

SiO-Programmer

PC Software for the SiO Controller

Instruction Manual

Rev. 4.30

For *SiO-Programmer* Ver. 4.30

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Introduction

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

SiO-Programmer allows you to write program data and parameters to the *SiO controller* easily and efficiently. You can also save your edited data to a file or print it.

You will find that this software makes the *SiO controller* easier to use.

This instruction manual covers *SiO-Programmer* version 4.20.

The version number of *SiO-Programmer* you are using can be found in the upper-left corner of the *SiO-Programmer* screen. (→ Page 13)

If you are using *SiO-Programmer* version 3.00 or earlier, refer to *SiO-Programmer Instruction Manual Rev. 1.xx*.

Also, if you are using *SiO-Programmer Ver.2.00 to 3.73*, please refer to *SiO-Programmer Instruction Manual Rev.3.73*.

The information in this manual is subject to change without notice due to product improvement.

For the latest information, please visit our website at:

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

Precautions for use

- Be sure to turn off the *SiO controller* before connecting a communication cable to or disconnecting it from your computer with *SiO-Programmer* installed.
- To transmit data between the *SiO controller* and your computer, use the USB cable specified by SUS.
- Do not turn off the *SiO controller* during data communication between the controller and your computer. 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 fast when writing program data, forcing output via the I/O monitor, or performing other tasks. Doing so may stop the communication.

Overview

Here is a brief overview of the features supported by *SiO-Programmer* :

◆ Editing programs

You can edit program data.

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

In addition, the data can be read, written, or collated via communication.

◆ Setting parameters

You can edit the maximum values of hardware timers, ON/OFF cycle settings, and other parameters.

◆ Monitoring

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

◆ Simulator

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

The simulator allows you to check inputs and outputs before connecting your computer to the SiO controller.

System requirements

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

◆ Supported computer models

This software has been verified to run on computers installed with any of the following operating systems:

Windows 10 (32/64-bit version)
Windows 11 (64-bit version)

*: Even on these operating systems, *SiO-Programmer* may not work properly, depending on your computer model.

◆ CPU and memory

2 GHz or faster CPU, 4 GB or more of system memory recommended

◆ Hard disk space

2 GB or more of free space

◆ Display

Resolution: 1280 × 768 or more
Colors: 256 or more

◆ Other

USB 2.0 port

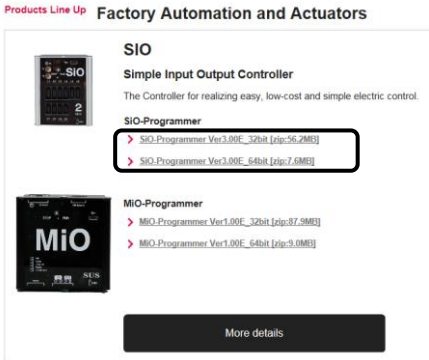
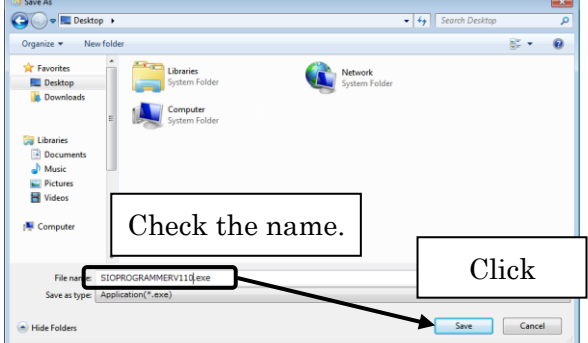
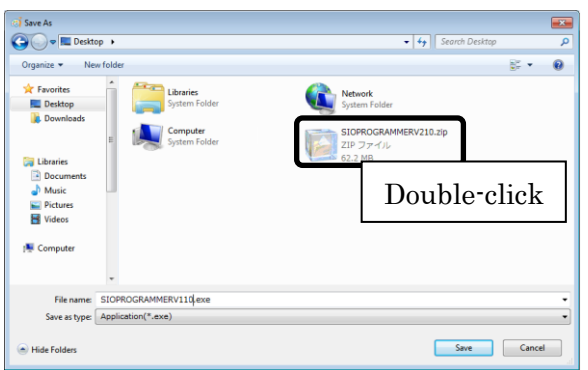
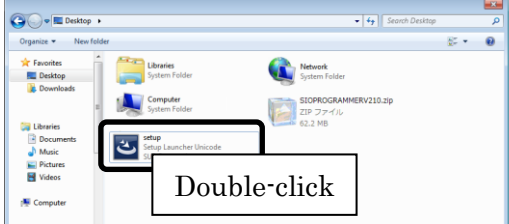
Installing SiO-Programmer

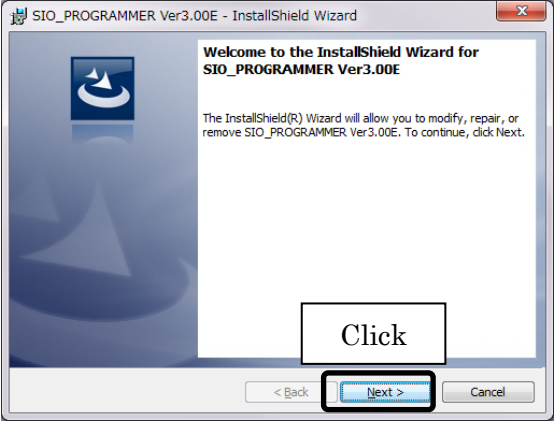
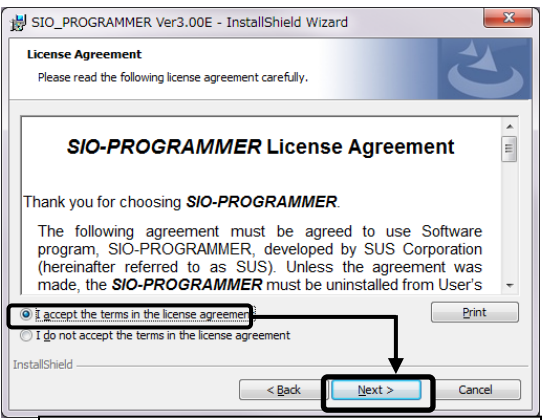
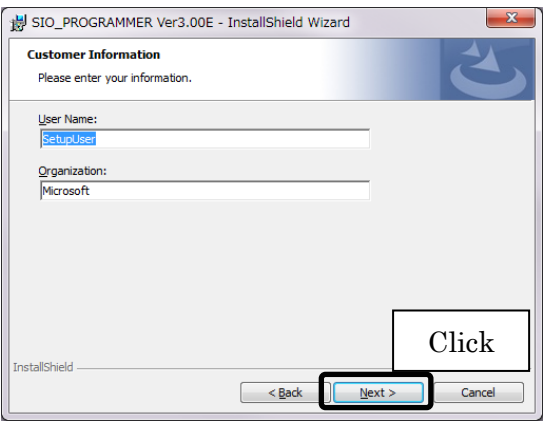
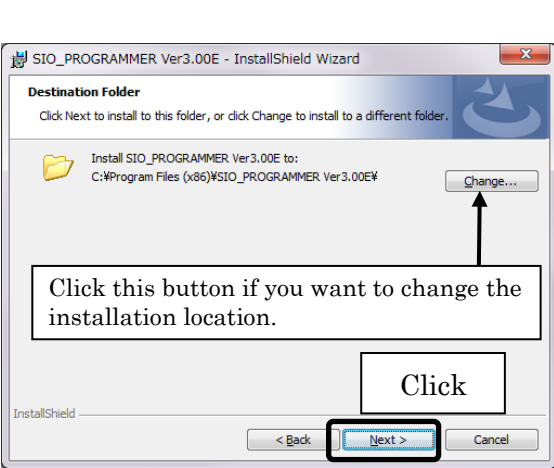
You need to install *SiO-Programmer* on your computer's hard disk before you can use it.

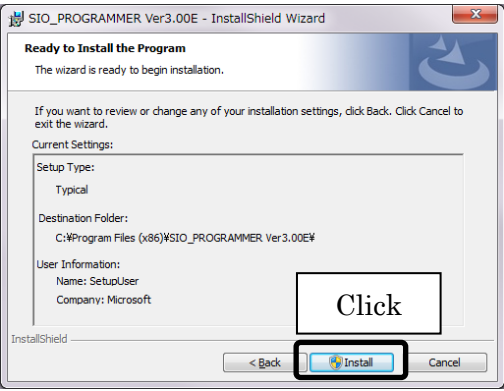
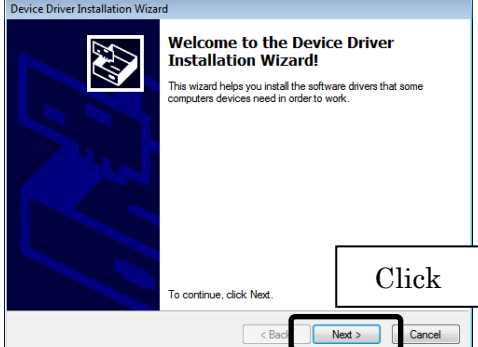
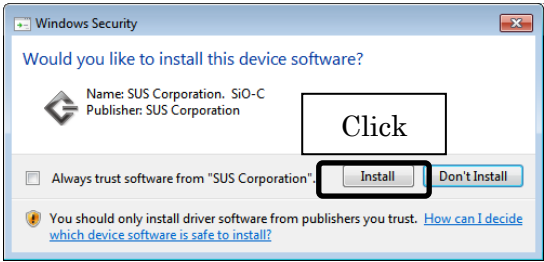
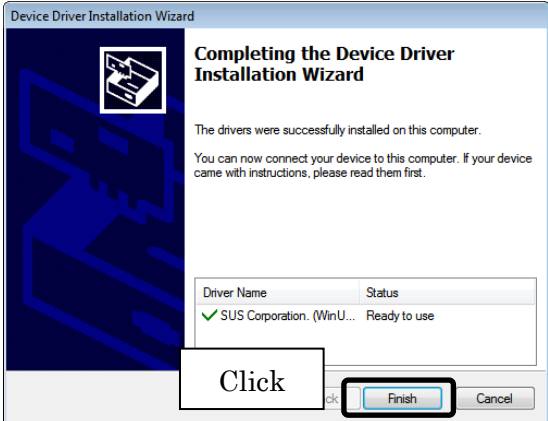
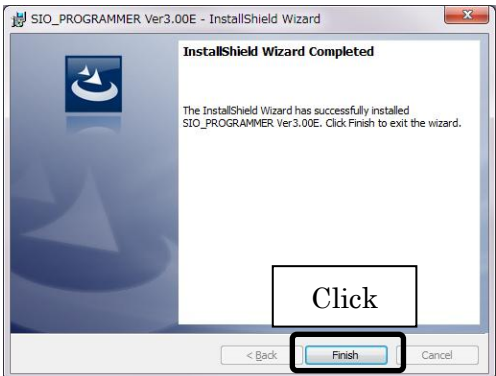
Quit all other applications before installing SiO-Programmer.

This software does not automatically replace SiO-Programmer Ver2.xx to Ver3.xx.

Here is how to install *SiO-Programmer*:

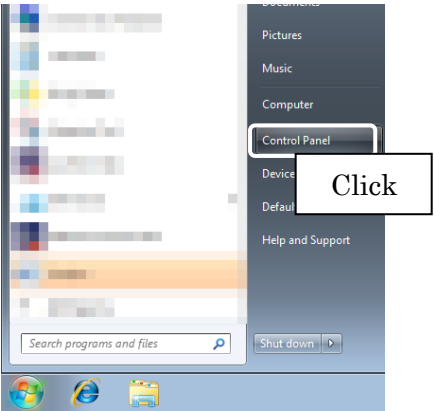
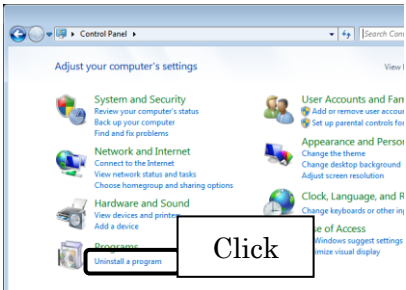
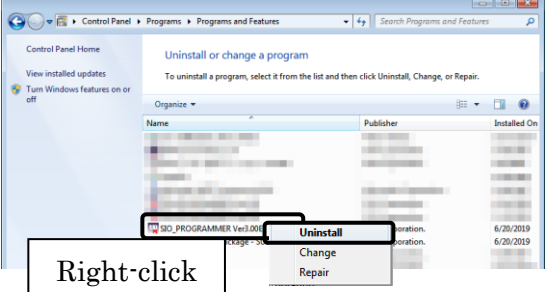
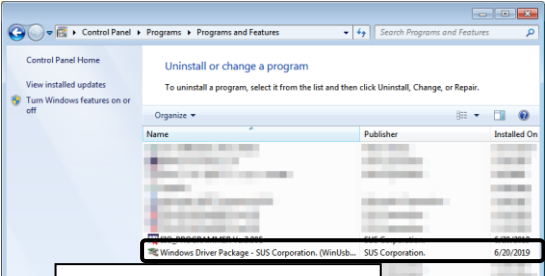
1	Download (and save) the <i>SiO-Programmer</i> setup program to your computer. A zipped file for download is available. The file name is "SiO-Programmer_###E.zip". * The "###" represents the version number.	
2	Specify a folder into which to download the file. Click the [Save] button to save the file.	
3	Open My Computer or Explorer to navigate to the file you downloaded (and saved) from our website, and then double-click it. When you double-click the file, you are prompted to specify the folder where you want to unzip the file.	
4	Double-click "setup.exe" to start installation.	

5	When the setup wizard appears, click the [Next] button.	
6	Read the <i>SiO-Programmer</i> license agreement and accept the terms and conditions. Then click [Next]. * 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.
7	Enter your user name and organization name, and then click the [Next] button.	
	By default, a folder named “SIO_PROGRAMMER###” is created in the “Program Files” folder as the installation location, where the program is installed. To use the default folder, click the [Next] button. To use a different folder, click the [Change] button and specify the desired folder. * The “###” represents the version number.	 Click this button if you want to change the installation location.

8	Verify that the installation location and the user and organization (company) names you entered are correct. Then click the [Install] button.	
9	The Device Driver Installation Wizard appears. Click [Next] .	
10	When a dialog box like the one shown on the right appears, click [Install] .	
11	When the device driver has been installed, click [Finish] .	
	The SiO-Programmer installation wizard switches to the Installation Complete window. Click [Finish] .	

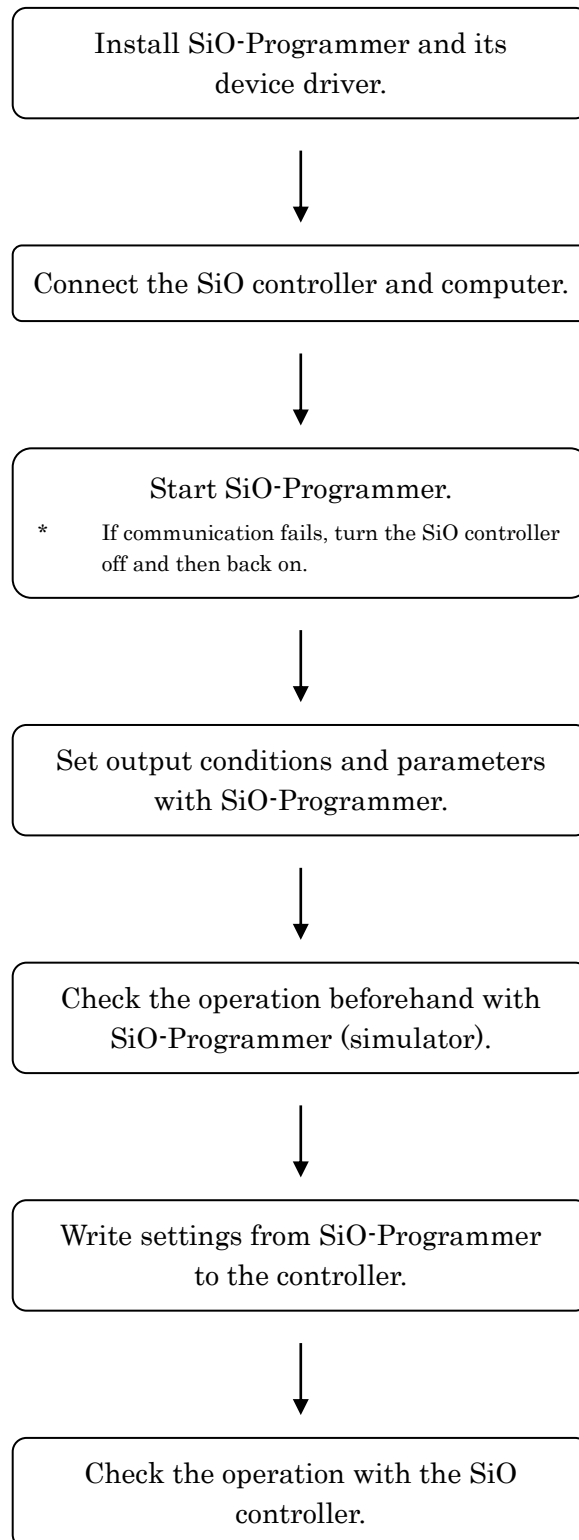
Uninstalling SiO-Programmer

The process of removing files and other data from a computer's hard disk is called uninstallation. Here is how to uninstall *SiO-Programmer* from your computer's hard disk:

1 Click the Start button > [Control Panel] to open the Control Panel.	
2 Click [Uninstall a program].	
3 Select "<i>SiO-Programmer</i>", right-click it, and then select [Uninstall].	
4 Uninstall the device driver. To do so, select "<i>Windows Driver Package - SUS Corporation. (WinUSB) SiOController</i>", right-click it, and then select [Uninstall]. * If the above driver is not displayed and "<i>Windows Driver Package D:Frontia (WinUSB) USBTMCd</i>" exists, uninstall this driver instead.	

Setting up the SiO controller

Follow the steps below to set up the SiO controller.



Connecting a USB cable

Computer side

Install SiO-Programmer and its software driver before connecting the controller to your computer. (→ Page 7)

After installing them, connect the Type A connector of the USB cable to the USB port on your computer.

* Only one SiO controller can be used with one computer.

Controller side

Connect the micro-USB connector of the USB cable to the SiO controller.

Be sure to gently insert the connector while holding the controller with your hand.

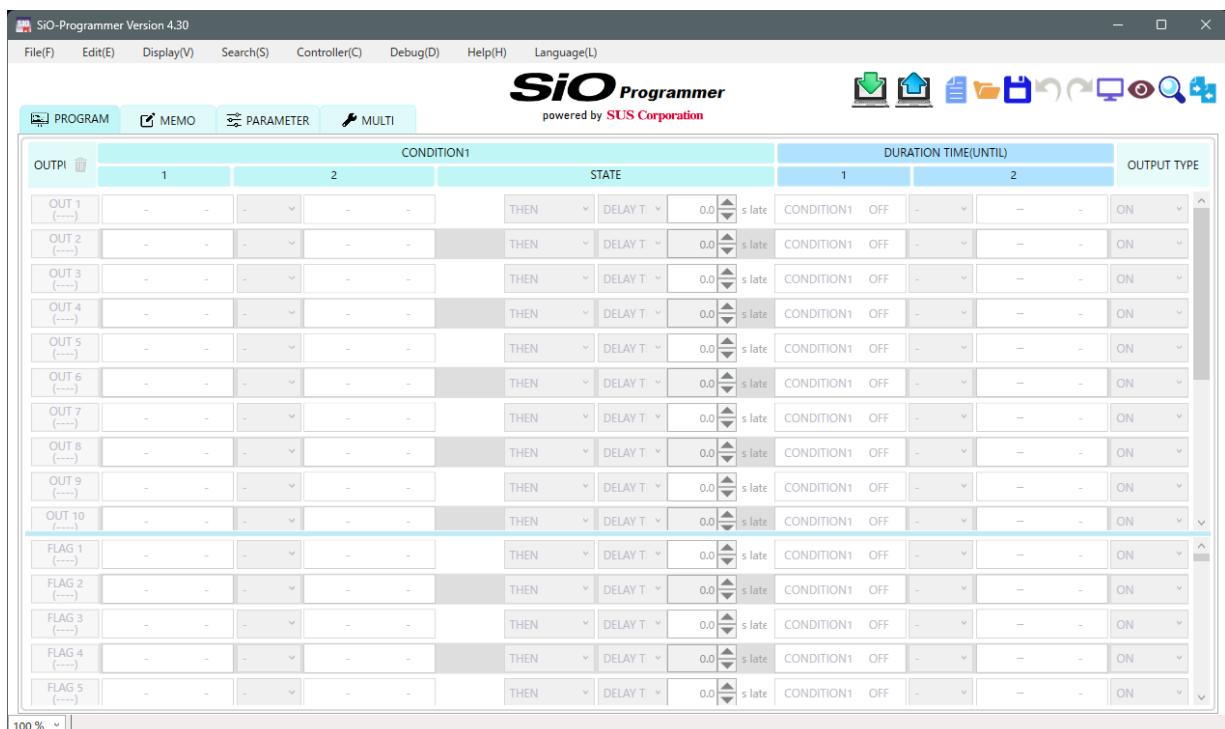
If the cable is connected correctly, the device driver is installed properly, making your computer and the controller ready to communicate with each other.

* After USB communication, disconnect the power cable of the controller body, turn off the power, and then disconnect the USB cable.

Starting SiO-Programmer

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

If you used the default folder during installation, the icon is stored in the following location:
[Start Menu] > [Programs] > [SIO_PROGRAMMER]



Program Window

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

(1) Output condition settings → Page 18

Specify input, time, and output settings to set up the SiO controller. The [Reset Program] button allows you to reset only the program.

(2) Tool icons → Page 14

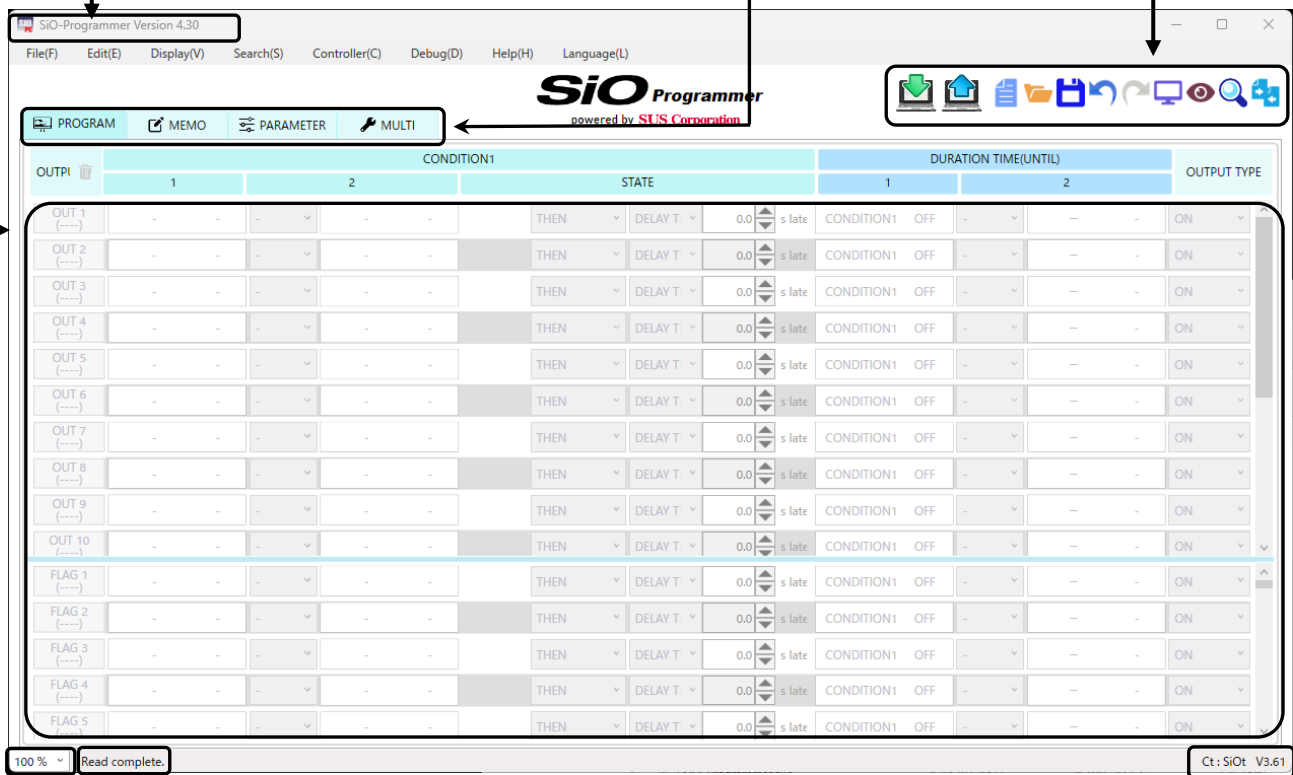
These icons allow you to compare data, use the I/O monitor, save configuration files, and perform other tasks.

(3) Version number

Indicates the version number of

(4) Setting item tab

The setting items of the controller are divided into four tabs. Click to switch the display of SiO-Programmer.
Program → Page 18/Memo → Page 28 /
Parameter → Page 30/Multiple selection → Page 35



(5) Message → Page 52

Messages are displayed during communication and when using functions.

(7) CT version number

Indicates the version number of the controller used for communication.

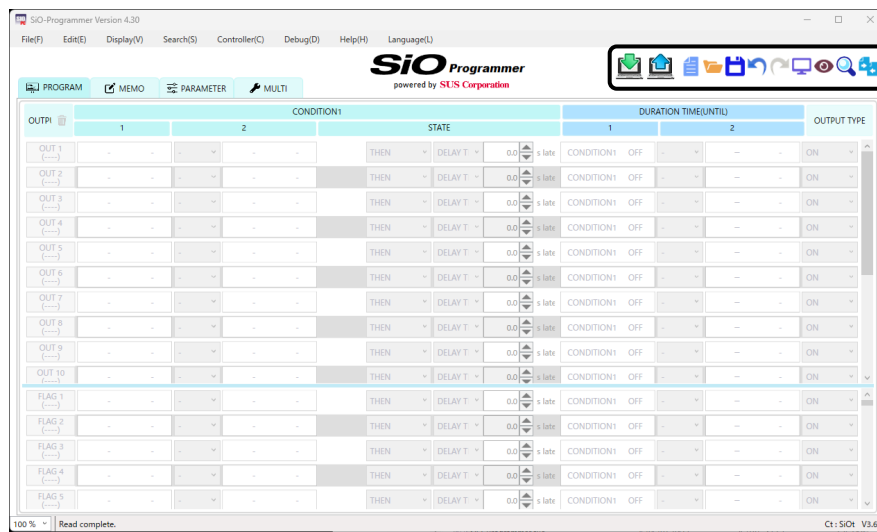
(6) Font size setting

You can change the magnification of the character size of SiO-Programmer. There are 5 types of magnifications to choose from: 200%/150%/120%/100%/80%.

*Characters may be cut off depending on the size.

"In that case, please enlarge the window."

Tool Icons



(1) Read

Reads settings from connected controller.

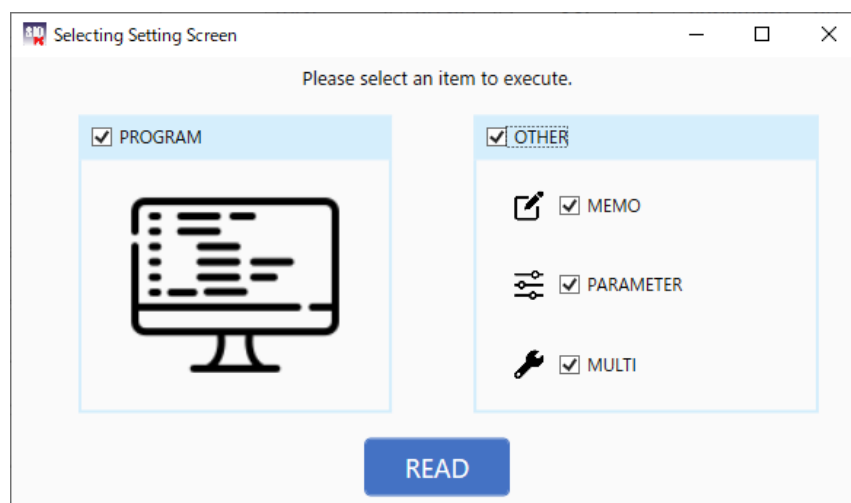
(2) Write

Writes settings to connected controller.

(3) New

Discards the current program, notes, parameters, and other settings, and restores the default settings.

Clicking on (1) through (3) will open the following window, from which you can select the item.



(4) Open

Opens a saved configuration file. Selecting a configuration data file (*.sio) reflects the settings saved in the file on the window.

* You can also open an SiO file by dragging and dropping it.

* An SiO file saved in a different version of SiO-Programmer may not open.

See page 17 for more details.

(5) Save

Saves the current settings. The extension of the configuration file is “.sio”.

If you name the file “sample”, it is saved under the name “sample.sio”.

(6) Undo

Restore the currently program, notes, parameters, and other settings.

This function can be performed up to 20 times.

(7) Redo

It's possible to cancel the undo.

This function can use only the number of times which undo.

(8) Simulator

Starts the simulator (→ Page 49).

The simulator allows you to check how the program you created works.

* You can use the simulator without connecting your computer and the SiO controller.

(9) I/O monitor

Starts the I/O monitor (→Page 47).

You can check the I/O status and switch the output status on or off.

* You need to connect your computer and the SiO controller.

(10) Search and Replace

Display search and replace window (→ Page.50)

Search:

The same I/O as the selected search word becomes yellow.

Replace:

The same I/O as the selected search word replaced with the replaced word.

If there is a multi select which setted Search word, that setting is replaced.

(11) Compare

Compares the current settings in SiO-Programmer with the settings on the connected SiO controller or in an sio data file.

Any differences are highlighted in red.

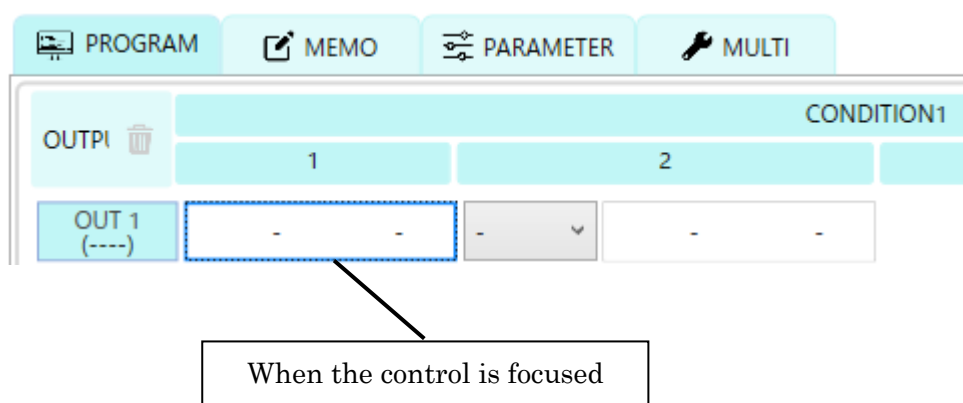
* To compare the current settings with the settings on the SiO controller, connect your computer and the controller to allow communication between them.

Shortcuts are available for some functions.

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

“Keyboard Operations During Program Configuration”

<i>Item</i>	<i>Description</i>
Enter	Click / Confirm
TAB, ←, →	Focus Navigation
↑, ↓	Move Up/Down Rows, Navigate Options in Combo Box
Space	OUT, FLAG Enable / Disable
“Signal Selection Screen”	Signals (I:IN, O:OUT, F:FLAG, M:New Multi, L:Old Multi, E:Ether, R,RUN)
I, O, F, M, L, E, R	
“Signal Selection Screen”	ON,OFF
Z, X	



SiO Controller/SiO-Programmer Compatibility Table

■ How to check the version of the SiO controller ■

The version of the SiO controller can be found on the back of the controller.

SiO-Programmer		Version in which the data file was created								
		Ver1.xx	Ver2.00-2.10	Ver2.20-2.60	Ver3.00-3.31	Ver3.40-3.41	Ver3.50-3.53	Ver3.60-3.62	Ver3.70-3.72	Ver4.00-4.30
Your version	Ver1.xx	○	×	×	×	×	×	×	×	×
	Ver2.00-2.10	○	○	×	×	×	×	×	×	×
	Ver2.20-2.60	○	○	○	×	×	×	×	×	×
	Ver3.00-3.31	○	○	○	○	×	×	×	×	×
	Ver3.40-3.41	○	○	○	○	○	×	×	×	×
	Ver3.50-3.53	○	○	○	○	○	○	×	×	×
	Ver3.60-3.62	○	○	○	○	○	○	○	×	×
	Ver3.70-3.72	○	○	○	○	○	○	○	○	×
	Ver4.00-4.30	○	○	○	○	○	○	○	○	○

Note that the version of SiO-Programmer you can use differs depending on the controller to be used.

Compatibility of saved files between different versions of SiO-Programmer

Note that you cannot open saved files depending on the version of SiO-Programmer you are using, as shown below.

		SiO-C			SiO2, SiO3, SiO-N1		SiO32	SiO-N3		SiO1	SiO1	SiO11, SiO13	SiO2 R2	SiO2 R2	SiO11 R2	SiO11 TB
		Ver1.xx	Ver2.xx	Ver3.xx	Ver1.xx	Ver3.xx	Ver3.xx	Ver1.xx	Ver3.xx	Ver3.00-3.61	Ver3.70	Ver3.xx	Ver3.60	Ver3.70	Ver3.xx	Ver3.xx
SiO-Programmer	Ver1.xx	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Ver2.xx	×	○	×	○	×	×	×	×	×	×	×	×	×	×	×
	Ver3.00-3.30	×	○	○	○	○	○	×	×	×	×	×	×	×	×	×
	Ver3.40-3.41	×	○	○	○	○	○	○	×	○	×	×	×	×	×	×
	Ver3.50-3.53	×	○	○	○	○	○	○	×	○	×	○	×	×	×	×
	Ver3.60-3.62	×	○	○	○	○	○	○	×	○	×	○	○	×	×	×
	Ver3.70-4.04	×	○	○	○	○	○	○	×	○	×	○	○	×	○	×
	Ver4.05-4.10	×	○	○	○	○	○	○	×	○	×	○	○	×	○	○
	Ver4.20-4.30	×	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Ver4.30	×	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Editing Data

Window for creating programs

The [Output condition settings] area allows you to program the SiO controller.

You can read program data from a file or the controller as well as create it.

The number of available outputs and internal outputs varies depending on the controller model.

■ available outputs

- SiO3 / SiON3 / SiOt3 : 16 outputs

OUTPUT	CONDITION1				DURATION TIME(UNTIL)				OUTPUT TYPE
	1	2	STATE		1	2			
OUT 1	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 2	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 3	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 4	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 5	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 6	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 7	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 8	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 9	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 10	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 11	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 12	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 13	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 14	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 15	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 16	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON

- SiO2 / SiO2 R2 : 4 outputs

OUTPUT	CONDITION1				DURATION TIME(UNTIL)				OUTPUT TYPE
	1	2	STATE		1	2			
OUT 1	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 2	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 3	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 4	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 5	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 6	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 7	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 8	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 9	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 10	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 11	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 12	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 13	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 14	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 15	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON
OUT 16	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	ON

- SiO-C / SiO-N1 / SiOt1 / SiO-N1 R2 / SiO-N1 TB: 8 outputs

OUTPUT	CONDITION1						DURATION TIME(UNTIL)				OUTPUT TYPE
	1	2	STATE	1	2	1	2	1	2	OUTPUT TYPE	
OUT 1	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 2	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 3	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 4	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 5	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 6	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 7	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 8	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 9	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 10	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 11	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 12	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 13	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 14	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 15	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 16	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON

Available outputs

The rest is for internal outputs.

Available outputs

- SiO3.2 / SiOt : 2 outputs

OUTPUT	CONDITION1						DURATION TIME(UNTIL)				OUTPUT TYPE
	1	2	STATE	1	2	1	2	1	2	OUTPUT TYPE	
OUT 1	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 2	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 3	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 4	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 5	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 6	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 7	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 8	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 9	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 10	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 11	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 12	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 13	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 14	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 15	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 16	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON

Available outputs

The rest is for internal outputs.

Available outputs

■ internal outputs

- SiO-C / SiO2 / SiO-N1 / SiO3.2 / SiO3 / SiOt : 48 outputs

OUTPUT	CONDITION1						DURATION TIME(UNTIL)				OUTPUT TYPE
	1	2	STATE	1	2	1	2	1	2	OUTPUT TYPE	
OUT 1	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 2	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 3	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 4	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 35	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 37	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 38	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 39	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 40	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 41	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 42	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 43	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 44	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 45	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 46	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 47	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 48	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON

Internal outputs.

• SiO-N3 / SiOt1 / SiOt3 / SiO2 R2 / SiO-N1 R2 / SiO-N1 TB : 256 output

OUTPUT	CONDITION1					DURATION TIME(UNTIL)					OUTPUT TYPE
	1	2	STATE			1	2				
OUT 1 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 2 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 3 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
OUT 4 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 243 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 244 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 245 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 246 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 247 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 248 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 249 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 250 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 251 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 252 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 253 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 254 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 255 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON
FLAG 256 [---]	-	-	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	ON

Internal outputs.

You can change the display ratio between the OUT pane and FLAG pane by dragging the blue bar between the two panes up or down.

OUTP	CONDITION1					DURATION TIME(UNTIL)					OUTPUT TYPE		
	1	2	STATE			1	2						
OUT 1	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON
OUT 2	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON
FLAG 243	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON
FLAG 244	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON
FLAG 245	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON
FLAG 246	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON
FLAG 247	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON
FLAG 248	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON
FLAG 249	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON
FLAG 250	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON
FLAG 251	-	-			THEN	DELAY	0.0	s lat:	CONDITION1	OFF	-	-	ON



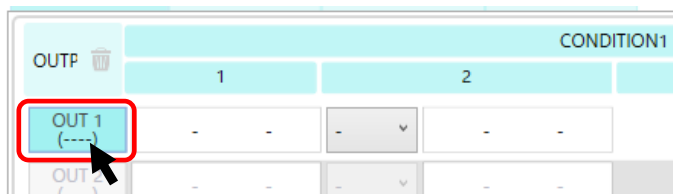
Change the display ratio.

Creating an I/O program

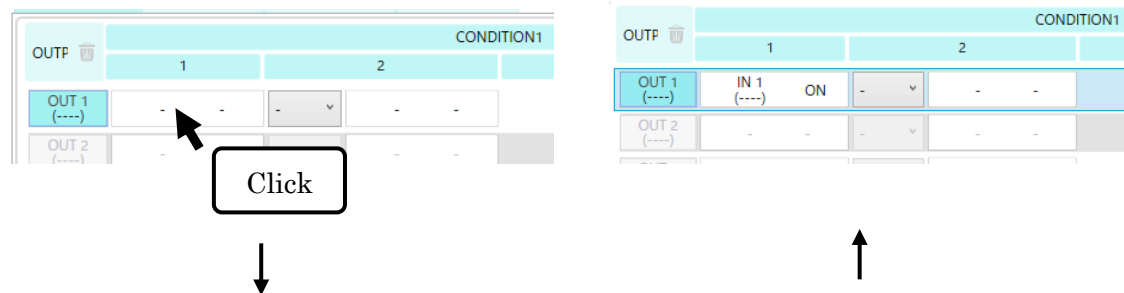
1. Click the desired numbered output button to enable it.

Doing so turns the button blue and allows you to edit the output settings for the selected number.

***The outputs that have not been clicked (OUT2 and subsequent outputs, shown below) are dimmed. These outputs are disabled and do not work, although their settings can be written to the controller.**

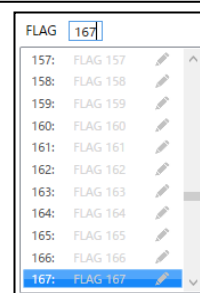


2. Set each item.



※1

It can also be set by entering a number in the text box next to the item name.



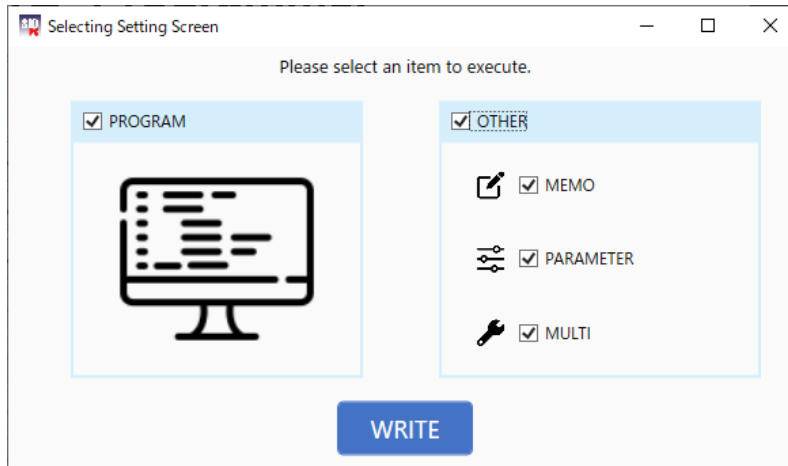
Specify settings for each output. For more details, see “Details of each item” (→ Page 24).

Item	Description
OUT	Indicates the destination to which a signal is output when set conditions are met. For OUT1, you can specify settings for output 1.
CONDITION1 (1 and 2)	Specify conditions for enabling output. You can set two conditions and associate them using the [And] or [Or] option. If you want to set only one condition, select “–” for the third to fifth buttons. Example: To enable output when IN1 (input 1) or IN2 (input 2) turns on OUTPUT 1 2 CONDITION1 OUT 1 (---- IN 1 (---- ON AND IN 2 (---- ON  OR 
STATE	Specify the state after which to enable output if the ON conditions are met. Select [THEN], [CONTINUES], or [TIMES THEN], and specify the time period after which to enable output. For [CONTINUES], set the number of counts as well. STATE THEN DELAY TIME 2.0 s later DELAY TIME 5.0 sec CONTINUES 3 TIMES THEN DELAY TIME 10.0 s later
	THEN TIMES THEN CONTINUES
	Specify how long to wait before output is enabled after the conditions are met. Example 1: “0.0” → Enables output at the moment the conditions are met. Example 2: “2.0” → Enables output 2 seconds after the conditions are met. This is a condition for turning on output. Specify how long the conditions should be met before output is enabled. Example: “3.0” → Enables output if the conditions are met for 3.0 seconds.
	* You can set values D-Times or via hardware timers T1 and T2. → See “Timer settings” on page 27.
DURATION TIMES (UNTIL) (1 and 2)	Set conditions for turning off the output that was enabled when the conditions set above were met. You can set two conditions and associate them using the [And], [Or], or [Before] option. If you want to set only one condition, select “–” for the third to fifth buttons. * If you specify how long to wait before output is turned off ([Before]), you cannot select [And] to combine two conditions. Example: To turn off output 5 seconds after IN3 turns on DURATION TIME(UNTIL) 1 2 IN 3 (---- ON BEFORE D-TIME 5.0 sec    
OUTPUT TYPE	Set the type of output. For ON/OFF cycles, you can select from three options.

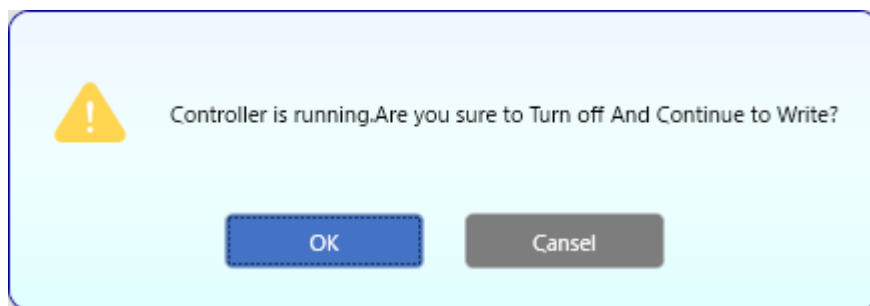
3. Write the settings to the controller.

If not, the settings will not be applied to the controller.

When you press the Register button, a window similar to the one below will appear. Select the items to be registered and press the “Write” button.

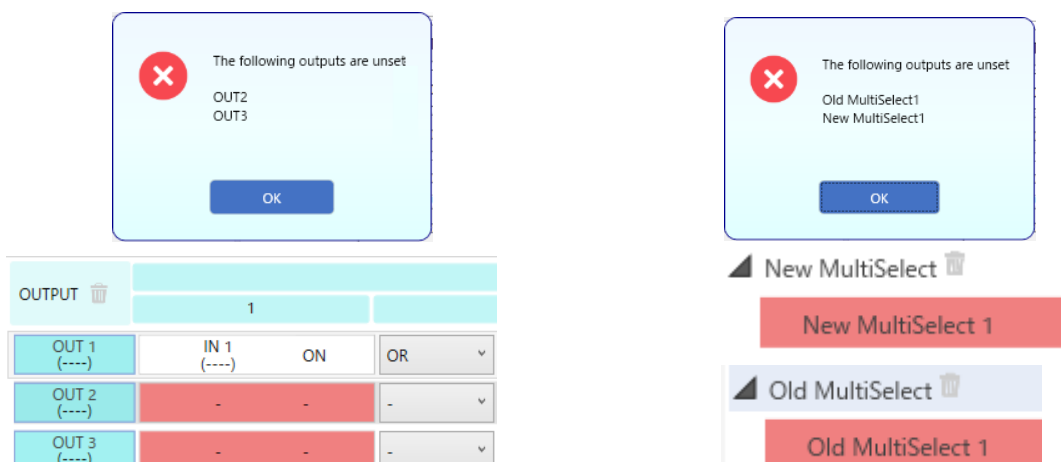


- * Make sure that the controller is in the STOP state before writing the settings to the controller. If the controller is in the RUN state, a message like the one shown below appears. Click the [OK] button to force the controller off to start writing.



If there are invalid settings, a window like the one shown below appears.

Check and correct the invalid output condition settings, which are highlighted in red.



Details of each item

This section details the items you can select in the program window.

(1) CONDITION1

ON conditions are used to turn on output. When set conditions are met, the output turns on. You can specify two conditions.

Three or more conditions can be set by using old multiple selection (→ Page 35) or new multiple selection (→ Page 37), or by specifying unused output or internal output as a condition.

Item	Description
RUN	Indicates that the controller is in the RUN state. If you select [RUN] and [ON], this condition is always met when the controller is used. Do not select [RUN] and [OFF], as this will disable output.
INIT	This signal stays on for a specified number of seconds after the controller goes into the RUN state. You can set the number of seconds in the [PARAMETER] area. See Page 30 for more details. [INIT] + [ON]: Turns on output when the controller goes into the RUN state, and turns off output after a specified number of seconds. [INIT] + [OFF]: Turns off output when the controller goes into the RUN state, and turns on output after a specified number of seconds.
IN1 to IN16 OUT1 to OUT16 FLAG1 to FLAG256 Ether1 to Ether64	Set conditions using [IN] (input), [OUT] (output), [FLAG] (internal output), and [Ether](Ethernet). [IN1] + [ON]: Enables output when IN1 turns on. [OUT1] + [ON]: Enables output when OUT1 turns on. [FLAG1] + [ON]: Enables output when FLAG1 turns on. [Ether1] + [ON]: Enables output when Ether1 turns on.
New Multi sel	Allows you to group multiple inputs and outputs and their ON/OFF status into one condition. You can configure settings for the new multiple selection option in the [MULTI] area (→ Page 37).
Old Multi sel	Allows you to group multiple inputs and outputs into one condition. You can configure settings for the old multiple selection option in the [MULTI] area (→ Page 35).
AND OR	Used to specify a second condition. [And] enables output when both the first and second conditions are met. [Or] enables output when either the first or second condition is met.

(2) STATE

The [STATE] area allows you to set a time period as a condition or specify how long to wait before the operation starts.

Item	Description
THEN	Specify how long to wait from the moment the ON conditions are met until output is enabled. Once the conditions are met, the output stays on even if the conditions are no longer met during the wait time. You can specify up to 6,000.0 seconds.
CONTINUES	Selecting this option enables output only when the ON conditions are met for a certain period of time. You can specify up to 6,000.0 seconds.
TIMES THEN	This option enables output when the ON conditions are met a specified number of times. Set the number of counts and specify how long to wait before output is enabled after the set count is reached. The count is incremented each time the ON conditions are met. You can specify up to 50,000 times. Example: If the ON condition is [IN1] + [ON], and when IN1 turns on, off, and then back on, the number of counts is two. The count is reset when the OFF conditions are met. If you select [CONDITION1] + [OFF] as an OFF condition, the count is reset and output is disabled.

(3) DURATION TIMES(UNTIL)

Specify conditions for turning off the output set in the [OUTPUT TYPE] area. You can specify two OFF conditions.

Three or more conditions can be set by using old multiple selection (→ Page 35) or new multiple selection (→ Page 37), or by specifying unused output or internal output as a condition.

Item	Description
CONDITION1	Indicates the conditions set in the [CONDITION1] area. Selecting [CONDITION1] + [OFF] disables output when the ON conditions are no longer met. If you select [CONDITION1] + [ON], output is not enabled even if the ON conditions are met.
D-Time	Delay Time. Turns off output when a specified time period has elapsed after output is enabled. You can enter a value directly. You can specify up to 6,000.0 seconds.
T1, T2	Turns off output when a specified time period has elapsed after output is enabled. You can set hardware timers. (→ Page 27)

RUN	Indicates that the controller is in the RUN state. If you specify [RUN] and [OFF] and once output is enabled, it continues until the RUN switch on the controller is turned off. Note that if you set [RUN] to [ON], no output occurs.
IN1 to IN16 OUT1 to OUT16 FLAG1 to FLAG256 Ether1 to Ether64	Set conditions using [IN] (input), [OUT] (output), [FLAG] (internal output), and [Ether](Ethernet). Selecting [IN1] + [ON] turns off output when IN1 turns on. Selecting [OUT1] + [ON] turns off output when OUT1 turns on. Selecting [FLAG1] + [ON] turns off output when FLAG1 turns on. Selecting [Ether1] + [ON] turns off output when Ether1 turns on.
New Multi sel	Allows you to group multiple inputs and outputs and their ON/OFF status into one condition. You can configure settings for the new multiple selection option in the [MULTI] area (→ Page 37).
Old Multi sel	Allows you to group multiple inputs and outputs into one condition. You can configure settings for the multiple selection option in the [MULTI] area (→ Page 35).
AND OR AFTER	Used to specify a second condition. [AND] disables output when both the first and second conditions are met. [OR] disables output when either the first or second condition is met. [BEFORE] disables output when the first condition is met and then the second condition is met. * If you select [AND], you cannot specify [D-TIME], [T1], or [T2].

(4) OUTPUT TYPE

You can set the type of output.

Item	Description
ON	Causes the output to stay on. A light would stay lit.
ONOFF ALT	Turns output on and off alternately. A light would blink. You can specify three ON/OFF cycle settings and can change the ON and OFF time periods in the [PARAMETER] area.

Timer settings

When setting a timer in the [STATE] or [DURATION TIMES(UNTIL)] area, you can choose to enter D-TIME or use a hardware timer.

STATE			
	THEN	DELAY TIME	3.0 s later
	T1	sec	CONTINUES
3	TIMES THEN	T2	s later

DURATION TIME(UNTIL)			
	1	2	
D-TIME	1.0 sec	-	-
T1	sec	-	-
T2	sec	-	-

1. D-TIME(Dalay Time)

Enter a time period directly. You can specify up to 6,000.0 seconds in 0.1-second increments.

2. Hardware timers

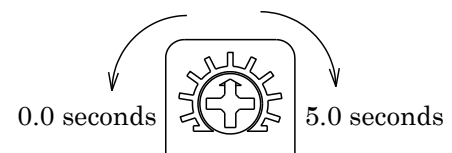
[T1] and [T2] indicate that the hardware timers are being used. These timers are especially useful when the same value is used repeatedly or if you may need to change timer settings without using the computer.

The maximum values of the hardware timers can be set as that for the analog timers on the controller. You can set the maximum values of the hardware timers in the [HARD TIMER MAX] area in the PC software. You can specify maximum values from 5.0 and 6000.0 seconds in 0.1-second increments.

Once you enter maximum values, set the analog timers relative to the maximum values.

Example

(1) Set the maximum values of the hardware timers to 5.0 seconds.



(2) Set the analog timers with a maximum of 5.0 seconds.

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

I/O notes

Memos (labels) can be set for various outputs of IN, OUT, FLAG, Ether, new multiple selection, and old multiple selection.

I/O notes help you create a program by giving you an idea of how input and output devices will operate.

PROGRAM

MEMO

PARAMETER

MULTI

IN

OUT

FLAG

1

2

3

4

5

6

7

1

2

3

4

5

6

7

1

2

3

4

5

6

7

The number of characters is 16 or less.

Enter the names of the input and output devices that are actually connected, and you will see those names in messages (displayed when you position the mouse cursor over output buttons) and on items set in the program window. This allows you to check how the devices operate.

The notes you enter are also reflected in the I/O monitor and simulator windows.

OUTPUT	CONDITION1									
	1		2			STATE				
OUT 1 (Lamp1)	IN 1 (SW(R))	ON	-	-	-	THEN	DELAY TIME	3.0	s	la
OUT 2 (Lamp2)	OUT 1 (Lamp1)	ON	-	-	-	T1	sec	CONTINUES		
OUT 3 (Lamp3)	IN 1 (SW(R))	ON	AND	IN 2 (SW(G))	ON	3	TIMES THEN	T2	s	la

PROGRAM

MEMO

PARAMETER

MULTI

IN

OUT

1

2

3

4

1

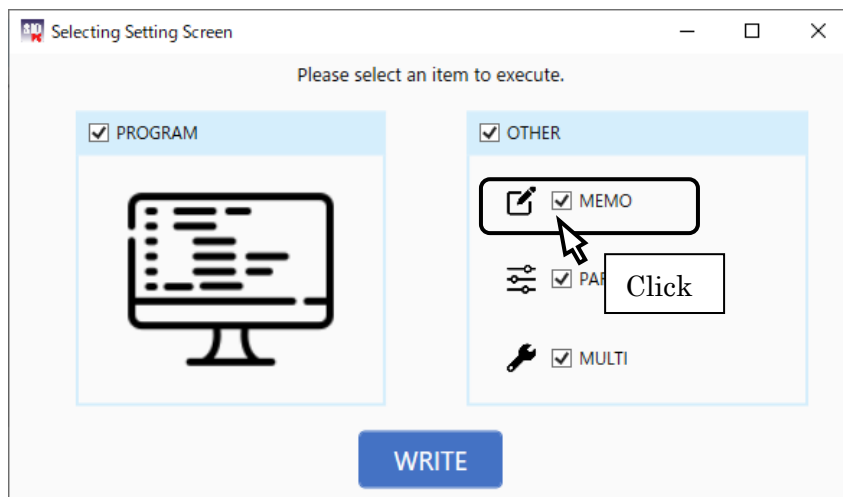
2

3

4

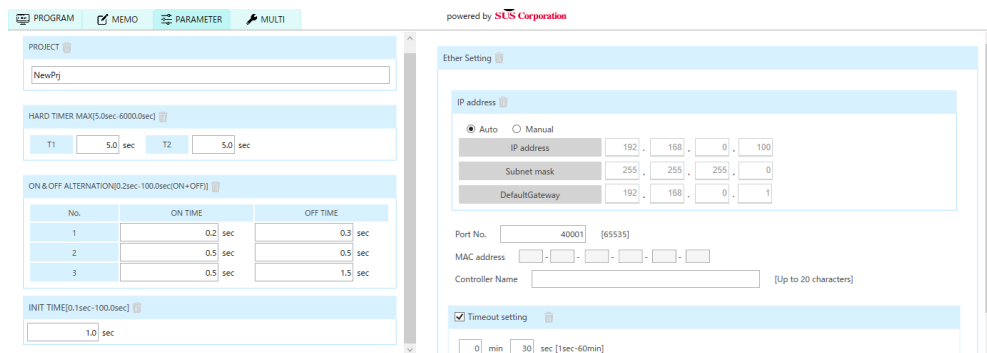
- Reading/Writing Memos to the Controller

Various SiO controllers (except SiO C and SiO3.2) with controller version 3.60 or higher can store memos. Memos can be read/registered by putting a check mark in “Memo” when reading/registering to the supported controllers.

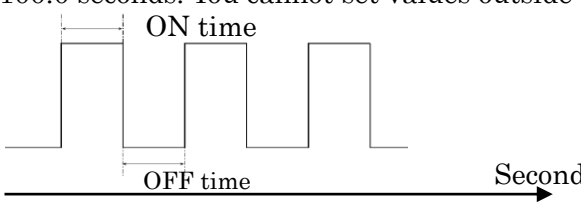
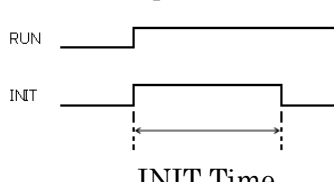


Parameter settings

The [Parameter settings] area allows you to change parameters or address / port settings.



◆ Parameters

Item	Description
HARD TIMER MAX	Set the maximum values of the hardware timers. See Page 27 for details on the hardware timers. You can specify maximum values from 5.0 to 6000.0 seconds separately for T1 and T2.
ON/OFF ALTERNATION	These settings are related to [ONOFF ALT No. 1], [ONOFF ALT No. 2], and [ONOFF ALT No. 3] in the [OUTPUT TYPE] area of the program window. You can set when to switch the output on and off alternately. ON TIME: The time period during which the output is ON Specify a value from 0.1 to 99.9 seconds. OFF TIME: The time period during which the output is OFF Specify a value from 0.1 to 99.9 seconds. Make sure that the total time (ON time + OFF time) is in the range of 0.2 to 100.0 seconds. You cannot set values outside this range. 
INIT TIME	This is the time period for the [INIT] option, which can be used in the [CONDITION1] area of the program window. When you put the controller into the RUN state, the INIT signal turns on internally, and then turns off after a specified number of seconds. You can use the INIT signal to enable output for a certain number of seconds after the controller enters the RUN state. This option is useful when you want to reset all settings or perform origin return of all output devices at once. 

Item	
Address/Port	Set the IP address subnet mask port number for Ethernet communication. Moreover, a MAC Address can be read. This parameter can use only a SiOt series controller.

- About automatic / manual setting of address

In the address setting, set the IP address, subnet mask, default gateway.

The DHCP (IP address automatic assignment) function can be turned ON / OFF by switching the automatic / manual button as shown in the figure below.

In addition, the initial value when SiO-Programmer is started is set to automatic.

- Auto

The controller automatically obtains the IP address, subnet mask, default gateway value from a DHCP (IP address auto-assignment) server such as a router and connects to the network.

The value is displayed by communicating using SiO-Programmer while the controller is connected to the network.

In addition, all the setting points in the frame will be grayed out, and you will not be able to input anything from the PC side.

The screenshot shows the 'IP address' window. The 'Auto' radio button is selected and highlighted with a red box. The 'Manual' radio button is unselected. Below the radio buttons, the IP address, Subnet mask, and DefaultGateway are displayed in a grayed-out state. The IP address is 192.168.0.100, Subnet mask is 255.255.255.0, and DefaultGateway is 192.168.0.1.

- Manual

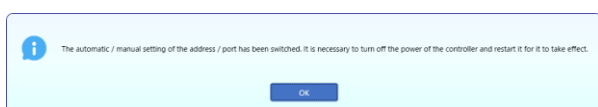
Connect to the network by registering with the controller by entering the IP address, subnet mask, default gateway value.

The screenshot shows the 'IP address' window. The 'Manual' radio button is selected and highlighted with a red box. The 'Auto' radio button is unselected. Below the radio buttons, the IP address, Subnet mask, and DefaultGateway are displayed in a light blue state, indicating they are active for input. The IP address is 192.168.0.100, Subnet mask is 255.255.255.0, and DefaultGateway is 192.168.0.1.

* When registering with the controller, register with the controller If the automatic / manual setting that was set is changed, A message will be displayed as shown on the right.

To reflect when switching between automatic / manual

Settings Turn off the power of the controller once.



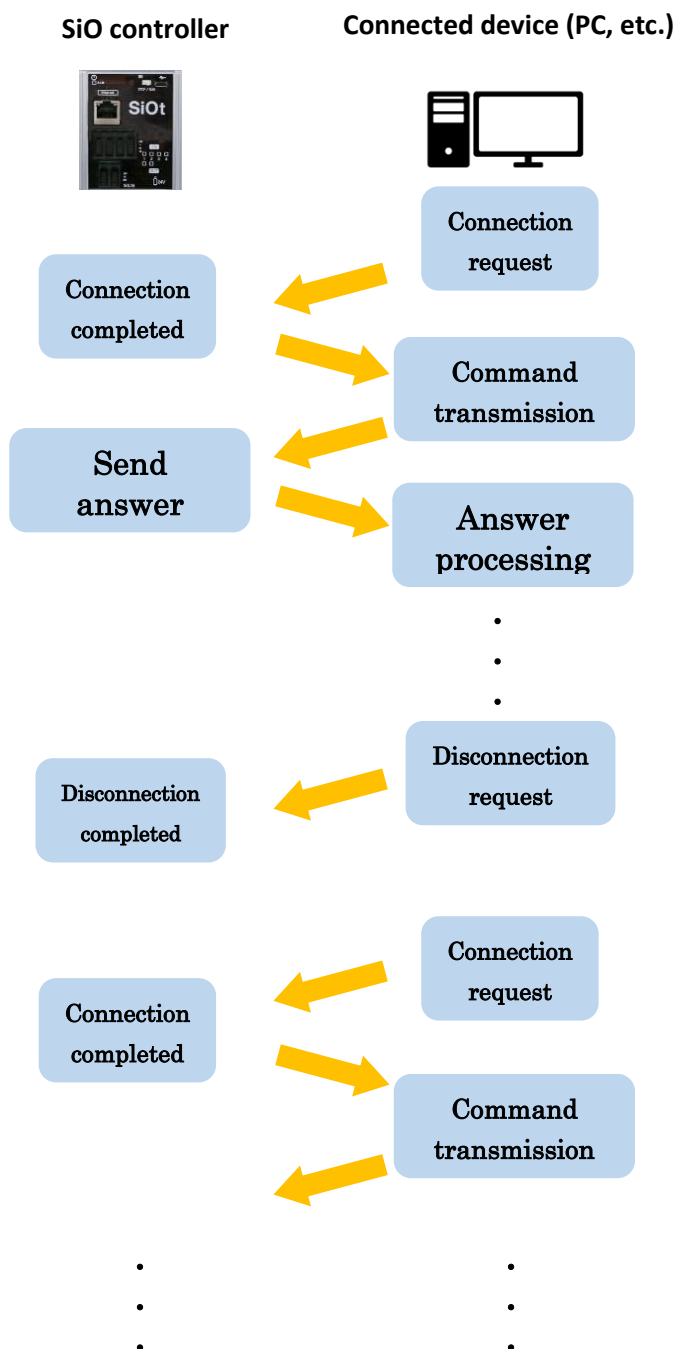
• About Ethernet communication timeout setting

Description of timeout settings

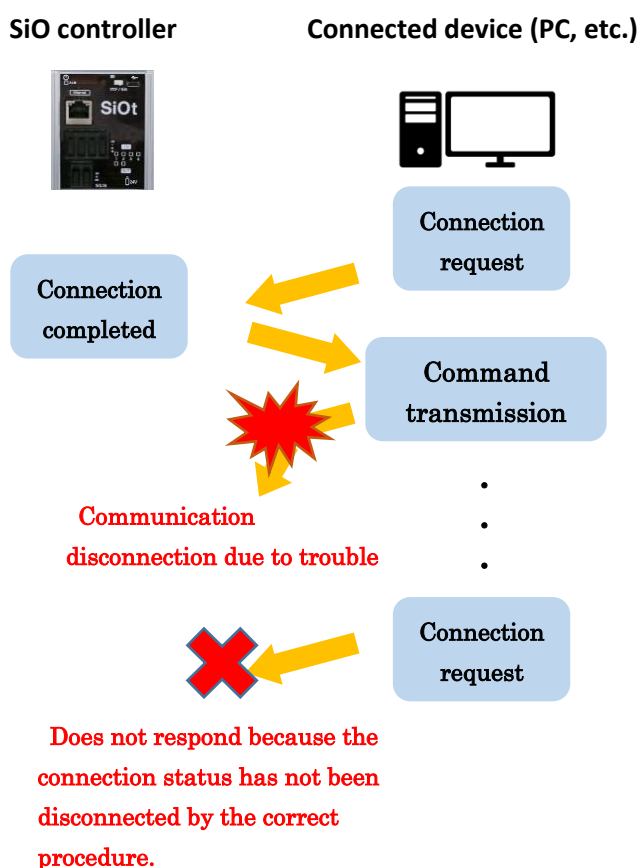
If a command is not sent from a device that supports Ethernet communication such as a PC within the set time, this function cancels the connection status of the controller and enables quick reconnection.

The initial value is set to "valid" for 30 seconds.

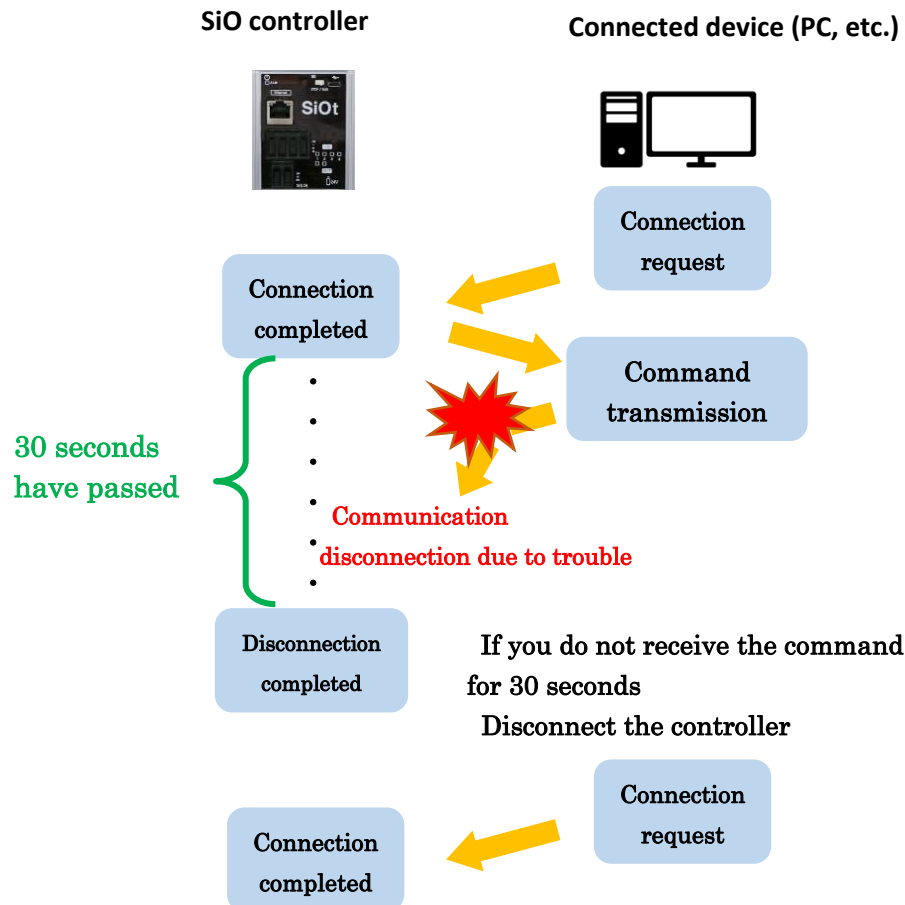
【 Example 1 】Normal communication flow



【 Example 2 】When there is no timeout setting



【 Example 3 】 When there is a timeout setting (30 seconds)



In this way, if the command cannot be received in time, the controller determines that the communication has failed and disconnects the connection state.

By setting the timeout, it is possible to quickly switch from disconnection to recovery.

- If enabled

If “Timeout setting” is selected, a time setting is required.

The initial value is 30 seconds, and the input range can be set from 1 second to 60 minutes.

☒ Timeout setting 

min sec [1sec-60min]

- If disabled

If not selected, you cannot click the text that sets the timeout period.

☐ Timeout setting 

min sec [1sec-60min]

- About the controller name for Ethernet communication

Description of controller name

It is a name tag that can be used to distinguish the controller when using Ethernet communication software (IoT-Monitor).

The screenshot displays the 'IP address' configuration section of the SiO-Programmer. It includes a header bar with a trash icon. Below it, there are radio buttons for 'Auto' (selected) and 'Manual'. The 'IP address' row shows the values 192, 168, 0, and 100. The 'Subnet mask' row shows 255, 255, 255, and 0. The 'DefaultGateway' row shows 192, 168, 0, and 1. Below these, there is a 'Port No.' field with the value 40001 and a range [65535]. A 'MAC address' field is shown with six empty boxes. The 'Controller Name' field is highlighted with a red border and contains the text '[Up to 20 characters]'. Below this, there is a 'Timeout setting' section with a checked checkbox and a trash icon. The 'Timeout setting' row shows '0' min and '30' sec, with a range [1sec-60min].

IP address			
☒ Auto ☐ Manual			
IP address	192	168	0
Subnet mask	255	255	0
DefaultGateway	192	168	1

Port No. 40001 [65535]

MAC address - - - - -

Controller Name [Up to 20 characters]

☒ Timeout setting

0 min 30 sec [1sec-60min]

The SiO Programmer writes and reads the set controller name.

- * The controller name can also be confirmed from the Ethernet communication software (IoT-Monitor).

◆ Old Multi Sel(Old Multiple selections)

Multi Select will be displayed when you switch tabs.

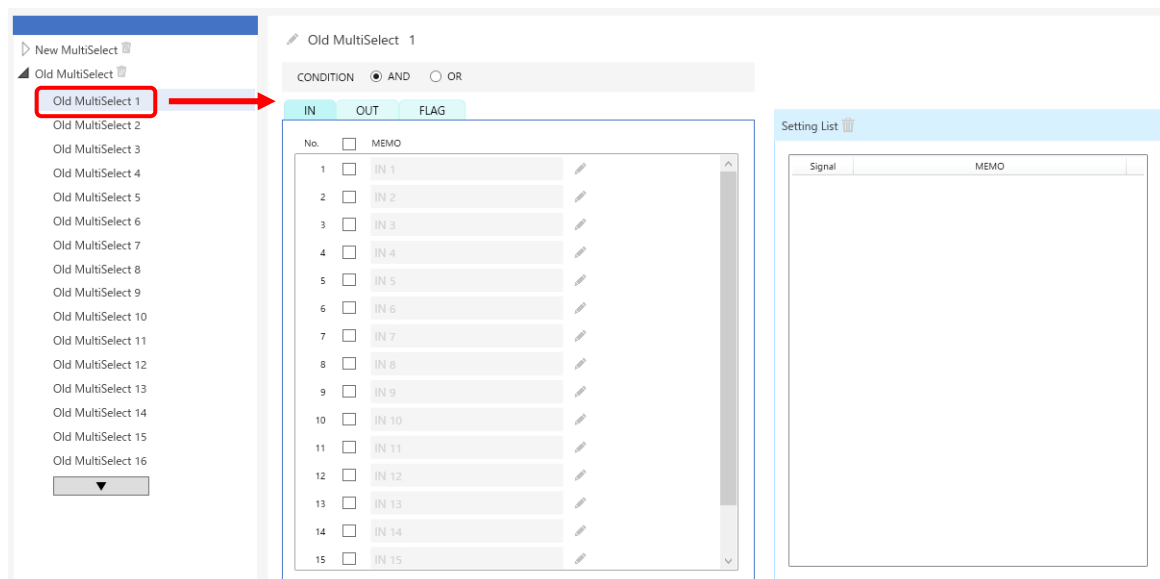
The old multiple selection option allows you to group multiple inputs and outputs.

Although you can only specify up to two I/O devices as ON or OFF conditions, this option enables you to use multiple inputs and outputs as one condition.

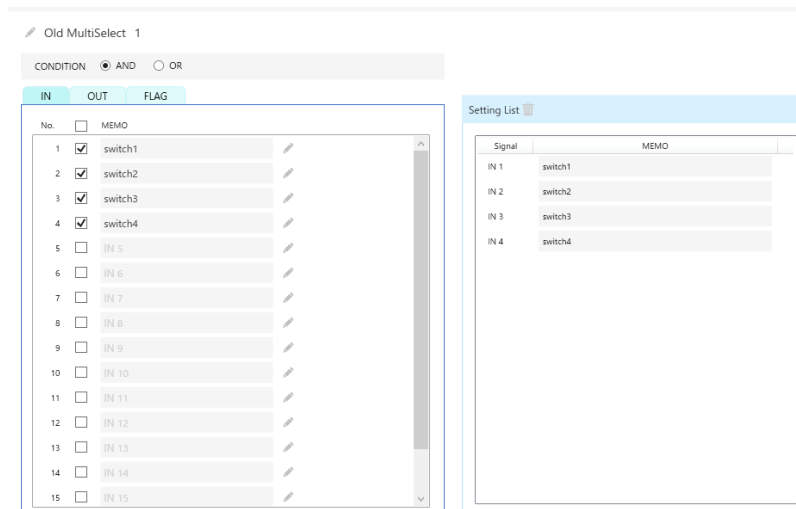
Old Multiple selections displayed by default are 16 types, but there are up to 64 choices available.

How to set and use the Old MultiSelect

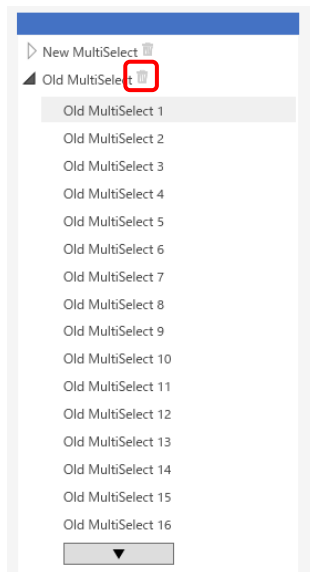
Click "Old MultiSelect1" under "Old Multi Select" to display a separate screen where you can set the options.



Example: In the [Old Multi select 1] window, select the [IN1] (switch 1) to [IN4] (switch 4) check boxes and select [And].



If you click the [] next to “Old Multiple Selection” on the left side, you can reset all settings of “Old Multiple Selection 1-64”.

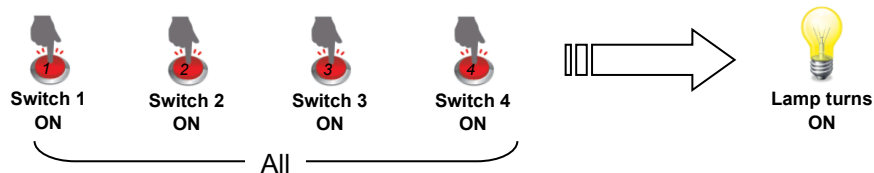


< Example of use >

Create the following program:

OUTPI 	CONDITION1					DURATION TIME(UNTIL)							
	1	2	STATE			1	2						
OUT 1 (----	Old MultiSelect	ON	-	-	-	THEN	DELAY T	0.0	s late	CONDITION1	OFF	-	-

This program causes a lamp to light up when all switches (1 to 4) are turned on.



◆ New Multi Sel(New Multiple selections)

*Please refer to the version table on our website for the controllers that can use New multiple selection.

Multi Select will be displayed when you switch tabs.

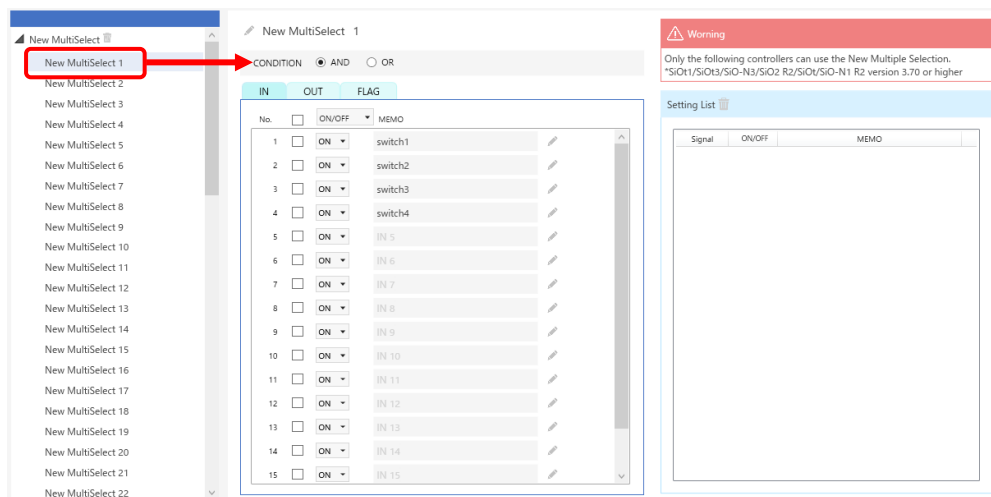
The new multiple selection option allows you to group multiple inputs and outputs.

Although you can only specify up to two I/O devices as ON or OFF conditions, this option enables you to use multiple inputs and outputs as one condition. In addition to this, the new multiple selection allows you to set the ON and OFF states of each selected input/output, which can be set as a specific condition.

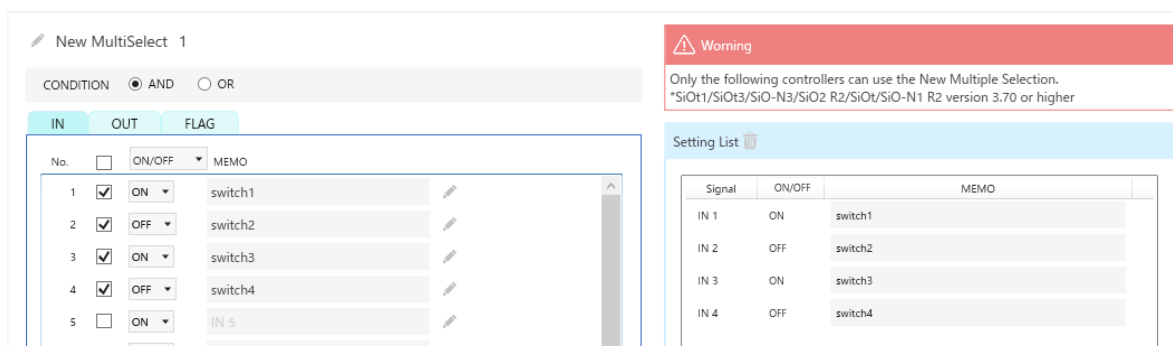
There are 64 types of new multiple selections that can be created, and the output that can be set is IN/OUT of the registered controller and FLAG1 to 256.

How to set and use the New multiSelect

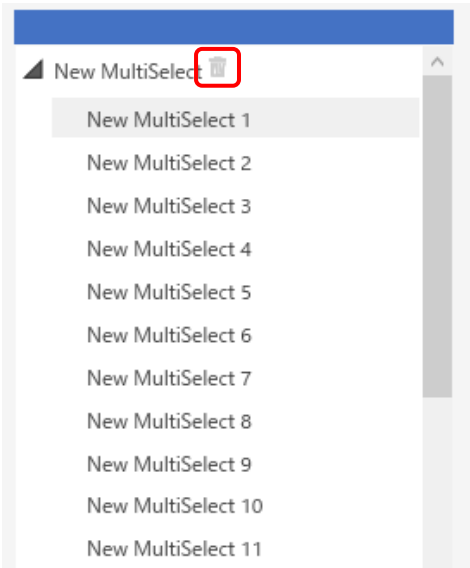
Click "New MultiSelect1" under " New Multi Select" to display a separate screen where you can set the options.



Example: In the [New Multi select 1] window, select the [IN1] (switch 1) to [IN4] (switch 4) check boxes and select [And]. Also, set IN1 and IN3 to ON, and IN2 and IN4 to OFF.



If you click the [] next to “New Multiple Selection” on the left side, you can reset all settings of “New Multiple Selection 1-64”.



< Example of use>
Create the following program:

OUTPUT	CONDITION1				DURATION TIME(UNTIL)			
	1	2	STATE		1	2		
OUT 1 (---)	New MultiSelect (---)	ON	-	-	THEN	DELAY TIM	0.0	s later
						CONDITION1	OFF	-

When "Switch 1" and "Switch 3" are ON and "Switch 2" and "Switch 4" are OFF, the lamp lights up.



Setting examples

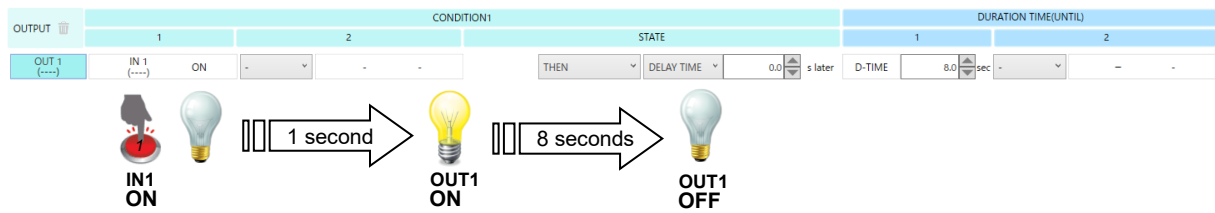


... Input



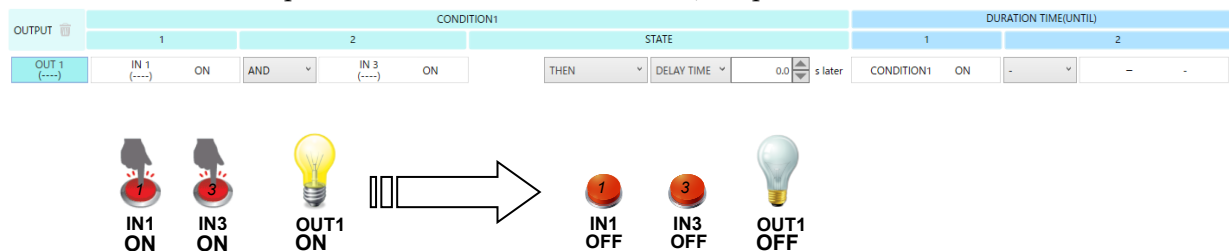
... Output

Example 1: If input 1 stays on for 1 second, output 1 turns on and then turns off after 8 sec.



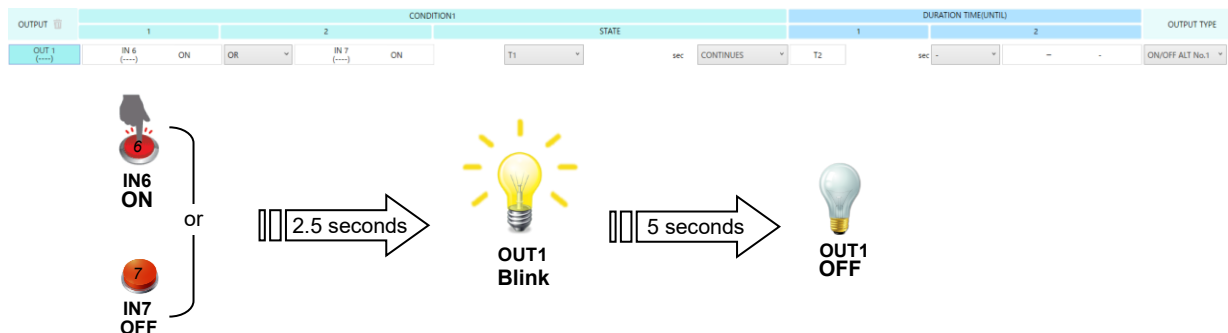
Example 2: When inputs 1 and 3 are turned on, output 1 turns on.

When input 1 or 3 or both are turned off, output 1 turns off.



Example 3: If input 6 stays on or input 7 stays off for 2.5 seconds, output 1 blinks for 5 seconds and then turns off.

* This example uses the hardware timers.

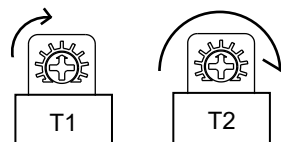


In the [HARD TIMER MAX] area, set T1 and T2 to 5.0 seconds.

Turn analog timer T1 halfway, and turn analog timer T2 to the maximum.

HARD TIMER MAX[5.0sec-6000.0sec]

T1	5.0 sec	T2	5.0 sec
----	---------	----	---------



Example 4: If inputs 1, 2, and 3 are turned on, output 1 turns on.

OUTPUT	CONDITION1				DURATION TIME(UNTIL)									
	1		2		STATE		1		2					
OUT 1 (---)	FLAG 1 (---)	ON	AND	IN 3 (---)	ON	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	-
FLAG 1 (---)	IN 1 (---)	ON	AND	IN 2 (---)	ON	THEN	DELAY TIME	0.0	s later	CONDITION1	OFF	-	-	-



**IN1
ON****IN2
ON****IN3
ON****OUT1
ON**

Specify inputs 1 and 2 as the conditions for internal output 1 (FLAG1), and specify internal output 1 and input 3 as the conditions for output 1. In this way, you can specify three or more conditions.

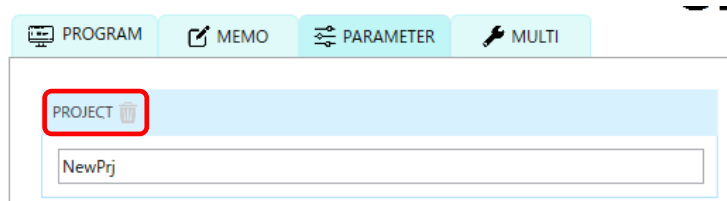
See page 43 for more details on internal outputs.

Useful features

Here are some useful features of SiO-Programmer:

(1) Saving project names

You can save project names to the controller. Use project names as notes on what programs are stored on the controller. When you save your settings to a file, the project name is saved separately from the file name. This means that you can simply read the project name from the file and write it to the controller.



(2) Cut, copy, paste, and reset

In the program window, **right-click** in a row and click [OUT X Reset], [OUT X Cut], [OUT X Copy], or [OUT X Paste] to reset, cut, or copy the output settings in the row where you right-clicked or to paste settings to that row.

Shortcuts are available for some commands.

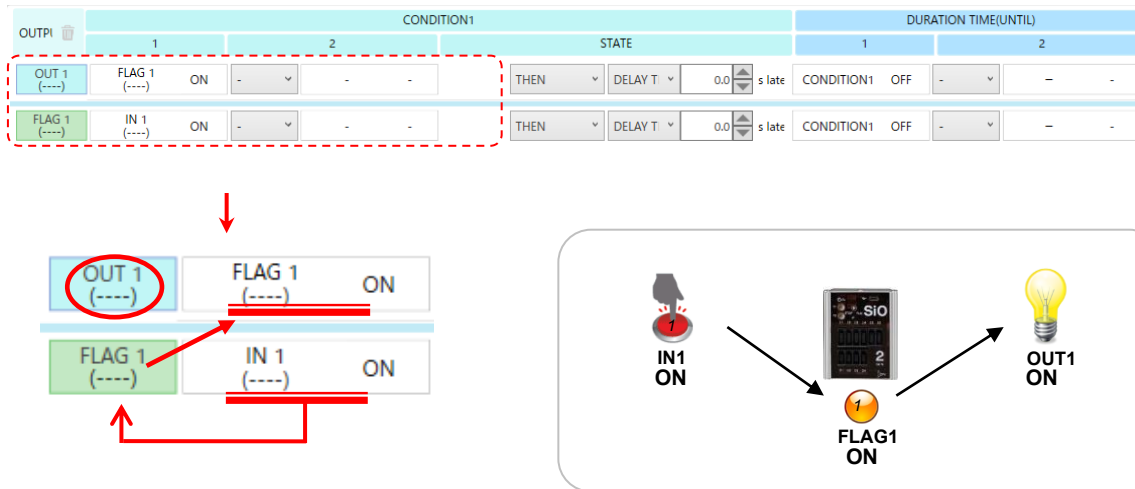
- Cut: Ctrl + X
- Copy: Ctrl + C
- Paste: Ctrl + V



(4) Internal outputs (FLAGS)

Internal outputs (FLAGS) or the outputs exceeding the available number of outputs (e.g., OUT5 and subsequent outputs in the case of SiO2) cannot be used to output external signals. However, these outputs, which work inside the controller, can be used as conditions.

Take the following program as an example:



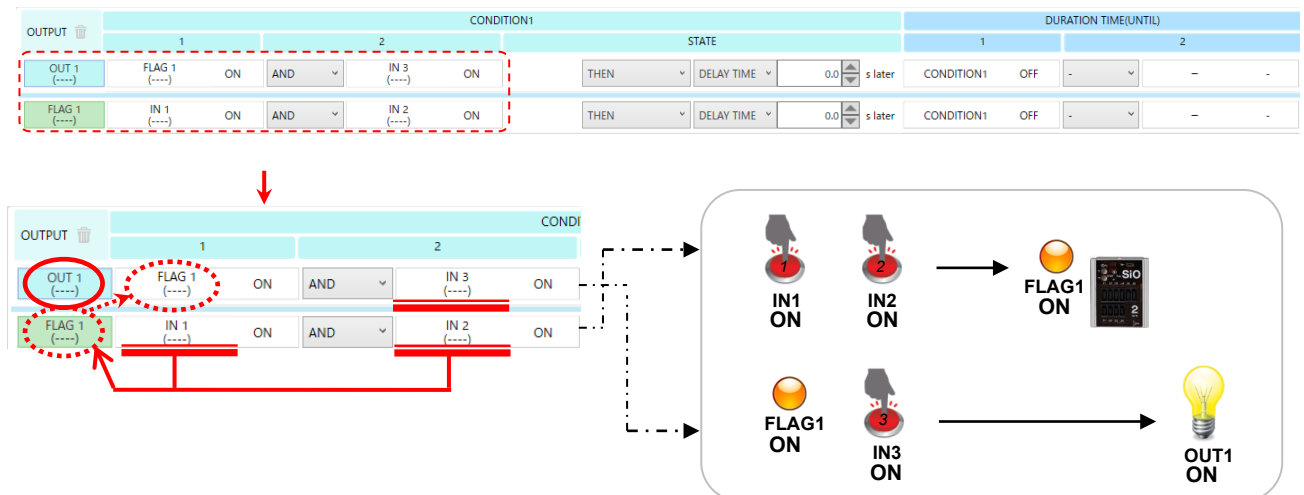
In this program, turning on IN1 causes OUT1 to turn on.

When IN1 is turned on, the condition for FLAG1 is met and FLAG1 turns on.

When FLAG1 turns on, the FLAG1 signal turns on inside the SiO controller, although the controller shows no change.

This, in turn, meets the ON condition for OUT1 (FLAG1 is ON), causing OUT1 to turn on.

Although normally you can only specify up to two ON conditions, you can specify three ON conditions using the above internal output, as follows:



In this program, turning on IN1, IN2, and IN3 causes OUT1 to turn on.

Specify IN1 and IN2 as the ON conditions for FLAG1, and FLAG1 and IN3 as the ON conditions for OUT1.

OUT1 turns on when IN1, IN2, and IN3 are all turned on.

Although turning on IN1 and IN2 causes FLAG1 to turn on, only OUT1 appears to turn on, because the controller shows no change.

(5) Insertion of FLAG

In the program window, **right-click** in a row and click [FLAG X Insert], The new FLAG settings on the row where you right-clicked .

Before insert

Program window					New / Old Multi Sel			FLAG Memo	
OUT 1 (---)	FLAG 1 (relay)	ON	AND	IN 3 (---)	IN	OUT	FLAG	FLAG	
FLAG 1 (relay)	IN 1 (---)	ON	AND	IN 2 (---)	No.	☐	ON/OFF	MEMO	
FLAG 2 (---)	IN 2 (---)	ON	-	-	1	☒	ON	relay	1 relay
FLAG 3 (---)	-	-	-	-	2	☐	OFF	FLAG 2	2
FLAG 4 (---)	FLAG 2 (---)	ON	-	-	3	☐	ON	FLAG 3	
FLAG 5 (---)	-	-	-	-					

Right-click and FLAG Inserts

FLAG 1 (relay)	IN 1 (---)	ON	AND	IN 3 (---)	FLAG 1 (---)	-	-	-
FLAG 2 (---)	-	-	-	-	FLAG 2 (relay)	IN 1 (---)	ON	AND
FLAG 3 (---)	-	-	-	-	FLAG 3 (---)	IN 2 (---)	ON	-
FLAG 4 (---)	-	-	-	-	FLAG 4 (---)	-	-	-
FLAG 5 (---)	-	-	-	-	FLAG 5 (---)	FLAG 3 (---)	ON	-
FLAG 6 (---)	-	-	-	-				

Program window and Multi Sel, FLAG Memo will be automatically edited according to the insertion of the flag.

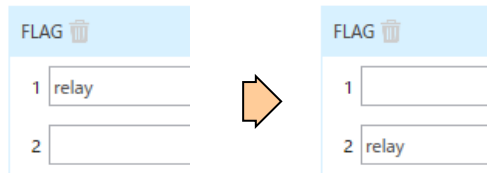
Program window

OUT 1 (---)	FLAG 1 (relay)	ON	AND	IN 3 (---)	OUT 1 (---)	FLAG 2 (relay)	ON	AND	IN 3 (---)
FLAG 1 (relay)	IN 1 (---)	ON	AND	IN 2 (---)	FLAG 1 (---)	-	-	-	-
FLAG 2 (---)	IN 2 (---)	ON	-	-	FLAG 2 (relay)	IN 1 (---)	ON	AND	IN 2 (---)
FLAG 3 (---)	-	-	-	-	FLAG 3 (---)	IN 2 (---)	ON	-	-
FLAG 4 (---)	FLAG 2 (---)	ON	-	-	FLAG 4 (---)	-	-	-	-
					FLAG 5 (---)	FLAG 3 (---)	ON	-	-

New/Old Multi Sel

IN	OUT	FLAG
No.	☐	ON/OFF
1	☒	ON
2	☐	OFF
3	☐	ON

FLAG Memo



After Insert

Program window

OUT 1 (---)	FLAG 2 (relay)	ON	AND	IN 3 (---)	ON
FLAG 1 (---)	-	-	-	-	-
FLAG 2 (relay)	IN 1 (---)	ON	AND	IN 2 (---)	ON
FLAG 3 (---)	IN 2 (---)	ON	-	-	-
FLAG 4 (---)	-	-	-	-	-
FLAG 5 (---)	FLAG 3 (---)	ON	-	-	-

New/Old Multi Sel

No.	IN	OUT	FLAG
1	☐	ON	FLAG 1
2	☒	ON	relay
3	☐	OFF	FLAG 3
4	☐	ON	FLAG 4

FLAG Memo

New multiple selection shifts the checked FLAG and its ON/OFF setting, and old multiple selection shifts the checked FLAG downward by one.

※Cannot be inserted in the following cases

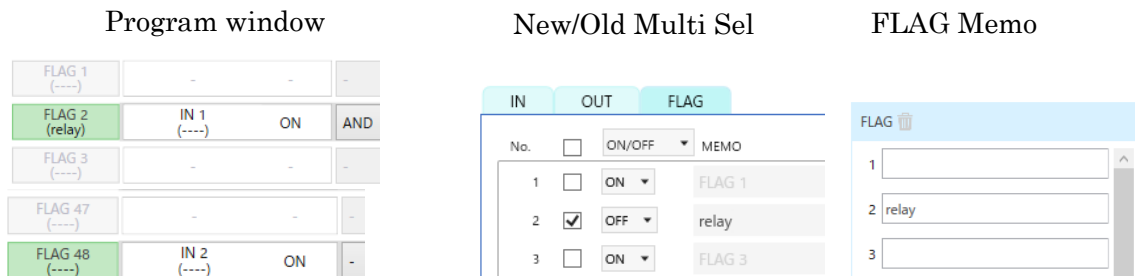
1. If the FLAG256 is valid and the program is entered
2. If the FLAG256 is invalid but the program is entered
3. If the FLAG256 is valid and no program is entered
4. If the FLAG256 Memo is entered
5. If the FLAG 256 is used in Program Window
6. If the FLAG 256 is used in Multi Sel

(6) Delete of FLAG

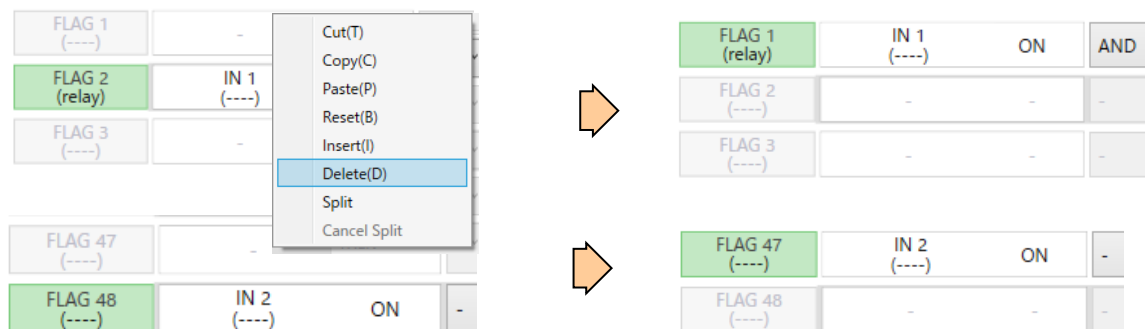
In the program window, **right-click** in a row and click [FLAG X Delete], The selected FLAG is deleted and new FLAG settings in last row.

Like insertion of FLAG, Program window and Multi Sel, FLAG Memo will be automatically edited according to the delete of the flag.

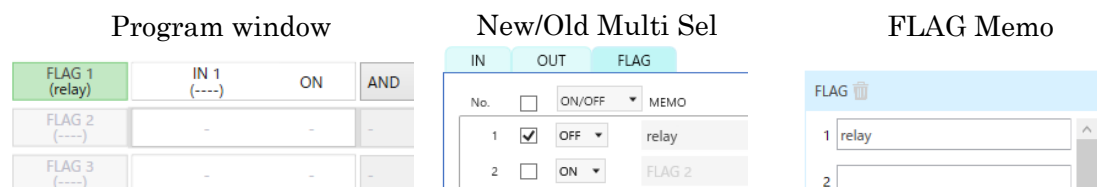
Before delete



Right-click and FLAG Delete



After Delete



The new multiple selection shifts the checked FLAG and its ON/OFF setting, and the old multiple selection shifts the checked FLAG up by one.

※Cannot be inserted in the following cases

1. If the Selected FLAG is valid and the program is entered
2. If the Selected FLAG is invalid but the program is entered
3. If the Selected FLAG is valid and no program is entered
4. If the Selected FLAGMemo is entered
5. If the Selected FLAG is used in Program Window
6. If the Selected FLAG is used in Multi Sel

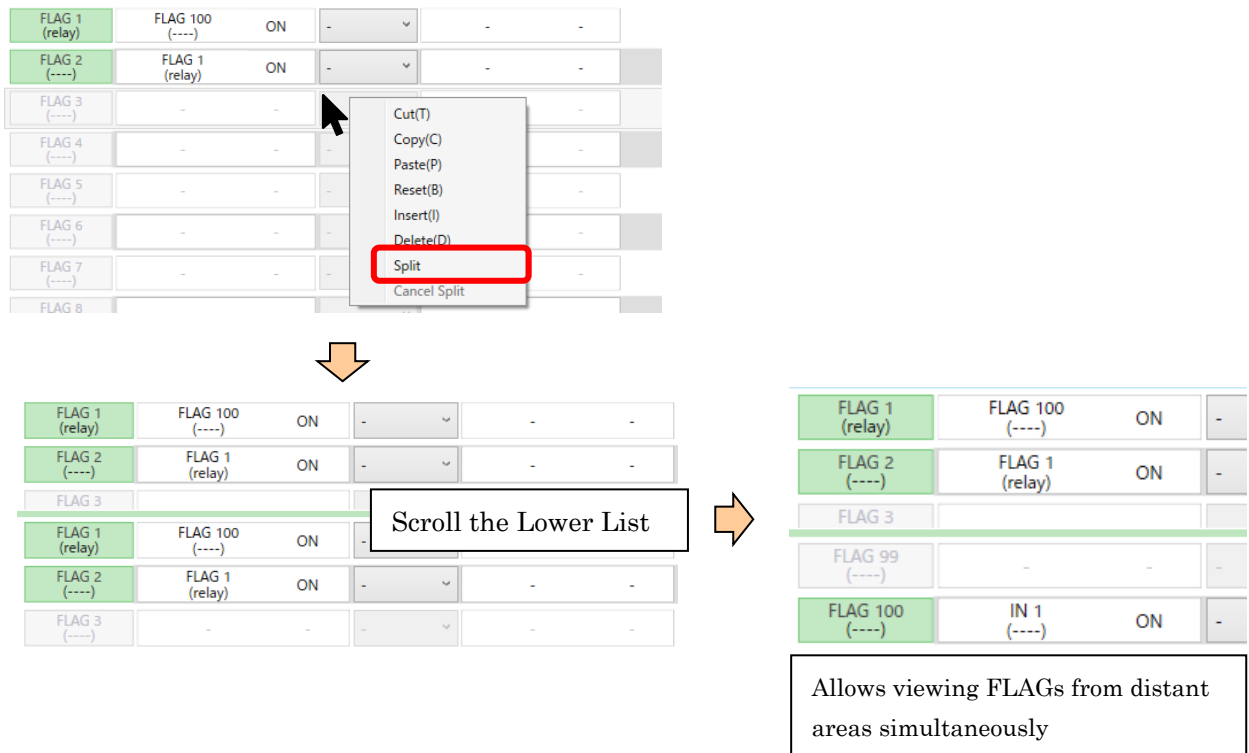
(7) Start by a double-click of a configuration file

SiO-Programmer can be started in the state which made setting data reflected by a double-click of a configuration file

(8) Split Display of FLAG Indicators

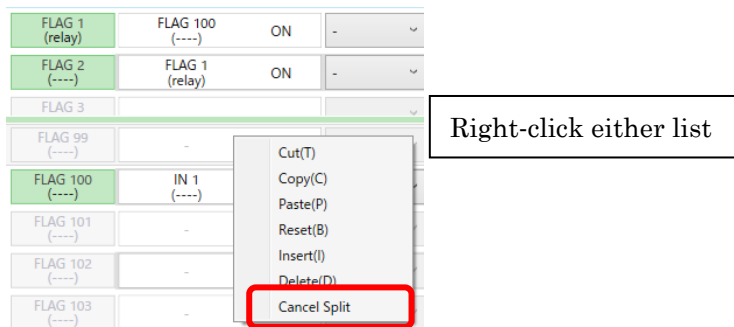
Split Display of FLAG Indicators — This feature allows the FLAG list to be divided into two sections, enabling the user to view FLAG entries from separate areas at the same time. The contents of both lists remain synchronized after the split.

Only two splits are supported.

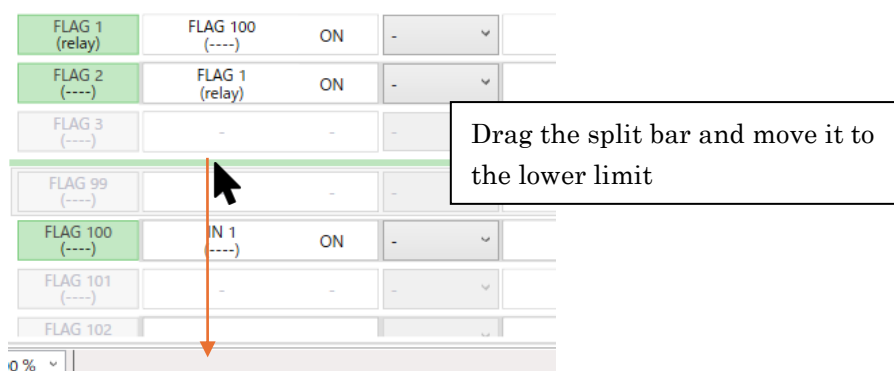


How to Cancel the Split View

1.



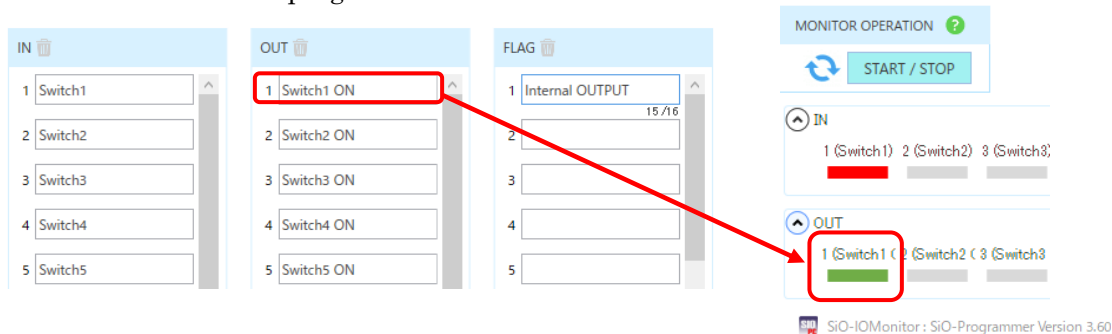
2.



I/O Monitor

The I/O monitor enables you to monitor the I/O status. You can display the I/O monitor by clicking the monitor icon at the top right of the window. The I/O monitor can be used only when the controller and your computer are connected.

On the I/O monitor, you can check whether the controller is in the RUN state, check the ON/OFF status of the inputs and outputs, or force OUTs or FLAGS to turn on. You can also save changes in the I/O status to a CSV file. The names of inputs and outputs will be replaced with the notes you enter in the program window. At the bottom of the monitor window is an I/O monitor that looks similar to the program window.



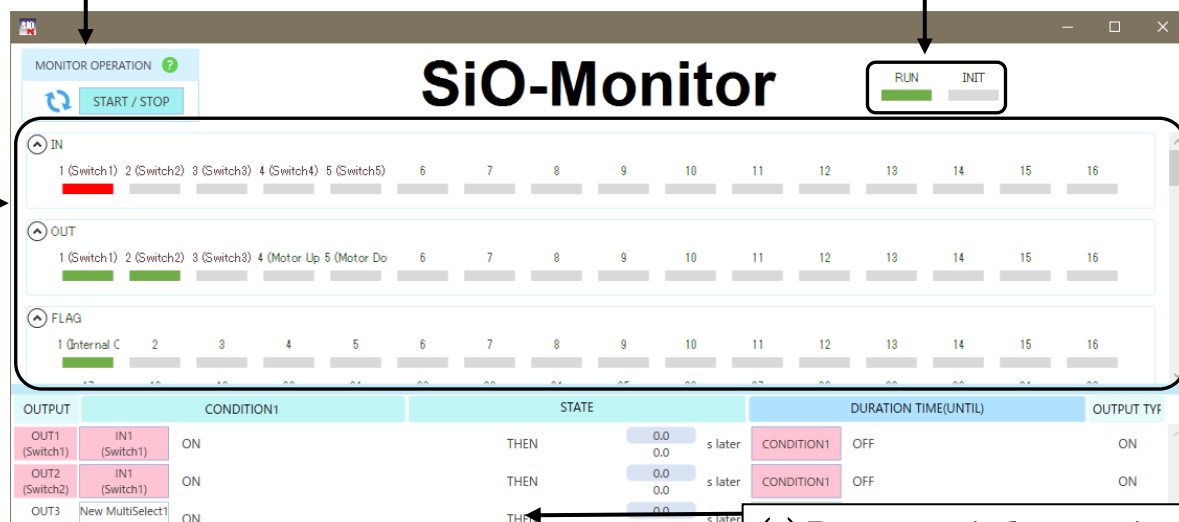
(1) Monitor controls

Click [START] to start monitoring. Click [STOP] to stop monitoring.

(4) RUN switch

Indicates whether the controller is in the RUN or STOP state.

- RUN: Green; STOP: Gray



(3) I/O status check

Shows the I/O status.

ON: Red for IN indicators, green for OUT, FLAG, and multiple-selection indicators

OFF: Gray

CheckOFF: Click an output indicator to invert them on during Clicking.

CheckOn: Click an output indicator to invert them.

Click a multiple-selection indicator to see its settings

For New/Old multiple selection, click to display the settings.

New multiple selection and Ether will not be displayed if a non-compliant controller is connected.

(4) Program window monitor

Allows you to monitor the I/O status in the layout of the program window.

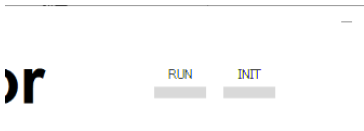
- ON: Red; OFF: White

If the number of seconds or counts is set, the number of seconds or counts on the controller appears circled in blue.

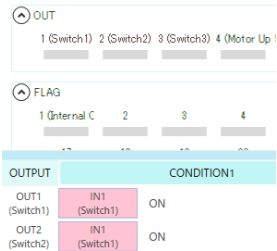
Forced Output

Only when the SiO controller being monitored is in the RUNOFF state, you can turn ON the OUT from the monitor screen.
The procedure for forced output is as follows:

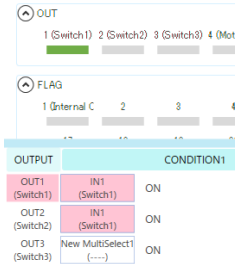
1. Turn OFF the RUN of the controller. Please also refer to the various SiO controller manuals.



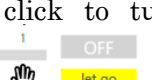
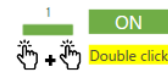
2. Click on the item you want to force output.



3. The clicked item will turn ON.

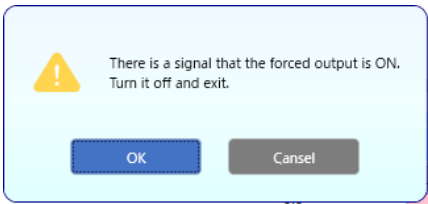


When performing forced output, the behavior changes depending on whether you use a single click or a double click. Please refer to the table below for details.

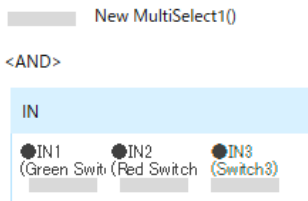
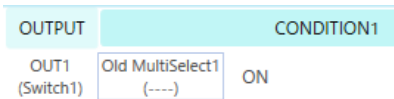
Method to turn ON	Method to maintain ON state	Method to turn OFF
Click 	While Clicking 	Release the click to turn it OFF 
Double Click 	Release Click 	Click again to turn it OFF 

When you try to close the monitor screen while the forced output is ON, the following screen will be displayed:

- Pressing ****OK**** will turn OFF the OUT and FLAG that were in forced output state and close the monitor screen.
- Pressing ****Cancel**** will keep the forced output state active and continue displaying the monitor screen.



***Note:** If you are using both new and legacy multi select modes, you can display the selected IOs by clicking. Additionally, for new multiple-selection mode, ON settings will be shown as "●" and OFF settings will be shown as "○".

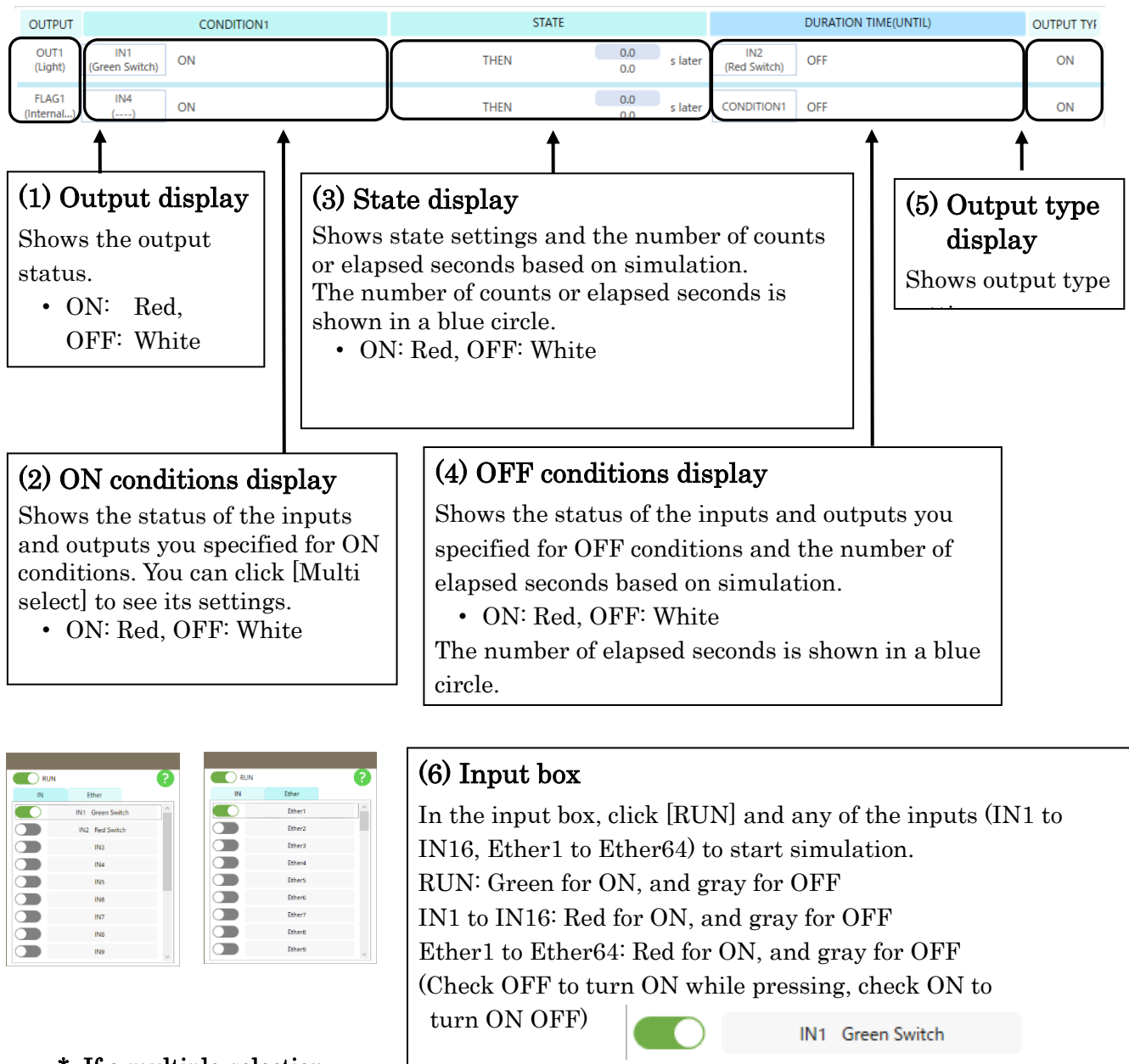


Simulator

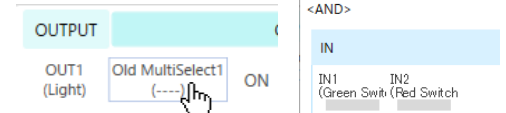
The simulator shows how the settings you configured in SiO-Programmer work. Use the simulator to check whether your settings work as intended before actually using the controller. Since the simulator runs on your computer, **you can use it without connecting the SiO controller.**

Clicking the simulator icon at the upper right of the program window displays simulation windows—an I/O display window and input box.

In the input box, click [RUN] and any of the inputs (IN1 to IN16) to start simulation.



* If a multiple-selection condition is set, click [New/Old Multi select] to see which inputs and outputs are selected. Also, only the new multiple selection will be displayed as ON setting as "●" and OFF setting as "○".



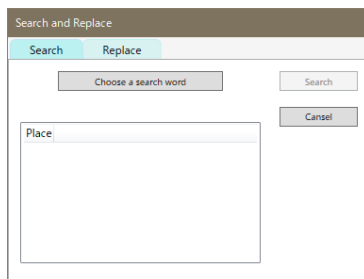
▪ Search and Replace

Search and Replace is a feature which searches for the I/O and replaces with another I/O. Clicking the Search and Replace icon at the upper right of the program window or Pressing Ctrl +F, Ctrl +H display Search and Replace window.

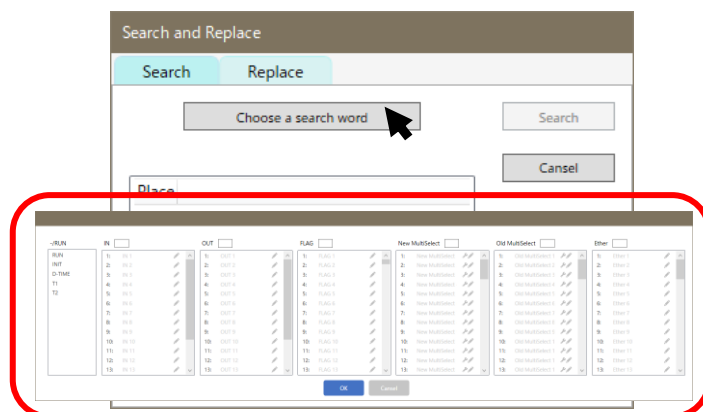
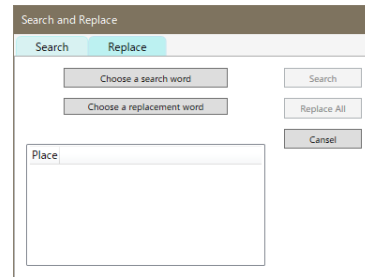
If you click the search and replace icon or press Ctrl + F , the search tab is displayed.

If you press Ctrl + H , the replace tab is displayed.

<Search tab>



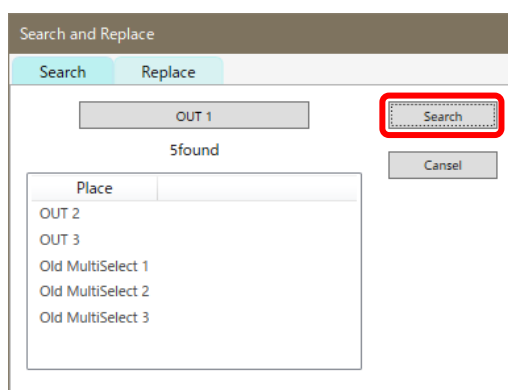
<Replace tab>



① Display Search Words

Select the I/O which you need to search. Clicking textbox displays search words. The search words include IN,OUT,FLAG,New Multi sel, Old Multi sel ,Ether, RUN,INIT,D-TIME, T1, T2. Search words and replaced words in Replace tab also are displayed by same way.

<Search>



② Search(Program Window)

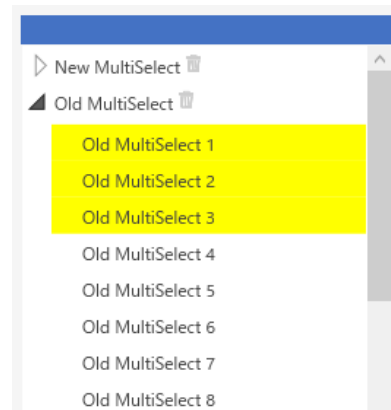
Clicking search Button displays number of finding and the place where search words are. The same I/O as the selected search word becomes yellow.

OUTPI			COND	
	1	2		
OUT 1 (----	RUN	ON	-	-
OUT 2 (----	OUT 1 (----	ON	-	-
OUT 3 (----	FLAG 2 (----	ON	AND	OUT 1 (----
OUT 4 (----	IN 1 (----	ON	-	IN 2 (----

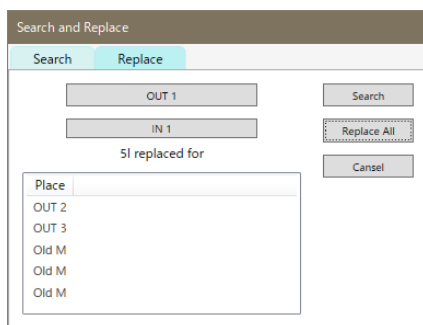
③ Search(New/Old Multi select)

If there is a multi select which setted Search word, Multi select window display.

After editing settings , Press the OK button to save the settings.



<Replace>



④ Replace All

When an Replace-All button is clicked, The same I/O as the selected search word replaced with the replaced word.

If there is a new/old multi select which setted Search word, that setting is replaced.

Program screen

OUTPI	1	2	COND
OUT 1 (---)	RUN ON	-	-
OUT 2 (---)	OUT 1 (---) ON	-	-
OUT 3 (---)	FLAG 2 (---) ON	AND	OUT 1 (---) ON
OUT 4 (---)	IN 1 (---) ON	-	IN 2 (---) ON



OUTPI	1	2	COND
OUT 1 (---)	RUN ON	-	-
OUT 2 (---)	IN 1 (---) ON	-	-
OUT 3 (---)	FLAG 2 (---) ON	AND	IN 1 (---) ON
OUT 4 (---)	IN 1 (---) ON	-	IN 2 (---) ON

New/Old Multi select

IN	OUT	FLAG
No.	☐	MEMO
1	☒ OUT 1	
2	☐ OUT 2	



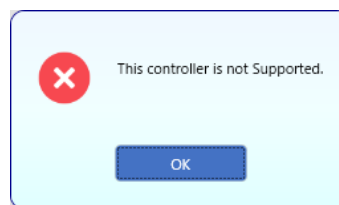
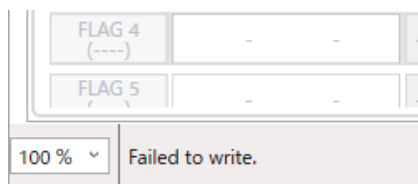
IN	OUT	FLAG
No.	☐	MEMO
1	☒ IN 1	
2	☐ IN 2	

※Please be careful about the following point.

- OFFCondition is not able to replace with INIT.
- The setting of multi select is not able to replace with RUN, INIT, Ether.
- The new/old multi select which has setting replace word is not able to replace.
- The replacement to D-TIME,T1,T2 cannot be performed.

Onscreen Messages

A message like the one shown below appears if an error occurs, such as when a program is incorrect or the SiO controller is not connected.



If an error message appears, check the following and eliminate the cause.

Message	Description
A read error has occurred.	Your computer has failed to communicate with the SiO controller. 1. Check that the SiO controller and your computer are connected and that the SiO controller is turned on. If they are connected, make sure that the USB cable is not damaged. 2. You may be using an older version of the PC software or device driver. Uninstall both the device driver and PC software (page 7), and download the latest installer from SUS's website.
Failed to read.	
Failed to write.	
Failed to communicate.	
Unknown command	
SIO Controller is not connected.	Your computer does not recognize the SiO controller because no device driver is installed or because the device driver is not working properly. Uninstall both the device driver and PC software , and download the latest versions of the software and device driver from SUS's website.
No driver is installed.	
Cannot write during RUN.	When the SiO controller is in the RUN state, you cannot write a program to the controller. Turn off the RUN switch on the controller before writing a program.
Check the Red data then setting.	You cannot write the program to the controller because the program is not configured correctly. Check and correct the settings for the items highlighted in red.
The following outputs are unset	You cannot write the program to the controller because the program is not configured correctly. Check the output program listed in the message.

Message	Description
Version x.xx and later of the SiO controller are not supported. Download the latest version of SiO-Programmer from SUS's website.	Your version of SiO-Programmer is not supported by the connected controller. Install the latest version of SiO-Programmer that works with the controller.
Failed to force output.	The SiO controller may be turned off, or the USB cable may be disconnected or damaged.
Failed to obtain the I/O status.	
Install Adobe Reader.	Clicking the Help button displays this manual in PDF format. You cannot view the manual on a computer that does not have Adobe Reader installed.
The language file is corrupted.	The help file or language file for SiO-Programmer is corrupted and cannot be read. Uninstall SiO-Programmer and reinstall it.
The help file is corrupted.	
Do you want to write this program?	This message appears if you click the [登録 Write] button when the program is not configured.
Cannot run multiple instances of SiO-Programmer.	You cannot run multiple instances of SiO-Programmer at once.
It is not supported by your controller(After Ether9).	Displayed when trying to write Ether9 or higher while connecting the SiOt Ver3.00 controller.
For your controller, switch the address / port setting to manual and register.	Displayed when trying to write the address / port settings automatically while connecting the SiOt Ver3.00 controller.
The automatic / manual setting of the address / port has been switched. To reflect this, you need to turn off the power of the controller and restart it.	Displayed when the pre-registered automatic / manual setting and the registered one are different while connecting a controller of Siot series Ver3.10 or higher.
Your controller does not support the memo registration function.	Each SiO controller (excluding SiO C and SiO 3.2) is displayed when you try to read / register including a memo while connecting a controller earlier than Ver3.60.
You can use up to FLAG48 old multiple selection 16 with your controller.	Displayed when FLAG49, old multiple selection 17 or more is registered while a controller other than SiO-N3, SiO t1, SiO t3, SiO2 R2 is connected.
For your controller, the timeout setting is not implemented, so switch it to disabled and register.	Displayed when trying to register with the timeout setting enabled while connecting a controller earlier than Ver3.60 of the SiOt series.
The controller cannot be recognized. Please check the following items.	Check the display items because the SiO controller cannot be recognized.
The device driver is not installed. Please uninstall the device driver and the PC software, and download them again from the SUS HP.	Since the device driver cannot be found, uninstall the device driver and SiO-Programmer once, and then download again from the SUS HP.

Message	Description
Communication processing failed. Check if another SiO-Programmer is communicating.	This is displayed when other software is communicating with the SiO controller connected to the PC.
This Controller does not support the New Multiple Selection.	Controller does not support New Multiple Selection. Refer to the website to confirm the controller that is compatible.

Inquiring about *SiO-Programmer*

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

scu-sales@sus.co.jp

Revision History

Version	Date	Description	Revised Pages
1.00	'16/06/01	Initial release	
1.01	'16/08/30	[Change Point] Language name (JAPAN → JAPANESE) changed [Changes] Setting examples — Corrected the T1 setting in Example 3. Useful features — Corrected the description in “(4) Internal outputs”.	25 41
1.10	'16/12/15	[Change Point] - Supports cutting, copying, and pasting of programs - Change the monitor to full screen display - Parameter setting (interval / ON time → ON time / OFF time) notation change [Changes] General — Replaced images with those from SiO-Programmer version 1.10. Details of each item — Changed “Interval/ON time” to “ON time/OFF time”. Useful features — Added cut, copy, and paste. I/O monitor — Updated the information to indicate that the settings window monitor is displayed from the beginning. Messages — Added “Driver installation”.	7~ 25 40~42 45 51
1.11	'17/01/10	[Change Point] Changed the initial display resolution to 1280 × 768 [Changes] System requirements — Changed the display resolution from 1024 × 768 to 1280 × 768.	6
2.00	'17/03/01	[Change Point] - SiO-Programmer main screen design change - Addition of counter function - Simulation function added	

		• Change from 1 OFF condition to 2 • Changed the initial display resolution to 1366 x 768 [Changes] Updated the information to cover the features added to SiO-Programmer version 2.00: • Added the counter feature. • Added the simulation feature. • Increased the number of OFF conditions from 1 to 2. • Improved ease of use. General — Replaced images with those from SiO-Programmer version 2.00. System requirements — Changed the display resolution from 1280 × 768 to 1366 × 768.	20, 23~ 47 20, 23~ 15~ 14~ 6
2.10	'17/04/27	[Change Point] • Display the SiO controller version on the SiO-Programmer screen [Changes] Introduction — Changed the revision number from 1.11 to 1.xx. Program window — Added information about CT version number. Tool icons — Added “File”, “Print”, and notes. SiO controller/SiO-Programmer compatibility table — Added Editing data — Added descriptions of internal outputs and SiO2. Parameter settings — Added a diagram of INIT time. Useful features — Added commands. Changed the description of internal outputs.	4 13 14 16 17 27 40~42
2.20	'17/06/30	[Change Point] • Added input / output logging function to the monitor • Supports overwrite installation [Changes] Installing SiO-Programmer — Added a description of how to update SiO-Programmer. I/O logging — Added Onscreen messages — Added	7 46 53~55
2.30	'17/09/01	[Change Point] • FLAG score changed from 16 points to 32 points	

		[Changes] General — Changed the number of internal outputs from 16 to 32.	19~
2.40	'18/01/05	[Change Point] Changed the initial display resolution to 1280 x 768 [Changes] System requirements — Changed the display resolution from 1366 x 768 to 1280 x 768.	6
2.50	'18/06/26	[Change Point] - Added SiO controller (SiO-N1) - Compatible models 64Bit, Windows 8.1 / 10 added [Changes] System requirements — Added 64-bit versions and Windows 8.1 and 10 to the computer models. Editing data — Added a description of SiO-N1.	6 17~
3.00	'19/01/28	[Change Point] - Changed the number of internal outputs from 32 to 48. - Changed the maximum number of counts from 100 to 50000 - Timer setting upper limit changed from 300.0 seconds to 6000.0 seconds [Changes] Details of each item — Added a description of the multiple selection option. Changed the number of counts. Changed the timers. General — Changed the number of internal outputs from 32 to 48. I/O monitor — Added a description of monitoring controls.	22~ 19~ 45
3.10	'19/06/28	[Change Point] Added an alternate function to the forced output of the monitor [Changes] I/O monitor — force output.	45
3.20	'19/10/29	[Change Point] Tool (search, replace) function added	

		[Changes] Starting SiO-Programmer —Program Window Image Change, 12 Program Window —Program Window Image Change, 13 —Edited explanation of FLAG 13 Tool Icons —Program Window Image Change, 14 —Added explanation of search and replace function 15 Editing Data —deleted explanation of FLAG display 18 Search and Replace —Added explanation of search and replace feature 48	
3.30	'20/02/27	[Change Point] • Added tool (undo, redo) function • Addition of startup from the configuration file • FLAG insertion / deletion function added • Addition of search items (time, T1, T2) [Changes] Starting SiO-Programmer —Program Window Image Change, 12 Program Window —Program Window Image Change, 13 Tool Icons —Program Window Image Change, 14 —Added explanation of undo function and redo function 15 Window for creating programs —Program Window Image Change, 17,18 Useful features —Added explanation of Insertion of FLAG 40~42 —Added explanation of Delete of FLAG —Added explanation about Starting by a double-click of a configuration file Search and Replace —Added of the search item (time, T1 and T2) 48,49	

3.40	'20/09/07	[Change Point] • Added SiO controller (SiOt, SiO-N3) • Ether signals 1 to 8 added • Addition of address / port settings [Changes] SiO Controller/SiO-Programmer Compatibility Table • Compatibility of saved files between different versions of SiO-Programmer —Compatible table Edit Window for creating programs —Added explanation of internal outputs Creating an I/O program • CONDITION1 —Edit the number of FLAGS —Add Ether • DURATION TIMES —Edit the number of FLAGS —Added Ether Parameter settings —Parameter setting image change —Added explanation of Address and Port Added explanation of Add FLAG and Multi sel	16 18~ 22,24 27, 28 39
3.41	'21/03/17	[Change Point] • Addition of precautions after USB communication [Changes] Connecting a USB cable —Added notes after USB communication.	12
3.51	'21/06/11	[Change Point] • Chahanged the number of Ether signals from 8 to 64. • Addition of DHCP function	

		[Changes] SiO Controller/SiO-Programmer Compatibility Table • Compatibility Table —Controller added (SiO3.2, SiON3, SiOt) —Added SiO-Programmer 3,51 —Change the number of Ethers for ON and OFF conditions Parameter settings —Added explanation about automatic / manual setting of addresses	16 22~ 28
3.52	'21/07/02	[Change Point] • None [Changes] SiO Controller/SiO-Programmer Compatibility Table • Compatibility Table —Added SiO-Programmer 3,52	16~
3.53	'21/08/10	[Change Point] • Added SiO controller (SiOt1, SiOt3) [Changes] SiO Controller/SiO-Programmer Compatibility Table • Compatibility Table —Controller added (SiOt1, SiOt3) —Added SiO-Programmer 3,53	16
3.60	'21/11/30	[Change Point] • Added SiO controller (SiO2 R2) • Added MEMO reading / registration function • Added timeout setting for Ethernet communication • Added controller name display for Ethernet communication • Add message [Changes] SiO Controller/SiO-Programmer Compatibility Table • Compatibility Table —Controller added (SiO2 R2) —Added SiO-Programmer 3,60	16

		Input / Output memo • About reading / registering memos to the controller Parameter settings • Ethernet communication timeout setting • About the controller name for Ethernet communication Message display • 「Your controller does not support the memo registration function.」 • 「You can use up to FLAG48 Multiple Selection 16 on your controller.」 • 「The timeout function is not available on your controller.」 • 「Unable to recognize the controller. Please check the following items.」 • 「The device driver is not installed. Please uninstall the device driver and the PC software, and download them again from the SUS HP.」 • 「Communication processing failed. Check if another SiO-Programmer is communicating.」	27 30~31 32 51 51 51 51 51 52
3.62	'22/06/27	[Change Point] • System requirements [Changes] Addition of supported computer models —Add windows 11 SiO Controller/SiO-Programmer Compatibility Table —Version update	P6 P16

3.70	'22/08/29	[Change Point] • Added New Multiple Selection • Vietnamese language support [Changes] Multiple Selection → Old Multiple Selection Added New Multiple Selection Added Vietnamese to supported languages SiO Controller/SiO-Programmer Compatibility Table • Compatibility Table Message display	P16 P52
3.71	'22/11/30	[Changes] SiO Controller/SiO-Programmer Compatibility Table • Compatibility Table Message display	P16 P52
3.72	'23/1/25	[Change Point] • Thai language support [Changes] Added Thai to supported languages SiO Controller/SiO-Programmer Compatibility Table • Compatibility Table	P15 P16
4.10	'24/8/30	[Change Point] • New Multi Select Compatible Controller Update [Changes] SiO Controller/SiO-Programmer Compatibility Table —Version update • FLAG and Legacy Multi Select Support Controller Update	P37 P17 P18
4.11	'25/4/4	[Change Point] Corrected notation regarding controller version	P.19
4.30	'26/8/4	[Change Point] • Added Keyboard Operations for Programming Mode • Added Split Display Feature for FLAG List • Changed FLAG Color in Program Screen from Blue to Green	P.19

4.30	'26/8/4	[Changes] Replaced All Images Added "FLAG Split Display" Feature Added Keyboard Operations for Program Settings	P4 - 63 P46 P16
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