KEYENCE Corporation

KV-700/1000/3000/5000 Ethernet Driver

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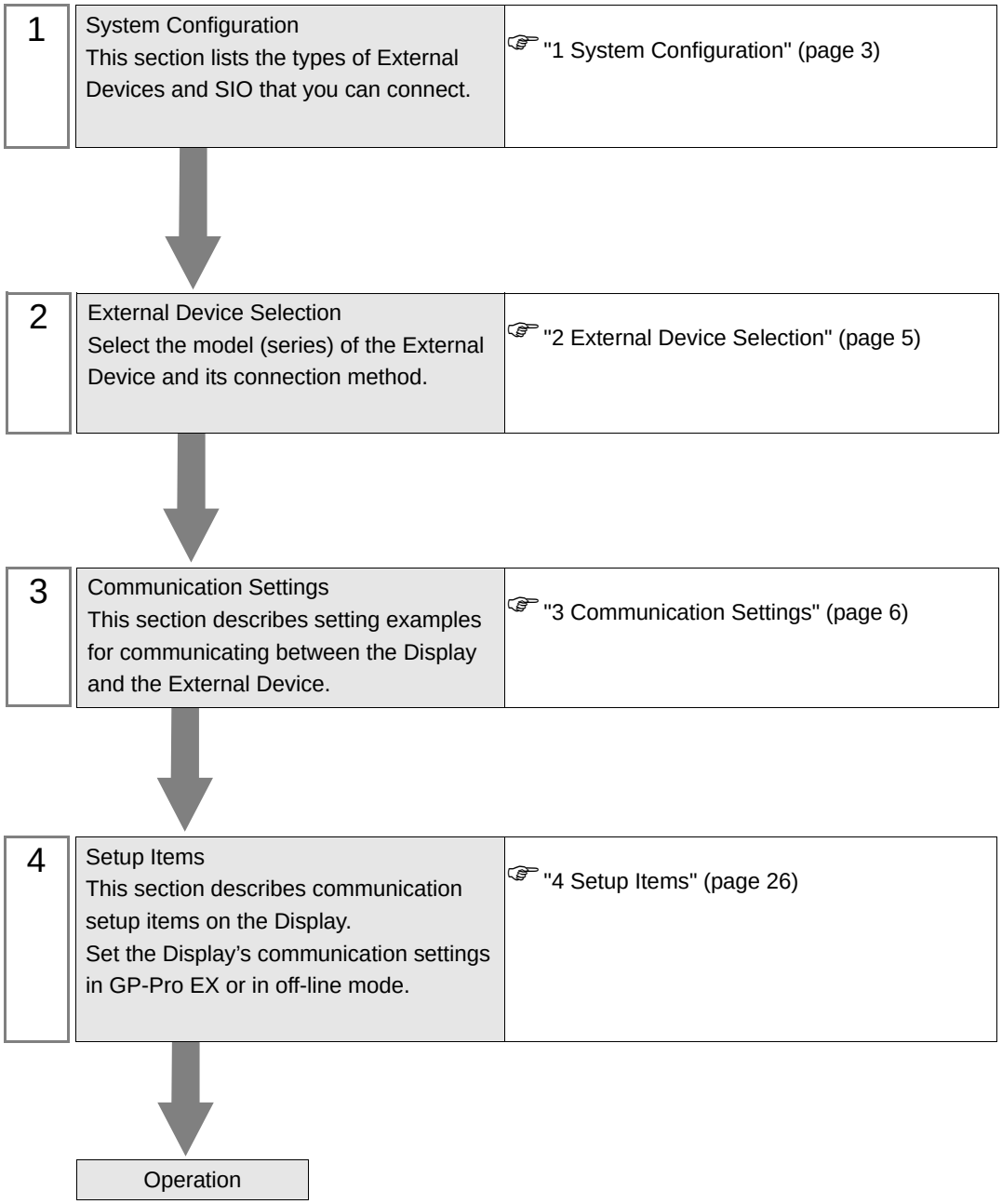
Introduction

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

In this manual, the connection procedure is described in the sections identified below.



1 System Configuration

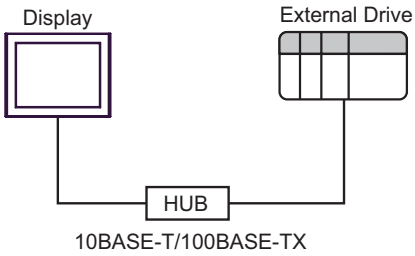
The following table lists system configurations for connecting KEYENCE Corporation External Devices and the Display.

Series	CPU	Link I/F	SIO Type	Setting Example
KV-700 Series	KV-700	KV-LE20A	Ethernet (UDP)	Setting Example 1 (page 6)
			Ethernet (TCP)	Setting Example 2 (page 8)
		KV-LE20V*1	Ethernet (UDP)	Setting Example 5 (page 14)
			Ethernet (TCP)	Setting Example 6 (page 16)
KV-1000 Series	KV-1000	KV-LE20A	Ethernet (UDP)	Setting Example 3 (page 10)
			Ethernet (TCP)	Setting Example 4 (page 12)
		KV-LE20V*1	Ethernet (UDP)	Setting Example 5 (page 14)
			Ethernet (TCP)	Setting Example 6 (page 16)
KV-3000 Series	KV-3000	KV-LE20V*1	Ethernet (UDP)	Setting Example 7 (page 18)
			Ethernet (TCP)	Setting Example 8 (page 20)
KV-5000 Series	KV-5000	KV-LE20V*1	Ethernet (UDP)	Setting Example 7 (page 18)
			Ethernet (TCP)	Setting Example 8 (page 20)
		Ethernet port on CPU*1	Ethernet (UDP)	Setting Example 9 (page 22)
			Ethernet (TCP)	Setting Example 10 (page 24)

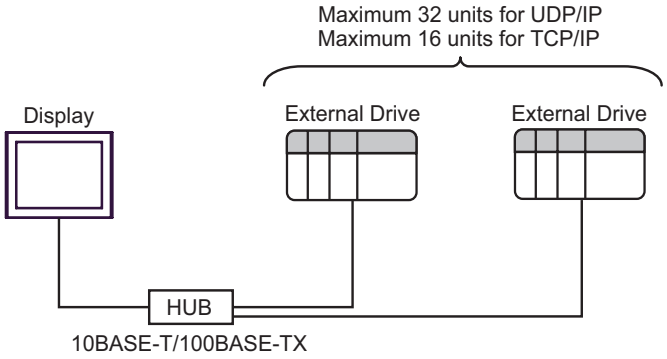
*1 For communication settings, KV STUDIO Ver. 4 or later ladder software is required.

■ Connection Configuration

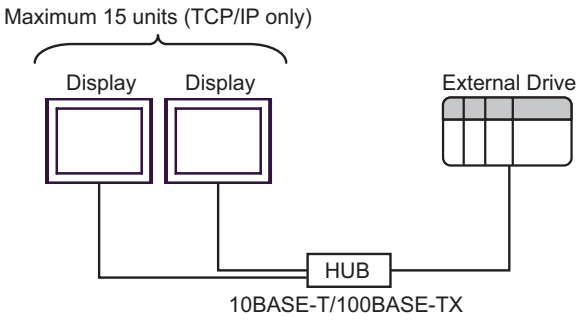
- 1:1 Connection



- 1:n Connection

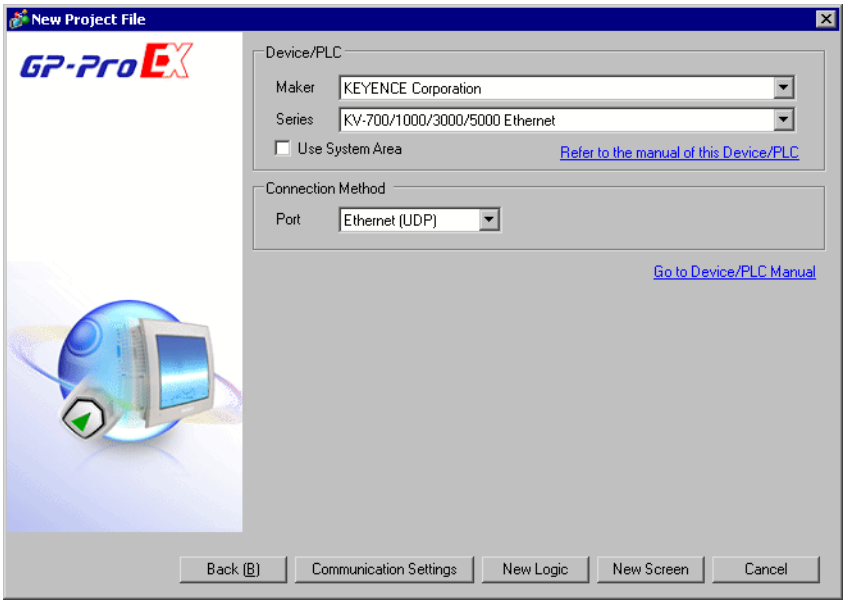


- n:1 Connection



2 External Device Selection

Select the External Device to connect to the Display.



Setup Items	Setup Description
Maker	Select the maker of the External Device to be connected. Select "KEYENCE Corporation".
Series	Select the model (series) of the External Device to be connected and the connection method. Select "KV-700/1000/3000/5000 Ethernet". In System Configuration, check to make sure the external device to which you are connecting is supported in "KV-700/1000/3000/5000 Ethernet". ☞ "1 System Configuration" (page 3)
Use System Area	Check this option to synchronize the system data area of the display unit 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 Setting Guide of [System Setting Window], Setting Guide of [Main Unit Settings], System Area Setting" Cf. Maintenance/Troubleshooting Manual "2.15.1 Common to the Display", Setting Guide of [Main Unit Settings], System Area Setting"
Port	Select the port of the Display to be connected to the External Device.

3 Communication Settings

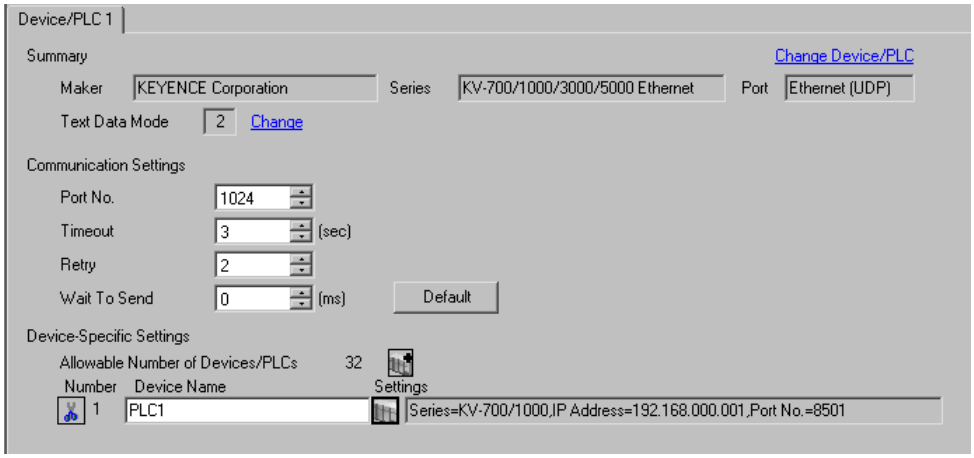
This section provides examples of communication settings recommended by Pro-face for the Display and the External Device.

3.1 Setting Example 1

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Settings

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

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.
- In [Individual Device Settings], set the IP address of the External Device.
- Set the Display's IP address in off-line mode.

■ External Device Settings

Use the configuration tool (KV BUILDER/Ver. 4.70) for External Device communication settings. Refer to your External Device manual for details.

1 Start up the configuration tool.
2 From the [File] menu, select [New Project], enter a project name, and then click [OK].
3 In the [Change Device] dialog box, if extended memory is installed, select "KV-700+M"; if not, select "KV-700". Then click [OK].
4 In the dialog box that appears, click [Yes] to move to the Unit Editor.
5 Click the [Unit selection (2)] tab, select "KV-LE20A", and then drag and drop the unit between the CPU and the end unit.
6 With KV-LE20A selected, switch to the [Unit setup (3)] tab, and set as follows.

Setup Items	Settings
First DM No.	DM10000
Speed	100/10 Mbps (automatic)
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Port No. (HOST Link)	8501

7 From the [File] menu, select [Save and Exit] to return to the editor mode.
8 From the [Monitor/Simulator] menu, select [Convert → Move → Monitor].
9 Check [Unit setting information], and then click [Exec]. The setting information is transferred.

This completes the setting of the External Device.

◆ Notes

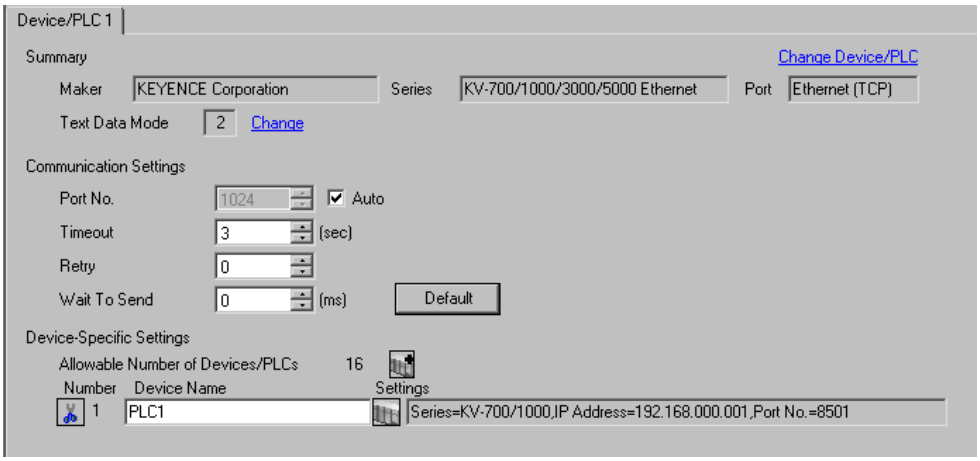
- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.

3.2 Setting Example 2

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Settings

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

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.
- In [Individual Device Settings], set the IP address of the External Device.
- Set the Display's IP address in off-line mode.

■ External Device Settings

Use the configuration tool (KV BUILDER/Ver. 4.70) for External Device communication settings. Refer to your External Device manual for details.

1 Start up the configuration tool.
2 From the [File] menu, select [New Project], enter a project name, and then click [OK].
3 In the [Change Device] dialog box, if extended memory is installed, select "KV-700+M"; if not, select "KV-700". Then click [OK].
4 In the dialog box that appears, click [Yes] to move to the Unit Editor.
5 Click the [Unit selection (2)] tab, select "KV-LE20A", and then drag and drop the unit between the CPU and the end unit.
6 With KV-LE20A selected, switch to the [Unit setup (3)] tab, and set as follows.

Setup Items	Settings
First DM No.	DM10000
Speed	100/10 Mbps (automatic)
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Port No. (HOST Link)	8501

7 From the [File] menu, select [Save and Exit] to return to the editor mode.
8 From the [Monitor/Simulator] menu, select [Convert → Move → Monitor].
9 Check [Unit setting information], and then click [Exec]. The setting information is transferred.

This completes the setting of the External Device.

◆ Notes

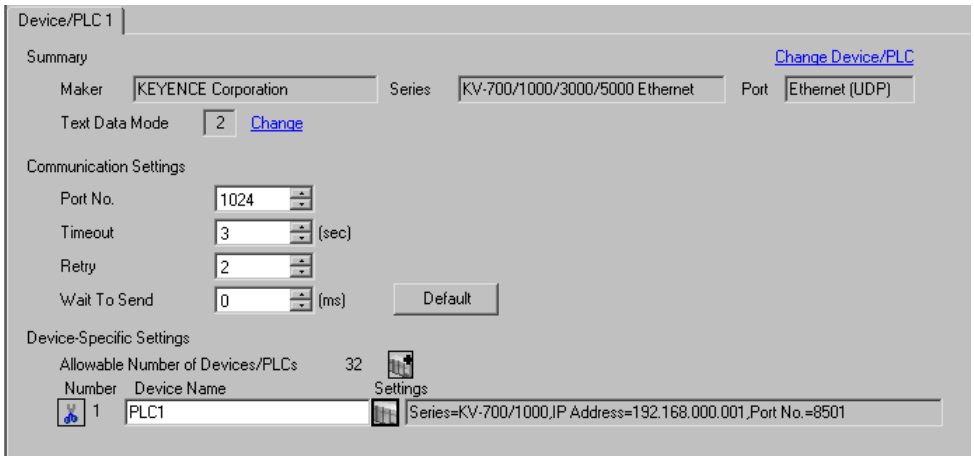
- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.

3.3 Setting Example 3

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Settings

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

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.
- In [Individual Device Settings], set the IP address of the External Device.
- Set the Display's IP address in off-line mode.

■ External Device Settings

Use the configuration tool (KV STUDIO/Ver. 2.50) for External Device communication settings. Refer to your External Device manual for details.

1 Start up the configuration tool.
2 From the [File] menu, select [New Project], enter a project name, and then click [OK].
3 In the dialog box that appears, click [Yes] to move to the Unit Editor.
4 Click the [Unit selection (2)] tab, select "KV-LE20A", and then drag and drop the unit between the CPU and the end unit.
5 With KV-LE20A selected, switch to the [Unit setup (3)] tab, and set as follows.

Setup Items	Settings
First DM No.	DM10000
Speed	100/10 Mbps (automatic)
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Port No. (HOST Link)	8501

6 From the [File] menu, select [Save and Exit] to return to the editor mode.
7 From the [Monitor/Simulator] menu, select [Convert → Move].
8 Check [Unit setting information], and then click [Exec]. The setting information is transferred.

This completes the setting of the External Device.

◆ Notes

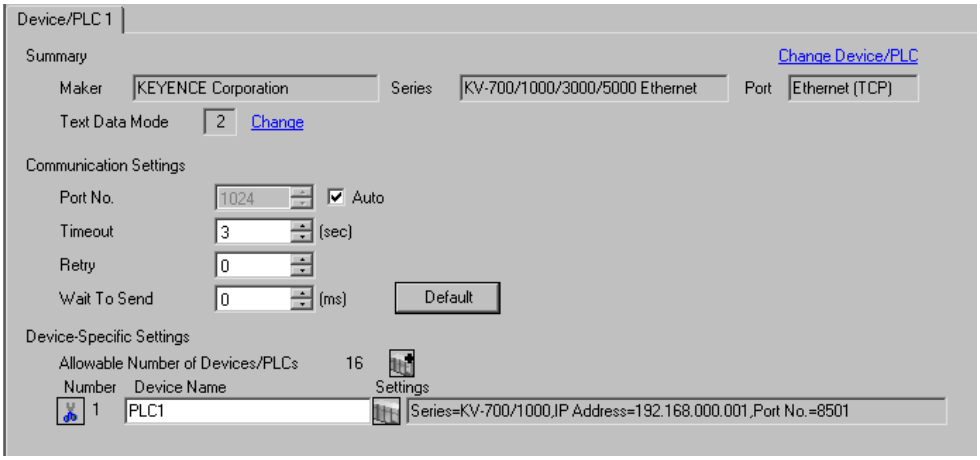
- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.

3.4 Setting Example 4

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Settings

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

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.
- In [Individual Device Settings], set the IP address of the External Device.
- Set the Display's IP address in off-line mode.

■ External Device Settings

Use the configuration tool (KV STUDIO/Ver. 2.50) for External Device communication settings. Refer to your External Device manual for details.

1 Start up the configuration tool.
2 From the [File] menu, select [New Project], enter a project name, and then click [OK].
3 In the dialog box that appears, click [Yes] to move to the Unit Editor.
4 Click the [Unit selection (2)] tab, select "KV-LE20A", and then drag and drop the unit between the CPU and the end unit.
5 With KV-LE20A selected, switch to the [Unit setup (3)] tab, and set as follows.

Setup Items	Settings
First DM No.	DM10000
Speed	100/10 Mbps (automatic)
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Port No. (HOST Link)	8501

6 From the [File] menu, select [Save and Exit] to return to the editor mode.
7 From the [Monitor/Simulator] menu, select [Convert → Move].
8 Check [Unit setting information], and then click [Exec]. The setting information is transferred.

This completes the setting of the External Device.

◆ Notes

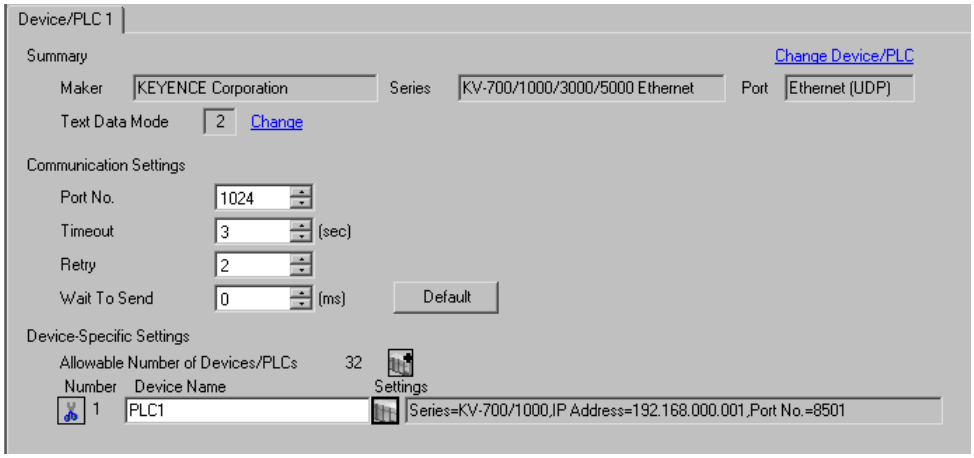
- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.

3.5 Setting Example 5

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Settings

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

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.
- In [Individual Device Settings], set the IP address of the External Device.
- Set the Display's IP address in off-line mode.

■ External Device Settings

Use the ladder software (KV STUDIO Ver. 4 or later) for External Device communication settings. Refer to your External Device manual for details.

1 Start up the ladder software.
2 From the [File] menu, select [New Project] and display the [New Project] dialog box.
3 Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
4 Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
5 Select "KV-LE20V" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
6 Right-click "KV-LE20V" in the unit placement area and select [Unit setup display].
7 Configure the following setting items.

Setup Items	Settings
First DM No.	DM10100
Speed	100/10 Mbps (automatic)
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Port No. (HOST Link)	8501

8 From the [Convert] menu, select [Auto-assign relay/DM].
9 From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
10 Click [Yes].
11 From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
12 Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

This completes the setting of the External Device.

◆ Notes

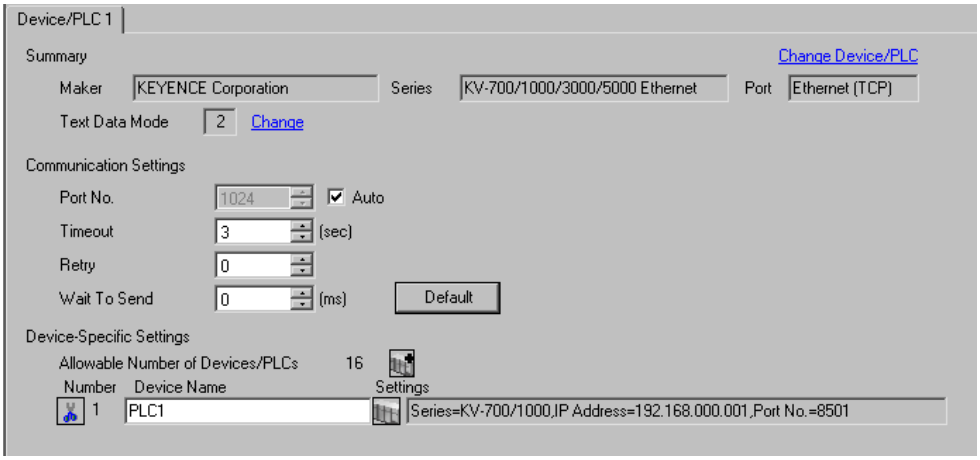
- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.

3.6 Setting Example 6

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Settings

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

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.
- In [Individual Device Settings], set the IP address of the External Device.
- Set the Display's IP address in off-line mode.

■ External Device Settings

Use the ladder software (KV STUDIO Ver. 4 or later) for External Device communication settings. Refer to your External Device manual for details.

1 Start up the ladder software.
2 From the [File] menu, select [New Project] and display the [New Project] dialog box.
3 Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
4 Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
5 Select "KV-LE20V" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
6 Right-click "KV-LE20V" in the unit placement area and select [Unit setup display].
7 Configure the following setting items.

Setup Items	Settings
First DM No.	DM10100
Speed	100/10 Mbps (automatic)
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Port No. (HOST Link)	8501

8 From the [Convert] menu, select [Auto-assign relay/DM].
9 From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
10 Click [Yes].
11 From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
12 Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

This completes the setting of the External Device.

◆ Notes

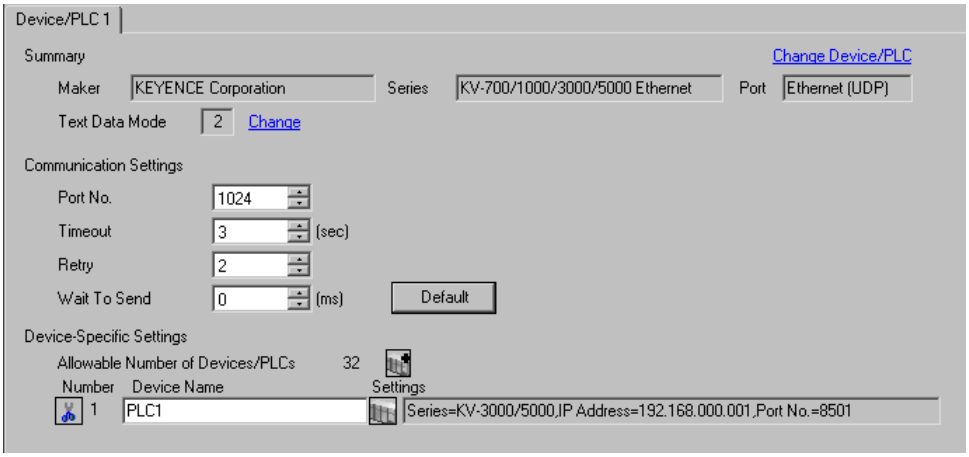
- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.

3.7 Setting Example 7

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Settings

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

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.
- In [Individual Device Settings], set the IP address of the External Device.
- Set the Display's IP address in off-line mode.

■ External Device Settings

Use the ladder software (KV STUDIO Ver. 4 or later) for External Device communication settings. Refer to your External Device manual for details.

1 Start up the ladder software.
2 From the [File] menu, select [New Project] and display the [New Project] dialog box.
3 Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
4 Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
5 Select "KV-LE20V" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
6 Right-click "KV-LE20V" in the unit placement area and select [Unit setup display].
7 Configure the following setting items.

Setup Items	Settings
First DM No.	DM10100
Speed	100/10 Mbps (automatic)
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Port No. (HOST Link)	8501

8 From the [Convert] menu, select [Auto-assign relay/DM].
9 From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
10 Click [Yes].
11 From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
12 Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

This completes the setting of the External Device.

◆ Notes

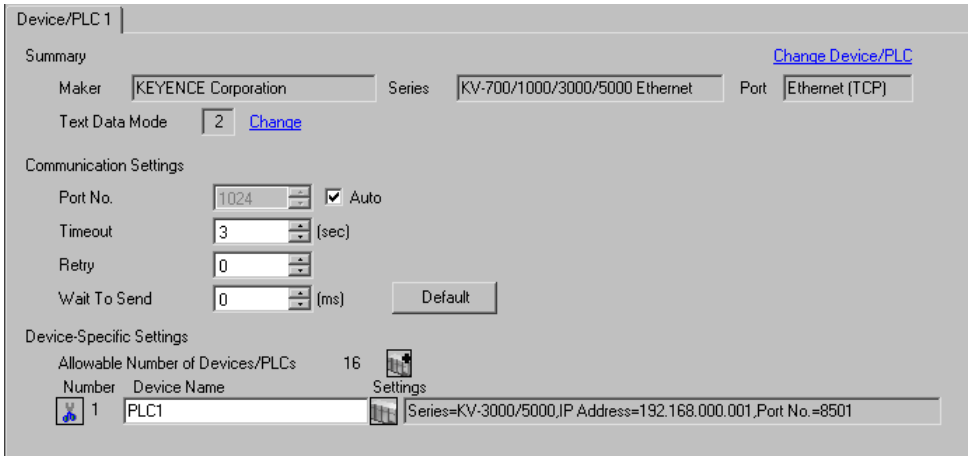
- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.

3.8 Setting Example 8

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Settings

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

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.
- In [Individual Device Settings], set the IP address of the External Device.
- Set the Display's IP address in off-line mode.

■ External Device Settings

Use the ladder software (KV STUDIO Ver. 4 or later) for External Device communication settings. Refer to your External Device manual for details.

1 Start up the ladder software.
2 From the [File] menu, select [New Project] and display the [New Project] dialog box.
3 Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
4 Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
5 Select "KV-LE20V" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
6 Right-click "KV-LE20V" in the unit placement area and select [Unit setup display].
7 Configure the following setting items.

Setup Items	Settings
First DM No.	DM10100
Speed	100/10 Mbps (automatic)
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Port No. (HOST Link)	8501

8 From the [Convert] menu, select [Auto-assign relay/DM].
9 From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
10 Click [Yes].
11 From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
12 Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

This completes the setting of the External Device.

◆ Notes

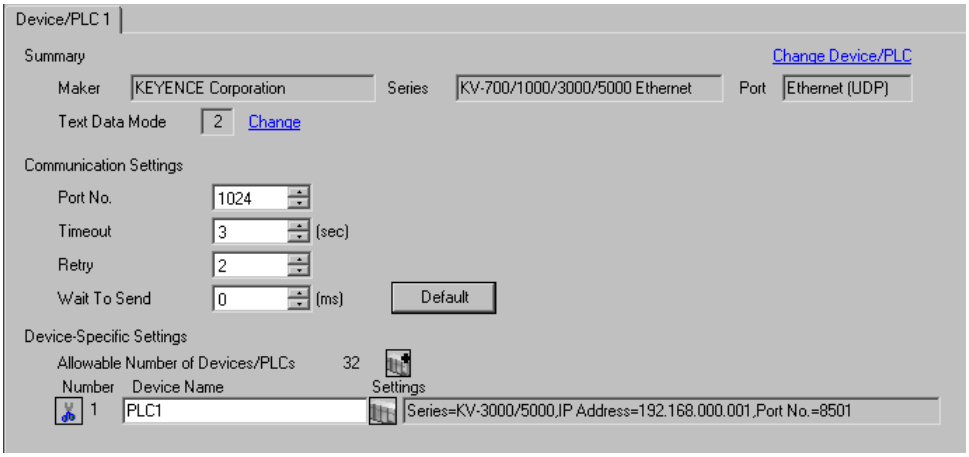
- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.

3.9 Setting Example 9

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Settings

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

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.
- In [Individual Device Settings], set the IP address of the External Device.
- Set the Display's IP address in off-line mode.

■ External Device Settings

Use the ladder software (KV STUDIO Ver. 4 or later) for External Device communication settings. Refer to your External Device manual for details.

1 Start up the ladder software.
2 From the [File] menu, select [New Project] and display the [New Project] dialog box.
3 Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
4 Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
5 Right-click "KV-5000" in the unit placement area and select [Unit setup display].
6 Select "Ethernet" in [Communication Mode], and configure the following setting items.

Setup Items	Settings
First DM No.	DM0
Speed	100/10 Mbps (automatic)
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Port No. (HOST Link)	8501

7 From the [Convert] menu, select [Auto-assign relay/DM].
8 From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
9 Click [Yes].
10 From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
11 Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

This completes the setting of the External Device.

◆ Notes

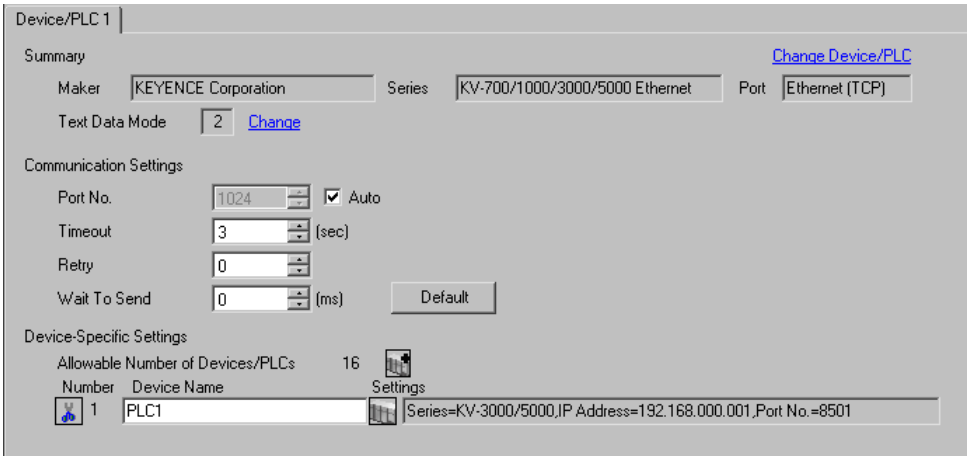
- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.

3.10 Setting Example 10

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Settings

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

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.
- In [Individual Device Settings], set the IP address of the External Device.
- Set the Display's IP address in off-line mode.

■ External Device Settings

Use the ladder software (KV STUDIO Ver. 4 or later) for External Device communication settings. Refer to your External Device manual for details.

1 Start up the ladder software.
2 From the [File] menu, select [New Project] and display the [New Project] dialog box.
3 Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
4 Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
5 Right-click "KV-5000" in the unit placement area and select [Unit setup display].
6 Select "Ethernet" in [Communication Mode], and configure the following setting items.

Setup Items	Settings
First DM No.	DM0
Speed	100/10 Mbps (automatic)
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Port No. (HOST Link)	8501

7 From the [Convert] menu, select [Auto-assign relay/DM].
8 From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
9 Click [Yes].
10 From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
11 Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

This completes the setting of the External Device.

◆ Notes

- Check with your network administrator about the IP address you want to use.
- Do not duplicate IP addresses on the same network.

4 Setup Items

Set up the Display's communication settings in GP-Pro EX or in the Display's off-line mode.

The setting of each parameter must match that of the External Device.

☞"3 Communication Settings" (page 6)

NOTE

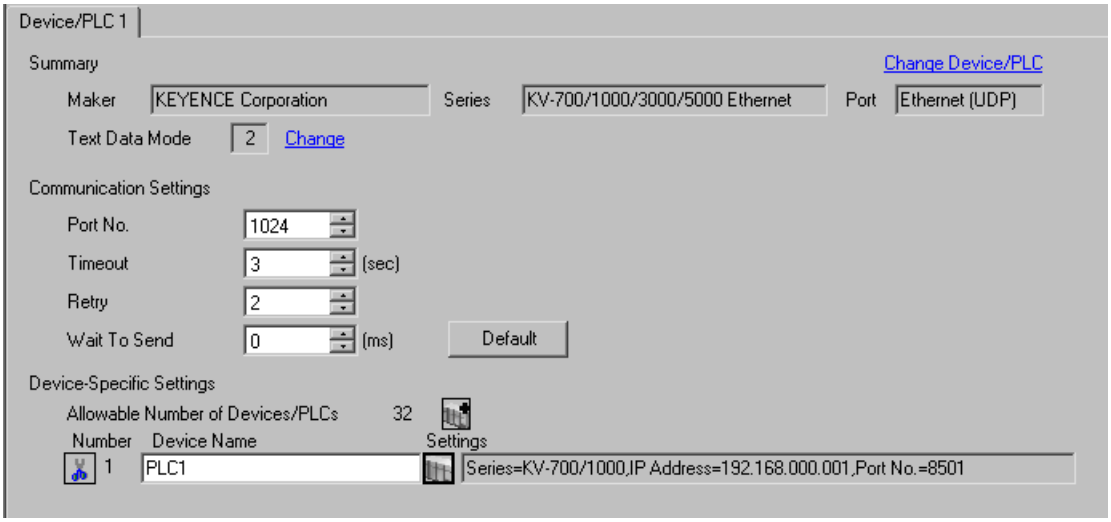
- Set the Display's IP address in off-line mode.

  Cf. Maintenance/Troubleshooting Manual "2.5 Ethernet Settings"

4.1 Setup Items in GP-Pro EX

■ Communication Settings

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



Setup Items	Setup Description
Port No.	Use an integer from "1024 to 65535" to enter the port number of the Display. If you check [Auto], the port number will be automatically set. **NOTE** • [Auto] option is available to set only when you select "Ethernet (TCP)" in [Connection Method].
Timeout	Enter the time(s) for which the Display waits for the response from the External Device, from "1 to 127".
Retry	In case of no response from the External Device, enter how many times the Display retransmits the command, from "0 to 255".
Wait To Send	Enter the standby time (ms) from when the Display receives packets until it transmits the next command, from "0 to 255".

■ Device Settings

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

Setup Items	Setup Description
Series	Select the series of the External Device.
IP Address	Set the IP address of the External Device. **NOTE** • Check with your network administrator about the IP address you want to use. • Do not duplicate IP addresses on the same network.
Port No.	Use an integer from "1024 to 65535" to enter the port number of the External Device. IMPORTANT • Only one display can be connected to one port.

4.2 Setup Items in Off-line Mode

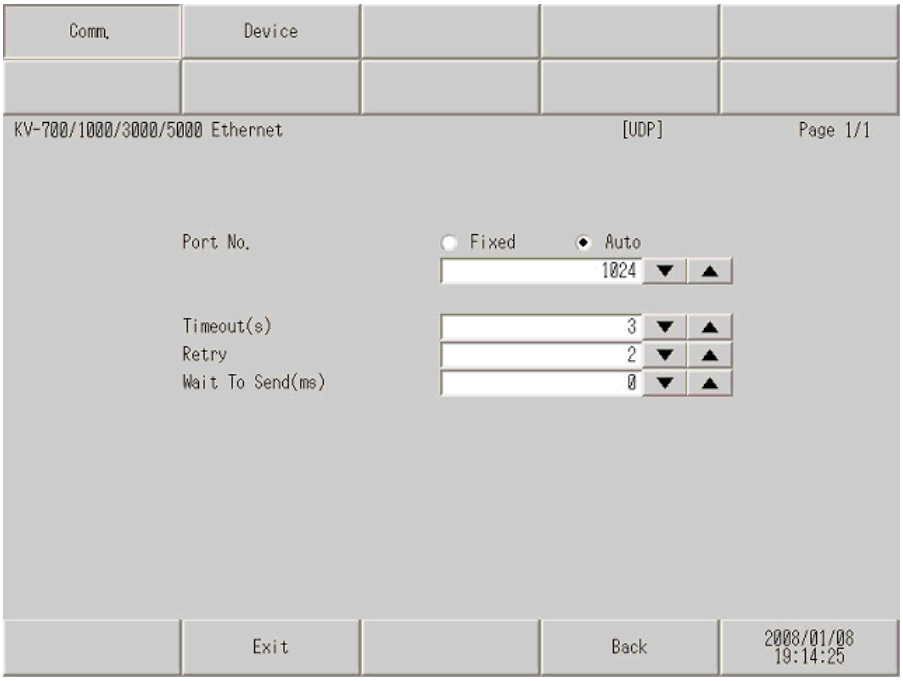
NOTE

- 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

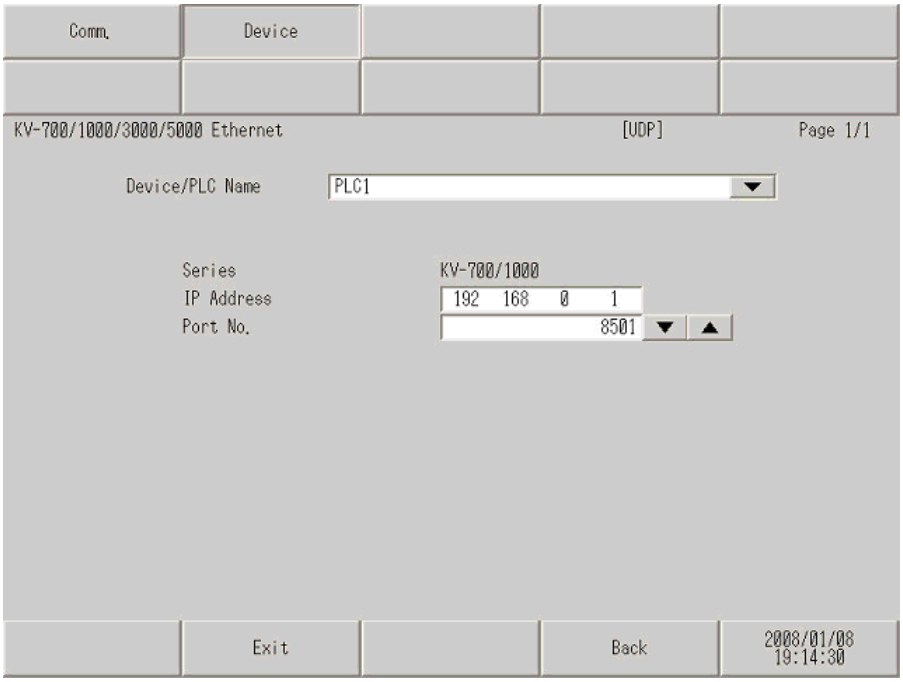
To display the setting screen, touch [Device/PLC Settings] from [Peripheral Equipment Settings] in off-line mode. Touch the External Device you want to set from the displayed list.



Setup Items	Setup Description
Port No.	Set the Port No. of the Display. In UDP connection, the entered port number 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 "1024 to 65535" to enter the port number of the Display.When you select [Auto], the port number will be automatically assigned regardless of the entered value.
Timeout	Enter the time(s) for which the Display waits for a response from the External Device, from "1 to 127".
Retry	In case of no response from the External Device, enter how many times the Display retransmits the command, from "0 to 255".
Wait To Send	Enter the standby time (ms) from when the Display receives packets until it transmits the next command, from "0 to 255".

■ Device Settings

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



Setup Items	Setup Description
Device/PLC Name	Select the External Device to set. Device/PLC Name is the title of the External Device set with GP-Pro EX. (Initial value [PLC1])
Series	Displays the series of the External Device.
IP Address	Set the IP address of the External Device. **NOTE** • Check with your network administrator about the IP address you want to use. • Do not duplicate IP addresses on the same network.
Port No.	Use an integer from "1024 to 65535" to enter the port number of the External Device. IMPORTANT • Only one display can be connected to one port.

5 Supported Devices

The following table shows the range of supported device addresses. Note that the actually supported range varies depending on the External Device. Consult your External Device manual for the range.

5.1 KV-700 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Input Relay	00000 - 59915	000 - 599	L / H	
Output Relay				
Internal Auxiliary Relay				
Control Relay	CR0000 - CR3915	CR00 - CR39		
Timer (Contact)	T000 - T511	-----	-	
Counter (Contact)	C000 - C511	-----		
High-speed Counter Comparator (Contact)	CTC0 - CTC3	-----		*1
Timer (Setting Value)	-----	TS000 - TS511	L / H	*2
Counter (Setting Value)	-----	CS000 - CS511		*2
Timer (Current Value)	-----	TC000 - TC511		*2
Counter (Current Value)	-----	CC000 - CC511		*2
Data Memory	-----	DM00000 - DM39999		Bit 15 *3
Temporary Data Memory	-----	TM000 - TM511		Bit 15
Control Memory	-----	CM0000 - CM3999		Bit 15
Digital Trimmer	-----	TRM0 - TRM7		*1 *2
High-speed Counter (Current Value)	-----	CTH0 - CTH1		*2
High-speed Counter Comparator (Setting Value)	-----	CTC0 - CTC3		*2

*1 Write disable

*2 32-bit device

*3 To use DM20000 to DM39999, you need to install extended memory.

NOTE

- 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)"

- Refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

5.2 KV-1000 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Input Relay	00000 - 59915	000 - 599	L/H	*1
Output Relay				*1
Internal Auxiliary Relay				*1
Internal Auxiliary Relay	MR00000 - MR99915	MR000 - MR999		
Latch Relay	LR00000 - LR99915	LR000 - LR999		
Control Relay	CR0000 - CR3915	CR00 - CR39		
Timer (Contact)	T0000 - T3999	-----	-	
Counter (Contact)	C0000 - C3999	-----		
High-speed Counter Comparator (Contact)	CTC0 - CTC3	-----		*2
Timer (Setting Value)	-----	TS0000 - TS3999	L/H	*3
Counter (Setting Value)	-----	CS0000 - CS3999		*3
Timer (Current Value)	-----	TC0000 - TC3999		*3
Counter (Current Value)	-----	CC0000 - CC3999		*3
Data Memory	-----	DM00000 - DM65534		Bit 15
Extension Data Memory	-----	EM00000 - EM65534		Bit 15
Extension Data Memory	-----	FM00000 - FM32766		Bit 15
Temporary Data Memory	-----	TM000 - TM511		Bit 15
Control Memory	-----	CM00000 - CM11998		Bit 15
Index Register	-----	Z01 - Z12		Bit 15 *4
Digital Trimmer	-----	TRM0 - TRM7		*2 *3
High-speed Counter (Current Value)	-----	CTH0 - CTH1		*3
High-speed Counter Comparator (Setting Value)	-----	CTC0 - CTC3		*3

*1 KV-1000 shows R000 to R599 (R00000 to R59915); the Display, on the other hand, shows 000 to 599 (00000 to 59915).

*2 Write disable

*3 32-bit device

*4 Z11 and Z12, used by the External Device system, are not available to write in.

NOTE

- 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)"

- Refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

5.3 KV-3000/5000 Series

: This address can be specified as system data area.

Device		Bit Address	Word Address	32 bits	Remarks
Input Relay		R00000 - R99915	R000 - R999	L/H	
Output Relay					
Internal Auxiliary Relay					
Link Relay		B0000 - B3FFF	B000 - B3FF		
Internal Auxiliary Relay		MR00000 - MR99915	MR000 - MR999		
Latch Relay		LR00000 - LR99915	LR000 - LR999		
Control Relay		CR0000 - CR3915	CR00 - CR39		
Work Relay		VB0000 - VB3FFF	VB000 - VB3FF		
Timer (Contact)		T0000 - T3999	-----	-	
Counter (Contact)		C0000 - C3999	-----		
High-speed Counter Comparator (Contact)		CTC0 - CTC3	-----		*1
Timer (Setting Value)		-----	TS0000 - TS3999	L/H	*2
Counter (Setting Value)		-----	CS0000 - CS3999		*2
Timer (Current Value)		-----	TC0000 - TC3999		*2
Counter (Current Value)		-----	CC0000 - CC3999		*2
Data Memory		-----	DM00000 - DM65534		Bit 15
Extension Data Memory		-----	EM00000 - EM65534		Bit 15
File Register	Current Bank	-----	FM00000 - FM32767		Bit 15
	Serial Number System	-----	ZF000000 - ZF131071		Bit 15
Temporary Data Memory		-----	TM000 - TM511		Bit 15
Control Memory		-----	CM00000 - CM05999		Bit 15
Link Register		-----	W0000 - W3FFF		Bit F
Work Memory		-----	VM00000 - VM59999		Bit 15
Index Register		-----	Z01 - Z12		*2 *3
Digital Trimmer		-----	TRM0 - TRM7		*1 *2
High-speed Counter (Current Value)		-----	CTH0 - CTH1		*2
High-speed Counter Comparator (Setting Value)		-----	CTC0 - CTC3		*2

*1 Write disable

*2 32-bit device

*3 Z11 and Z12, used by the External Device system, are not available to write in.

NOTE

- 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)"

- 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 if you select "Device Type & Address" for the address type in Data Displays.

6.1 KV-700 Series

Device	Device Name	Device Code (HEX)	Address Code
Input Relay	-----	0080	Word Address
Output Relay			
Internal Auxiliary Relay			
Control Relay	CR	008A	Word Address
Timer (Setting Value)	TS	0062	Double Word Address
Counter (Setting Value)	CS	0063	Double Word Address
Timer (Current Value)	TC	0060	Double Word Address
Counter (Current Value)	CC	0061	Double Word Address
Data Memory	DM	0000	Word Address
Temporary Data Memory	TM	0001	Word Address
Control Memory	CM	0002	Word Address
Digital Trimmer	TRM	0064	Double Word Address
High-speed Counter (Current Value)	CTH	0065	Double Word Address
High-speed Counter Comparator (Setting Value)	CTC	0066	Double Word Address

6.2 KV-1000 Series

Device	Device Name	Device Code (HEX)	Address Code
Input Relay	-----	0080	Word Address
Output Relay			
Internal Auxiliary Relay			
Internal Auxiliary Relay	MR	0082	Word Address
Latch Relay	LR	0084	Word Address
Control Relay	CR	008A	Word Address
Timer (Setting Value)	TS	0062	Double Word Address
Counter (Setting Value)	CS	0063	Double Word Address
Timer (Current Value)	TC	0060	Double Word Address
Counter (Current Value)	CC	0061	Double Word Address
Data Memory	DM	0000	Word Address
Extension Data Memory	EM	0010	Word Address
Extension Data Memory	FM	0011	Word Address
Temporary Data Memory	TM	0001	Word Address
Control Memory	CM	0002	Word Address
Index Register	Z	0003	Word Address
Digital Trimmer	TRM	0064	Double Word Address
High-speed Counter (Current Value)	CTH	0065	Double Word Address
High-speed Counter Comparator (Setting Value)	CTC	0066	Double Word Address

6.3 KV-3000/5000 Series

Device		Device Name	Device Code (HEX)	Address Code
Input Relay		R	0080	Word Address
Output Relay				
Internal Auxiliary Relay				
Link Relay		B	008B	Word Address
Internal Auxiliary Relay		MR	0082	Word Address
Latch Relay		LR	0084	Word Address
Control Relay		CR	008A	Word Address
Work Relay		VB	008C	Word Address
Timer (Setting Value)		TS	0062	Double Word Address
Counter (Setting Value)		CS	0063	Double Word Address
Timer (Current Value)		TC	0060	Double Word Address
Counter (Current Value)		CC	0061	Double Word Address
Data Memory		DM	0000	Word Address
Extension Data Memory		EM	0010	Word Address
File Register	Current Bank	FM	0011	Word Address
	Serial Number System	ZF	0012	Word Address
Temporary Data Memory		TM	0001	Word Address
Control Memory		CM	0002	Word Address
Link Register		W	0013	Word Address
Work Memory		VM	0014	Word Address
Index Register		Z	0067	Double Word Address
Digital Trimmer		TRM	0064	Double Word Address
High-speed Counter (Current Value)		CTH	0065	Double Word Address
High-speed Counter Comparator (Setting Value)		CTC	0066	Double Word Address

7 Error Messages

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

Item	Description
No.	Error No.
Device Name	Name of the External Device where an error has occurred. Device name is the title of the External Device set with GP-Pro EX. (Initial value [PLC1])
Error Message	Displays messages related to an error that has occurred.
Error Occurrence Area	Displays the IP address or device address of the External Device where an error has occurred, or error codes received from the 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.

■ Error Code List of External Device

Error Code (HEX)	Error Description
E0	Accessed the device not defined as device in the External Device.*1
E1	A command which is not supported by the CPU unit was sent.
E4	Wrote in the write disable device.

*1 When you write to Timer (Contact/Current Value/Setting Value), Counter (Contact/Current Value/Setting Value), High-speed Counter and High-speed Counter Comparator (Setting Value), the changed settings must be made in the ladder program in advance.