



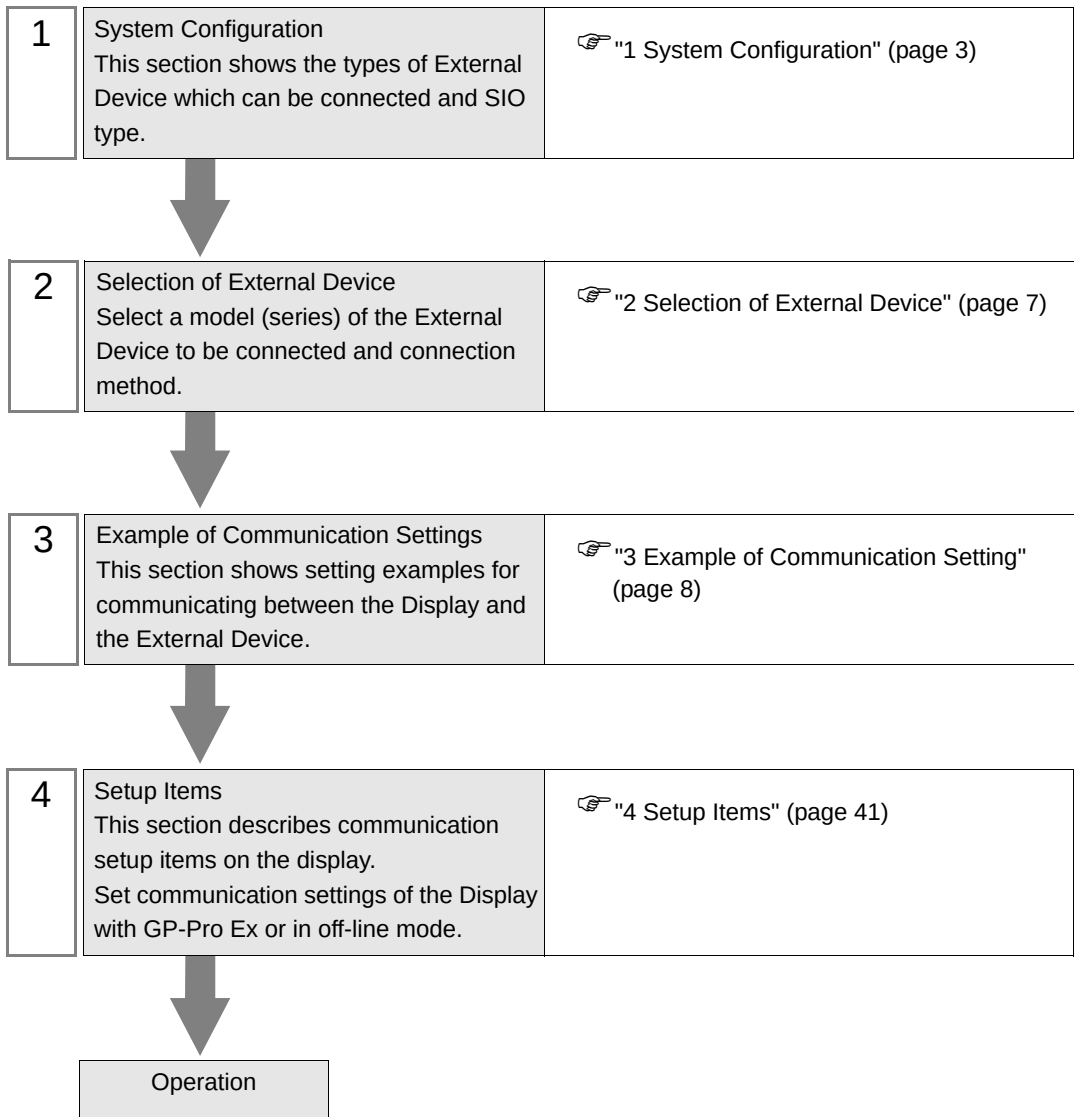
CS/CJ Series Ethernet Driver

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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 OMRON Corporation and the Display are connected is shown.

Series	CPU*1	Link I/F	SIO Type	Setting Example		
CS Series	CS1H-CPU67 CS1H-CPU66 CS1H-CPU65 CS1H-CPU64 CS1G-CPU45 CS1G-CPU44 CS1G-CPU43 CS1G-CPU42	CS1W-ETN01	Ethernet (UDP)	Setting Example 1 (page 8)		
	CS1H-CPU67H CS1H-CPU66H CS1H-CPU65H CS1H-CPU64H CS1H-CPU63H CS1G-CPU45H CS1G-CPU44H CS1G-CPU43H CS1G-CPU42H	CS1W-ETN11				
	CS1H-CPU67-V1 CS1H-CPU66-V1 CS1H-CPU65-V1 CS1H-CPU64-V1 CS1H-CPU63-V1 CS1G-CPU45-V1 CS1G-CPU44-V1 CS1G-CPU43-V1 CS1G-CPU42-V1	CS1W-ETN21			Ethernet (UDP)	Setting Example 3 (page 14)
					Ethernet (TCP)	Setting Example 4 (page 17)
	CJ1 Series	CJ1G-CPU45 CJ1G-CPU44 CJ1M-CPU23 CJ1M-CPU22 CJ1M-CPU21 CJ1M-CPU13 CJ1M-CPU12 CJ1M-CPU11 CJ1H-CPU66H CJ1H-CPU65H CJ1G-CPU45H CJ1G-CPU44H CJ1G-CPU43H CJ1G-CPU42H	CJ1W-ETN01	Ethernet (UDP)	Setting Example 2 (page 11)	
			CJ1W-ETN11			
			CJ1W-ETN21			Ethernet (UDP)
				Ethernet (TCP)	Setting Example 4 (page 17)	

Series	CPU ^{*1}	Link I/F	SIO Type	Setting Example
CJ2 Series	CJ2H-CPU64-EIP CJ2H-CPU65-EIP CJ2H-CPU66-EIP CJ2H-CPU67-EIP CJ2H-CPU68-EIP	EtherNet/IP port on CPU	Ethernet (UDP)	Setting Example 5 (page 20)
			Ethernet (TCP)	Setting Example 6 (page 24)
		CJ1W-ETN21	Ethernet (UDP)	Setting Example 7 (page 28)
			Ethernet (TCP)	Setting Example 8 (page 31)
CP1 Series	CP1H-X□□DR-A CP1H-X□□DT-D CP1H-X□□DT1-D CP1H-XA□□DR-A CP1H-XA□□DT-D CP1H-XA□□DT1-D CP1H-Y□□DT-D	CJ1W-ETN21	Ethernet (UDP)	Setting Example 9 (page 34)
			Ethernet (TCP)	Setting Example 10 (page 38)

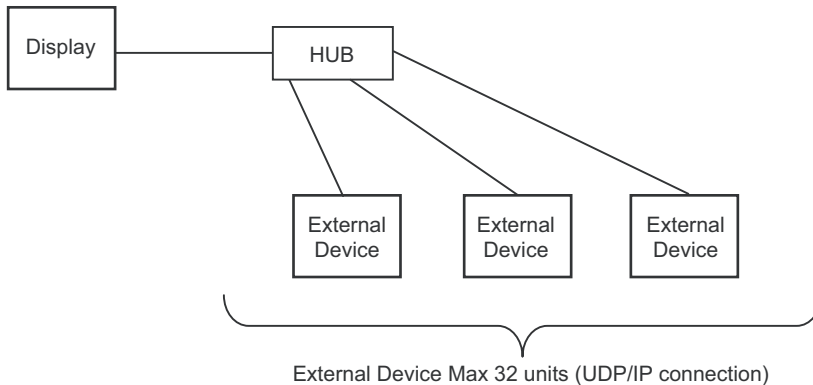
*1 □ differs depending on the number of CPU input-output points.

■ Device Configuration

- 1:1 Connection

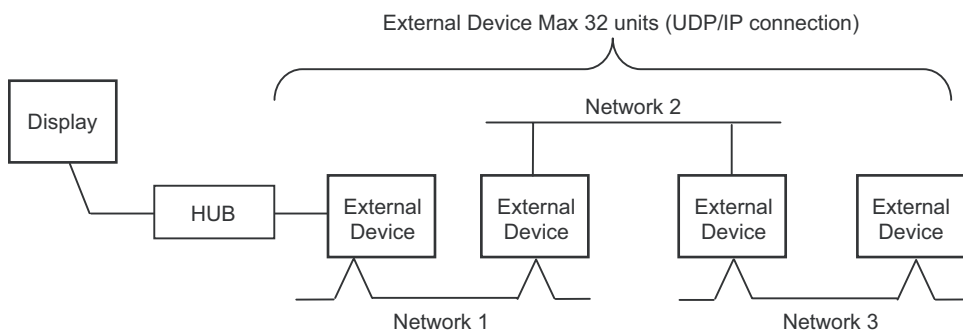


- 1:n Connection

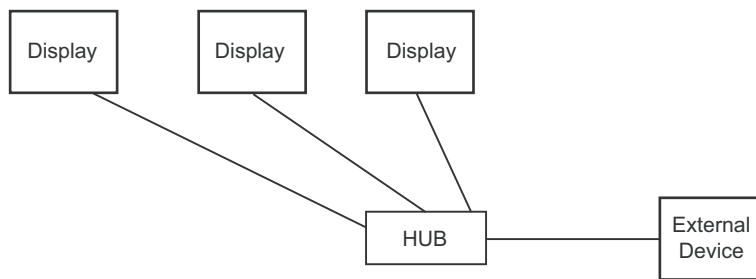


- 1:n Connection (access beyond network)

Set the relay node between networks to allow you to access the PLC with the different network address. You can access beyond maximum 3 levels of network.

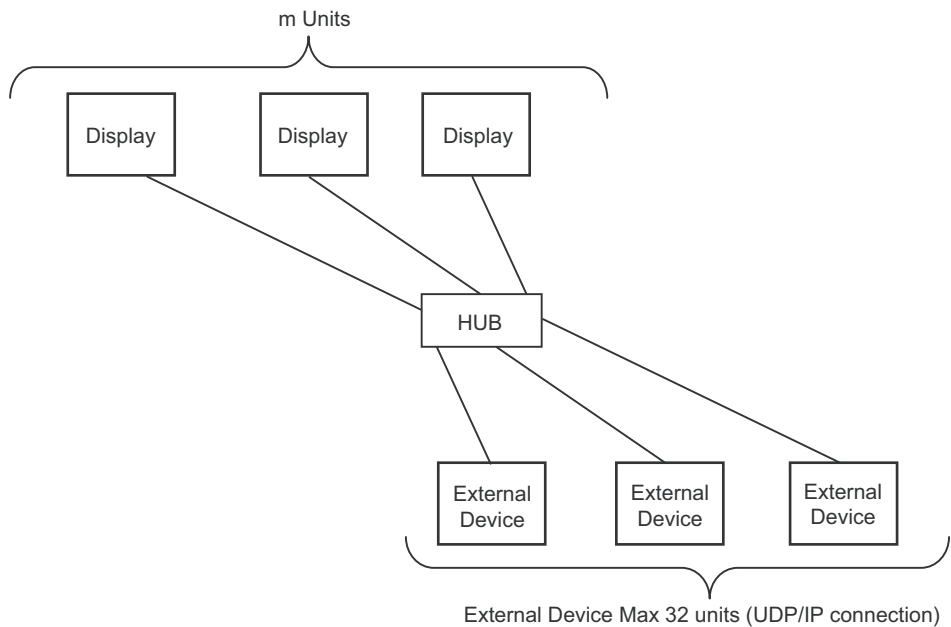


- m:1 Connection



NOTE • The number of GP units has no limit. Note that more number of connecting units will result in increasing the communication load.

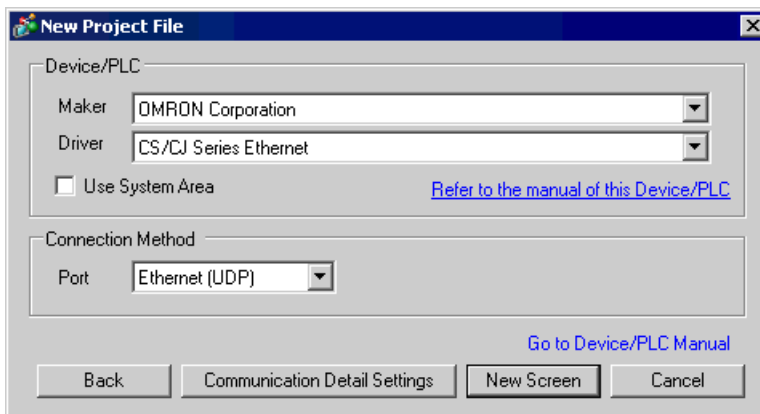
- m:n Connection



NOTE • The number of GP units has no limit. Note that more number of connecting units will result in increasing the communication load.

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 "OMRON Corporation".
Driver	Select a model (series) of the External Device to be connected and connection method. Select "CS/CJ Series Ethernet". Check the External Device which can be connected in "CS/CJ Series Ethernet" in system configuration. ☞ "1 System Configuration" (page 3)
Use System Area	Check this option when you synchronize the system data area of the Display and the device (memory) of the External Device. When they are synchronized, you can use the ladder program of the External Device to change screens or to pop up a window on the Display. Cf. GP Pro-EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)" This can also be set with GP Pro-EX or in the Display off-line mode. Cf. GP-Pro EX Reference Manual "5.17.6 [System Settings] Setting Guide, [Display Unit] Settings Guide, System Area Settings" Cf. Maintenance/Troubleshooting Manual "2.15.1 Settings common to all Display models, [Main Unit Settings] Settings Guide, 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.

When you use the CS/CJ Series, use GP-Pro EX and the ladder software to set as below.

3.1 Setting Example 1

■ Setting of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1

Summary [Change Device/PLC](#)

Maker Series Port

Text Data Mode [Change](#)

Communication Settings

Port No.

Timeout (sec)

Retry

Wait To Send (ms)

Source Address

Network

Node

Device-Specific Settings

Allowable No. of Device/PLCs 32 Unit(s)

No.	Device Name	Settings
1	PLC1	IP Address=000.000.000.000,Port No.=9600,Network=0,Node=1

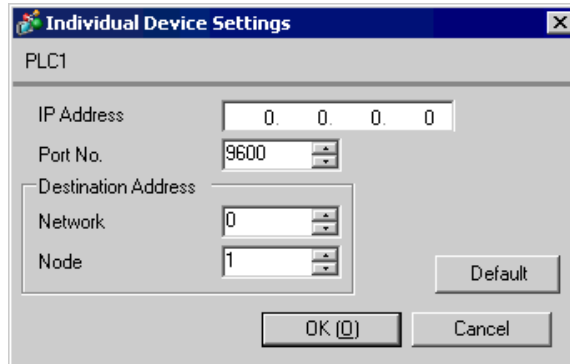
NOTE

- Set the optional network address of the Display in [Network].
- Set the optional node address of the Display in [Node].

◆ 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

- Set the IP address you set for the External Device in [IP address].
- Set the network address you set for the External Device in [Network].
- Set the node address you set for the External Device in [Node].

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.
- The default port No. of the External Device is 9600. Always perform the same settings for the port No. of the Display and the External Device.

■ Setting of External Device

Double-click [I/O Table] in the project window to display the [PC I/O Table] window. Select [Unit Settings] from the menu displayed by right-clicking on the Ethernet unit in the window to select the Ethernet Unit Setting Screen.

Setup Items	Settings
IP Address Conversion	IP Address Table Method
IP Address Table	Node address and IP address you set in the Display.
IP Address Setting Rotary Switch ^{*2}	Option
Source Network Address ^{*1}	Option
Node Address Setting Rotary Switch ^{*2}	Option
Unit No. Setting Rotary Switch ^{*2}	0
FINS/UDP Port	9600

*1 Parameter used when you access beyond network.
Set in the routing table of "CX-Net Network Configuration". Please refer to the manual of the External Device for more details.

*2 Set with the rotary switch on the front of the Ethernet unit.

◆ Notes

- Check with a network administrator about IP address and subnet mask. Do not set the duplicate IP address.
- Always perform the same settings for the port No. of the Display and the External Device.

3.2 Setting Example 2

■ Setting of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1

Summary

Maker Series Port [Change Device/PLC](#)

Text Data Mode [Change](#)

Communication Settings

Port No.

Timeout (sec)

Retry

Wait To Send (ms)

Source Address

Network

Node

Device-Specific Settings

Allowable No. of Device/PLCs 32 Unit(s)

No.	Device Name	Settings
1	PLC1	IP Address=000.000.000.000, Port No.=9600, Network=0, Node=1

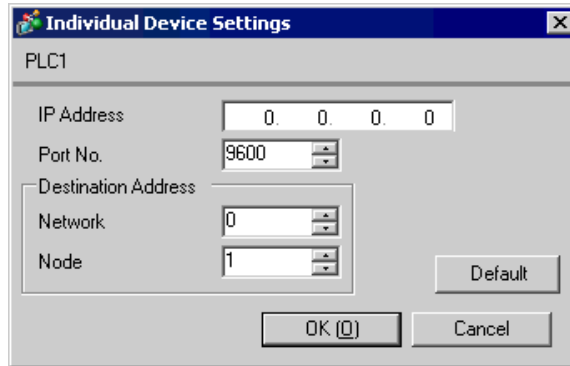
NOTE

- Set the optional network address of the Display in [Network].
- Set the optional node address of the Display in [Node].

◆ 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

- Set the IP address you set for the External Device in [IP address].
- Set the network address you set for the External Device in [Network].
- Set the node address you set for the External Device in [Node].

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.
- The default port No. of the External Device is 9600. Always perform the same settings for the port No. of the Display and the External Device.

■ Setting of External Device

Double-click [I/O Table] in the project window to display the [PC I/O Table] window. Select [Unit Settings] from the menu displayed by right-clicking on the Ethernet unit in the window to select the Ethernet Unit Setting Screen.

Setup Items	Settings
IP Address Conversion	IP Address Table Method
IP Address Table	Node address and IP address you set in the Display.
IP Address	Option
Source Network Address ^{*1}	Option
Node Address Setting Rotary Switch ^{*2}	Option
Unit No. Setting Rotary Switch ^{*2}	0
FINS/UDP Port	9600

*1 Parameter used when you access beyond network.
Set in the routing table of "CX-Net Network Configuration". Please refer to the manual of the External Device for more details.

*2 Set with the rotary switch on the front of the Ethernet unit.

◆ Notes

- Check with a network administrator about IP address and subnet mask. Do not set the duplicate IP address.
- Always perform the same settings for the port No. of the Display and the External Device.

3.3 Setting Example 3

■ Setting of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1

Summary

Maker: OMRON Corporation Series: CS/CJ Series Ethernet Port: Ethernet (UDP) [Change Device/PLC](#)

Text Data Mode: 1 [Change](#)

Communication Settings

Port No.: 9600

Timeout: 3 (sec)

Retry: 2

Wait To Send: 0 (ms)

Source Address

Network: 0

Node: 1

Default

Device-Specific Settings

Allowable No. of Device/PLCs: 32 Unit(s)

No.	Device Name	Settings
1	PLC1	IP Address=000.000.000.000,Port No.=9600,Network=0,Node=1

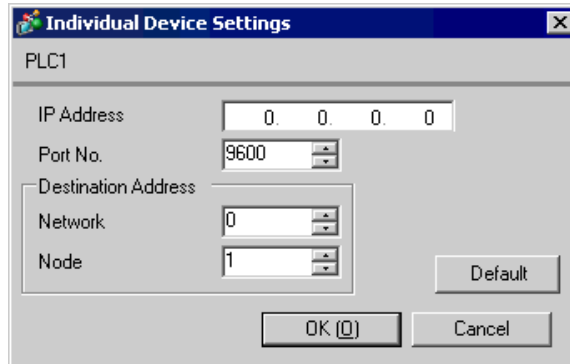
NOTE

- Set the optional network address of the Display in [Network].
- Set the optional node address of the Display in [Node].

◆ 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

- Set the IP address you set for the External Device in [IP address].
- Set the network address you set for the External Device in [Network].
- Set the node address you set for the External Device in [Node].

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.
- The default port No. of the PLC is 9600. For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

■ Setting of External Device

Double-click [I/O Table] in the project window to display the [PC I/O Table] window. Select [Unit Settings] from the menu displayed by right-clicking on the Ethernet unit in the window to select the Ethernet Unit Setting Screen.

Setup Items	Settings
IP Address Conversion	Auto Creation Method (dynamic)
Line Speed	Auto Detection
IP Address	Option
Source Network Address ^{*1}	Option
Node Address Setting Rotary Switch ^{*2}	Option
Unit No. Setting Rotary Switch ^{*2}	0
FINS/UDP Port	9600

*1 Parameter used when you access beyond network.
Set in the routing table of "CX-Net Network Configuration". Please refer to the manual of the External Device for more details.

*2 Set with the rotary switch on the front of the Ethernet unit.

◆ Notes

- Check with a network administrator about IP address and subnet mask. Do not set the duplicate IP address.
- For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

3.4 Setting Example 4

■ Setting of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1

Summary [Change Device/PLC](#)

Maker Series Port

Text Data Mode [Change](#)

Communication Settings

Port No.

Timeout (sec)

Retry

Wait To Send (ms)

Source Address

Network

Node

Device-Specific Settings

Allowable No. of Device/PLCs 16 Unit(s)

No.	Device Name	Settings
1	PLC1	IP Address=000.000.000.000, Port No.=9600, Network=0, Node=1

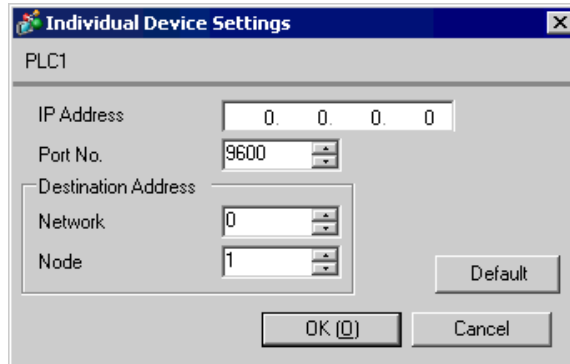
NOTE

- Set the optional network address of the Display in [Network].
- Set the optional node address of the Display in [Node].

◆ 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

- Set the IP address you set for the External Device in [IP address].
- Set the network address you set for the External Device in [Network].
- Set the node address you set for the External Device in [Node].

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.
- The default port No. of the External Device is 9600. For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

■ Setting of External Device

To communicate GP and SYSMAC-CS1 Series (EtherNet Unit: CS1W-ETN21), CJ Series (EtherNet Unit: CJ1W-ETN21), you need to set the EtherNet Unit of PLC.

Double-click [I/O Table] in the project window to display the [PC I/O Table] window. Select [Unit Settings] from the menu displayed by right-clicking on the Ethernet unit in the window to select the Ethernet Unit Setting Screen.

Setup Items	Settings
IP Address Conversion	Auto Creation Method (dynamic)
Line Speed	Auto Detection
IP Address	Option
Source Network Address ^{*1}	Option
Node Address Setting Rotary Switch ^{*2}	Option
Unit No. Setting Rotary Switch ^{*2}	0
FINS/TCP Port	9600

*1 Parameter used when you access beyond network.
Set in the routing table of "CX-Net Network Configuration". Please refer to the manual of the External Device for more details.

*2 Set with the rotary switch on the front of the Ethernet unit.

◆ Notes

- Check with a network administrator about IP address and subnet mask. Do not set the duplicate IP address.

3.5 Setting Example 5

■ Setting of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1

Summary [Change Device/PLC](#)

Maker Series Port

Text Data Mode [Change](#)

Communication Settings

Port No.

Timeout (sec)

Retry

Wait To Send (ms)

Source Address

Network

Node

Device-Specific Settings

Allowable Number of Devices/PLCs 32

Number	Device Name	Settings
1	PLC1	IP Address=192.168.0.001, Port No.=9600, Network=0, Node=1

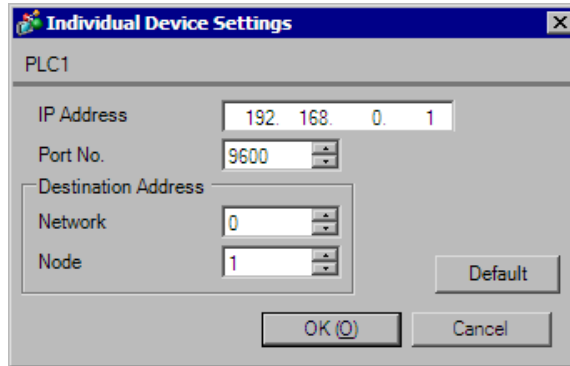
NOTE

- Set the optional network address of the Display in [Network].
- Set the optional node address of the Display in [Node].

◆ 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

- Set the IP address you set for the External Device in [IP address].
- Set the network address you set for the External Device in [Network].
- Set the node address you set for the External Device in [Node].

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.
- The default port No. of the PLC is 9600. For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

■ Setting of External Device

For External Device communication settings, use the DIP switch and rotary switch of the External Device and ladder software (CX-Programmer). For IP address settings, with Auto (dynamic).

Refer to your External Device manual for details.

◆ DIP Switch Setting

Dip Switch	Setting	Description
SW1	OFF	Set whether the user memory is writable or not. ON: Write disable OFF: Write enable
SW2	OFF	Set whether data is loaded from a memory card or not when the power is on. ON: Load enable OFF: Load disable
SW3	OFF	Not used.
SW4	OFF	Not used.
SW5	OFF	Set communication speed of serial port. ON: Communication speed of ladder software (Toolbus) is automatically recognized. OFF: Accordance with communication setting of ladder software.
SW6	OFF	Switch the status of special auxiliary relay (A395.12).
SW7	OFF	Set the type of simplified backup.
SW8	OFF	Always OFF.

◆ Rotary Switch Setting

Setup Items	Setting Value
Unit No.	0

Setup Items		Setting Value
NODE No.	x 16 ¹	0
	x 16 ⁰	1

◆ Ladder Software Setting

- 1 Start up the ladder software.
- 2 Select [New] in the [File] menu to display [Change PLC] dialog box.
- 3 Select External Device in the [Device Type].
- 4 Click [Settings...] in the [Device Type] to display the [Device Type Settings] dialog box.
- 5 Select CPU type in the [CPU Type] and click [OK].
- 6 Select connection type in the [Network Type].
- 7 Click [OK].
- 8 Double-click [IO Table and Unit Setup] in the tree view of the work space to display the [PLC IO Table].

- 9 Double-click built-in EtherNet/IP port in the [Built-in Port/Inner-Board] of the tree view to display the [Edit Parameters] dialog box.
- 10 Set [IP Address] and [Sub-net Mask] in the [TCP/IP] tab as below.

Setup Items	Setting Value
IP Address	192.168.0.1
Sub-net Mask	255.255.255.0

- 11 Click [OK]
- 12 Transfer the communication settings to External Device.
- 13 Reboot the External Device.

◆ Notes

- Check with a network administrator about IP address and subnet mask. Do not set the duplicate IP address.
- For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

3.6 Setting Example 6

■ Setting of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1

Summary [Change Device/PLC](#)

Maker Series Port

Text Data Mode [Change](#)

Communication Settings

Port No.

Timeout (sec)

Retry

Wait To Send (ms)

Source Address

Network

Node

Device-Specific Settings

Allowable Number of Devices/PLCs 16

Number	Device Name	Settings
1	PLC1	IP Address=192.168.000.001, Port No.=9600, Network=0, Node=1

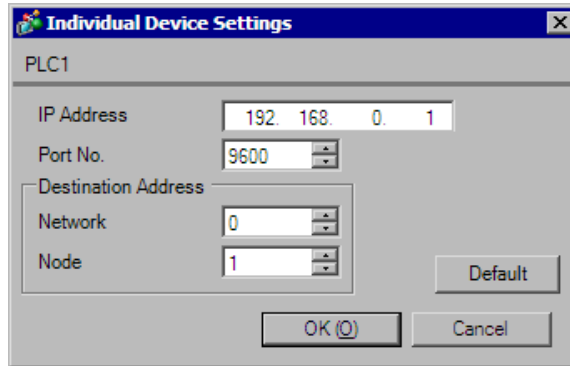
NOTE

- Set the optional network address of the Display in [Network].
- Set the optional node address of the Display in [Node].

◆ 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

- Set the IP address you set for the External Device in [IP address].
- Set the network address you set for the External Device in [Network].
- Set the node address you set for the External Device in [Node].

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.
- The default port No. of the External Device is 9600. For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

■ Setting of External Device

For External Device communication settings, use the DIP switch and rotary switch of the External Device and ladder software (CX-Programmer). For IP address settings, with Auto (dynamic).

Refer to your External Device manual for details.

◆ DIP Switch Setting

Dip Switch	Setting	Description
SW1	OFF	Set whether the user memory is writable or not. ON: Write disable OFF: Write enable
SW2	OFF	Set whether data is loaded from a memory card or not when the power is on. ON: Load enable OFF: Load disable
SW3	OFF	Not used.
SW4	OFF	Not used.
SW5	OFF	Set communication speed of serial port. ON: Communication speed of ladder software (Toolbus) is automatically recognized. OFF: Accordance with communication setting of ladder software.
SW6	OFF	Switch the status of special auxiliary relay (A395.12).
SW7	OFF	Set the type of simplified backup.
SW8	OFF	Always OFF.

◆ Rotary Switch Setting

Setup Items	Setting Value
Unit No.	0

Setup Items		Setting Value
NODE No.	x 16 ¹	0
	x 16 ⁰	1

◆ Ladder Software Setting

- 1 Start up the ladder software.
- 2 Select [New] in the [File] menu to display [Change PLC] dialog box.
- 3 Select External Device in the [Device Type].
- 4 Click [Settings...] in the [Device Type] to display the [Device Type Settings] dialog box.
- 5 Select CPU type in the [CPU Type] and click [OK].
- 6 Select connection type in the [Network Type].
- 7 Click [OK].
- 8 Double-click [IO Table and Unit Setup] in the tree view of the work space to display the [PLC IO Table].

- 9 Double-click built-in EtherNet/IP port in the [Built-in Port/Inner-Board] of the tree view to display the [Edit Parameters] dialog box.
- 10 Set [IP Address] and [Sub-net Mask] in the [TCP/IP] tab as below.

Setup Items	Setting Value
IP Address	192.168.0.1
Sub-net Mask	255.255.255.0

- 11 Click [OK]
- 12 Transfer the communication settings to External Device.
- 13 Reboot the External Device.

◆ Notes

- Check with a network administrator about IP address and subnet mask. Do not set the duplicate IP address.

3.7 Setting Example 7

■ Setting of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1

Summary

Maker Series Port [Change Device/PLC](#)

Text Data Mode [Change](#)

Communication Settings

Port No.

Timeout (sec)

Retry

Wait To Send (ms)

Source Address

Network

Node

Device-Specific Settings

Allowable Number of Devices/PLCs 32

Number	Device Name	Settings
1	PLC1	IP Address=192.168.0.001,Port No.=9600,Network=0,Node=1

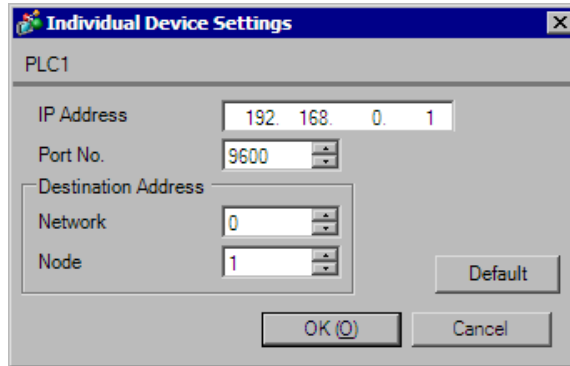
NOTE

- Set the optional network address of the Display in [Network].
- Set the optional node address of the Display in [Node].

◆ 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

- Set the IP address you set for the External Device in [IP address].
- Set the network address you set for the External Device in [Network].
- Set the node address you set for the External Device in [Node].

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.
- The default port No. of the PLC is 9600. For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

■ Setting of External Device

For External Device communication settings, use the rotary switch of the External Device and ladder software (CX-Programmer). For IP address settings, with Auto (dynamic).

Refer to your External Device manual for details.

◆ Rotary Switch Setting

Setup Items	Setting Value
Unit No.	1

Setup Items		Setting Value
NODE No.	x 16 ¹	0
	x 16 ⁰	1

◆ Ladder Software Setting

- 1 Start up the ladder software.
- 2 Select [New] in the [File] menu to display [Change PLC] dialog box.
- 3 Select External Device in the [Device Type].
- 4 Click [Settings...] in the [Device Type] to display the [Device Type Settings] dialog box.
- 5 Select CPU type in the [CPU Type] and click [OK].
- 6 Select connection type in the [Network Type].
- 7 Click [OK].
- 8 Double-click [IO Table and Unit Setup] in the tree view of the work space to display the [PLC IO Table] dialog box.
- 9 Double-click the slot number that connects to the link I/F from the [Main rack] of the tree view to display the [Select Unit] dialog box.
- 10 Select a link I/F to be registered from the [Communications Adapter] of the tree view.
- 11 Click [OK] to display the [Add Unit] dialog box.
- 12 Enter "1" in the [Unit].
- 13 Click [OK].
- 14 Double-click the link I/F that was registered in the [PLC IO Table] dialog box to display the [Edit Parameters] dialog box.
- 15 Set [IP Address] and [Sub-net Mask] in the [Setting] tab as below.

Setup Items	Setting Value
IP Address	192.168.0.1
Sub-net Mask	255.255.255.0

- 16 Click [OK]
- 17 Transfer the communication settings to External Device.
- 18 Reboot the External Device.

◆ Notes

- Check with a network administrator about IP address and subnet mask. Do not set the duplicate IP address.
- For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

3.8 Setting Example 8

■ Setting of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1

Summary [Change Device/PLC](#)

Maker Series Port

Text Data Mode [Change](#)

Communication Settings

Port No.

Timeout (sec)

Retry

Wait To Send (ms)

Source Address

Network

Node

Device-Specific Settings

Allowable Number of Devices/PLCs 16

Number	Device Name	Settings
1	PLC1	IP Address=192.168.000.001,Port No.=9600,Network=0,Node=1

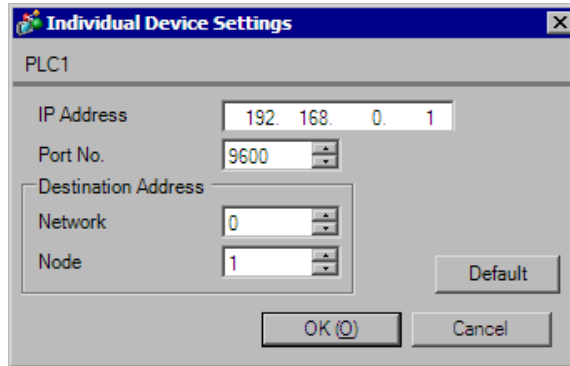
NOTE

- Set the optional network address of the Display in [Network].
- Set the optional node address of the Display in [Node].

◆ 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

- Set the IP address you set for the External Device in [IP address].
- Set the network address you set for the External Device in [Network].
- Set the node address you set for the External Device in [Node].

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.
- The default port No. of the External Device is 9600. For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

■ Setting of External Device

For External Device communication settings, use the rotary switch of the External Device and ladder software (CX-Programmer). For IP address settings, with Auto (dynamic).

Refer to your External Device manual for details.

◆ Rotary Switch Setting

Setup Items	Setting Value
Unit No.	1

Setup Items	Setting Value
NODE No.	x 16 ¹
	x 16 ⁰
	0
	1

◆ Ladder Software Setting

- 1 Start up the ladder software.
- 2 Select [New] in the [File] menu to display [Change PLC] dialog box.
- 3 Select External Device in the [Device Type].
- 4 Click [Settings...] in the [Device Type] to display the [Device Type Settings] dialog box.
- 5 Select CPU type in the [CPU Type] and click [OK].
- 6 Select connection type in the [Network Type].
- 7 Click [OK].
- 8 Double-click [IO Table and Unit Setup] in the tree view of the work space to display the [PLC IO Table] dialog box.
- 9 Double-click the slot number that connects to the link I/F from the [Main rack] of the tree view to display the [Select Unit] dialog box.
- 10 Select a link I/F to be registered from the [Communications Adapter] of the tree view.
- 11 Click [OK] to display the [Add Unit] dialog box.
- 12 Enter "1" in the [Unit].
- 13 Click [OK].
- 14 Double-click the link I/F that was registered in the [PLC IO Table] dialog box to display the [Edit Parameters] dialog box.
- 15 Set [IP Address] and [Sub-net Mask] in the [Setting] tab as below.

Setup Items	Setting Value
IP Address	192.168.0.1
Sub-net Mask	255.255.255.0

- 16 Click [OK]
- 17 Transfer the communication settings to External Device.
- 18 Reboot the External Device.

◆ Notes

- Check with a network administrator about IP address and subnet mask. Do not set the duplicate IP address.

3.9 Setting Example 9

■ Setting of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1

Summary

Maker: OMRON Corporation Series: CS/CJ Series Ethernet Port: Ethernet (UDP)

Text Data Mode: 1 [Change](#)

Communication Settings

Port No.: 9600

Timeout: 3 (sec)

Retry: 2

Wait To Send: 0 (ms)

Source Address

Network: 0

Node: 2

Default

Device-Specific Settings

Allowable Number of Devices/PLCs: 32

Number	Device Name	Settings
1	PLC1	IP Address=192.168.0.001,Port No.=9600,Network=0,Node=1

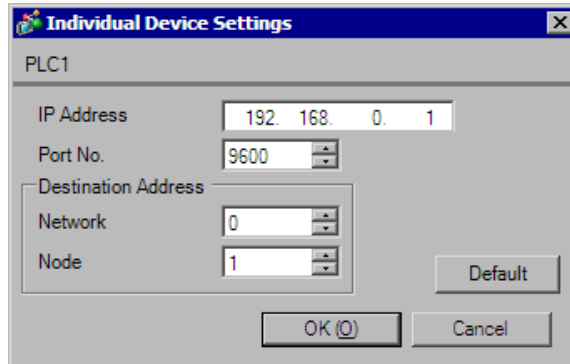
NOTE

- Set the optional network address of the Display in [Network].
- Set the optional node address of the Display in [Node].

◆ 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

- Set the IP address you set for the External Device in [IP address].
- Set the network address you set for the External Device in [Network].
- Set the node address you set for the External Device in [Node].

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.
- The default port No. of the PLC is 9600. For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

■ Setting of External Device

For External Device communication settings, use the rotary switch of the External Device and ladder software (CX-Programmer). For IP address settings, with Auto (dynamic).

Refer to your External Device manual for details.

◆ Rotary Switch Setting

Setup Items	Setting Value
Unit No.	1

Setup Items		Setting Value
NODE No.	x 16 ¹	0
	x 16 ⁰	1

◆ Ladder Software Setting

- 1 Start up the ladder software.
- 2 Select [New] in the [File] menu to display [Change PLC] dialog box.
- 3 Select External Device in the [Device Type].
- 4 Click [Settings...] in the [Device Type] to display the [Device Type Settings] dialog box.
- 5 Select CPU type in the [CPU Type] and click [OK].
- 6 Select connection type in the [Network Type].
- 7 Click [OK].
- 8 Double-click [IO Table and Unit Setup] in the tree view of the work space to display the [PLC Type Selection] dialog box.
- 9 select the External Device.
- 10 Click [OK] to display the [PLC IO Table] dialog box.
- 11 Double-click the slot number that connects to the link I/F from the [Main rack] of the tree view to display the [Select Unit] dialog box.
- 12 Select a link I/F to be registered from the [Communications Adapter] of the tree view.
- 13 Click [OK] to display the [Add Unit] dialog box.
- 14 Enter "1" in the [Unit].
- 15 Click [OK].
- 16 Double-click the link I/F that was registered in the [PLC IO Table] dialog box to display the [Edit Parameters] dialog box.
- 17 Set [IP Address] and [Sub-net Mask] in the [Setting] tab as below.

Setup Items	Setting Value
IP Address	192.168.0.1
Sub-net Mask	255.255.255.0

- 18 Click [OK]
- 19 Transfer the communication settings to External Device.
- 20 Reboot the External Device.

◆ Notes

- Check with a network administrator about IP address and subnet mask. Do not set the duplicate IP address.
- For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

3.10 Setting Example 10

■ Setting of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1

Summary [Change Device/PLC](#)

Maker Series Port

Text Data Mode [Change](#)

Communication Settings

Port No.

Timeout (sec)

Retry

Wait To Send (ms)

Source Address

Network

Node

Device-Specific Settings

Allowable Number of Devices/PLCs 16

Number	Device Name	Settings
1	PLC1	IP Address=192.168.000.001, Port No.=9600, Network=0, Node=1

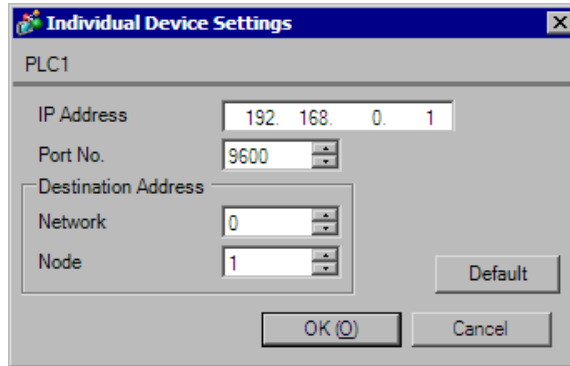
NOTE

- Set the optional network address of the Display in [Network].
- Set the optional node address of the Display in [Node].

◆ 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

- Set the IP address you set for the External Device in [IP address].
- Set the network address you set for the External Device in [Network].
- Set the node address you set for the External Device in [Node].

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.
- The default port No. of the External Device is 9600. For UDP connection, always perform the same settings for the port No. of the Display and the External Device.

■ Setting of External Device

For External Device communication settings, use the rotary switch of the External Device and ladder software (CX-Programmer). For IP address settings, with Auto (dynamic).

Refer to your External Device manual for details.

◆ Rotary Switch Setting

Setup Items	Setting Value
Unit No.	1

Setup Items		Setting Value
NODE No.	x 16 ¹	0
	x 16 ⁰	1

◆ Ladder Software Setting

- 1 Start up the ladder software.
- 2 Select [New] in the [File] menu to display [Change PLC] dialog box.
- 3 Select External Device in the [Device Type].
- 4 Click [Settings...] in the [Device Type] to display the [Device Type Settings] dialog box.
- 5 Select CPU type in the [CPU Type] and click [OK].
- 6 Select connection type in the [Network Type].
- 7 Click [OK].
- 8 Double-click [IO Table and Unit Setup] in the tree view of the work space to display the [PLC Type Selection] dialog box.
- 9 select the External Device.
- 10 Click [OK] to display the [PLC IO Table] dialog box.
- 11 Double-click the slot number that connects to the link I/F from the [Main rack] of the tree view to display the [Select Unit] dialog box.
- 12 Select a link I/F to be registered from the [Communications Adapter] of the tree view.
- 13 Click [OK] to display the [Add Unit] dialog box.
- 14 Enter "1" in the [Unit].
- 15 Click [OK].
- 16 Double-click the link I/F that was registered in the [PLC IO Table] dialog box to display the [Edit Parameters] dialog box.
- 17 Set [IP Address] and [Sub-net Mask] in the [Setting] tab as below.

Setup Items	Setting Value
IP Address	192.168.0.1
Sub-net Mask	255.255.255.0

- 18 Click [OK]
- 19 Transfer the communication settings to External Device.
- 20 Reboot the External Device.

◆ Notes

- Check with a network administrator about IP address and subnet mask. Do not set the duplicate IP address.

4 Setup Items

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

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

☞ "3 Example of Communication Setting" (page 8)

NOTE • Set the Display's IP address in off-line mode.

Cf. Maintenance/Troubleshooting Manual "2.5 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.

Device/PLC 1

Summary [Change Device/PLC](#)

Maker Series Port

Text Data Mode [Change](#)

Communication Settings

Port No.

Timeout (sec)

Retry

Wait To Send (ms)

Source Address

Network

Node

Device-Specific Settings

Allowable No. of Device/PLCs: 32 Unit(s)

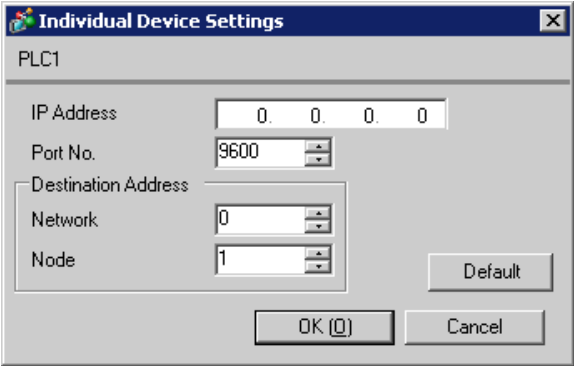
No.	Device Name	Settings
1	PLC1	IP Address=000.000.000.000,Port No.=9600,Network=0,Node=1

Setup Items		Setup Description
Port No.		For UDP connection, use an integer from 1024 to 65535 to enter the port No. of the Display. For TCP connection, the port No. of the Display is fixed to "Auto Assign", and it will be automatically assigned.
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.
Source Address	Network	Enter the network address of the Display, using 0 to 127.
	Node	Enter the node address of the Display, using 1 to 254.

■ 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.



The dialog box is titled "Individual Device Settings" and has a close button (X) in the top right corner. Below the title bar, it says "PLC1". The main area contains the following fields and buttons:

- IP Address:** A text box with the value "0. 0. 0. 0".
- Port No.:** A spin box with the value "9600".
- Destination Address:** A group box containing:
 - Network:** A spin box with the value "0".
 - Node:** A spin box with the value "1".
- Buttons:** "Default", "OK (O)", and "Cancel".

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.		Enter the port No. of the External Device, using 1 to 65535. NOTE - UDP connection: Do not use the port No. 53/123, which are reserved in the system. - TCP connection: Do not use the port No. 20/21/25/53/110, which are reserved in the system.
Destination Address	Network	Enter the network address of the External Device, using 0 to 127.
	Node	Enter the node address of the External Device, using 1 to 254.

4.2 Setup Items in Off-Line Mode

NOTE

- Refer to the Maintenance/Troubleshooting manual for information on how to enter off-line mode or about the operation.

Cf. Maintenance/Troubleshooting Manual "2.2 Off-line Mode"

■ Communication Settings

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

Comm.	Device			
CS/CJ Series Ethernet [UDP] Page 1/1				
Port No.	9600 ▼ ▲ (Case of TCP: Allocated Automatically)			
Timeout(s)	3 ▼ ▲			
Retry	2 ▼ ▲			
Wait To Send(ms)	0 ▼ ▲			
Network Address	0 ▼ ▲			
Node Address	1 ▼ ▲			
Exit		Back		2005/09/02 12:45:50

Setup Items	Setup Description
Port No.	For UDP connection, use an integer from 1024 to 65535 to enter the port No. of the Display. For TCP connection, the port No. of the Display will be automatically assigned regardless of the entered value.
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.
Network Address	Enter the network address of the Display, using 0 to 127.
Node Address	Enter the node address of the Display, using 1 to 254.

■ Device Setting

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

Comm.	Device			
CS/CJ Series Ethernet		[UDP]	Page 1/1	
Device/PLC Name		[PLC1] ▼		
IP Address	0 0 0 0			
Port No.	9600 ▼ ▲			
Network Address	0 ▼ ▲			
Node Address	1 ▼ ▲			
Exit		Back		2005/09/02 12:45:52

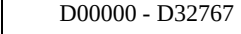
Setup Items	Setup Description
Device/PLC Name	Select the External Device to set. Device/PLC name is a title of the External Device set with GP-Pro EX. (Initial value [PLC1])
IP Address	Set IP address of the External Device. NOTE Check with a network administrator about IP address. Do not set the duplicate IP address.
Port No.	Enter the port No. of the External Device, using 1 to 65535.
Network Address	Enter the network address of the External Device, using 0 to 127.
Node Address	Enter the node address of the External Device, using 1 to 254.

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.

5.1 CS/CJ1 Series

 This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Channel I/O	0000.00 - 6143.15	0000 - 6143		*1
Internal Auxiliary Relay	W000.00 - W511.15	W000 - W511		
Special Auxiliary Relay	A000.00 - A959.15	A000 - A959		*2
Latch Relay	H000.00 - H511.15	H000 - H511		
Timer (Time Up Flag)	T0000 - T4095	-		*3
Counter (Count Up Flag)	C0000 - C4095	-		*3
Timer (Current Value)	-	T0000 - T4095		
Counter (Current Value)	-	C0000 - C4095		
Data Memory	D00000.00 - D32767.15	 D00000 - D32767		*1
Extension Data Memory (E0-EC)	E000000.00 - EC32767.15	E000000 - EC32767		*4 *5
Extension Data Memory (Current Bank)	-	EM00000 - EM32767		 *5*6
Task Flag (Bit)	TKB00 - TKB31	-		*3
Task Flag (Status)	TK00.00 - TK31.07	TK00 - TK30		 *3
Index Register	-	IR00 - IR15		 *7
Data Register	-	DR00 - DR15		 *7

*1 Do not write in Channel I/O address 1500-1899 and Data Memory address D30000-D31599 from the Display. Because those address are used for setting the system on the External Device.

*2 Write disable in A000 to A447.

*3 Write disable

*4 Max 13 bank (E0 to EC) can be used. 1 bank is 32768 words. Available bank number is different depending on the CPU unit.

*5 CJM1 Series does not include the extension data memory (E0 to EC, current bank EM).

*6 CJ1 Series does not include the extension data memory (Current bank EM).

*7 Write disable during RUN

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
 - Please refer to the precautions on manual notation for icons in the table.
 "Manual Symbols and Terminology"
-

5.2 CJ2 Series

 This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Channel I/O	0000.00 - 6143.15	0000 - 6143	L / H	*1
Internal Auxiliary Relay	W000.00 - W511.15	W000 - W511		
Special Auxiliary Relay	A0000.00 - A1471.15 A10000.00 - A11535.15	A0000 - A1471 A10000 - A11535		*2
Latch Relay	H000.00 - H511.15	H000 - H511		
Timer (Time Up Flag)	T0000 - T4095	-		*3
Counter (Count Up Flag)	C0000 - C4095	-		*3
Timer (Current Value)	-	T0000 - T4095		
Counter (Current Value)	-	C0000 - C4095		
Data Memory	D00000.00 - D32767.15	D00000 - D32767		*1
Extension Data Memory (E0-E18)	E0 00000.00 - E18 32767.15	E0 00000 - E18 32767		*4
Extension Data Memory (Current Bank)	-	EM00000 - EM32767		Bit 15
Task Flag (Bit)	TKB000 - TKB127	-		*3
Task Flag (Status)	TK000.00 - TK127.07	TK000 - TK126		÷ 2 *3
Index Register	-	IR00 - IR15		Bit 31 *5
Data Register	-	DR00 - DR15		Bit 15 *5

*1 Do not write in Channel I/O address 1500-1899 and Data Memory address D30000-D31599 from the Display. Because those address are used for setting the system on the External Device.

*2 Write disable in A000 - A447 and A10000 - A11535.

*3 Write disable

*4 Max 24 bank (E0 to E18) can be used. 1 bank is 32768 words. Available bank number is different depending on the CPU unit.

*5 Write disable during RUN

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
 - Please refer to the precautions on manual notation for icons in the table.
 "Manual Symbols and Terminology"
-

5.3 CP1 Series

 This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Channel I/O	0000.00 - 6143.15	0000 - 6143		
Internal Auxiliary Relay	W000.00 - W511.15	W000 - W511		
Special Auxiliary Relay	A000.00 - A959.15	A000 - A959		*1
Latch Relay	H000.00 - H511.15	H000 - H511		
Timer (Time Up Flag)	T0000 - T4095	-		*2
Counter (Count Up Flag)	C0000 - C4095	-		*2
Timer (Current Value)	-	T0000 - T4095		
Counter (Current Value)	-	C0000 - C4095		
Data Memory	D00000.00 - D32767.15	 D00000 - D32767		
Task Flag (Bit)	TKB00 - TKB31	-		*2
Task Flag (Status)	TK00.00 - TK31.07	TK00 - TK30		 2 *2
Index Register	-	IR00 - IR15		 31 *3
Data Register	-	DR00 - DR15		 15 *3

*1 Write disable in A000 - A447.

*2 Write disable

*3 Write disable during RUN

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
- Please refer to the precautions on manual notation for icons in the table.
 "Manual Symbols and Terminology"

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.

Device	Device Name	Device Code (HEX)	Address Code
Channel I/O	-	0080	Word Address
Internal Auxiliary Relay	W	0082	Word Address
Special Auxiliary Relay	A	0085	Word Address
Latch Relay	H	0084	Word Address
Timer (Current Value)	T	0060	Word Address
Counter (Current Value)	C	0061	Word Address
Data Memory	D	0000	Word Address
Extension Data Memory (E0-E18)	E0	0010	Word Address
	E1	0011	Word Address
	E2	0012	Word Address
	E3	0013	Word Address
	E4	0014	Word Address
	E5	0015	Word Address
	E6	0016	Word Address
	E7	0017	Word Address
	E8	0018	Word Address
	E9	0019	Word Address
	EA	001A	Word Address
	EB	001B	Word Address
	EC	001C	Word Address
	ED	001D	Word Address
	EE	001E	Word Address
	EF	001F	Word Address
	E10	0020	Word Address
	E11	0021	Word Address
	E12	0022	Word Address
	E13	0023	Word Address

Device	Device Name	Device Code (HEX)	Address Code
Extension Data Memory (E0-E18)	E14	0024	Word Address
	E15	0025	Word Address
	E16	0026	Word Address
	E17	0027	Word Address
	E18	0028	Word Address
Extension Data Memory (Current Bank)	EM	0001	Word Address
Task Flag (Status)	TK	0002	Word Address
Index Register	IR	0003	Word Address
Data Register	DR	0004	Word Address

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 as "IP address (Decimal); MAC address (Hex)". • Device address is displayed as "Address: Device address". • Received error codes are displayed 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 "When an error is displayed (Error Code List)" in "Maintenance/Troubleshooting Manual" for details on the error messages common to the driver.
-