



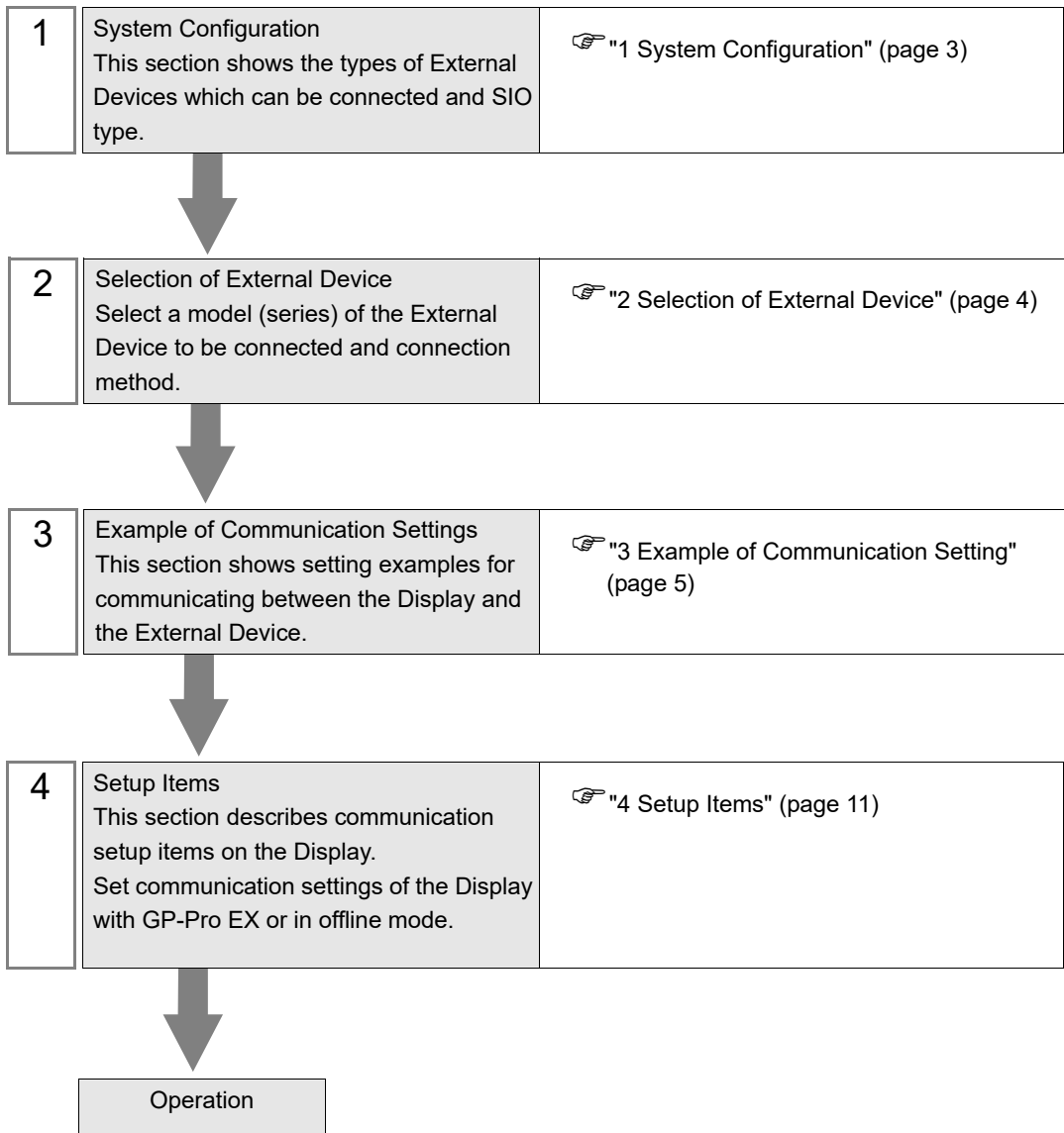
Modbus TCP Driver

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Introduction

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

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



1 System Configuration

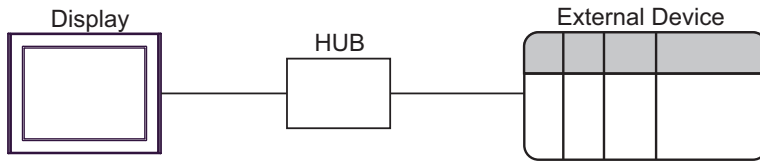
The system configuration in the case when the External Device of Shenzhen Inovance technology and the Display are connected is shown.

Series	CPU	Link I/F	Interface	Setting Example
H3U-XP	H3U-1616MR-XP H3U-1616MT-XP	Ethernet port on CPU unit	Ethernet (TCP)	Setting Example 1 (page 5)
	H3U-3232MR H3U-3232MT H3U0808PMRTA	Ethernet port on CPU unit	Ethernet (TCP)	Setting Example 2 (page 7)
H5U	H5U-1614MTD	Ethernet port on CPU unit	Ethernet (TCP)	Setting Example 3 (page 9)

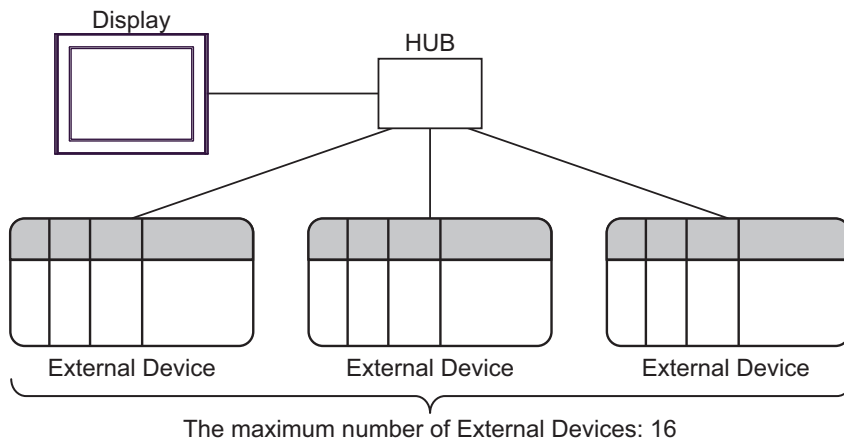
NOTE • This driver does not support GP3000 series, LT3000 series and ST series.

■ Connection Configuration

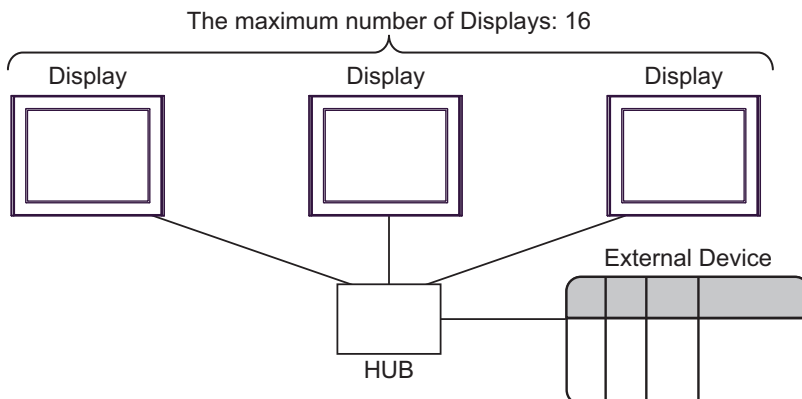
- 1:1 Connection



- 1:n Connection

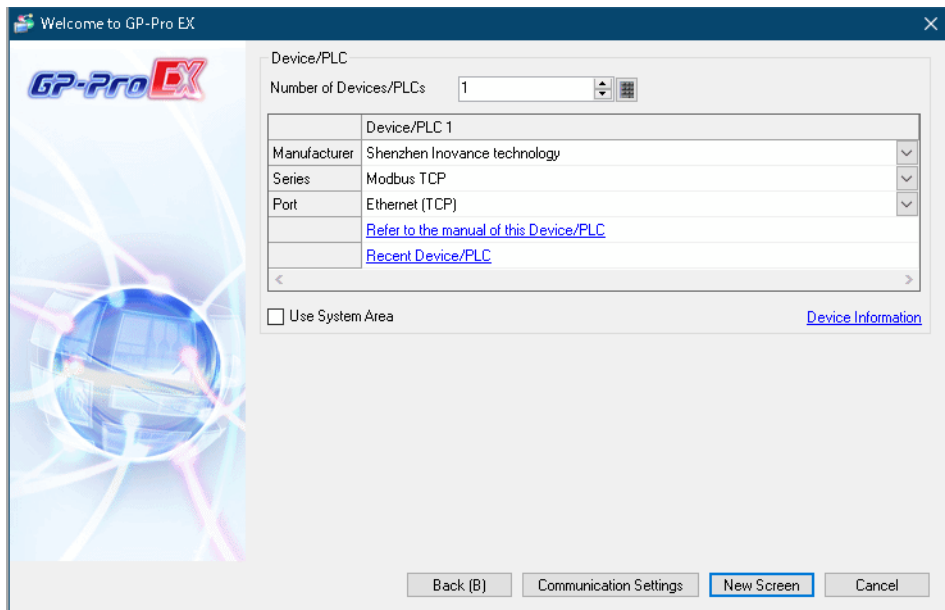


- n:1 Connection



2 Selection of External Device

Select the External Device to be connected to the Display.



Setup Items	Setup Description
Number of Devices/PLCs	Enter an integer from 1 to 4 to define the number of Devices/PLCs to connect to the display.
Manufacturer	Select the manufacturer of the External Device to connect. Select "Shenzhen Inovance technology".
Series	Select the External Device model (series) and the connection method. Select "Modbus TCP". In System configuration, make sure the External Device you are connecting is supported by "Modbus TCP". ☞ "1 System Configuration" (page 3)
Port	Select the Display port to connect 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.

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/PLC 1

Summary [Change Device/PLC](#)

Manufacturer Series Port

Text Data Mode [Change](#)

Communication Settings

Port No. Auto

Timeout (sec)

Retry


Wait To Send (ms)

Device-Specific Settings

Allowable Number of Devices/PLCs [Add Device](#)

No.	Device Name	Settings	Add Indirect Device
1	PLC1	Series=H3U,IP Address=195.168.000.001,Port No.=502	<input type="button" value="Add"/>

◆ 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.

Individual Device Settings

PLC1

Series

If you change the series, please reconfirm all address settings.

IP Address

Port No.

◆ 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.

■ Settings of External Device

Use Shenzhen Inovance technology's setting tool (AutoShop) and DIP switches to configure communication settings on the External Device.

Refer to your External Device manual for details.

◆ Setting Tool Setup

- 1 Start up the setting tool.
- 2 In [Project Manager], from [Communication Config] double-click [Ethernet].
- 3 Set the [IP Address] as follows.

Setting Items	Setting Value
IP	192.168.0
Subnet	255.255.255.0

- 4 Click [OK].

◆ Set up CPU

Use DIP switches to set the fourth octet of the IP address.

DIP switch	Setting Value	Description
3	OFF	The fourth octet: 1 (= 000001)
4	OFF	
5	OFF	
6	OFF	
7	OFF	
8	ON	

◆ Notes

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

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.

■ Settings of External Device

Use Shenzhen Inovance technology's setting tool (AutoShop) and rotary switches to configure communication settings on the External Device.

Refer to your External Device manual for details.

◆ Setting Tool Setup

- 1 Start up the setting tool.
- 2 In [Project Manager], from [Communication Config] double-click [Ethernet].
- 3 Set the [IP Address] as follows.

Setting Items	Setting Value
IP	192.168.0
Subnet	255.255.255.0

- 4 Click [OK].

◆ Set up CPU

Use rotary switches to set the fourth octet of the IP address.

Rotary switch	Setting Value	Description
1 (x16)	0	The fourth octet: 1
0 (x1)	1	

◆ Notes

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

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/PLC 1

Summary [Change Device/PLC](#)

Manufacturer: Shenzhen Inovance technology Series: Modbus TCP Port: Ethernet (TCP)

Text Data Mode: 1 [Change](#)

Communication Settings

Port No.: 1024 Auto

Timeout: 3 (sec)

Retry: 0

Wait To Send: 0 (ms) [Default](#)

Device-Specific Settings

Allowable Number of Devices/PLCs: 16 [Add Device](#)

No.	Device Name	Settings	Add Indirect Device
1	PLC1	Series=H5U,IP Address=195.168.000.001,Port No.=502	

◆ 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.

Individual Device Settings

PLC1

Series: H5U

If you change the series, please reconfirm all address settings.

IP Address: 195.168.0.1

Port No.: 502

[Default](#)

[OK \(O\)](#) [Cancel](#)

◆ 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.

■ Settings of External Device

Use Shenzhen Inovance technology's setting tool (AutoShop) to configure communication settings on the External Device.

Refer to your External Device manual for details.

- 1 Start up the setting tool.
- 2 From the [Tools] menu, select [Communication Setting].
- 3 Click [Change IP].
- 4 In the [New IP Address] field enter "192.168.0.1" and click [Change IP].
- 5 When a message appears declaring the IP address has changed, click [OK].
- 6 In the [Subnet mask] field enter "255.255.255.0".

◆ Notes

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

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 5)

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].

Device/PLC 1

Summary [Change Device/PLC](#)

Manufacturer Series Port

Text Data Mode [Change](#)

Communication Settings

Port No. Auto

Timeout (sec)

Retry

Wait To Send (ms)

Device-Specific Settings

Allowable Number of Devices/PLCs 16 [Add Device](#)


No.	Device Name	Settings	Add Indirect Device
1	<input type="text" value="PLC1"/>	<input type="text" value="Series=H3U,IP Address=195.168.000.001,Port No.=50"/>	<input type="button" value="Add Indirect Device"/>

Setup Items	Setup Description
Port No.	Enter a port number of the Display, using 1024 to 65535. Check into [Auto], and a port number is set automatically.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which Display waits for the response from 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.

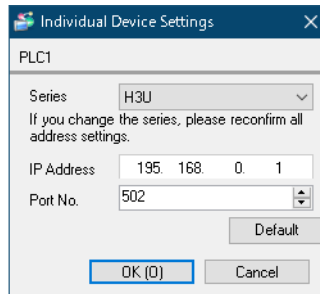
NOTE • Refer to the GP-Pro EX Reference Manual for Indirect Device.

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.
IP Address	Set IP address of the External Device. <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">NOTE</div> <ul style="list-style-type: none"> • Check with a network administrator about IP address. Do not set the duplicate IP address.
Port No.	Set port number of the External Device.

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"

- The number of the setup items to be displayed for 1 page in the offline mode depends on the Display in use. Please refer to the Reference manual for details.

■ 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.

Comm.	Device			
Modbus TCP			[TCP]	Page 1/1
Port No.	<input type="radio"/> Fixed <input checked="" type="radio"/> Auto	1024	▼	▲
Timeout(s)		3	▼	▲
Retry		0	▼	▲
Wait To Send(ms)		0	▼	▲
	Exit		Back	2020/01/06 10:50:24

Setup Items	Setup Description
Port No.	Enter a port number of the Display. Select either of "Fixed" "Auto". Enter a port number of the Display with "1024-65535", when select "Fixed". Assign automatically without affecting the input value, when select "Auto".
Timeout	Use an integer from 1 to 127 to enter the time (s) for which Display waits for the response from 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].


Comm.	Device			
Modbus TCP		[TCP]	Page 1/1	
Device/PLC Name	PLC1 ▼			
Series	H3U			
IP Address	192 168 0 1			
Port No.	502 ▼ ▲			
	Exit		Back	2020/01/06 10:50:29



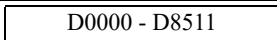
Setup Items	Setup Description
Device/PLC Name	Select the External Device for device setting. Device name is a title of External Device set with GP-Pro EX.(Initial value [PLC1])
Series	Display the series of the External Device.
IP Address	Set IP address of the External Device. <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">NOTE</div> <ul style="list-style-type: none"> • Check with a network administrator about IP address. Do not set the duplicate IP address.
Port No.	Set port number of the External Device.

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 H3U Series

 This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Input Relay	X000 - X377	-	[L/H]	
Output Relay	Y000 - Y377	-		
Internal Relay	M0000 - M7679	-		
Special Relay	M8000 - M8511	-		
Special Relay	SM0000 - SM1023	-		
State Relay	S0000 - S4095	-		
Timer Contact	T000 - T511	-		
Timer Register	-	T000 - T511		
Counter Contact	C000 - C255	-		
Counter Register	-	C000 - C199		
		C200 - C255		*1
Data Register	-	 D0000 - D8511		
Special Register	-	SD0000 - SD1023		
Extension Register	-	R00000 - R32767		


*1 32-bit device



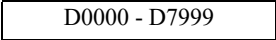
NOTE

- 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 H5U Series

 This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Input Relay	X0000 - X1777	-	L / H	
Output Relay	Y0000 - Y1777	-		
Internal Relay	M0000 - M7999	-		
State Relay	S0000 - S4095	-		
Internal Relay	B00000 - B32767	-		
Data Register	-	 D0000 - D7999		
Extension Register	-	R00000 - R32767		

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.

Device	Device Name	Device Code (HEX)	Address Code
Timer Register	T	0060	Word Address
Counter Register	C	0061 ^{*1}	Word Address
		0062 ^{*2}	Word Address
Data Register	D	0063	Word Address
Special Register	SD	0064	Word Address
Extension Register	R	0065	Word Address

*1 Device code for C000 to C199

*2 Device code for C200 to C255

7 Error Messages

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

Item	Description
No.	Error No.
Device Name	Name of External Device where error occurs. Device name is a title of External Device set with GP-Pro EX.((Initial value [PLC1])
Error Message	Displays messages related to the error which occurs.
Error Occurrence Area	<p>Displays IP address or device address of External Device where error occurs, or error codes received from External Device.</p> <p>NOTE</p> <ul style="list-style-type: none"> • IP address is displayed such as "IP address (Decimal): MAC address (Hex)". • Device address is displayed such as "Address: Device address". • Received error codes are displayed such as "Decimal [Hex]".

Display Examples of Error Messages

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

NOTE

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