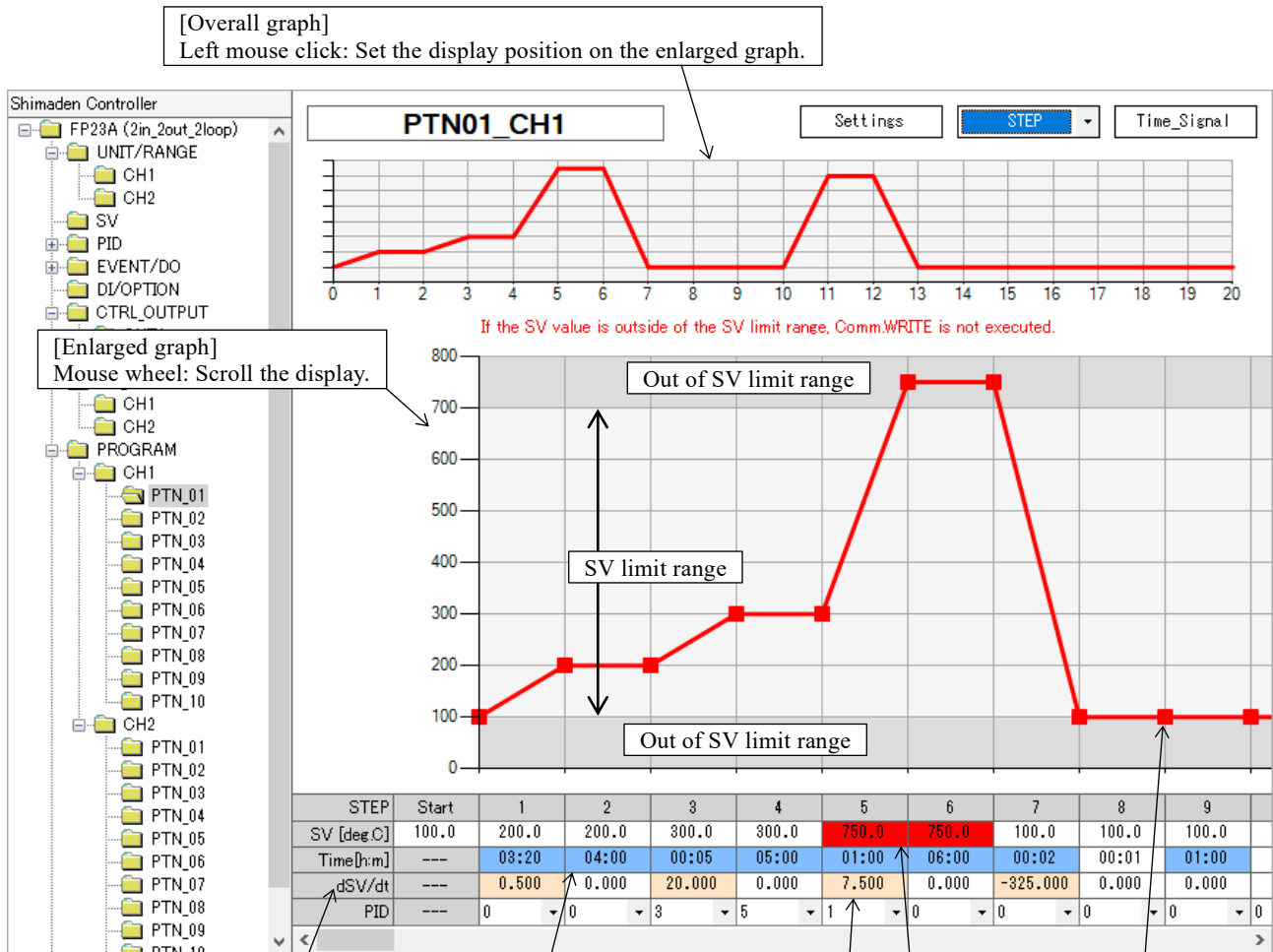
Select “Open from File” to display the dialog box shown below. Select the PTN parameter saving format “csv file” and click the “Open” button to apply the parameters read from the “csv file” to the selected PTN. Clicking the “Cancel” button will cancel the “Open from File” operation.



“Open from File” dialog box

5.16 STEP Window (only shown for FP23/FP23A Series)

This window is used to configure the parameters of the controller [STEP] window. The graph shows “STEP vs SV”.



[Overall graph]
Left mouse click: Set the display position on the enlarged graph.

[Enlarged graph]
Mouse wheel: Scroll the display.

If the value is 00:02 or higher, it is shown in color.

If the value is 0.001 or higher, it is shown in color.

If the value is outside the SV limit range, it is shown in color.

The Time values are calculated by entering the dSV/dt values. The dSV/dt values are then recalculated using the Time values. The entered values may change due to the effect of fractions in the recalculation.

[Plot points of SV values]

The following input methods can be used to set the SV value:

- Enter numerical values into the text boxes
- Click and drag on the graph using the left mouse button
- Fine tune using the mouse wheel or arrow keys (You can adjust the amount of change by holding down the Shift or Ctrl key)

To start method c, click the right mouse button on the graph to change the SV value plot point from red to black.

To exit, click the right mouse button on the graph again to change the SV value plot point back to red.

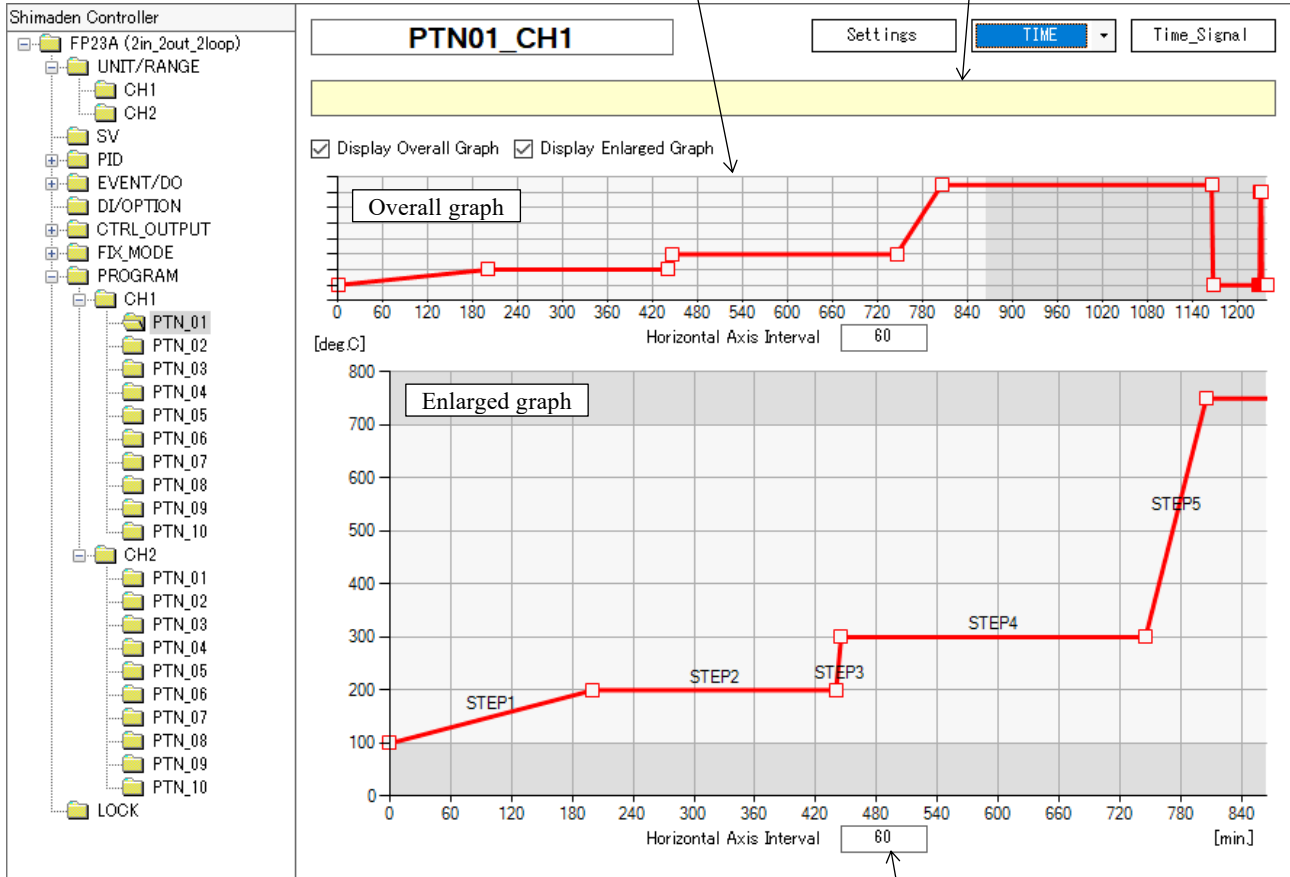
5.17 TIME Window (only shown for FP23/FP23A Series)

This window is used to show the STEP window graph as “Time vs SV”.

[How to use the overall graph]

- Left mouse click : Set the display position on the enlarged graph.
- Right mouse click : Set the display width on the enlarged graph.

Comments are shown here. They are reflected in “Screen Print” and “PROGRAM Window”.



Adjust the spacing of the horizontal axis here. You can configure the upper and lower graphs independently.

5.18 Time Signal Window (only shown for FP23/FP23A Series)

This window is used to configure the “Time Signal (TS1 to 8) Related” parameters of the controller [PROGRAM] window.

Enter values in the text boxes, and they are reflected in the graph on the right.

The screenshot displays the Shimaden Controller interface for PTN01_CH1. On the left is a tree view of the controller's configuration. The main area shows the 'Time_Signal' window with a graph and a table. The graph plots the time signal over 20 time units. The table below the graph lists parameters for time signals TS1 through TS8, including their ON/OFF status, step numbers, and times. Below this is a table of process parameters for steps 1 through 9.

ON	STEP	TIME
OFF	1	03:00
	3	01:00
TS1	1	01:00
	3	02:00
TS2	3	13:19
	1	20:39
TS3	OFF	00:00
TS4	OFF	00:00
TS5	OFF	00:00
TS6	OFF	00:00
TS7	OFF	00:00
TS8	OFF	00:00

STEP	Start	1	2	3	4	5	6	7	8	9
SV [deg.C]	100.0	200.0	200.0	300.0	300.0	200.0	200.0	100.0	100.0	100.0
Time[h:m]	---	03:20	04:00	00:05	05:00	01:00	06:00	00:02	00:01	01:00
dSV/dt	---	0.500	0.000	20.000	0.000	7.500	0.000	-325.000	0.000	0.000
PID	---	0	0	3	5	0	0	0	0	0

6 Communication

This section describes the communication method. For more information on how to connect the controller and the PC (host computer), refer to the relevant controller’s instruction manual.

6.1 Comm. Settings

Select “Comm. Settings” to display the following “Comm. Settings” dialog box. Set the parameters here to match the controller (must be a communication-compatible controller) to enable communication. The setting range is as shown in the table below.

“Comm. Settings” dialog box

Group name	Item	Setting range
Port settings	Port number (When configuring the “port number”, select the “COM number” shown in the driver item for “Your Communication Hardware” shown in “Ports (COM & LPT)” in “Device Manager” on your PC.)	COM1 to 10
	Communication speed [bps]	2400, 4800, 9600, 19200
	Data length [bit]	7, 8
	Parity	EVEN, ODD, NONE
	Stop bit [bit]	1, 2
Communication Settings	Protocol	SHIMADEN
	Address	01 to 98
	Control code	STX EXT CR
	BCC calculation method	ADD
	Timeout [ms] (The timeout value is a special parameter for this application. It is used to generate a timeout error after a set period of time has elapsed if there is no response from the controller.)	1000, 2000

1) [Initialization] button

This button is used to reset each of the “Port Settings/Communication Settings” parameters to their initial values.

2) [Save Settings] button

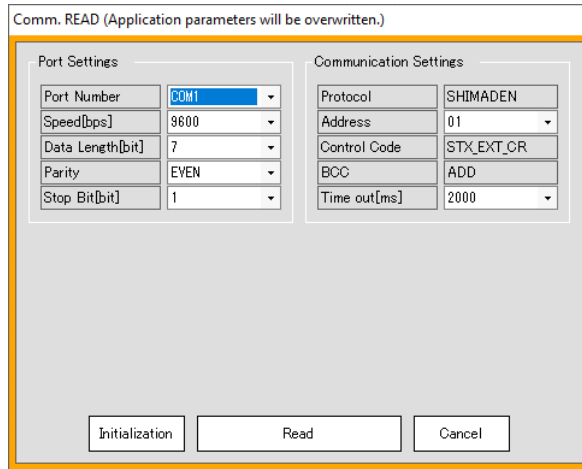
This button is used to save the parameter settings and close the dialog box. The saved values are used in the next operation and the next time the application is started.

3) [Cancel] button

This button is used to discard the parameter changes and close the dialog box.

6.2 Comm. READ

Select “Comm. READ” to display the “Comm. READ dialog box” shown below. Each of the displayed “Port Settings/Communication Settings” parameters is set to the value that was most recently saved. Also, each parameter is saved when you click the “Read” button.



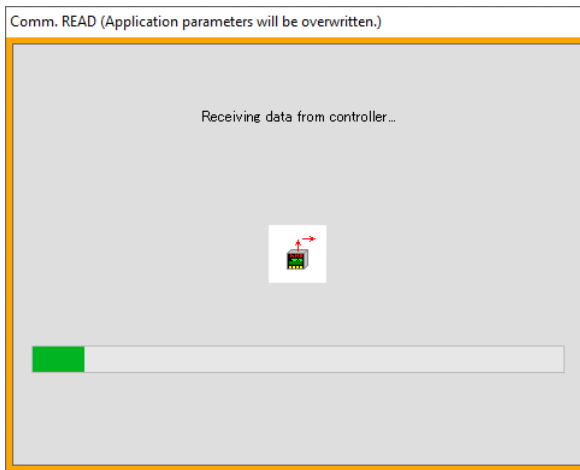
Comm. READ dialog box

1) [Initialization] button

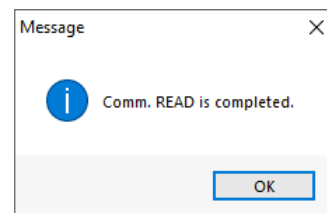
This button is used to reset each of the “Port Settings/Communication Settings” parameters to their initial values.

2) [Read] button

This button reads the parameters of the connected controller and applies them to the application parameters. When Comm. READ is completed, the dialog box shown below (right side) appears. Click the “OK” button to exit.



Comm. READ in progress window



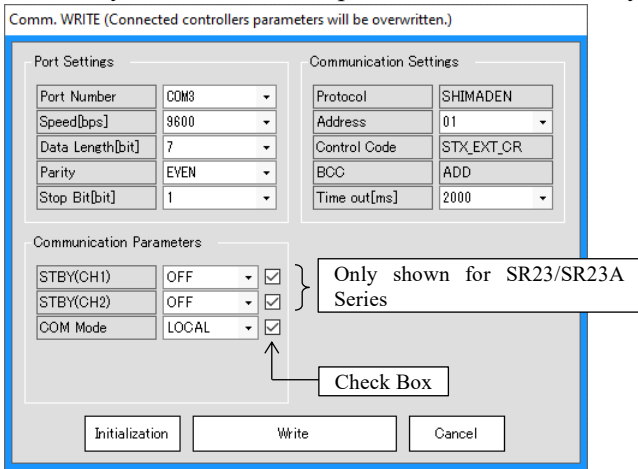
Dialog box on completion of Comm. READ

3) [Cancel] button

Clicking the “Cancel” button will cancel the “Comm. READ” operation and close the dialog box.

6.3 Comm. WRITE

Select “Comm. WRITE” to display the following “Comm. WRITE” dialog box. Each of the displayed “Port Settings/Communication Settings/Communication Parameters” parameters are set to the value that was most recently saved. Also, each parameter is saved when you click the “Write” button.



Comm. Write dialog box

Setting range for communication parameters

Group name	Item	Setting range
Communication parameter	STBY (CH1)	OFF, ON
	STBY (CH2)	
	COM Mode	LOCAL, COM

[STBY (CH*)]

After communication is completed, this parameter sets the controller's STBY parameter.

[COM Mode]

After communication is completed, this parameter sets the controller's COM parameter.

[Check Box]

Checking this checkbox enables the setting changes and communication for the corresponding parameters.

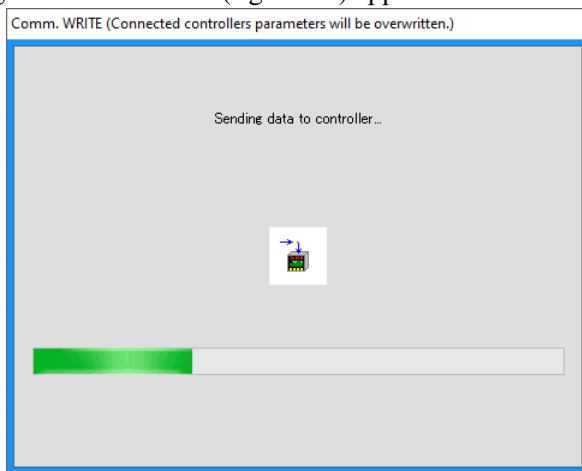
*: Indicates an arbitrary single character.

1) [Initialization] button

This button is used to reset each of the “Port Settings/Communication Settings” parameters to their initial values.

2) [Write] button

The application parameters are written to the connected controller. When Comm. WRITE is completed, the dialog box shown below (right side) appears. Click the “OK” button to exit.



Comm. WRITE in progress window



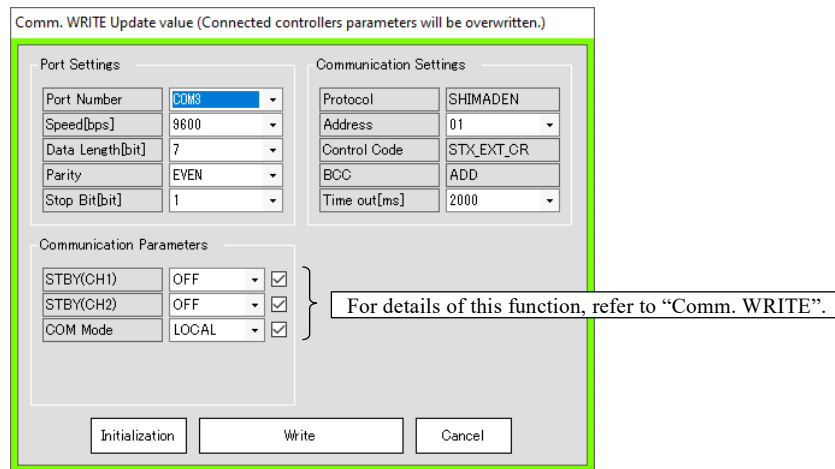
Dialog box on completion of Comm. WRITE

3) [Cancel] button

Clicking the “Cancel” button will cancel the “Comm. WRITE” operation and close the dialog box.

6.4 Comm. WRITE Update Value

Select “Comm. WRITE Update Value” to display the following “Comm. WRITE Update Value” dialog box. Each of the displayed “Port Settings/Communication Settings/Communication Parameters” parameters are set to the value that was most recently saved. Also, each parameter is saved when you click the “Write” button.



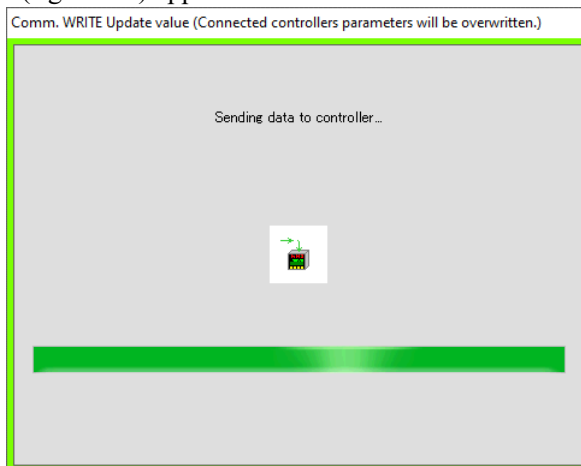
Comm. WRITE Update Value dialog box

1) [Initialization] button

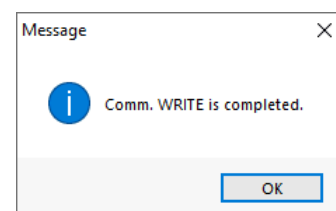
This button is used to reset each of the “Port Settings/Communication Settings” parameters to their initial values.

2) [Write] button

Of the parameters that were written using “Comm. READ/WRITE” before this operation, only the updated parameters are written to the connected controller. When Comm. WRITE is completed, the dialog box shown below (right side) appears. Click the “OK” button to exit.



Comm. WRITE Update Value in progress window



Dialog box on completion of Comm. WRITE Update Value

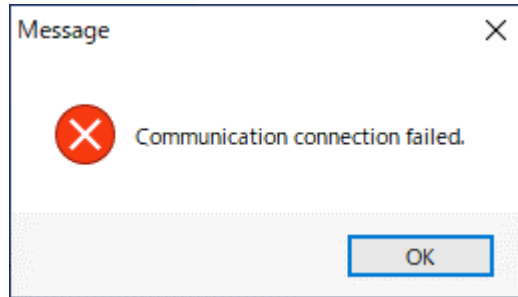
3) [Cancel] button

Clicking the “Cancel” button will cancel the “Comm. WRITE Update Value” operation and close the dialog box.

6.5 Communication Errors

1) Communication connection failure error

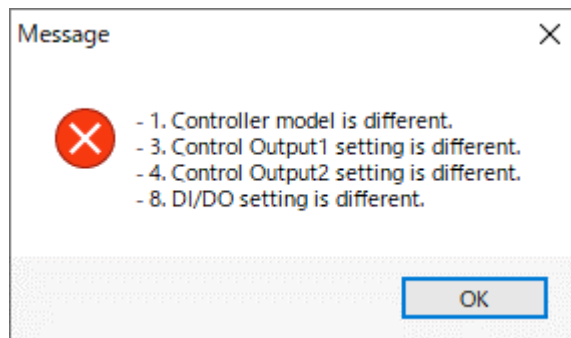
If the communication connection fails due to reasons such as the controller and PC not being physically connected or the application communication settings being different from those of the controller, the following error message is displayed and the communication operation terminates.



Error message when communication connection fails

2) Mismatch error in “Model Code” or “Input Specifications”

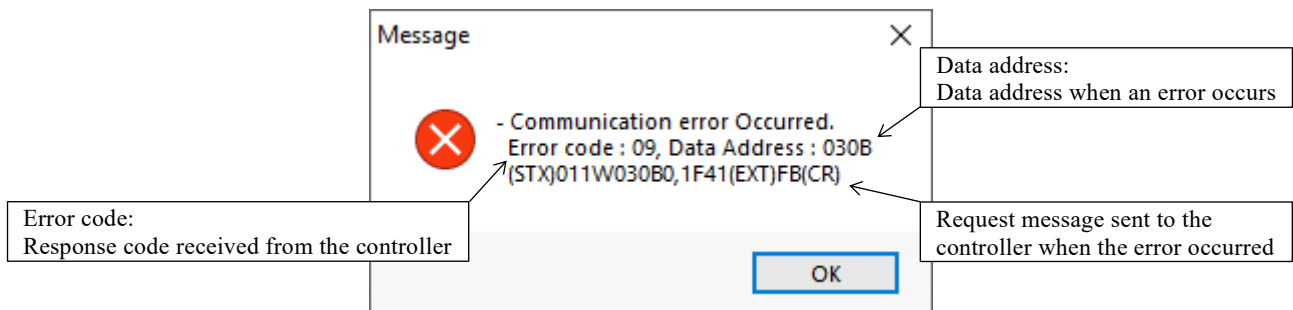
If there is a mismatch in the “Model Code” or “Input Specifications” between the connected controller and the application during “Comm. WRITE” or “Comm. WRITE Update Value”, the following error message is displayed. In order to communicate, it is necessary to resolve the mismatch according to the error message.



Error message when there is a mismatch in the “Model Code” or “Input Specifications”

3) Errors received from the controller

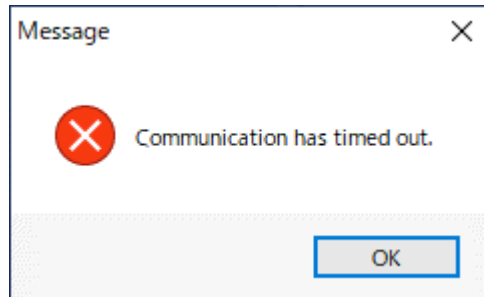
If the application receives an error from the controller, the following error message is displayed and the communication operation terminates. For more details about response codes, please refer to the controller instruction manual (Communication (Interface)).



Example of “Error received from controller”

4) "Timeout" error

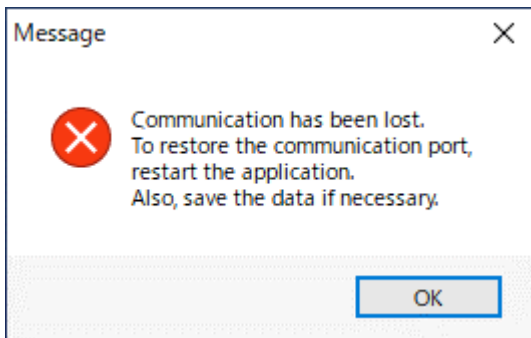
When the application sends a request message to the controller, if no response message is received after the time set in the "Timeout" application parameter, the following error message is displayed.



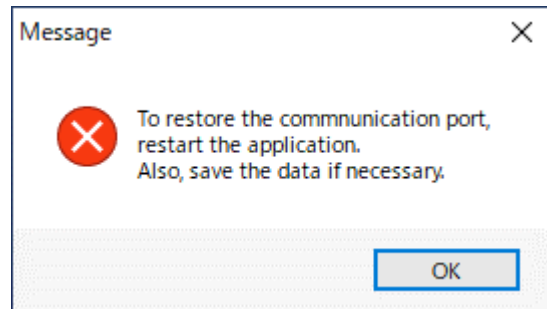
"Timeout" error message

5) "Communication cable disconnected during communication" error

If the communication cable is disconnected during communication, the error shown below (left side) is displayed and the communication operation terminates. If you reconnect the communication cable after this error and try to communicate with the controller without restarting the application, the error shown below (right side) is displayed and the communication operation will not start. If this error occurs, save the data as necessary and restart the application.



"Communication cable disconnected during communication" error message



Error message when communication is attempted after "Communication cable disconnected during communication" error without restarting

The contents of this manual are subject to change without notice.

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