

31 | Controlling External I/O

This chapter describes how to set up an I/O driver and map I/O terminals for controlling external I/O.

This chapter also outlines the details about each I/O unit. Refer to the page that describes the I/O unit you are using.

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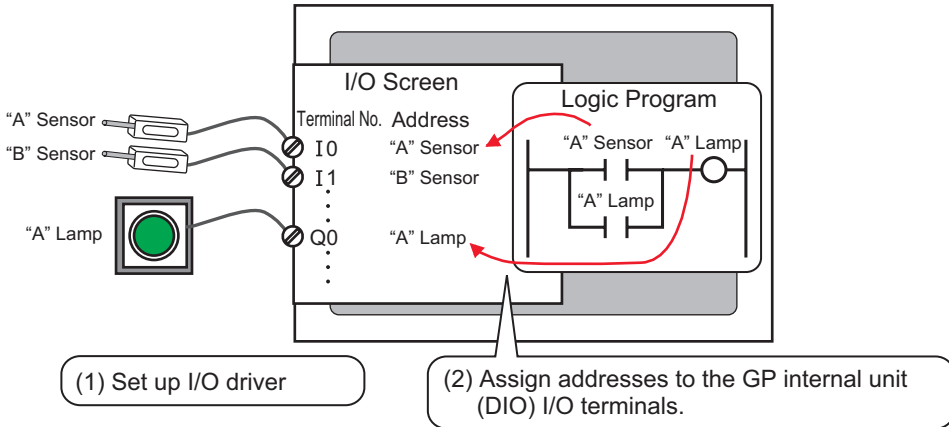
31.1 Controlling External I/O

To run a logic program on the GP, you need to map addresses to external I/O terminals, and identify which addresses should be output externally, and which addresses should be used to load an external signal.

Note that the setup procedure is different if the I/O unit is a GP built-in DIO or FLEX NETWORK.

■ GP built-in DIO

The device consists of six inputs and two outputs. When selecting the display model, if you select a model with built-in DIO, the DIO driver is added to the project.

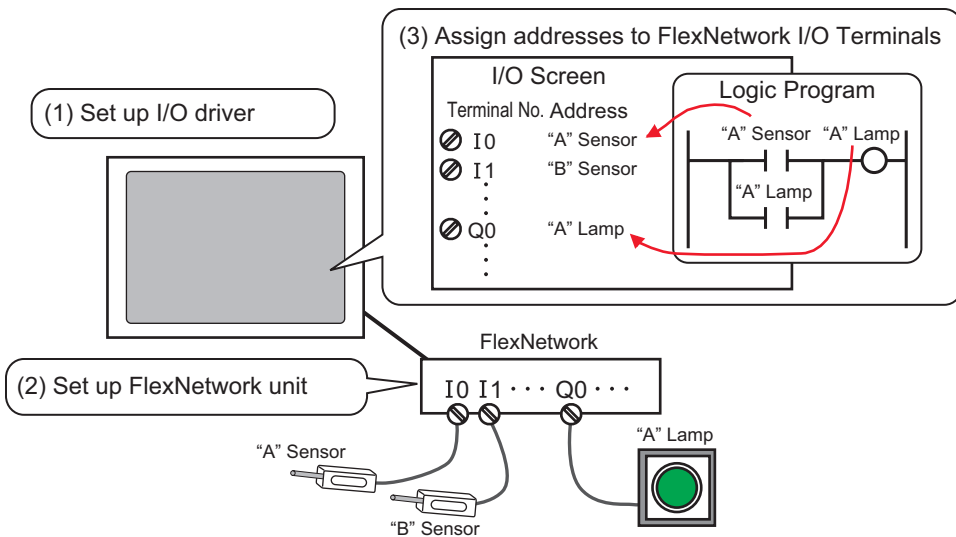


■ FLEX NETWORK

There are two lines connected to the I/O unit. The same communication data is output to line 1 and line 2.

When you use either line both line 1 and line 2 are available. When you are using one line, the maximum number of stations you can connect is 31. When you are using two lines, the maximum number of stations you can connect is 63. One line will support 31 and the other line will support 32.

For details on configuration, refer to the "FLEX NETWORK Users Manual 1.1 System Configurations".



31.1.1 I/O Driver Settings

To control the external I/O, in the I/O driver settings, specify the I/O Type for the GP built-in DIO, and the transmission speed for FLEX NETWORK.

- 1 Select [I/O Driver Settings] in [System Settings Window].



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- NOTE** • If the [System Settings Window] tab is not displayed in the workspace, on the [View (V)] menu, point to [Work Space (W)], and then click [System Settings Window (S)].
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- 2 Click [I/O Driver Settings]. The [I/O Driver Settings] dialog box appears. Specify the details for the I/O driver.

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- NOTE** • For details on I/O driver settings for the GP built-in DIO, refer to the setup guide.
 ➞ “ ■ DIO Driver” (page 31-9)
 • For details on the I/O driver settings for FLEX NETWORK, refer to the setup guide.
 ➞ “ ■ FLEX NETWORK Driver” (page 31-10)
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- 3 For the GP built-in DIO, map an address to each I/O terminal.

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- NOTE** ➞ “31.1.2 Mapping Addresses to I/O Terminals” (page 31-4)
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For the FLEX NETWORK, specify the model of your FLEX NETWORK unit before mapping an address to each I/O terminal.

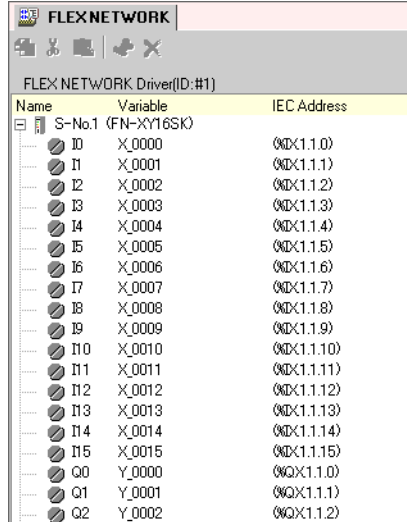
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- NOTE** ➞ “31.4 Mapping I/O to the FLEX NETWORK DIO Unit” (page 31-14)
 ➞ “31.5 Mapping I/O to the FLEX NETWORK Analog Unit” (page 31-21)
 ➞ “31.6 Mapping I/O to the FLEX NETWORK Positioning Unit” (page 31-28)
 ➞ “31.7 Mapping I/O to the FLEX NETWORK High-Speed Counter Unit” (page 31-33)
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31.1.2 Mapping Addresses to I/O Terminals

After specifying an I/O driver and a FLEX NETWORK model, map an address to each I/O terminal.

IMPORTANT

- When [Register Variable] is [Address Format], an address starting with “X_”, “Y_”, “I_”, or “Q_” is already mapped. You cannot change this setting.



Name	Variable	IEC Address
FLEX NETWORK Driver(ID:#1)		
S-No.1 (FN-XY16SK)		
I0	X_0000	(X)X1.1.0
I1	X_0001	(X)X1.1.1
I2	X_0002	(X)X1.1.2
I3	X_0003	(X)X1.1.3
I4	X_0004	(X)X1.1.4
I5	X_0005	(X)X1.1.5
I6	X_0006	(X)X1.1.6
I7	X_0007	(X)X1.1.7
I8	X_0008	(X)X1.1.8
I9	X_0009	(X)X1.1.9
II0	X_0010	(X)X1.1.10
II1	X_0011	(X)X1.1.11
II2	X_0012	(X)X1.1.12
II3	X_0013	(X)X1.1.13
II4	X_0014	(X)X1.1.14
II5	X_0015	(X)X1.1.15
Q0	Y_0000	(Y)X1.1.0
Q1	Y_0001	(Y)X1.1.1
Q2	Y_0002	(Y)X1.1.2

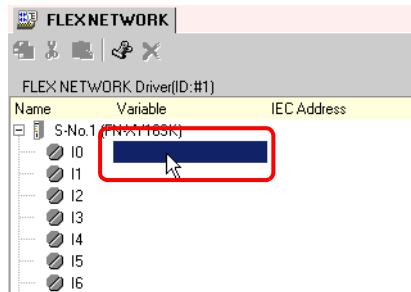
This section outlines the case when the [Register Variable] is [Variable Format].

■ Mapping Addresses to I/O Terminals

There are three ways to map addresses to I/O terminals: directly registering addresses on the I/O Screen, mapping addresses in the Address Settings Window, and mapping addresses in the logic program.

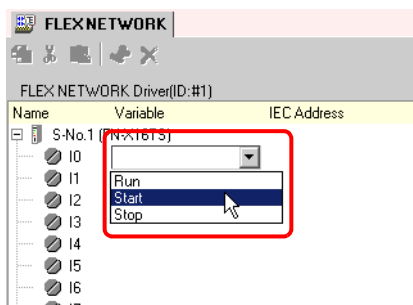
◆ Directly Registering Addresses on the I/O Screen

- 1 Select the I/O terminal variable and click , or double-click the variable.

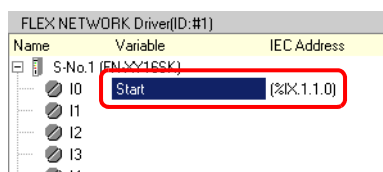


Name	Variable	IEC Address
FLEX NETWORK Driver(ID:#1)		
S-No.1 (FN-XY16SK)		
I0		
I1		
I2		
I3		
I4		
I5		
I6		

- To map an address that has been already registered, click  and select the address.



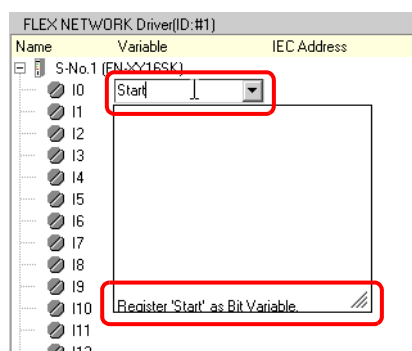
- Press the [Enter] key to map the address and display the I/O address (IEC Address).



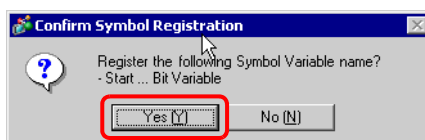
NOTE

- You can register new addresses on the I/O Screen.

- Type the new address name (e.g. Start), and press the [Enter] key. The message “Register ‘Start’ as Bit Variable.” is displayed.

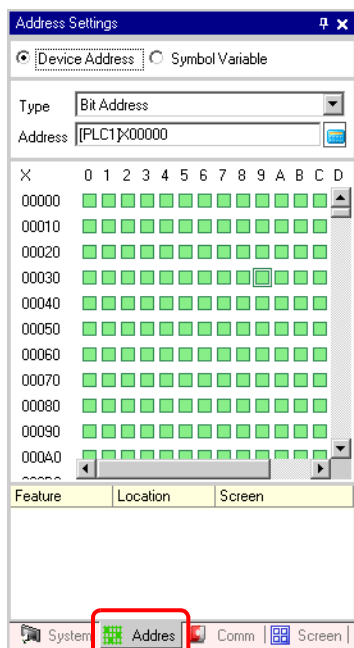


- Press the [Enter] key again, to display the [Confirm Symbol Registration] dialog box. Click [Yes].



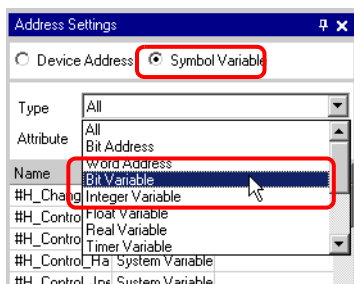
◆ Mapping an Address to I/O Terminals by Dragging the address from the Address Settings Window

- 1 Select the [Address Settings] tab to open the [Address Settings] window.



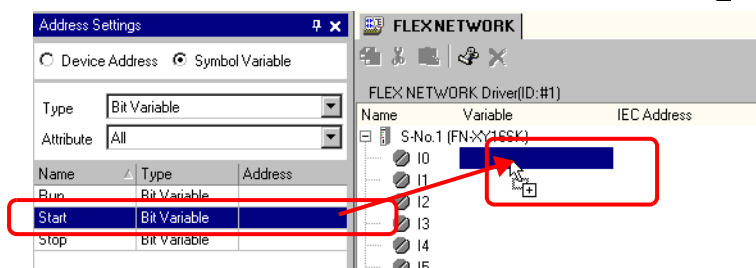
NOTE • If the [Address Settings] tab is not displayed in the Work Space, on the [View (V)] menu, point to [Work Space (W)], and then click [Address Settings Window (A)].

- 2 Select [Symbol Variable], and for the [Type] select [Bit Variable].



- 3 Only addresses that match the [Bit Variable] type are displayed in the list. Drag the address “Start” to the terminal being mapped.

Release the left mouse button where the cursor changes from  to .



4 The address will be mapped and the I/O address (IEC address) will be displayed.

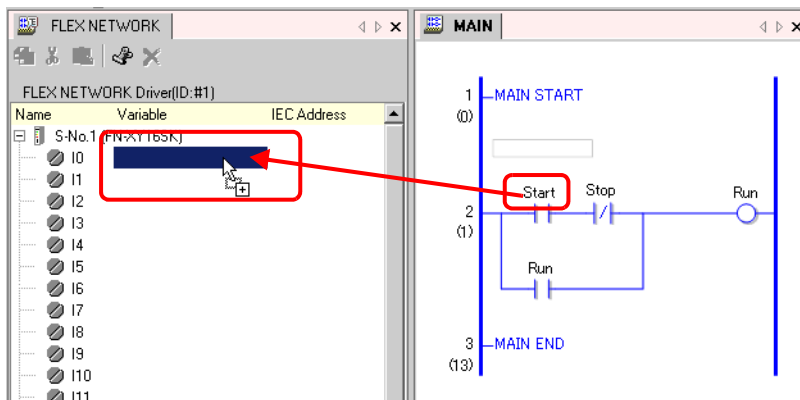
FLEX NETWORK Driver(ID:#1)		
Name	Variable	IEC Address
S-No.1 (FN-X-Y16SK)		
I0	Start	(%IX.1.1.0)
I1		
I2		
I3		
I4		

◆ Mapping an Address to I/O Terminals by Dragging the address from the Logic Program

In this section, the Logic Screen (e.g. MAIN) and the IO (e.g. FLEX NETWORK) are open and the two screens are displayed vertically.

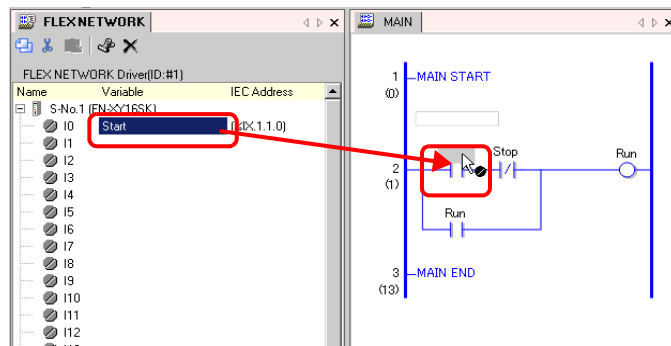
NOTE • To display two screens vertically, on the [View (V)] menu, point to [Screen Block (B)], and then click [Tile Vertically], or click .

1 Click and drag the instruction operand on the Logic Screen and drop the instruction operand on the terminal to be mapped, when the cursor changes from  to .



NOTE • It is not possible to map an address where the cursor is displayed as .

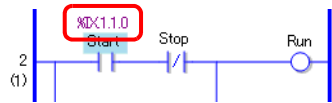
• Each I/O terminal address on the I/O Screen can be dragged and mapped to an instruction operand in the logic program. Click an address in the I/O Screen, and drag the address to the Logic screen's instruction operand you want to map. Release the mouse where the cursor changes from  to .



2 The address will be mapped and the I/O address (IEC address) will be displayed.

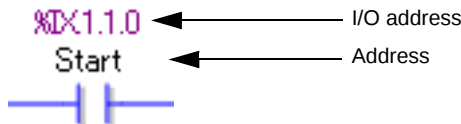
FLEX NETWORK Driver(ID:#1)		
Name	Variable	IEC Address
S-No.1 (FN-XY16SK)		
I0	Start	(%IX.1.1.0)
I1		
I2		
I3		
I4		

NOTE • The I/O address is also displayed in the logic program.



I/O Address Format

You can check the address mapped to I/O terminals from the logic program. This type of information is called an I/O address, and is displayed above the address in the following way.



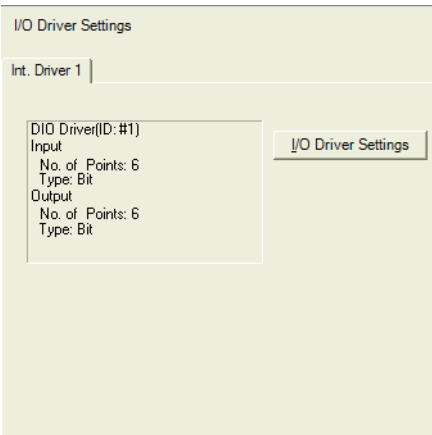
I/O address display: %AB1.C.D
(The underlined “%” and “1” are fixed.)

Notation	Description	
A	Stores the following ID symbol for an I/O terminal.	
	I/O pin	ID symbol
	Input pin	I
	Output pin	Q
B	Stores “X” for a bit pin and “W” for a word pin.	
C	Stores the FLEX NETWORK S-No.	
D	Stores the pin No.	

31.2 Settings Guide

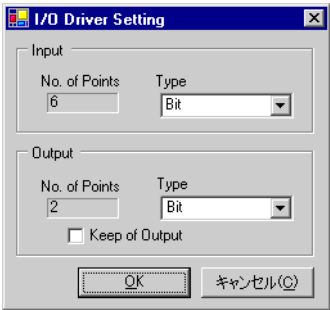
31.2.1 [I/O Driver Settings] Setup Guide

■ DIO Driver



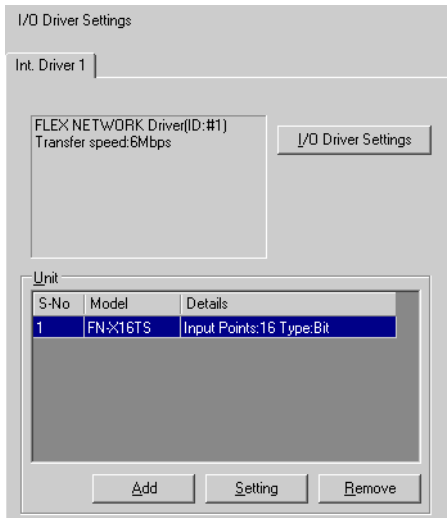
Setting	Description
I/O Driver Settings	The I/O driver settings are shown in the tab. Internal Driver 1: Internal 1 DIO driver
	Click the button to display the I/O Driver Setup dialog box.

◆ I/O Driver Setting



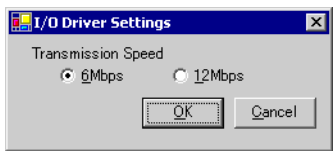
Setting	Description
Input	Select the variable type for the input from either [Bit] or [Word]. The No. of Points is 6 (fixed).
Output	Select the variable type for the output from either [Bit] or [Word]. The No. of Points is 2 (fixed).
Keep of Output	Select whether or not you want to retain output values when the logic is stopped. When this check box is selected, I/O values are retained even when the GP is shut down.

■ FLEX NETWORK Driver



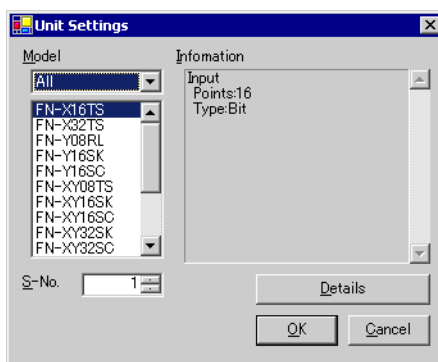
Setting	Description
I/O Driver Settings	The I/O driver settings are shown in the tab. Internal Driver 1: Internal 1 FLEX NETWORK driver
I/O Driver Settings	By clicking the button, the dialog box for setting an I/O driver is displayed. FN-X16TS is set by default.
Add	Adds I/O units.
Setting	Click the button to display the [Unit Settings] dialog box. Use the dialog box to select your I/O unit and define I/O details. ☞ “◆ Unit Settings” (page 31-11)
Remove	Deletes I/O units.

◆ I/O Driver Settings



Setting	Description
Transmission Speed	Select the communication speed for FLEX NETWORK as either [6Mbps] or [12Mbps].

◆ Unit Settings



Setting	Description
Model	Select the type of unit from the following options. Only relevant type models are displayed. All : Displays all units. Input : Displays units with inputs only. Output : Displays units with outputs only. I/O : Displays units with both inputs and outputs. Analog : Displays analog units. Special : Displays special units other than the above.
Information	Displays details for the I/O unit settings.
Scroll box	When the I/O unit information cannot be displayed on a single screen, scroll to view all the information.
S-No.	Specify a number (S-No.) to identify the I/O unit connected to the FLEX NETWORK. The settings range from 1 (default) to 63.
Details	By clicking the button, the [Details] dialog box for the selected I/O unit is displayed. If the I/O unit does not have settings details, the button cannot be clicked.