Fuji Electric Co., Ltd.

MICREX-SX Series Ethernet Driver

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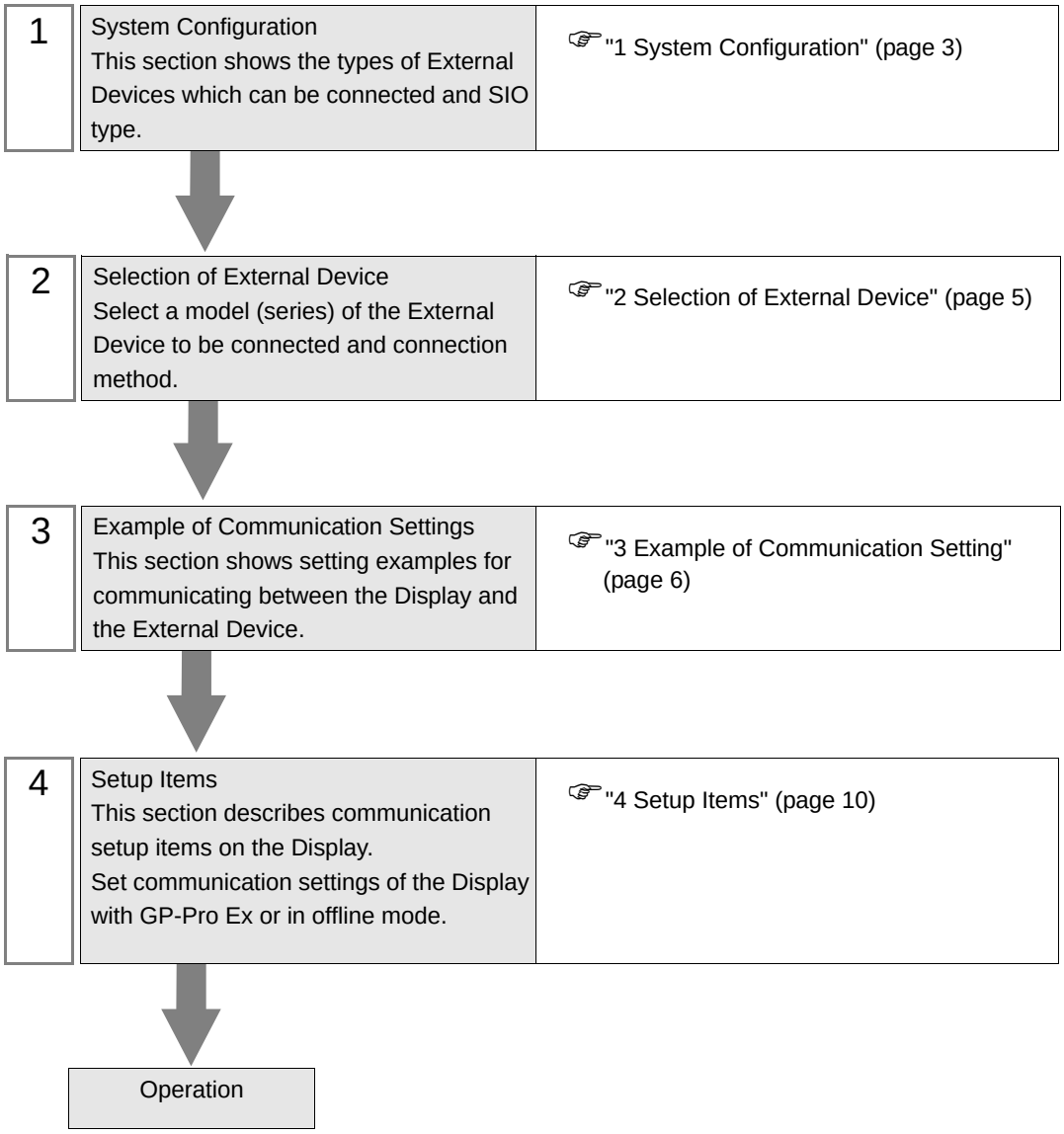
Introduction

This manual describes how to connect the Display and the External Device (target PLC).

In this manual, the connection procedure will be described by following the below sections:



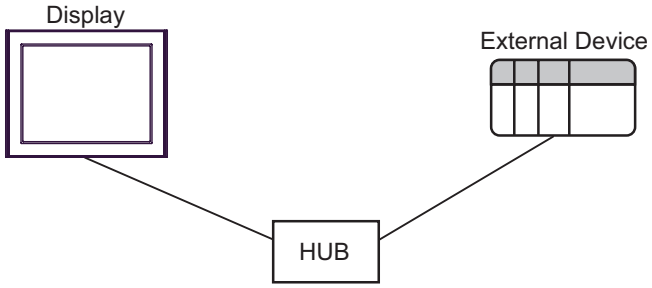
1 System Configuration

The system configuration in the case when the External Device of Fuji Electric Co., Ltd. and the Display are connected is shown.

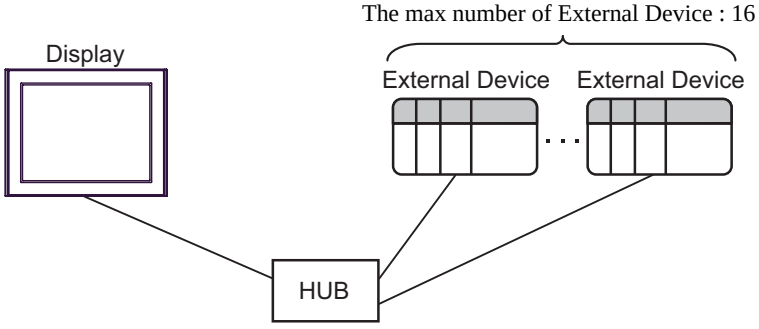
Series	CPU	Link I/F	SIO Type	Setting Example
SPH	SPH200 (NP1PH-08 / NP1PH-16)	NP1L-ET1	Ethernet (TCP)	"Setting Example 1" (page 6)
	SPH2000 (NP1PM-48R)	NP1L-ET1		"Setting Example 1" (page 6)
	SPH2000 (NP1PM-48E / NP1PM-256E)	Ethernet port on CPU Unit		"Setting Example 2" (page 8)
		NP1L-ET1		"Setting Example 1" (page 6)
	SPH300 (NP1PS-32 / NP1PS-32R / NP1PS-74 / NP1PS-74R / NP1PS-117 / NP1PS-117R / NP1PS-245R)	NP1L-ET1		"Setting Example 1" (page 6)

■ Connection Configuration

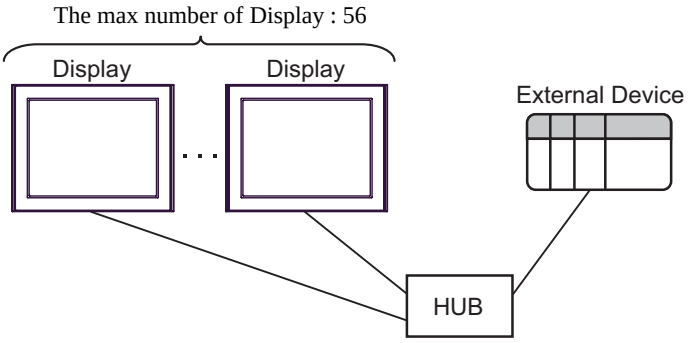
- 1:1 Connection



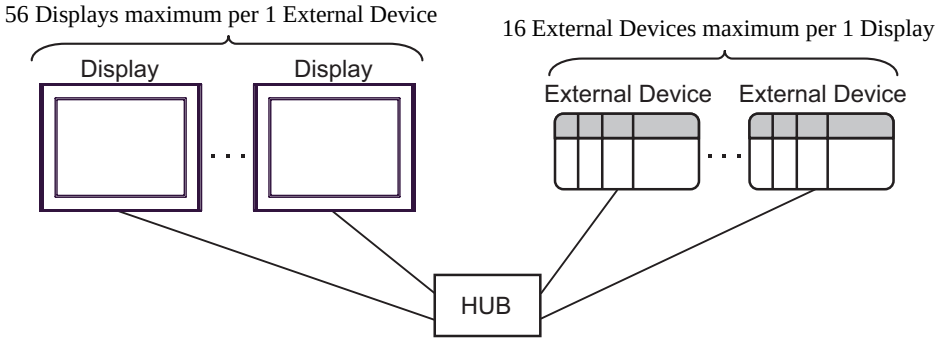
- 1:n Connection



- n:1 Connection



- n:m Connection



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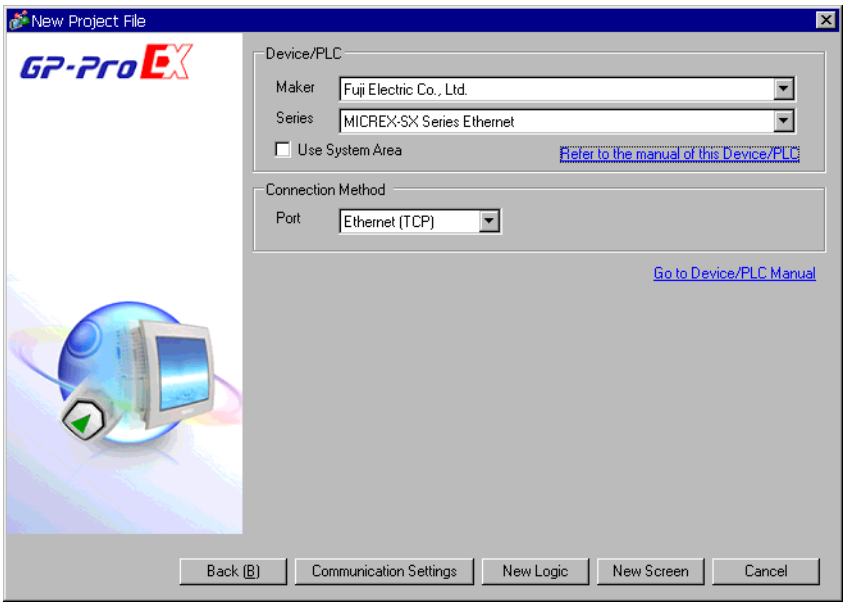
NOTE

- A maximum of 8 Displays can be connected to one Ethernet unit.
- A maximum of 10 Displays can be connected to one CPU unit.
- When using multiple CPU units and Ethernet units simultaneously, a maximum of 56 Displays can be connected. The greater the number of Display connected, the more the communication load increases.
- When 2 or more displays are connected to one External Device, the error below may be displayed when 2 or more Displays are activated simultaneously.
  "Error has been responded for initial communication command (Error Code:[Hex])"
  If an error occurs, the error will automatically recover after a certain period of time has passed and normal communication will resume.

2 Selection of External Device

Select the External Device to be connected to the Display.



Setup Items	Setup Description
Maker	Select the maker of the External Device to be connected. Select "Fuji Electric Co., Ltd.".
Series	Select a model (series) of the External Device to be connected and connection method. Select "MICREX-SX Series Ethernet". Check the External Device which can be connected in "MICREX-SX Series Ethernet" in system configuration. ☞ "1 System Configuration" (page 3)
Use System Area	Check this option when you synchronize the system data area of Display and the device (memory) of External Device. When synchronized, you can use the ladder program of External Device to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)" This can also be set in GP-Pro EX or in the Display's offline mode. Cf. GP-Pro EX Reference Manual "Display Unit (System Area) Settings Guide" Cf. Maintenance/Troubleshooting Manual "Main Unit - System Area Settings"
Port	Select the Display port to be connected to the External Device.

3 Example of Communication Setting

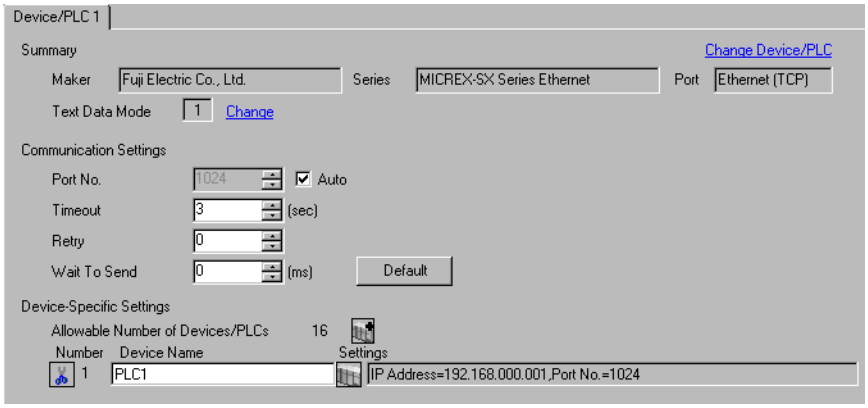
Examples of communication settings of the Display and the External Device, recommended by Pro-face, are shown.

3.1 Setting Example 1

■ Settings of GP-Pro EX

◆ Communication Settings

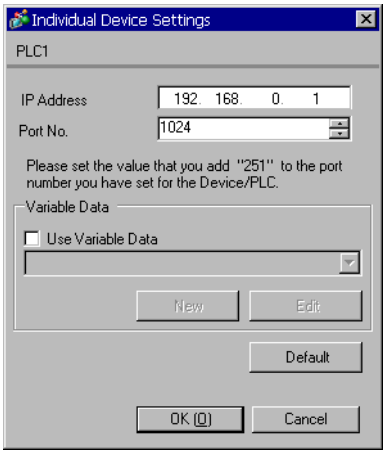
To display the setting screen, select [Device/PLC Settings] from [System setting window] in workspace.



◆ Device Setting

To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.



NOTE

- For the port number, set the value that "251" is added to the set port number with External Device.
  For example, if "773" is set to the port number with External Device, set "1024" to the port number of Device Setting.

■ Settings of External Device

Use the ladder software SX-Programmer Expert (D300win) for communication settings.

Please refer to the Micrex-SX Series D300Win users manual by Fuji Electric Co., Ltd. for more details.

1 Start up the D300win.

2 Select [New Project] from the [File] menu and select template of using CPU from the New Project dialog.

3 Double click [System Definition] of the project tree to display the system definition screen.

4 Select [Insert] from the displayed menu indicated after right-clicking the CPU.

5 Select Ethernet interface module to be used from [Outline Specification] of the displayed [Module insert] dialog box and register it to the system definition.

6 Right click Ethernet interface module and select [Properties] from the displayed menu.

7 Click [Parameter] of the [Module properties] dialog box.

8 Select [IP Address] tub of [Ethernet Parameter] dialog box.

9 Input IP address and subnet mask as shown below in [IP Address].

Setup Items	Setup Description
IP Address	192.168.0.1
Subnet mask	255.255.255.0

10 Select [Detail Setting] of [Ethernet Parameter] dialog box.

11 Select [Self port standard No.] and input "773" to the port number above Ethernet interface module.

NOTE

- For the port number of Device Setting for GP-Pro EX, set the value that "251" is added to the set port number.
  For example, if "773" is set to the port number, set "1024" to the port number of Device Setting for GP-Pro EX.

12 Select [Exit] from [File] menu on the system definition screen.

13 Select [Make] from [Build] menu and compile the project.

14 Select [Project Control] from [Online] menu and click [Download].

15 Select all items to be downloaded and click [OK].

16 After download is executed normally, click [Reset].

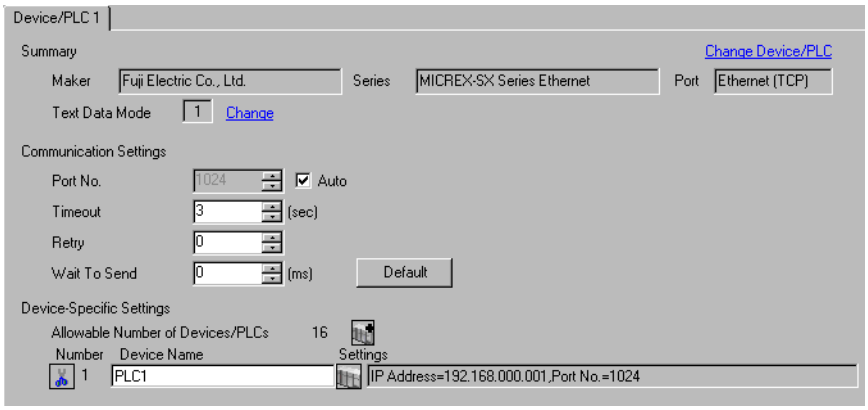
Now communication setting is completed.

3.2 Setting Example 2

■ Settings of GP-Pro EX

◆ Communication Settings

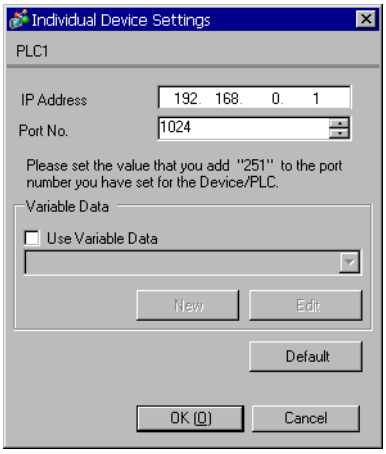
To display the setting screen, select [Device/PLC Settings] from [System setting window] in workspace.



◆ Device Setting

To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.



NOTE

- For the port number, set the value that "251" is added to the set port number with External Device.
  For example, if "773" is set to the port number with External Device, set "1024" to the port number of Device Setting.

■ Settings of External Device

Use the rotary switch of Ethernet port on CPU unit and the ladder software SX-Programmer Expert (D300win) for communication settings.

Please refer to the Micrex-SX Series D300Win users manual by Fuji Electric Co., Ltd. for more details.

◆ Rotary Switch Settings

Set "0" to the rotary switch of Ethernet port on CPU

◆ Ladder Software Setting

1 Start up the D300win.
2 Select [New Project] from the [File] menu and select template of using CPU from the New Project dialog.
3 Double click [System Definition] of the project tree to display the system definition screen.
4 Select [Properties] from the displayed menu indicated after right-clicking the CPU.
5 Click [Parameter] of the [Module properties] dialog box.
6 Select [IP Address/Gateway Setting] tub of [CPU Parameter] dialog box.
7 Input IP address and subnet mask as shown below in [IP Address/Gateway Setting].

Setup Items	Setup Description
IP Address	192.168.0.1
Subnet mask	255.255.255.0

8 Select [Detail Setting] of [IP Address/Gateway Setting] tub.
9 Select [Self port standard No.] and input "773" to the port number of Ethernet port above CPU unit.

NOTE

- For the port number of Device Setting for GP-Pro EX, set the value that "251" is added to the set port number.
  For example, if "773" is set to the port number, set "1024" to the port number of Device Setting for GP-Pro EX.

10 Select [Exit] from [File] menu on the system definition screen.
11 Select [Make] from [Build] menu and compile the project.
12 Select [Project Control] from [Online] menu and click [Download].
13 Select all items to be downloaded and click [OK].
14 After download is executed normally, click [Reset].

Now communication setting is completed.

4 Setup Items

Set communication settings of the Display with GP-Pro EX or in offline mode of the Display.

The setting of each parameter must be identical to that of External Device.

☞"3 Example of Communication Setting" (page 6)

NOTE

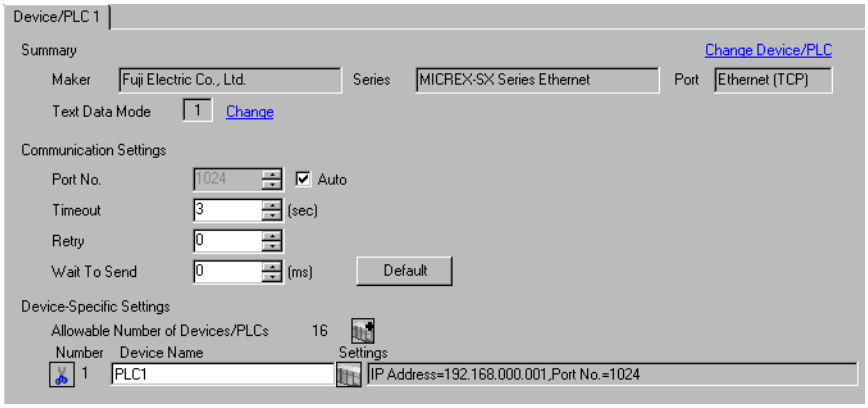
- Set the Display's IP address in offline mode.

  Cf. Maintenance/Troubleshooting Guide "Ethernet Settings"

4.1 Setup Items in GP-Pro EX

■ Communication Settings

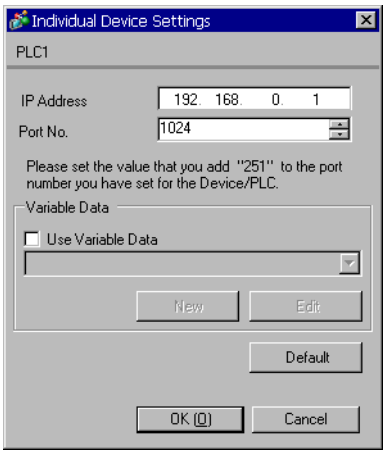
To display the setting screen, select [Device/PLC Settings] from [System setting window] in workspace.



Setup Items	Setup Description
Port No.	Use an integer from 1024 to 65535 to enter the port No. of the Display. When you check the option of [Auto], the port No. will be automatically set.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command.
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.

■ Device Setting

To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].



Setup Items	Setup Description
IP Address	Set IP address of the External Device. **NOTE** • Check with a network administrator about IP address. Do not set the duplicate IP address.
Port No.	Use an integer from 1024 to 65535 to enter the port No. of the External Device. **NOTE** • For the port number, set the value that "251" is added to the set port number with External Device. For example, if "773" is set to the port number with External Device, set "1024" to the port number of Device Setting.
Use Valiable Data	Put a check in the box when using variable data, and select variable data. ☞ "5.4 When Using a Variable" (page 31)

4.2 Setup Items in Offline Mode

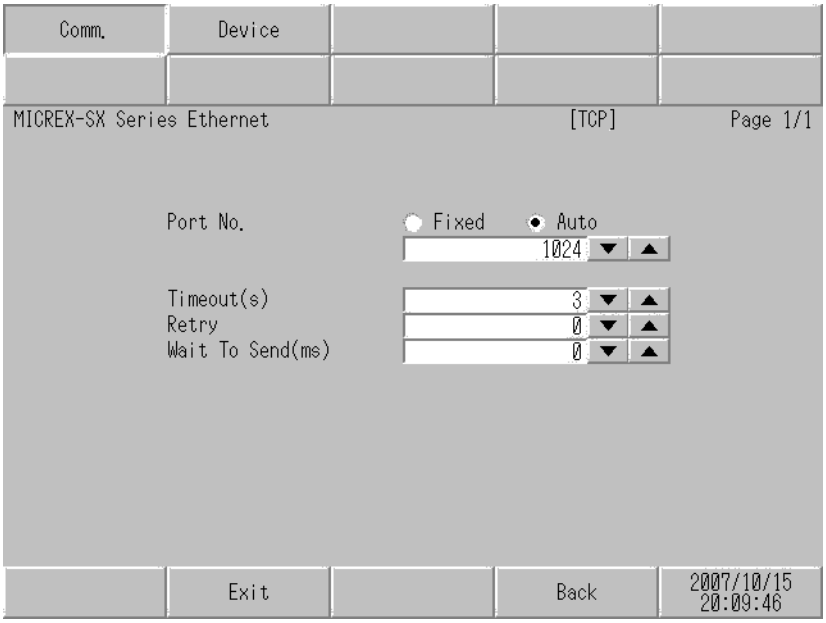
NOTE

- Refer to the Maintenance/Troubleshooting guide for information on how to enter offline mode or about the operation.

  Cf. Maintenance/Troubleshooting Guide "Offline Mode"

■ Communication Settings

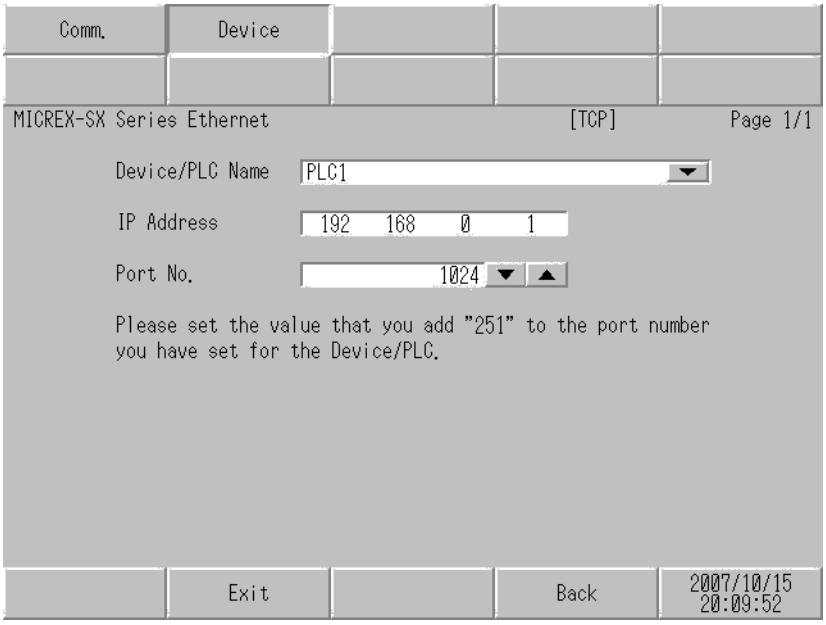
To display the setting screen, touch [Device/PLC Settings] from [Peripheral Settings] in offline mode. Touch the External Device you want to set from the displayed list.



Setup Items	Setup Description
Port No.	Set the Port No. of the display. Select either of [Fixed] or [Auto]. When you select [Fixed], use an integer from 1024 to 65535 to enter the port No. of the display. When you select [Auto], the port No. will be automatically assigned regardless of the entered value.
Timeout (s)	Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command.
Wait To Send (ms)	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.

■ Device Setting

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Equipment Settings]. Touch the External Device you want to set from the displayed list, and touch [Device Settings].



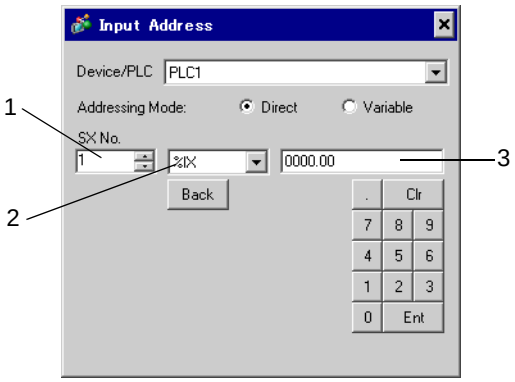
Setup Items	Setup Description
Device/PLC Name	Select the External Device for device setting. Device name is a title of External Device set with GP-Pro EX.(Initial value [PLC1])
IP Address	Set IP address of the External Device. **NOTE** Check with a network administrator about IP address. Do not set the duplicate IP address.
Port No.	Use an integer from 1024 to 65535 to enter the port No. of the External Device. **NOTE** • For the port number, set the value that "251" is added to the set port number with External Device. For example, if "773" is set to the port number with External Device, set "1024" to the port number of Device Setting.

5 Supported Device

Range of supported device address is shown in the table below. Please note that the actually supported range of the devices varies depending on the External Device to be used. Please check the actual range in the manual of your External Device.

Enter the External Device address in the dialog below.

■ When [Addressing Mode] is "Direct"

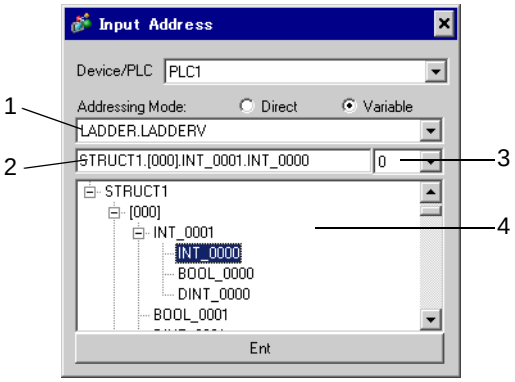


1 Enter [SX No.] (Input/Output Memory) or [CPU NO.] (Standard/Retain/System Memory).

2 Select a device.

3 Enter the address.

■ When [Addressing Mode] is "Variable"



1 Select a worksheet.

2 Enter the address.

3 When inputting a bit address, select the bit position of bit address.

4 Variable data is displayed. The address can be entered by double-clicking the displayed variable.

☞" ■ Making New Variable Data" (page 36)

NOTE

- The variables where derived data type of 3 or more hierarchies are defined will not be displayed.

5.1 SPH200

■ NP1PH-08

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Remarks
Input Memory	%IX□.000.00 - %IX□.511.15	%IW□.000 - %IW□.511	L / H	*1
Output Memory	%QX□.000.00 - %QX□.511.15	%QW□.000 - %QW□.511		*1
Standard Memory	%MX□.1.00000.00 - %MX□.1.04095.15	%MW□.1.00000 - %MW□.1.04095		*2 *3
Retain Memory	%MX□.3.0000.00 - %MX□.3.2047.15	%MW□.3.0000 - %MW□.3.2047		*2 *3
System Memory	%MX□.10.000.00 - %MX□.10.511.15	%MW□.10.000 - %MW□.10.511		*2

*1 Input/Output Memory Address Designation is as shown below.

• Bit Designation

%IX□.0.0
- Bit No. (0 to 15)
- Address (Word No.)
- SX Bus Unit No. (1 to 238)

• Word Designation

%IW□.0
- Address (Word No.)
- SX Bus Unit No. (1 to 238)

NOTE
- Please refer to the SX Bus Unit No. details in the manual of External Device.

*2 Standard/Retain/System Memory Address Designation is as shown below.

• Bit Designation

%MX□.1.0.0
- Bit No. (0 to 15)
- Address (Word No.)
- Memory Classification Number (1:Standard Memory, 3:Retain Memory, 10:System Memory)
- CPU No. (0 to 7). However, If CPU No. is 0, no data will be appended.

• Word Designation

%MW□.1.0
- Address (Word No.)
- Memory Classification Number (1:Standard Memory, 3:Retain Memory, 10:System Memory)
- CPU No. (0 to 7). However, If CPU No. is 0, no data will be appended.

*3 Standard and Retain Memory sizes can be changed. However, the total memory size is fixed. (For details, refer to the manual of External Device).

NOTE

- When specifying the address of the Eternal Device directly, always use a setting within the specified AT range of the ladder software. We recommend using an AT-specified- variable for the External Device used on the Display. Please refer to the MICREX-SX Series D300Win <Reference> Users Manual by Fuji Electric Co., Ltd. for details of specifying the AT range and how to set it. When using a variable that is not AT-specified, variable needs to be imported again and screen transfer needs to be executed if ladder program or variable is changed.
- Always use a system area and reading area within the specified AT range.
- Use high performance CPU system area with an address of %MW1.2048 or later.
- Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

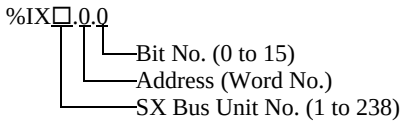
■ NP1PH-16

This address can be specified as system data area.

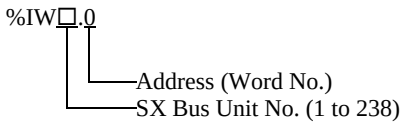
Device	Bit Address	Word Address	32bits	Remarks
Input Memory	%IX□.000.00 - %IX□.511.15	%IW□.000 - %IW□.511	L / H	*1
Output Memory	%QX□.000.00 - %QX□.511.15	%QW□.000 - %QW□.511		*1
Standard Memory	%MX□.1.00000.00 - %MX□.1.08191.15	%MW□.1.00000 - %MW□.1.08191		*2 *3
Retain Memory	%MX□.3.0000.00 - %MX□.3.4095.15	%MW□.3.0000 - %MW□.3.4095		*2 *3
System Memory	%MX□.10.000.00 - %MX□.10.511.15	%MW□.10.000 - %MW□.10.511		*2

*1 Input/Output Memory Address Designation is as shown below.

• Bit Designation



• Word Designation

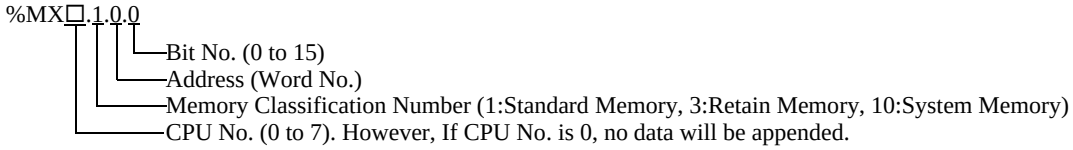


NOTE

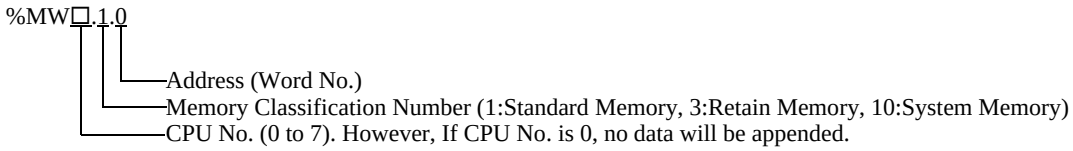
• Please refer to the SX Bus Unit No. details in the manual of External Device.

*2 Standard/Retain/System Memory Address Designation is as shown below.

• Bit Designation



• Word Designation



*3 Standard and Retain Memory sizes can be changed. However, the total memory size is fixed. (For details, refer to the manual of External Device).

NOTE

- When specifying the address of the Eternal Device directly, always use a setting within the specified AT range of the ladder software. We recommend using an AT-specified- variable for the External Device used on the Display. Please refer to the MICREX-SX Series D300Win <Reference> Users Manual by Fuji Electric Co., Ltd. for details of specifying the AT range and how to set it. When using a variable that is not AT-specified, variable needs to be imported again and screen transfer needs to be executed if ladder program or variable is changed.
- Always use a system area and reading area within the specified AT range.
- Use high performance CPU system area with an address of %MW1.2048 or later.
- Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

5.2 SPH2000

■ NP1PM-48R / NP1PM-48E

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Remarks
Input Memory	%IX□.000.00 - %IX□.511.15	%IW□.000 - %IW□.511	L / H	*1
Output Memory	%QX□.000.00 - %QX□.511.15	%QW□.000 - %QW□.511		*1
Standard Memory	%MX□.1.00000.00 - %MX□.1.65535.15	%MW□.1.00000 - %MW□.1.65535		*2 *3
Retain Memory	%MX□.3.0000.00 - %MX□.3.8191.15	%MW□.3.0000 - %MW□.3.8191		*2 *3
System Memory	%MX□.10.000.00 - %MX□.10.511.15	%MW□.10.000 - %MW□.10.511		*2

*1 Input/Output Memory Address Designation is as shown below.

• Bit Designation

%IX□.0.0
- Bit No. (0 to 15)
- Address (Word No.)
- SX Bus Unit No. (1 to 238)

• Word Designation

%IW□.0
- Address (Word No.)
- SX Bus Unit No. (1 to 238)

NOTE
- Please refer to the SX Bus Unit No. details in the manual of External Device.

*2 Standard/Retain/System Memory Address Designation is as shown below.

• Bit Designation

%MX□.1.0.0
- Bit No. (0 to 15)
- Address (Word No.)
- Memory Classification Number (1:Standard Memory, 3:Retain Memory, 10:System Memory)
- CPU No. (0 to 7). However, If CPU No. is 0, no data will be appended.

• Word Designation

%MW□.1.0
- Address (Word No.)
- Memory Classification Number (1:Standard Memory, 3:Retain Memory, 10:System Memory)
- CPU No. (0 to 7). However, If CPU No. is 0, no data will be appended.

*3 Standard and Retain Memory sizes can be changed. However, the total memory size is fixed. (For details, refer to the manual of External Device).

NOTE

- When specifying the address of the Eternal Device directly, always use a setting within the specified AT range of the ladder software. We recommend using an AT-specified- variable for the External Device used on the Display. Please refer to the MICREX-SX Series D300Win <Reference> Users Manual by Fuji Electric Co., Ltd. for details of specifying the AT range and how to set it. When using a variable that is not AT-specified, variable needs to be imported again and screen transfer needs to be executed if ladder program or variable is changed.
- Always use a system area and reading area within the specified AT range.
- Use high performance CPU system area with an address of %MW1.2048 or later.
- Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

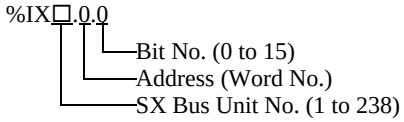
■ NP1PM-256E

This address can be specified as system data area.

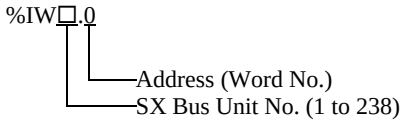
Device	Bit Address	Word Address	32bits	Remarks
Input Memory	%IX□.000.00 - %IX□.511.15	%IW□.000 - %IW□.511		*1
Output Memory	%QX□.000.00 - %QX□.511.15	%QW□.000 - %QW□.511		*1
Standard Memory	%MX□.1.00000.00 - %MX□.1.1703935.15	%MW□.1.00000 - %MW□.1. 1703935	L / H	*2 *3
Retain Memory	%MX□.3.0000.00 - %MX□.3. 262143.15	%MW□.3.0000 - %MW□.3.262143		*2 *3
System Memory	%MX□.10.000.00 - %MX□.10.511.15	%MW□.10.000 - %MW□.10.511		*2

*1 Input/Output Memory Address Designation is as shown below.

• Bit Designation



• Word Designation

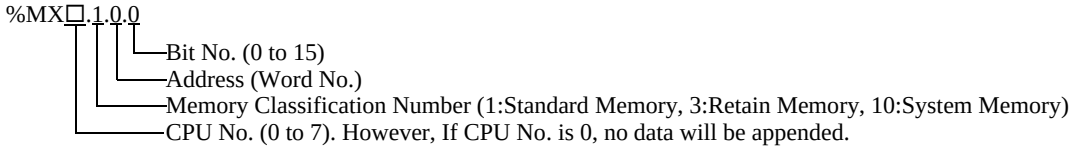


NOTE

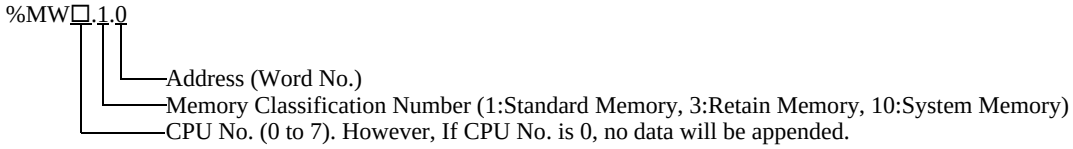
- Please refer to the SX Bus Unit No. details in the manual of External Device.

*2 Standard/Retain/System Memory Address Designation is as shown below.

• Bit Designation



• Word Designation



*3 Standard and Retain Memory sizes can be changed. However, the total memory size is fixed. (For details, refer to the manual of External Device).

NOTE

- When specifying the address of the Eternal Device directly, always use a setting within the specified AT range of the ladder software. We recommend using an AT-specified- variable for the External Device used on the Display. Please refer to the MICREX-SX Series D300Win <Reference> Users Manual by Fuji Electric Co., Ltd. for details of specifying the AT range and how to set it. When using a variable that is not AT-specified, variable needs to be imported again and screen transfer needs to be executed if ladder program or variable is changed.
- Always use a system area and reading area within the specified AT range.
- Use high performance CPU system area with an address of %MW1.2048 or later.
- Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

5.3 SPH300

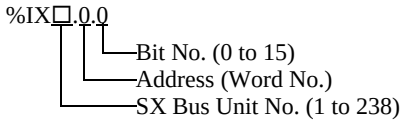
■ NP1PS-32 / NP1PS-32R

This address can be specified as system data area.

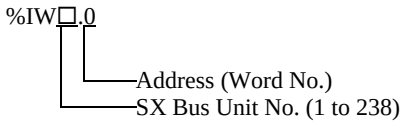
Device	Bit Address	Word Address	32bits	Remarks
Input Memory	%IX□.000.00 - %IX□.511.15	%IW□.000 - %IW□.511	L / H	*1
Output Memory	%QX□.000.00 - %QX□.511.15	%QW□.000 - %QW□.511		*1
Standard Memory	%MX□.1.0000.00 - %MX□.1.8191.15	%MW□.1.00000 - %MW□.1. 8191		*2 *3
Retain Memory	%MX□.3.0000.00 - %MX□.3. 4095.15	%MW□.3.0000 - %MW□.3.4095		*2 *3
System Memory	%MX□.10.000.00 - %MX□.10.511.15	%MW□.10.000 - %MW□.10.511		*2

*1 Input/Output memory Address Designation is as shown below.

• Bit Designation



• Word Designation

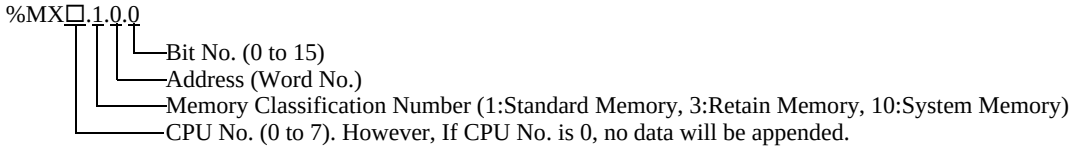


NOTE

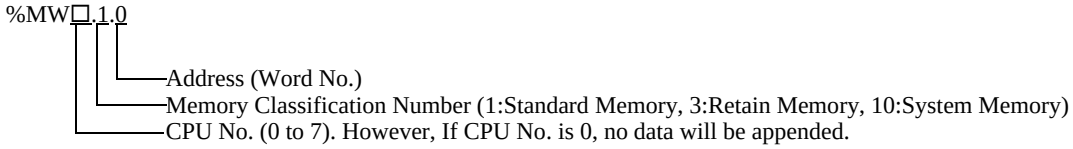
• Please refer to the SX Bus Unit No. details in the manual of External Device.

*2 Standard/Retain/System Memory Address Designation is as shown below.

• Bit Designation



• Word Designation



*3 Standard and Retain Memory sizes can be changed. However, the total memory size is fixed. (For details, refer to the manual of External Device).

NOTE

- When specifying the address of the Eternal Device directly, always use a setting within the specified AT range of the ladder software. We recommend using an AT-specified- variable for the External Device used on the Display. Please refer to the MICREX-SX Series D300Win <Reference> Users Manual by Fuji Electric Co., Ltd. for details of specifying the AT range and how to set it. When using a variable that is not AT-specified, variable needs to be imported again and screen transfer needs to be executed if ladder program or variable is changed.
- Always use a system area and reading area within the specified AT range.
- Use high performance CPU system area with an address of %MW1.2048 or later.
- Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

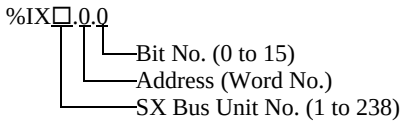
■ NP1PS-74 / NP1PS-74R

This address can be specified as system data area.

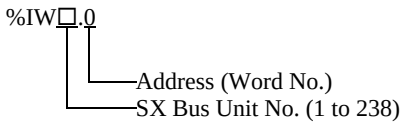
Device	Bit Address	Word Address	32bits	Remarks
Input Memory	%IX□.000.00 - %IX□.511.15	%IW□.000 - %IW□.511	L / H	*1
Output Memory	%QX□.000.00 - %QX□.511.15	%QW□.000 - %QW□.511		*1
Standard Memory	%MX□.1.0000.00 - %MX□.1.32767.15	%MW□.1.00000 - %MW□.1. 32767		*2 *3
Retain Memory	%MX□.3.0000.00 - %MX□.3. 16383.15	%MW□.3.0000 - %MW□.3.16383		*2 *3
System Memory	%MX□.10.000.00 - %MX□.10.511.15	%MW□.10.000 - %MW□.10.511		*2

*1 Input/Output Memory Address Designation is as shown below.

• Bit Designation



• Word Designation

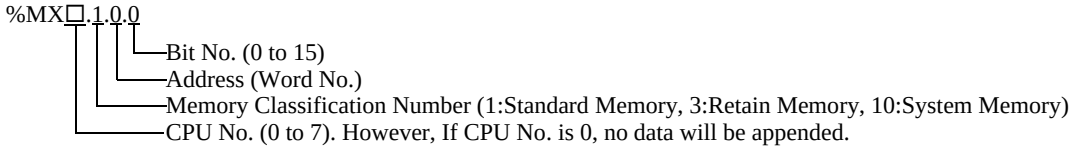


NOTE

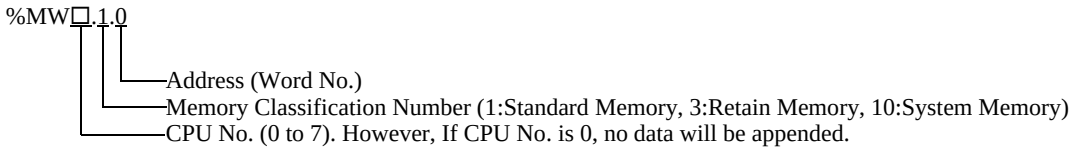
- Please refer to the SX Bus Unit No. details in the manual of External Device.

*2 Standard/Retain/System Memory Address Designation is as shown below.

• Bit Designation



• Word Designation



*3 Standard and Retain Memory sizes can be changed. However, the total memory size is fixed. (For details, refer to the manual of External Device).

NOTE

- When specifying the address of the Eternal Device directly, always use a setting within the specified AT range of the ladder software. We recommend using an AT-specified- variable for the External Device used on the Display. Please refer to the MICREX-SX Series D300Win <Reference> Users Manual by Fuji Electric Co., Ltd. for details of specifying the AT range and how to set it. When using a variable that is not AT-specified, variable needs to be imported again and screen transfer needs to be executed if ladder program or variable is changed.
- Always use a system area and reading area within the specified AT range.
- Use high performance CPU system area with an address of %MW1.2048 or later.
- Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

■ NP1PS-117 / NP1PS-117R

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Remarks
Input Memory	%IX□.000.00 - %IX□.511.15	%IW□.000 - %IW□.511	L / H	*1
Output Memory	%QX□.000.00 - %QX□.511.15	%QW□.000 - %QW□.511		*1
Standard Memory	%MX□.1.0000.00 - %MX□.1.131071.15	%MW□.1.00000 - %MW□.1. 131071		*2 *3
Retain Memory	%MX□.3.0000.00 - %MX□.3. 32767.15	%MW□.3.0000 - %MW□.3.32767		*2 *3
System Memory	%MX□.10.000.00 - %MX□.10.511.15	%MW□.10.000 - %MW□.10.511		*2

*1 Input/Output Memory Address Designation is as shown below.

• Bit Designation

%IX□.0.0
- Bit No. (0 to 15)
- Address (Word No.)
- SX Bus Unit No. (1 to 238)

• Word Designation

%IW□.0
- Address (Word No.)
- SX Bus Unit No. (1 to 238)

NOTE

• Please refer to the SX Bus Unit No. details in the manual of External Device.

*2 Standard/Retain/System Memory Address Designation is as shown below.

• Bit Designation

%MX□.1.0.0
- Bit No. (0 to 15)
- Address (Word No.)
- Memory Classification Number (1:Standard Memory, 3:Retain Memory, 10:System Memory)
- CPU No. (0 to 7). However, If CPU No. is 0, no data will be appended.

• Word Designation

%MW□.1.0
- Address (Word No.)
- Memory Classification Number (1:Standard Memory, 3:Retain Memory, 10:System Memory)
- CPU No. (0 to 7). However, If CPU No. is 0, no data will be appended.

*3 Standard and Retain Memory sizes can be changed. However, the total memory size is fixed. (For details, refer to the manual of External Device).

NOTE

- When specifying the address of the Eternal Device directly, always use a setting within the specified AT range of the ladder software. We recommend using an AT-specified- variable for the External Device used on the Display. Please refer to the MICREX-SX Series D300Win <Reference> Users Manual by Fuji Electric Co., Ltd. for details of specifying the AT range and how to set it. When using a variable that is not AT-specified, variable needs to be imported again and screen transfer needs to be executed if ladder program or variable is changed.
- Always use a system area and reading area within the specified AT range.
- Use high performance CPU system area with an address of %MW1.2048 or later.
- Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

■ NP1PS-245R

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Remarks
Input Memory	%IX□.000.00 - %IX□.511.15	%IW□.000 - %IW□.511		*1
Output Memory	%QX□.000.00 - %QX□.511.15	%QW□.000 - %QW□.511		*1
Standard Memory	%MX□.1.0000.00 - %MX□.1.262143.15	%MW□.1.00000 - %MW□.1. 262143	L / H	*2 *3
Retain Memory	%MX□.3.0000.00 - %MX□.3. 130047.15	%MW□.3.0000 - %MW□.3.130047		*2 *3
System Memory	%MX□.10.000.00 - %MX□.10.511.15	%MW□.10.000 - %MW□.10.511		*2

*1 Input/Output Memory Address Designation is as shown below.

• Bit Designation

%IX□.0.0
- Bit No. (0 to 15)
- Address (Word No.)
- SX Bus Unit No. (1 to 238)

• Word Designation

%IW□.0
- Address (Word No.)
- SX Bus Unit No. (1 to 238)

NOTE

• Please refer to the SX Bus Unit No. details in the manual of External Device.

*2 Standard/Retain/System Memory Address Designation is as shown below.

• Bit Designation

%MX□.1.0.0
- Bit No. (0 to 15)
- Address (Word No.)
- Memory Classification Number (1:Standard Memory, 3:Retain Memory, 10:System Memory)
- CPU No. (0 to 7). However, If CPU No. is 0, no data will be appended.

• Word Designation

%MW□.1.0
- Address (Word No.)
- Memory Classification Number (1:Standard Memory, 3:Retain Memory, 10:System Memory)
- CPU No. (0 to 7). However, If CPU No. is 0, no data will be appended.

*3 Standard and Retain Memory sizes can be changed. However, the total memory size is fixed. (For details, refer to the manual of External Device).

NOTE

- When specifying the address of the Eternal Device directly, always use a setting within the specified AT range of the ladder software. We recommend using an AT-specified- variable for the External Device used on the Display. Please refer to the MICREX-SX Series D300Win <Reference> Users Manual by Fuji Electric Co., Ltd. for details of specifying the AT range and how to set it. When using a variable that is not AT-specified, variable needs to be imported again and screen transfer needs to be executed if ladder program or variable is changed.
- Always use a system area and reading area within the specified AT range.
- Use high performance CPU system area with an address of %MW1.2048 or later.
- Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

5.4 When Using a Variable

■ Usable Device

The table below shows the Base Data Types of usable Variables.

Data Type		Bit Address	Word Address	32bits	Remarks
BOOL	Single Var	<VARNAME>	-	-	*1 *2 *3
	1D Array	<VARNAME>.[0] to <VARNAME>.[x-1]			
	2D Array	<VARNAME>.[0].[0] to <VARNAME>.[x-1].[y-1]			
INT UINT WORD	Single Tag	< VARNAME >.00 to < VARNAME >.15	< VARNAME >	L / H	*1 *2
	1D Array	< VARNAME >.[0].00 to < VARNAME >.[x-1].15	< VARNAME >.[0] to < VARNAME >.[x-1]		
	2D Array	< VARNAME >.[0].[0].00 to < VARNAME >.[x-1].[y-1].15	< VARNAME >.[0].[0] to < VARNAME >.[x-1].[y-1]		
DINT UDINT DWORD REAL TIME	Single Tag	< VARNAME >.00 to < VARNAME >.31	< VARNAME >	-	*1 *2
	1D Array	< VARNAME >.[0].00 to < VARNAME >.[x-1].31	< VARNAME >.[0] to < VARNAME >.[x-1]		
	2D Array	< VARNAME >.[0].[0].00 to < VARNAME >.[x-1].[y-1].31	< VARNAME >.[0].[0] to < VARNAME >.[x-1].[y-1]		
STRING	Single Tag	-	<VARNAME>	-	*1 *4

*1 <VARNAME>: This is the complete "Variable" name including "Worksheet" name and "Structure" name if it is a sub element of a structure. Maximum 255 characters including delimiters (‘.’) and address part (e.g. bit position and array information).

e.g. BOOL type single tag in a Global Worksheet:
"CONF.MainResource.Global_Variables.BOOLVAR"
e.g. INT type single tag in a Local Worksheet:
"MainProgram.MainProgramV.INTVAR"
e.g. DINT type bit address: "MainProgram.MainProgramV.DINTVAR.30"
e.g. REAL type 2D array: "MainProgram.MainProgramV.REALARRAY[1].[2]"
e.g. DINT from a TIMER structure: "MainProgram.MainProgramV.TIMERVAR.PRE"
e.g. BOOL from a User Defined Structure :
"CONF.MainResource.Global_Variables.USERSTRUCTURE_A.MYTIMER.EN"

*2 Array dimensions: Up to 2D arrays can be created. When a "Variable" is an array, the size is defined.

Range of array elements: -32728 to 32767

Number of array elements: 32768

Usable memory size for 1 variable: Less than 65535 words

*3 BOOL type arrays: The External Device address must start on bit 0. e.g. %MX1.100.0

*4 Cannot be used with array access. "STRING" cannot be used as a part of the structure.

NOTE

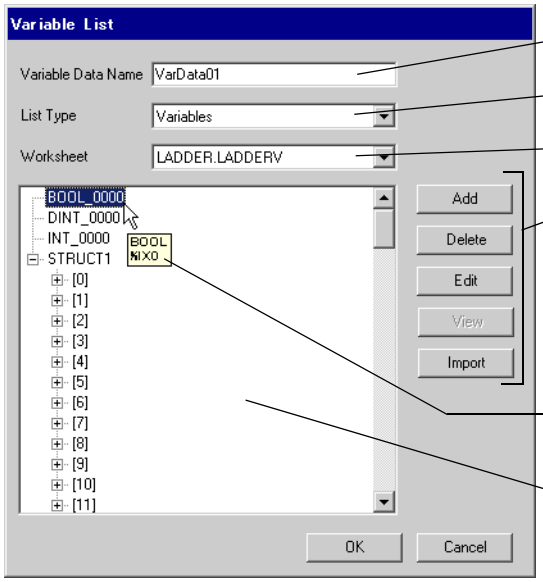
- The following derived data types are available for address input with GP-Pro EX.
  - Array data type
    One-dimensional array
    Two-dimensional array (an array of arrays)
  - Structural data type
    Structure
    Array of structure
    Structure of array
    Structure of structure
- When specifying the address of the Eternal Device directly, always use a setting within the specified AT range of the ladder software. We recommend using an AT-specified- variable for the External Device used on the Display. Please refer to the MICREX-SX Series D300Win <Reference> Users Manual by Fuji Electric Co., Ltd. for details of specifying the AT range and how to set it. When using a variable that is not AT-specified, variable needs to be imported again and screen transfer needs to be executed if ladder program or variable is changed.
- Always use a system area and reading area within the specified AT range.
- Use high performance CPU system area with an address of %MW1.2048 or later.
- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

To use a variable and Derived Data Type that were set by D300win with the GP-Pro EX, CSV file and IEC file need to be imported.
CSV file and IEC file are exported by D300win.
Imported data is saved as variable data.

NOTE

- Defined variable data can be used only with this driver. Therefore, variable data defined with other drivers cannot be used with this driver. In the same way, variable data defined with this driver cannot be used with other drivers.
- When IEC file meets any of the following conditions, it cannot be imported. Correct inappropriate conditions and then import the file.
  - There are two or more definitions or keywords (e.g. TYPE and END_TYPE) in 1 row. (When a line break is inserted in the comment, the case is recognized that there are two or more definitions or keywords in 1 row.)
  - There is a structure where array variables are defined.
  - There is an Alias of basic data type.

■ Setting Items of [Variable] List Dialog Box



Enter the file name of the variable data.

Select data type to be listed.

Select a worksheet where the variable is registered.

Operation buttons. After selecting the data in the [List], adding, deleting, or editing can be executed here.
[View] indicates the content of data.
[Import] imports variables and data type.

The cursor is moved to the variable, and data type and comments are displayed.

Variable, data type, array, and worksheet that are registered in the variable data are displayed.

■ Importing Variable and Data Type

1 Set variable, data type, array, and worksheet with D300win.

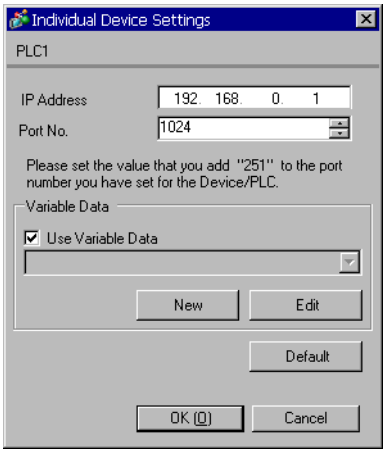
Version of D300win that is supported is V3.1.0.0 or later.

2 Select [Export] from the [File] menu and select the data to be exported.

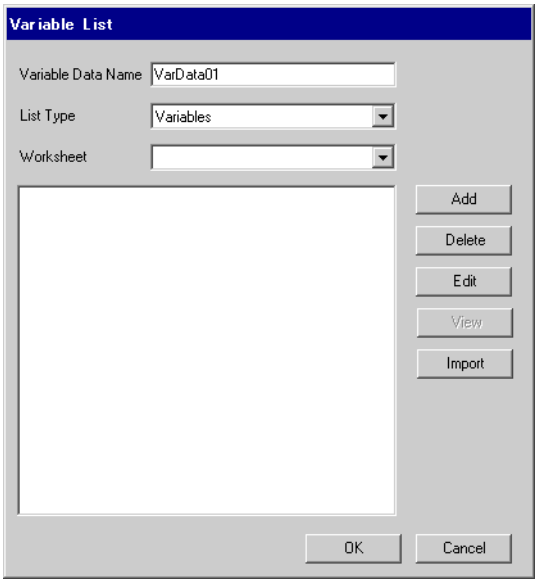
Data below needs to be exported.

Data to be exported	Description	File type
Cross reference	Variable and worksheet	CSV
IEC 61131-3	Data type and array	IEC

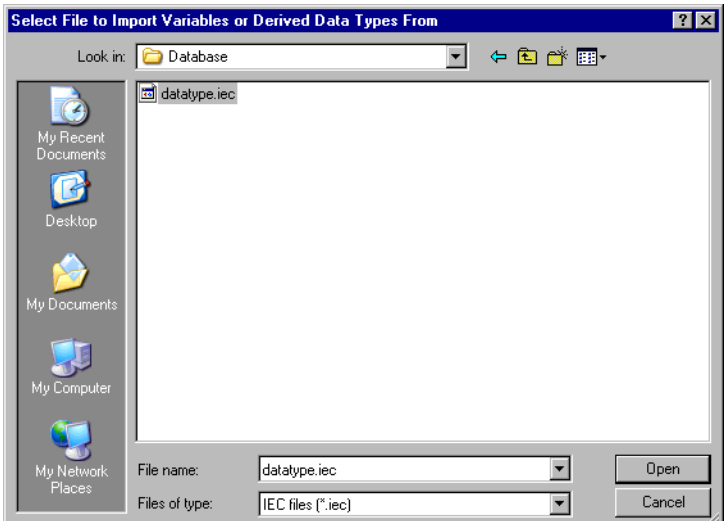
3 Make [Individual Device Settings] dialog box displayed with the GP-ProEX, and put a check to [Use Variable Data]. Then click [New].



4 Enter the name of variable data to save the setting in the [Variable Data Name].



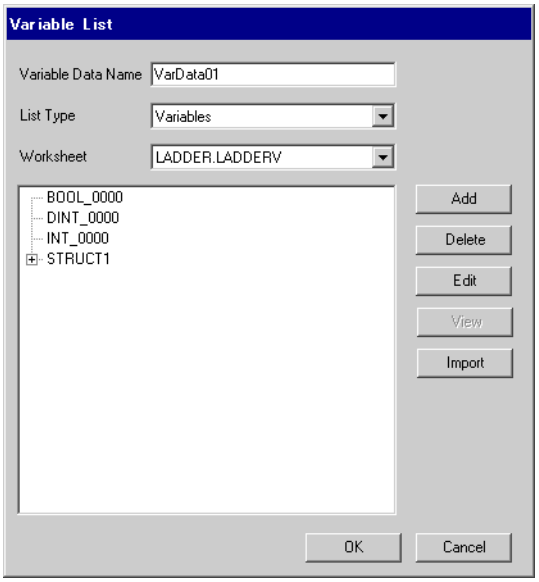
5 Click [Import] to import CSV file and IEC file that were exported in the Procedure 2.
Import IEC file first followed by CSV file.



NOTE

- When CSV file including variable with the user-defined data type is imported prior to IEC file, an error, "Unknown Data Type was found" is displayed and variable is not imported. Import IEC file first in order to register the user-defined data type.

6 Confirm the registered data and click [OK].

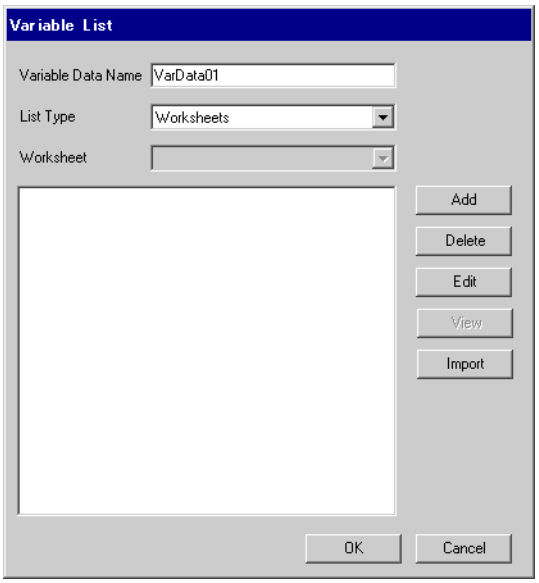


■ Making New Variable Data

If variable data is not imported, make variable data using the following procedures.

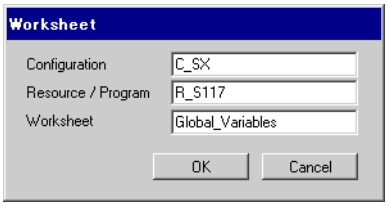
◆ Making a Worksheet

1 Select "Worksheets" from the [List Type] of the [Variable List] dialog box.



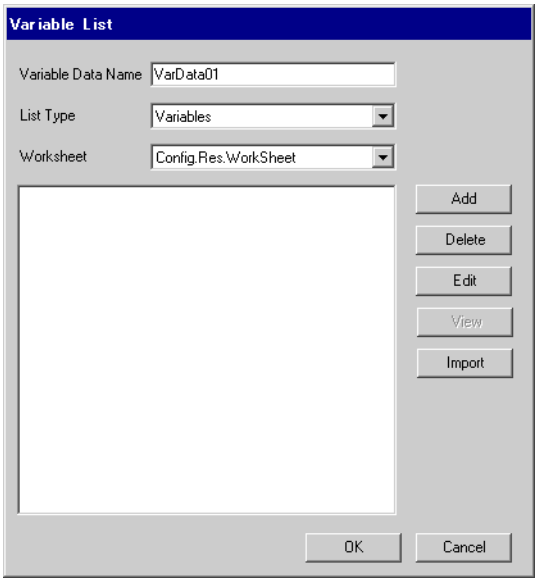
2 Click [Add] to display [Worksheet] dialog box.

3 Enter "Configuration", "Resource/Program" and "Worksheet" and click [OK].



◆ Making Variable

1 Select "Variables" from the [List Type] of the [Variable List] dialog box.

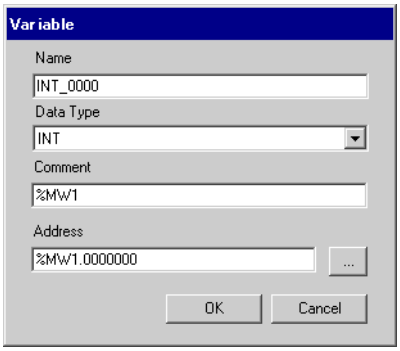


2 Click [Add] to display [Variable] dialog box.

NOTE

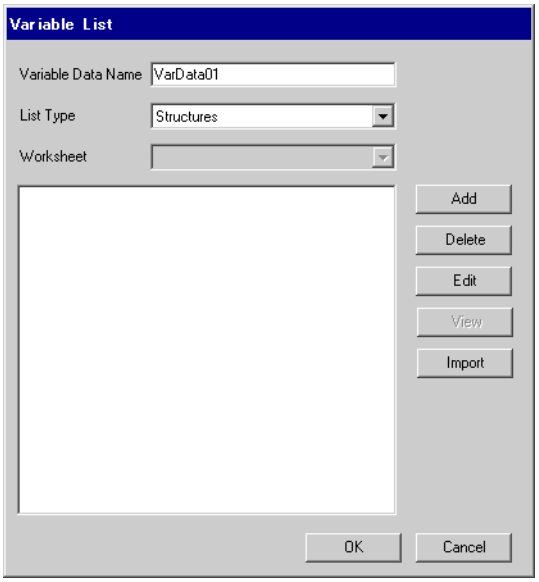
- To add a variable, the worksheet needs to be set.
  Make the worksheet before making the variable.
  ☞" ◆ Making a Worksheet" (page 36)

3 Enter "Name", "Data Type", "Address" and "Comment" and click [OK].



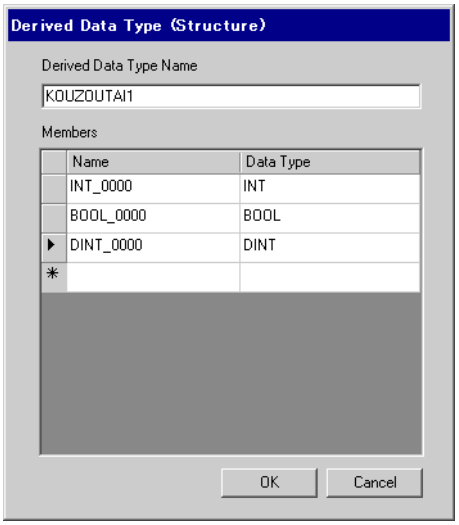
◆ Making Derived Data Type

1 Select "Structures" from the [List Type] of the [Variable List] dialog box.



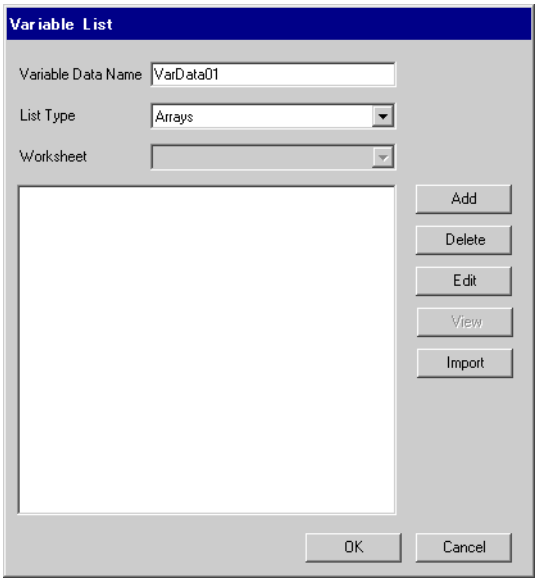
2 Click [Add] to display [Derived Data Type (Structure)] dialog box.

3 Enter "Derived Data Type Name" and "Name" and "Data Type" of Member included in "Derived Data Type", and click [OK].



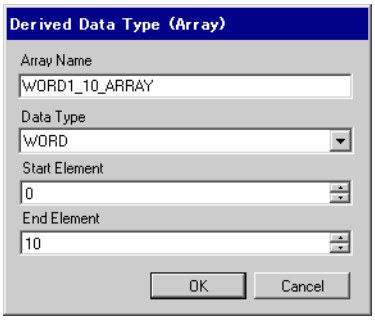
◆ Making an Array

1 Select "Arrays" from the [List Type] of the [Variable List] dialog box.



2 Click [Add] to display [Derived Data Type (Array)] dialog box.

3 Enter "Array Name", "Data Type", "Start Element" and "End Element" and click [OK].



6 Device Code and Address Code

Use device code and address code when you select "Device Type & Address" for the address type in data displays.

NOTE

- When using a variable, device code and address code cannot be used.

Device	Device Name	Device Code (HEX)	Address Code
Input Memory	%IX	83	Word Address
	%IW		
Output Memory	%QX	84	Word Address
	%QW		
Standard Memory	%MX1	80	Word Address
	%MW1		
Retain Memory	%MX3	81	Word Address
	%MW3		
System Memory	%MX10	82	Word Address
	%MW10		

7 Error Messages

Error messages are displayed on the screen of Display as follows: "No. : Device Name: Error Message (Error Occurrence Area)". Each description is shown below.

Item	Description
No.	Error No.
Device Name	Name of External Device where error occurs. Device name is a title of External Device set with GP-Pro EX. (Initial value [PLC1])
Error Message	Displays messages related to the error which occurs.
Error Occurrence Area	Displays IP address or device address of External Device where error occurs, or error codes received from External Device. **NOTE** • IP address is displayed such as "IP address (Decimal): MAC address (Hex)". • Device address is displayed such as "Address: Device address". • Received error codes are displayed such as "Decimal [Hex]".

Display Examples of Error Messages

"RHAA035: PLC1: Error has been responded for device write command (Error Code: 2 [02H])"

NOTE

- Refer to your External Device manual for details on received error codes.
- Refer to "Display-related errors" in "Maintenance/Troubleshooting Guide" for details on the error messages common to the driver.

■ Error Code Unique for Driver

Error Code	Description
0x10	CPU Error: An error occurs in the CPU and a command cannot be executed.
0x11	CPU in operation: Command cannot be executed because CPU is in operation.
0x12	Command cannot be executed: Due to CPU's key switch condition, a command cannot be executed.
0x23	During transmission interlocking: Transmission is interlocked due to a loader command from another device.
0x28	During command processing: Requested command cannot be executed because other command is in process.
0x2B	During other loader processing: Request command cannot be executed because loader is in process (program changes).
0x2F	Initialization incomplete: Requested command cannot be executed because system is initializing.
0x44	Memory addressing error: Specified address exceeds effective area.
0x45	Memory size over: Address + reading/the number of written words exceeds the effective area.

Continues to the next page.

Error Code	Description
0xA0	Designated command destination error: No module exists at the designated destination number.
0xA2	No command response: No response data from destination module.
0xA4	SX bus sending error: Error occurred in SX bus, and commands cannot be exchanged.
0xA5	SX bus NAK: NAK occurred in SX bus sending, and commands cannot be exchanged.

■ Error Message Unique for Driver

Error Code	Error Message	Description
RHxx128	"(Node Name):The number of specified destination module is not existed.(Error Code: [Hex])"	It occurs when accessing a non-existing CPU No., and SX No. Designate existing module.