JTEKT Corporation

# TOYOPUC CMP-LINK Ethernet Driver

## 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<br>This section shows the types of External Devices which can be connected and SIO type. | ☞"1 System Configuration" (page 3) |
| 2 | Selection of External Device<br>Select a model (series) of the External Device to be connected and connection method. | ☞"2 Selection of External Device" (page 6) |
| 3 | Example of Communication Settings<br>This section shows setting examples for communicating between the Display and the External Device. | ☞"3 Example of Communication Setting" (page 7) |
| 4 | Setup Items<br>This section describes communication setup items on the Display.<br>Set communication settings of the Display with GP-Pro EX or in offline mode. | ☞"4 Setup Items" (page 40) |

Operation

# 1 System Configuration

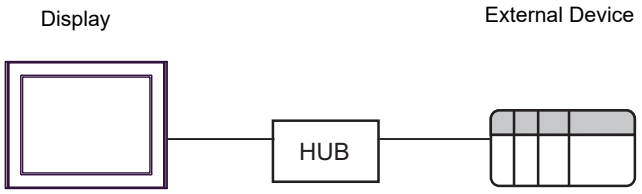
The system configuration in the case when the External Device of JTEKT Corporation and the Display are connected is shown.

| Series | CPU | Link I/F | SIO Type | Protocol Open Method | Setting Example |
|---|---|---|---|---|---|
| TOYOPUC-PC3 | PC3<br>PC3J<br>PC3JD<br>PC3JG | Ethernet port of THU-5296*1 | Ethernet (UDP) | UDP | Setting Example 1 (page 7) |
| | | | Ethernet (TCP) | Target unspecified passive | Setting Example 2 (page 10) |
| | | | | Target specified passive | Setting Example 3 (page 13) |
| | | Ethernet port of THU-5781*1 | Ethernet (UDP) | UDP | Setting Example 4 (page 16) |
| | | | Ethernet (TCP) | Target unspecified passive | Setting Example 5 (page 22) |
| | | | | Target specified passive | Setting Example 6 (page 28) |
| TOYOPUC-PC10G | PC10G | L1 Port on CPU Unit<br>L2 Port on CPU Unit | Ethernet (UDP) | UDP | Setting Example 7 (page 34) |
| | | | Ethernet (TCP) | Target unspecified passive | Setting Example 8 (page 36) |
| | | | | Target specified passive | Setting Example 9 (page 38) |

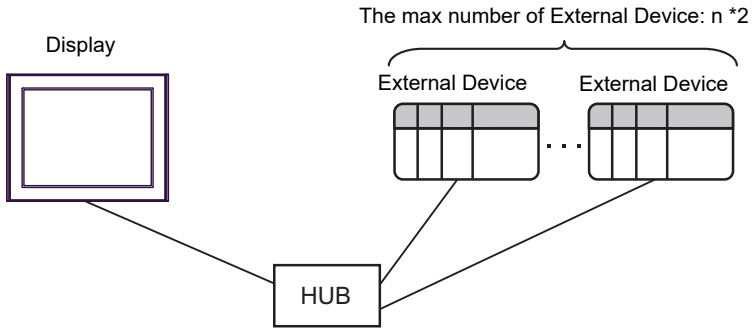
*1 In TCP connection, you can connect max 8 units of the Display to 1 External Device.

## ■ Connection Configuration

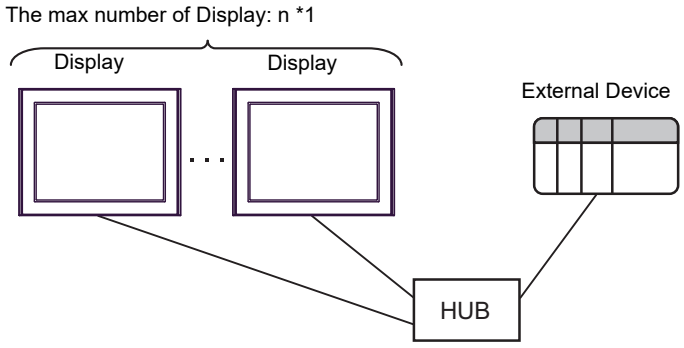
- 1:1 Connection



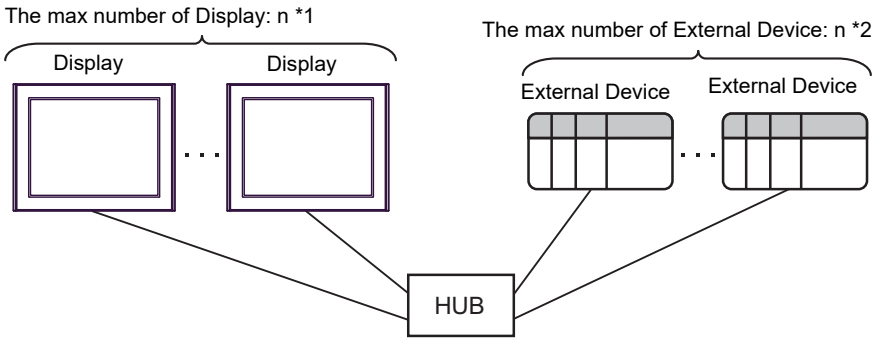
- 1:n Connection




- n:1 Connection




- n:m Connection




*1 The maximum number of Displays varies depending on the External Device series and the settings.

- When TOYOPUC-PC3 is used, up to 8 Displays can be connected.
- When "Ethernet" is specified for L1/L2 port settings on the CPU unit in TOYOPUC-PC10G, up to 8 Displays can be connected.
- When "Ethernet (32 ports)" is specified for L1/L2 port settings on the CPU unit in TOYOPUC-PC10G, up to 32 Displays can be connected.
  "Ethernet (32 ports)" can be specified only when the CPU version is V.3.00 or later.

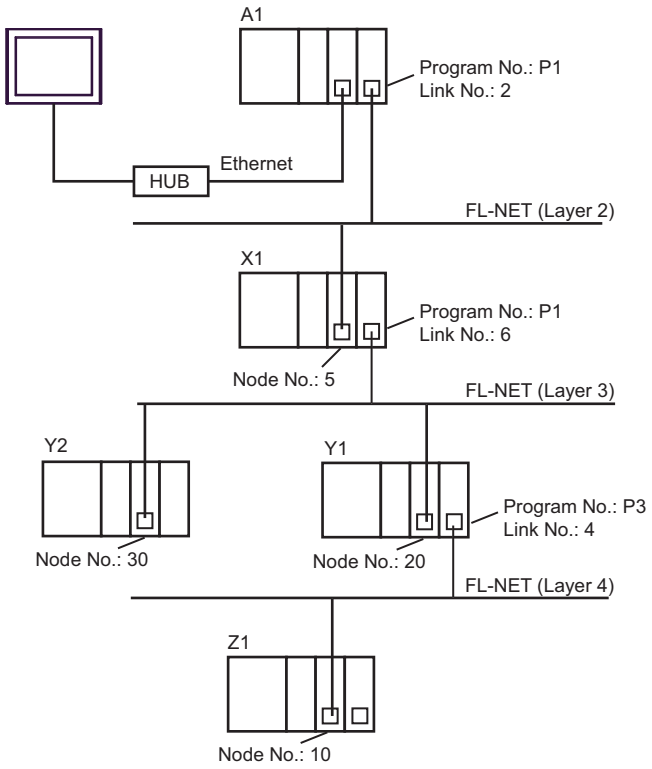
*2 For UDP and TCP connections, up to 32 and 16 External Devices can be connected respectively.

- FL-NET Connection

You can use this driver to access up to 4 layers of External Device connected to FL-NET.
In the [Individual Device Settings] dialog box, in hierarchical order, set up the program number / link number of External Device that act as relays, and the destination External Device's node number.

Example [Individual Device Settings] with the following network structure.
Set up each connected piece of External Device (such as A1 and X1 shown in the figure) using the ladder software PCwin. Display the [Link parameter setup] dialog box and set up the program number / link number and node number of the port to connect to FL-NET.

- Network Structure

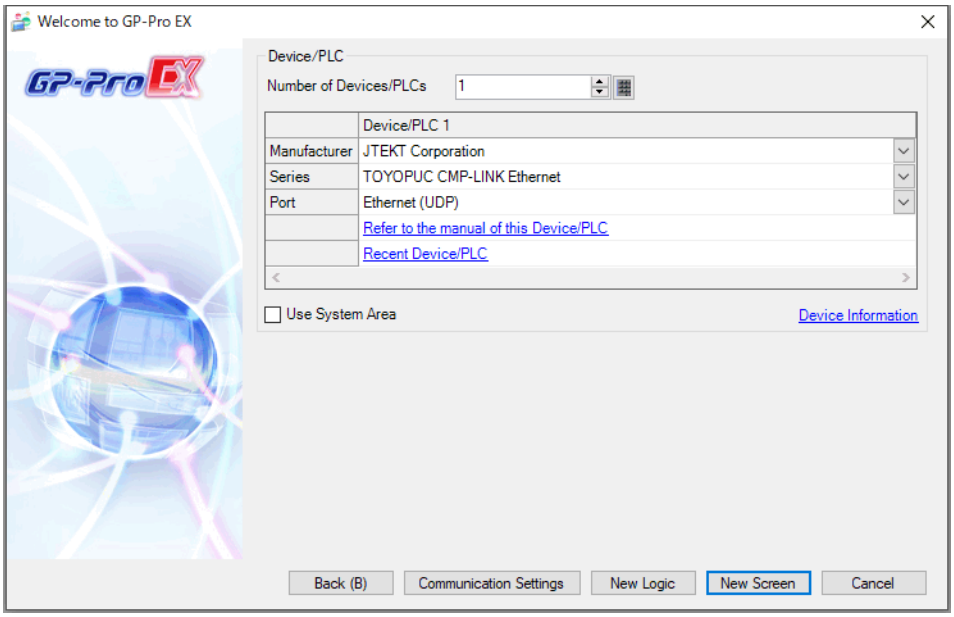



- Contents of [Individual Device Settings]

| External Device to access | No. of Layers | Layer | Program No. | Link No. | Relay / Destination (Node No.) |
|---|---|---|---|---|---|
| X1 | 2 | 2 | 1 | 2 | 5 |
| Y2 | 3 | 2 | 1 | 2 | 5 |
| | | 3 | 1 | 6 | 30 |
| Z1 | 4 | 2 | 1 | 2 | 5 |
| | | 3 | 1 | 6 | 20 |
| | | 4 | 3 | 4 | 10 |

# 2 Selection of External Device

Select the External Device to be connected to the Display.




| Setup Items | Setup Description |
|---|---|
| Number of Devices/ PLCs | Use an integer from 1 to 4 to enter the number of Devices/PLCs to connect to the display. |
| Manufacturer | Select the manufacturer of the External Device to be connected. Select "JTEKT Corporation". |
| Series | Select a model (series) of the External Device to be connected and connection method. Select "TOYOPUC CMP-LINK Ethernet". Check the External Device which can be connected in "TOYOPUC CMP-LINK Ethernet" in system configuration. ☞ "1 System Configuration" (page 3) |
| Port | Select the Display port to be connected to the External Device. |
| Use System Area | Check this option to synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the External Device's ladder program to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)" This feature can also be set in GP-Pro EX or in the Display's offline mode. Cf. GP-Pro EX Reference Manual "System Settings [Display Unit] - [System Area] Settings Guide" Cf. Maintenance/Troubleshooting Guide "Main Unit - System Area Settings" |

# 3 Example of Communication Setting

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

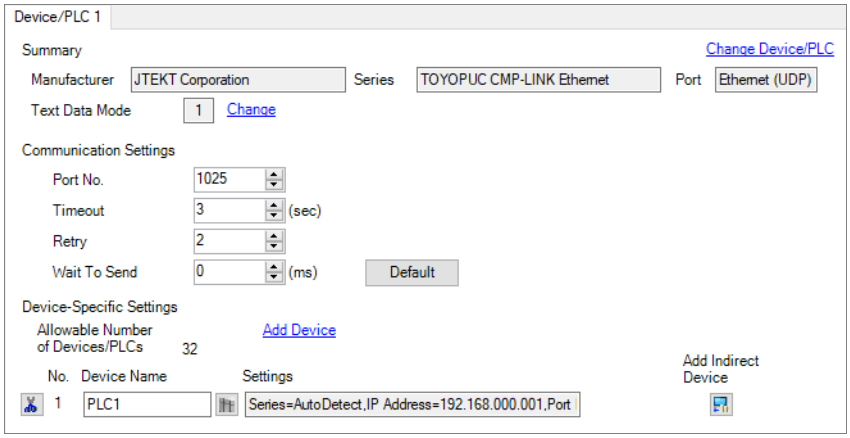
When you use the TOYOPUC-PC3 Series, use GP-Pro EX and the ladder software to set as below.

## 3.1 Setting Example 1

### ■ Settings of GP-Pro EX

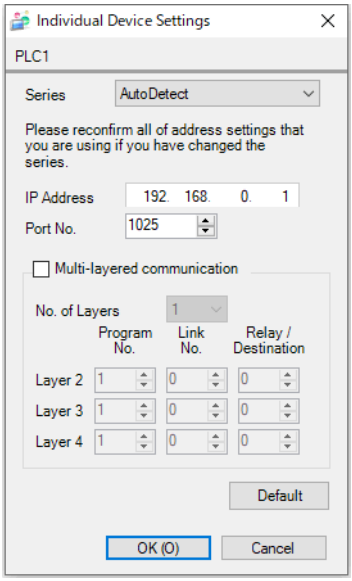
#### ◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].




#### ◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the External Device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



◆ Notes

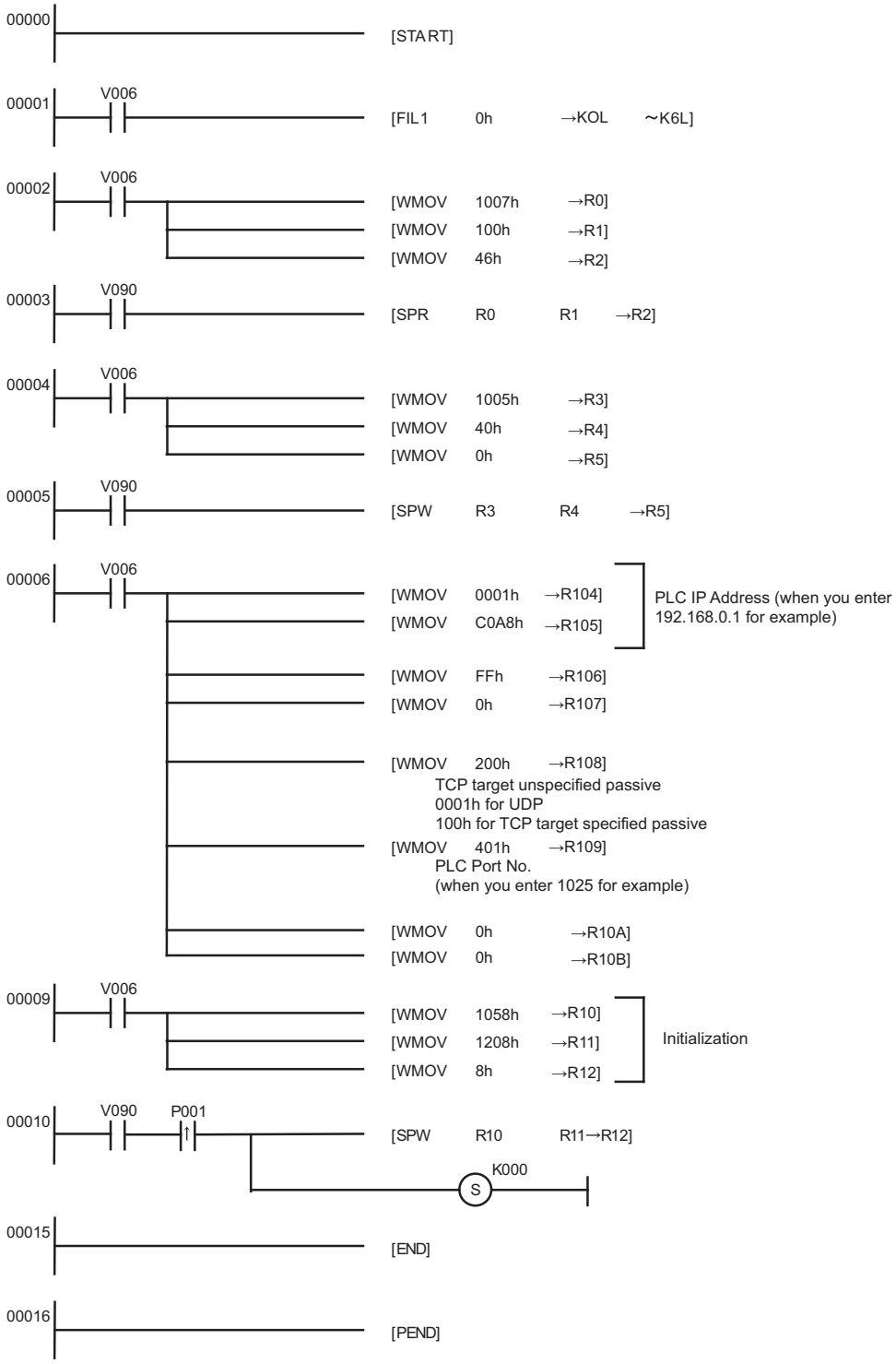
- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the offline mode of the Display.

## ■ Setting of External Device

Use the rotary switch on the front of the unit to set the mode switch. Use the ladder software to set other switches than the mode switch. Please refer to Sample of Ladder Program for the sample ladder to write the initial data.

| Setup Items | | Setup Description |
|---|---|---|
| Mode Switch | | 0 |
| Active Open | | 0: Not request |
| PING Request | | 1: Request |
| Source Node IP Address | | 192.168.0.1 |
| Source Node Port No. | | 401 (HEX) |
| Use Other Node Table | | Use |
| Connection | Protocol Open Method | 0001H |
| | Other Node Table No. | Preset other node table No. |
| Other Node Table | CPU Operation Mode | PC3 |
| | Other Node IP Address | Set IP address of the Display. |
| | Other Node Port No. | Set the port No. of the Display. |

◆ Example of Ladder Program




◆ Notes

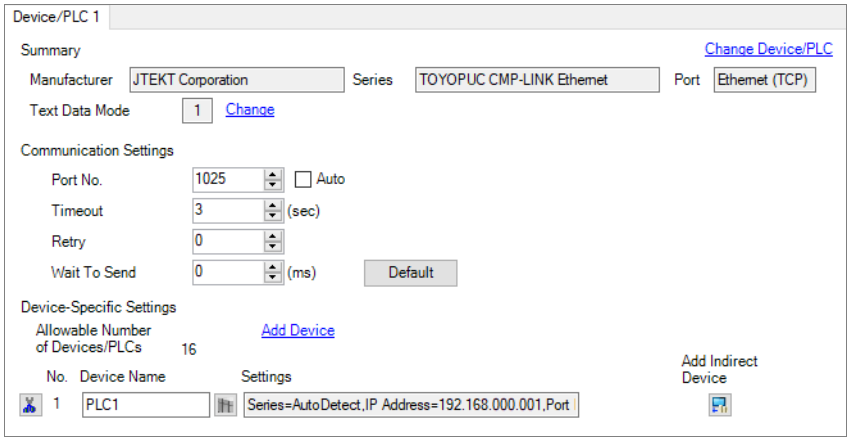
- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Please refer to the manual of the External Device for more details.

## 3.2 Setting Example 2

### ■ Settings of GP-Pro EX

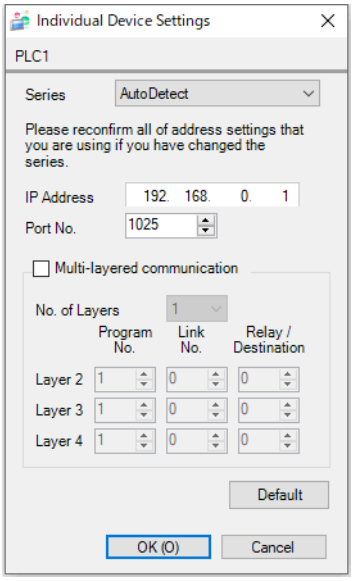
#### ◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].




#### ◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the External Device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.




#### ◆ Notes

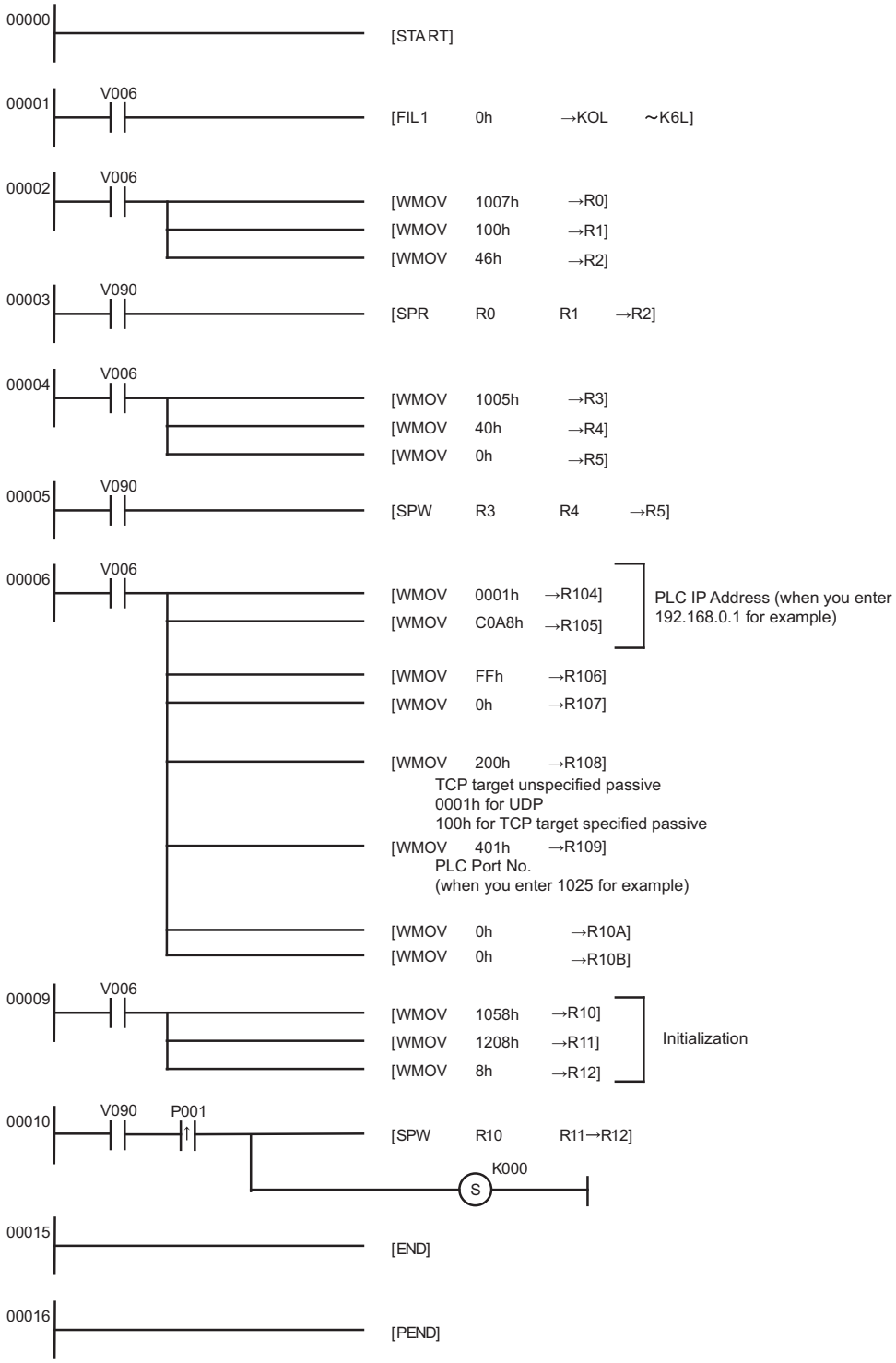
- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the offline mode of the Display.

## ■ Setting of External Device

Use the rotary switch on the front of the unit to set the mode switch. Use the ladder software to set other switches than the mode switch. Please refer to Sample of Ladder Program for the sample ladder to write the initial data.

| Setup Items | | Setup Description |
|---|---|---|
| Mode Switch | | 0 |
| Active Open | | 0: Not request |
| PING Request | | 1: Request |
| Source Node IP Address | | 192.168.0.1 |
| Source Node Port No. | | 401 (HEX) |
| Use Other Node Table | | Not use |
| Connection | Protocol Open Method | 0200H |
| | Other Node Table No. | Setting unnecessary |

◆ Example of Ladder Program




◆ Notes

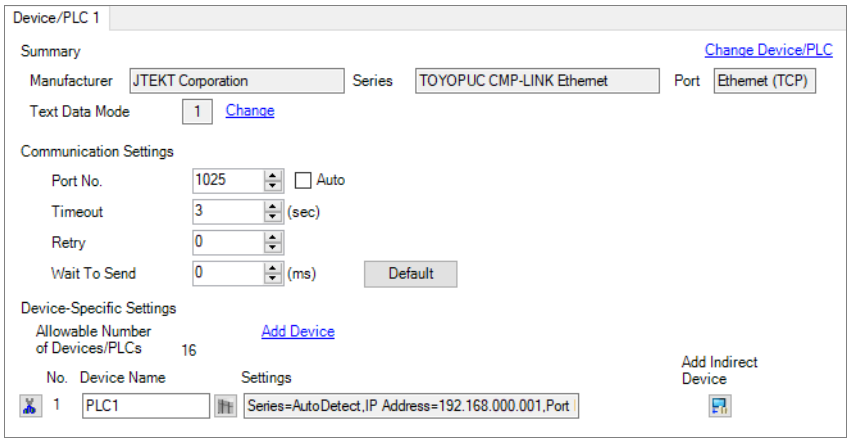
- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Please refer to the manual of the External Device for more details.

## 3.3 Setting Example 3

### ■ Settings of GP-Pro EX

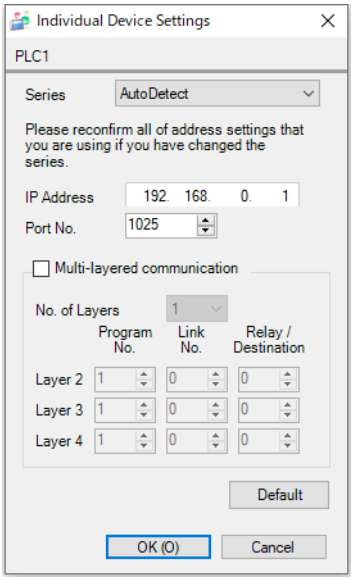
#### ◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].




#### ◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the External Device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.




#### ◆ Notes

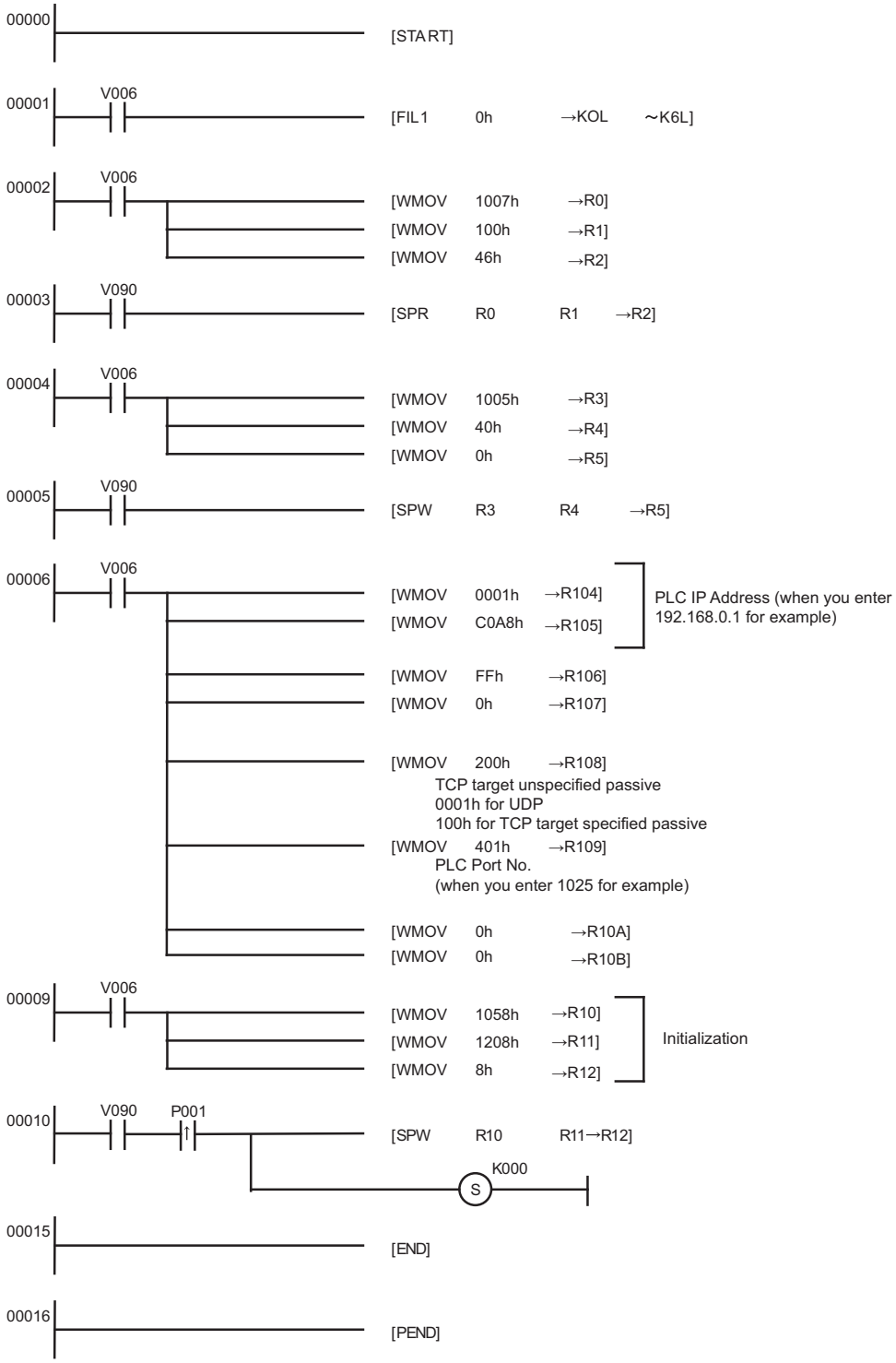
- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the offline mode of the Display.

## ■ Setting of External Device

Use the rotary switch on the front of the unit to set the mode switch. Use the ladder software to set other switches than the mode switch. Please refer to Sample of Ladder Program for the sample ladder to write the initial data.

| Setup Items | | Setup Description |
|---|---|---|
| Mode Switch | | 0 |
| Active Open | | 0: Not request |
| PING Request | | 1: Request |
| Source Node IP Address | | 192.168.0.1 |
| Source Node Port No. | | 401 (HEX) |
| Use Other Node Table | | Use |
| Connection | Protocol Open Method | 0100H |
| | Other Node Table No. | Preset other node table No. |
| Other Node Table | CPU Operation Mode | PC3 |
| | Other Node IP Address | Set IP address of the Display. |
| | Other Node Port No. | Set the port No. of the Display. |

◆ Example of Ladder Program




◆ Notes

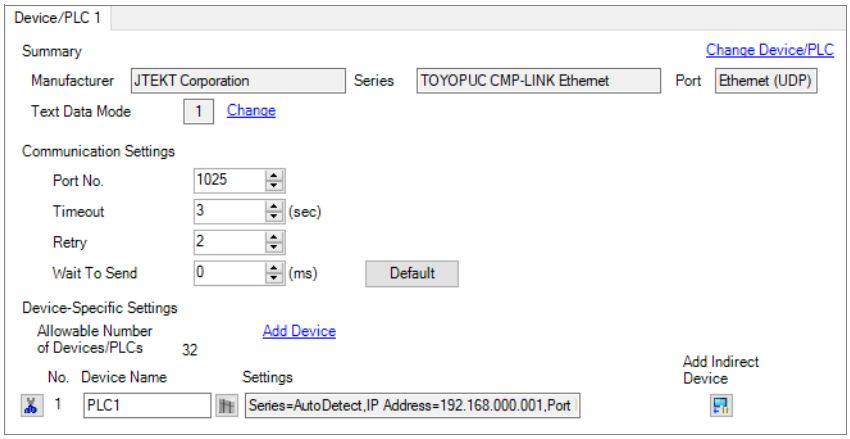
- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Please refer to the manual of the External Device for more details.

## 3.4 Setting Example 4

### ■ Settings of GP-Pro EX

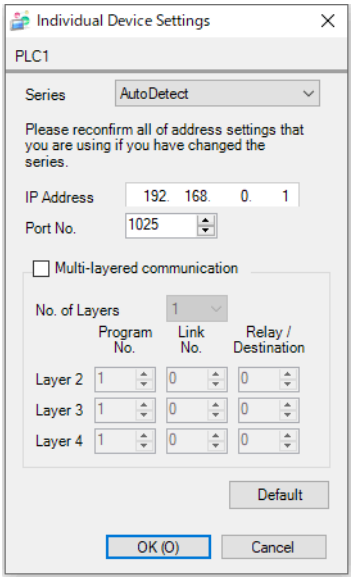
#### ◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].




#### ◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the External Device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.




#### ◆ 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 offline mode of the Display.

## ■ Setting of External Device

Use the programming software PCwin to set as below.

### ◆ Settings of I/O Module

Open [I/O Module Settings] of [Parameter] in the peripheral equipment and set the I/O Module identification code.

| Setup Items | Setup Description |
|---|---|
| Slot No. | 0 |
| Assignment Item Number | 00 |
| Identification Code | B3 |
| Module Type | Special/Communication |
| Module Name | Time Chart Module/Computer Link/Ethernet/S-NET |

### ◆ Settings of Link Module

Open the link setting for [Link Parameter] of [Parameter] in the peripheral equipment. Select the Rack No. and Slot No. to which Ethernet module is assigned, and set the link module name to [Ethernet]. If you also use the PC3J Series CPU program divide mode, please select the correct program number.

| Setup Items | Setup Description |
|---|---|
| Rack No. | Option |
| Slot No. | Option |
| Link Module Name | Ethernet |

### ◆ Settings of Communication Parameter

Set as below in the communication parameter.

| Setup Items | | Setup Description |
|---|---|---|
| Source Node IP Address | | 192.168.0.1 |
| Connection | Protocol Open Method | UDP |
| | Source Node Port No. | 1025 |
| | Other Node Table No. | Preset other node table No. |
| Other Node Table | CPU Operation Mode | PC3 |
| | Other Node IP Address | Set IP address of the Display. |
| | Other Node Port No. | Set the port No. of the Display. |

Communication parameter settings include the following two methods.

A. Setting method in the link parameter setting screen of the peripheral equipment.

To use this setting method, the programming software PCwin is necessary. You cannot use other software or tools to set the communication parameter with link parameters.

1 Select [Detail Settings] of [Link Parameter] from [Parameter] in the peripheral equipment to display [Communication Parameter Setting Screen].

2 Display the [Ethernet Setting] screen to set each parameter.

| Setup Items | Setup Description |
|---|---|
| Source Node IP Address | 192.168.0.1 |
| Connection | Option (1 - 8) |
| Protocol Open Method | UDP |
| Source Node Port No. | 1025 |
| Other Node Table No. | Preset other node table No. |
| Initialization | Initialize by link parameters |

3 Select [Other Node Table Setting] in the [Ethernet Setting] screen to set other node tables.

| Setup Items | Setup Description |
|---|---|
| Table | Option (1 - 16) |
| Other Node IP Address | Set IP address of the Display. |
| Other Node Port No. | Set the port No. of the Display. |

B.) Setting method by the ladder program

Use the ladder program as below to set the communication parameter.

1 Set the communication parameter in the register data.

2 Use the SPW command of function instruction to transfer the communication parameter to the file memory in the Ethernet module.

3 Use the SPW command of function instruction to set the initial request bit of the file memory in the Ethernet module to ON.

Example of communication parameter is shown below.

Source Node IP Address = 192.168.0.1 (C0.A8.00.01h)

Use Connection No.1, 2, 3 and Other Node Table No.1, 2

Connection 1: TCP active, Port No.6000 (1770h), Other Node Table No.1

Connection 2: TCP target specified passive, Port No.6001 (1771h), Other Node Table No.2

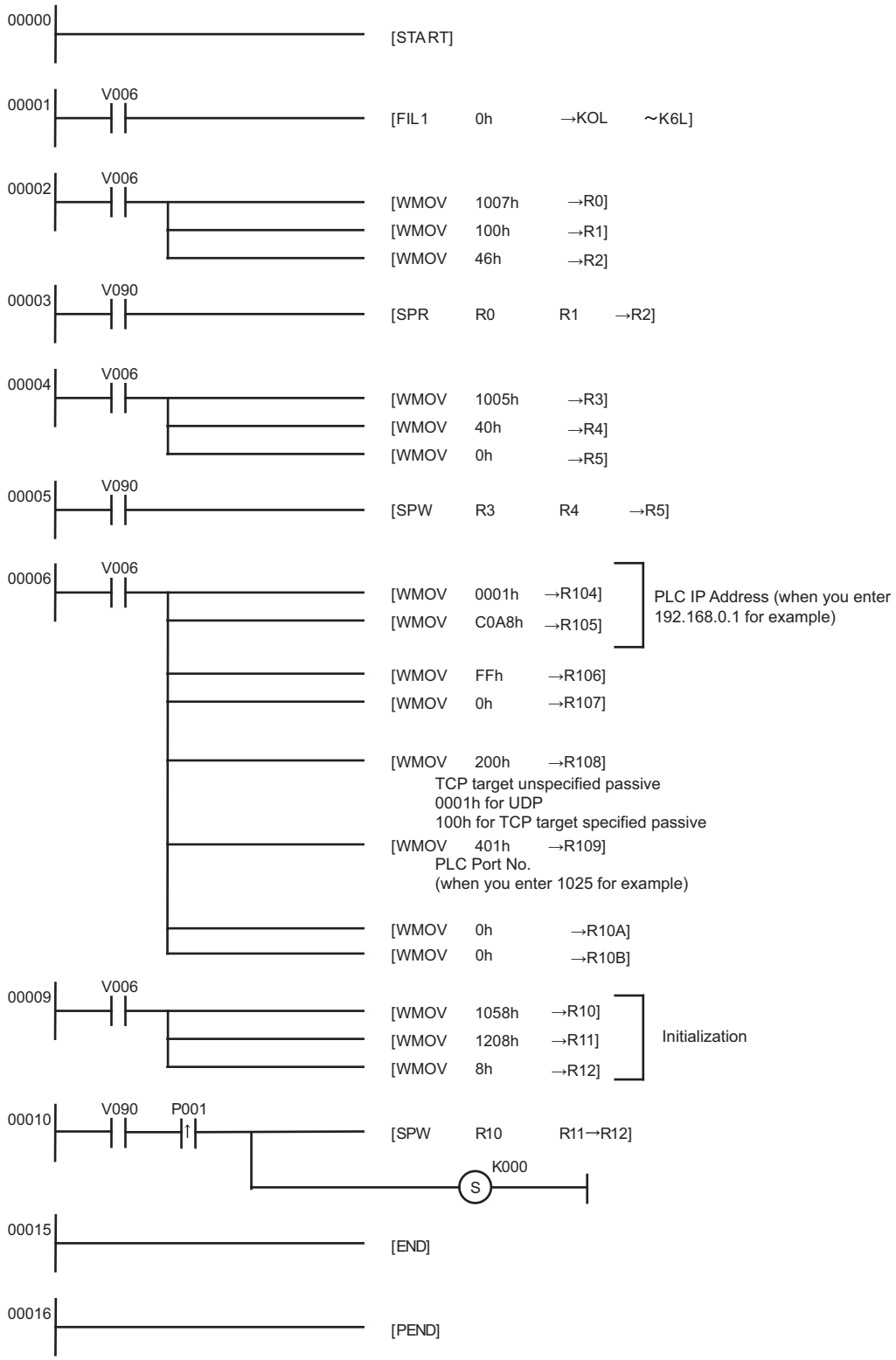
Connection 3: TCP target unspecified passive, Port No.6002 (1772h)

Other Node Table 1: IP Address = 192.168.0.2 (C0.A8.00.02h), Port No. 8000 (1F40h)

Other Node Table 2: IP Address = 192.168.0.3 (C0.A8.00.03h), Port No. 8001 (1F41h)

| Register Data | Setting Data | Data Description |
|---|---|---|
| R0104 | 0001 | Source Node IP Address (Low) |
| R0105 | C0A8 | Source Node IP Address (High) |
| R0106 | 0307 | Table (1, 2) used/Connection (1, 2, 3) used |
| R0107 | 0000 | Connection (9 - 16) used |
| R0108 | 0000 | Connection 1: TCP active |
| R0109 | 1770 | Connection 1: Port No. |
| R010A | 0001 | Connection 1: Other Node Table No. |
| R010B | 0000 | 0000 Fixed |
| R010C | 0100 | Connection 2: TCP target specified passive |
| R010D | 1771 | Connection 2: Port No. |
| R010E | 0002 | Connection 2: Other Node Table No. |
| R010F | 0000 | 0000 Fixed |
| R0110 | 0200 | Connection 3: TCP target unspecified passive |
| R0111 | 1772 | Connection 3: Port No. |
| R0112 | 0000 | Connection 3: Other Node Table No. |
| R0113 | 0000 | 0000 Fixed |
| R0114-R0127 | 0000 | No setting for Connection 4 - 8 (not used) |
| R0128 | 0002 | Other Node Table 1: Other Node IP Address (Low) |
| R0129 | C0A8 | Other Node Table 1: Other Node IP Address (High) |
| R012A | 1F40 | Other Node Table 1: Other Node Port No. |
| R012B | 0000 | 0000 Fixed |
| R012C | 0003 | Other Node Table 2: Other Node IP Address (Low) |
| R012D | C0A8 | Other Node Table 2: Other Node IP Address (High) |
| R012E | 1F41 | Other Node Table 2: Other Node Port No. |
| R012F | 0000 | 0000 Fixed |

◆ Example of Ladder Program



NOTE

- When the communication parameter is set by both the link parameter and the ladder program, the setting by the link parameter normally is given priority. However, when you select [Initialize by Initial Sequence Program] in the link parameter setting screen, the setting by the ladder program becomes effective even if the link parameter is set.

◆ Notes

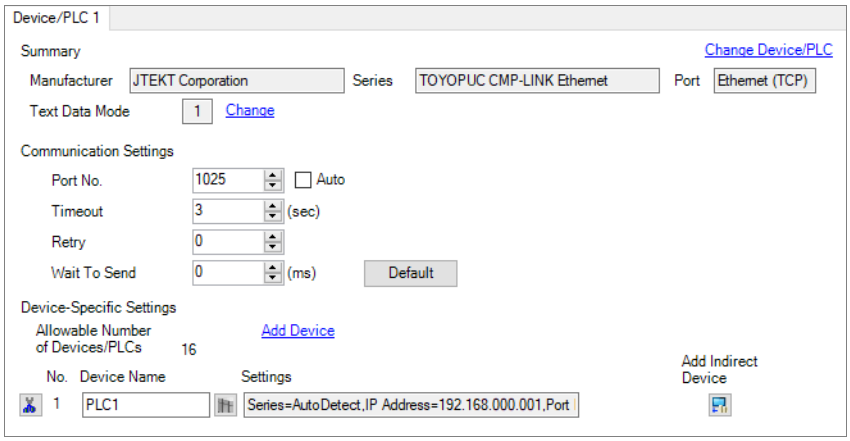
- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Please refer to the manual of the External Device for more details.

## 3.5 Setting Example 5

### ■ Settings of GP-Pro EX

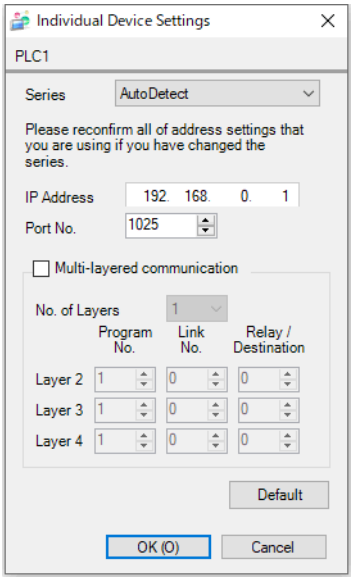
#### ◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].




#### ◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the External Device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.




#### ◆ 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 offline mode of the Display.

## ■ Setting of External Device

Use the programming software PCwin to set as below.

### ◆ Settings of I/O Module

Open [I/O Module Settings] of [Parameter] in the peripheral equipment and set the I/O Module identification code.

| Setup Items | Setup Description |
|---|---|
| Slot No. | 0 |
| Assignment Item Number | 00 |
| Identification Code | B3 |
| Module Type | Special/Communication |
| Module Name | Time Chart Module/Computer Link/Ethernet/S-NET |

### ◆ Settings of Link Module

Open the [Link Setting] of [Link Parameter] from [Parameter] in the peripheral equipment. Select the Rack No. and Slot No. to which Ethernet module is assigned, and set the link module name to [Ethernet]. If you also use the PC3J Series CPU program divide mode, please select the correct program number.

| Setup Items | Setup Description |
|---|---|
| Rack No. | Option |
| Slot No. | Option |
| Link Module Name | Ethernet |

### ◆ Settings of Communication Parameter

Set as below in the communication parameter.

| Setup Items | | Setup Description |
|---|---|---|
| Source Node IP Address | | 192.168.0.1 |
| Connection | Protocol Open Method | TCP target unspecified passive |
| | Source Node Port No. | 1025 |
| | Other Node Table No. | Setting unnecessary |

Communication parameter settings include the following two methods.

A. Setting method in the link parameter setting screen of the peripheral equipment.

To use this setting method, the programming software PCwin is necessary. You cannot use other software or tools to set the communication parameter with link parameters.

1 Select [Detail Settings] of [Link Parameter] from [Parameter] in the peripheral equipment to display [Communication Parameter Setting Screen].

2 Display the [Ethernet Setting] screen to set each parameter.

| Setup Items | Setup Description |
|---|---|
| Source Node IP Address | 192.168.0.1 |
| Connection | Option (1 - 8) |
| Protocol Open Method | TCP target unspecified passive |
| Source Node Port No. | 1025 |
| Other Node Table No. | Setting unnecessary |
| Initialization | Initialize by link parameters |

B. Setting method by the ladder program

Use the ladder program as below to set the communication parameter.

1 Set the communication parameter in the register data.

2 Use the SPW command of function instruction to transfer the communication parameter to the file memory in the Ethernet module.

3 Use the SPW command of function instruction to set the initial request bit of the file memory in the Ethernet module to ON.

Example of communication parameter is shown below.

Source Node IP Address = 192.168.0.1 (C0.A8.00.01h)

Use Connection No.1, 2, 3 and Other Node Table No.1, 2

Connection 1: TCP active, Port No.6000 (1770h), Other Node Table No.1

Connection 2: TCP target specified passive, Port No.6001 (1771h), Other Node Table No.2

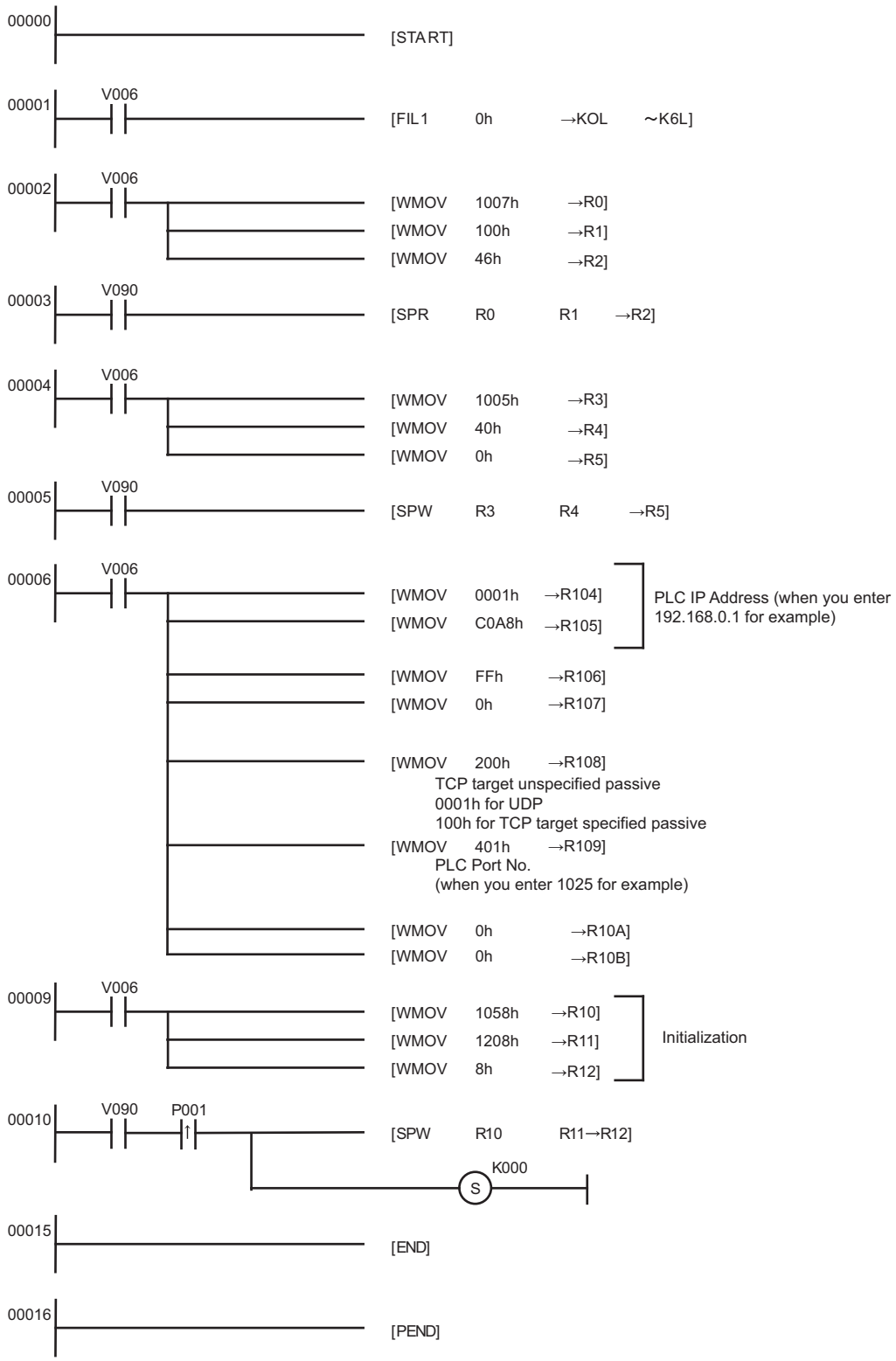
Connection 3: TCP target unspecified passive, Port No.6002 (1772h)

Other Node Table 1: IP Address = 192.168.0.2 (C0.A8.00.02h), Port No. 8000 (1F40h)

Other Node Table 2: IP Address = 192.168.0.3 (C0.A8.00.03h), Port No. 8001 (1F41h)

| Register Data | Setting Data | Data Description |
|---|---|---|
| R0104 | 0001 | Source Node IP Address (Low) |
| R0105 | C0A8 | Source Node IP Address (High) |
| R0106 | 0307 | Table (1, 2) used/Connection (1, 2, 3) used |
| R0107 | 0000 | Connection (9 - 16) used |
| R0108 | 0000 | Connection 1: TCP active |
| R0109 | 1770 | Connection 1: Port No. |
| R010A | 0001 | Connection 1: Other Node Table No. |
| R010B | 0000 | 0000 Fixed |
| R010C | 0100 | Connection 2: TCP target specified passive |
| R010D | 1771 | Connection 2: Port No. |
| R010E | 0002 | Connection 2: Other Node Table No. |
| R010F | 0000 | 0000 Fixed |
| R0110 | 0200 | Connection 3: TCP target unspecified passive |
| R0111 | 1772 | Connection 3: Port No. |
| R0112 | 0000 | Connection 3: Other Node Table No. |
| R0113 | 0000 | 0000 Fixed |
| R0114-R0127 | 0000 | No setting for Connection 4 - 8 (not used) |
| R0128 | 0002 | Other Node Table 1: Other Node IP Address (Low) |
| R0129 | C0A8 | Other Node Table 1: Other Node IP Address (High) |
| R012A | 1F40 | Other Node Table 1: Other Node Port No. |
| R012B | 0000 | 0000 Fixed |
| R012C | 0003 | Other Node Table 2: Other Node IP Address (Low) |
| R012D | C0A8 | Other Node Table 2: Other Node IP Address (High) |
| R012E | 1F41 | Other Node Table 2: Other Node Port No. |
| R012F | 0000 | 0000 Fixed |

◆ Example of Ladder Program



NOTE

- When the communication parameter is set by both the link parameter and the ladder program, the setting by the link parameter normally is given priority. However, when you select [Initialize by Initial Sequence Program] in the link parameter setting screen, the setting by the ladder program becomes effective even if the link parameter is set.

◆ Notes

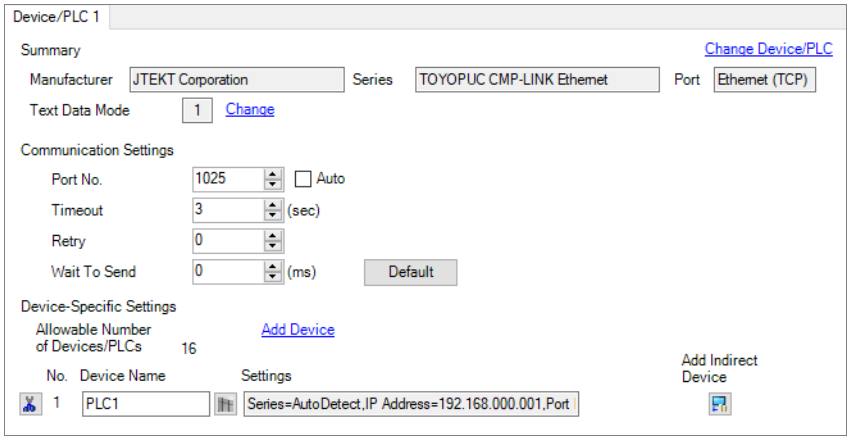
- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Please refer to the manual of the External Device for more details.

## 3.6 Setting Example 6

### ■ Settings of GP-Pro EX

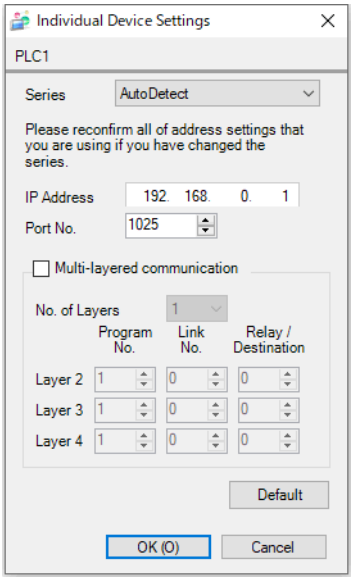
#### ◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].




#### ◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the External Device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.




#### ◆ 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 offline mode of the Display.

## ■ Setting of External Device

Use the programming software PCwin to set as below.

### ◆ Settings of I/O Module

Open [I/O Module Settings] of [Parameter] in the peripheral equipment and set the I/O Module identification code.

| Setup Items | Setup Description |
|---|---|
| Slot No. | 0 |
| Assignment Item Number | 00 |
| Identification Code | B3 |
| Module Type | Special/Communication |
| Module Name | Time Chart Module/Computer Link/Ethernet/S-NET |

### ◆ Settings of Link Module

Open the [Link Setting] of [Link Parameter] from [Parameter] in the peripheral equipment. Select the Rack No. and Slot No. to which Ethernet module is assigned, and set the link module name to [Ethernet]. If you also use the PC3J Series CPU program divide mode, please select the correct program number.

| Setup Items | Setup Description |
|---|---|
| Rack No. | Option |
| Slot No. | Option |
| Link Module Name | Ethernet |

### ◆ Settings of Communication Parameter

Set as below in the communication parameter.

| Setup Items | | Setup Description |
|---|---|---|
| Source Node IP Address | | 192.168.0.1 |
| Connection | Protocol Open Method | TCP target specified passive |
| | Source Node Port No. | 1025 |
| | Other Node Table No. | Preset other node table No. |
| Other Node Table | CPU Operation Mode | PC3 |
| | Other Node IP Address | Set IP address of the Display. |
| | Other Node Port No. | Set the port No. of the Display. |

Communication parameter settings include the following two methods.

A. Setting method in the link parameter setting screen of the peripheral equipment.

To use this setting method, the programming software PCwin is necessary. You cannot use other software or tools to set the communication parameter with link parameters.

1 Select [Detail Settings] of [Link Parameter] from [Parameter] in the peripheral equipment to display [Communication Parameter Setting Screen].

2 Display the [Ethernet Setting] screen to set each parameter.

| Setup Items | Setup Description |
|---|---|
| Source Node IP Address | 192.168.0.1 |
| Connection | Option (1 - 8) |
| Protocol Open Method | TCP target specified passive |
| Source Node Port No. | 1025 |
| Other Node Table No. | Preset other node table No. |
| Initialization | Initialize by link parameters |

3 Select [Other Node Table Setting] in the [Ethernet Setting] screen to set other node tables.

| Setup Items | Setup Description |
|---|---|
| Table | Option (1 - 16) |
| Other Node IP Address | Set IP address of the Display. |
| Other Node Port No. | Set the port No. of the Display. |

B. Setting method by the ladder program

Use the ladder program as below to set the communication parameter.

1 Set the communication parameter in the register data.

2 Use the SPW command of function instruction to transfer the communication parameter to the file memory in the Ethernet module.

3 Use the SPW command of function instruction to set the initial request bit of the file memory in the Ethernet module to ON.

Example of communication parameter is shown below.

Source Node IP Address = 192.168.0.1 (C0.A8.00.01h)

Use Connection No.1, 2, 3 and Other Node Table No.1, 2

Connection 1: TCP active, Port No.6000 (1770h), Other Node Table No.1

Connection 2: TCP target specified passive, Port No.6001 (1771h), Other Node Table No.2

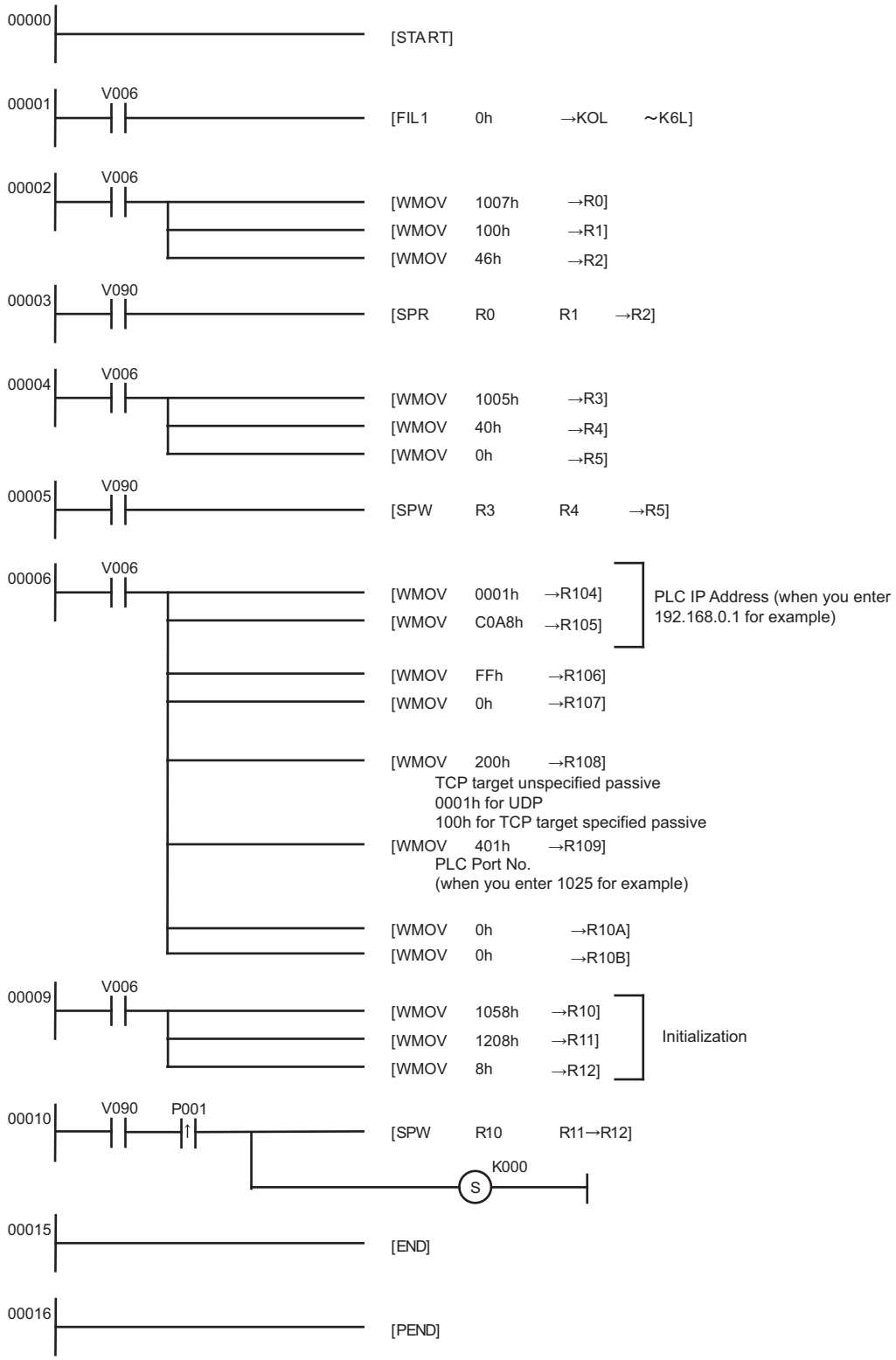
Connection 3: TCP target unspecified passive, Port No.6002 (1772h)

Other Node Table 1: IP Address = 192.168.0.2 (C0.A8.00.02h), Port No. 8000 (1F40h)

Other Node Table 2: IP Address = 192.168.0.3 (C0.A8.00.03h), Port No. 8001 (1F41h)

| Register Data | Setting Data | Data Description |
|---|---|---|
| R0104 | 0001 | Source Node IP Address (Low) |
| R0105 | C0A8 | Source Node IP Address (High) |
| R0106 | 0307 | Table (1, 2) used/Connection (1, 2, 3) used |
| R0107 | 0000 | Connection (9 - 16) used |
| R0108 | 0000 | Connection 1: TCP active |
| R0109 | 1770 | Connection 1: Port No. |
| R010A | 0001 | Connection 1: Other Node Table No. |
| R010B | 0000 | 0000 Fixed |
| R010C | 0100 | Connection 2: TCP target specified passive |
| R010D | 1771 | Connection 2: Port No. |
| R010E | 0002 | Connection 2: Other Node Table No. |
| R010F | 0000 | 0000 Fixed |
| R0110 | 0200 | Connection 3: TCP target unspecified passive |
| R0111 | 1772 | Connection 3: Port No. |
| R0112 | 0000 | Connection 3: Other Node Table No. |
| R0113 | 0000 | 0000 Fixed |
| R0114-R0127 | 0000 | No setting for Connection 4 - 8 (not used) |
| R0128 | 0002 | Other Node Table 1: Other Node IP Address (Low) |
| R0129 | C0A8 | Other Node Table 1: Other Node IP Address (High) |
| R012A | 1F40 | Other Node Table 1: Other Node Port No. |
| R012B | 0000 | 0000 Fixed |
| R012C | 0003 | Other Node Table 2: Other Node IP Address (Low) |
| R012D | C0A8 | Other Node Table 2: Other Node IP Address (High) |
| R012E | 1F41 | Other Node Table 2: Other Node Port No. |
| R012F | 0000 | 0000 Fixed |

◆ Example of Ladder Program



NOTE

- When the communication parameter is set by both the link parameter and the ladder program, the setting by the link parameter normally is given priority. However, when you select [Initialize by Initial Sequence Program] in the link parameter setting screen, the setting by the ladder program becomes effective even if the link parameter is set.

◆ Notes

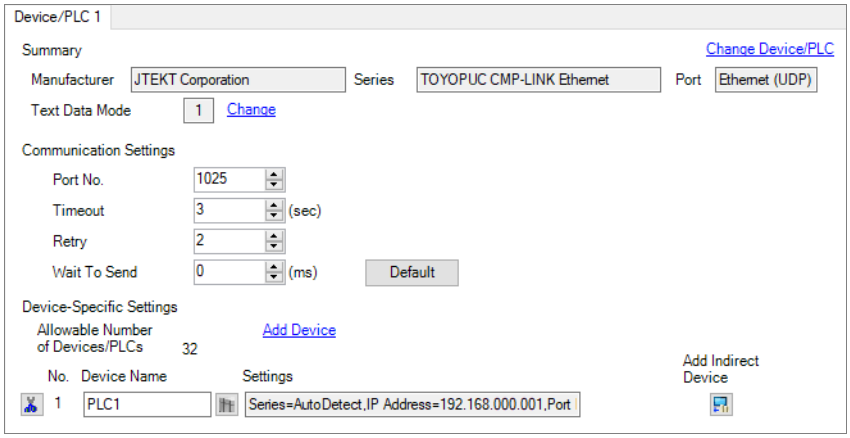
- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Please refer to the manual of the External Device for more details.

## 3.7 Setting Example 7

### ■ Settings of GP-Pro EX

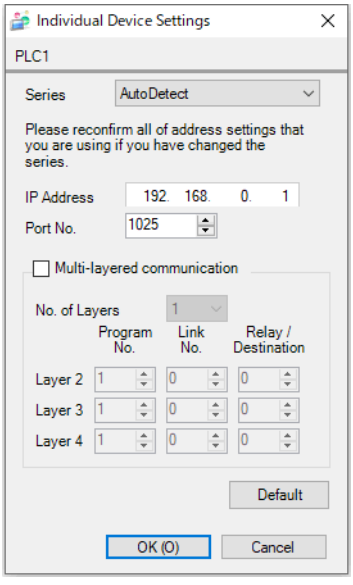
#### ◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].




#### ◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the External Device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.




#### ◆ 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 offline mode of the Display.

## ■ Setting of External Device

Communication settings are made with the ladder software (PCwin). For details on the settings, refer to the Device/PLC Manual.

1 Start the ladder software to start a project.
2 "PC10 Standard" is specified for [CPU Mode] in the project tree.
3 Double-click [Link Parameter] in the project tree.
4 Select the Link No. that you specify the link module in the [Link parameter setup] dialog box, and click [Link setup].
5 Select a link module you use from [Link module name], and click [OK].

**NOTE** • "Ethernet (32 ports)" can be specified only when the CPU version is V.3.00 or later.

6 Click [Detail] with the specified link module selected and make the settings as shown below.

| Setup Items | Setup Description |
|---|---|
| Own Node IP Address | 192.168.0.1 |
| Connection 1 | Used |
| Open Protocol | UDP |
| Own Node Port No. | 1025 |
| Other Node Table No. | 1 |
| Initialize | Initialization based on Link Parameter |

7 Click [Other Node Table] and make the settings as shown below.

| Setup Items | Setup Description |
|---|---|
| Table 1 | Used |
| Other Node IP Address | 192.168.0.2 |
| Other Node Port No. | 1025 |

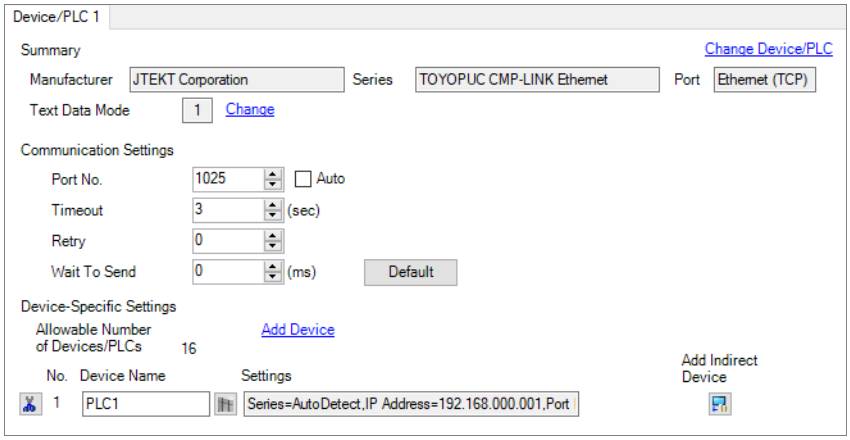
8 Write the communication settings in the External Device. After the writing is completed, restart the External Device.

## 3.8 Setting Example 8

### ■ Settings of GP-Pro EX

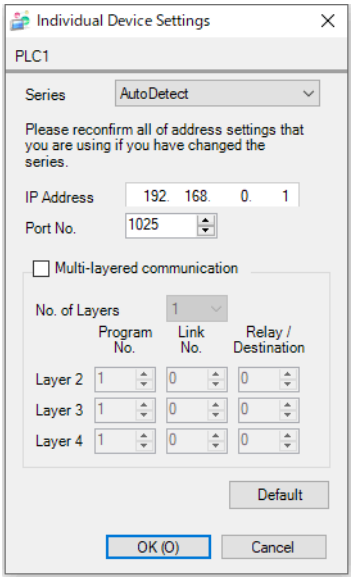
#### ◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].




#### ◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the External Device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.




#### ◆ 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 offline mode of the Display.

## ■ Setting of External Device

Communication settings are made with the ladder software (PCwin). For details on the settings, refer to the Device/PLC Manual.

1 Start the ladder software to start a project.
2 "PC10 Standard" is specified for [CPU Mode] in the project tree.
3 Double-click [Link Parameter] in the project tree.
4 Select the Link No. that you specify the link module in the [Link parameter setup] dialog box, and click [Link setup].
5 Select a link module you use from [Link module name], and click [OK].

**NOTE** • "Ethernet (32 ports)" can be specified only when the CPU version is V.3.00 or later.

6 Click [Detail] with the specified link module selected and make the settings as shown below.

| Setup Items | Setup Description |
|---|---|
| Own Node IP Address | 192.168.0.1 |
| Connection 1 | Used |
| Open Protocol | TCP Destination Non-Specified Passive Open |
| Own Node Port No. | 1025 |
| Initialize | Initialization based on Link Parameter |

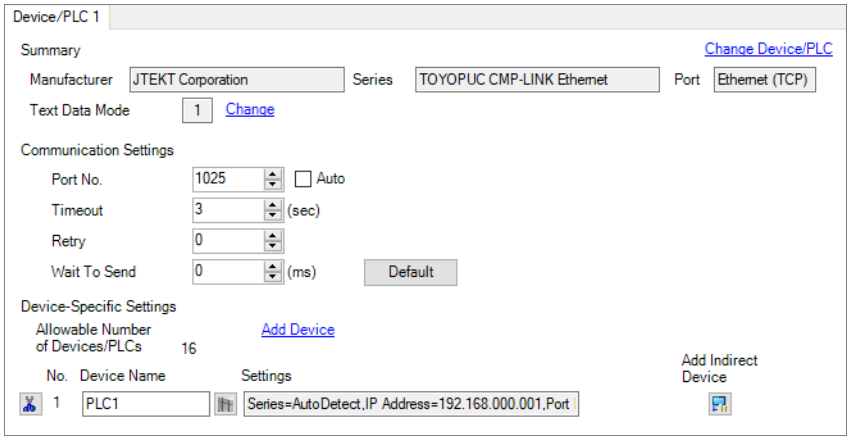
7 Write the communication settings in the External Device. After the writing is completed, restart the External Device.

## 3.9 Setting Example 9

### ■ Settings of GP-Pro EX

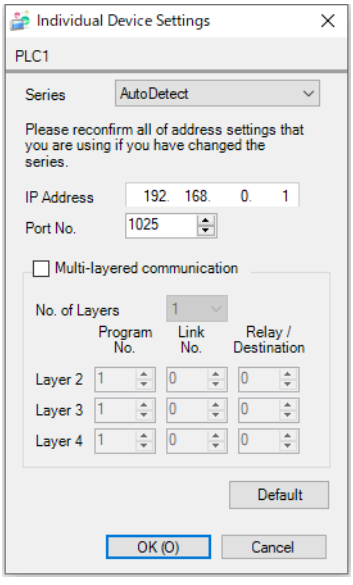
#### ◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].




#### ◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the External Device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.




#### ◆ 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 offline mode of the Display.

## ■ Setting of External Device

Communication settings are made with the ladder software (PCwin). For details on the settings, refer to the Device/PLC Manual.

1 Start the ladder software to start a project.
2 "PC10 Standard" is specified for [CPU Mode] in the project tree.
3 Double-click [Link Parameter] in the project tree.
4 Select the Link No. that you specify the link module in the [Link parameter setup] dialog box, and click [Link setup].
5 Select a link module you use from [Link module name], and click [OK].

**NOTE** • "Ethernet (32 ports)" can be specified only when the CPU version is V.3.00 or later.

6 Click [Detail] with the specified link module selected and make the settings as shown below.

| Setup Items | Setup Description |
|---|---|
| Own Node IP Address | 192.168.0.1 |
| Connection 1 | Used |
| Open Protocol | TCP Destination-Specified Passive Open |
| Own Node Port No. | 1025 |
| Other Node Table No. | 1 |
| Initialize | Initialization based on Link Parameter |

7 Click [Other Node Table] and make the settings as shown below.

| Setup Items | Setup Description |
|---|---|
| Table 1 | Used |
| Other Node IP Address | 192.168.0.2 |
| Other Node Port No. | 1025 |

8 Write the communication settings in the External Device. After the writing is completed, restart the External Device.

# 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 7)

**NOTE**

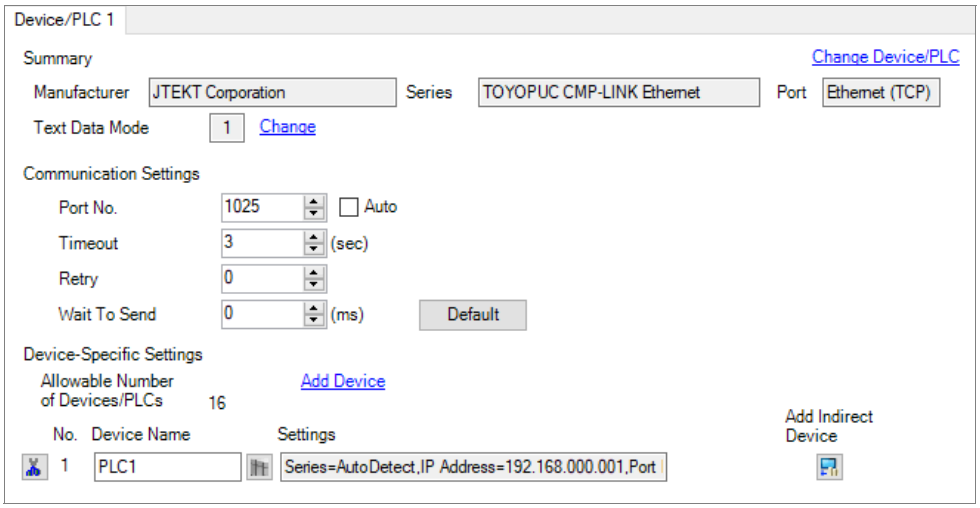
- Set the Display's IP address in offline mode.

  Cf. Maintenance/Troubleshooting Manual "Ethernet Settings"

## 4.1 Setup Items in GP-Pro EX

### ■ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].




| Setup Items | Setup Description |
|---|---|
| Port No. | Use an integer from 1025 to 65534 to enter the port No. of the Display. When you check the option of [Auto Assign], the port No. will be automatically set.<br>**NOTE**<br>• [Auto Assign] option is available to set only when you select "Ethernet (TCP)" in [Connecting Method]. |
| 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. |

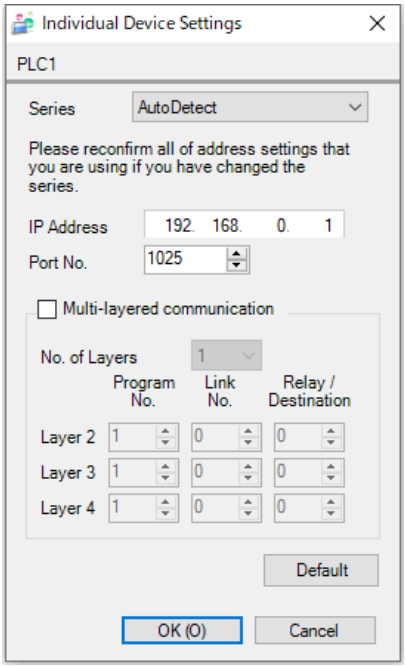
**NOTE**

- Refer to the GP-Pro EX Reference Manual for Indirect Device.

  Cf. GP-Pro EX Reference Manual "Changing the Device/PLC at Runtime (Indirect Device)"

## ■ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the External Device and click [Settings] . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.




| Setup Items | Setup Description |
|---|---|
| Series | Select the series of the External Device. Normally select "AutoDetect".<br>[AutoDetect]: Automatically changes communication commands based on whether the External Device is using "PC3 / PC10 Standard mode" or "PC10 mode".<br>[PC3/PC10 Standard mode]:<br>Use communication commands supported by "PC3 / PC10 Standard mode". You can use the "PC3 / PC10 Standard mode" address range.<br>[PC10 mode]: Use communication commands supported by "PC10 mode". You can use the "PC10 mode" address range. |
| IP Address | Set IP address of the External Device.<br>**NOTE**<br>• Check with a network administrator about IP address. Do not set the duplicate IP address. |
| Port No. | Use an integer from 1025 to 65534 to enter the port No. of the External Device. |
| Multi-layered communication | Select this check box when communicating with equipment on FL-NET. |
| No. of Layers | Enter the number of layers you are using on FL-NET, from 2 to 4. |
| Program No. | Enter the program number (1 to 3) of equipment used as a relay or as the destination. |
| Link No. | Enter the link number (0 to 8) of equipment used as a relay or as the destination. |
| Relay / Destination | Enter the node number (0 to 255) of equipment used as a relay or as the destination. |

## 4.2 Setup Items in Offline Mode

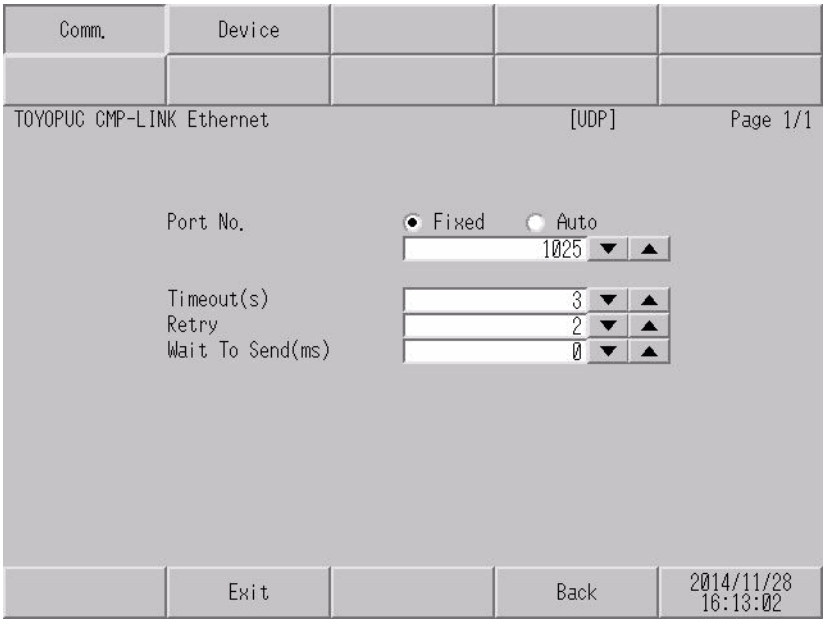
**NOTE**

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

  Cf. Maintenance/Troubleshooting Manual "Offline Mode"

### ■ Communication Settings

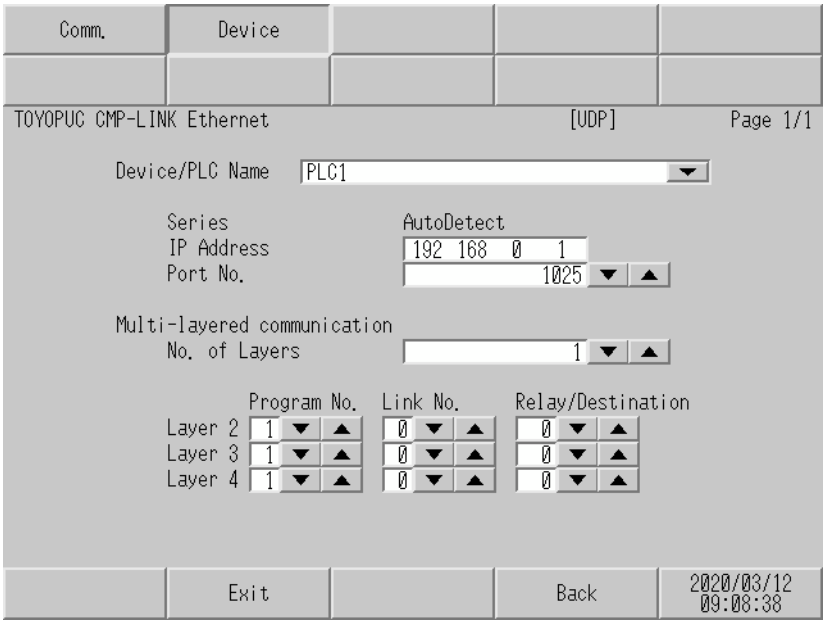
To display the setting screen, touch [Device/PLC Settings] from [Peripheral Settings] in offline mode. Touch the External Device you want to set from the displayed list.




| Setup Items | Setup Description |
|---|---|
| Port No. | Set the port No. of the Display. In UDP connection, entered port No. will be assigned regardless of whether you select [Fixed] or [Auto]. In TCP connection, select either of [Fixed] or [Auto]. When you select [Fixed], use an integer from 1025 to 65534 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 | 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, touch [Device/PLC Settings] from [Peripheral Settings]. Touch the External Device you want to set from the displayed list, and touch [Device].




| 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]) |
| Series | Displays the series of the External Device. |
| IP Address | Set IP address of the External Device.<br>**NOTE**<br>• Check with a network administrator about IP address. Do not set the duplicate IP address. |
| Port No. | Use an integer from 1025 to 65534 to enter the port No. of the External Device. |
| No. of Layers | Enter the number of layers you are using on FL-NET, from 1 to 4. |
| Program No. | Enter the program number (1 to 3) of equipment used as a relay or as the destination. |
| Link No. | Enter the link number (0 to 8) of equipment used as a relay or as the destination. |
| Relay/Destination | Enter the node number (0 to 255) of equipment used as a relay or as the destination. |

# 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 TOYOPUC-PC3 / TOYOPUC-PC-10G (PC10 Standard mode)

This address can be specified as system data area.

| Device | Bit Address | Word Address | 32bits | Notes |
|---|---|---|---|---|
| Input Relay | 1X000 - 1X7FF | 1X00W - 1X7FW | | *1*3 |
| | 2X000 - 2X7FF | 2X00W - 2X7FW | | |
| | 3X000 - 3X7FF | 3X00W - 3X7FW | | |
| Output Relay | 1Y000 - 1Y7FF | 1Y00W - 1Y7FW | | *1*3 |
| | 2Y000 - 2Y7FF | 2Y00W - 2Y7FW | | |
| | 3Y000 - 3Y7FF | 3Y00W - 3Y7FW | | |
| Internal Relay | 1M000 - 1M7FF | 1M00W - 1M7FW | | *1 |
| | 2M000 - 2M7FF | 2M00W - 2M7FW | | |
| | 3M000 - 3M7FF | 3M00W - 3M7FW | | |
| Keep Relay | 1K000 - 1K2FF | 1K00W - 1K2FW | | *1 |
| | 2K000 - 2K2FF | 2K00W - 2K2FW | | |
| | 3K000 - 3K2FF | 3K00W - 3K2FW | L / H | |
| Link Relay | 1L000 - 1L7FF | 1L00W - 1L7FW | | *1 |
| | 2L000 - 2L7FF | 2L00W - 2L7FW | | |
| | 3L000 - 3L7FF | 3L00W - 3L7FW | | |
| Special Relay | 1V00 - 1VFF | 1V0W - 1VFW | | *1 |
| | 2V00 - 2VFF | 2V0W - 2VFW | | |
| | 3V00 - 3VFF | 3V0W - 3VFW | | |
| Timer (Contact) | 1T000 - 1T1FF | 1T00W - 1T1FW | | *1 *3 |
| | 2T000 - 2T1FF | 2T00W - 2T1FW | | |
| | 3T000 - 3T1FF | 3T00W - 3T1FW | | |
| Counter (Contact) | 1C000 - 1C1FF | 1C00W - 1C1FW | | *1*3 |
| | 2C000 - 2C1FF | 2C00W - 2C1FW | | |
| | 3C000 - 3C1FF | 3C00W - 3C1FW | | |

| Device | Bit Address | Word Address | 32bits | Notes |
|---|---|---|---|---|
| Current Value Register | 1N000-0 - 1N1FF-F | 1N000 - 1N1FF | | *2 |
| | 2N000-0 - 2N1FF-F | 2N000 - 2N1FF | | |
| | 3N000-0 - 3N1FF-F | 3N000 - 3N1FF | | |
| Data Register | 1D0000-0 - 1D2FFF-F | 1D0000 - 1D2FFF | | *2 |
| | 2D0000-0 - 2D2FFF-F | 2D0000 - 2D2FFF | | |
| | 3D0000-0 - 3D2FFF-F | 3D0000 - 3D2FFF | | |
| Link Register | 1R000-0 - 1R7FF-F | 1R000 - 1R7FF | | *2 |
| | 2R000-0 - 2R7FF-F | 2R000 - 2R7FF | | |
| | 3R000-0 - 3R7FF-F | 3R000 - 3R7FF | | |
| Special Register | 1S000-0 - 1S3FF-F | 1S000 - 1S3FF | | *2 |
| | 2S000-0 - 2S3FF-F | 2S000 - 2S3FF | | |
| | 3S000-0 - 3S3FF-F | 3S000 - 3S3FF | | |
| File Register | B0000-0 - B1FFF-F | B0000 - B1FFF | | *2 |
| Extension Input | EX000 - EX7FF | EX00W - EX7FW | | *1 *3 |
| Extension Output | EY000 - EY7FF | EY00W - EY7FW | | *1*3 |
| Extension Internal Relay | EM0000 - EM1FFF | EM000W - EM1FFW | L/H | *1 |
| Extension Special Relay | EV000 - EVFFF | EV00W - EVFFW | | *1 |
| Extension Keep Relay | EK000 - EKFFF | EK00W - EKFFW | | *1 |
| Extension Timer | ET000 - ET7FF | ET00W - ET7FW | | *1 *3 |
| Extension Counter | EC000 - EC7FF | EC00W - EC7FW | | *1 *3 |
| Extension Link Relay | EL0000 - EL1FFF | EL000W - EL1FFW | | *1 |
| Extension 2 Input | GX0000 - GXFFFF | GX000W - GXFFFW | | *1 *3 |
| Extension 2 Output | GY0000 - GYFFFF | GY000W - GYFFFW | | *1 *3 |
| Extension 2 Internal Relay | GM0000 - GMFFFF | GM000W - GMFFFW | | *1 |
| Extension Data Register | U0000-0 - U7FFF-F | U0000 - U7FFF | | *2 |
| Extension Setting Value Register | H000-0 - H7FF-F | H000 - H7FF | | *2 |
| Extension Special Register | ES000-0 - ES7FF-F | ES000 - ES7FF | | *2 |
| Extension Current Value Register | EN000-0 - EN7FF-F | EN000 - EN7FF | | *2 |
| Watch Time Register | ------ | WT0 - WT6 | | *4 *5 |
| Extended Buffer Register | EB00000-0 - EB1FFFF-F | EB00000 - EB1FFFF | | *2 |

*1 For word description of the bit device, add "W" to the last of the word address.
Example) When the address is 0 in M device, describe "M0000W".

*2 For bit description of the word device, describe "-" following the word address and the bit position next.
Example) When the address is 0 and the bit is 5 in D device, describe " D0000-5".

*3 You cannot set the duplicate address for X and Y (EX, EY, GX, GY), T and C (ET, EC).
(Setting such address as X000/Y000, EX000/EY000, T000/C000, ET000/EC000 is wrong.)

*4 When you write "Watch Time Register", the Display reads all addresses of "Watch Time Register" in the External Device. Then the Display writes all addresses of "Watch Time Register" after the Display changes the data of your requested address. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

*5 Contents of "Watch Time Register" are shown below.

| Address | Mean | Note |
|---|---|---|
| WT0 | day of week | 0:Sunday, 1:Monday, 2:Tuesday, 3:Wednesday, 4:Thursday, 5:Friday, 6:Saturday |
| WT1 | year | lower two digits of A.D. |
| WT2 | month | |
| WT3 | day | |
| WT4 | hour | 24-hour system |
| WT5 | minute | |
| WT6 | second | |

**NOTE**

- 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 TOYOPUC-PC10G (PC10 mode)

This address can be specified as system data area.

| Device | Bit Address | Word Address | 32bits | Notes |
|---|---|---|---|---|
| Input Relay | 1X000 - 1X7FF | 1X00W - 1X7FW | | *1*3 |
| | 2X000 - 2X7FF | 2X00W - 2X7FW | | |
| | 3X000 - 3X7FF | 3X00W - 3X7FW | | |
| Output Relay | 1Y000 - 1Y7FF | 1Y00W - 1Y7FW | | *1*3 |
| | 2Y000 - 2Y7FF | 2Y00W - 2Y7FW | | |
| | 3Y000 - 3Y7FF | 3Y00W - 3Y7FW | | |
| Internal Relay | 1M000 - 1M7FF | 1M00W - 1M7FW | | *1 |
| | 2M000 - 2M7FF | 2M00W - 2M7FW | | |
| | 3M000 - 3M7FF | 3M00W - 3M7FW | | |
| | 1M1000 - 1M17FF | 1M100W - 1M17FW | | |
| | 2M1000 - 2M17FF | 2M100W - 2M17FW | | |
| | 3M1000 - 3M17FF | 3M100W - 3M17FW | | |
| Keep Relay | 1K000 - 1K2FF | 1K00W - 1K2FW | | *1 |
| | 2K000 - 2K2FF | 2K00W - 2K2FW | L/H | |
| | 3K000 - 3K2FF | 3K00W - 3K2FW | | |
| Link Relay | 1L000 - 1L7FF | 1L00W - 1L7FW | | *1 |
| | 2L000 - 2L7FF | 2L00W - 2L7FW | | |
| | 3L000 - 3L7FF | 3L00W - 3L7FW | | |
| | 1L1000 - 1L2FFF | 1L100W - 1L2FFW | | |
| | 2L1000 - 2L2FFF | 2L100W - 2L2FFW | | |
| | 3L1000 - 3L2FFF | 3L100W - 3L2FFW | | |
| Special Relay | 1V00 - 1VFF | 1V0W - 1VFW | | *1 |
| | 2V00 - 2VFF | 2V0W - 2VFW | | |
| | 3V00 - 3VFF | 3V0W - 3VFW | | |
| | 1V1000 - 1V17FF | 1V100W - 1V17FW | | |
| | 2V1000 - 2V17FF | 2V100W - 2V17FW | | |
| | 3V1000 - 3V17FF | 3V100W - 3V17FW | | |

| Device | Bit Address | Word Address | 32bits | Notes |
|---|---|---|---|---|
| Timer (Contact) | 1T000 - 1T1FF | 1T00W - 1T1FW | | *1 *3 |
| | 2T000 - 2T1FF | 2T00W - 2T1FW | | |
| | 3T000 - 3T1FF | 3T00W - 3T1FW | | |
| | 1T1000 - 1T17FF | 1T100W - 1T17FW | | |
| | 2T1000 - 2T17FF | 2T100W - 2T17FW | | |
| | 3T1000 - 3T17FF | 3T100W - 3T17FW | | |
| Counter (Contact) | 1C000 - 1C1FF | 1C00W - 1C1FW | | *1*3 |
| | 2C000 - 2C1FF | 2C00W - 2C1FW | | |
| | 3C000 - 3C1FF | 3C00W - 3C1FW | | |
| | 1C1000 - 1C17FF | 1C100W - 1C17FW | | |
| | 2C1000 - 2C17FF | 2C100W - 2C17FW | | |
| | 3C1000 - 3C17FF | 3C100W - 3C17FW | | |
| Current Value Register | 1N000-0 - 1N1FF-F | 1N000 - 1N1FF | | *2 |
| | 2N000-0 - 2N1FF-F | 2N000 - 2N1FF | | |
| | 3N000-0 - 3N1FF-F | 3N000 - 3N1FF | | |
| | 1N1000-0 - 1N17FF-F | 1N1000 - 1N17FF | | |
| | 2N1000-0 - 2N17FF-F | 2N1000 - 2N17FF | L / H | |
| | 3N1000-0 - 3N17FF-F | 3N1000 - 3N17FF | | |
| Data Register | 1D0000-0 - 1D2FFF-F | 1D0000 - 1D2FFF | | *2 |
| | 2D0000-0 - 2D2FFF-F | 2D0000 - 2D2FFF | | |
| | 3D0000-0 - 3D2FFF-F | 3D0000 - 3D2FFF | | |
| Link Register | 1R000-0 - 1R7FF-F | 1R000 - 1R7FF | | *2 |
| | 2R000-0 - 2R7FF-F | 2R000 - 2R7FF | | |
| | 3R000-0 - 3R7FF-F | 3R000 - 3R7FF | | |
| Special Register | 1S000-0 - 1S3FF-F | 1S000 - 1S3FF | | *2 |
| | 2S000-0 - 2S3FF-F | 2S000 - 2S3FF | | |
| | 3S000-0 - 3S3FF-F | 3S000 - 3S3FF | | |
| | 1S1000-0 - 1S13FF-F | 1S1000 - 1S13FF | | |
| | 2S1000-0 - 2S13FF-F | 2S1000 - 2S13FF | | |
| | 3S1000-0 - 3S13FF-F | 3S1000 - 3S13FF | | |
| File Register | B0000-0 - B1FFF-F | B0000 - B1FFF | | *2 |
| Extension Input | EX000 - EX7FF | EX00W - EX7FW | | *1 *3 |
| Extension Output | EY000 - EY7FF | EY00W - EY7FW | | *1*3 |

| Device | Bit Address | Word Address | 32bits | Notes |
|---|---|---|---|---|
| Extension Internal Relay | EM0000 - EM1FFF | EM000W - EM1FFW | L/H | *1 |
| Extension Special Relay | EV000 - EVFFF | EV00W - EVFFW | | *1 |
| Extension Keep Relay | EK000 - EKFFF | EK00W - EKFFW | | *1 |
| Extension Timer | ET000 - ET7FF | ET00W - ET7FW | | *1 *3 |
| Extension Counter | EC000 - EC7FF | EC00W - EC7FW | | *1 *3 |
| Extension Link Relay | EL0000 - EL1FFF | EL000W - EL1FFW | | *1 |
| Extension 2 Input | GX0000 - GXFFFF | GX000W - GXFFFW | | *1 *3 |
| Extension 2 Output | GY0000 - GYFFFF | GY000W - GYFFFW | | *1 *3 |
| Extension 2 Internal Relay | GM0000 - GMFFFF | GM000W - GMFFFW | | *1 |
| Extension Data Register | U00000-0 - U1FFFF-F | U00000 - U1FFFF | | *2 |
| Extension Setting Value Register | H000-0 - H7FF-F | H000 - H7FF | | *2 |
| Extension Special Register | ES000-0 - ES7FF-F | ES000 - ES7FF | | *2 |
| Extension Current Value Register | EN000-0 - EN7FF-F | EN000 - EN7FF | | *2 |
| Watch Time Register | ------ | WT0 - WT6 | | *4 *5 |
| Extended buffer register | EB00000-0 - EB3FFFF-F | EB00000 - EB3FFFF | | *2 |
| Extended flash register | FR000000-0 - FR1FFFFF-F | FR000000 - FR1FFFFF | | *2 *6 |

*1 For word description of the bit device, add "W" to the last of the word address.
Example) When the address is 0 in M device, describe "M0000W".

*2 For bit description of the word device, describe "-" following the word address and the bit position next.
Example) When the address is 0 and the bit is 5 in D device, describe " D0000-5".

*3 You cannot set the duplicate address for X and Y (EX, EY, GX, GY), T and C (ET, EC).
(Setting such address as X000/Y000, EX000/EY000, T000/C000, ET000/EC000 is wrong.)

*4 When you write "Watch Time Register", the Display reads all addresses of "Watch Time Register" in the External Device. Then the Display writes all addresses of "Watch Time Register" after the Display changes the data of your requested address. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

*5 Contents of "Watch Time Register" are shown below.

| Address | Mean | Note |
|---|---|---|
| WT0 | day of week | 0:Sunday, 1:Monday, 2:Tuesday, 3:Wednesday, 4:Thursday, 5:Friday, 6:Saturday |
| WT1 | year | lower two digits of A.D. |
| WT2 | month | |
| WT3 | day | |
| WT4 | hour | 24-hour system |
| WT5 | minute | |
| WT6 | second | |

*6 You can read from and write to the extended flash register. However, you cannot write values to flash memory. Use the ladder software to write values to flash memory.

**NOTE**

- 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"

# 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.

## 6.1 TOYOPUC-PC3 / TOYOPUC-PC-10G (PC10 Standard mode)

| Device | Device Name | Device Code (HEX) | Address Code |
|---|---|---|---|
| Input Relay | 1X | 0080 | Word Address |
| | 2X | 0180 | Word Address |
| | 3X | 0280 | Word Address |
| Output Relay | 1Y | 0081 | Word Address |
| | 2Y | 0181 | Word Address |
| | 3Y | 0281 | Word Address |
| Internal Relay | 1M | 0082 | Word Address |
| | 2M | 0182 | Word Address |
| | 3M | 0282 | Word Address |
| Keep Relay | 1K | 0084 | Word Address |
| | 2K | 0184 | Word Address |
| | 3K | 0284 | Word Address |
| Link Relay | 1L | 0088 | Word Address |
| | 2L | 0188 | Word Address |
| | 3L | 0288 | Word Address |
| Special Relay | 1V | 0083 | Word Address |
| | 2V | 0183 | Word Address |
| | 3V | 0283 | Word Address |
| Timer (Contact) | 1T | 0086 | Word Address |
| | 2T | 0186 | Word Address |
| | 3T | 0286 | Word Address |
| Counter (Contact) | 1C | 0087 | Word Address |
| | 2C | 0187 | Word Address |
| | 3C | 0287 | Word Address |
| Special Register | 1S | 0001 | Word Address |
| | 2S | 0101 | Word Address |
| | 3S | 0201 | Word Address |

| Device | Device Name | Device Code (HEX) | Address Code |
|---|---|---|---|
| Current Value Register | 1N | 0003 | Word Address |
| | 2N | 0103 | Word Address |
| | 3N | 0203 | Word Address |
| Data Register | 1D | 0000 | Word Address |
| | 2D | 0100 | Word Address |
| | 3D | 0200 | Word Address |
| Link Register | 1R | 0002 | Word Address |
| | 2R | 0102 | Word Address |
| | 3R | 0202 | Word Address |
| File Register | B | 0004 | Word Address |
| Extension Setting Value Register | H | 0006 | Word Address |
| Extension Data Register | U | 0005 | Word Address |
| Extension Input | EX | 0090 | Word Address |
| Extension Output | EY | 0091 | Word Address |
| Extension Internal Relay | EM | 0092 | Word Address |
| Extension Keep Relay | EK | 0094 | Word Address |
| Extension Link Relay | EL | 0098 | Word Address |
| Extension Special Relay | EV | 0093 | Word Address |
| Extension Timer | ET | 0096 | Word Address |
| Extension Counter | EC | 0097 | Word Address |
| Extension Special Register | ES | 0011 | Word Address |
| Extension Current Value Register | EN | 0013 | Word Address |
| Extension 2 Input | GX | 00A0 | Word Address |
| Extension 2 Output | GY | 00A1 | Word Address |
| Extension 2 Internal Relay | GM | 00A2 | Word Address |
| Watch Time Register | WT | 0007 | Word Address |
| Extended Buffer Register | EB | 0014 | Word Address |

## 6.2 TOYOPUC-PC10G (PC10 mode)

| Device | Device Name | Device Code (HEX) | Address Code |
|---|---|---|---|
| Input Relay | 1X | 0080 | Word Address |
| | 2X | 0180 | Word Address |
| | 3X | 0280 | Word Address |
| Output Relay | 1Y | 0081 | Word Address |
| | 2Y | 0181 | Word Address |
| | 3Y | 0281 | Word Address |
| Internal Relay | 1M | 0082 | Word Address |
| | 2M | 0182 | Word Address |
| | 3M | 0282 | Word Address |
| | 1M1 | 00B2 | Word Address |
| | 2M1 | 01B2 | Word Address |
| | 3M1 | 02B2 | Word Address |
| Keep Relay | 1K | 0084 | Word Address |
| | 2K | 0184 | Word Address |
| | 3K | 0284 | Word Address |
| Link Relay | 1L | 0088 | Word Address |
| | 2L | 0188 | Word Address |
| | 3L | 0288 | Word Address |
| | 1L1 | 00B8 | Word Address |
| | 2L1 | 01B8 | Word Address |
| | 3L1 | 02B8 | Word Address |
| | 1L2 | 00B9 | Word Address |
| | 2L2 | 01B9 | Word Address |
| | 3L2 | 02B9 | Word Address |
| Special Relay | 1V | 0083 | Word Address |
| | 2V | 0183 | Word Address |
| | 3V | 0283 | Word Address |
| | 1V1 | 00B3 | Word Address |
| | 2V1 | 01B3 | Word Address |
| | 3V1 | 02B3 | Word Address |

| Device | Device Name | Device Code (HEX) | Address Code |
|---|---|---|---|
| Timer (Contact) | 1T | 0086 | Word Address |
| | 2T | 0186 | Word Address |
| | 3T | 0286 | Word Address |
| | 1T1 | 00B6 | Word Address |
| | 2T1 | 01B6 | Word Address |
| | 3T1 | 02B6 | Word Address |
| Counter (Contact) | 1C | 0087 | Word Address |
| | 2C | 0187 | Word Address |
| | 3C | 0287 | Word Address |
| | 1C1 | 00B7 | Word Address |
| | 2C1 | 01B7 | Word Address |
| | 3C1 | 02B7 | Word Address |
| Special Register | 1S | 0001 | Word Address |
| | 2S | 0101 | Word Address |
| | 3S | 0201 | Word Address |
| | 1S1 | 0031 | Word Address |
| | 2S1 | 0131 | Word Address |
| | 3S1 | 0231 | Word Address |
| Current Value Register | 1N | 0003 | Word Address |
| | 2N | 0103 | Word Address |
| | 3N | 0203 | Word Address |
| | 1N1 | 0033 | Word Address |
| | 2N1 | 0133 | Word Address |
| | 3N1 | 0233 | Word Address |
| Data Register | 1D | 0000 | Word Address |
| | 2D | 0100 | Word Address |
| | 3D | 0200 | Word Address |
| Link Register | 1R | 0002 | Word Address |
| | 2R | 0102 | Word Address |
| | 3R | 0202 | Word Address |
| File Register | B | 0004 | Word Address |

| Device | Device Name | Device Code (HEX) | Address Code |
|---|---|---|---|
| Extension Setting Value Register | H | 0006 | Word Address |
| Extension Data Register | U | 0005 | Word Address |
| Extension Input | EX | 0090 | Word Address |
| Extension Output | EY | 0091 | Word Address |
| Extension Internal Relay | EM | 0092 | Word Address |
| Extension Keep Relay | EK | 0094 | Word Address |
| Extension Link Relay | EL | 0098 | Word Address |
| Extension Special Relay | EV | 0093 | Word Address |
| Extension Timer | ET | 0096 | Word Address |
| Extension Counter | EC | 0097 | Word Address |
| Extension Special Register | ES | 0011 | Word Address |
| Extension Current Value Register | EN | 0013 | Word Address |
| Extension 2 Input | GX | 00A0 | Word Address |
| Extension 2 Output | GY | 00A1 | Word Address |
| Extension 2 Internal Relay | GM | 00A2 | Word Address |
| Watch Time Register | WT | 0007 | Word Address |
| Extended buffer register | EB | 0014 | Word Address |
| Extended flash register | FR | 0018 | 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. Name of External Device 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.<br>NOTE<br>• IP address is displayed as "IP address (Decimal): MAC address (Hex)".<br>• Device address is displayed as "Address: Device address".<br>• 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.

## ■ Error Messages Unique to External Device

| Message ID | Error Message | Description |
|---|---|---|
| RHxx128 | (Node Name): PC2 Mode is not supported. | PC2 mode is not supported. |
| RHxx129 | (Node Name): [Device Name] device is not supported in PC3 Mode. | The specified device is not supported in PC3 mode. |
| RHxx130 | (Node Name): Out of range device in PC3 Mode. (Address:[Device Address]) | The specified device address is out of the supported range in PC3 mode. |