
SiO-X Programmer

PC Software for
SiO-X Series Controllers

Instruction Manual

Rev. 1.20

For *SiO-X Programmer* Ver. 1.20

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SiO-X Programmer License Agreement

Thank you for choosing ***SiO-X Programmer***.

You must accept the following terms and conditions to use ***SiO-X Programmer***, a software program developed by SUS Corporation (hereinafter referred to as “SUS”). If you do not accept these terms and conditions, please remove ***SiO-X Programmer*** from your computer immediately.

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3. You are the only person entitled to use ***SiO-X Programmer***. In addition, you may only use it for your own business purposes with SUS’s ***SiO-X controller***.
4. No part of ***SiO-X Programmer*** or the accompanying documentation may be reproduced, modified, or quoted without the prior written consent of SUS.
5. SUS assumes no liability for the consequences of your use of ***SiO-X Programmer*** (see “***SiO-X Programmer*** Disclaimer”). No compensation may be claimed against SUS for any damage resulting from the use of ***SiO-X Programmer***.
6. If you breach any of these terms, or if there are serious circumstances that make it difficult to continue this agreement, SUS may immediately terminate the license.
7. SUS may change the specifications of ***SiO-X Programmer*** without prior notice. In addition, SUS does not provide any warranty for ***SiO-X Programmer***.

SiO-X Programmer Disclaimer

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Introduction

SiO-X Programmer is PC software that supports SUS Corporation's **SiO-X controllers**.

It allows you to write program data and parameters to SiO-X controllers easily and efficiently.
You can also save your edited data to a file or print it.

The information in this manual is subject to change without notice due to product improvements or other reasons.

For the latest information, please visit our website at:

<https://www.sus.co.jp/>

Precautions for Use

- Be sure to turn off the **SiO-X controller** before connecting or disconnecting a communication cable to or from the controller.
- To transmit data between the **SiO-X controller** and your PC, use the USB cable specified by SUS.
- Do not turn off the **SiO-X controller** during data communication with your PC.
Also, be sure to connect the USB cable securely to prevent it from coming off during data communication.
- If you are using a USB flash drive to save data, **do not unplug it while the software is running**.
- Do not press any button repeatedly and rapidly when writing program data, forcing output via the I/O Monitor, or performing other tasks. Doing so may disrupt the communication.

Overview

SiO-X Programmer supports the following features:

◆ Editing programs

You can edit program data.

Your edited data can be saved to a file or printed.

Additionally, data can be read, written, or compared via communication.

◆ Setting functions and parameters

You can edit the maximum values of the hardware timers, the IP address, and other settings, configure functions such as Multiple Selection and Free Input, and enter notes.

◆ Configuring log output

You can edit the conditions for saving log data to an SD card and the types of log data to save, as well as read data from an inserted SD card.

◆ Monitoring

You can monitor the I/O status. The output status can be forced on or off.

◆ Running a simulator

The program data you enter can be simulated on your PC.

This allows you to check inputs and outputs before connecting your PC to the SiO-X controller.

System Requirements

The following environment is required to run *SiO-X Programmer*.

◆ Supported computer models

This software has been verified to run on IBM PC-compatible computers (DOS/V) running any of the following operating systems:

Windows 10 (32/64-bit version)

Windows 11

Note: Even on these operating systems, SiO-X Programmer may not run properly, depending on your computer model.

◆ CPU and memory

A 2 GHz or faster CPU and at least 4 GB of system memory are recommended.

◆ Hard disk space

At least 512 MB of free space

◆ Display

Resolution: 1280 × 768 or higher

Colors: 256 or more

◆ Other

USB 2.0 port

Installing SiO-X Programmer

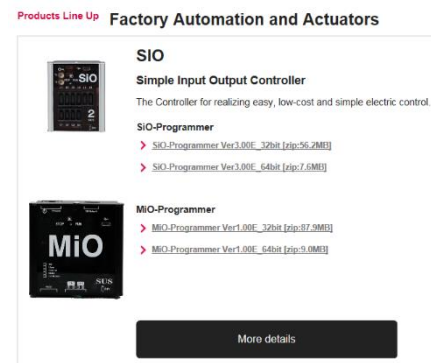
You need to install **SiO-X Programmer** on your PC's hard disk before you can use it.
Be sure to quit all other applications before starting the installation.
Here is how to install **SiO-X Programmer**:

Step 1

Download (and save) the **SiO-X Programmer** setup program to your PC.

It is available as a compressed file for download.
The file name is “SiO-X Programmer_###.zip”.

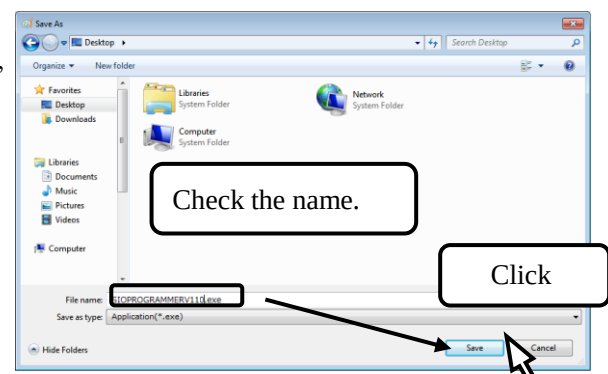
Note: The “###” represents the version number.



Step 2

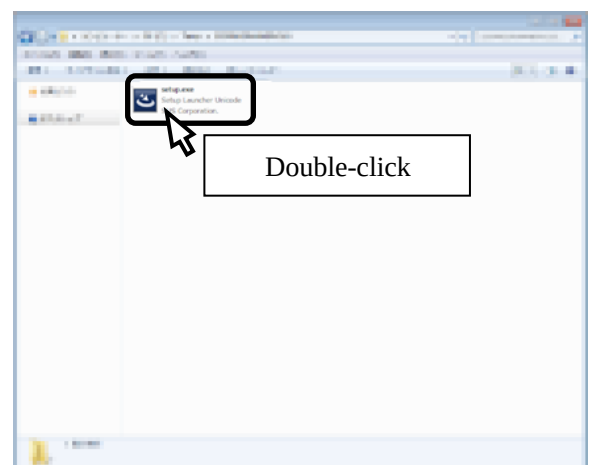
Create a folder into which to download the file, and specify that folder.

In this example, we create a folder named “Temp”, specify it as the save location, and then click the **[Save]** button to save the file.



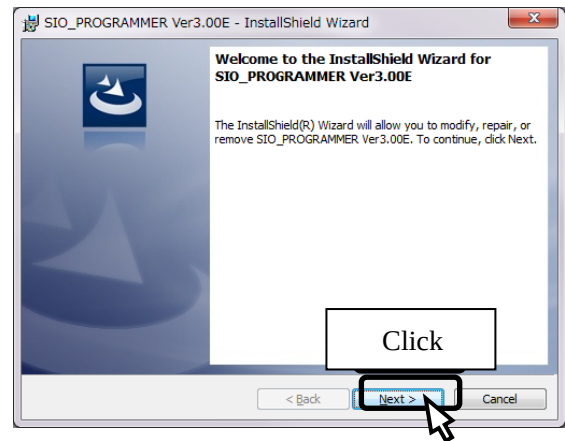
Step 3

Double-click “**setup.exe**” to start installation.



Step 4

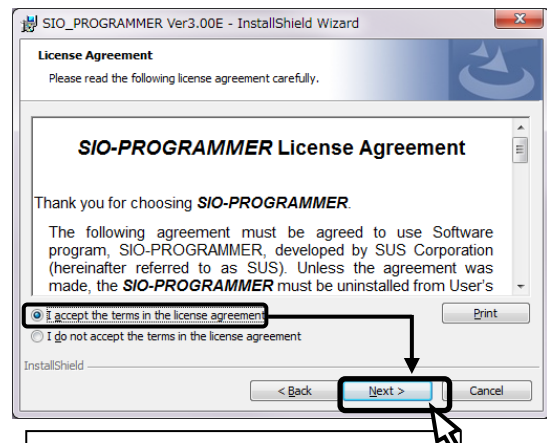
When the setup wizard appears, click the **[Next]** button.



Step 5

Read the **SiO-X Programmer** license agreement and accept the terms and conditions. Then click **[Next]**.

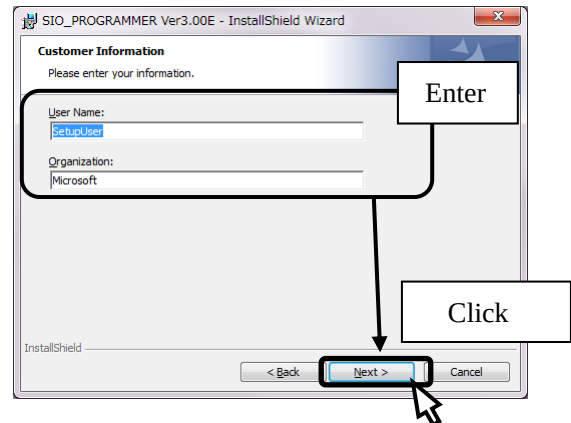
Note: If you do not accept the terms and conditions, you cannot proceed with the installation.



Accept the terms and conditions, and then click the **[Next]** button.

Step 6

Enter your user name and organization name, and then click the **[Next]** button.



Step 7

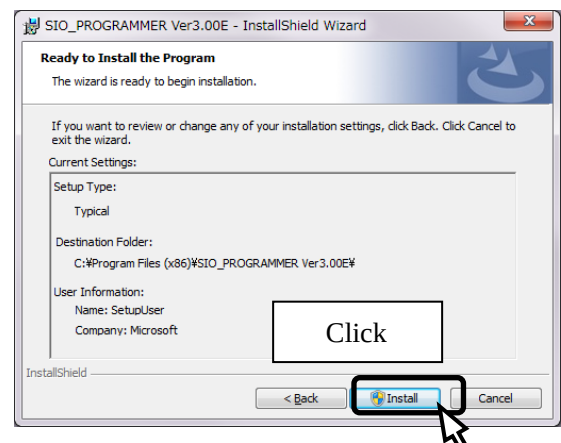
By default, a folder named “SIO_PROGRAMMER####” is created in the “Program Files” folder as the installation location, where the program will be installed. To use the default folder, click the **[Next]** button. To use a different folder, click the **[Change]** button and specify the desired folder.

Note: The “####” represents the version number.



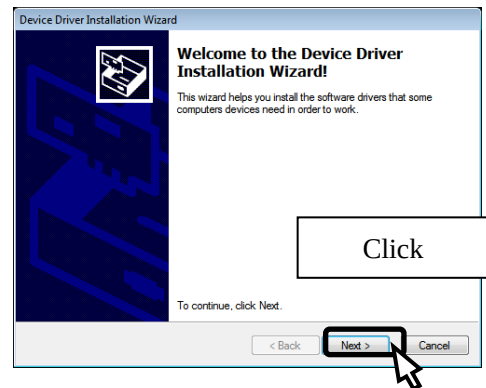
Step 8

Verify that the installation location and the user and organization (company) names you entered are correct. Then click the **[Install]** button.



Step 9

The Device Driver Installation Wizard appears. Click **[Next]**.



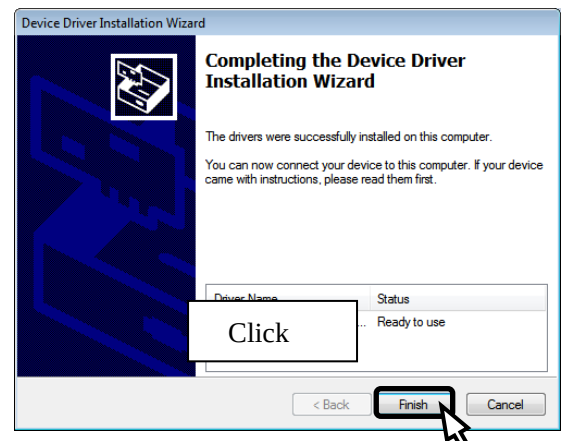
Step 10

When a dialog box like the one shown on the right appears, click **[Install]**.



Step 11

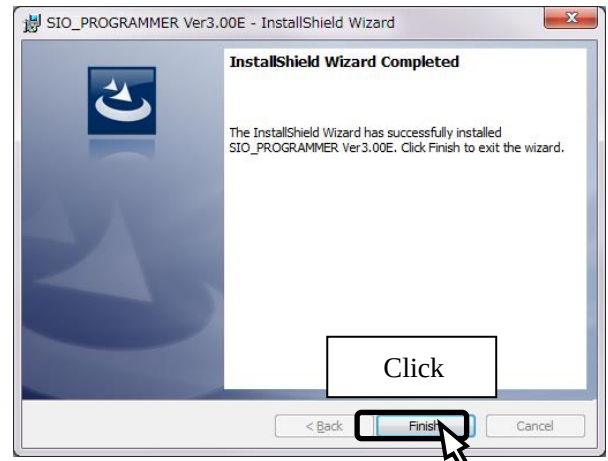
When the device driver has been installed, click **[Finish]**.



Step 12

The SiO-X Programmer installation wizard switches to the Installation Complete window. Click **[Finish]**.

After the installation is complete, you can delete the download folder (“Temp”, in this example), “SiO-X Programmer_###.zip”, and unzipped files (e.g., “setup.exe”).



Uninstalling SiO-X Programmer

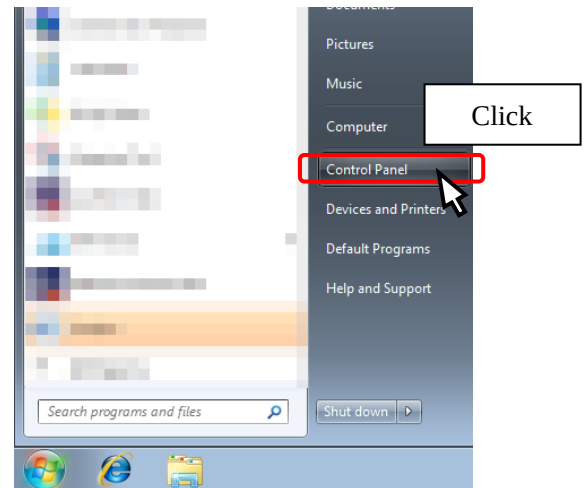
The process of removing files and other data from a PC's hard disk is called uninstallation.

Here is how to uninstall **SiO-X Programmer** from your PC's hard disk:

Note: The following images are from Windows 10. The steps may vary depending on the Windows version.

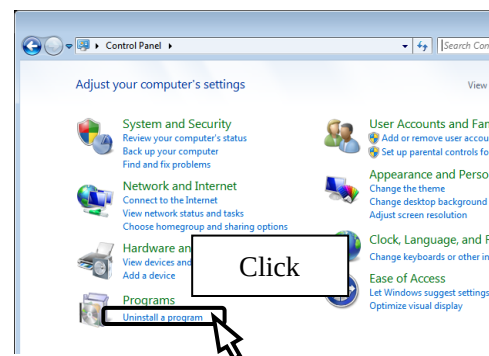
Step 1

Click the **Start** button > **[Windows System]** > **[Control Panel]** to open the Control Panel.



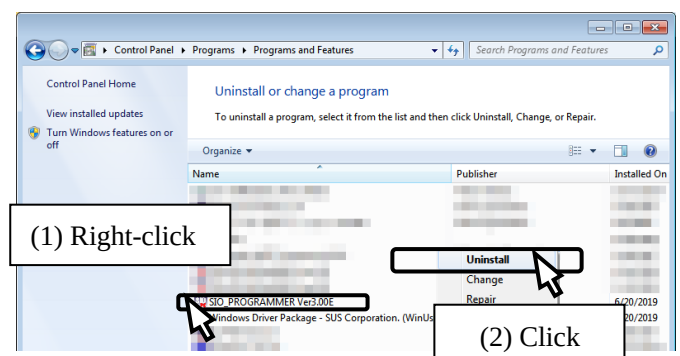
Step 2

Click [Uninstall a program].



Step 3

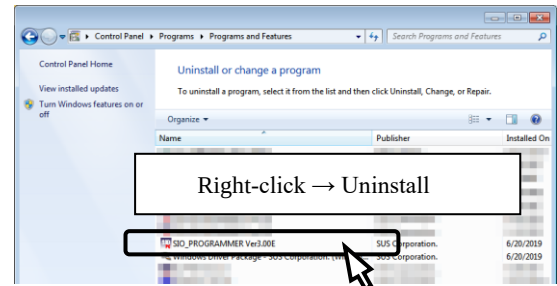
Select "SiO-X Programmer" in the **[Programs and Features]** window, right-click, and then select [Uninstall].



Step 4

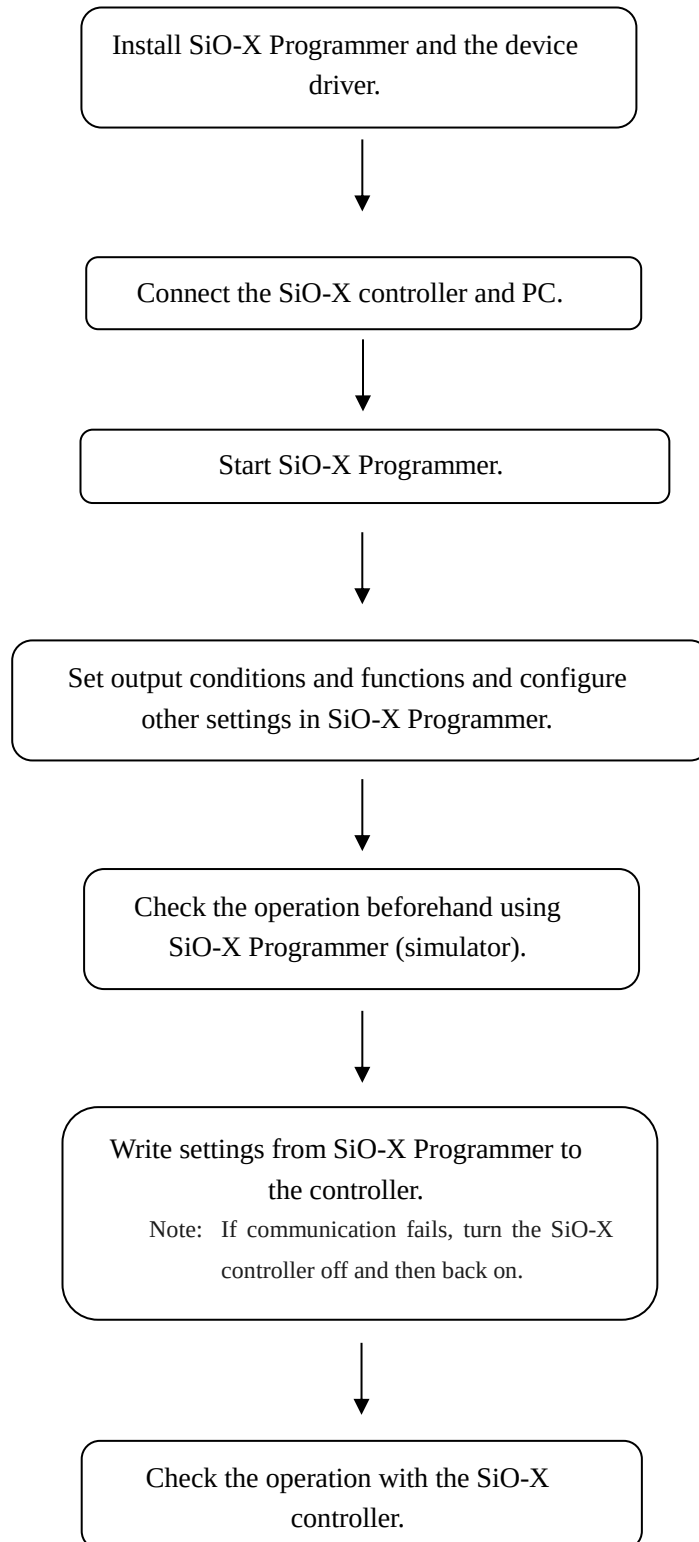
Uninstall the device driver. To do so, select “Windows Driver Package - SUS Corporation. (WinUSB) SiOController”, right-click, and then select [Uninstall/Change].

Note: If the above driver is not displayed and “Windows Driver Package D:Frontia (WinUSB) USBTMCd” exists, uninstall this driver instead.



Setting Up the Controller

Follow the steps below to set up the SiO-X controller.



Note: Only one SiO-X controller can be used with a single PC.

Connect the micro-USB connector of the USB cable to the SiO-X controller.
Be sure to gently insert the connector while holding the controller with your hand.
If the cable is connected correctly, the device driver is installed properly, making your PC and the controller ready to communicate with each other.

Note: When unplugging the USB cable, first disconnect the power cable from the controller.

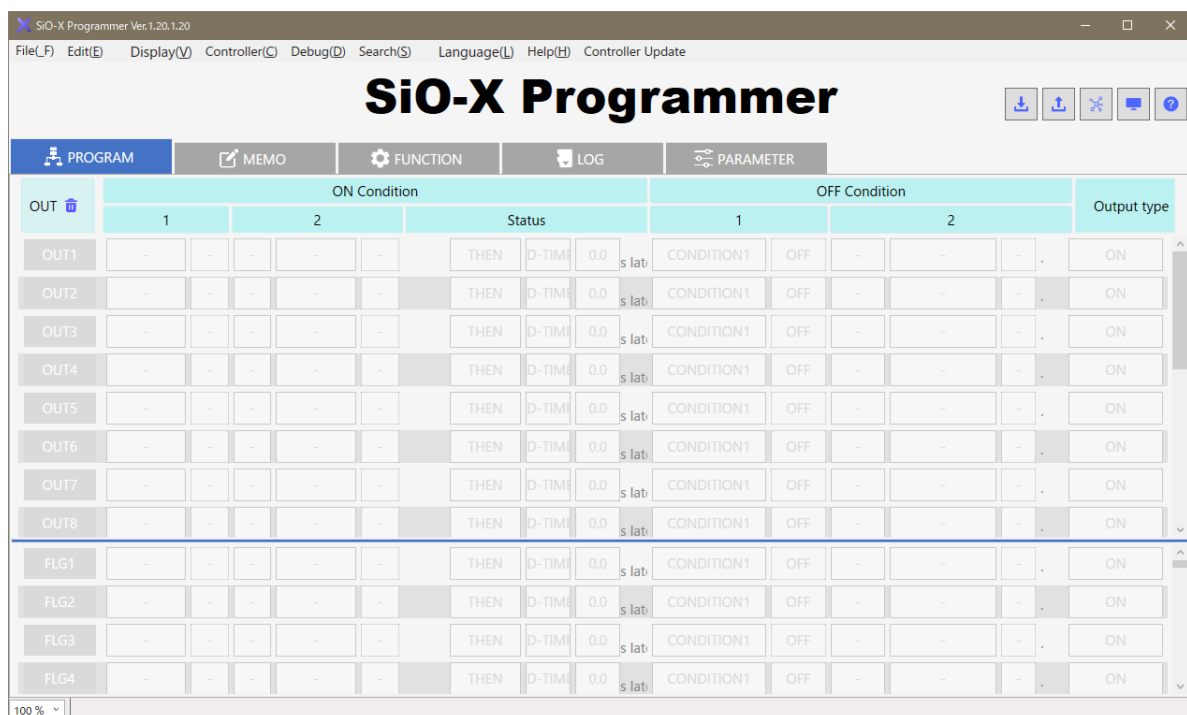
Starting SiO-X Programmer

Once the installation is complete, a shortcut icon for **SiO-X Programmer** is created in the Start menu. Click the icon to start SiO-X Programmer.



If you used the default folder during installation, the icon is stored in the following location:

Start button > **[Programs]** > **[SIOX_PROGRAMMER]**



Main Window

- This section shows the names of the screen elements and describes their functions.

(2) Tool icons → Page 17

These icons allow you to perform some functions available in the menus.

(1) Version number

Indicates the version number of SiO-X Programmer.

(3) Setup tabs

Click a tab to switch between different setup options.

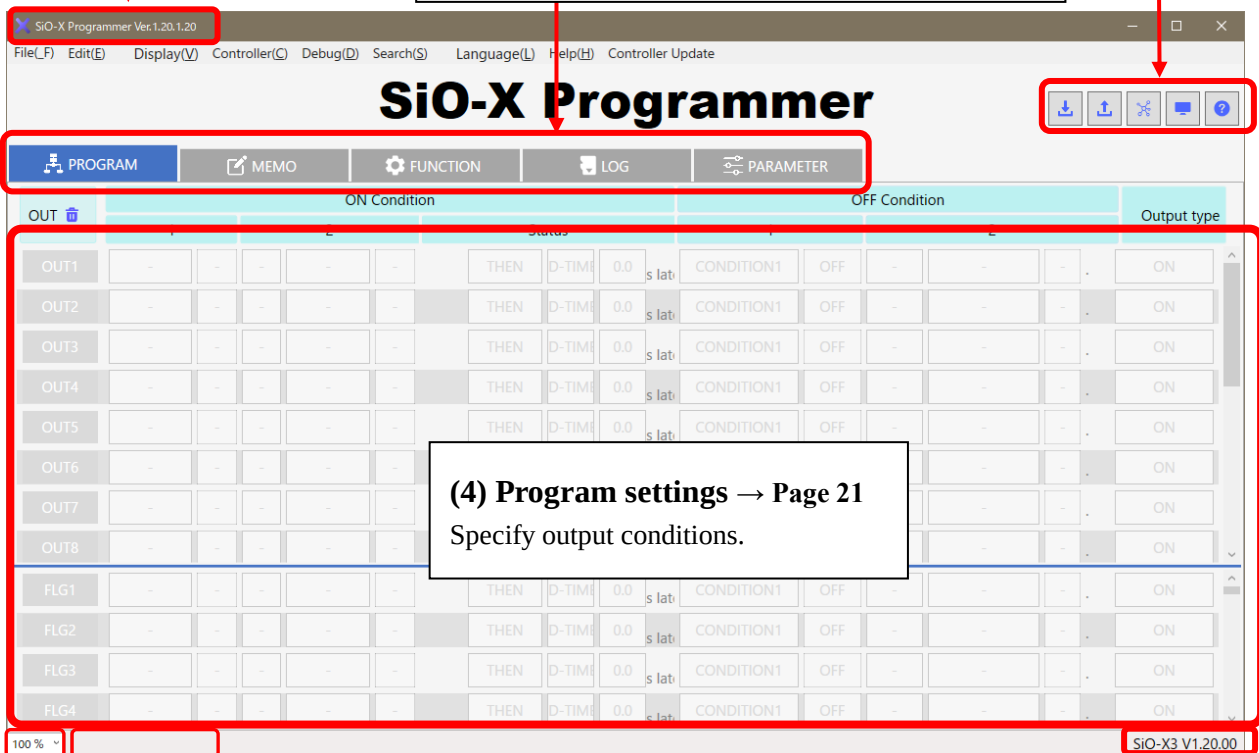
Program → Page 22

Notes → Page 41

Functions → Page 42

Log → Page 67

Parameters → Page 70



(4) Program settings → Page 21

Specify output conditions.

(6) Messages → Page 93

Displays messages during communication, file reading, and other processes.

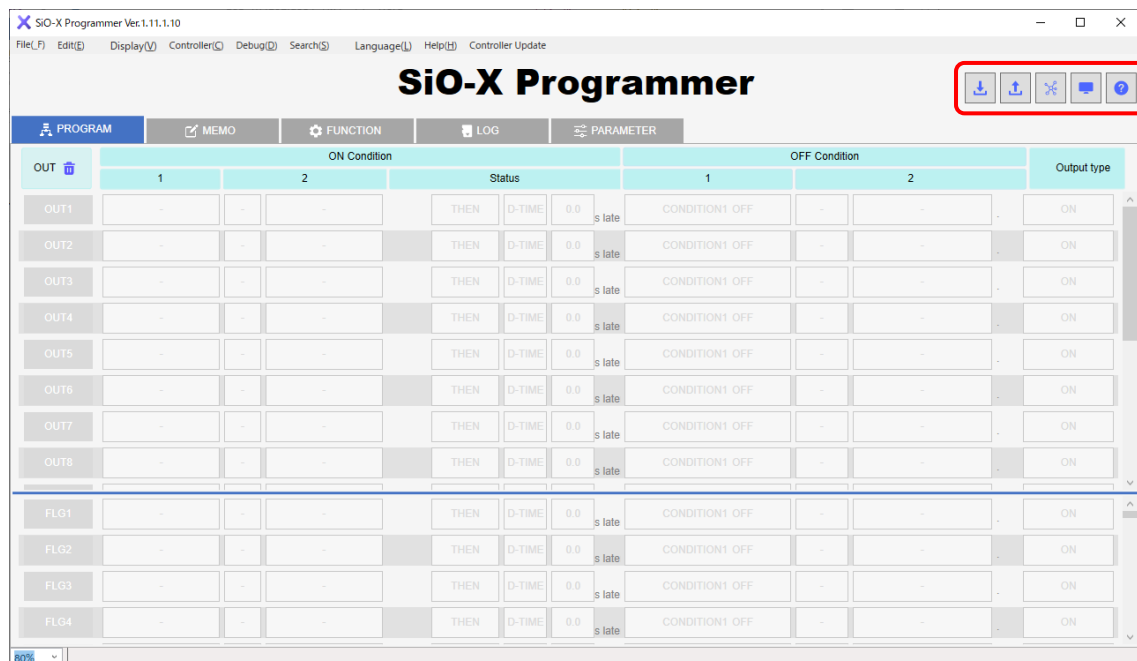
(5) Display size

Set the character size.

(7) CT version number

Indicates the version number of the controller that has communicated with SiO-X Programmer.

Tool Icons



Reading from the controller → Page 75

Starts communication to read settings from the controller. You can specify which items to read.



Writing to the controller → Page 73

Starts communication to write SiO-X Programmer settings to the controller.



Simulation → Page 83

Enables the programs and Functions configured in SiO-X Programmer to be simulated on the PC. Simulation does not require the controller to be connected.



I/O Monitor → Page 77

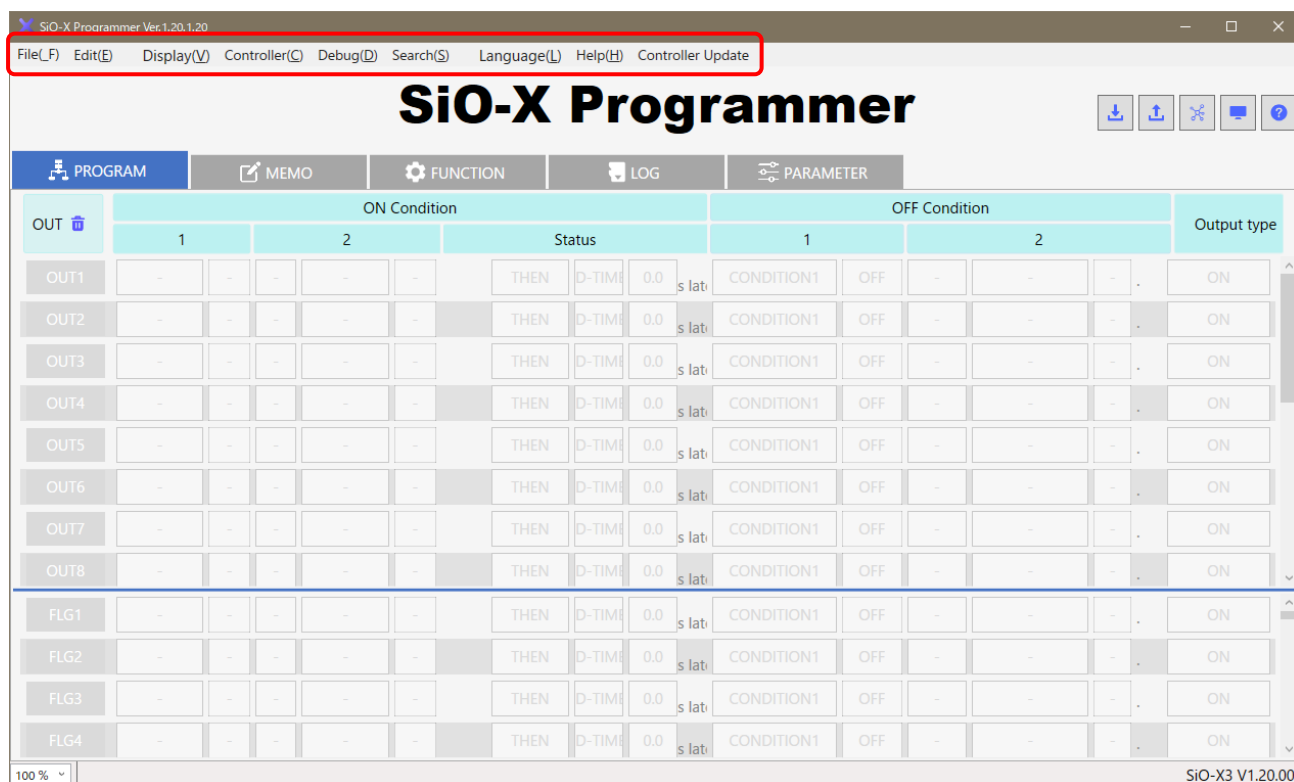
Starts the I/O Monitor, where you can check the I/O status of the controller and force output.



Help

Opens a help file.

Menus

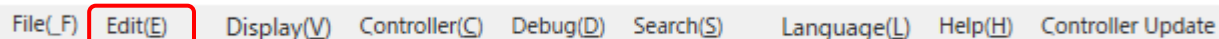


◆ File (_F)



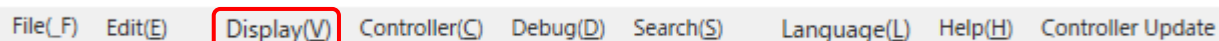
- New (N)
Resets all items.
- Open (O)
Opens a saved configuration file. Select a configuration data file (*.siox), and the settings saved in the file will be applied.
You can also open an .siox file by dragging and dropping it into the window.
Note: SiO-Programmer data files (*.sio) cannot be opened.
- Save (S)
Saves all current settings to a file. The extension of the configuration file is “.siox”.
If you name the file “sample”, it will be saved as “sample.siox”.
- Print (P) → Page 89
Prints settings. You can select which items to print.

◆ Edit (E)



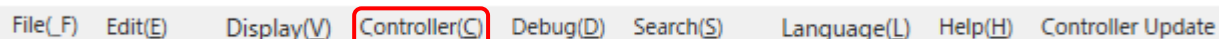
- Undo (U)
Undoes the last edit you made. You can undo up to 20 previous actions.
- Redo (R)
Cancels an “undo” action. You can redo as many actions as you have undone.
- Cut (T), Copy (C), Paste (P), Reset (B), Insert (I), Delete (D) → Page 36
Used to edit a selected output in the program setup window. The Insert and Delete commands are available only for FLGs.
- Reset selected items (Q)
Resets only selected items.

◆ Display (V)



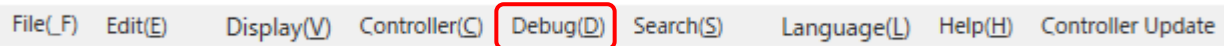
- Character size (H)
Select Large (T), Medium (M), or Small (S) for the character size.
You can specify an exact size in the main window (see page 16).

◆ Controller (C)



- Read (R) → Page 75
Starts communication to read settings from the controller. You can specify which items to read.
- Write (W) → Page 73
Starts communication to write SiO-X Programmer settings to the controller.

◆ Debug (D)



• Simulation (S) → Page 83

Enables the programs and Functions configured in SiO-X Programmer to be simulated on the PC.

Note: Simulation does not require the controller to be connected.

• Monitor (M) → Page 77

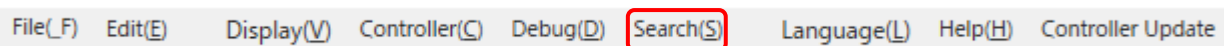
Starts the I/O Monitor, where you can check the I/O status of the controller and force output.

• Compare (C)

Compares the current settings in SiO-X Programmer with the settings on a connected controller or in an .siox file.

Any differences are highlighted in red.

◆ Search (S) → Page 85



• Find (F)

Highlights the input or output that matches your search criteria in yellow.

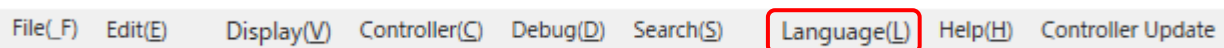
Searches are performed on the [Program], [Functions], and [Log Output] tabs.

• Replace (H)

Finds and replaces an input or output with a different one.

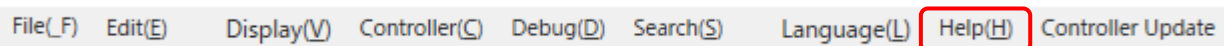
Searches are performed on the [Program], [Functions], and [Log Output] tabs. Note that some inputs or outputs may not be replaced.

◆ Language (L)



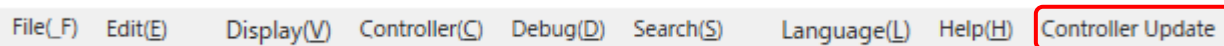
Switches to the display language you select.

◆ Help (H)



Opens a help file.

◆ Controller Update → Page 90



Updates the controller.

Note: Shortcuts are available for some commands.

- | | | | |
|----------|----------|------------|---------------|
| • New: | Ctrl + N | • Reset: | Ctrl + R |
| • Open: | Ctrl + O | • Insert: | Ctrl + Insert |
| • Save: | Ctrl + S | • Delete: | Ctrl + Delete |
| • Print: | Ctrl + P | • Find: | Ctrl + F |
| • Undo: | Ctrl + Z | • Replace: | Ctrl + H |
| • Redo: | Ctrl + Y | | |
| • Cut: | Ctrl + X | | |
| • Copy: | Ctrl + C | | |
| • Paste: | Ctrl + V | | |

Editing Programs

Window for Creating Programs

On the “Program” tab, you can program the outputs of the SiO-X controller.

The program settings are divided into OUTs (available outputs) and FLGs (internal outputs).

OUT 	ON Condition							OFF Condition						Output type
	1		2		Status			1		2				
OUT1	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON	
OUT2	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON	
OUT3	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON	
OUT4	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON	
OUT5	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON	
OUT6	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON	
OUT7	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON	
OUT8	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON	

OUTs (available outputs)

FLG1	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON
FLG2	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON
FLG3	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON
FLG4	-	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON

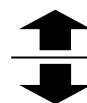
The subsequent outputs are FLGs (internal outputs).

OUTs (available outputs)

The subsequent outputs are FLGs (internal outputs).

You can adjust the display ratio between the OUT and FLAG panes by dragging the blue bar between them up or down.

OUT7	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	-	-	-	ON
OUT8	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	-	-	-	ON
FLG1	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	-	-	-	ON
FLG2	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	-	-	-	ON



Creating an I/O Program

You can program outputs by selecting one or more conditions for each OUT and FLG. Here are the steps for programming an output:

1. Enable the OUT you want to use for output.

OUT	ON Condition				OFF Condition				Output type		
	1	2	Status		1	2					
OUT1	-	-		THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON

Click the desired OUT button to enable it.
You can now edit the output settings for that OUT.

OUT	ON Condition			
	1		2	
OUT1	-	-	-	
OUT2	-	-	-	

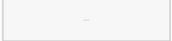
Note: Outputs that have not been clicked (OUT2 and subsequent outputs, shown below) are dimmed. These outputs are disabled and do not function, although their settings can still be written to the controller.

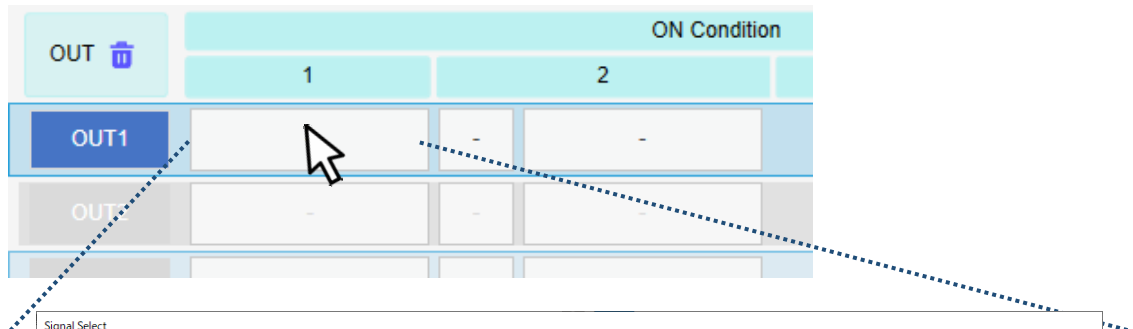
OUT	ON Condition			
	1		2	
OUT1	-	-	-	
OUT2	-	-	-	

- Set ON conditions 1 and 2.

Setting an ON condition involves selecting a **condition for turning on the OUT**.

OUT	ON Condition			Status	OFF Condition			Output type				
	1	2			1	2						
OUT1	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON

Click the  button for ON condition 1 to display a window where you can select a condition.



Signal Select

★ Bookmark	IO	Function
★	IN	OUT
★	OUT	FLAG
★	TP	Ether

IN	OUT	FLAG	TP	Ether
1: IN1	1: OUT1	1: FLG1	1: TP1	1: Ether1
2: IN2	2: OUT2	2: FLG2	2: TP2	2: Ether2
3: IN3	3: OUT3	3: FLG3	3: TP3	3: Ether3
4: IN4	4: OUT4	4: FLG4	4: TP4	4: Ether4
5: IN5	5: OUT5	5: FLG5	5: TP5	5: Ether5
6: IN6	6: OUT6	6: FLG6	6: TP6	6: Ether6
7: IN7	7: OUT7	7: FLG7	7: TP7	7: Ether7
8: IN8	8: OUT8	8: FLG8	8: TP8	8: Ether8
9: IN9	9: OUT9	9: FLG9	9: TP9	9: Ether9
10: IN10	10: OUT10	10: FLG10	10: TP10	10: Ether10
11: IN11	11: OUT11	11: FLG11	11: TP11	11: Ether11
12: IN12	12: OUT12	12: FLG12	12: TP12	12: Ether12
13: IN13	13: OUT13	13: FLG13	13: TP13	13: Ether13
14: IN14	14: OUT14	14: FLG14	14: TP14	14: Ether14
15: IN15	15: OUT15	15: FLG15	15: TP15	15: Ether15

ON/OFF

ON OFF OK Cancel

Select a signal, choose [ON] or [OFF], and then click [OK].

Signal Select

★ Bookmark	IO	Function
★	IN	OUT
★	OUT	FLAG
★	TP	Ether

IN	OUT	FLAG	TP	Ether
1: IN1				
2: IN2				
3: IN3				

For details on the signal selection window (ON conditions), see page 26.

To set two ON conditions, select [AND] or [OR], and set ON condition 2 as well.

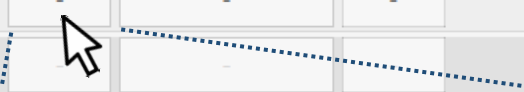
OUT 	ON Condition					
	1		2			Sta
OUT1	IN1	ON	-	-	-	THEN
OUT2	-	-	-	-	-	THEN
OUT3	-	-	-	-	-	THEN

Signal Select

-

AND

OR



Signal Selection Window for ON Conditions

IO

Signal Select

★ Bookmark IO Function

- /RUN ★ IN 1 ★ OUT ★ FLAG ★ TP ★ Ether ★

-	1: IN1	1: OUT1	1: FLG1	1: TP1	1: Ether1
RUN	2: IN2	2: OUT2	2: FLG2	2: TP2	2: Ether2
INIT	3: IN3	3: OUT3	3: FLG3	3: TP3	3: Ether3
	4: IN4	4: OUT4	4: FLG4	4: TP4	4: Ether4
	5: IN5	5: OUT5	5: FLG5	5: TP5	5: Ether5
	6: IN6	6: OUT6	6: FLG6	6: TP6	6: Ether6
	7: IN7	7: OUT7	7: FLG7	7: TP7	7: Ether7
	8: IN8	8: OUT8	8: FLG8	8: TP8	8: Ether8
	9: IN9	9: OUT9	9: FLG9	9: TP9	9: Ether9
	10: IN10	10: OUT10	10: FLG10	10: TP10	10: Ether10
	11: IN11	11: OUT11	11: FLG11	11: TP11	11: Ether11
	12: IN12	12: OUT12	12: FLG12	12: TP12	12: Ether12
	13: IN13	13: OUT13	13: FLG13	13: TP13	13: Ether13
	14: IN14	14: OUT14	14: FLG14	14: TP14	14: Ether14
	15: IN15	15: OUT15	15: FLG15	15: TP15	15: Ether15
	16: IN16	16: OUT16	16: FLG16	16: TP16	16: Ether16

ON/OFF

ON OFF

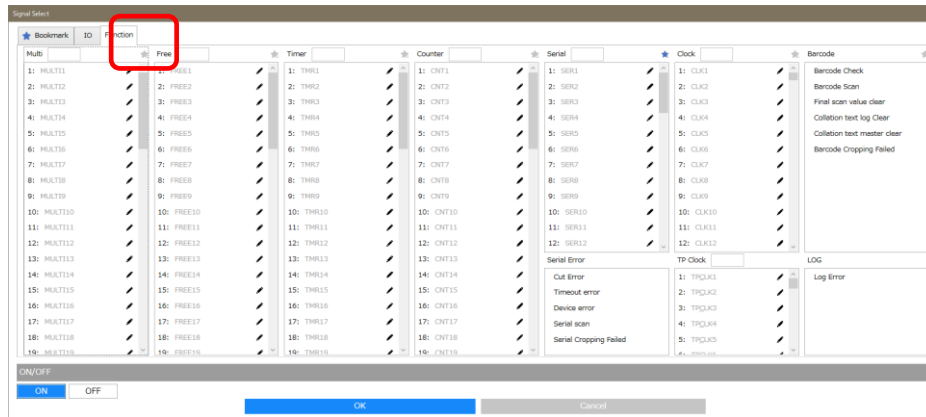
OK Cancel

- RUN
The RUN switch on the controller
- INIT → Page 64
After the RUN switch on the controller is turned on, the OUT will turn on and remain on for a specified period of time before turning off.
- IN (1 to 16)
Input signals to the controller
- OUT (1 to 16)
Output signals from the controller
- FLG (1 to 256)
Internal output signals from the controller
- TP (1 to 256)
Signals sent from an SiO-X touch panel (SUC-1021)
- Ether (1 to 64)
Signals sent from a client during Ethernet communication

Functions

On the [Functions] tab, you can set conditions using special functions.

The Functions feature provides capabilities such as communicating with external devices and creating complex programs.

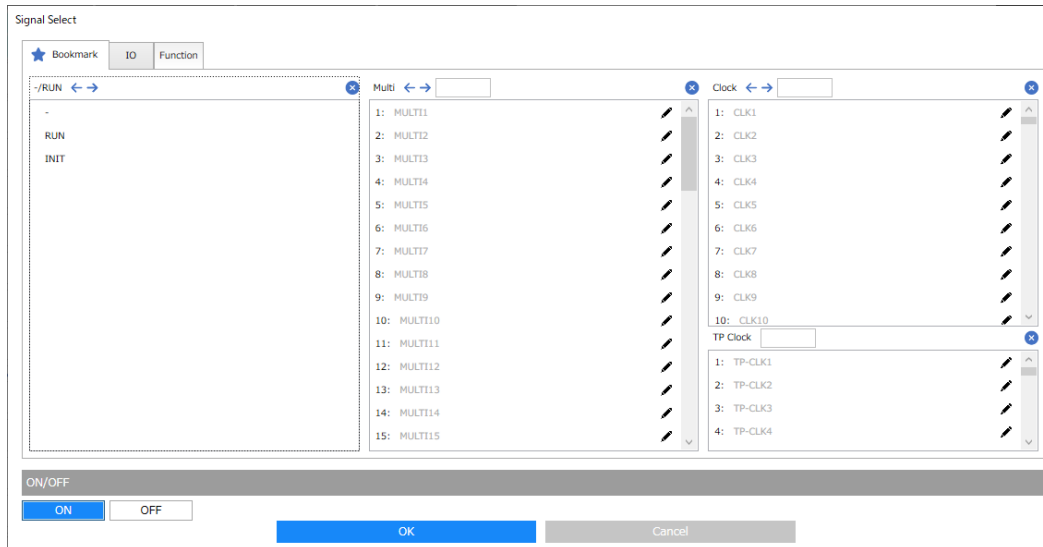


For more information on the Functions feature, see page 42 onward.

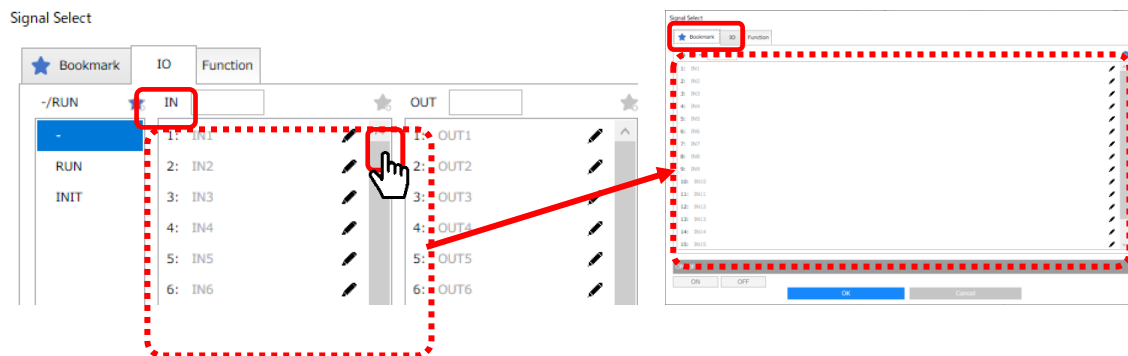
- Multiple Selection (MULTIs 1 to 64) → Page 45
Multiple selections available as a Function
- Free Input (FREEs 1 to 64) → Page 46
Free inputs available as a Function
- Timer (TMRs 1 to 64) → Page 43
Timers available as a Function
- Counter (CNTs 1 to 64) → Page 44
Counters available as a Function
- Serial (SERs 1 to 50) → Page 54
Serials available as a Function
- Serial Errors → Page 60
Errors that can occur when a serial (available as a Function) is used
- Clock (CLKs 1 to 256) → Page 66
Clocks available as a Function
- TP Clock (TP-CLKs 1 to 64)
Clocks you set on an SiO-X touch panel (SUC-1021)
- Barcode
 - Barcode comparison: Barcodes available as a Function → Page 62
 - Barcode scan: Turns on briefly when a barcode is scanned by a barcode reader.
 - Initialization of most recently scanned data: Turns on when the most recent scan data is initialized.
 - Collation text log initialization: Turns on when the Collation text log is initialized.
 - Collation text initialization: Turns on when the Collation text masters are initialized.

★ Bookmarks

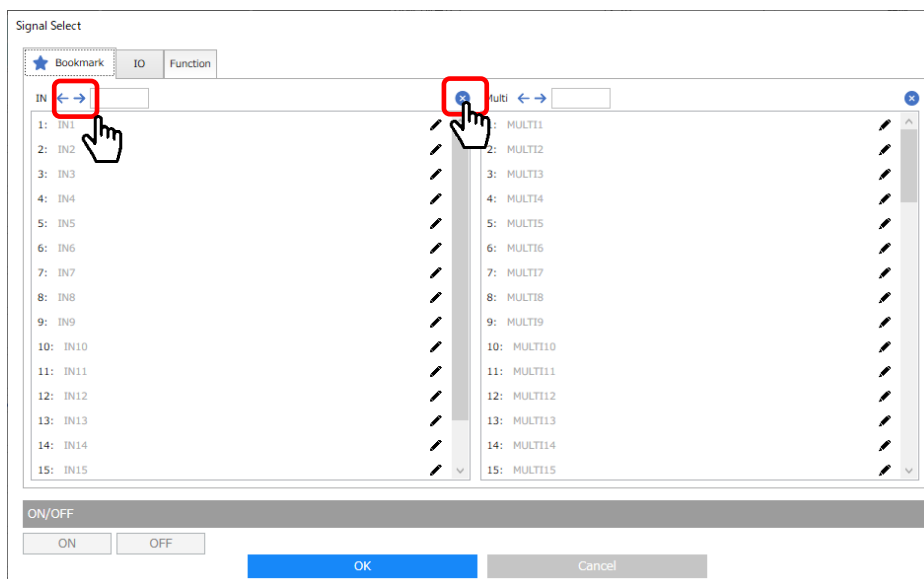
The [Bookmarks] tab displays only the signals you need from the [IO] and [Functions] tabs.



You can add signals to the [Bookmark] tab by clicking their corresponding bookmark icons.



You can change the display position and delete bookmarks.



3. Set the state.

Specify the state of ON conditions 1 and 2 that **turns on the OUT**.

OUT	ON Condition				OFF Condition				Output type
	1	2	Status		1	2			
OUT1	IN1 ON	-	THEN	D-TIME 0.0 s late	CONDITION1 OFF	-	-	ON	

Click the **THEN** button under [Status] to display a window where you can select a condition.

ON Condition			
Status			
-	THEN	D-TIME	0.0 s late
-	THEN	D-TIME	0.0 s late

Signal Select

THEN

CONTINUES

TIMES THEN

- THEN**

The OUT turns on when a specified period of time has elapsed after the condition(s) are met. For the time, you can select either a direct value (0.0 to 6000.0 seconds) or T1/T2.

THEN	D-TIME	0.0	s late
------	--------	-----	--------

- CONTINUES**

The OUT turns on if the condition(s) continue to be met for a specified period of time.

For the time, you can select either a direct value (0.0 to 6000.0 seconds) or T1/T2.

Example: IN1 (switch), CONTINUES, and 1 second

→ If the switch is turned off after 0.5 seconds, no signal will be output.

D-TIME	0.0	sec	CONTINUES
--------	-----	-----	-----------

- TIMES THEN**

The OUT turns on when a specified period of time has elapsed after the condition is met a specified number of times.

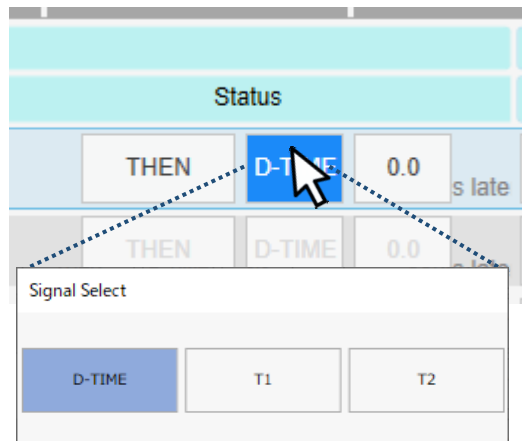
The count is reset when the OFF condition(s) (see page 31) are met.

You can set the count within the range of 1 to 50000.

For the time, you can select either a direct value (0.0 to 6000.0 seconds) or T1/T2.

3	TIMES THEN	D-TIME	0.0	s late
---	------------	--------	-----	--------

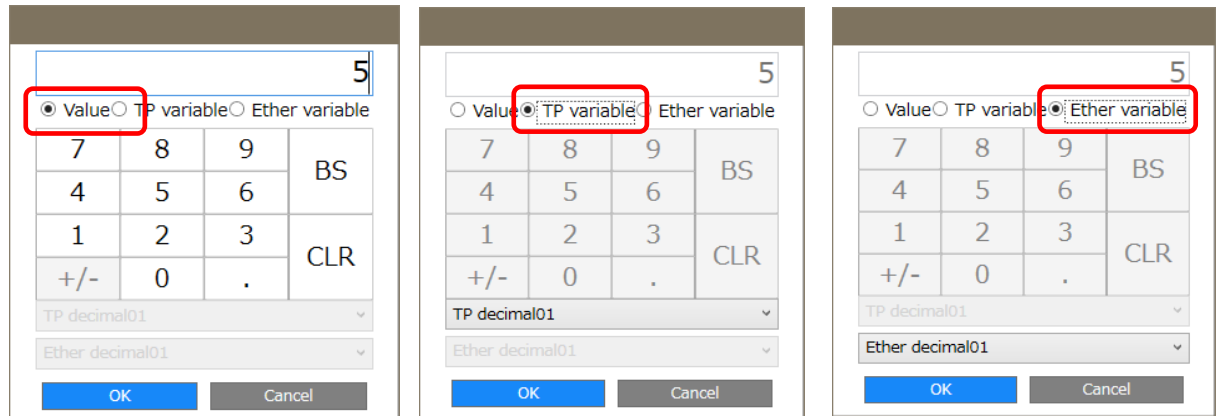
Click the **D-TIME** button under [Status] to set the time.



- **D-TIME**
Specify the wait time directly. The setting range is from 0.0 to 6000.0 seconds.
- **T1/T2** → Page 65
Use the hardware timers on the SiO-X controller.

★ How to Set the Time

If you select [Direct value], specify a value directly or set a TP variable.

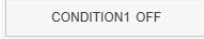


- **Numeric value**
Enter a numeric value. Click [BS] to delete a single character, or [CLR] to delete all characters.
- **TP variable**
Select this option if you want to set a value directly on an SiO-X touch panel (SUC-1021).
You can select from [TP integer 1] to [TP integer 64] for the count, and from [TP decimal 1] to [TP decimal 64] for the time.
- **Ether variable**
Select this option when setting values directly via IoT-Monitor.
For count values, choose "Ether Integer 1-64."
For time values, select "Ether Decimal 1-64."

4. Set OFF conditions 1 and 2.

Specify OFF conditions for turning off the **OUT that has turned on**.

OUT	ON Condition				OFF Condition				Output type
	1	2	Status		1	2			
OUT1	IN1 ON	-		THEN D-TIME 0.0 s late	CONDITION1 OFF	-		ON	

Click  the  button for OFF condition 1 to display a window where you can select a condition.

OFF Condition

Status

1

2

D-TIME 0.0 s late

CONDITION1 OFF

-

Signal Select

Bookmark

IO

Function/Other

- /RUN

IN

OUT

FLAG

TP

Ether

1: IN1

2: IN2

3: IN3

4: IN4

5: IN5

6: IN6

7: IN7

8: IN8

9: IN9

10: IN10

11: IN11

12: IN12

1: OUT1

2: OUT2

3: OUT3

4: OUT4

5: OUT5

6: OUT6

7: OUT7

8: OUT8

9: OUT9

10: OUT10

11: OUT11

12: OUT12

1: FLG1

2: FLG2

3: FLG3

4: FLG4

5: FLG5

6: FLG6

7: FLG7

8: FLG8

9: FLG9

10: FLG10

11: FLG11

12: FLG12

1: TP1

2: TP2

3: TP3

4: TP4

5: TP5

6: TP6

7: TP7

8: TP8

9: TP9

10: TP10

11: TP11

12: TP12

1: Ether1

2: Ether2

3: Ether3

4: Ether4

5: Ether5

6: Ether6

7: Ether7

8: Ether8

9: Ether9

10: Ether10

11: Ether11

12: Ether12

ON/OFF

ON

OFF

OK

Cancel

Select an OFF condition and click [OK].

Signal Select

Bookmark

IO

Function/Other

- /RUN

IN

1: IN1

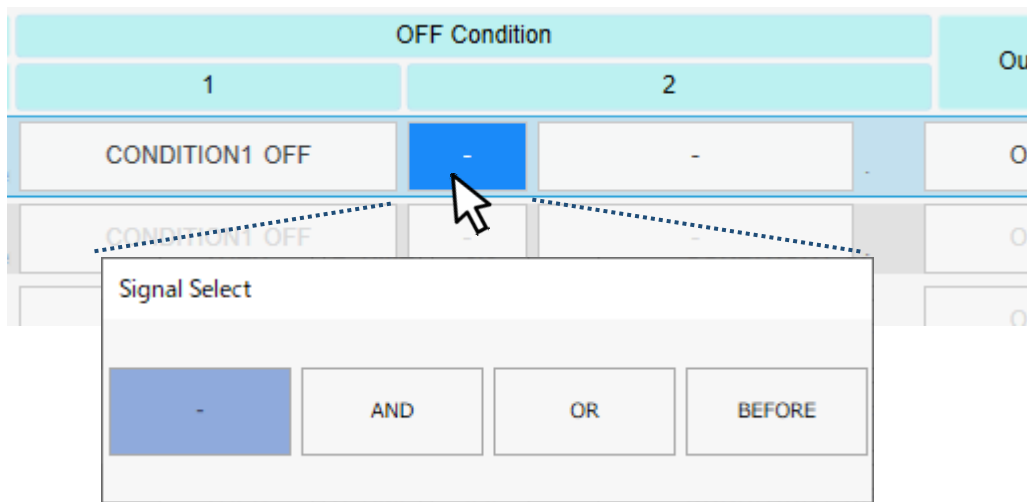
2: IN2

3: IN3

4: IN4

For details on the signal selection window (OFF conditions), see page 33.

To set two OFF conditions, select [AND], [OR], or [BEFORE], and set OFF condition 2 as well.



Signal Selection Window for OFF Conditions

Note: Bookmarks work the same as they do for ON conditions (see page 28).

IO

Signal Select

Bookmark IO Function/Other

-/RUN	IN	OUT	FLAG	TP	Ether
-	1: IN1	1: OUT1	1: FLG1	1: TP1	1: Ether1
ON Condit	2: IN2	2: OUT2	2: FLG2	2: TP2	2: Ether2
RUN	3: IN3	3: OUT3	3: FLG3	3: TP3	3: Ether3
	4: IN4	4: OUT4	4: FLG4	4: TP4	4: Ether4
	5: IN5	5: OUT5	5: FLG5	5: TP5	5: Ether5
	6: IN6	6: OUT6	6: FLG6	6: TP6	6: Ether6
	7: IN7	7: OUT7	7: FLG7	7: TP7	7: Ether7
	8: IN8	8: OUT8	8: FLG8	8: TP8	8: Ether8
	9: IN9	9: OUT9	9: FLG9	9: TP9	9: Ether9
	10: IN10	10: OUT10	10: FLG10	10: TP10	10: Ether10
	11: IN11	11: OUT11	11: FLG11	11: TP11	11: Ether11
	12: IN12	12: OUT12	12: FLG12	12: TP12	12: Ether12

ON/OFF

ON OFF OK Cancel

- ON conditions
The OUT turns on when the ON condition(s) (see page 24) are met and turns off when they are not met.
- RUN
The RUN switch on the controller
- IN (1 to 16)
Input signals to the controller
- OUT (1 to 16)
Output signals from the controller
- FLG (1 to 256)
Internal output signals from the controller
- TP (1 to 256)
Signals sent from an SiO-X touch panel (SUC-1021)
- Ether (1 to 64)
Signals sent from a client during Ethernet communication

Functions/Other

For more information on the Functions feature, see page 42 onward.

Signal Select

Bookmark IO **Function/Other**

D-TIME ★ Multi ★ NEXT FUNCTION ★ Clock ★

D-TIME

T1

T2

1: MULTI1

2: MULTI2

3: MULTI3

4: MULTI4

5: MULTI5

6: MULTI6

7: MULTI7

8: MULTI8

9: MULTI9

10: MULTI10

11: MULTI11

12: MULTI12

NEXT BARCODE

NEXT SER

1: CLK1

2: CLK2

3: CLK3

4: CLK4

5: CLK5

6: CLK6

7: CLK7

8: CLK8

TP Clock

1: TP-CLK1

2: TP-CLK2

3: TP-CLK3

ON/OFF

ON OFF

OK Cancel

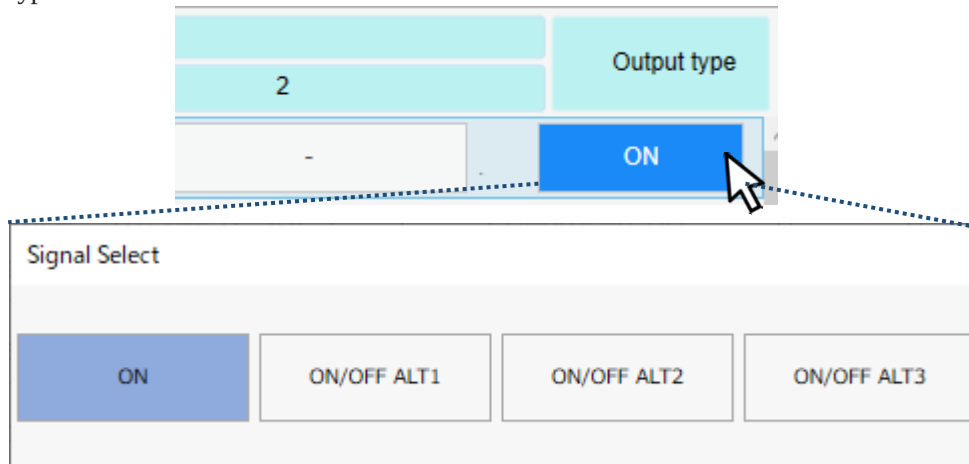
- **D-TIME**
Set the duration for which the OUT remains on. The setting range is from 0.1 to 6000.0 seconds.
- **T1/T2** → Page 65
Specify the duration for which the OUT remains on using either of the hardware timers on the controller.
- **Multiple Selection (MULTIs 1 to 64)** → Page 45
Multiple selections available as a Function
- **Next Function**
 - **Next Barcode**
This can be selected only when a barcode is set as an ON condition.
The OUT turns on when the next barcode is scanned.
 - **Next Serial**
This can be selected only when a serial is set as an ON condition.
The OUT turns on when the next serial communication is performed.
- **Clock (CLKs 1 to 64)** → Page 66
Clocks available as a Function
- **TP Clock (TP-CLKs 1 to 64)**
Clocks you set on an SiO-X touch panel (SUC-1021).

5. Set the output type.

The output type determines whether the OUT **lights up or flashes** when the condition(s) are met.

OUT	ON Condition						OFF Condition						Output type
	1	2		Status			1	2					
OUT1	IN1 ON	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	-	ON	

Click the button under [OUTPUT TYPE] to display a window where you can select an output type.



- ON
The OUT lights up when the condition(s) are met.
- ON/OFF Cycle 1, ON/OFF Cycle 2, ON/OFF Cycle 3
The OUT flashes when the condition(s) are met.
Three options are available, and you can set the ON and OFF times on the [Functions] tab (see page 42).

Working with the Program Window

◆ Cut, Copy, Paste, and Reset

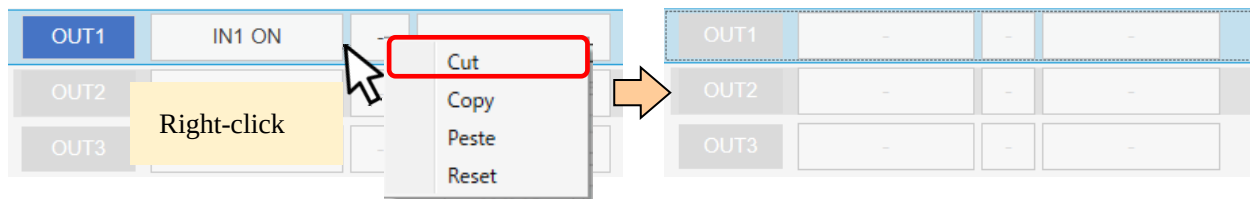
Right-click in the program window, and you can select [Cut], [Copy], [Paste], or [Reset].

These commands can be used for both OUTs and FLGs.

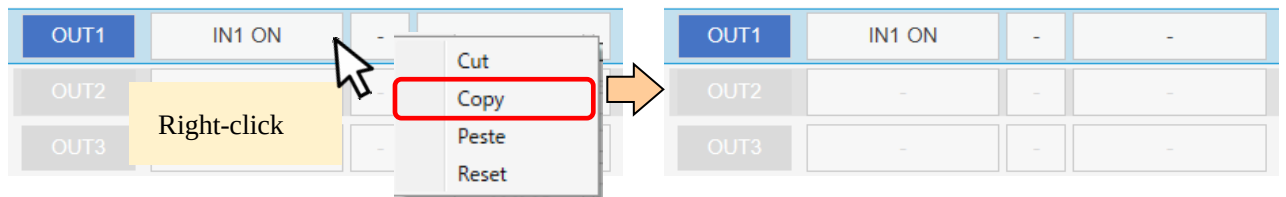
Shortcuts are available for some commands.

- Cut: Ctrl + X
- Copy: Ctrl + C
- Paste: Ctrl + V
- Reset: Ctrl + R

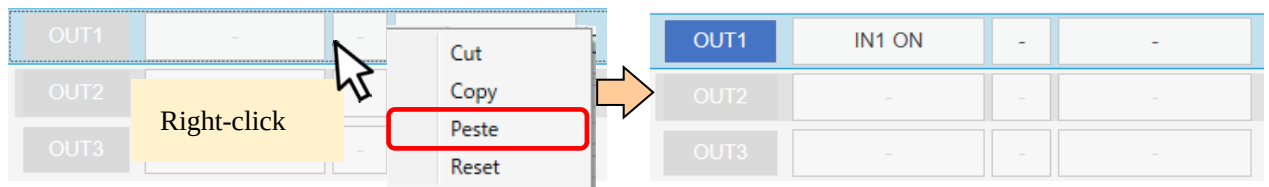
• Cut



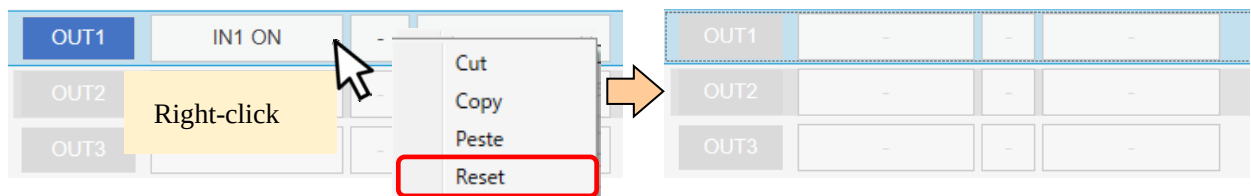
• Copy



• Paste



• Reset



◆ Inserting an FLG

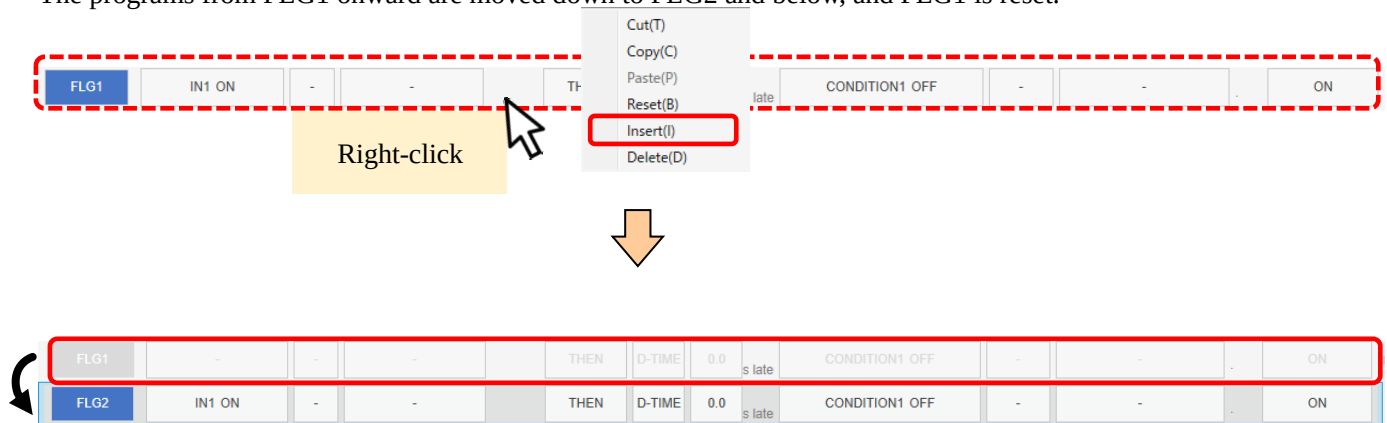
Right-clicking on an FLG and selecting [Insert FLG (No.)] resets the FLG and moves down the existing programs.

You can also use the shortcut **Ctrl + Insert** to insert an FLG.

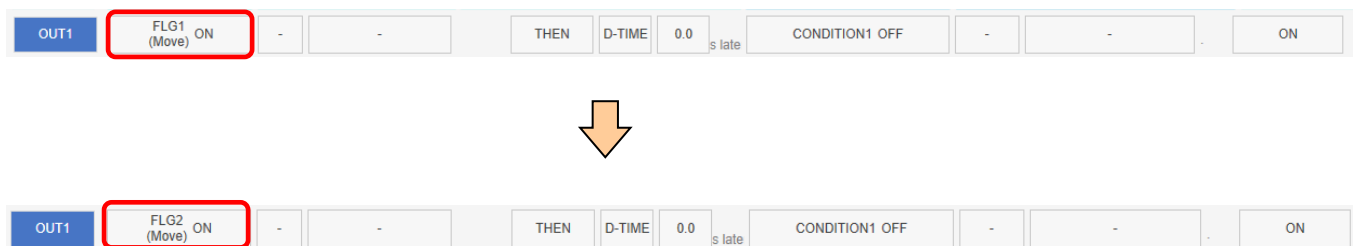
Example: When an FLG is inserted into FLG1

Programs

The programs from FLG1 onward are moved down to FLG2 and below, and FLG1 is reset.

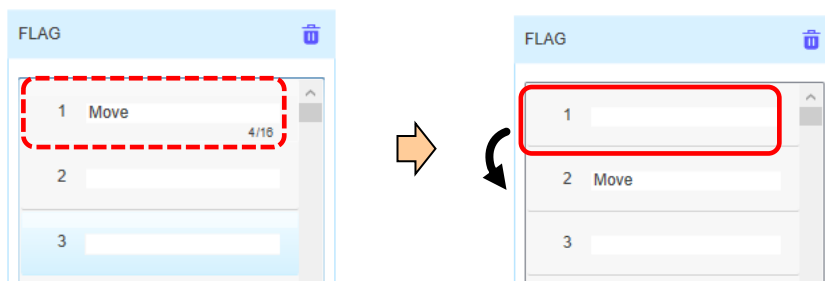


If FLGs with numbers larger than the number of the inserted FLG are used in other programs, those numbers are incremented by 1.



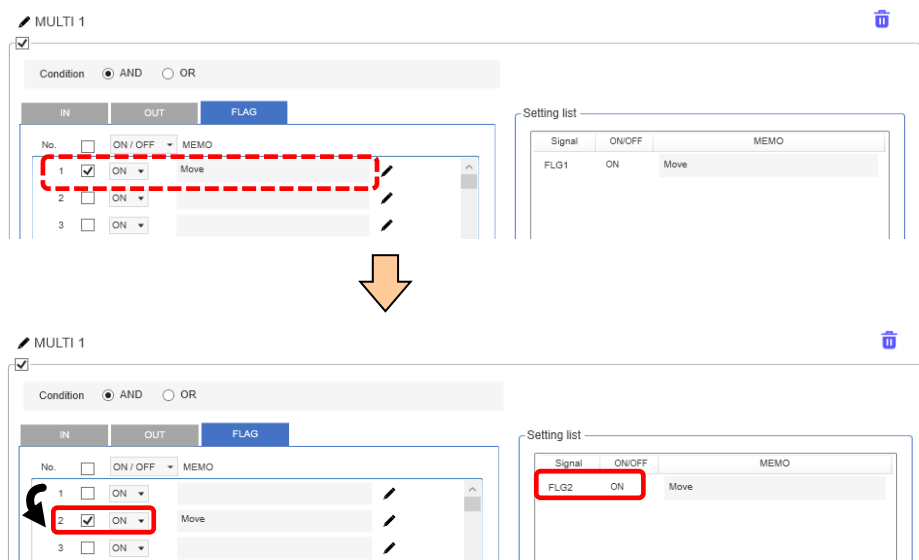
Notes

Notes for FLGs with numbers equal to and greater than the number of the inserted FLG are moved down.



Functions – Timer, Counter, Multiple Selection, Free Input, Serial, and Barcode

FLGs with numbers equal to or greater than the number of the inserted FLG are moved down.



Note: You cannot insert FLGs in the following cases:

1. If FLG256 is enabled and programmed
2. If FLG256 is disabled but programmed
3. If FLG256 is enabled and not programmed
4. If FLG256 contains a note
5. If FLG256 is used in a program
6. If FLG256 is used in a multiple selection

◆ Deleting an FLG

Right-clicking on an FLG and selecting [Delete FLG (No.)] deletes the FLG and moves up its subsequent programs. You can also use the shortcut Ctrl + Delete to delete an FLG.

Example: When FLG3 is deleted

Programs

The program for FLG3 is deleted, and FLG4 and its subsequent programs are moved up.

OUT	ON Condition							OFF Condition				Output type
	1	2	Status		1	2						
FLG1	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG2	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG3	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG4 (Move4)	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG5 (Move5)	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG6 (Move6)	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG7 (Move7)	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	



OUT 	ON Condition							OFF Condition				Output type
	1	2	Status			1	2					
FLG1	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG2	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG3 (Move4)	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG4 (Move5)	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG5 (Move6)	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	
FLG6 (Move7)	-	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	

If FLGs with numbers larger than the number of the deleted FLG are used in other programs, those numbers are decremented by 1.

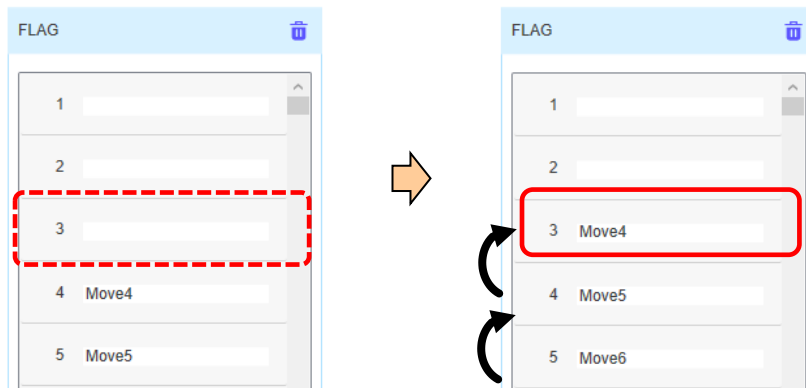
OUT 	ON Condition							OFF Condition				Output type
	1	2	Status				1	2				
OUT1	FLG5 (Move5) ON	-	-	THEN	D-TIME	0.0	s late	CONDITION1 OFF	-	-	ON	



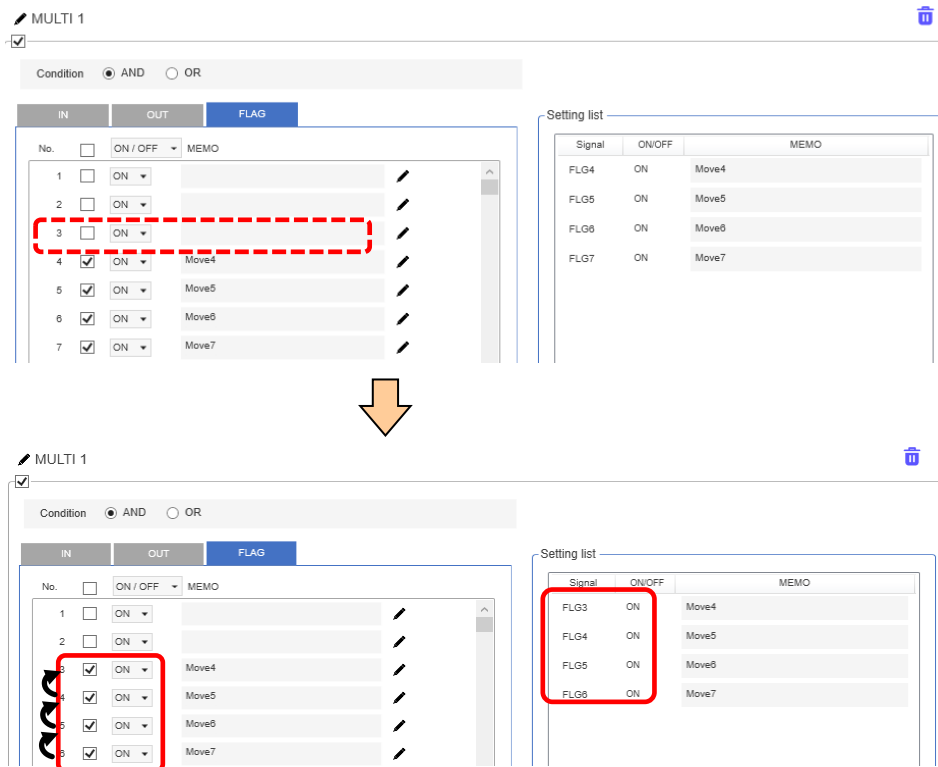
OUT 	ON Condition							OFF Condition				Output type
	1	2	Status			1	2					
OUT1	FLG4 (Move5) ON	-	-	THEN	D-TIME	0.0 s late	CONDITION1 OFF	-	-	-	ON	

Notes

Notes for FLGs with numbers larger than the number of the deleted FLG are moved up.



Functions – Timer, Counter, Multiple Selection, Free Input, Serial, and Barcode
 FLGs with numbers larger than the number of the deleted FLG are moved up.

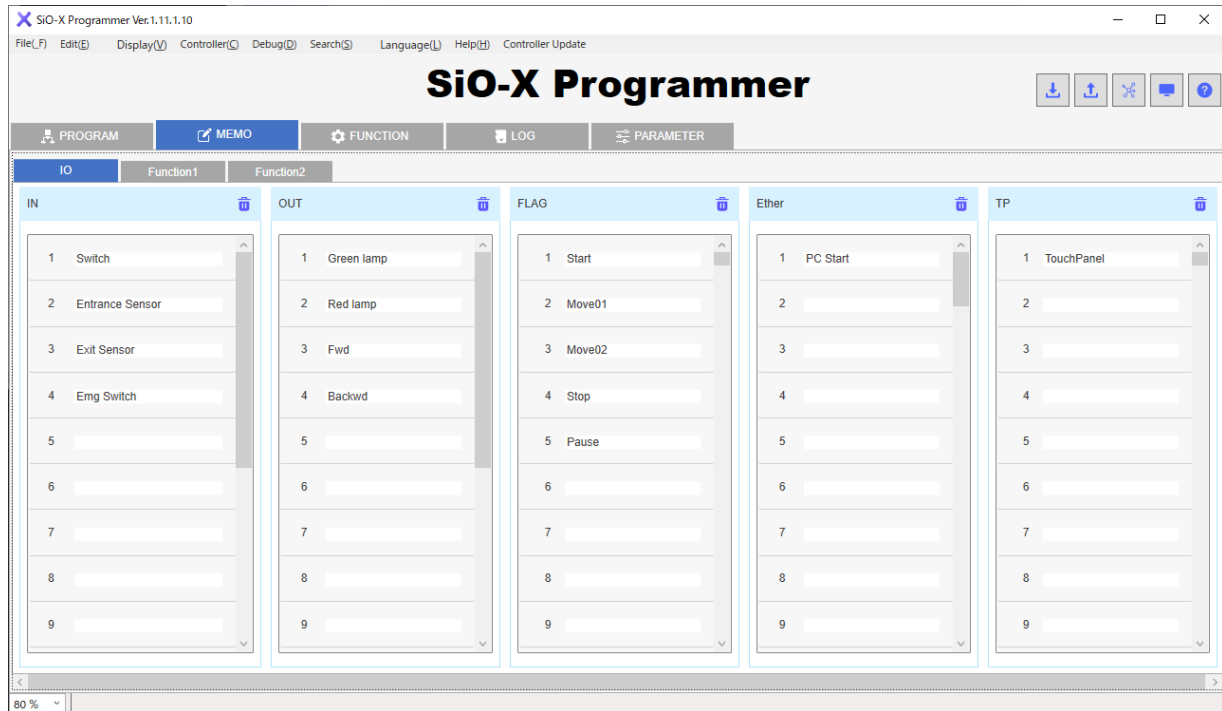


Note: You cannot delete the following FLGs:

1. FLGs that are enabled and programmed
2. FLGs that are disabled but programmed
3. FLGs that are enabled and not programmed
4. FLGs that contain notes
5. FLGs that are used in programs
6. FLGs that are used in multiple selections

Editing Notes

You can add comments to signals and Functions used in programs.

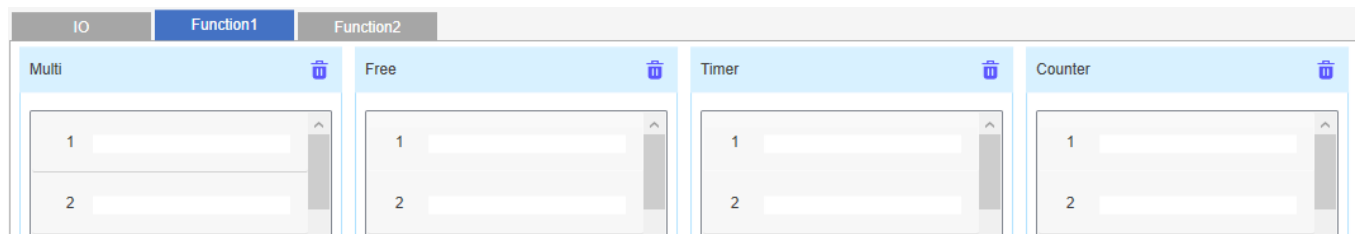


The signals and functions are organized into the following tabs:

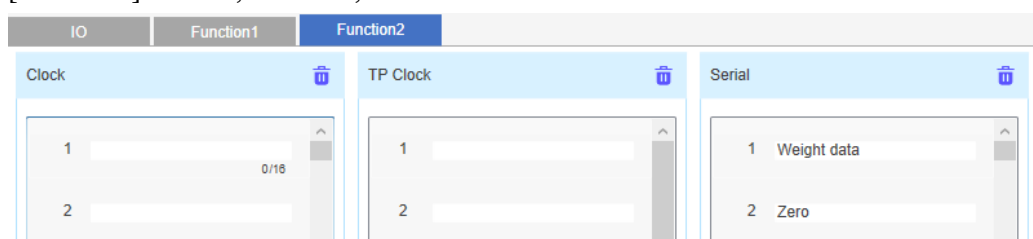
[IO] – IN, OUT, FLG, Ether, and TP



[Function1] – Multiple Selection, Free Input, Timer, and Counter



[Function2] – Clock, TP Clock, and Serial



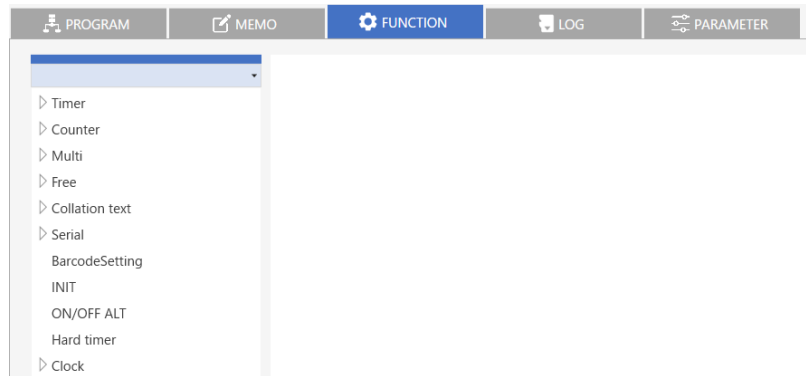
Editing Functions

On the [Functions] tab, you can set special functions to be used in the program.

The Functions provide capabilities such as communicating with external devices and creating complex programs.

List of Functions:

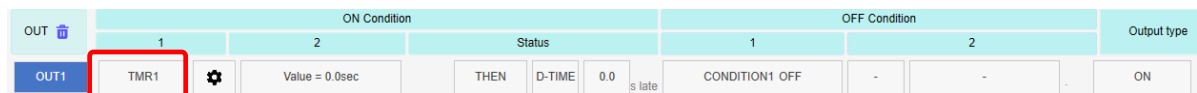
1. Timers
2. Counters
3. Multiple Selections
4. Free Inputs
5. Collation text
6. Serials
7. Barcodes
8. INIT
9. ON/OFF Cycles
10. Hardware Timers
11. Clocks



◆ Basic Steps for Using a Function

- ① Select a Function in the program.

Example: Select a timer.



- ② Click the gear icon and configure the Function.

Example: Set the count condition for the timer.



- ③ Set a program condition.

Example: Set the number of seconds after which the ON condition is met.



1. Timers (TMRs) 1 to 64

A timer counts time.

It counts up or down as long as the condition is met.

Function Settings

- (1) Count-Up and Count-Down
Select either [Count-Up] or [Count-Down].
- (2) Timer Unit
Select a unit. See “**Program Settings**” below.
- (3) Count-Up/Down Condition
When this condition is met, the timer starts counting up or down.
- (4) Reset Condition
When this condition is met, the timer value is reset.

Program Settings

When the specified timer (TMR) reaches a specified value, the ON condition is satisfied.

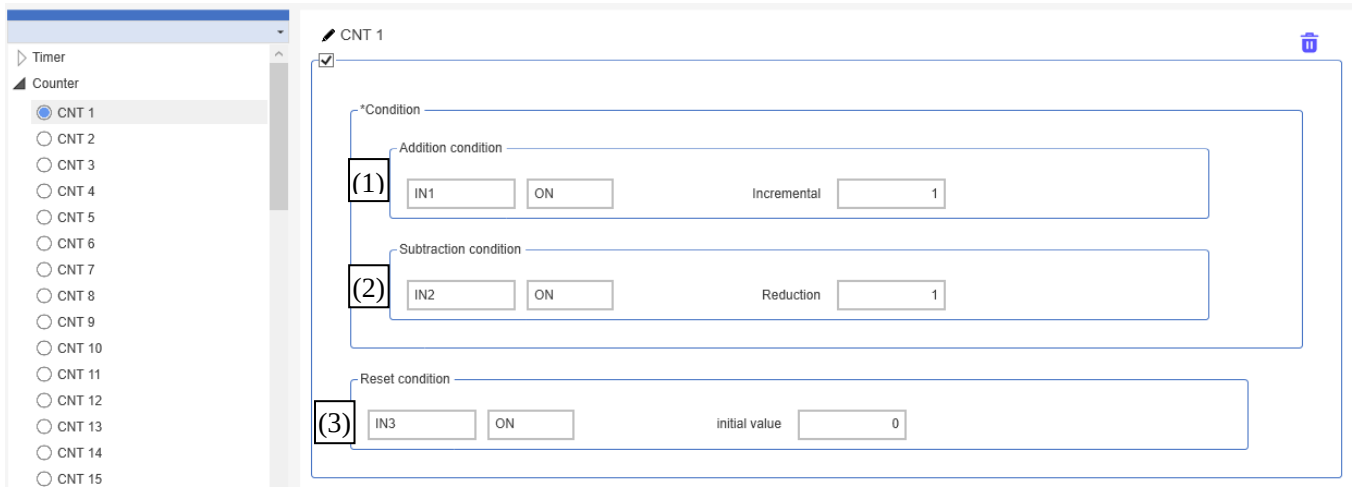
Setting range: 0.0 to 9999.9 seconds, 0.0 to 9999.9 minutes, or 0.0 to 9999.9 hours

Note: You can specify the unit in (2) above.

2. Counters (CNTs) 1 to 64

A counter counts the number of occurrences.

It increments or decrements when the condition is met.



Function Settings

(1) Addition Condition

When this condition is met, the counter increments by the number specified in [Increment].

The setting range for [Increment] is from 1 to 99.

(2) Subtraction Condition

When this condition is met, the counter decrements by the number specified in [Decrement].

The setting range for [Decrement] is from 1 to 99.

Note: You need to set either condition (1) or (2).

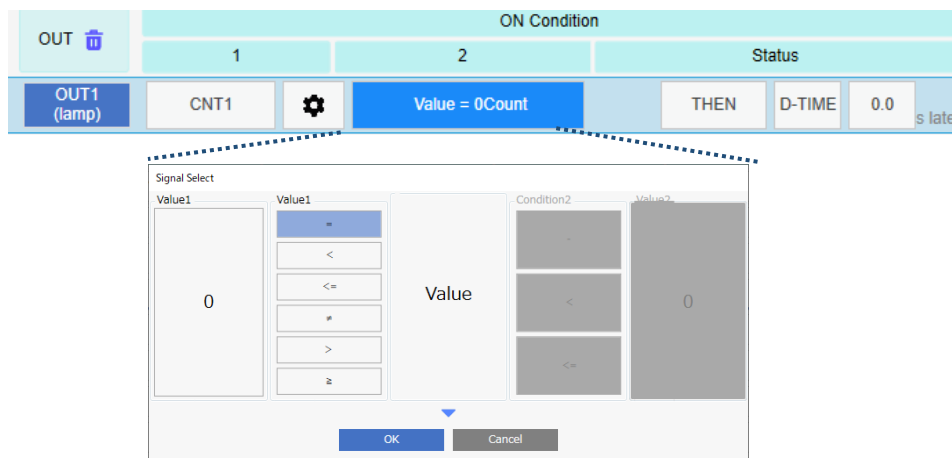
(3) Reset Condition

When this condition is met, the counter value is reset. The setting range is from 0 to 99999.

Program Settings

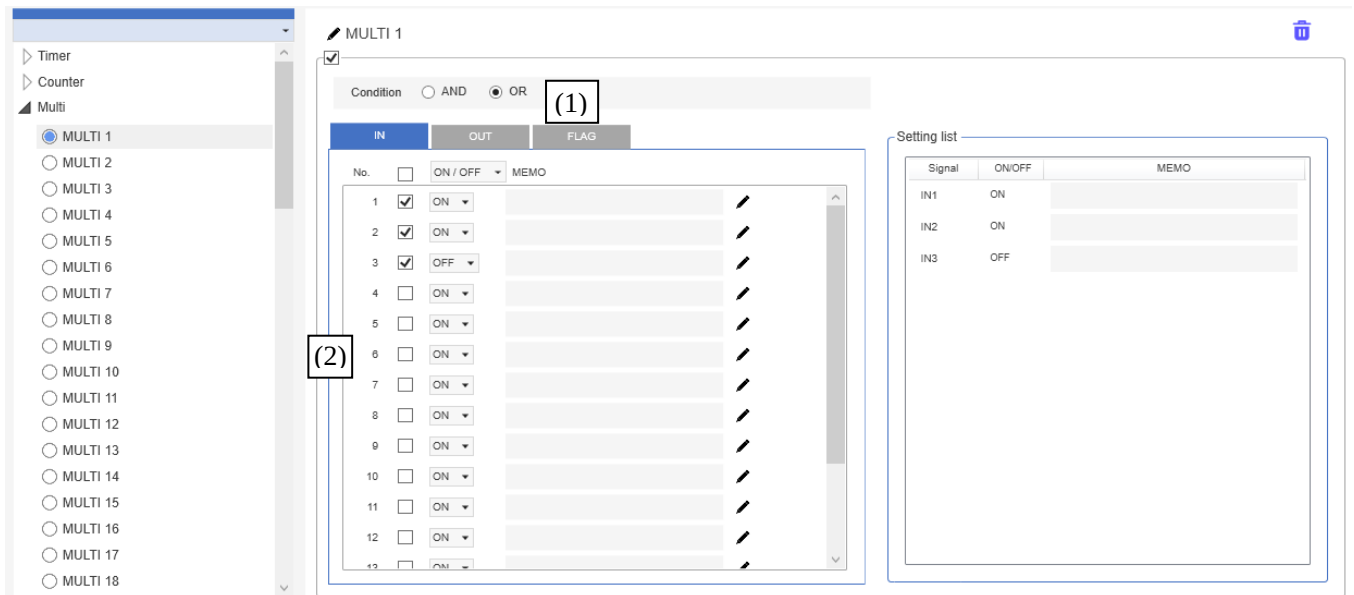
When the specified counter (CNT) reaches a specified value, the ON condition is satisfied.

Setting range: 0 to 99999



3. Multiple Selections (MULTIs) 1 to 64

A multiple selection combines INs, OUTs, FLGs, and ON/OFF into a single condition.



Function Settings

(1) Condition

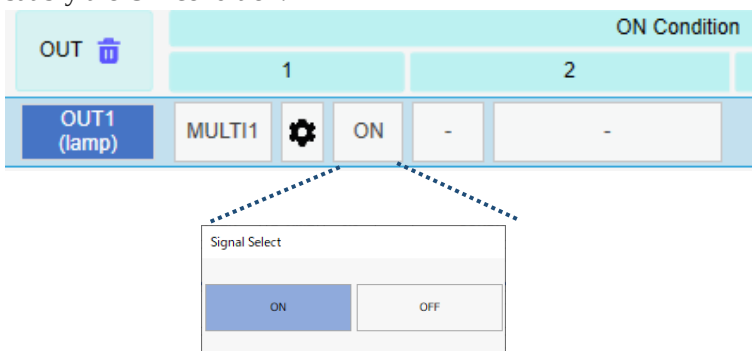
Select [AND] or [OR].

(2) I/O selections

Select inputs and outputs from INs 1 to 16, OUTs 1 to 16, and FLGs 1 to 256, and choose ON or OFF for each input and output.

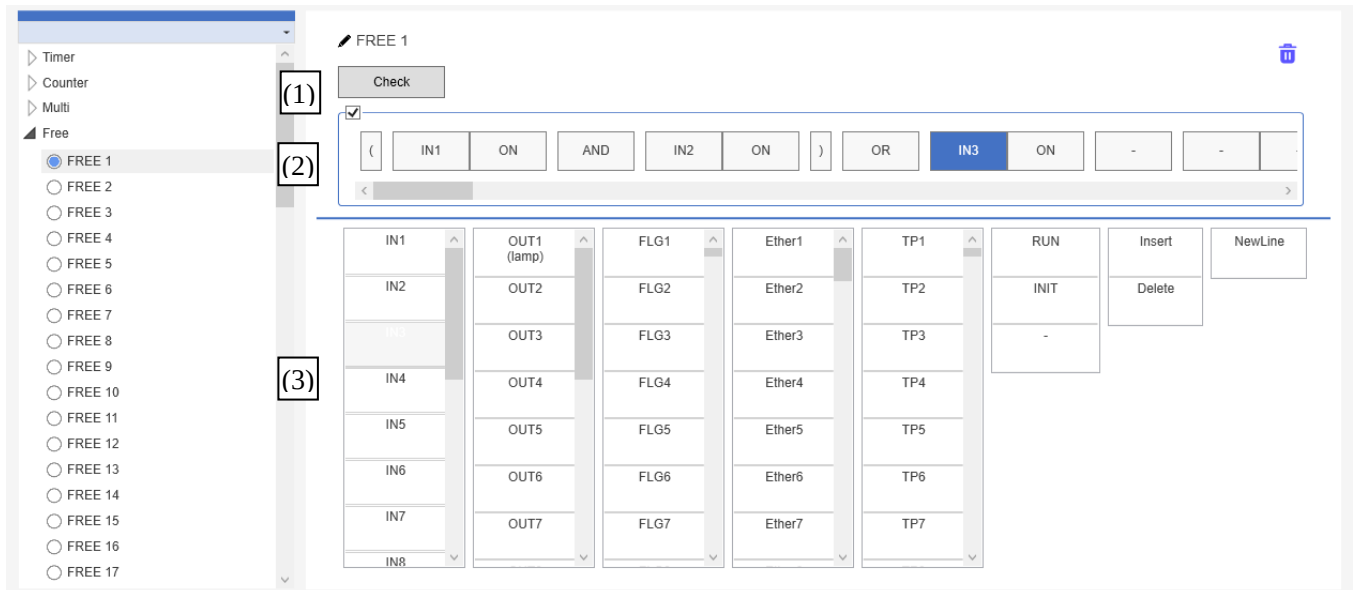
Program Settings

Select ON or OFF to specify whether the conditions for the specified multiple selection (MULTI) should be met to satisfy the ON condition.



4. Free Inputs (FREEs) 1 to 64

A free input combines INs, OUTs, FLGs, ON/OFF, and AND/OR into a single condition.



Function Settings

(1) Check Button

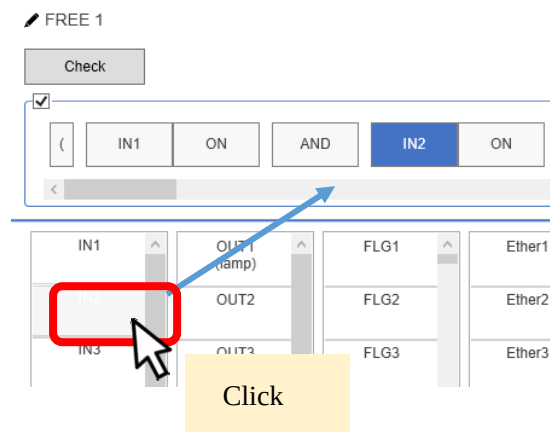
This button allows you to check the current settings for errors.

(2) Free input program

This area shows the current settings. Click and specify settings in (3).

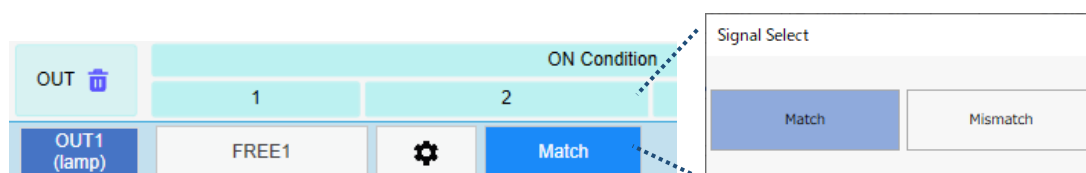
(3) Selection pane

Click the desired option to set it as a condition in (2).



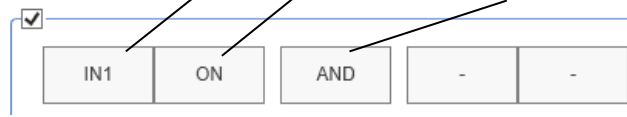
Program Settings

Select [Match] or [Mismatch] to specify whether the conditions for the specified free input (FREE) should be met to satisfy the ON condition.



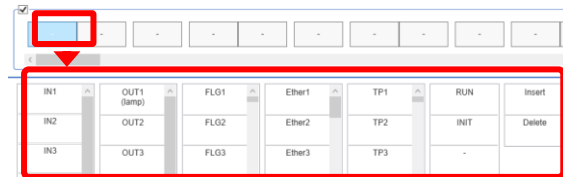
Free Input – Condition Settings

The settings consist of repeated sequences of “I/O”, “ON/OFF”, and “AND/OR”.

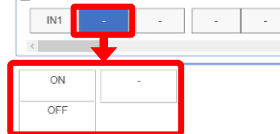


The selection pane changes depending on which button () is selected.

• I/O



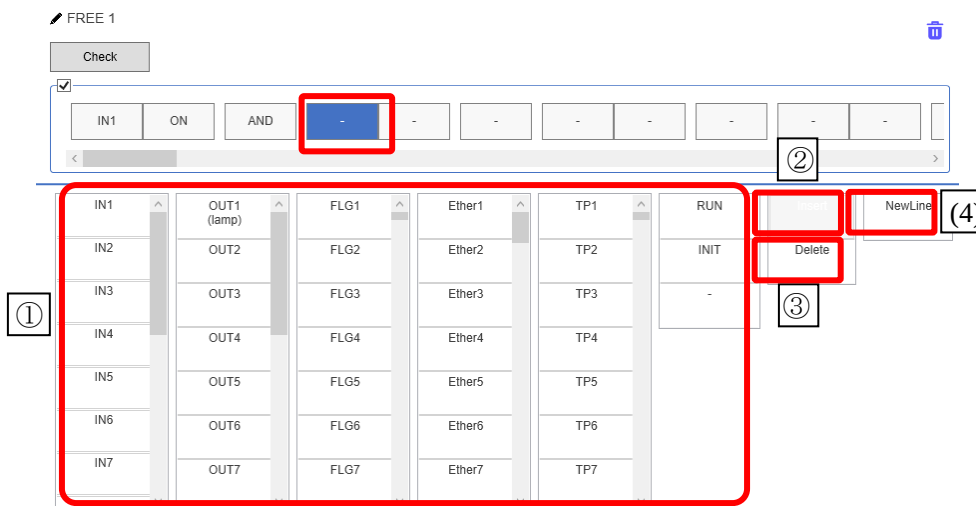
• ON/OFF



• AND/OR



When an I/O button is selected:



① IN, OUT, FLG, Ether, TP, RUN, INIT, -
Set an I/O as a condition.

② Insert

Click this button to insert a set of “Blank Condition”, “ON/OFF”, and “AND/OR” buttons at the selected position.



③ Delete

Click this button to delete the selected “I/O” button along with its subsequent "ON/OFF" and "AND/OR" buttons.



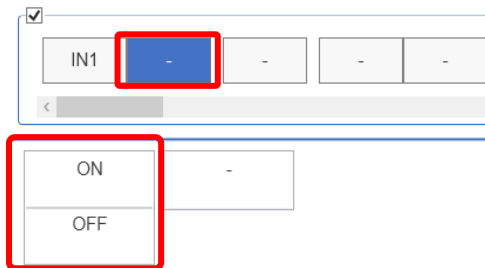
④ Line Break

You can select this button only when an I/O button other than the first one in a row is selected. It moves the selected I/O button and its subsequent buttons to a new line.



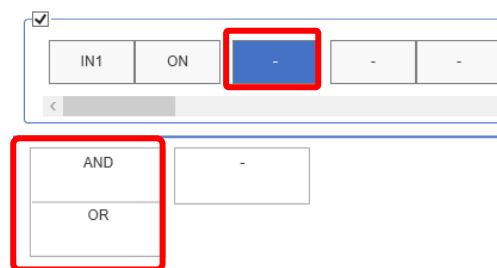
When an ON/OFF button is selected:

Select [ON] or [OFF].



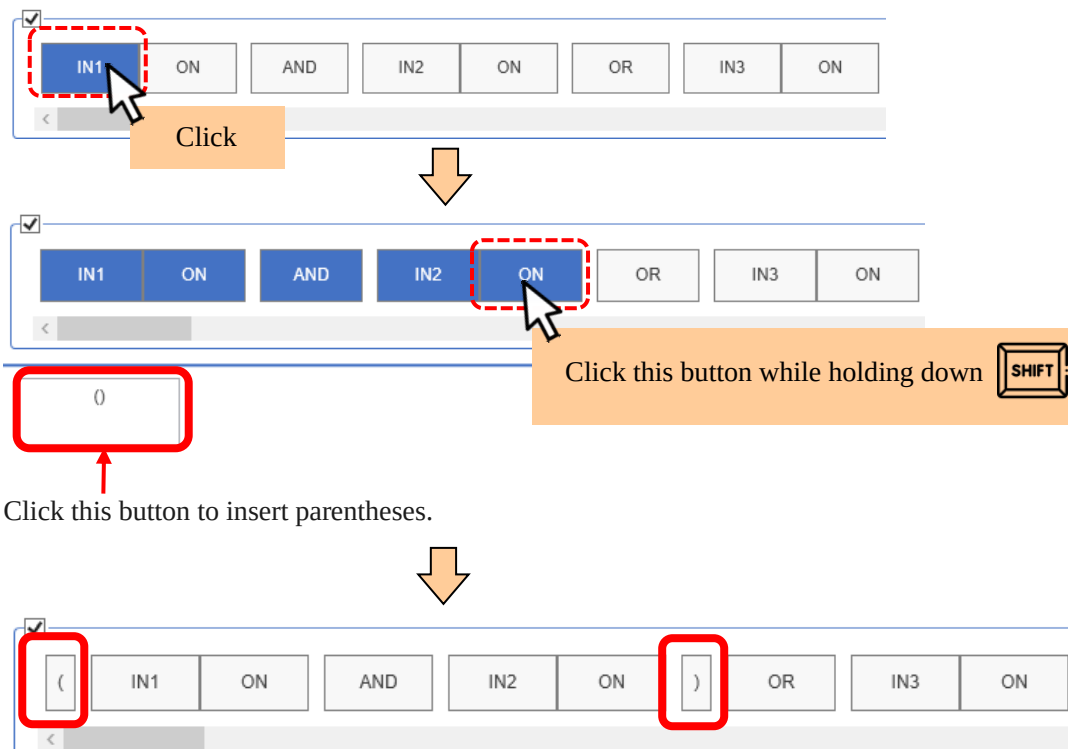
When an AND/OR button is selected:

Select [AND] or [OR].



Inserting Parentheses

When combining multiple AND/OR buttons, you need to set the priority of the conditions using parentheses. To do this, click the leftmost button (I/O) within the area you want to enclose, click the rightmost button (ON/OFF) within the area **while holding down the SHIFT key**, and then click the parentheses button that appears in the selection pane.



5. Collation text

This Function compares values read by a barcode reader or serial devices with specified text to check for matches.

	Text	Matching condition	Output
1		exact match	-
2		exact match	-
3		exact match	-
4		exact match	-
5		exact match	-

Barcode Matching Verification

state of match

Scan Value

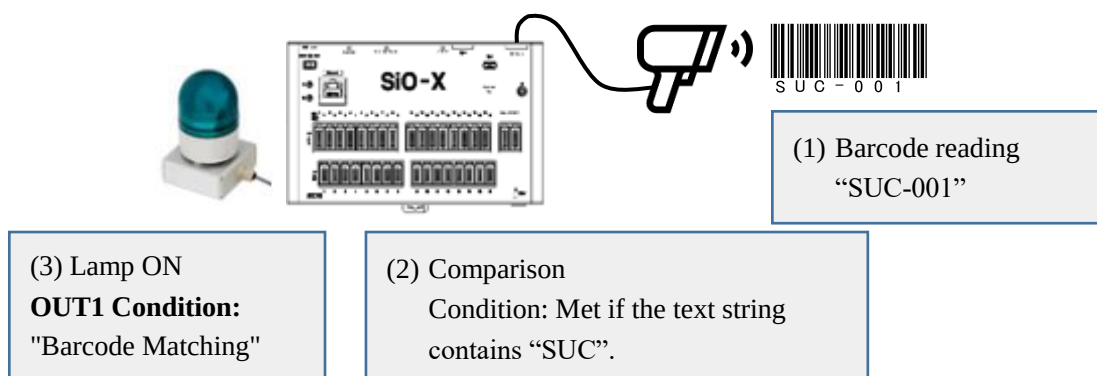
Clipped value

Match No.

Example: Lighting a Lamp When Specific Barcodes Have Been Read

Settings for reading strings via Serial (P.54) and Barcode (P.62) are configured.

The read strings are matched against the Text Matching parameters defined in this section, and the result can be applied as conditions within the program (P.27).



(1)Read characters via Serial (P.54) or Barcode (P.62).

(2)Match the read characters against the specified Text Matching parameters.

(3)If a match is found, the conditions defined in the program are fulfilled, triggering outputs such as OUT.

Two types of settings are available for barcodes:

- All List
Specify the text to compare with.
- Settings
Configure timeout and other barcode settings.

Setup Procedure

Follow these steps to configure settings:

1. Specify the text to compare with.

On the [All List] screen (see page 51), specify matching criteria for barcodes that have been read.

If you want to save log data (see page 67), specify where to save it.

	Text	Matching condition	Output
1	SUC-	exact match	-
2	XAC-	exact match	-
3	TP Barcode1	exact match	Collation text Log1
4	Collation text Master1	exact match	-

2. Configure other barcode settings.

On the [Settings] screen (see page 53), specify the required parameters, such as the scan setting, Collation text registration conditions, and initialization conditions.

No.	Condition	Barcode	Serial
1	Select signal	ON	☒ ☐
2	Select signal	ON	☒ ☐
3	Select signal	ON	☒ ☐
4	Select signal	ON	☒ ☐

3. Configure program settings.

Create a program (see page 23) using conditions such as barcode matching and initialization.

OUT	1	2
OUT1 (lamp)	Barcode...	Match

About Barcode Readers

Barcode readers are available as peripherals for PCs and other devices.

Only barcode readers with a USB keyboard interface can be used with the controller.

Some barcodes and barcode readers may have limitations on the characters that can be used.

Read the instruction manual for your barcode reader carefully before use.



Notes:

- Set the end-of-data character to Enter or Tab.
- If your barcode reader allows you to set the time interval between characters being sent, set a value smaller than the “maximum wait time between characters” (see page 62) for the SiO-X.
- Your barcode reader will not be recognized if you connect it to the controller while the I/O Monitor is running (see page 77).

All List

Specify the text to compare with. You can set up to 800 text strings.

(1) Text options

- Select this option if you want to enter text directly.
- Collation text masters → Page 53
Use this option to compare read data with a barcode registered as a Collation text.
- TP barcodes
Use this option to compare read data with a barcode set on an SiO-X touch panel (SUC-1021).
- Ether barcodes
Use this option to compare read data with a barcode set via Ethernet communication.

(2) Text

Each text string can contain up to 50 characters.

(1) If you chose to enter text directly in (1), specify the text that you want to be matched.

If you selected “Character Count Match”, “Character Position Match”, “Check for Alphanumeric Characters”, or “Suffix Check for Alphanumeric Characters” in (3), set the criteria that you want to be met.

Note: Text strings can only contain half-width alphanumeric characters (uppercase and lowercase) and the following symbols:

¥^~)(&%\$#`!`{*+?><_¥/.,,:;@[_ (half-width space)

(3) Matching Criteria

Select matching criteria.

- Exact Match
A match occurs when scanned text exactly matches the specified text.
- Partial Match
A match occurs when scanned text contains the specified text.
- Character Count Match
A match occurs when scanned text has the same number of characters as specified.

- **Character Position Match**
This option determines whether the position and number of characters in scanned text partially match.
- **Prefix Match**
A match occurs when scanned text starts with the specified character(s).
- **Suffix Match**
A match occurs when scanned text ends with the specified character(s).
- **Check for Alphanumeric Characters**
This option determines whether scanned text contains letters (uppercase or lowercase), numbers, or other characters at the specified position.
- **Suffix Check for Alphanumeric Characters**
This option determines whether the last few characters of scanned text are letters (uppercase or lowercase), numbers, or other characters.

(4) Output Destination

Scanned barcode values that match your specified text can be stored in areas called “Collation text logs.”

These stored values can be saved as a CSV file using the logging feature (see page 67).

You can select from Collation text logs 1 to 10.

Example of Collation text logging



The screenshot shows a software interface with a light blue header bar. Below the header, there is a row of three elements: a small box containing the number '1', a text input field containing 'SUC-', and a dropdown menu currently showing 'partly consistent'. To the right of these is another dropdown menu, which is highlighted with a red rectangular box and currently shows 'Collation text Log1'.

In the above example, if you scan a barcode that reads “SUC-100”, “SUC-100” will be stored in Collation text log 1.

(5) Test for Matches

Test your settings using a barcode reader connected to the PC.

Click the [Test for Matches] button to enter scan standby mode, and click the button again to exit the mode.

When you scan a barcode during scan standby mode, the scanned barcode is checked against the specified values, and if there is a match, the corresponding number is displayed.

Note: During the test, values entered from the keyboard will also be recognized as scanned values.

(6) CSV File Deployment/Creation

You can save or open CSV files to configure text matching conditions and output destinations.

- ****Text****: Enter the string as-is.
- ****Matching Condition****: Enter a number to specify the matching type:
 - `0`: Exact match
 - `1`: Partial match
 - `4`: Prefix match
 - `5`: Suffix match
- ****Output Destination****: Enter a number between 0 and 10 to select the initial value or match log 1–10.

If no input is provided, creating a CSV file will generate a template for future use.

Collation text Settings

Configure timeout and other barcode settings.

(1) Final data -> Collation text Master Conditions for setting

No.	Condition	Barcode	Serial
1	Select signal ON	☒	☐
2	Select signal ON	☒	☐
3	Select signal ON	☒	☐
4	Select signal ON	☒	☐
5	Select signal ON	☒	☐
6	Select signal ON	☒	☐
7	Select signal ON	☒	☐
8	Select signal ON	☒	☐
9	Select signal ON	☒	☐
10	Select signal ON	☒	☐

(2) Initialization condition

Collation text log Clear	Select signal ON
Collation text master clear	Select signal ON

(1) Most Recently Scanned Data → Collation text Master Registration Conditions

Specify conditions for registering Collation text masters.

When a specified condition is met, the most recently scanned data is registered as a collation text master.

Once registered, the collation text master can be used as text for comparison.

A Collation text allows you to set data for comparison without using a PC and change the data as many times as needed by meeting the condition.

You can set up to 10 Collation text masters.

(2) Initialization Conditions

When an initialization condition is met, the corresponding data is initialized.

- Collation text log initialization

Initializes all data stored in Collation text logs 1 to 10.

Once the data is initialized, the “Collation text log initialization” signal for the program turns on.

- Collation text initialization

Initializes all data registered as Collation text masters 1 to 10.

Once the data is initialized, the “Collation text initialization” signal for the program turns on.

6. Serials (SERs) 1 to 50

The controller can communicate with RS-232C devices (referred to as “serial devices” below) and obtain values.

SER 1 (Weight data)

☒ Request Timing ON.

Request command

Serial scan termination conditions

Response character count

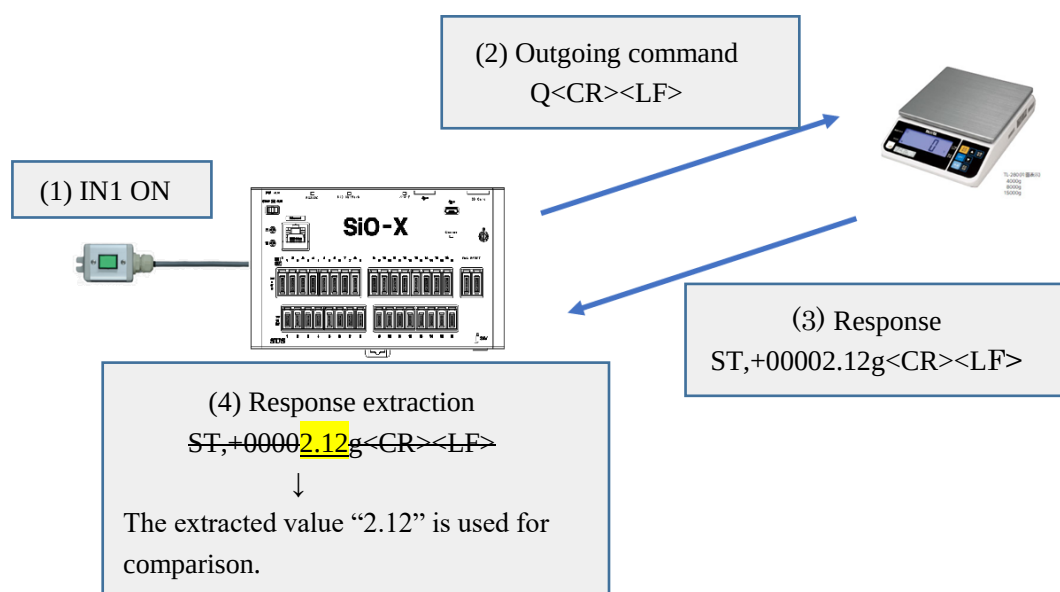
Clip from Response ☒ Enabled ☐ Disabled

Extraction Method

Initial Position

☒ 4 character of the Response.

Example: Reading a Value from an Electronic Balance

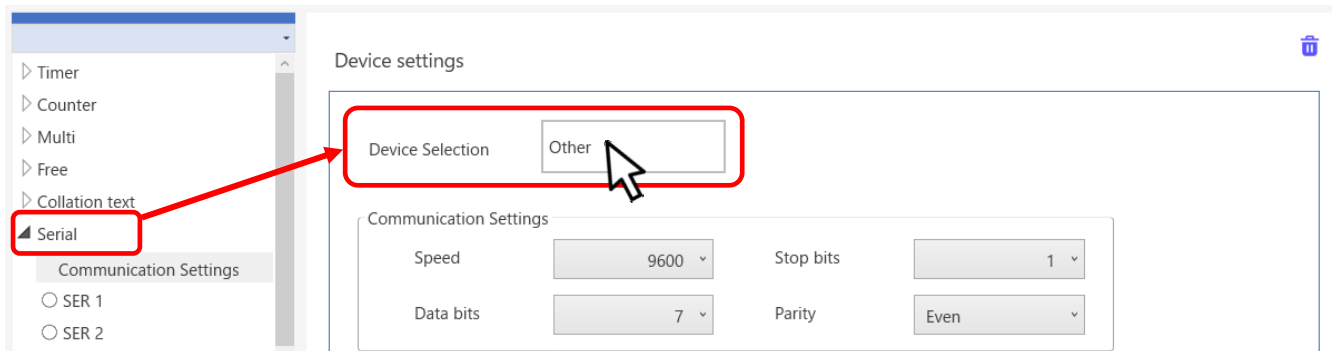


Serial settings are divided into the following two types.
See page 50 onward for steps to configure serial settings.

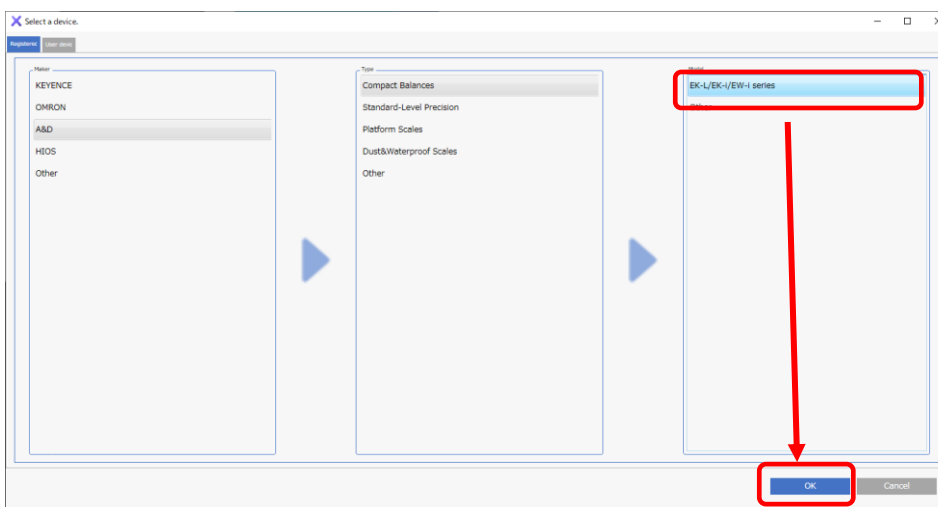
- Communication Settings → Page 55
Configure settings for communication with devices.
- SER 1 to SER 50 → Page 57
Specify the commands to send to serial devices and the conditions for sending them.

Steps for Configuring Serial Settings

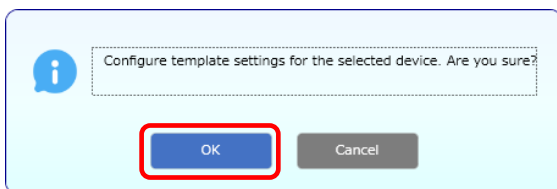
1. Click [Communication Settings] → [Device Selection].



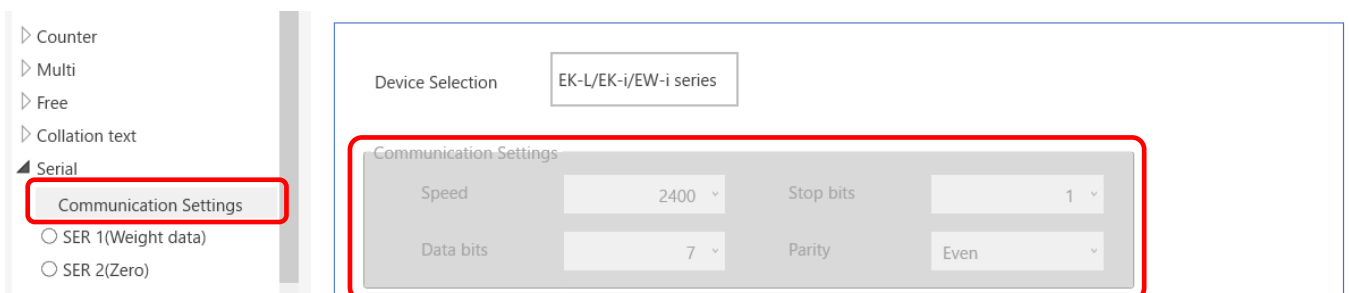
2. The [Device Selection] window appears. Select the device you want to communicate with, and then click [OK].



3. The following message appears. Click [OK].



4. Communication settings and outgoing command settings (for SER1 onward) are automatically entered.



5. Select the command you want to use.

6. Enable the command and configure the required settings, such as transmission timing. (See page 57.)

Note: To communicate with a serial device not registered in [Device Selection], set the device selection to “Other” and then configure settings for that device.

- Baud rate
- Stop bit length
- Data bit length
- Parity check
- Continuous Data Reception Mode → P.58
- Timeout Settings and End Code for Continuous Mode
- Timeout period
- Error identifier

Serial (Outgoing Command) Settings

Note: If you select a device in [Device Selection], all settings except [Request Timing] will be automatically configured.

The screenshot shows the 'SER 1 (Weight data)' configuration window. On the left is a tree view with categories: Timer, Counter, Multi, Free, Collation text, and Serial. Under 'Serial', 'Communication Settings' is expanded, showing a list of SERs from SER 1 to SER 24. SER 1 (Weight data) is selected. The main area contains the following settings:

- (1) Request Timing: Select signal, ON.
- (2) Request command: Q<CR><LF>
- (3) Serial scan termination conditions: Response character count: 17
- (4) Clip from Response: ☒ Enabled ☐ Disabled
- (5) Extraction Method: Initial Position: ☒ 4 character of the Response.
- (6) Final Position: ☒ Number of characters read: 9
- (7) Decimal character->Decir: [Dropdown menu]
- (8) Clear the last received data: Select signal, ON
- (9) Test start: [Button]

(1) Request Timing

When the specified input or output turns on, the command is sent to the serial device.

Note: In the following situations, the command for the SER with the smallest number is prioritized and sent, while other commands are not sent:

- When multiple SERs have the same transmission timing condition
- When different transmission timing conditions for different SERs are met simultaneously

(2) Request Command → Page 59

This is the command to be sent. It can contain up to 50 characters.

Set a termination code for each command.

(3) Serial Reception Termination Condition - Response Character Count

This specifies the number of characters expected in responses from the serial device.

An error occurs if the number of returned characters differs.

(4) Clip from Response

Specify whether to extract response characters.

Select [Enable] to obtain values from the serial device.

Select [Disable] if you only want to send commands, such as a reset command, to the serial device.

(5) Initial Position

Specify the starting position for extracting response characters using one of the following methods:

1. ****By Character Position****: Set the position, counting the first character as position 1.
2. ****By Header****: Identify the position based on the detected header.

If the starting condition is not met, an extraction failure signal will be output.

(6) Final Position

Specify the ending position for extracting response characters using one of the following methods:

1. ****By Character Count****: Define the position by the number of characters.
2. ****By Footer****: Use a footer to determine the position.

If the footer is not received, a maximum of 50 characters will be extracted starting from the specified start position.

(7) Conversion Settings for Responses from Serial Devices

If the response contains hexadecimal characters, conversion to decimal is required (signed/unsigned to decimal).

(8) Clear the last received data

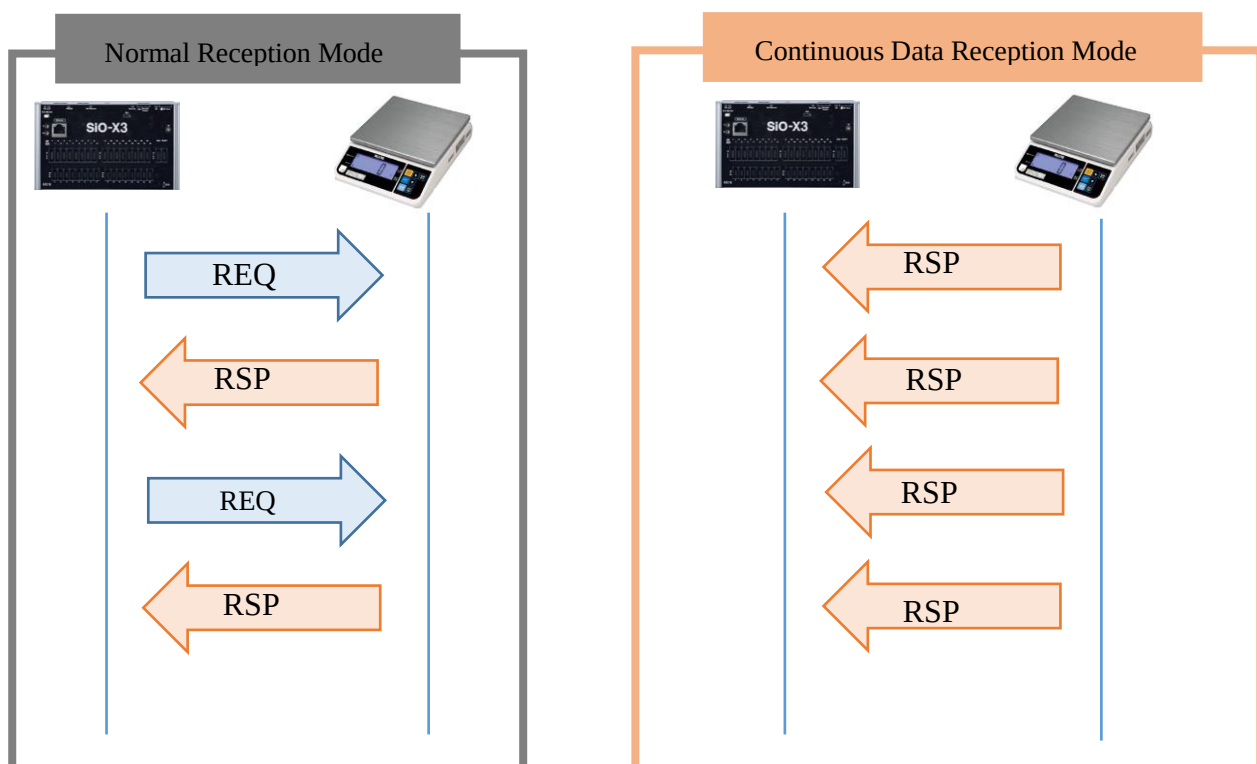
Set a signal to clear the last received data from each serial (SER) device.

(9) Test Execution

Perform a transmission test with serial devices connected to the controller.

- A command will be sent, and the returned response characters will be displayed.
- If extraction is enabled, both the extracted value and the converted value will be shown.

■ Continuous Data Reception Mode



Outgoing Command Setup Window

Specify the outgoing command. Set a termination code for each command.

(1) Command

This is the command being edited.

Characters enclosed in < >, such as <CR>, are control characters and count as a single character.

They cannot be copied or pasted.

(2) Arrow buttons

These buttons move the cursor in the command field.

(3) Delete One Character

This button deletes the character to the left of the cursor.

(4) All clear

This button deletes the entire command being edited.

(5) Input buttons

Click these buttons to enter an outgoing command.

You can enter control characters, symbols, numbers, and letters (uppercase and lowercase).

Note: <NULL> cannot be specified.

Serial Errors

An error occurs if there is a communication problem, such as when the controller fails to obtain values correctly. When a serial error occurs, the LED above the RUN switch on the controller flashes red.

- Extraction error

Here's the English translation:

This is an error signal that occurs when the extraction cannot be performed as per the configuration.

When this error occurs, the LED will not blink, and the extracted string will be “ ” (0 characters).

This error occurs in the following situations:

- When a setting other than "String" is selected in Conversion Settings (→P.58) and there are characters in the extracted string that cannot be converted to a numeric value.

- If "From the N-th character" is set as the Start Condition (→P.57), the error occurs if the specified position exceeds the number of response characters (→P.57).

- If "From the N-th occurrence of ☐ (specific character)" is set as the Start Condition (→P.57), the error occurs if the specified character is not included in the response string.

Note: This failure signal does not occur if the extraction cannot complete according to the "End Position" (→P.57). Instead, 50 characters from the start position will be extracted..

- Serial timeout error

This error is triggered if no response is received from the serial device within a specified period after sending a command.

Additionally, an error will be generated if the response is received but contains fewer characters than the required response length (see Response Character Count, p.57).

The timeout period is determined by the "Timeout Setting" in Communication Device Settings (p.56).•

Device alarm

This alarm occurs if the controller receives an error identifier (see page 56).

Note: After sending a command, the controller must wait a specified amount of time before sending the next one.

You can set the wait time as described on page 70. If the condition for sending a command is met a second time during this wait period, the controller will ignore it.

Program Settings

The ON condition is satisfied when an extracted value (SER) meets the specified criteria.

① When the Value is Numeric

Setting range: -99999.99999 to +99999.99999

OUT

ON Condition

1 2

OUT1 SER1 2.00 <= Value < 5.00

By checking the appropriate option, the system can accommodate NOT conditions.

Signal Select

Value1 Condition1 Value Condition2 Value2

2.00 = < <= > >= Value < <= 5.00

☒ NOT

OK Cancel

② When the Value is a String

Setting range: 1 to 800 (for collation text).

OUT

ON Condition

1 2

OUT1 SER3 1 Match

Signal Select

Value1 Condition1 Value2

1 - 2

OK Cancel

7. BarcodeSettings

This Function compares values read by a barcode reader with specified text to check for matches.

Barcode scan timeout

Barcode Scan Termination Criteria

Maximum inter-character wait time ms (15 - 1000)

Exit Code ☒ Enabled ☐ Disable

Extraction Method

Initial Position

☒ 1 character of the Response.

☐ .

Final Position

☒ Number of characters read

☐ terminator character

Initialization condition

Final scan value clear

Configure timeout and other barcode settings.

(1) Maximum inter-characters wait time

This is the maximum wait time between characters scanned by a barcode reader.

When receiving text data from the barcode reader, the controller assumes that scanning has ended if the specified wait time has elapsed after it receives the last character. The setting range is from 15 to 1000 ms.

If scanned text is cut off, increase or otherwise adjust this value.

Note: If your barcode reader allows you to set the time interval between characters being sent, set an interval shorter than the maximum wait time between characters for the SiO-X.

(2) Initial Position

Specify the starting position for extracting response characters using one of the following methods:

1. By Character Position: Designate the position, counting the first character as position 1.
2. By Header: Specify the position based on the detected header.

If the starting conditions for extraction are not met, a failure signal will be output.

(3) Final Position

Specify the ending position for extracting response characters using one of the following methods:

1. **By Character Count:** Define the position based on the number of characters.
2. **By Footer:** Specify the position using a footer.

If the footer is not received, a maximum of 50 characters will be extracted starting from the specified start position

(4) Initialization Conditions

When an initialization condition is met, the corresponding data is initialized.

- Initialization of most recently scanned data

Initializes the most recently scanned data, causing any criteria met by the data to no longer be met.

Once the data is initialized, the “initialization of most recently scanned data” signal for the program turns on.

Program Settings

Setting range: 1 to 800

If [Match] is selected: The ON condition is satisfied when scanned data matches **any** of the barcode settings 1 to 5 (OR).

The screenshot shows the 'ON Condition' settings for 'OUT1 (lamp)'. The 'Barcode...' field is set to '1-5'. The 'Match' button is highlighted with a red box. Below this, a 'Signal Select' dialog box is shown with 'Value1' set to '1' and 'Value2' set to '5'. The 'Condition1' dropdown is set to 'Match'. The 'OK' button is highlighted.

If [Mismatch] is selected: The ON condition is satisfied when scanned data does **not** match **any** of the barcode settings 1 to 5.

The screenshot shows the 'ON Condition' settings for 'OUT1 (lamp)'. The 'Barcode...' field is set to '1-5'. The 'Mismatch' button is highlighted with a red box.

Note: After a barcode is scanned, the controller must wait a specified amount of time before the next scan.

You can set the wait time as described on page 70. If a barcode is scanned a second time during this wait period, the controller will ignore it.

7. INIT Setting

Set the RUN-INIT time.

When the RUN switch on the controller is turned on, the INIT turns on and remains on for the specified period of time.

Program Settings

If [INIT ON] is selected: The ON condition is satisfied for a specified number of seconds after the RUN switch is turned on.

If [INIT OFF] is selected: The ON condition is satisfied when a specified number of seconds has elapsed after the RUN switch is turned on.

Setting range: 0.1 to 100 seconds

8. ON/OFF Cycle Settings

Set ON/OFF cycle times.

You can set up to three ON/OFF cycles and specify the ON and OFF durations for each.

Ensure that the total time (ON duration + OFF duration) is 100 seconds or less.

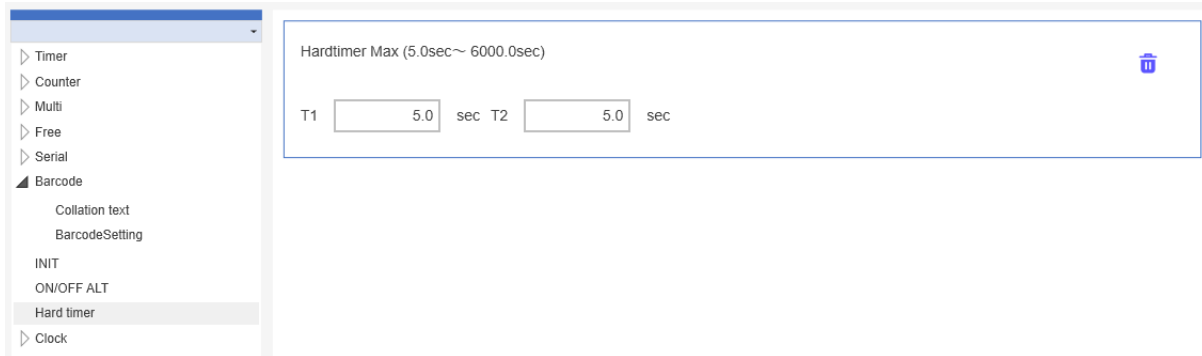
Program Settings

The OUT flashes at the ON/OFF intervals specified in the [ON/OFF cycle] fields.

Setting range: 0.1 to 100 seconds

9. Hardware Timer Settings

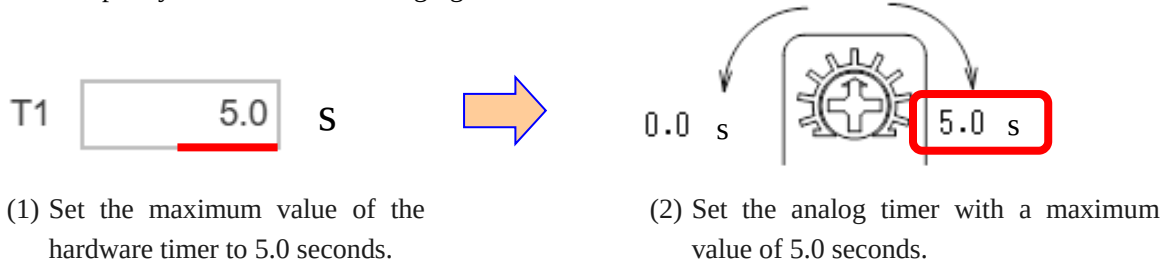
Set the maximum times for the hardware timers.



The SiO-X controller has two analog timers, “T1” and “T2”, which can be used in programs.

Specify the maximum values, and set the analog timers relative to these values.

You can specify maximum values ranging from 5.0 to 6,000.0 seconds, in 0.1-second increments.



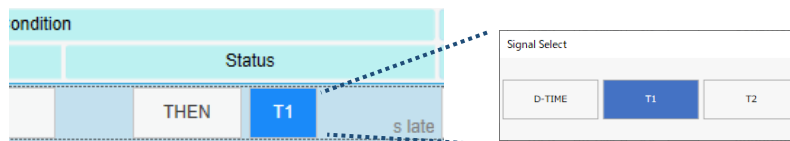
*** Timer settings are accurate to within $\pm 0.1\%$ of the actual time.**

Program Settings

Setting range: 5.0 to 6000.0 seconds

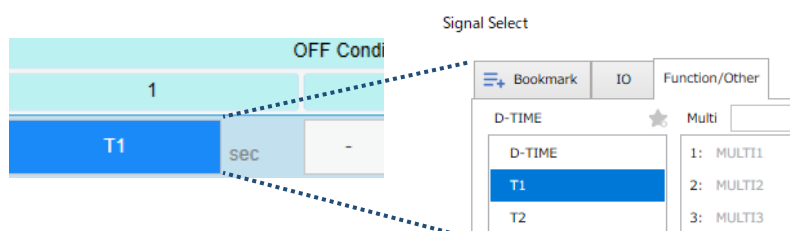
- Under [Status]

The OUT turns on when the number of seconds specified using the T1 or T2 analog timer, relative to the maximum time set for [T1] or [T2], has elapsed.



- Under [OFF CONDITIONS]

The OUT turns on and remains on until the number of seconds specified using the T1 or T2 analog timer, relative to the maximum time set for [T1] or [T2], has elapsed.



10. Clocks (CLKs 1 to 256)

The OUT turns on when a clock configured on the controller reaches a specified date and time.

Set the date and time as a condition. A match lasts for only one minute when the condition is met.

Function Settings

(1) Options for specifying dates

- Specify a date
- Specify a day of the week
- Specify a day of the Xth week
- Every day

(2) Time

Specify the hour and minute. If you select the [Every hour] check box, specify only the minute.

(3) ON Time

Set the output time based on the duration configured in (2).

(4) Day of the Xth Week

(1) If you selected [Specify a day of the Xth week] in (1), specify the settings here.

(5) Day of the Week

(1) If you selected [Specify a day of the week] in (1), specify the setting here.

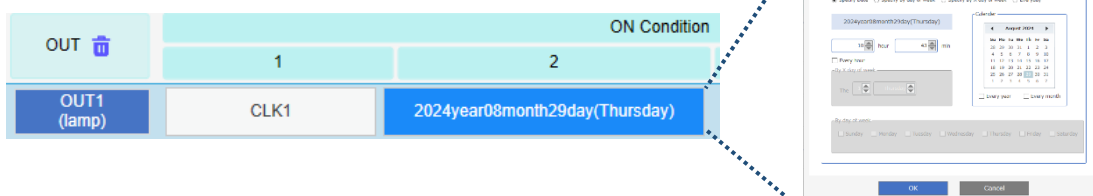
(6) Calendar

If you selected [Specify a date] in (1), you can click the desired date on the calendar to specify it directly.

If you want the OUT to turn on on the specified date every month or every year, select the [Every month] or [Every year] check box.

Program Example

The ON condition is satisfied for one minute when the specified date and time is reached.



Configuring Log Output

The Log Output feature allows you to save CSV files to an SD card inserted in the SiO-X controller. You can save the ON/OFF status of each I/O, values for the Functions, and other data.

Note: An SD card is not incorporated in the controller and must be purchased separately.

The screenshot shows the 'LOG' tab in the SiO-X Programmer. The interface includes a top menu bar with 'PROGRAM', 'MEMO', 'FUNCTION', 'LOG' (selected), and 'PARAMETER'. Below the menu, there are numbered steps (1-5) on the left side of the settings area.

1. **Enabled** ☒ **Disable** ☐

2. **Logout Condition**
 IN1 ON - - then log output with the [3.Content to be saved].

3. **Content to be saved**

IN	OUT	FLAG	Multi	Free	TP
Ether	Timer	Counter	Serial	Barcode	

Setting list
 Stored Capacity: about 100 Bytes / count

Name	Memo
FLG1	
FLG2	
FLG3	
Ether1	
Ether2	
TMR1	

4. **Characters per line** 1000 (30 ~ 3000)

5. **Write Controller**

On the [LOG] tab, you can use the following tabs:

[SD Card Read]

This tab displays the CSV data stored on an SD card inserted in the controller.

[Settings]

This tab allows you to configure logging settings.

Read from SD Card

This tab allows you to view the data stored on a microSD card inserted in the SiO controller.

The RUN switch on the controller must be set to STOP during communication with the SD card.

	Time	Status/Data
1	2024/08/29 10:17:23	RUN
2	2024/08/29 10:17:56	STOP
3	2024/08/29 10:18:06	RUN
4	2024/08/29 10:18:17	Barcode=252-0328
5	2024/08/29 10:18:22	Barcode=961-8061
6	2024/08/29 10:18:26	Barcode=252-0328
7	2024/08/29 10:18:30	Barcode=961-8061
8	2024/08/29 10:18:32	Barcode=252-0328
9	2024/08/29 10:18:34	Barcode=961-8061
10	2024/08/29 10:18:36	Barcode=252-0328
11	2024/08/29 10:18:45	STOP
12	2024/08/29 10:18:45	RUN
13	2024/08/29 11:06:02	STOP

(1) Read

Reads data from the card.

In the [No.] fields, you can specify the range of data to be read.

(2) Save as CSV File

Saves the read data as a CSV file on the PC.

(3) Reset View

Returns the display to its initial state.

(4) Delete Data on SD Card

Deletes the data on the SD card.

Note: Deleted data cannot be recovered.

(5) Free Space on SD Card

Indicates the remaining free space on the SD card.

(6) CSV Data Display

Lists the CSV data. The data cannot be edited.

Settings

Configure logging settings.

The screenshot shows the 'SD Card Recorder' settings interface. A red box highlights the 'Setting' button at the top. The interface includes a 'Logout Condition' section with a dropdown menu currently set to 'IN1 ON'. Below this is a 'Content to be saved' section with a grid of checkboxes for various data types: IN, OUT, FLAG, Multi, Free, TP, Ether, Timer, Counter, Serial, and Barcode. A list of input names (IN1 through IN9) is shown on the left, and a 'Setting list' on the right shows the selected items (FLG1, FLG2, FLG3, Ether1, Ether2, TMR1). At the bottom, there is a 'Characters per line' field set to 1000 and a 'Write Controller' button with an upward arrow icon.

(1) Enable/Disable

Enable or disable logging.

Note: If you select [Enable], an alarm will occur unless an SD card is inserted in the controller.

(2) Logging Conditions

Conditions for saving data to a CSV file. You can select from the following options: RUN, INIT, IN, OUT, FLG, TP, Ether, Cycle (1.0 to 6000.0 sec), and Signal Change.

(3) Items to Save

Types of data to be saved to a CSV file. The items you select will be added to the Settings List, updating the storage size.

- IN, OUT, FLG, TP, Ether, MULTI, FREE: ON/OFF
- TMR, CNT: Current values
- SER: Value extracted from the most recent response characters
- Barcode (last scan): Most recently scanned data
- Collation text log: Stored data

(4) Settings List

This list displays the items selected in (3). The [Storage Size] area shows the approximate size of data saved each time.

(5) Number of characters per line

The number of characters saved each time. Set the number to exceed the storage size shown in (4).

Note: If you change the number of characters, a new file will be created and used the next time data is logged. Existing files will remain on the SD card.

(6) Write to Controller

Writes only the logging settings on this screen to the controller.

Note: After saving log data, the controller must wait a specified amount of time before the next logging.

You can set the wait time as described on page 70. If the condition for saving log data is met a second time during this wait period, the controller will ignore it.

Editing Parameters

The [Parameters] tab allows you to set the controller's address and time.

The screenshot shows the 'PARAMETER' tab in the SiO-X Programmer. The interface is divided into two main sections: 'Ether setting' on the left and 'Control' on the right. Numbered callouts are placed over various fields:

- (1) Project name (Max 50): A text field containing 'NewPrj'.
- (2) IP address: A section with 'Auto' and 'Manual' radio buttons. Under 'Auto', there are fields for IP address (192.168.0.100), Subnetmask (255.255.255.0), and Defaultgateway (192.168.0.1).
- (3) Port No: A text field containing '40001' with a range '(0 ~ 65535)'.
- (4) MAC address: A text field with a format of '** - ** - ** - ** - ** - **'.
- (5) Controller name: A text field with a limit '(Max 20)'.
- (6) Timeout: A section with 'Enabled' and 'Disable' radio buttons, and a time selector set to '0 min 30 sec (1sec ~ 60min)'.
- (7) Control: A section with 'Current time' (2024/08/29 11:09) and 'Manual setting' (2024 year 01 month 01 day 00 hour 00 min). It includes a 'Write' button and a 'Controller Time' section with a 'Check' button and an empty text field.
- (8) Controller interval (0.0 s to 10 s): A section with 'Serial command transmission' (0.5 sec), 'Barcode reading' (0.5 sec), and 'SD log Save' (0.5 sec).

(1) Project Name

The name of the project to be saved to the controller.

(2) to (6) Ethernet Settings

Address settings for the controller. Specify these settings for Ethernet communication.

(2) Auto/Manual

Select [Auto] to automatically assign an IP address using DHCP, or select [Manual] to set a static IP address. If you select [Manual], set an IP address, subnet mask, and default gateway.

(3) Port No.

The port number of the controller.

(4) MAC address

The MAC address of the controller. It cannot be changed.

(5) Controller name

The name of the controller that can be displayed during Ethernet communication.

(6) Timeout Settings

The timeout period for Ethernet communication. See page 71 for more information.

(7) Time Setting

The controller's internal time used by the Clock Function (see page 66).

Clicking the [Update] button updates only the controller's internal time.

To check the current controller time, click [Check] in the [Controller's Internal Time] area.

(8) Time Intervals for Controller Actions

Set the wait time between actions.

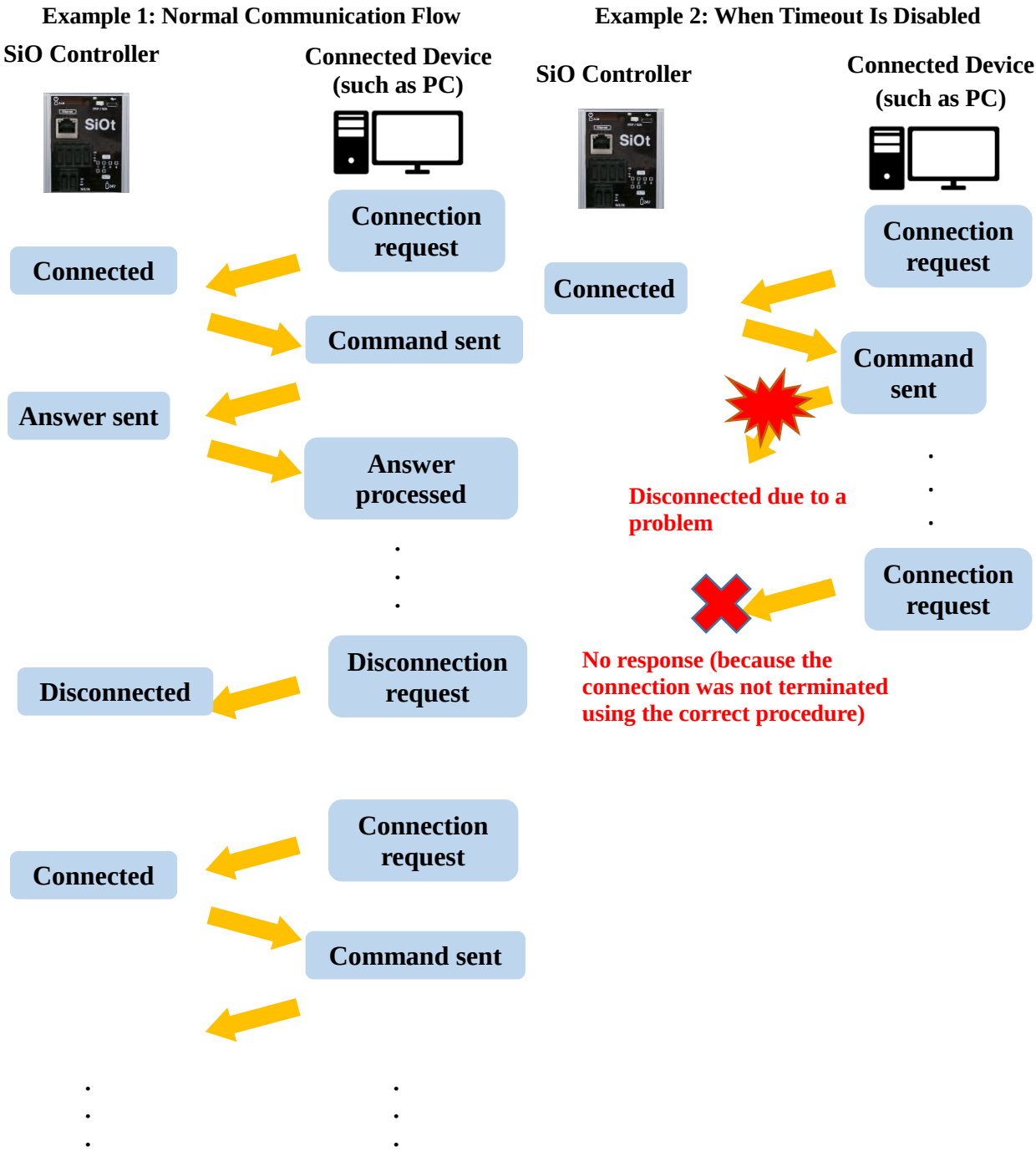
If the same condition is met a second time during the specified wait period, the controller will not perform the action.

Ethernet Communication Timeout Settings

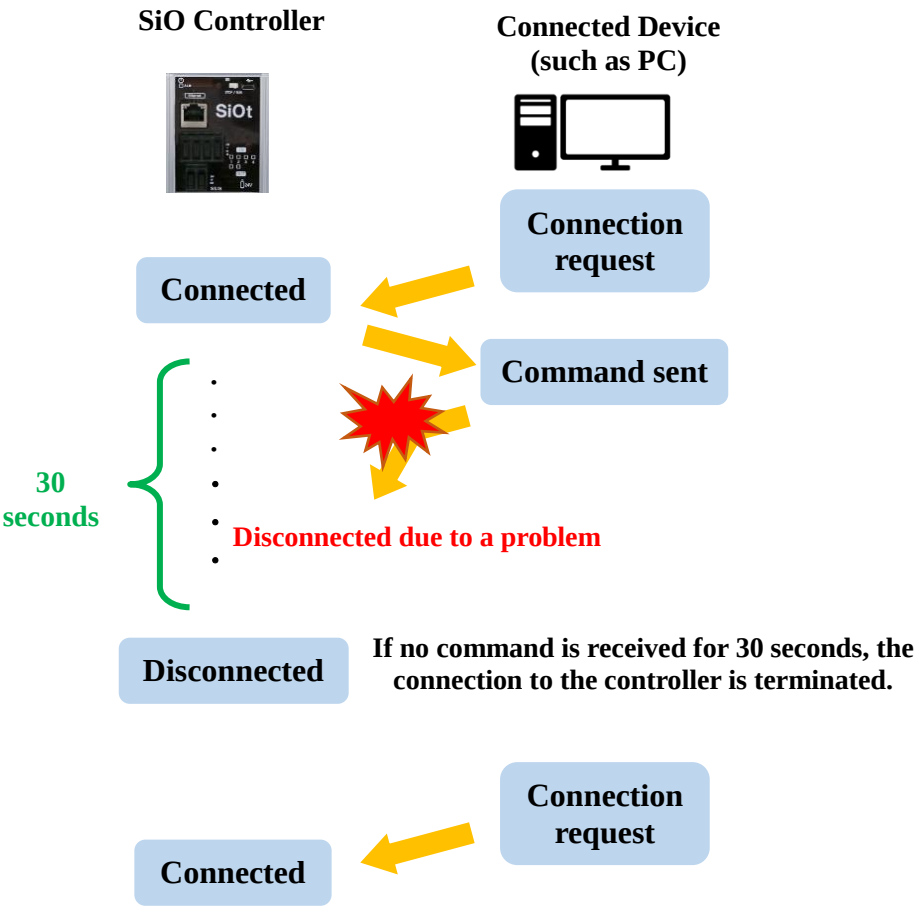
The timeout feature automatically terminates the connection between the controller and an Ethernet device if no command is sent within a specified period after the connection is established.

It enables quick reconnection even if each device fails to detect a disconnection of communication due to a communication channel problem or other factors.

The default settings are [Enable] and 30 seconds.



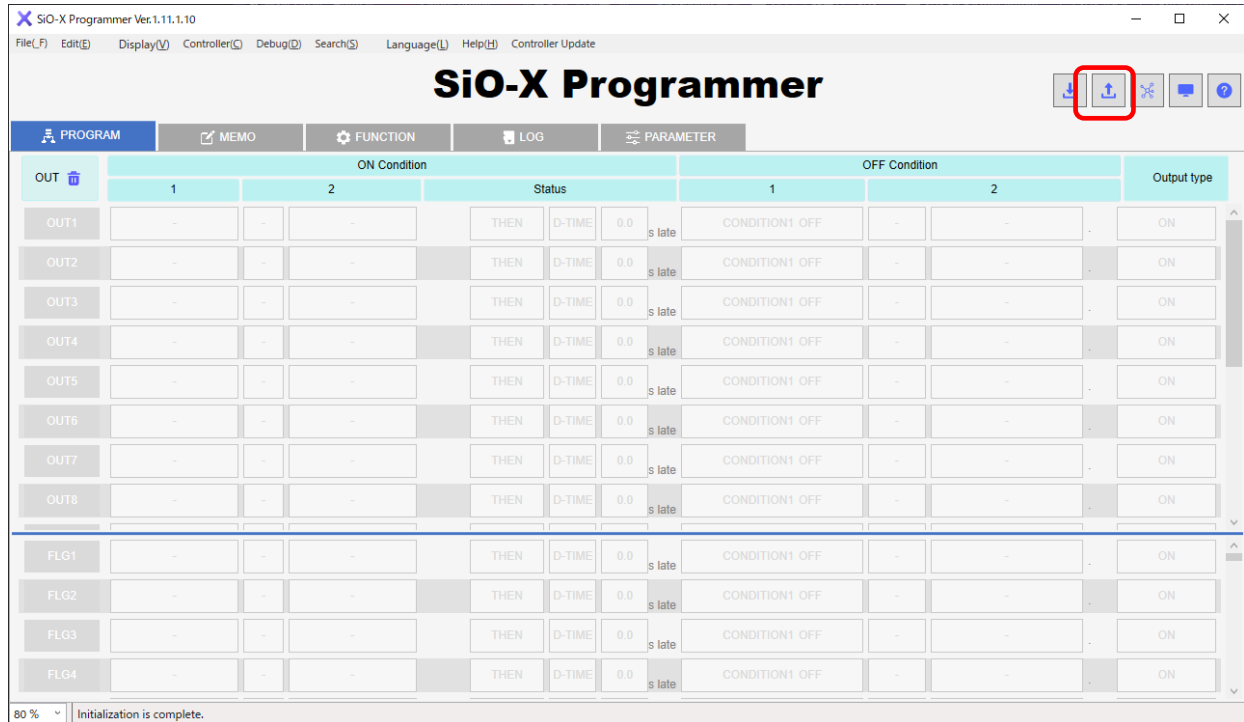
Example 3: When Timeout Is Enabled (30 Seconds)



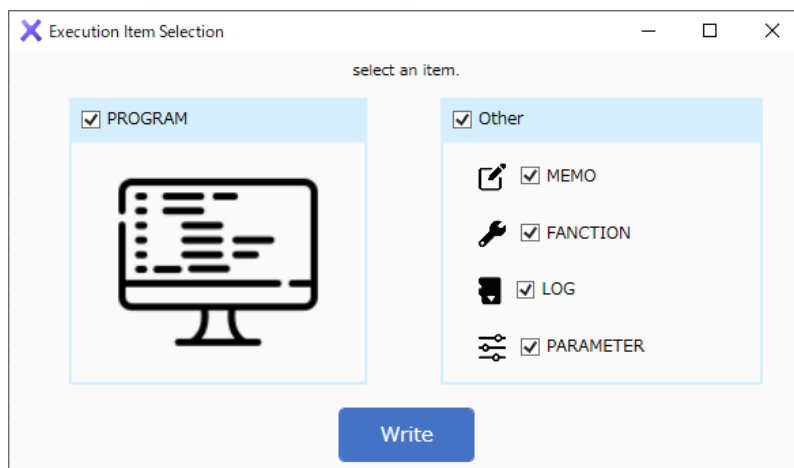
Writing to the Controller

Once your settings are complete, write them to the controller.

To do this, connect a USB cable to the controller, turn it on, and then click the [Write] icon.

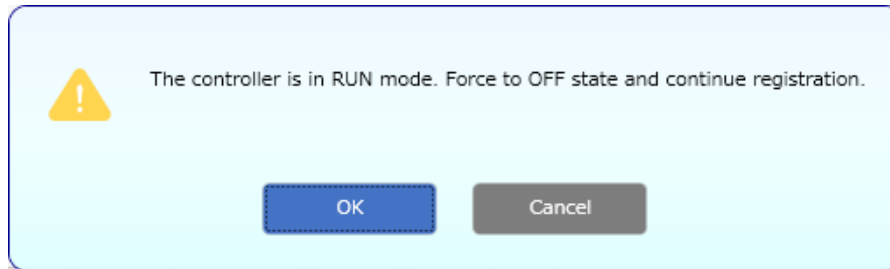


Clicking the [Write] button displays the following window:



Select the items you want to write to the controller, and click the [Write] button.

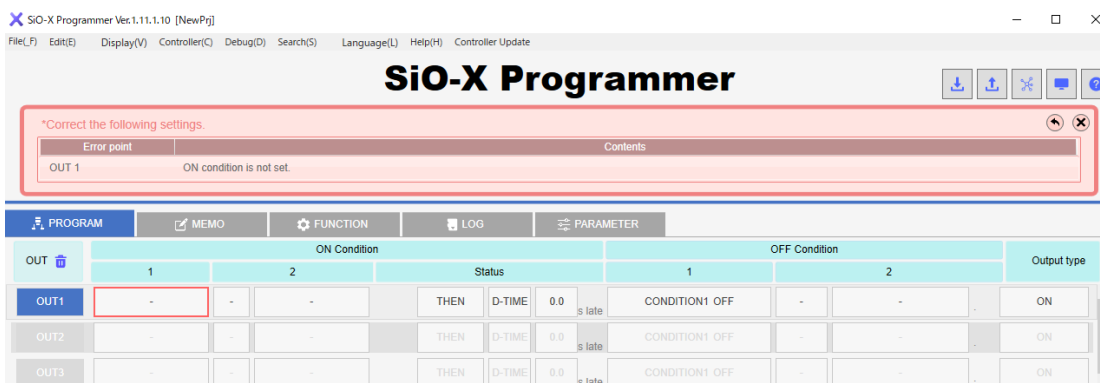
Note: Ensure that the controller is in the STOP state before writing the settings to the controller.
 If the controller is in the RUN state, the message shown below appears.
 Selecting [OK] forces the controller into the OFF state and begins the writing process.



When the writing is complete, the following message appears:

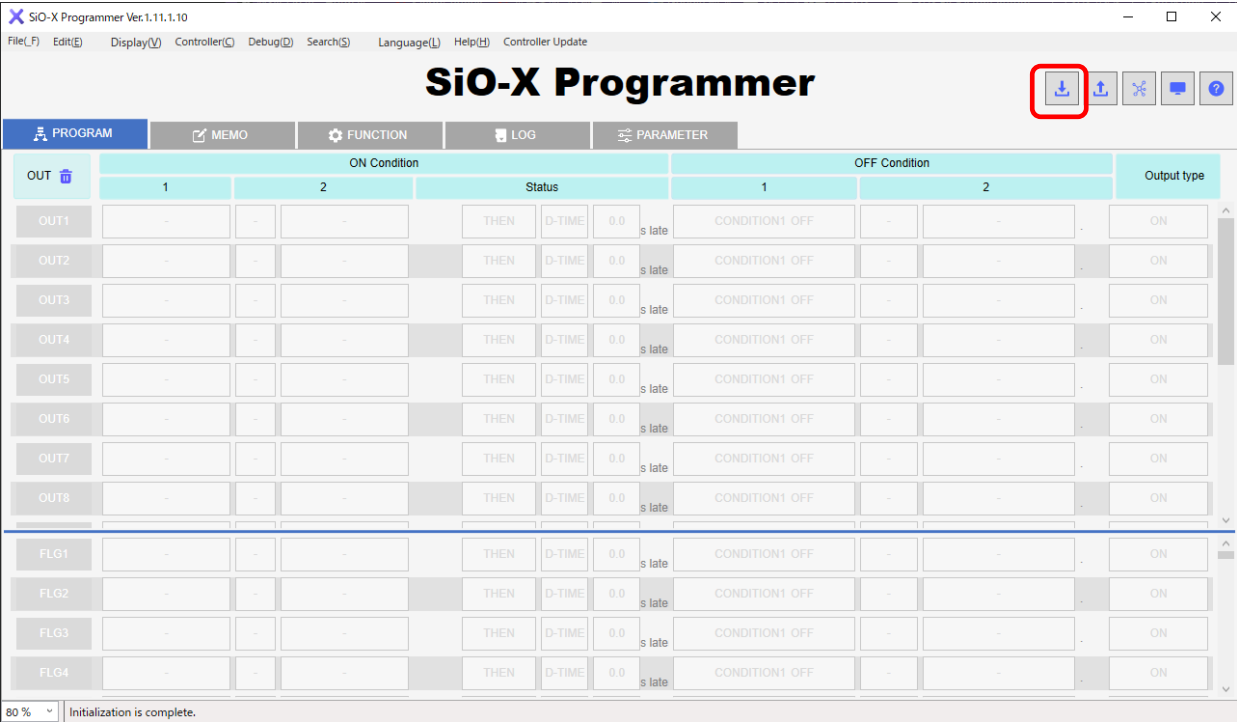


If there are incorrect settings, a window like the one shown below appears.
 Correct all incorrect settings shown in the window.

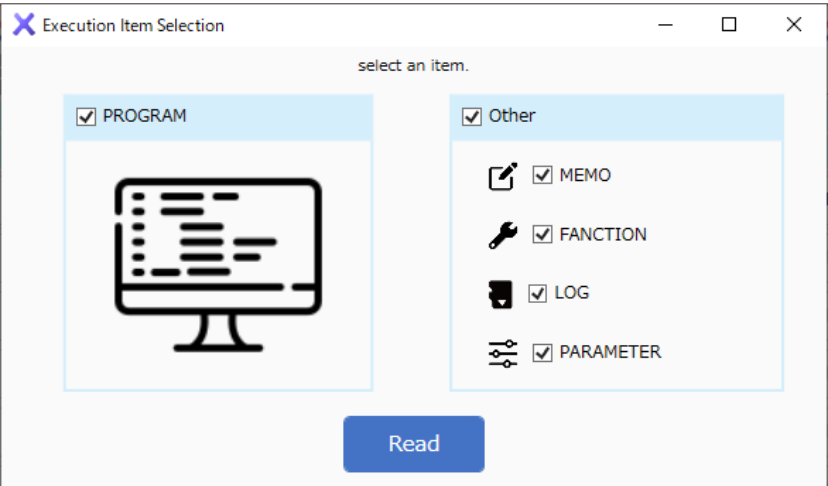


Reading from the Controller

You can read and display the data that has been written to the controller.
To do this, connect a USB cable to the controller, turn it on, and then click the [Read] icon.

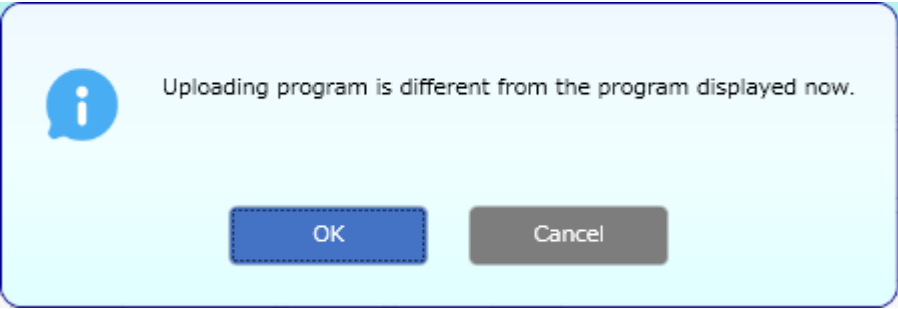


Clicking the [Read] button displays the following window:

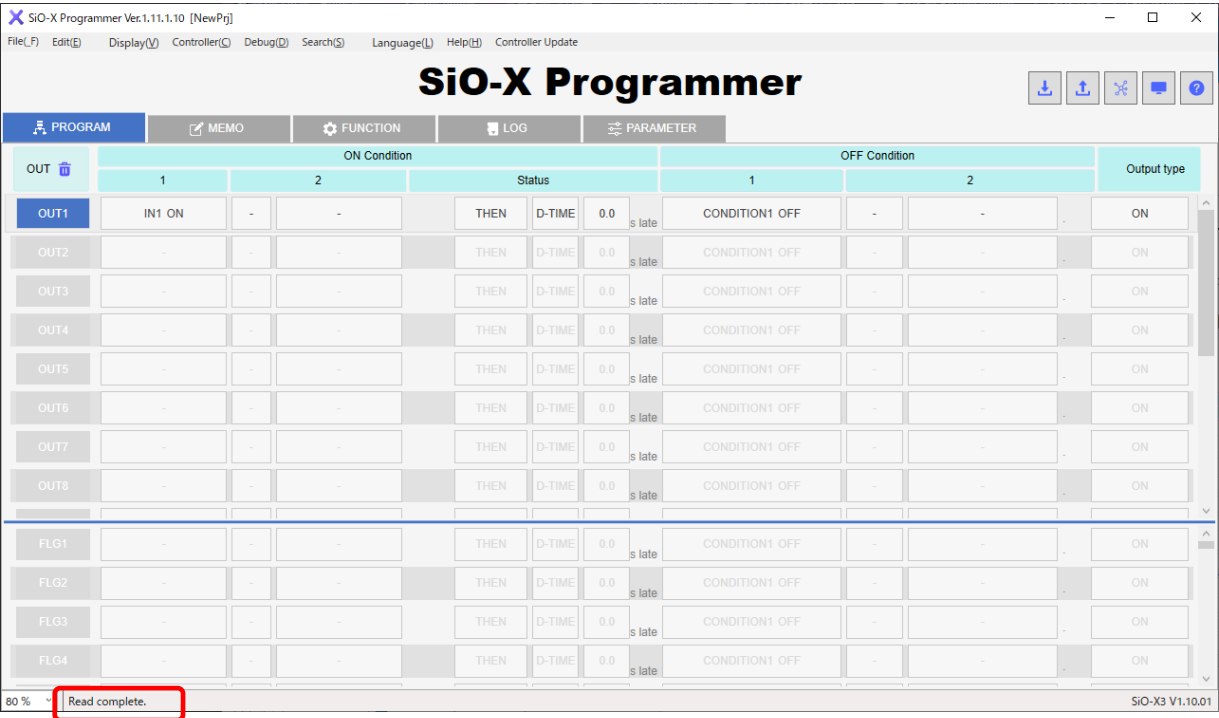


Select the items you want to read from the controller, and click the [Read] button.

If the data currently displayed differs from the data on the controller, the following message appears:
Click [OK] to proceed with reading.



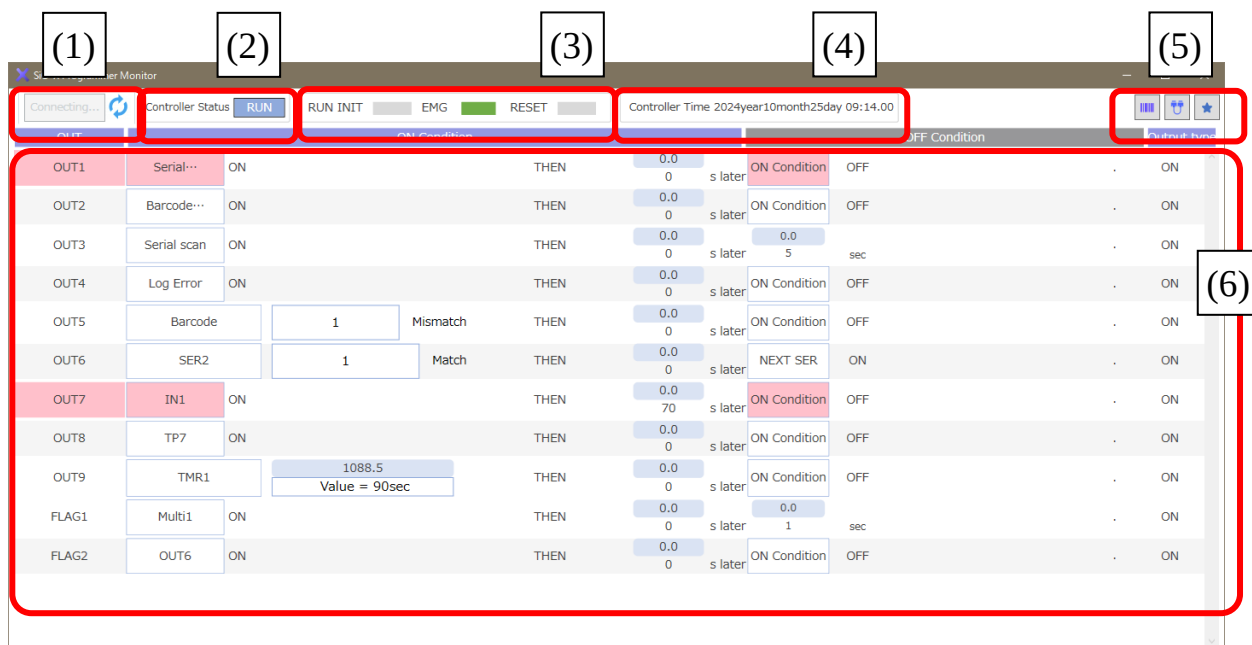
When the reading is complete, the following message appears:



I/O Monitor

The I/O Monitor allows you to monitor the I/O status of the controller.

It can be used only when the controller is connected to a PC.



(1) Monitoring start/stop

(2) Controller status

RUN **STOP** Indicates the RUN or STOP state.

EMG Indicates the EMG state. Turn on the EMG signal and then turn on the RESET signal to restore normal operation.

EMG[Waiting RESET] Indicates that an EMG has been cleared and that the controller is waiting for the RESET signal.

ALARM Indicates a controller alarm. The SD card cannot be read correctly or has insufficient free space. Resolve the issue and then restart the controller.

(3) RUN INIT, RESET, EMG

Shows the ON/OFF status of each signal.

(4) Controller's internal time

Shows the internal time of the controller.

(5) Icons to open windows for different Functions

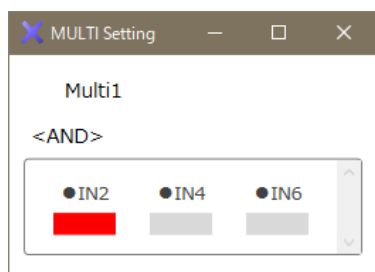
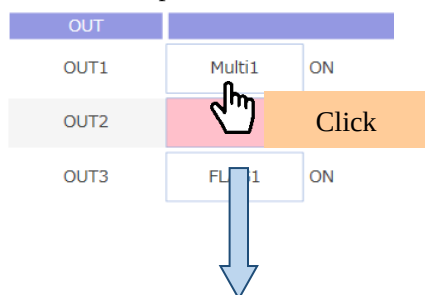
These icons open the [Barcode Monitor], [Serial Communication Monitor], and [I/O Bookmarks] windows.

(6) Program debug display

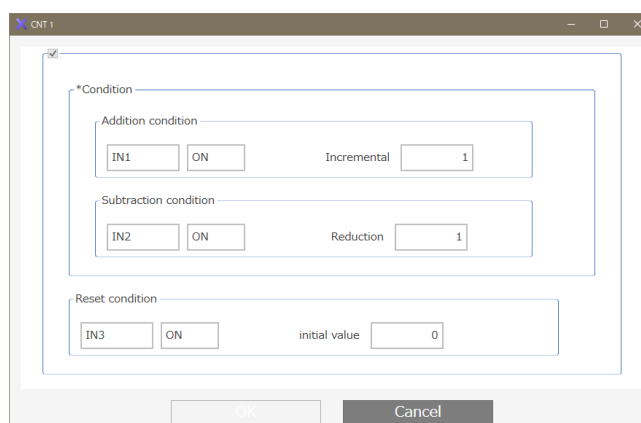
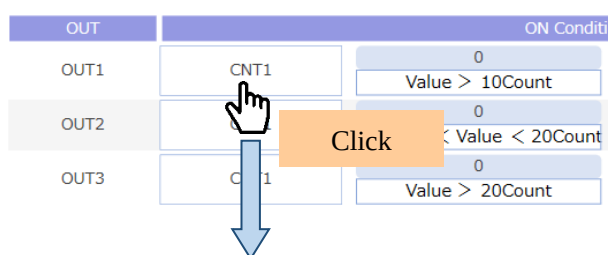
Shows the I/O Monitor in the layout of the program window. (ON: Red; OFF: White)

The settings for each Function item can be displayed in a separate window.

When a multiple selection is selected:



When a counter is selected:

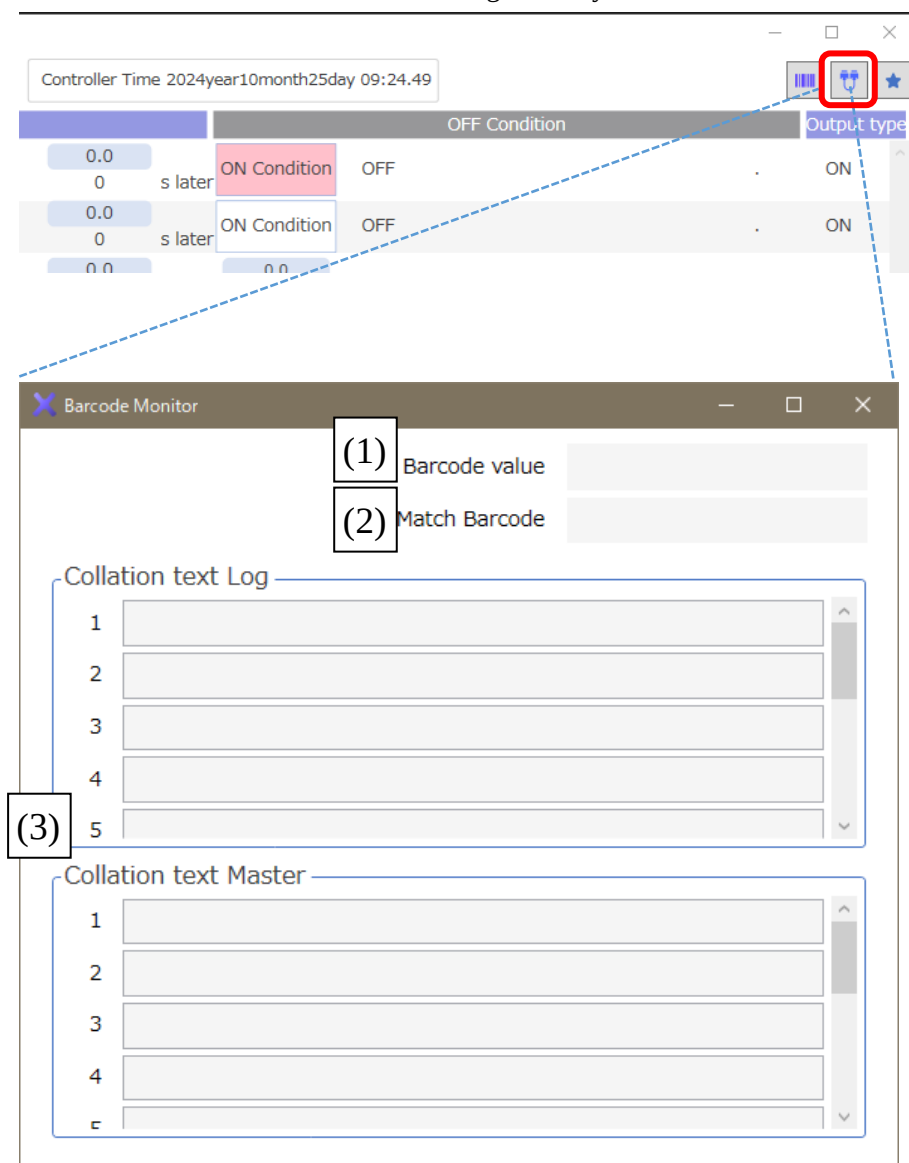


Barcode Monitor

The Barcode Monitor allows you to monitor the data read by a barcode reader connected to the controller and the matching status.

This window appears when you click the  button in the [I/O Monitor] window.

Note: The barcode reader will not be recognized if you connect it to the controller while the I/O Monitor is running.



(1) Barcode value

Shows the most recently scanned barcode data.

(2) Matching barcode

Indicates the number of the barcode that matched the most recently scanned data.

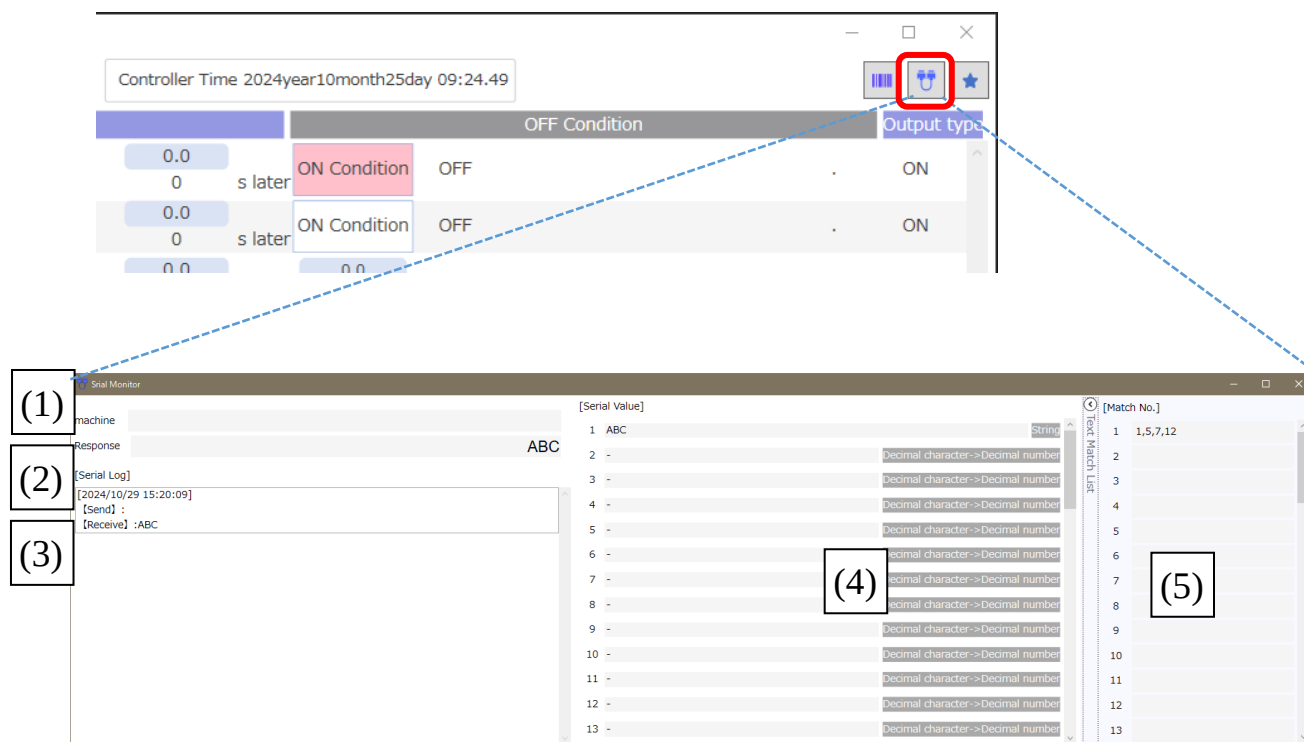
(3) Collation text logs

Lists the data stored in Collation text logs 1 to 10.

Serial Communication Monitor

This monitor tracks the status of communication between the controller and a serial device.

It is displayed when you click the  button in the [I/O Monitor] window.



(1) Connected device

Displays the name of the device configured and registered with the controller.

(2) Response characters

Shows the characters returned from the serial device during the most recent communication.

(3) Serial Communication Log

Lists the communication data logged since the Serial Communication Monitor was opened.

(4) Serial Values

Displays the most recently extracted values for SERs 1 to 256.

If a serial error occurs, all values will change to “-”.

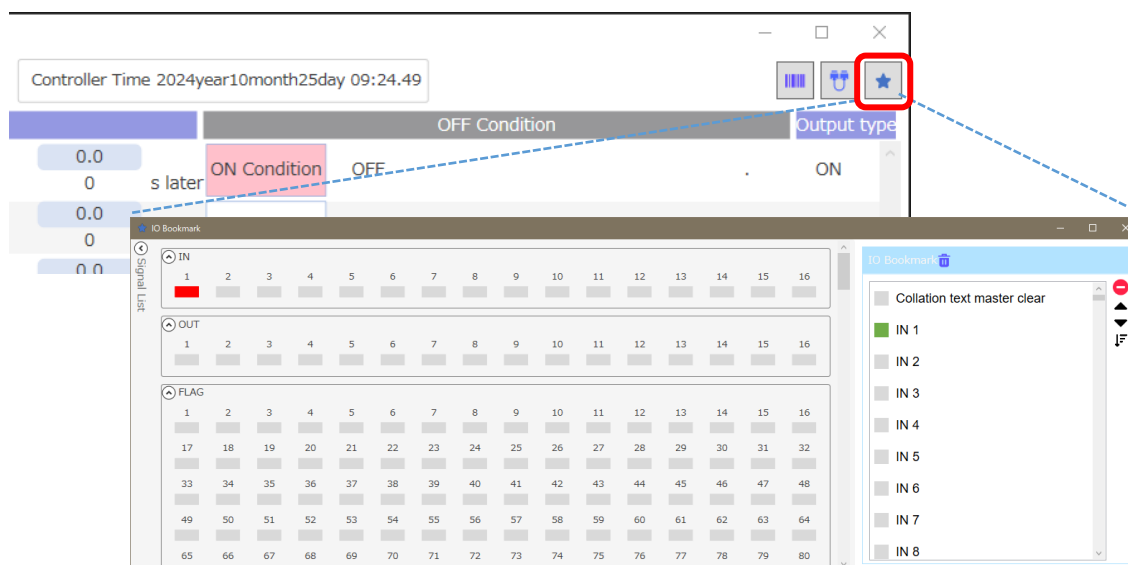
(5) Match No.

If the extracted value is a string, the matching number will be displayed by comparing it with the reference text.

I/O Bookmarks

The [I/O Bookmarks] window displays only the I/Os of your choice.

This window appears when you click the  button in the [I/O Monitor] window.

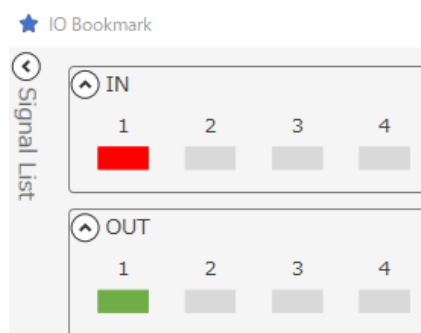


• I/O display

Shows the ON/OFF status of each signal.

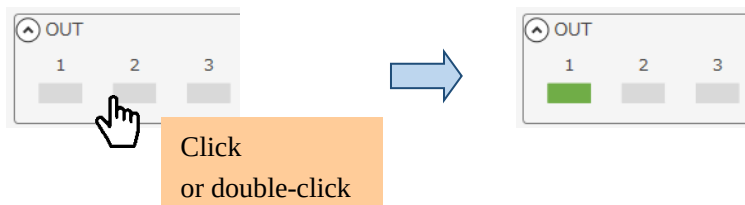
ON: Red (for IN signals), green (for other signals)

OFF: Gray

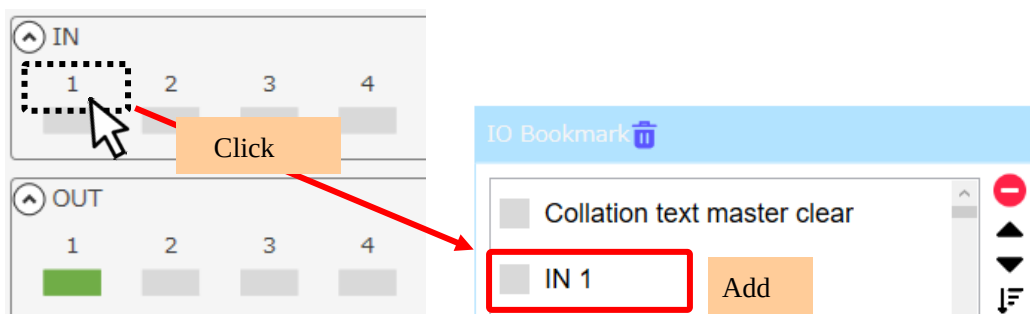


When the controller is in the STOP state, you can click an OUT or FLG to force output.

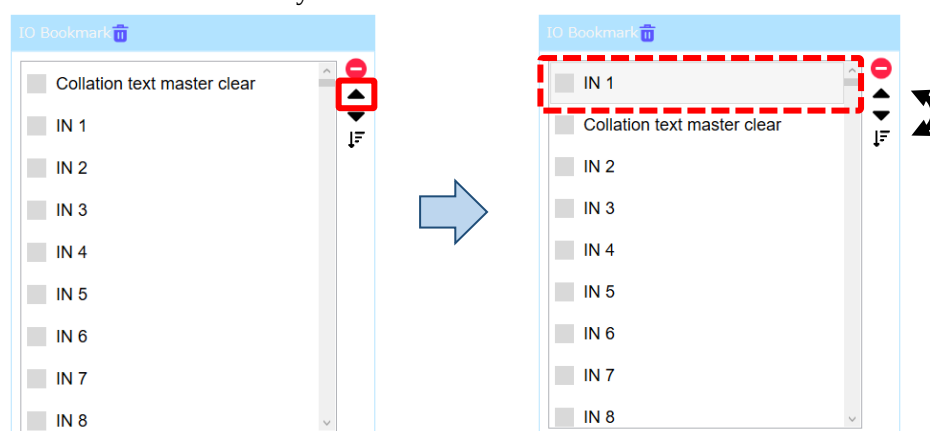
(Single-click: Momentary; Double-click: Alternate)



Click an I/O name in area (6) of the I/O Monitor to add it to the [I/O Bookmarks] window.

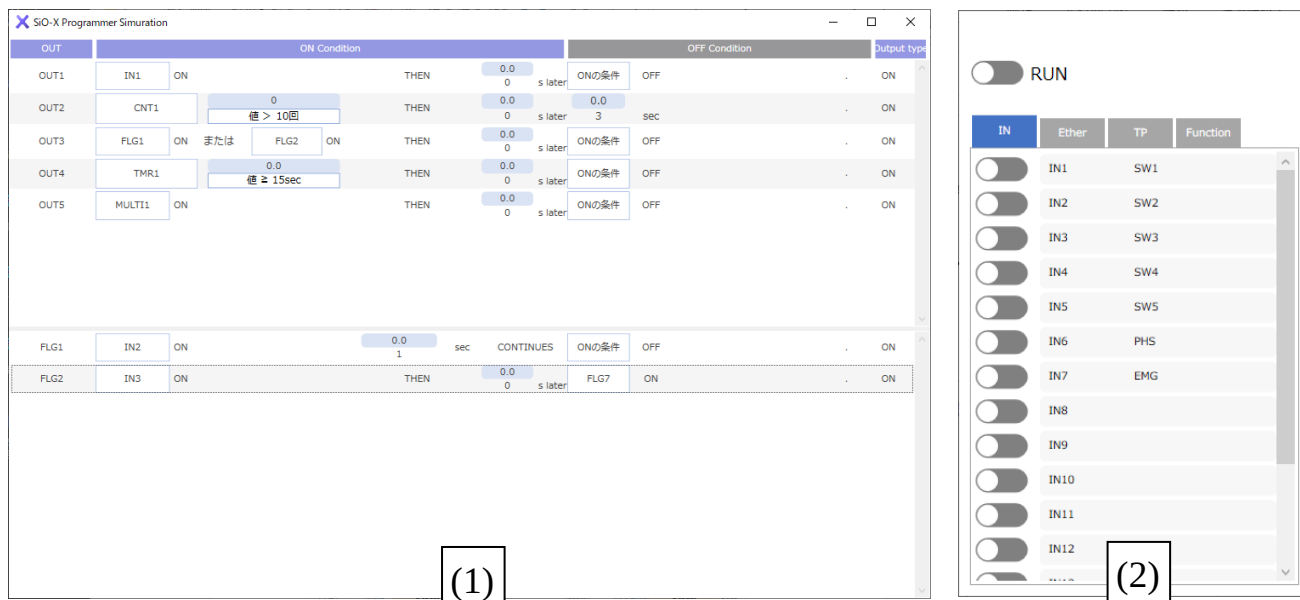


You can reorder or delete your selected I/O.



Simulation

The Simulation feature allows you to simulate your created program on the PC without needing to connect to the controller.

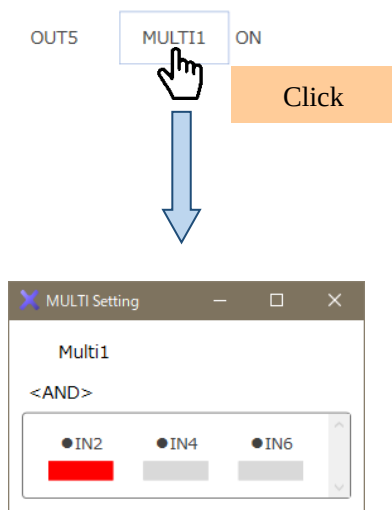


(1) Program debug display

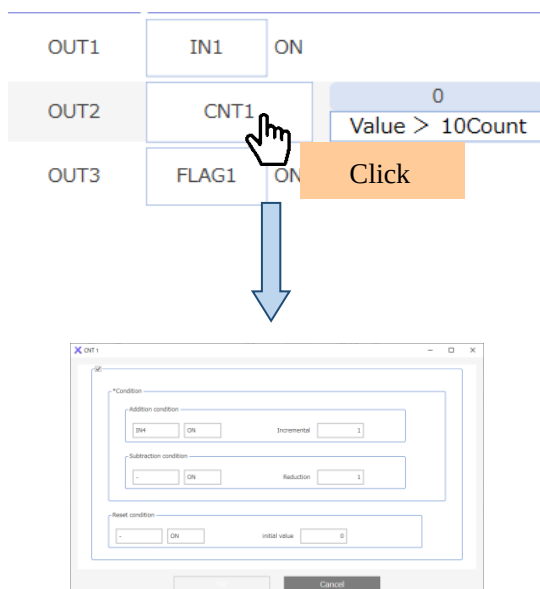
Shows the I/O Monitor in the layout of the program window. (ON: Red; OFF: White)

The settings for each Function item can be displayed in a separate window.

When a multiple selection is selected:



When a counter is selected:



(2) Input pane

Switch INs on or off, enter serial values, and configure other settings.

Turn on the RUN switch to start simulation.

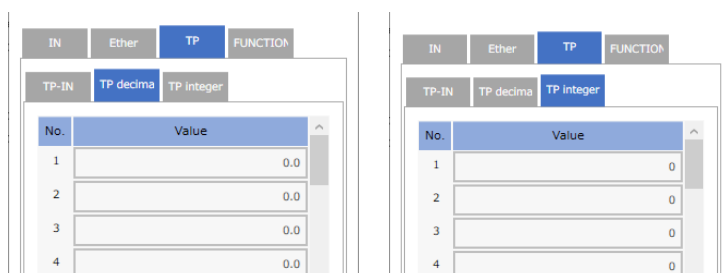
- RUN, IN, Ether, TP-IN, Clock, TP Clock, and Barcode Signals

Use switches to turn the signals on or off.



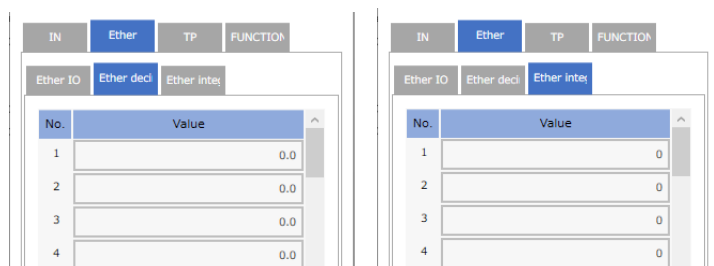
- TP-Timer, TP-Counter

Specify the timer and count values to be entered from an SiO-X touch panel (SUC-1021).



- Ether-Timer/Ether-Counter

Configure the time/count values input from the IoT-Monitor (PC software).



- Barcode

Enter the value of the barcode to be scanned, and click the [Scan] button or press the Enter or Tab key.



- Serial

Enter the extraction value for the response characters from the device.

- For numeric values: -99999.99999 to +99999.99999
- For character strings: ASCII characters (a-z, A-Z, 0-9, various symbols), up to 50 characters

Normal Reception

Serial

No.	Clipped value	MEMO	
1	ABCDEF		⚙
2	1.12		⚙
3			⚙
4			⚙

The extraction value is received at the "Request Timing."

Continuous Reception

Serial

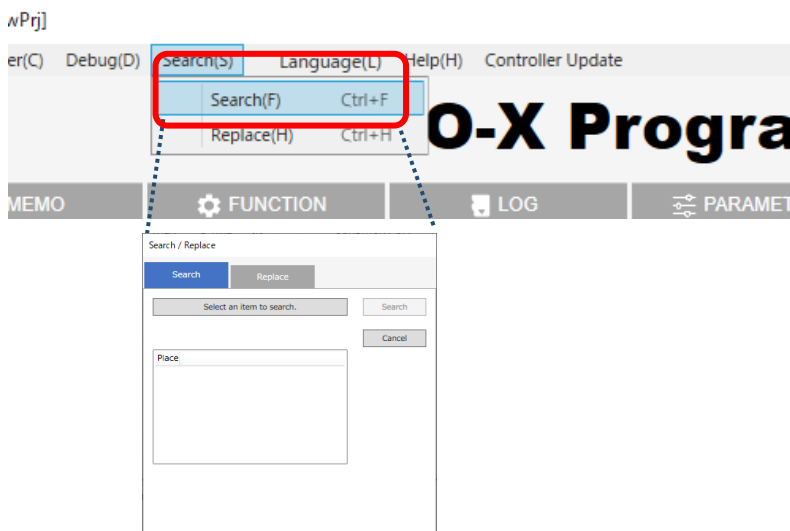
No.	Reception	Clipped value	MEMO	
1	Reception	ABCDEFG		⚙
2	Reception	1.12		⚙
3	Reception			⚙
4	Reception			⚙

The extraction value is received by pressing the "Receive" button.

Search and Replace

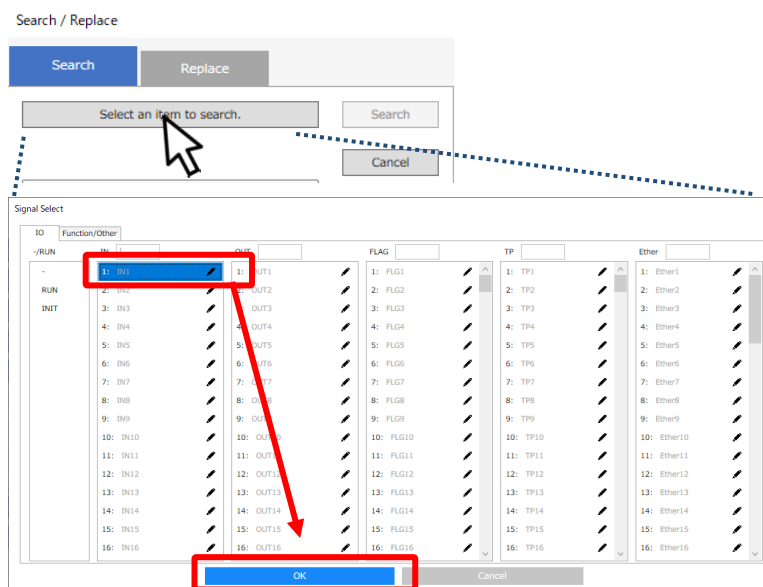
You can find and replace specific inputs and outputs.

Click [Find] on the menu to open the [Search and Search] window.

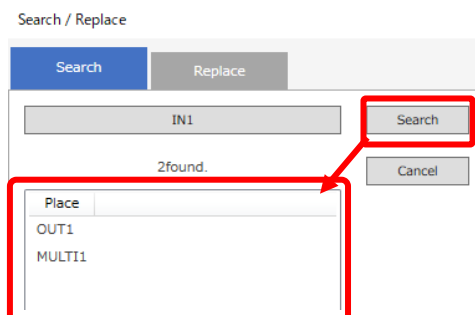


How to Search an Item

1. Open the [Search] tab and select the item you want to search for.



2. Click the [Search] button. This displays the locations of any matches.



When Matches Are Found

- Program

PROGRAM		MEMO		FUNCTION	
OUT	ON Condition				
	1	2			
OUT1	IN1 ON	-	-		
OUT2	CNT1	⚙	Value > 10Count		
OUT3	FLG1 ON	OR	FLG2 ON		
OUT4	TMR1	⚙	Value ≥ 15.0sec		
OUT5	MULTI1	⚙	ON	-	-

- Functions

SiO-X Programmer Ver.1.11.1.10 [NewPg]

File(F) Edit(E) Display(V) Controller(C) Debug(D) Search(S) Language(L) Help(H) Controller

SiO-X

PROGRAM MEMO FUNCTION LOG

Timer

Counter

CNT 1

CNT 2

CNT 3

CNT 4

CNT 5

CNT 6

CNT 1

*Condition

Addition condition

IN1 ON

Subtraction condition

- Log Output

PROGRAM MEMO FUNCTION LOG PARAMETER

SD Card Read Setting

1. ☒ Enabled ☐ Disable

2. Logout Condition

IN1 ON - - then log output with the [3.Content to be saved].

3. Content to be saved

IN	OUT	FLAG	Multi	Free	TP
Ether	Timer	Counter	Serial	Barcode	

Name	Memo
☒ IN1	
☐ IN2	
☐ IN3	
☐ IN4	
☐ IN5	
☐ IN6	
☐ IN7	
☐ IN8	
☐ IN9	

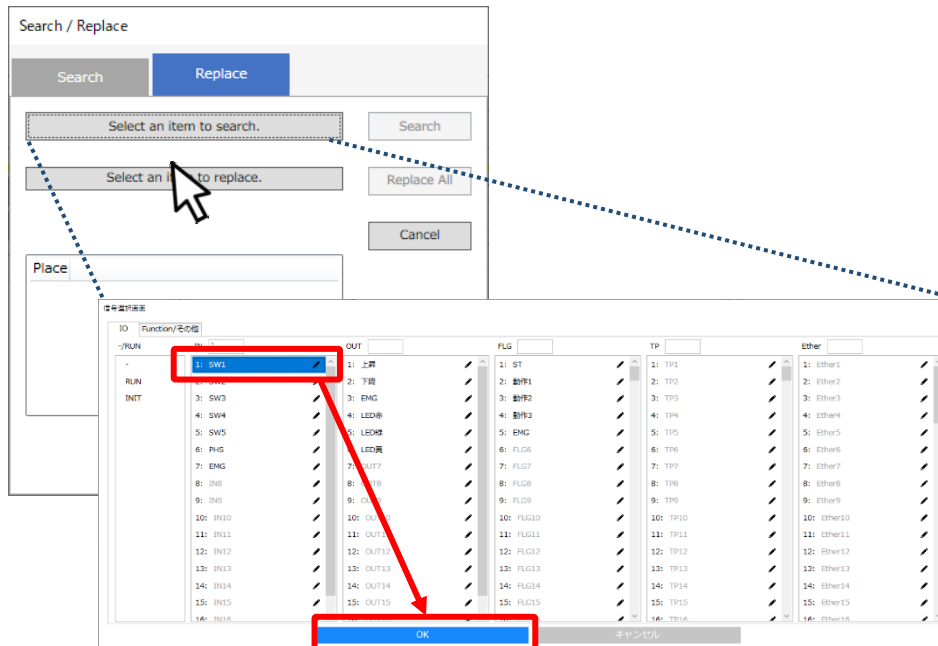
Setting list

Stored Capacity: about 38 Bytes / count

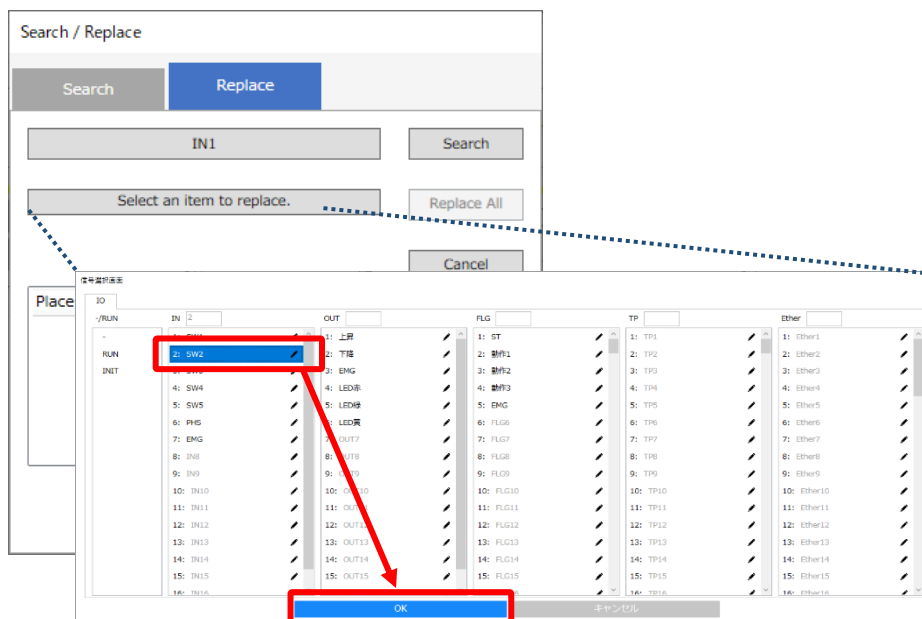
Name	Memo
IN1	

How to Replace an Item

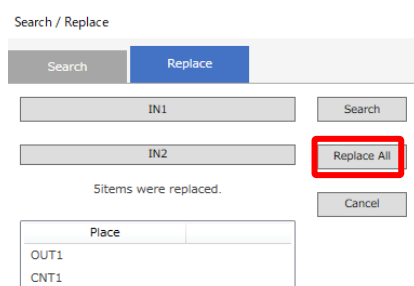
1. Open the [Replace] tab and select the item you want to replace.



2. Select a replacement item.



3. Click [Replace All] to perform the replacement.

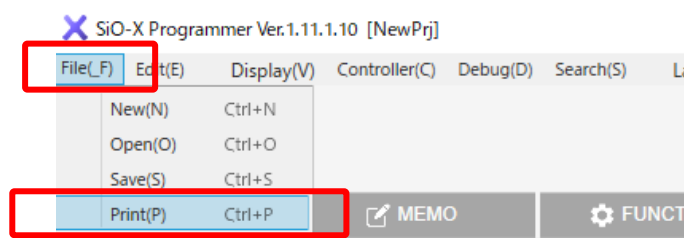


Note the following:

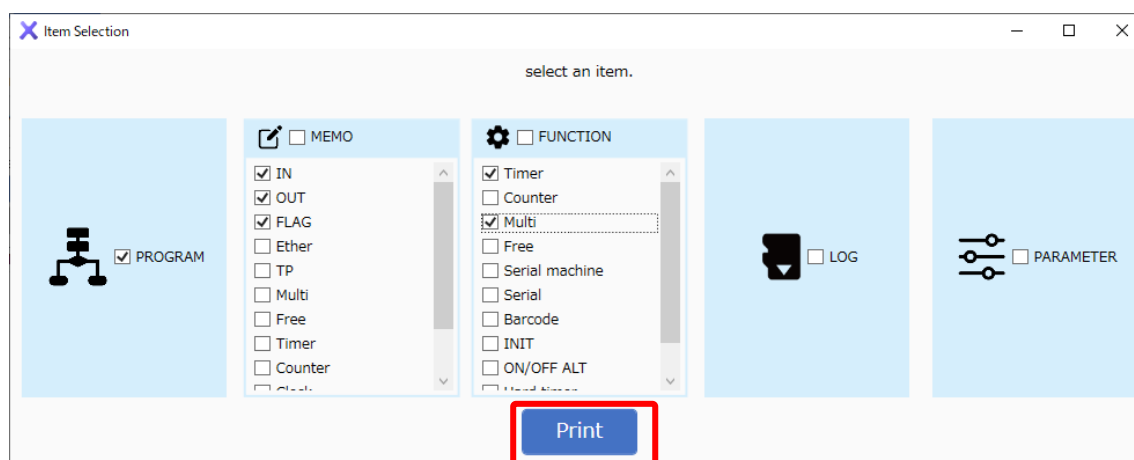
- An OFF condition cannot be replaced with INIT.
- Settings for new and old multiple selections cannot be replaced with RUN, INIT, Ether, or TP.
- Replacement with an item that is already set in a multiple selection will fail.
- Replacement with Clock, T1, or T2 will fail.

Printing

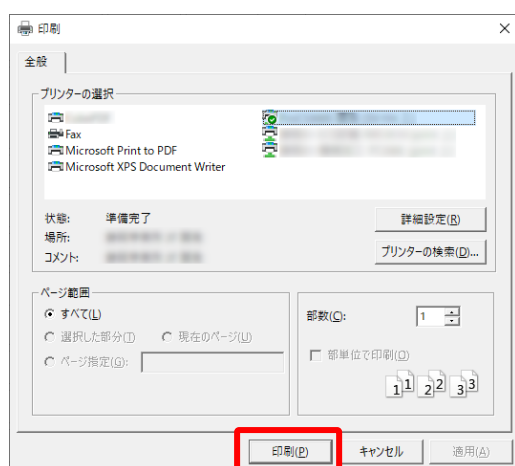
You can print the SiO-X Programmer settings by clicking [File] and then [Print] on the menu.



When the item selection window appears, select the items you want to print, and then click [Print].



In the [Print] dialog box, configure settings and click [Print].
Only the selected items will be printed.



SiO-X Programmer

FileName: ProjectName: NewPrj

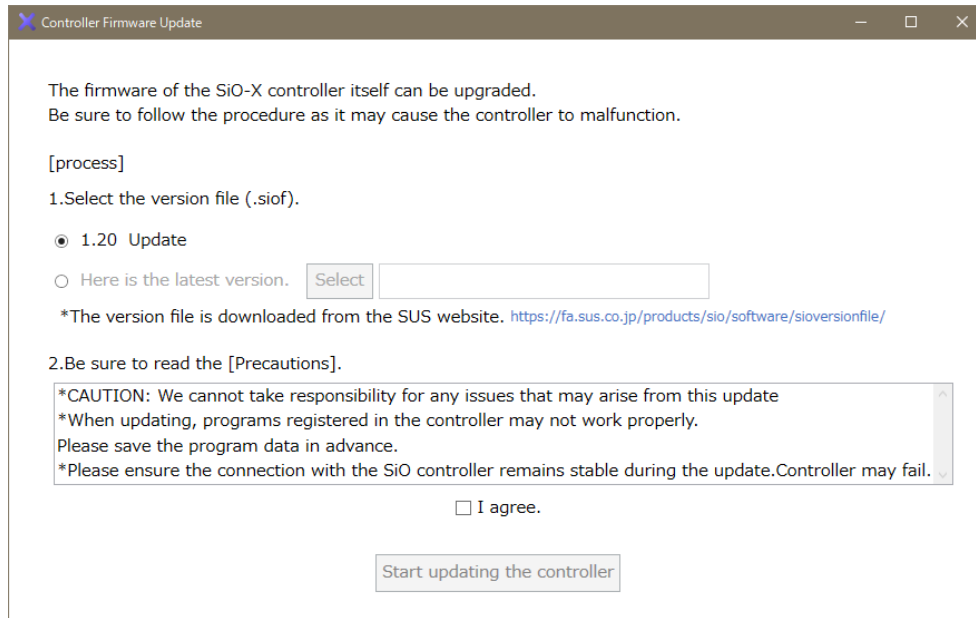
[Program]

OUT	ON Condition		Status	OFF Condition	
	1	2		1	2
OUT1	INZ ON	-	THEN	D-TIME	0.0
OUT2	CNT1	Value > 10Count	THEN	D-TIME	0.0
OUT3	PLG1 ON	OR	THEN	D-TIME	0.0
OUT4	TMK1	Value < 15.0sec	THEN	D-TIME	0.0
OUT5	MULT1	CNT	THEN	D-TIME	0.0
OUT6			THEN	D-TIME	0.0
OUT7			THEN	D-TIME	0.0
OUT8			THEN	D-TIME	0.0
OUT9			THEN	D-TIME	0.0
OUT10			THEN	D-TIME	0.0
OUT11			THEN	D-TIME	0.0
OUT12			THEN	D-TIME	0.0
OUT13			THEN	D-TIME	0.0
OUT14			THEN	D-TIME	0.0

Updating the Controller

If the controller's firmware version is not the latest, you can update the controller by downloading the firmware data.

Note: Be sure to follow the appropriate update procedure. Otherwise, the controller may fail.



① Downloading the latest version file

Download the latest version file for the controller from SUS's website.

② Updating SiO-X Programmer to a compatible version

Before updating the controller, you need a version of SiO-X Programmer that supports the updated version of the controller.

Check the last two digits of your SiO-X Programmer version, and confirm that they are greater than (or equal to) the number included in the name of the .siof file you have downloaded.

If your SiO-X Programmer version is lower than required, it does not support the updated version of the controller. If this is the case, update your SiO-X Programmer to the latest version.

◆ Software version (last two digits)

◆ Name of the .siof file



1.20.1.20

Xver1.20.siof



Since the version is the same as that of the .siof file, you can update the controller without updating SiO-X Programmer.

1.20.1.20

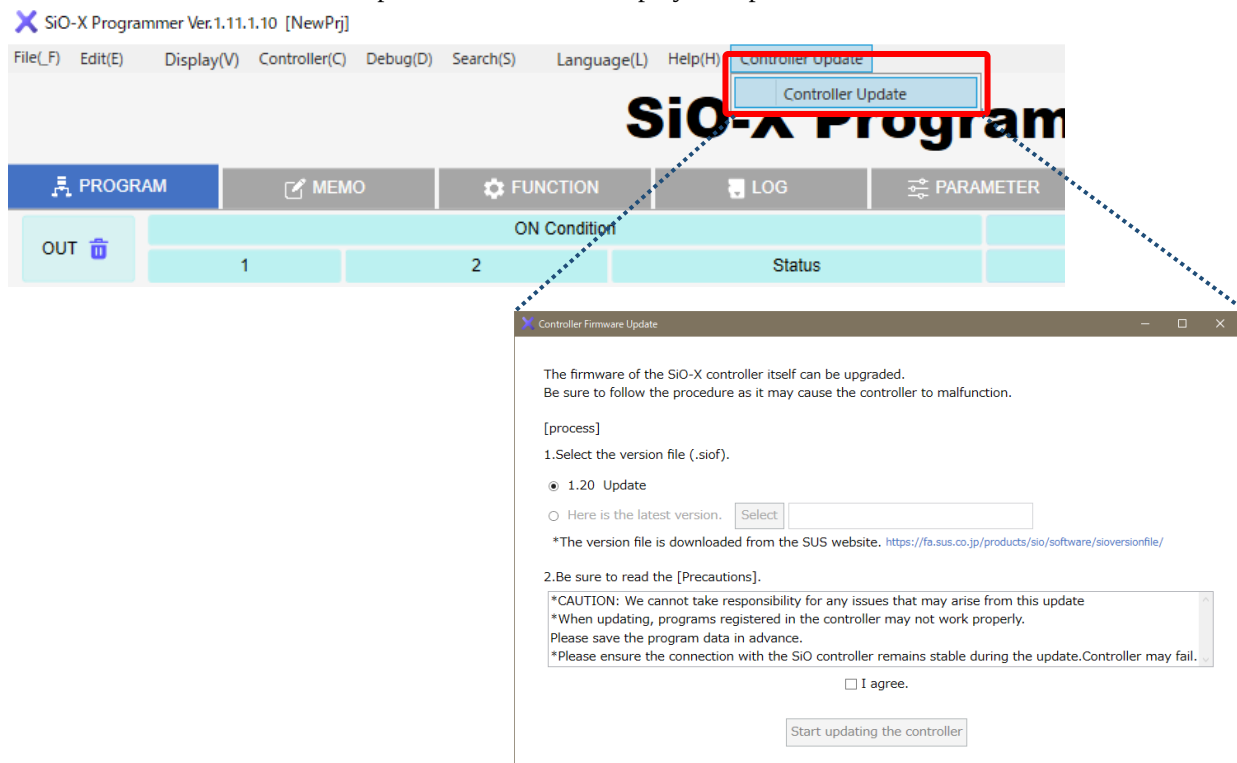
Xver1.30.siof



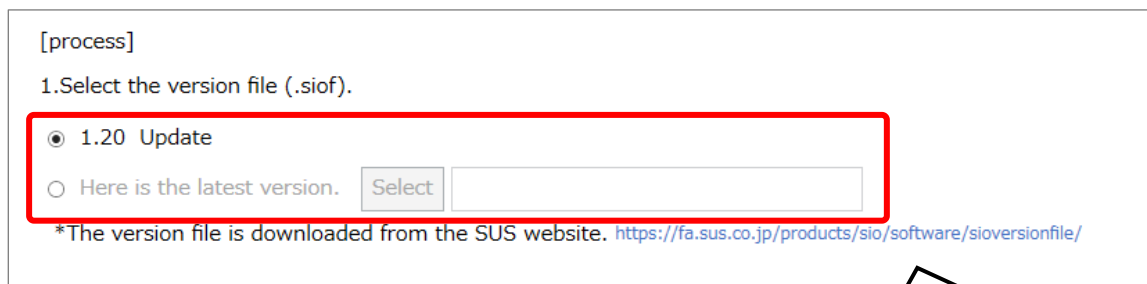
Since the version is lower than that of the .siof file, you need to update SiO-X Programmer.

Steps for Updating the Controller

1. From the menu bar, select [Update Controller] to display the update window.



2. Select the version file (.siof file).



Check for Latest Version

3. Read the terms and conditions carefully, and if you accept them, select the [I agree to the terms and conditions] check box.

- 2.Be sure to read the [Precautions].



- Click [Start Updating the Controller].

Note: You can click this button only if Steps 2 and 3 have been completed correctly.

Do not turn off the controller during the update process.

Doing so may cause the controller to fail.

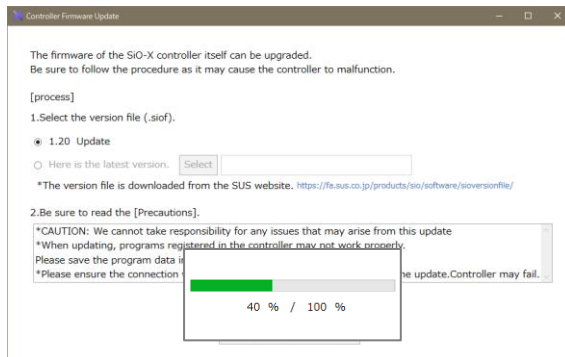
- Be sure to read the [Precautions].

***CAUTION: We cannot take responsibility for any issues that may arise from this update**

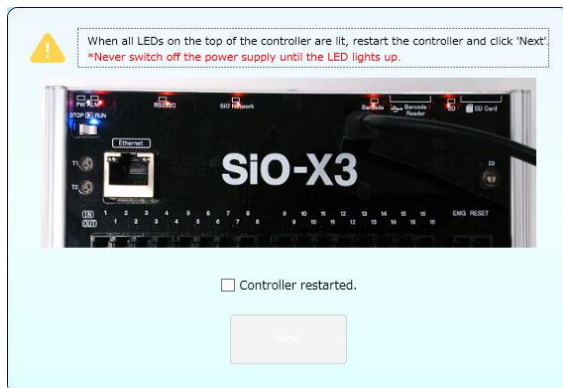
☒ I agree.

Start updating the controller

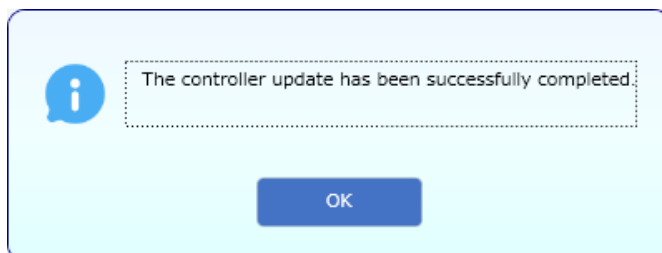
- The data is read, the controller is updated, and then the data is written.



When all of the LEDs along the top of the controller light up, as shown in the following window, restart the controller and click [Next].

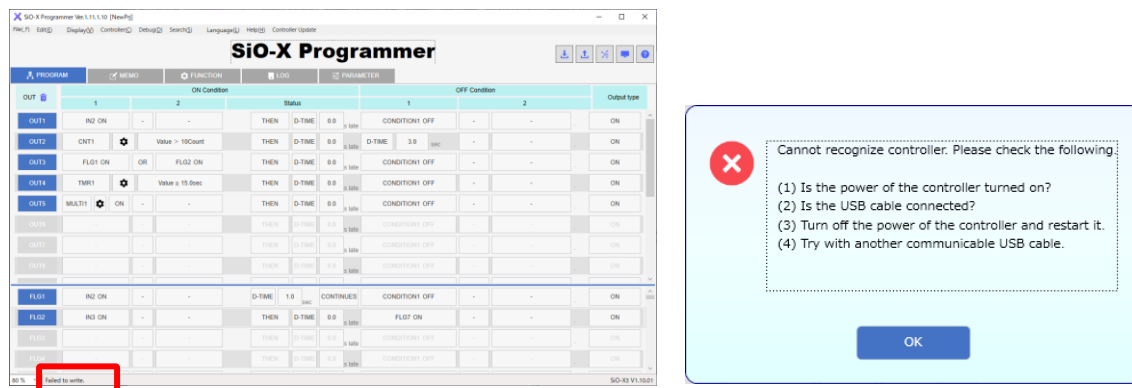


- The process is complete when the following message appears:



Onscreen Messages

If a message appears as shown below, refer to the following list and take the appropriate action.



■ Reading from and Writing to the Controller

Message	Description
A read error occurred.	The PC failed to communicate with the controller. Check the following and try communicating again: 1. The controller and PC are connected correctly. 2. The controller is turned on. 3. The USB cable is not damaged. 4. The USB cable supports data transmission. 5. Reset the controller's power once. 6. Uninstall both the device driver and PC software (see page 12), and reinstall them using a new setup file downloaded from SUS's website.
Failed to read.	
Failed to write.	
Failed to communicate.	
Unknown command	
Failed to recognize the controller.	
Failed to force output.	
Failed to obtain the I/O status.	
Failed to communicate. Check whether another instance of SiO Programmer is communicating.	Communication fails if another instance of SiO-X Programmer is running and already communicating with the controller.
No driver is installed.	The PC does not recognize the controller because no device driver is installed or because the installed device driver is not functioning properly. 1. Check whether the USB cable supports data transmission, and try using a different cable. 2. Uninstall both the device driver and PC software, and download their latest versions from SUS's website.
Correct the settings listed above.	The program is not configured correctly and cannot be written to the controller. Check the error locations and details, and make the necessary corrections.

Message	Description
Failed to bring the controller into the RUN state.	The controller failed to return to the RUN state after a forced stop. Turn the controller off and then back on.
Do you want to write this program?	This message appears if you click the [Write] button when the program is not configured.
The method for setting the address and port has been changed from [Auto] to [Manual] or vice versa. To apply this change, you must turn off the controller and then restart it.	If you switch between the [Auto] and [Manual] options for the IP address on the [Parameters] tab, you must reset the controller's power.
This controller is not compatible with SiO-X Programmer.	The compatible PC software varies depending on the controller type. Install the PC software compatible with your controller: SiO-X: SiO-X Programmer Other SiO controllers: SiO-Programmer MiO: MiO-Programmer

■ Program Errors

Message	Description
Neither ON nor OFF is specified.	Neither ON nor OFF is specified for the ON and OFF conditions.
The numeric value is set incorrectly.	The set value is outside the specified range. Set the value within the specified range.
The numeric value is invalid.	
The time is set incorrectly.	
No conditions are specified.	No conditions are specified as ON or OFF conditions. ON Condition 1 and OFF Condition 1 must be set.
Neither AND nor OR is specified.	If ON Condition 2 or OFF Condition 2 is set, specify [AND], [OR], or [THEN] ([THEN] can only be specified for OFF conditions).
Specify a conjunction.	
This option can be specified only if "Serial" is used as an ON condition.	The OFF condition "Next Serial" can be selected only if "Serial" is specified as an ON condition.
This option can be specified only if "Barcode" is used as an ON condition.	The OFF condition "Next Barcode" can be selected only if "Barcode" is specified as an ON condition.

■ Free Inputs

Message	Description
Failed to save the data due to an incorrectly set free input.	You can save the data to a file only if the free input is configured correctly.
You cannot put parentheses within parentheses.	The parentheses are set incorrectly. Example: (IN1 ON OR (IN2 ON) AND IN3 ON)
More than 32 line breaks are used.	Up to 32 line breaks can be used.
More than 30 pairs of parentheses are used.	Up to 30 pairs of parentheses can be used.
A program is set at the end. Insertion is not possible.	Insertion is not possible because a program is set at the end.
The program line does not end with ON or OFF.	If the program line ends with an item other ON or OFF (such as "IN1" or "THEN"), specify ON or OFF.
Insertion is not possible due to an insufficient number of program settings in the last line. Delete the line break.	Insertion is not possible if there is an insufficient number of program settings.

■ Replace Command

Message	Description
Failed to replace the multiple selection.	Replacement with the following fails: • An I/O with the same condition • An item other than IN, OUT, and FLG
Failed to replace the log.	Replacement with the following fails: • (For conditions) An item other than IN, OUT, FLG, TP, or Ether • (For items) An I/O with the same condition
Failed to replace the main program.	Replacement with an I/O that cannot be set (such as a Function) fails.

■ Log Output

Message	Description
An error occurred while the controller was accessing the SD card.	Check whether the SD card is inserted correctly.
An SD card is not inserted.	
The specified number is not found on the SD card.	The specified number is not included in the SD card data.
The number of bytes per line and the file size do not match.	The value specified in the [Number of bytes per line] field does not match the current file size (the number of bytes × the number of lines). If this message appears, a new CSV file will be created and used the next time data is logged.
Set the number of characters per line to be larger than the [Storage size] value shown in the [Items to Save] area.	The number of characters per line represents the maximum number of characters per record. This means that you need to set a value larger than the number of characters in the data to be saved.

■ Insertion and Deletion

Message	Description
Insertion failed.	Insertion fails in the following cases: • Programs for OUTs 1 to 16 • If FLG256 is not in the initial state • If FLG256 contains a note • If any program uses FLG256
Deletion failed.	Deletion fails in the following cases: • Programs for OUTs 1 to 16 • If the selected FLG is not in the initial state • If the selected FLG contains a note • If any program uses the selected FLG
OUTs cannot be inserted.	Programs for OUTs 1 to 16 cannot be inserted or deleted.
OUTs cannot be deleted.	

■ Other

Message	Description
Install Adobe Reader.	You need a PDF reader to open the help file, which is in PDF format.
The help file is corrupted.	The help file is corrupted for some reason. Reinstall SiO-X Programmer using the setup file.

Getting Help with *SiO-X Programmer*

If you have any problems with or questions about *SiO-X Programmer*,
please email us at:

sus-sales@sus.co.jp

Revision History

Ver.	Date	Description	Revised Page
1.00	04/30/2024	Initial release	
1.20	01/31/2025	[Change Points] - Added *Ether* variable - Added *Text Matching Function* - Modified Serial *SER* from 256 → 50 - Introduced *Continuous Reception Mode* for Serial - Added *String Evaluation* for Serial - Enhanced *Extraction Method* for Serial and Barcode - Added *ON-Time Tracking* - Added *Serial Reception Signal* - Introduced *Error Signal* for Barcode Extraction - Added *Log Error Signal* [Modified Sections] - <All>	4-