MODBUS SIO Master Driver

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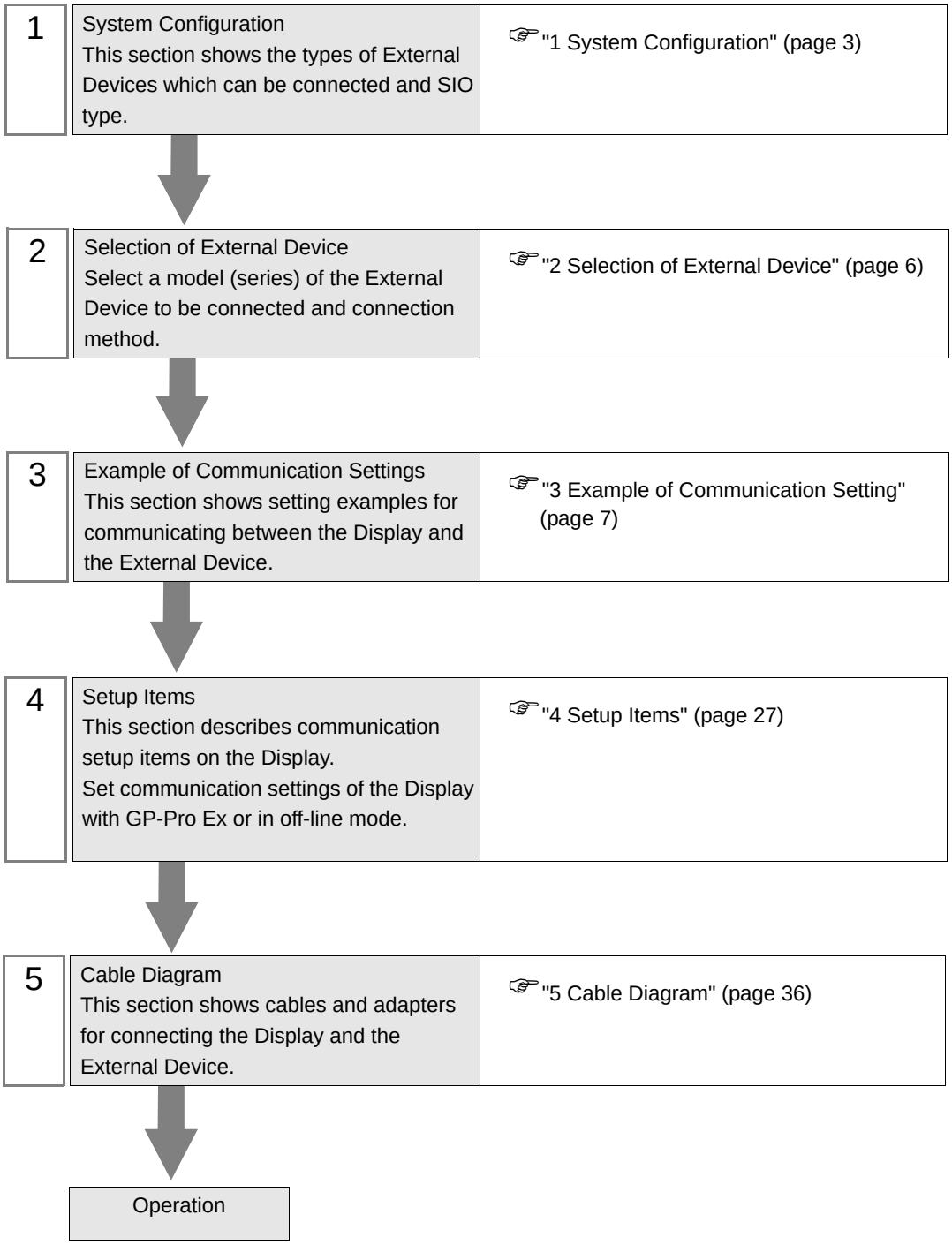
Introduction

This manual describes how to connect the Display (GP3000 series) 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 Schneider Electric Industries and the Display are connected is shown.

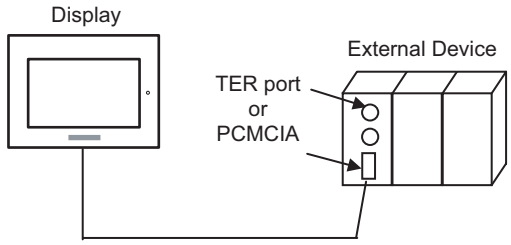
Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
Micro	TSX 37 05 028DR1 TSX 37 08 056DR1 TSX 37 10 128DT1 TSX 37 10 128DR1 TSX 37 10 128DTK1 TSX 37 10 164DTK1 TSX 37 10 028AR1 TSX 37 10 028DR1	TER port on CPU	RS232C	Setting Example 1 (page 7)	Cable Diagram 2 (page 41)
		Accessory box TSX SCA 50	RS485 (2wire)	Setting Example 3 (page 11)	Cable Diagram 3 (page 42)
	TSX 37 21 101 TSX 37 22 101 TSX 37 21 001 TSX 37 22 001	TER port on CPU	RS232C	Setting Example 1 (page 7)	Cable Diagram 2 (page 41)
		Accessory box TSX SCA 50	RS485 (2wire)	Setting Example 3 (page 11)	Cable Diagram 3 (page 42)
		PCMCIA card for RS232C TSX SCP 111	RS232C	Setting Example 2 (page 9)	Cable Diagram 4 (page 47)
		PCMCIA card for RS485 TSX SCP 114	RS485 (2wire)	Setting Example 3 (page 11)	Cable Diagram 5 (page 48)
Premium	TSX P57 103M TSX P57 153M TSX P57 203M TSX P57 253M TSX P57 303M TSX P57 353M TSX P57 453M	PCMCIA card for RS232C TSX SCP 111	RS232C	Setting Example 4 (page 13)	Cable Diagram 4 (page 47)
		PCMCIA card for RS485 TSX SCP 114	RS485 (2wire)	Setting Example 5 (page 15)	Cable Diagram 5 (page 48)
Twido	TWD LCAA 10DRF TWD LCAA 16DRF TWD LCAA 24DRF TWD LMDA 20DTK TWD LMDA 20DUK TWD LMDA 20DRT TWD LMDA 40DTK TWD LMDA 40DUK	Programming port on CPU	RS232C	Setting Example 6 (page 17)	Cable Diagram 2 (page 41)
		TWD NAC 485T	RS485 (2wire)	Setting Example 7 (page 19)	Cable Diagram 1 (page 36)
Quantum	140 CPU 113 02 140 CPU 113 03 140 CPU 434 12A 140 CPU 534 14A	Modbus port on CPU	RS232C	Setting Example 8 (page 21)	Cable Diagram 6 (page 51)

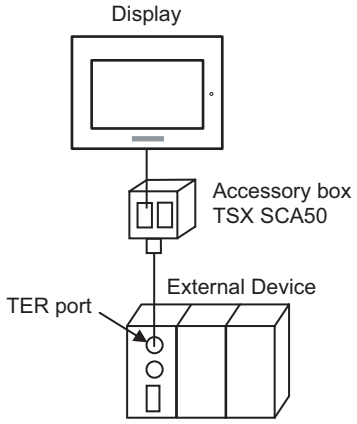
Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
Momentum	171 CCS 700 00 171 CCS 700 10 171 CCS 760 00 171 CCC 760 10	Modbus port 1 on CPU	RS232C	Setting Example 9 (page 23)	Cable Diagram 7 (page 52)
	171 CCS 780 00 171 CCC 780 10	Modbus port 1 on CPU	RS232C	Setting Example 9 (page 23)	Cable Diagram 7 (page 52)
		Modbus port 2 on CPU	RS485 (4wire)	Setting Example 10 (page 25)	Cable Diagram 8 (page 53)
	171 CCC 980 20 171 CCC 980 30	Modbus port 2 on CPU	RS485 (4wire)	Setting Example 10 (page 25)	Cable Diagram 8 (page 53)

■ Connection Configuration

◆ Micro Series

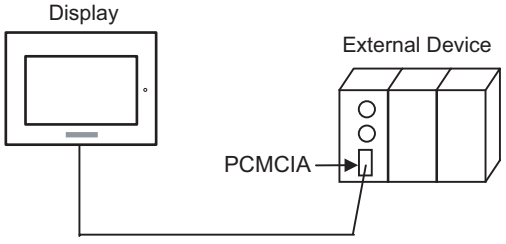
- 1:1 Connection





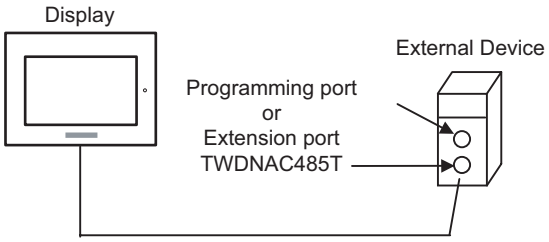
◆ Premium Series

- 1:1 Connection

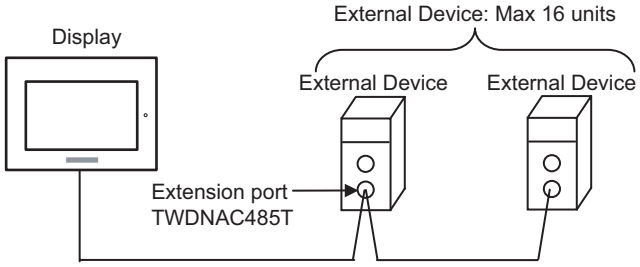


◆ Twido Series

- 1:1 Connection

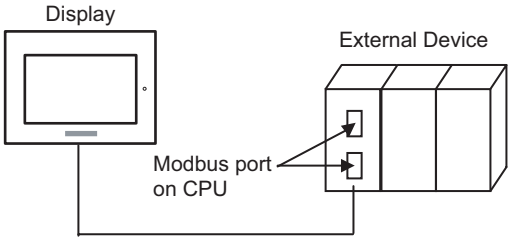


- 1:n Connection



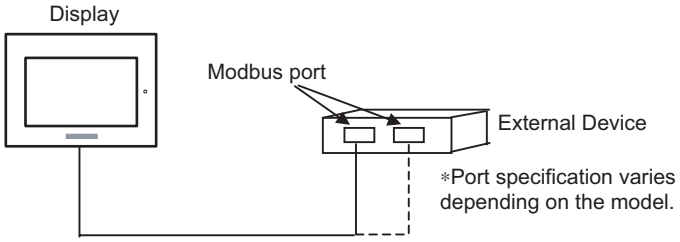
◆ Quantum Series

- 1:1 Connection



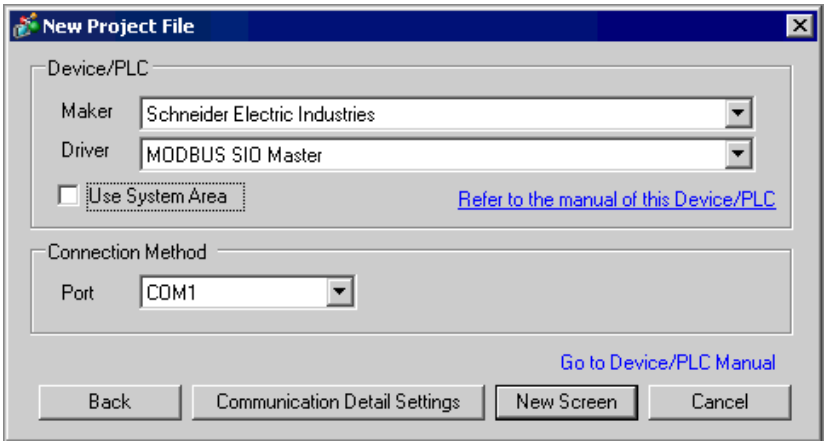
◆ Momentum Series

- 1:1 Connection



2 Selection of External Device

Select the External Device to be connected to the Display.



Setup Items	Setup Description
Maker	Select the maker of the External Device to be connected. Select "Schneider Electric Industries".
Driver	Select a model (series) of the External Device to be connected and connection method. Select "MODBUS SIO Master". Check the External Device which can be connected in "MODBUS SIO Master" in system configuration. ☞"1 System Configuration" (page 3)
Use System Area	Check this option when you synchronize the system data area of Display and the device (memory) of External Device. When synchronized, you can use the ladder program of External Device to switch the display or display the window on the display. Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (only for direct access method)" This can be also set with GP-Pro EX or in off-line mode of Display. Cf. GP-Pro EX Reference Manual " 6.13.6 Setting Guide of [System Setting Window]■[Main Unit Settings] Settings Guide◆System Area Setting" Cf. GP3000 Series User Manual "4.3.6 System Area Setting"
Port	Select the Display port to be connected to the External Device.

3 Example of Communication Setting

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

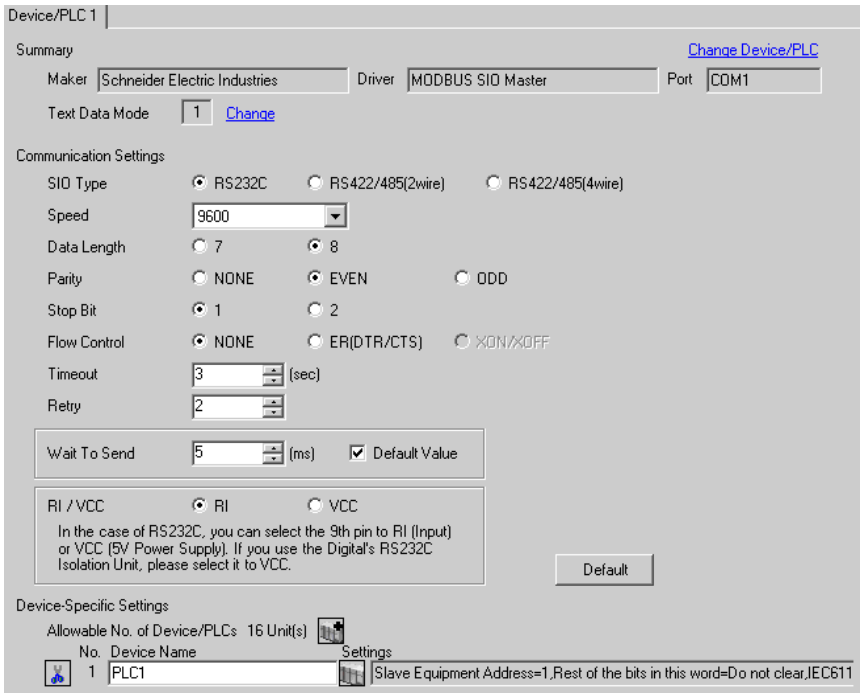
When using MODBUS Series, use GP-Pro EX and the ladder software to set as below.

3.1 Setting Example 1

■ Settings of GP-Pro EX

◆ Communication Settings

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

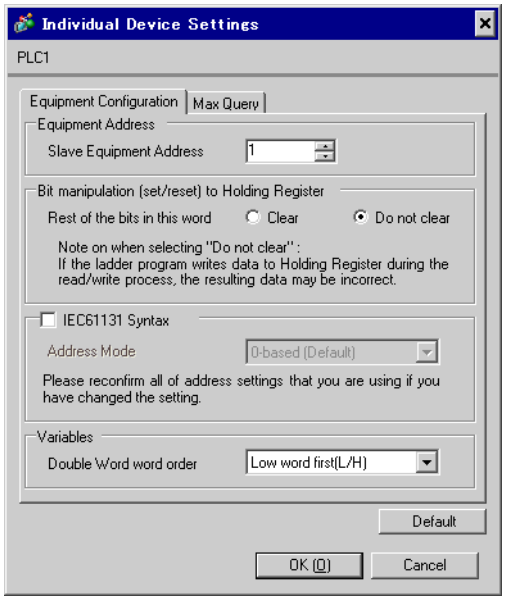


◆ Device Setting

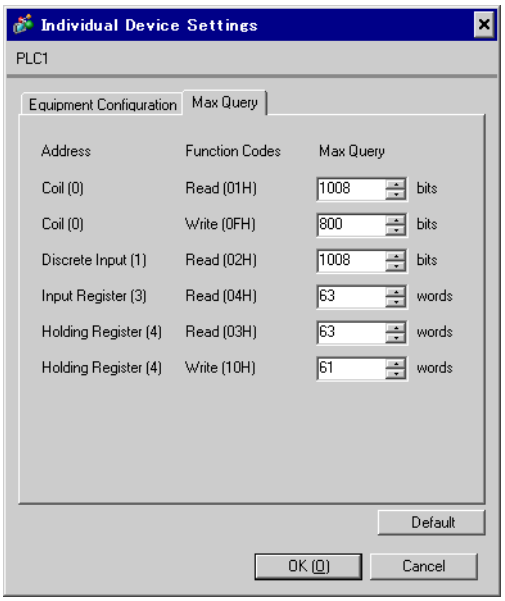
To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

[Equipment Configuration] tab



[Max Query] tab



■ Settings of External Device

Use the ladder software "PL7 PRO" for communication settings.

Double-click "Hardware Configuration" from "Configuration" in "Application Browser" of "PL7 PRO". Next, double-click "Comm" in the "Configuration" dialog box. Perform the settings in the displayed dialog box.

Setup Items	Setup Description	
CHANNEL	CHANNEL 0	
	MODBUS/JBUS LINK	MAST
Slave number	1	
Transmission speed	9600bps	
Delay between characters	5msec	
Data	RTU (8 bit)	
Stop	1 bit	
Parity	Even	

◆ Notes

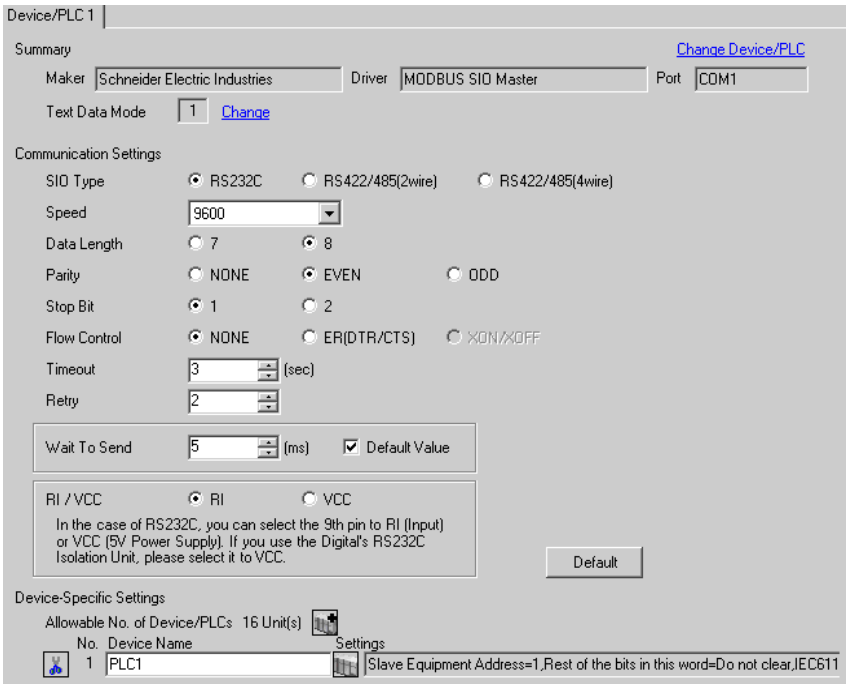
- Please refer to the manual of the ladder software for more detail on other setting description.

3.2 Setting Example 2

■ Settings of GP-Pro EX

◆ Communication Settings

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

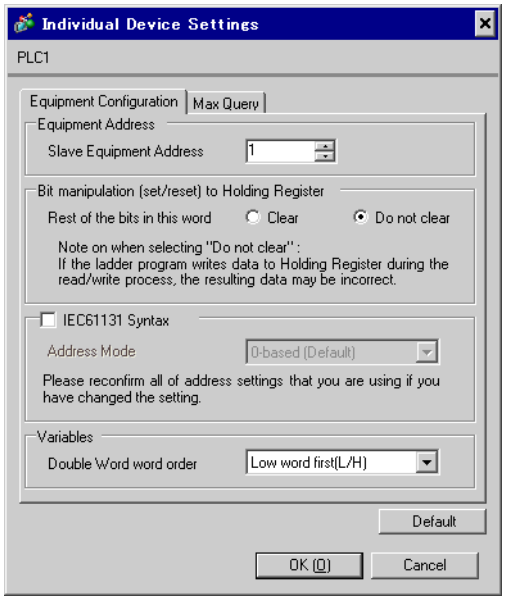


◆ Device Setting

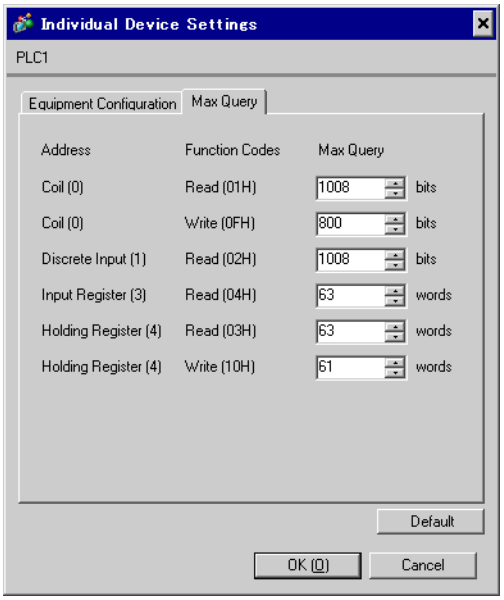
To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

[Equipment Configuration] tab



[Max Query] tab



■ Settings of External Device

Use the ladder software "PL7 PRO" for communication settings.

Double-click "Hardware Configuration" from "Configuration" in "Application Browser" of "PL7 PRO". Next, double-click "Comm" in the "Configuration" dialog box. Perform the settings in the displayed dialog box.

Setup Items	Setup Description	
CHANNEL	CHANNEL 1	
	TSX SCP 111 RS232 MP PCMCIA CARD	
	MODBUS/JBUS LINK	MAST
Slave number	1	
Type	Slave	
Transmission speed	9600bps	
Delay between characters	4msec	
Data	RTU (8 bit)	
Stop	1 bit	
Parity	Even	

◆ Notes

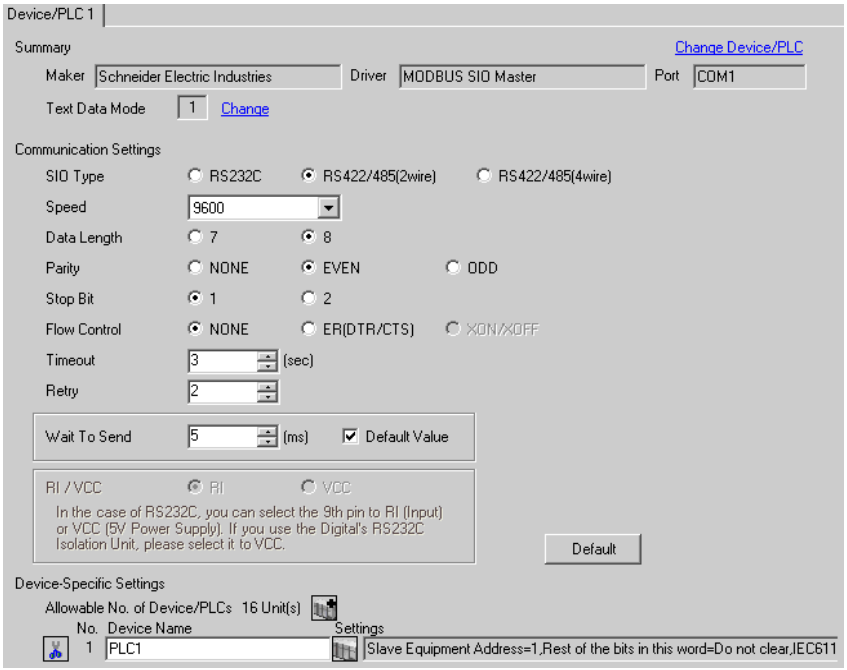
Please refer to the manual of the ladder software for more detail on other setting description.

3.3 Setting Example 3

■ Settings of GP-Pro EX

◆ Communication Settings

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

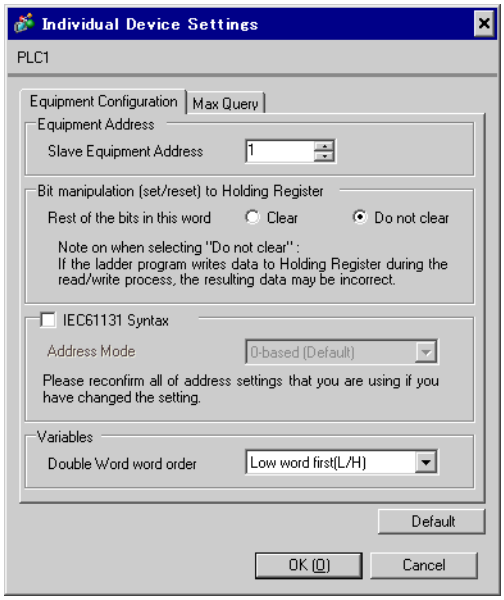


◆ Device Setting

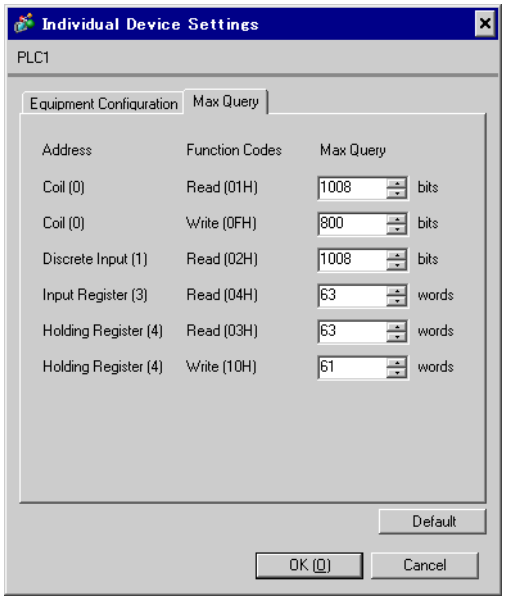
To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

[Equipment Configuration] tab



[Max Query] tab



■ Settings of External Device

Use the ladder software "PL7 PRO" for communication settings.

Double-click "Hardware Configuration" from "Configuration" in "Application Browser" of "PL7 PRO". Next, double-click "Comm" in the "Configuration" dialog box. Perform the settings in the displayed dialog box.

Setup Items	Setup Description	
CHANNEL	CHANNEL 1	
	TSX SCP 114 RS485 MP PCMCIA CARD	
	MODBUS/JBUS LINK	MAST
Slave number	1	
Type	Slave	
Transmission speed	9600bps	
Delay between characters	4msec	
Data	RTU (8 bit)	
Stop	1 bit	
Parity	Even	

◆ Notes

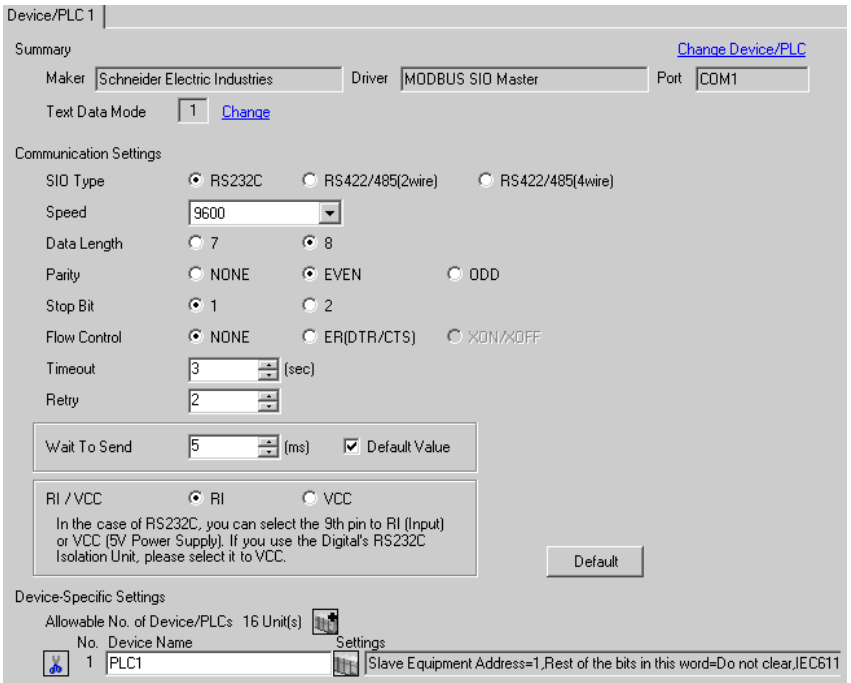
Please refer to the manual of the ladder software for more detail on other setting description.

3.4 Setting Example 4

■ Settings of GP-Pro EX

◆ Communication Settings

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

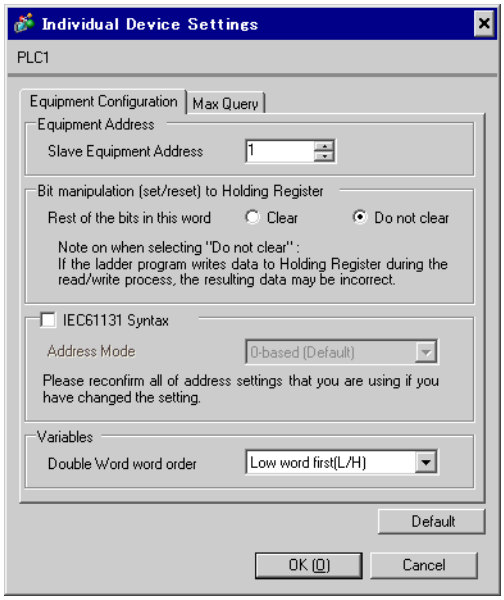


◆ Device Setting

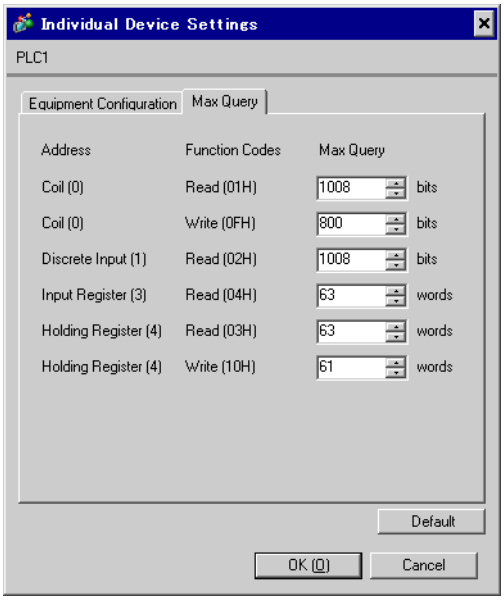
To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

[Equipment Configuration] tab



[Max Query] tab



■ Settings of External Device

Use the ladder software "PL7 PRO" for communication settings.

Double-click "Hardware Configuration" from "Configuration" in "Application Browser" of "PL7 PRO". Next, double-click "Comm" in the "Configuration" dialog box. Perform the settings in the displayed dialog box.

Setup Items	Setup Description	
CHANNEL	CHANNEL 1	
	TSX SCP 111 RS232 MP PCMCIA CARD	
	MODBUS/JBUS LINK	MAST
Type	Slave	
Slave number	1	
Transmission speed	9600bps	
Delay between characters	4msec	
Data	RTU (8 bit)	
Stop	1 bit	
Parity	Even	

◆ Notes

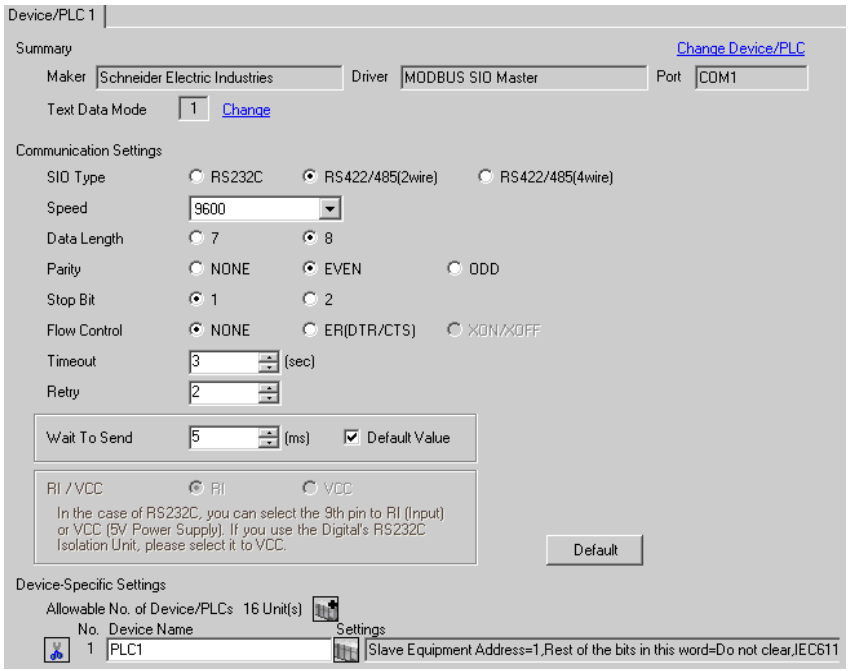
- Please refer to the manual of the ladder software for more detail on other setting description.

3.5 Setting Example 5

■ Settings of GP-Pro EX

◆ Communication Settings

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

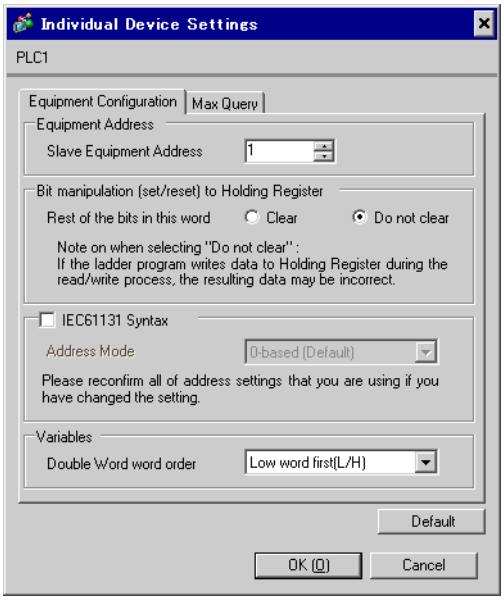


◆ Device Setting

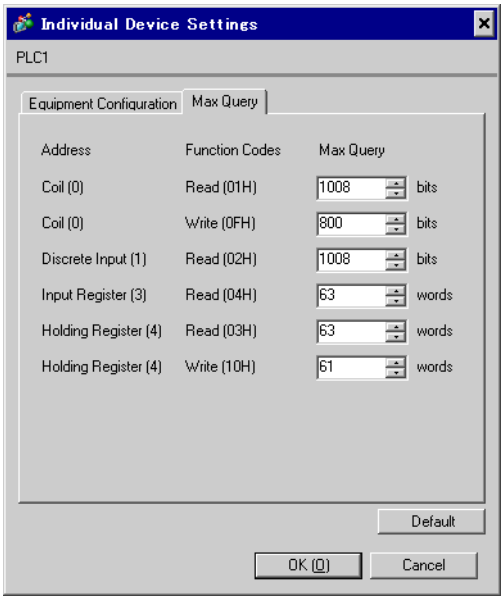
To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

[Equipment Configuration] tab



[Max Query] tab



■ Settings of External Device

Use the ladder software "PL7 PRO" for communication settings.

Double-click "Hardware Configuration" from "Configuration" in "Application Browser" of "PL7 PRO". Next, double-click "Comm" in the "Configuration" dialog box. Perform the settings in the displayed dialog box.

Setup Items	Setup Description	
CHANNEL	CHANNEL 1	
	TSX SCP 114 RS485 MP PCMCIA CARD	
	MODBUS/JBUS LINK	MAST
Type	Slave	
Slave number	1	
Transmission speed	9600bps	
Delay between characters	4msec	
Data	RTU (8 bit)	
Stop	1 bit	
Parity	Even	

◆ Notes

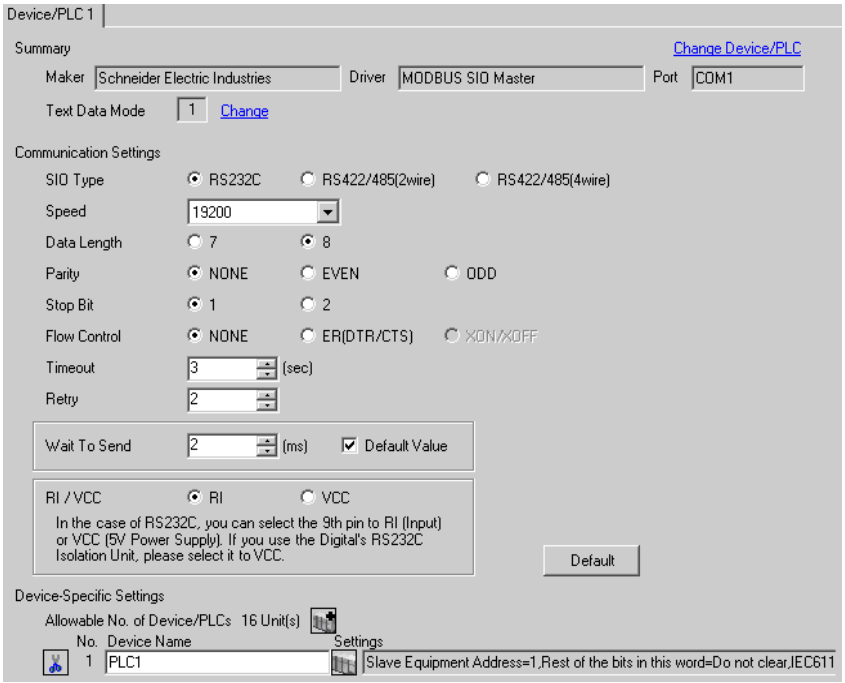
Please refer to the manual of the ladder software for more detail on other setting description.

3.6 Setting Example 6

■ Settings of GP-Pro EX

◆ Communication Settings

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

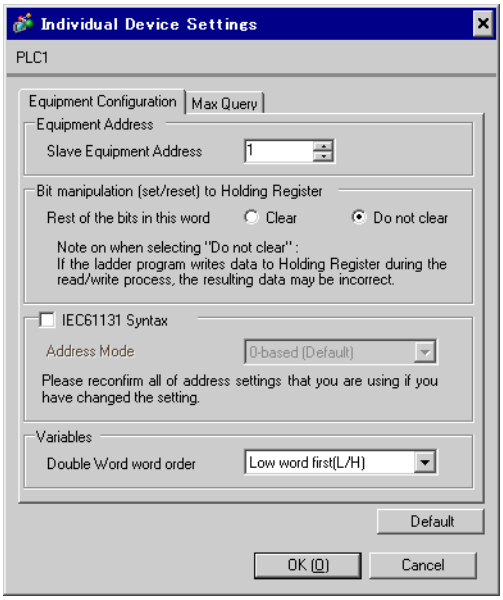


◆ Device Setting

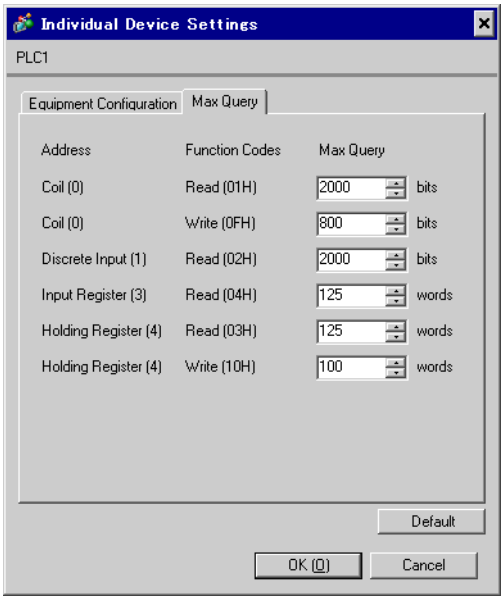
To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

[Equipment Configuration] tab



[Max Query] tab



■ Settings of External Device

Use the ladder software "TwidoSoft" for communication settings.

Select "Hardware" from "TWDLMDA40DUK" in "Application Browser" of "TwidoSoft", and right-click on "Port 1 : Remote Link, 1" to select "Edit Controller Comm Setup...".

Perform the settings in the "Controller Communication Setup" dialog box displayed next.

Setup Items		Setup Description
Protocol	Type	Modbus
	Address	1
Parameters	Baud Rate	19200
	Data Bits	8
	Parity	None
	Stop Bits	1
End of Frame		10
Response Timeout		10 x 100msec
Frame Timeout		4msec

◆ Notes

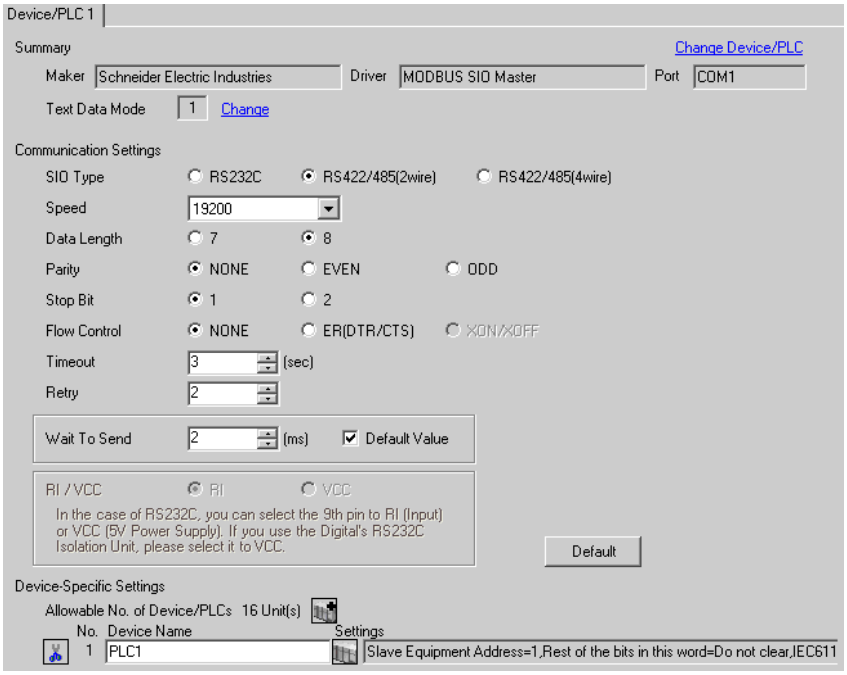
Please refer to the manual of the ladder software for more detail on other setting description.

3.7 Setting Example 7

■ Settings of GP-Pro EX

◆ Communication Settings

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

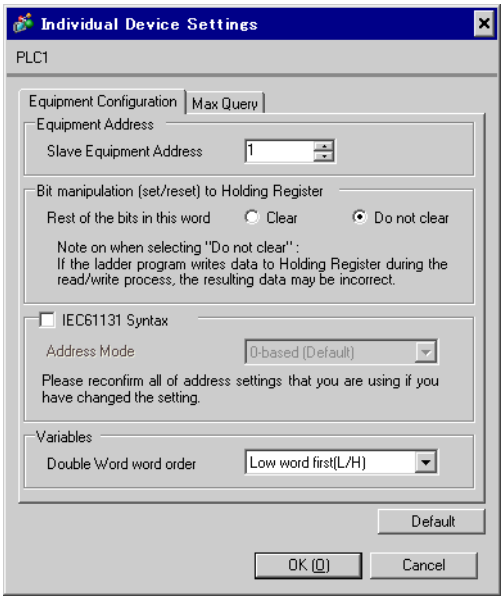


◆ Device Setting

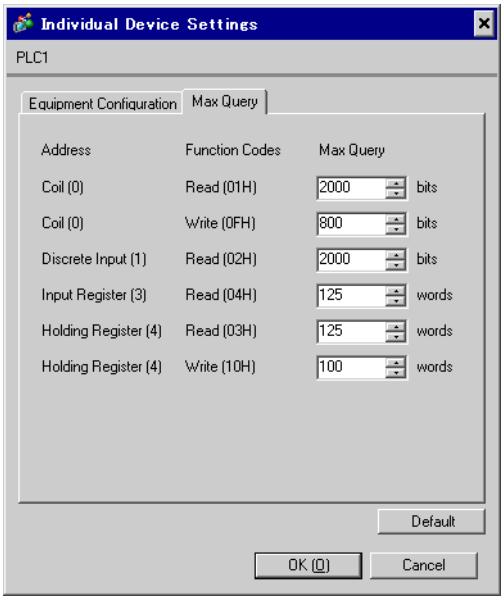
To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

[Equipment Configuration] tab



[Max Query] tab



■ Settings of External Device

Use the ladder software "TwidoSoft" for communication settings.

Right-click on "Hardware" from "TWDLMDA40DUK" in "Application Browser" of "TwidoSoft" to select "Add Option...". Right-click on "Port 2 : Modbus, 1" added to "Hardware" in "TWDLMDA40DUK" to select "Edit Controller Comm Setup...".

Perform the settings in the "Controller Communication Setup" dialog box displayed next.

Setup Items		Setup Description
Protocol	Type	Modbus
	Address	1
Parameters	Baud Rate	19200
	Data Bits	8
	Parity	None
	Stop Bits	1
End of Frame		10
Response Timeout		10 x 100msec
Frame Timeout		10msec

◆ Notes

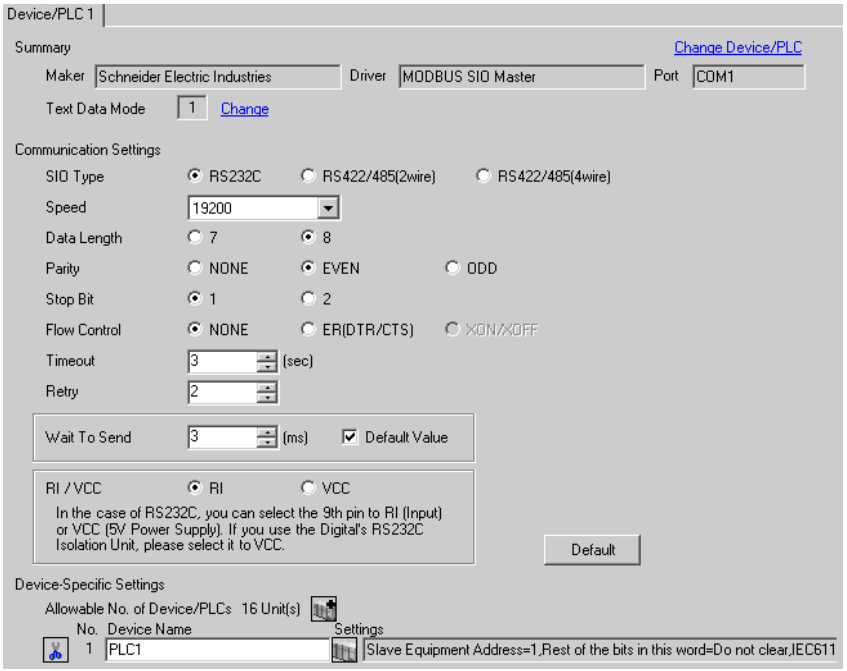
Please refer to the manual of the ladder software for more detail on other setting description.

3.8 Setting Example 8

■ Settings of GP-Pro EX

◆ Communication Settings

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

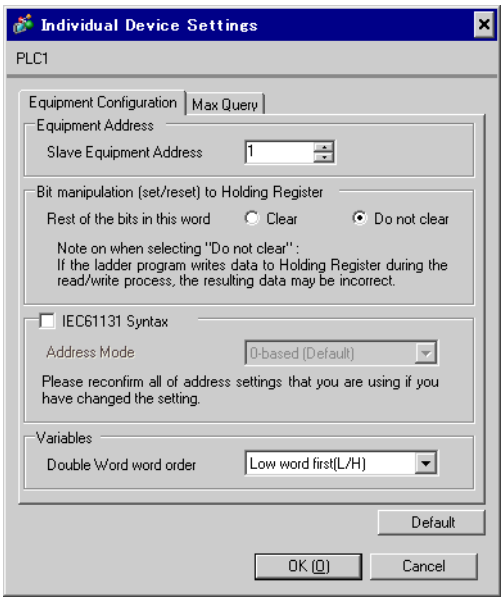


◆ Device Setting

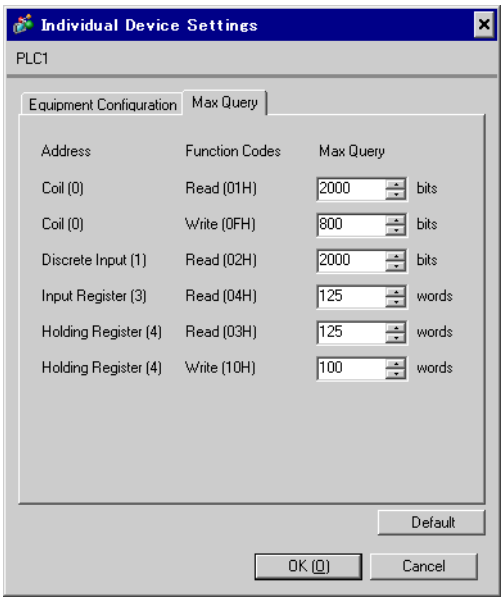
To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

[Equipment Configuration] tab



[Max Query] tab



■ Settings of External Device

Use the ladder software "Concept" for communication settings.

After selecting the External Device in Quantum Series in "PLC Selection" of "Concept", select "Modbus Port Settings" and perform the settings in the "Modbus Port Settings" dialog box.

Setup Items	Setup Description
Baud	19200
Data Bits	8
Stop Bits	1
Parity	Even
Delay(ms)	10
Address	1
Head slot	0
Mode	RTU
Protocol	RS232

◆ Notes

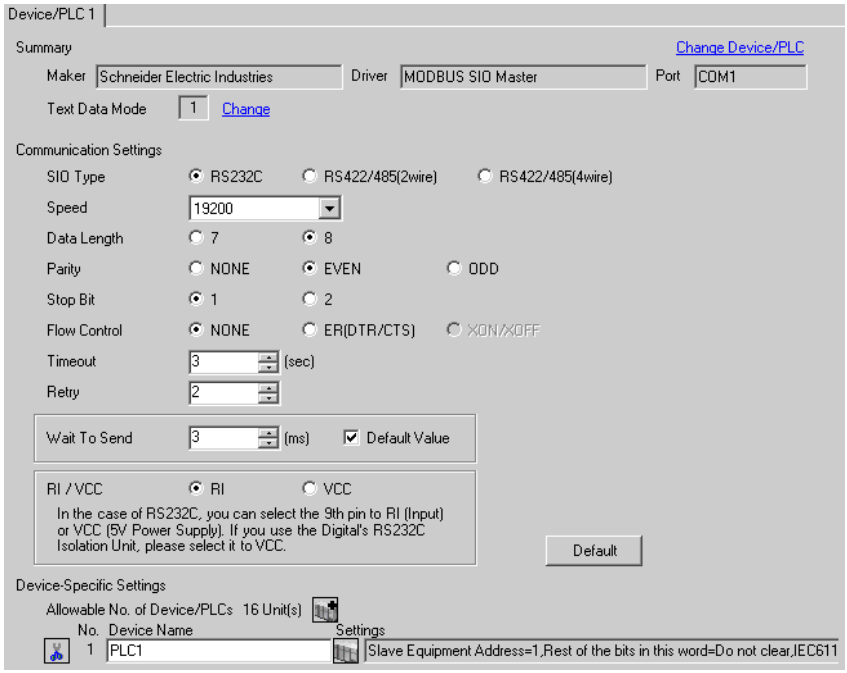
Please refer to the manual of the ladder software for more detail on other setting description.

3.9 Setting Example 9

■ Settings of GP-Pro EX

◆ Communication Settings

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

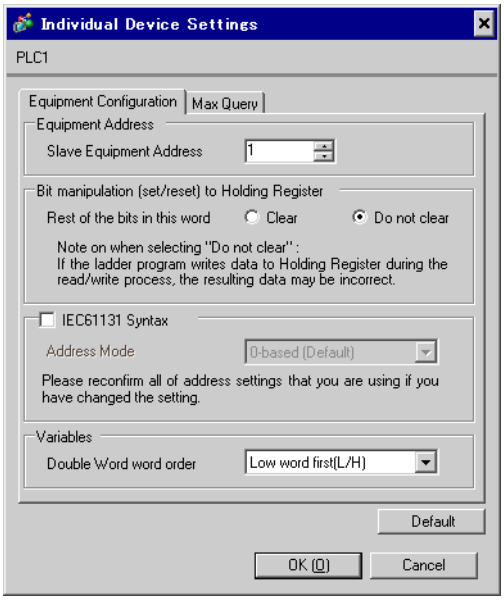


◆ Device Setting

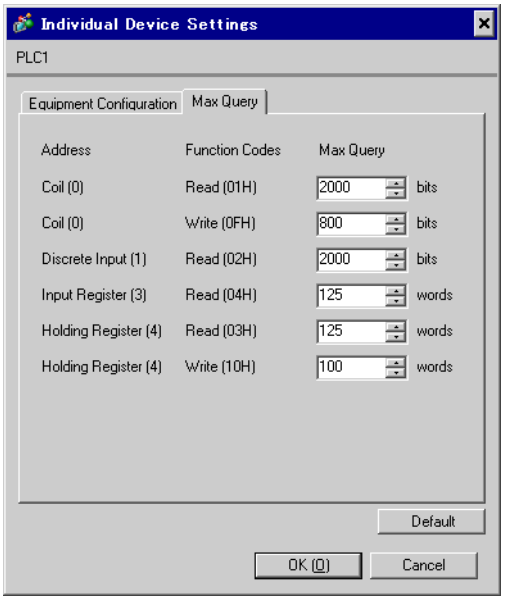
To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

[Equipment Configuration] tab



[Max Query] tab



■ Settings of External Device

Use the ladder software "Concept" for communication settings.

After selecting the External Device in Momentum Series in "PLC Selection" of "Concept", select "Modbus Port Settings" and perform the settings in the "Modbus Port Settings" dialog box.

Setup Items	Setup Description
Baud	19200
Data Bits	8
Stop Bits	1
Parity	Even
Delay(ms)	10
Address	1
Head slot	0
Mode	RTU
Protocol	RS232

◆ Notes

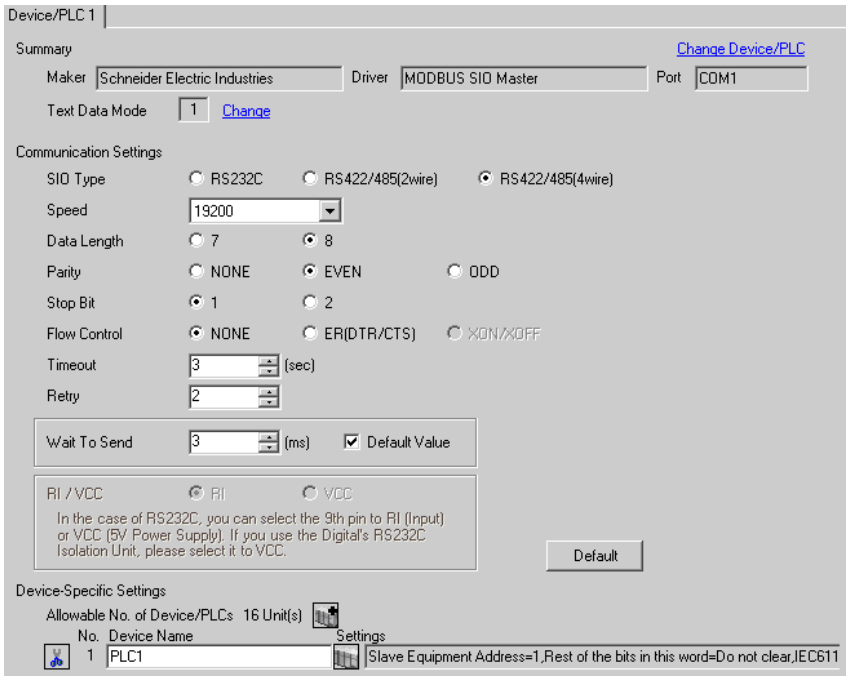
Please refer to the manual of the ladder software for more detail on other setting description.

3.10 Setting Example 10

■ Settings of GP-Pro EX

◆ Communication Settings

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

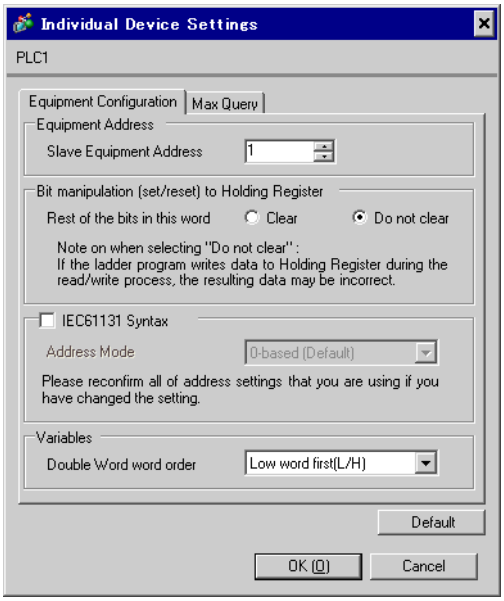


◆ Device Setting

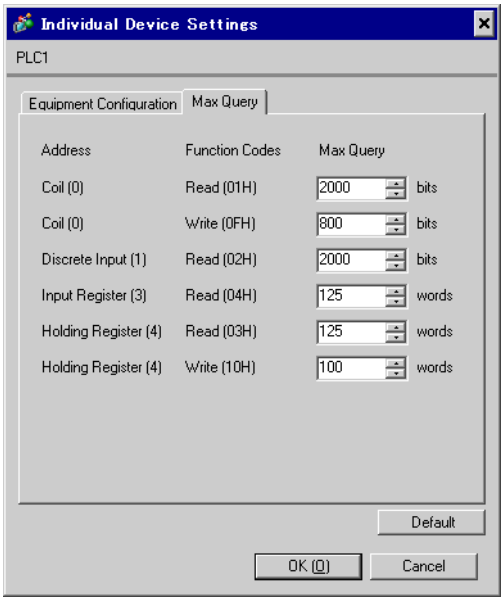
To display the setting screen, click ([Setting]) of External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

[Equipment Configuration] tab



[Max Query] tab



■ Settings of External Device

Use the ladder software "Concept" for communication settings.

After selecting the External Device in Momentum Series in "PLC Selection" of "Concept", select "Modbus Port Settings" and perform the settings in the "Modbus Port Settings" dialog box.

Setup Items	Setup Description
Baud	19200
Data Bits	8
Stop Bits	1
Parity	Even
Delay(ms)	10
Address	1
Head slot	0
Mode	RTU
Protocol	RS485

◆ Notes

Please refer to the manual of the ladder software for more detail on other setting description.

4 Setup Items

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

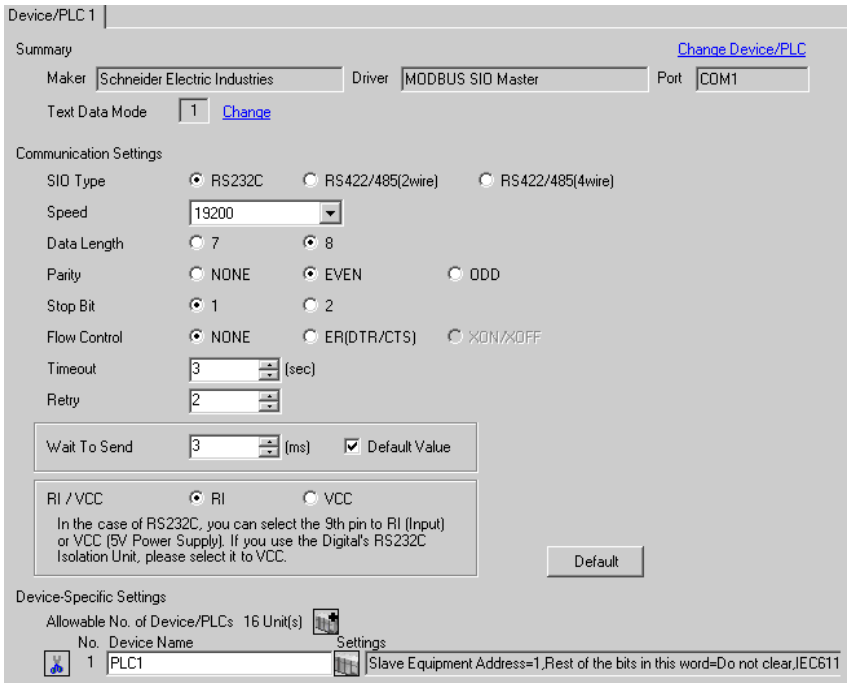
The setting of each parameter must be identical to that of External Device.

☞"3 Example of Communication Setting" (page 7)

4.1 Setup Items in GP-Pro EX

■ Communication Settings

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



Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device.
Speed	Select speed between the External Device and the Display.
Data Length	Select data length.
Parity	Select how to check parity.
Stop Bit	Select stop bit length.
Flow Control	Select the communication control method to prevent overflow of transmission and reception data.
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.

continued to next page

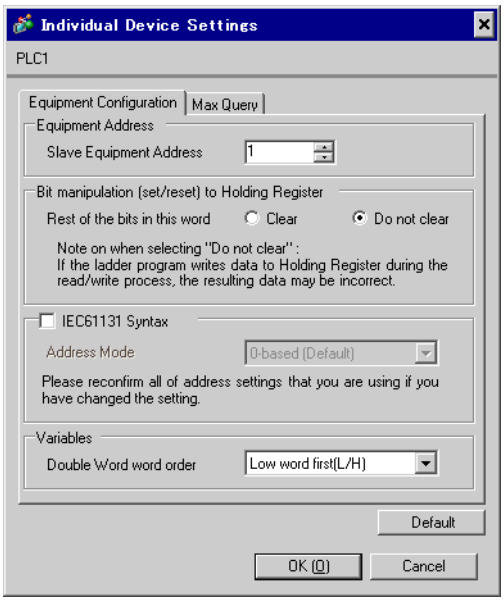
Setup Items	Setup Description
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands. When the check box of the default value is checked, the Wait To Send value automatically changes in the formula below by changing each value for Speed/Data Length/Parity/Stop Bit. $\text{Wait To Send (ms)} = \frac{3500 \times (1 + \text{Data Length} + \text{Stop Bit} + \text{Parity})}{\text{Speed (bps)}}$ Value for the parity setting is shown below. No Parity = 0 Parity Even = 1 Parity Odd = 1
RI/VCC	You can switch RI/VCC of the 9th pin when you select RS232C for SIO type.

◆ Device Setting

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

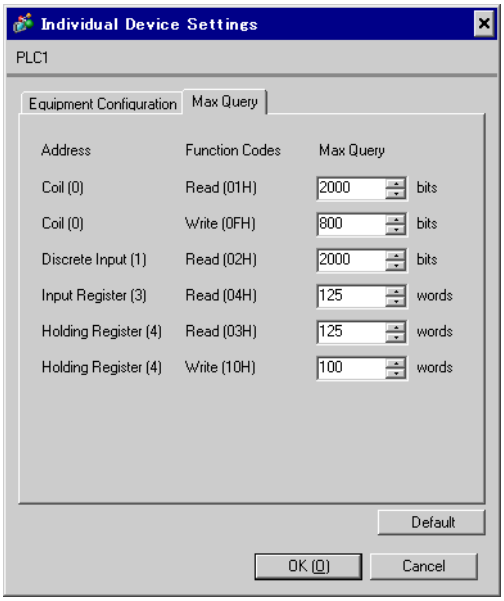
When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

[Equipment Configuration] tab



Setup Items	Setup Description
Slave Equipment Address	Use an integer from 1 to 247 to enter the slave equipment address of the External Device.
Bit manipulation (set / reset) to Holding Resister	From "Clear" or "Do not clear", select treatment of the rest of the bits in the same word when the bit manipulation to Holding Register is performed.
Rest of the bits in this word	
IEC61131 Syntax	Check this item when you use the IEC61131 syntax for variables. In case that you check on, select Address Mode, [0-based] or [1-based].
Double Word word order	Select the order of storing double word data from "Low word first" or "High word first".

[Max Query] tab



Setup Items	Setup Description
Coil Read	Set the number of max data for device [coil] which can be read for one communication, using 16 to 2000 bits.
Coil Write	Set the number of max data for device [coil] which can be written for one communication, using 1 to 800 bits.
Discrete Input Read	Set the number of max data for device [discrete input] which can be read for one communication, using 16 to 2000 bits.
Input Register Read	Set the number of max data for device [input register] which can be read for one communication, using 1 to 125 words.
Holding Register Read	Set the number of max data for device [holding register] which can be read for one communication, using 1 to 125 words.
Holding Register Write	Set the number of max data for device [holding register] which can be written for one communication, using 1 to 100 words.

4.2 Setup Items in Off-Line Mode

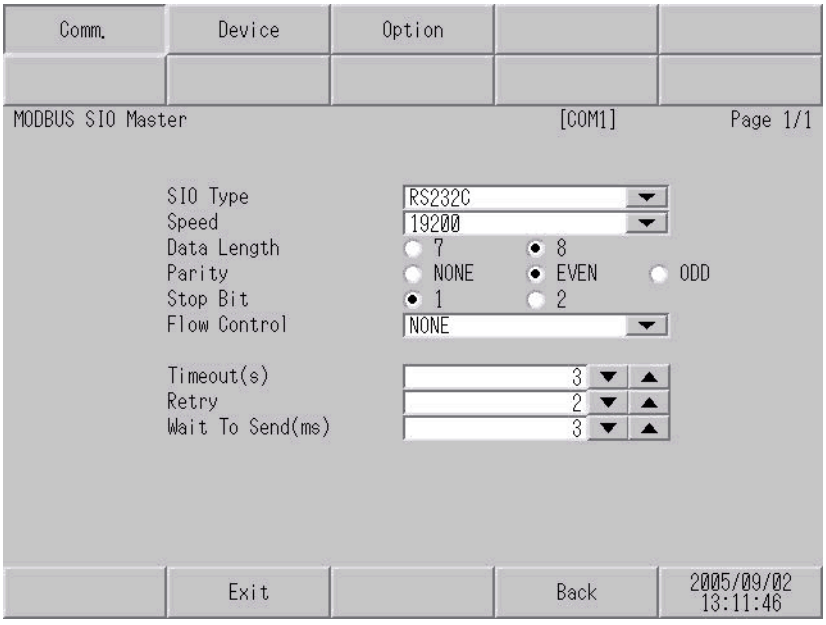
NOTE

- Please refer to GP3000 Series User Manual for more information on how to enter off-line mode or about operation.

  Cf. GP3000 Series User Manual "Chapter 4 Settings"

◆ Communication Settings

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



Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device.
Speed	Select speed between the External Device and the Display.
Data Length	Select data length.
Parity	Select how to check parity.
Stop Bit	Select stop bit length.
Flow Control	Select the communication control method to prevent overflow of transmission and reception data.
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.

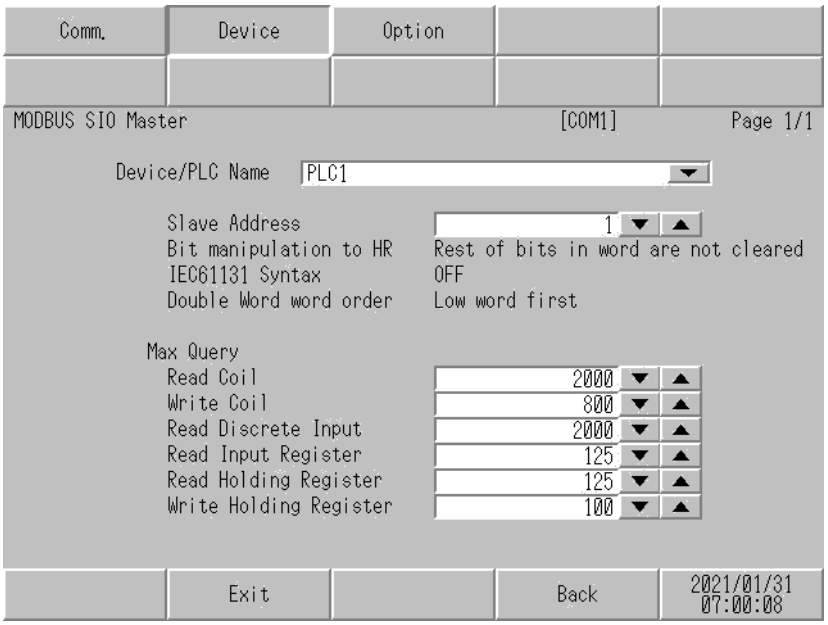
continued to next page

Setup Items	Setup Description
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. When each value of Speed/Data Length/Parity/Stop Bit is changed, calculate the Wait To Send value in the formula below and set it. $\text{Wait To Send (ms)} = \frac{3500 \times (1 + \text{Data Length} + \text{Stop Bit} + \text{Parity})}{\text{Speed (bps)}}$ Value for the parity setting is shown below. No Parity = 0 Parity Even = 1 Parity Odd = 1

◆ 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].

.



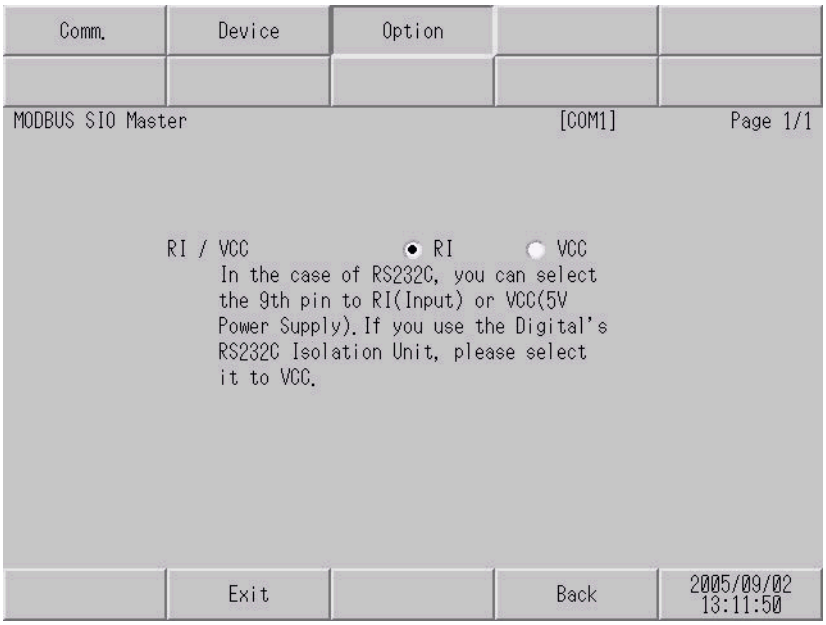
Setup Items	Setup Description
Device/PLC Name	Select the External Device for device setting. Device name is a title of External Device set with GP-Pro EX.(Initial value [PLC1])
Slave Address	Use an integer from 1 to 247 to enter the slave equipment address of the External Device.
Bit manipulation to HR	From "Rest of bits in word are cleared" or "Rest of bits in word are not cleared", select treatment of the rest of the bits in the same word when the bit manipulation to Holding Register is performed. (Not available to set in off-line mode.)
IEC61131 Syntax	Displays the usage status of the currently set IEC61131 syntax in ON/OFF. (Not available in off-line mode.)
Double Word word order	Displays the currently set order of storing double word data from "Low word first" or "High word first". (Not available to set in off-line mode.)
Coil Read	Set the number of max data for device [coil] which can be read for one communication, using 16 to 2000 bits.
Coil Write	Set the number of max data for device [coil] which can be written for one communication, using 1 to 800 bits.
Discrete Input Read	Set the number of max data for device [discrete input] which can be read for one communication, using 16 to 2000 bits.
Input Register Read	Set the number of max data for device [input register] which can be read for one communication, using 1 to 125 words.

continued to next page

Setup Items		Setup Description
Holding Register	Read	Set the number of max data for device [holding register] which can be read for one communication, using 1 to 125 words.
Holding Register	Write	Set the number of max data for device [holding register] which can be written for one communication, using 1 to 100 words.

◆ Option

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 [Option].



Setup Items	Setup Description
RI/VCC	You can switch RI/VCC of the 9th pin when you select RS232C for SIO type.

5 Cable Diagram

The cable diagram shown below may be different from the cable diagram recommended by Schneider Electric Industries. Please be assured there is no operational problem in applying the cable diagram shown in this manual.

- The FG pin of the External Device body must be D-class grounded. Please refer to the manual of the External Device for more details.
- SG and FG are connected inside the Display. When connecting SG to the External Device, design the system not to form short-circuit loop.

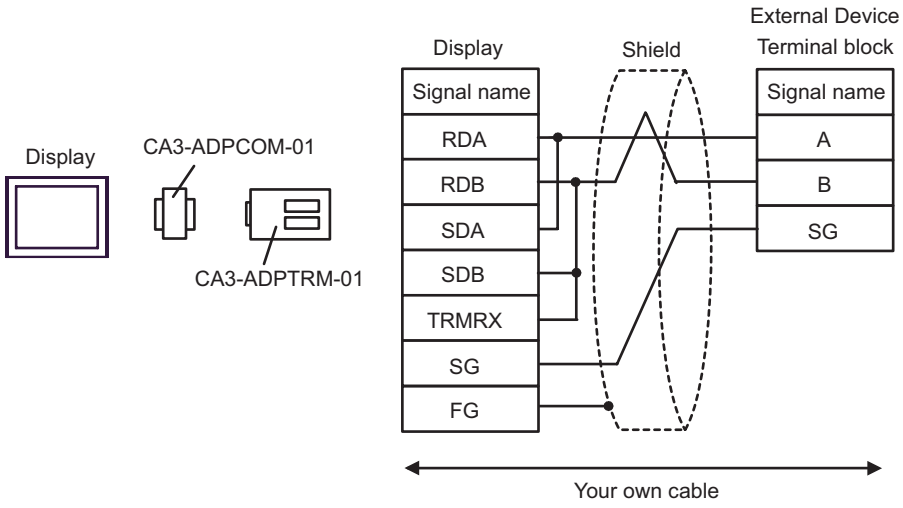
Cable Diagram 1

Display (Connection Port)	Cable		Notes
GP*1 (COM1) AGP-3302 (COM2)	A	COM port conversion adapter (for COM1) by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	The cable length must be 200m or less.
	B	Your own cable	
GP*1 (COM2)	C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	

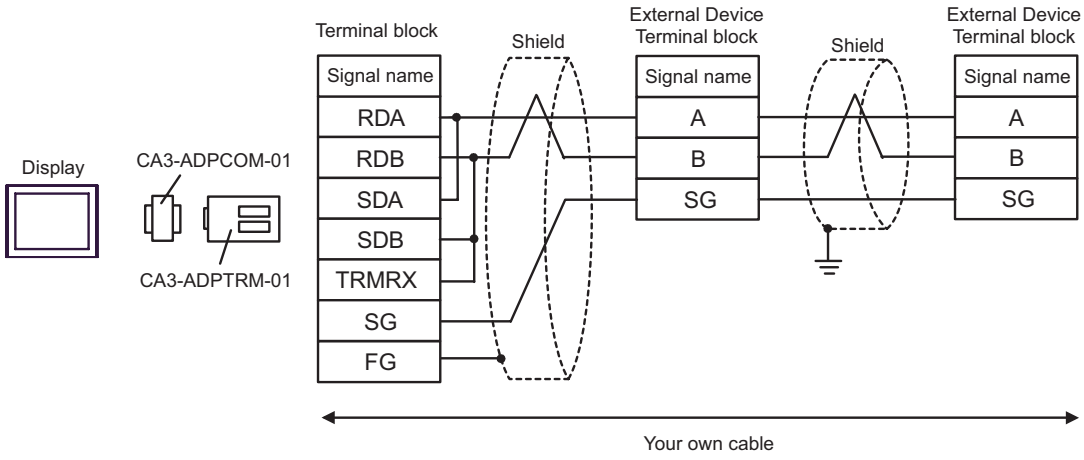
*1 All GP models except AGP-3302

A) When using the COM port conversion adapter (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable

- 1:1 Connection

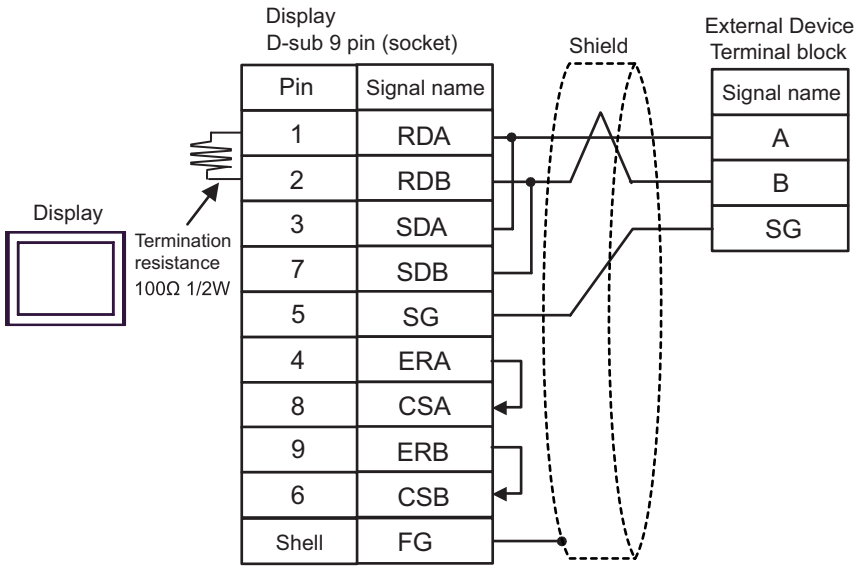


- 1:n Connection

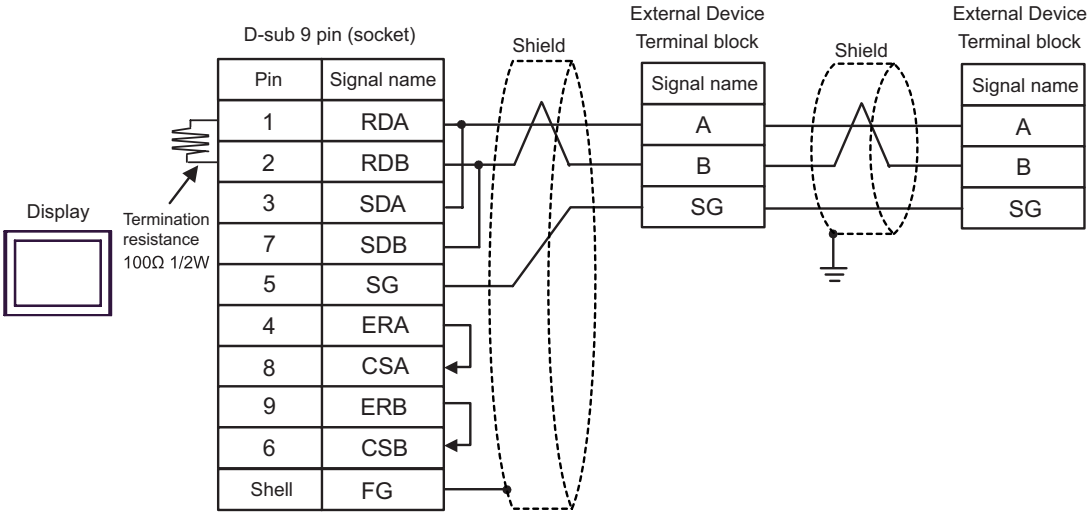


B) When using your own cable

- 1:1 Connection

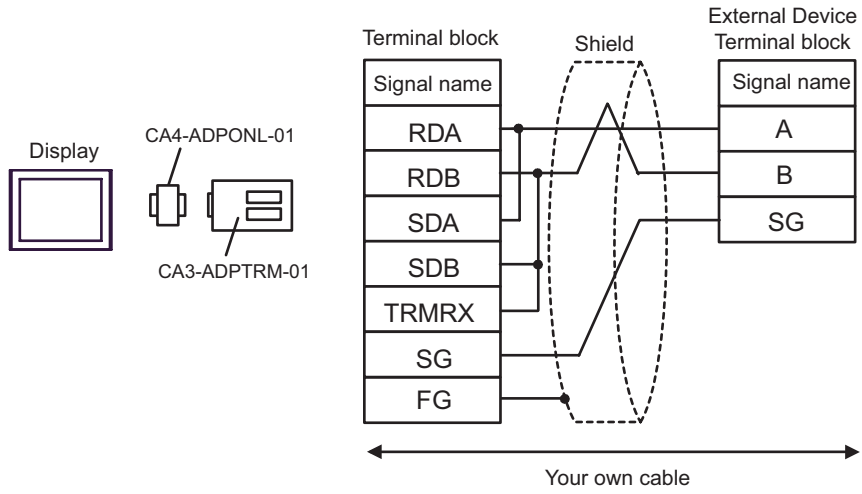


- 1:n Connection

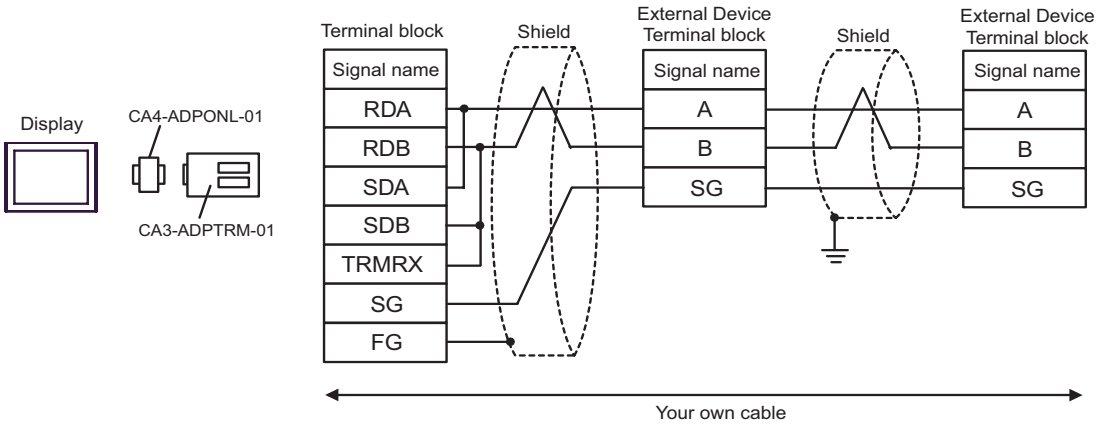


C) When using the online adapter (CA4-ADPONL-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable

- 1:1 Connection

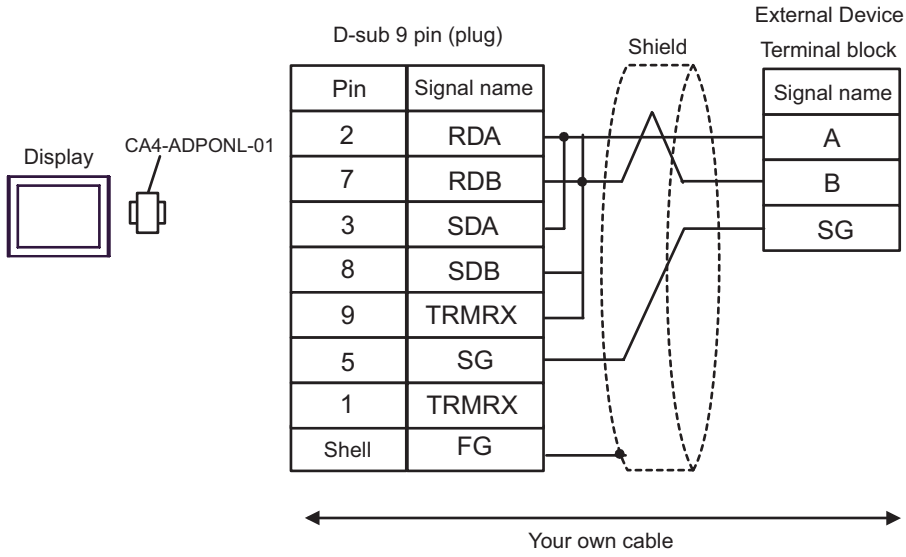


- 1:n Connection

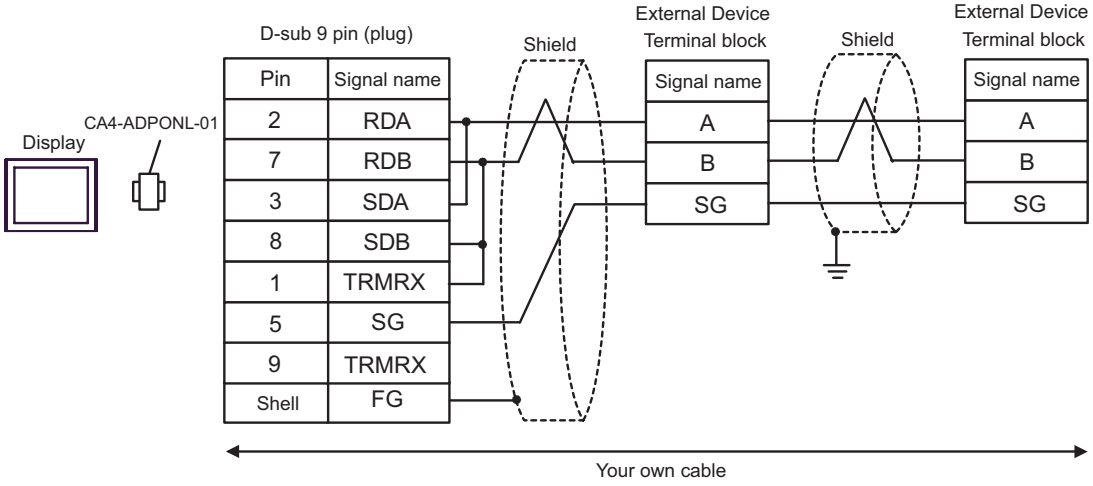


D) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable

- 1:1 Connection



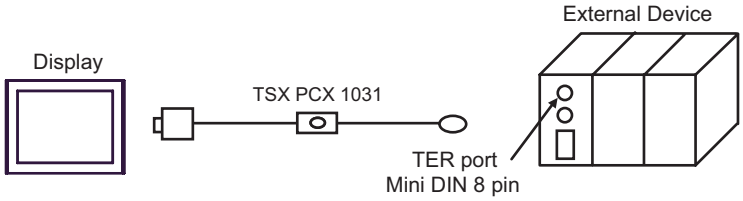
- 1:n Connection



Cable Diagram 2

Display (Connection Port)	Cable	Notes
GP (COM1)	Cable by Schneider Electric Industries TSX PCX 1031 (2.5m)*1	

*1 Set the rotary switch to "3 (OTHER DIRECT)".



Cable Diagram 3

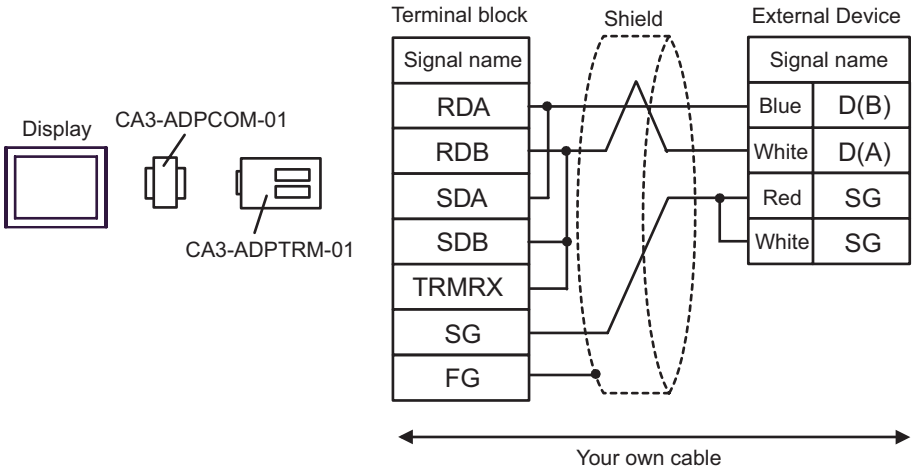
Display (Connection Port)	Cable		Notes
GP*1 (COM1) AGP-3302 (COM2)	A	COM port conversion adapter (for COM1) by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	The cable length must be 10m or less.*2
	B	Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	
GP*1 (COM2)	C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	

*1 All GP models except AGP-3302

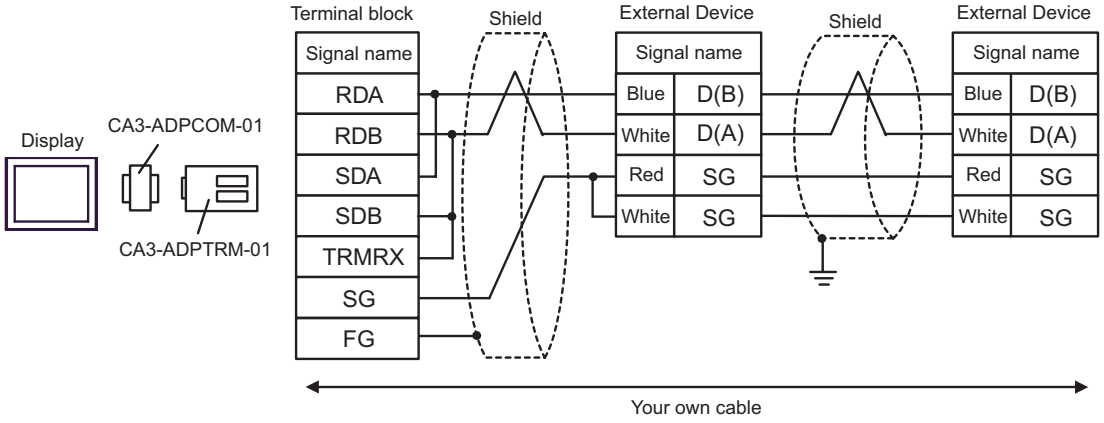
*2 Max length between the "GP" and the "Accessory Box connected to GP". Total cable length between accessory boxes must be 1000m or less.

A) When using the COM port conversion adapter (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and the accessory box (TSX SCA 50) by Schneider Electric

- 1:1 Connection

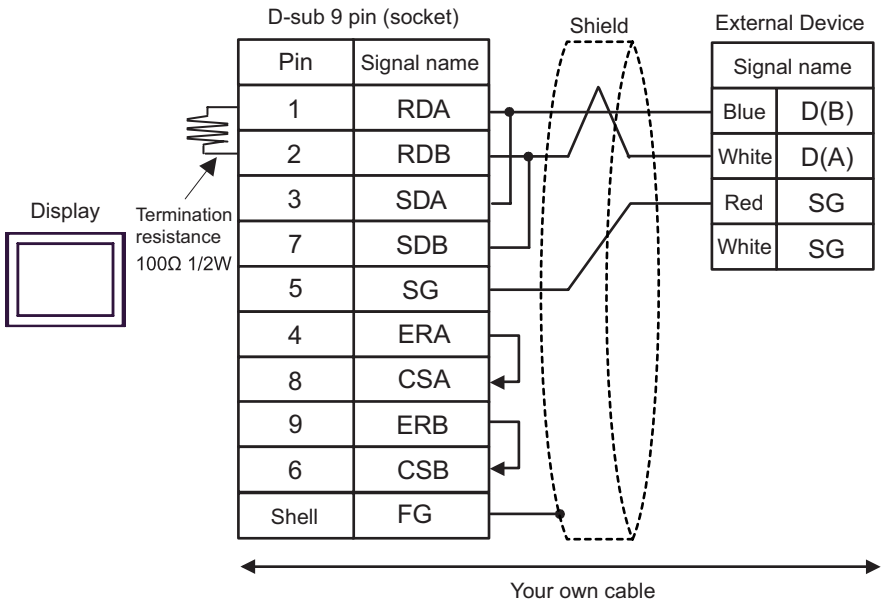


- 1:n Connection

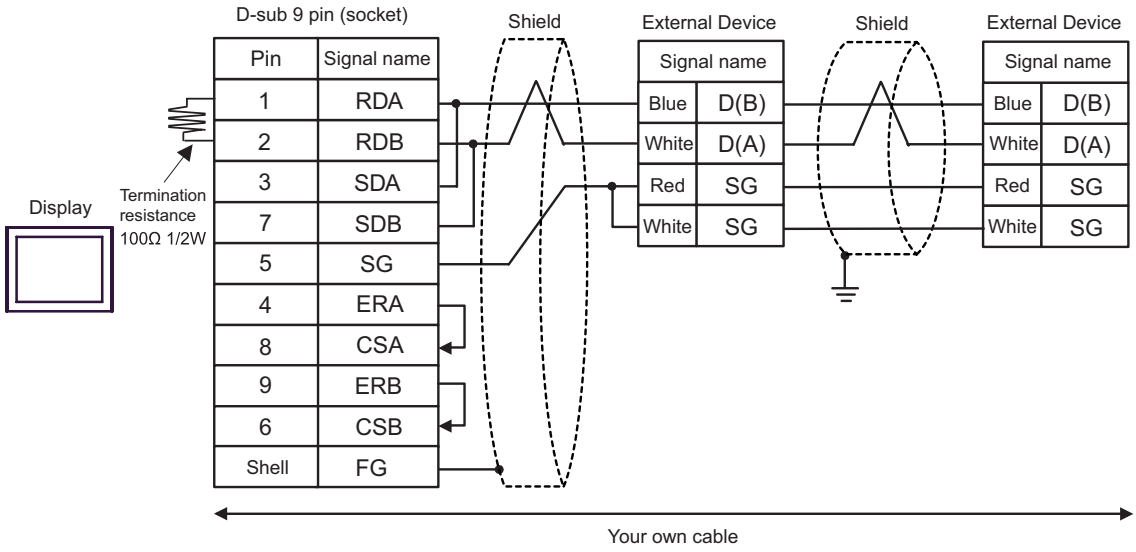


B) When using the accessory box (TSX SCA 50) by Schneider Electric and your own cable

- 1:1 Connection

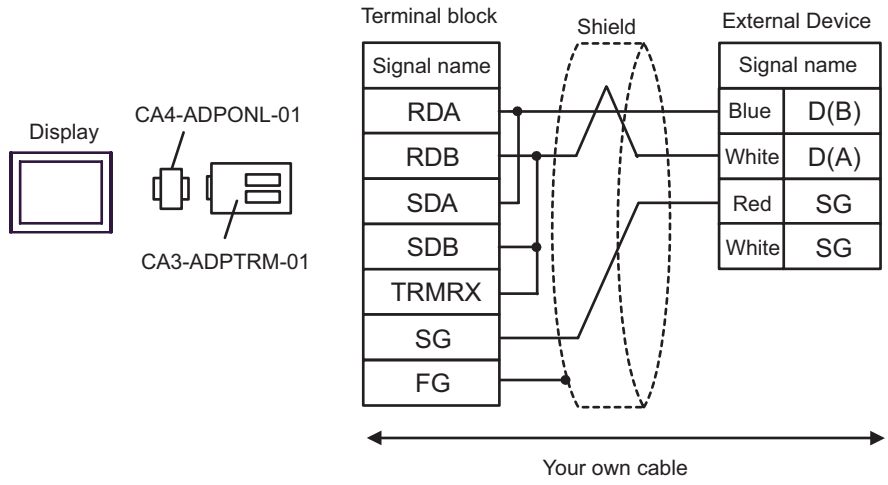


- 1:n Connection

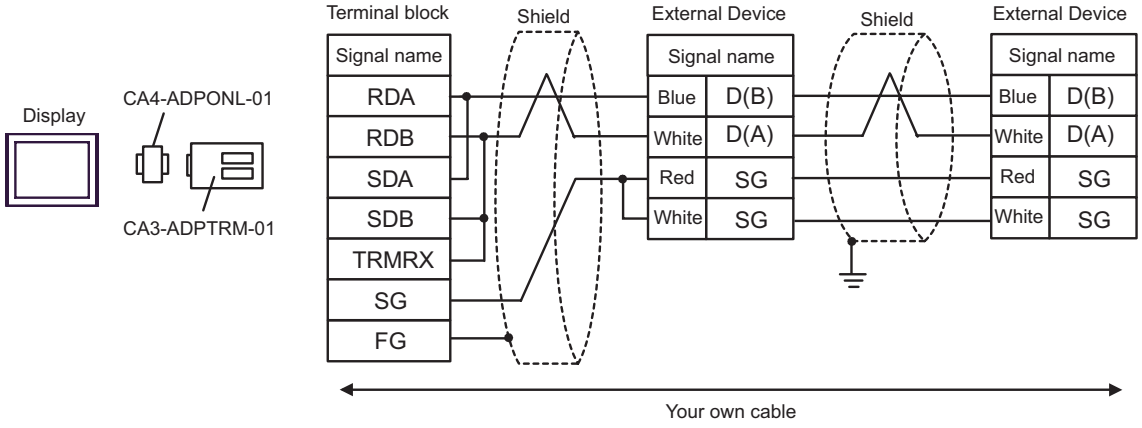


C) When using the online adapter (CA4-ADPONL-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face, your own cable and the accessory box (TSX SCA 50) by Schneider Electric

- 1:1 Connection

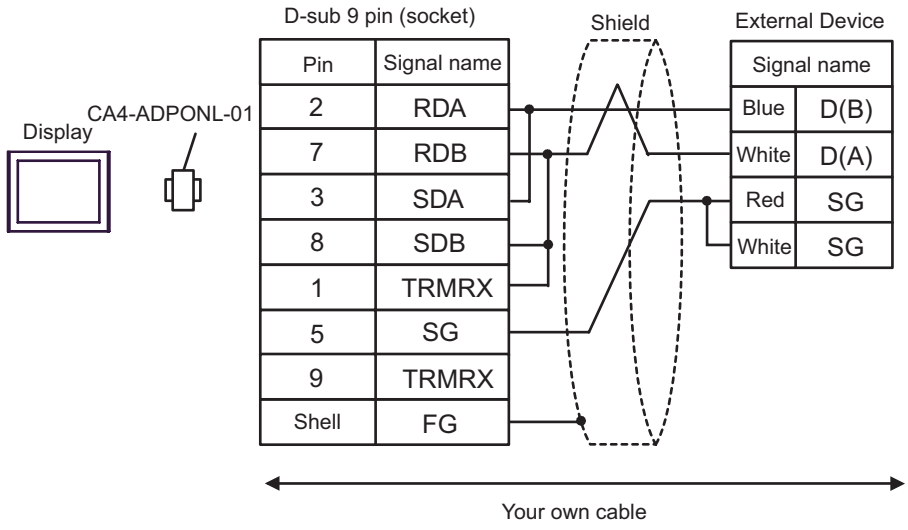


- 1:n Connection

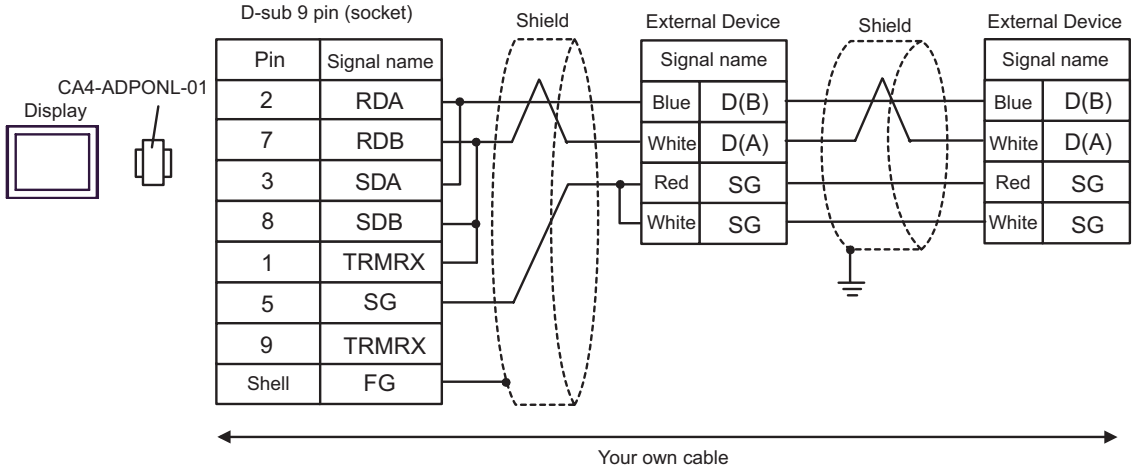


D) When using the online adapter (CA4-ADPONL-01) by Pro-face and the accessory box (TSX SCA 50) by Schneider Electric

- 1:1 Connection



- 1:n Connection

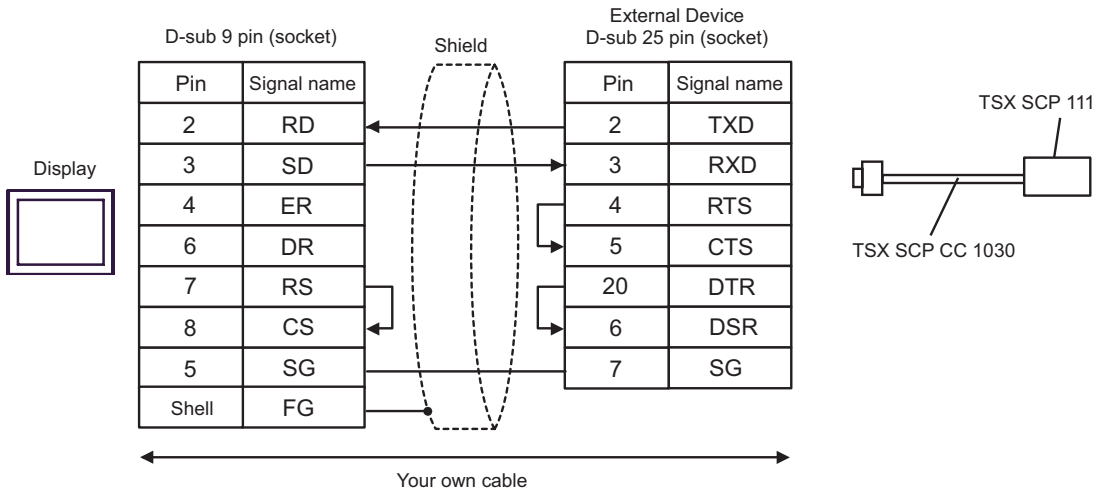


Cable Diagram 4

Display (Connection Port)	Cable	Notes
GP (COM1)	Your own cable + RS 232 D tap link cable by Schneider Electric TSX SCP CC 1030 (3m) + PCMCIA card for RS232C by Schneider Electric TSX SCP 111	The cable length must be 15m or less. *1

*1 Total length for TSX SCP CC 1030 and your own cable.

When using your own cable, the RS 232 D tapLink cable (TSX SCP CC 1030) by Schneider Electric and the PCMCIA card (TSX SCP 111) for RS232C by Schneider Electric

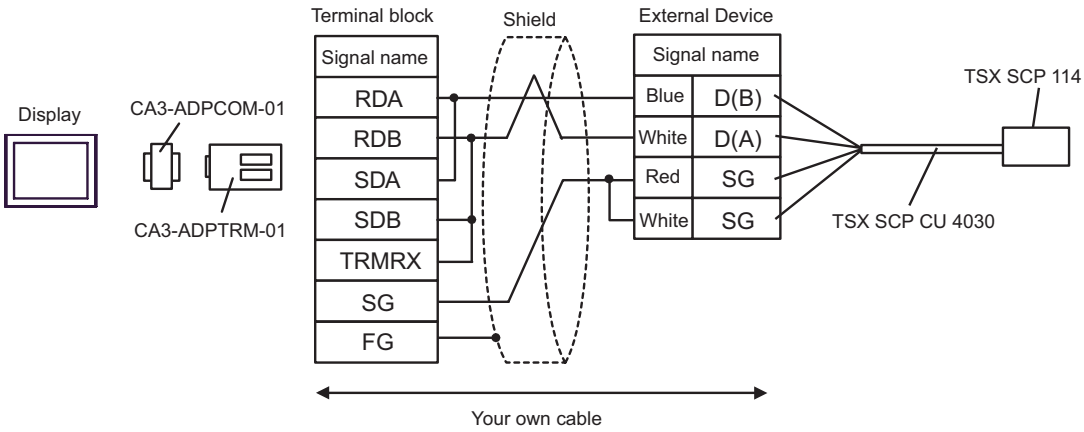


Cable Diagram 5

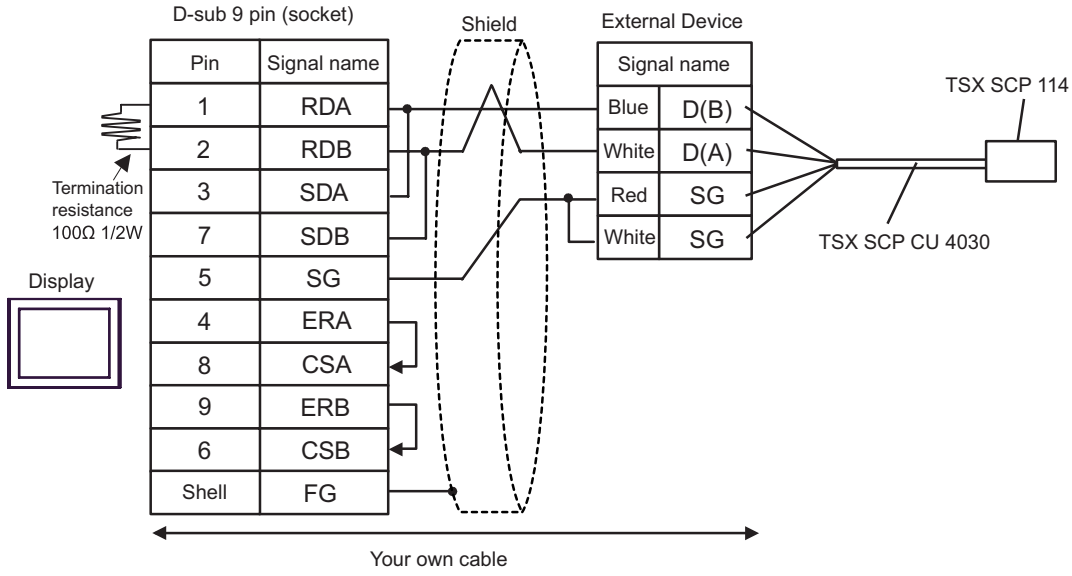
Display (Connection Port)	Cable		Notes
GP*1 (COM1) AGP-3302 (COM2)	A	COM port conversion adapter (for COM1) by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industries TSX SCP 114	
	B	Your own cable + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industries TSX SCP 114	
GP*1 (COM2)	C	Online adapter by Pro-face CA3-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industries TSX SCP 114	
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industries TSX SCP 114	

*1 All GP models except AGP-3302

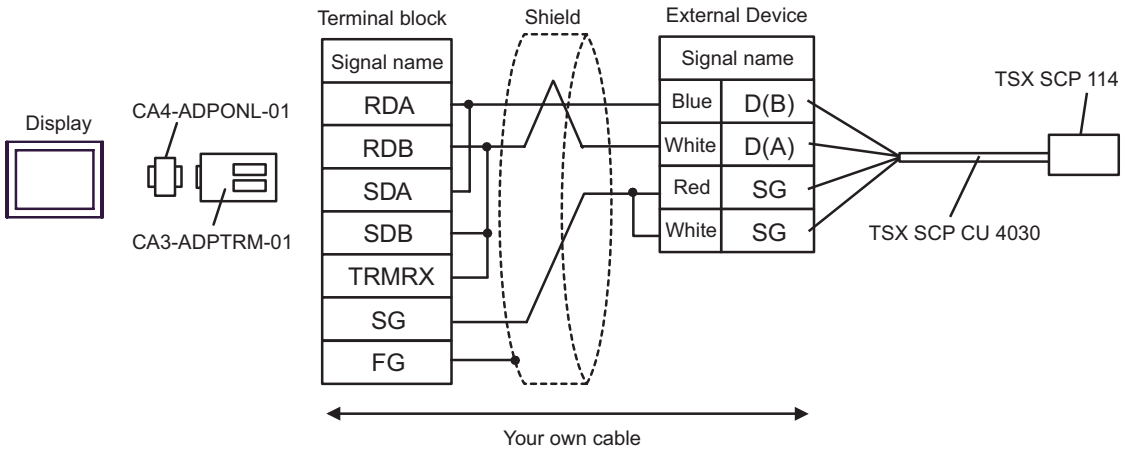
A) When using the COM port conversion adapter (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



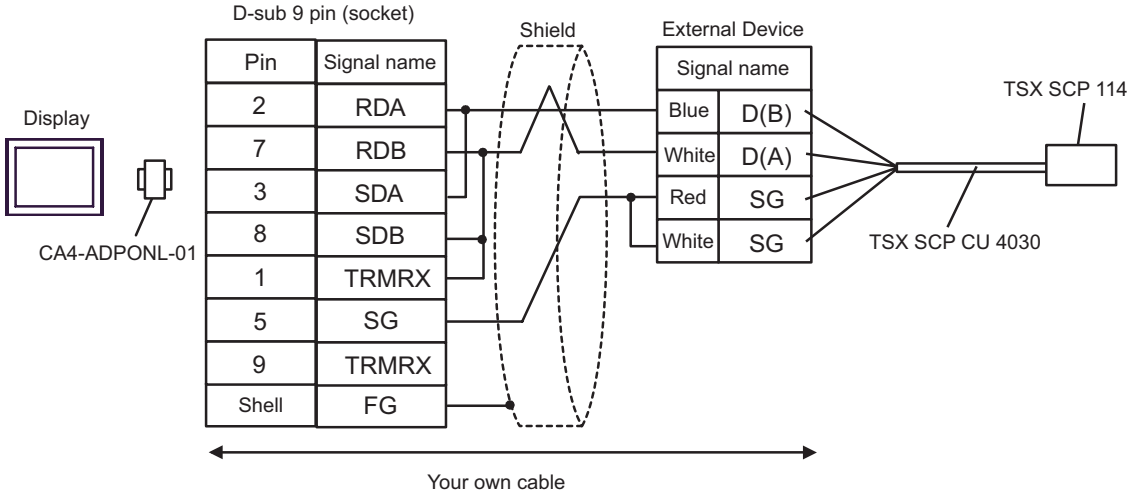
B) When using your own cable, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



C) When using the online adapter (CA4-ADPONL-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric

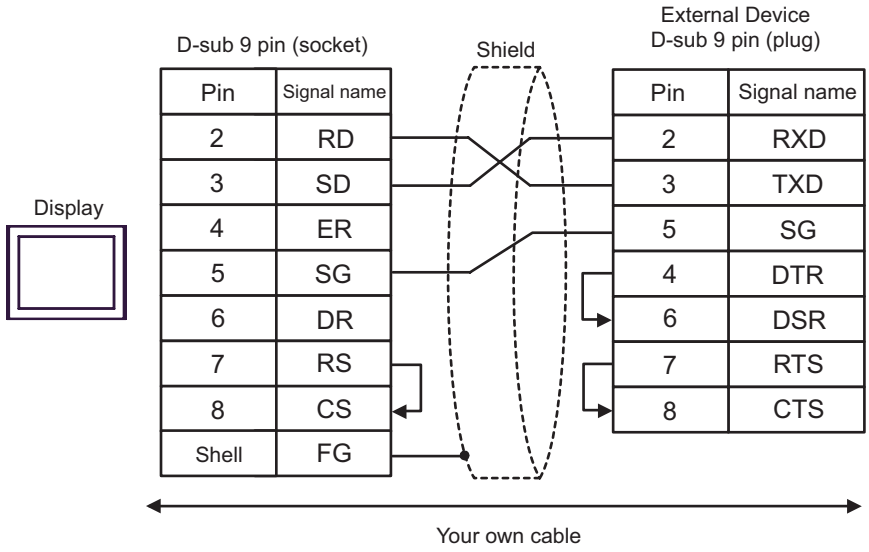


D) When using the online adapter (CA4-ADPONL-01) by Pro-face, your own cable, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



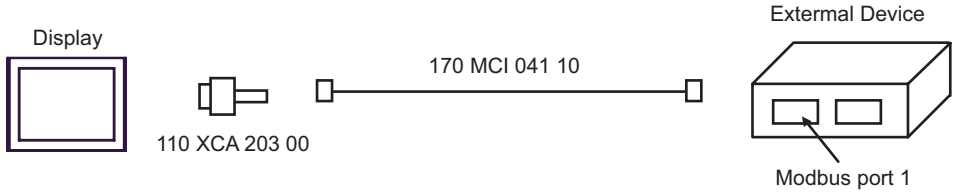
Cable Diagram 6

Display (Connection Port)	Cable	Notes
GP (COM1)	Your own cable	The cable length must be 15m or less.



Cable Diagram 7

Display (Connection Port)	Cable	Notes
GP (COM1)	D-Shell adapter by Schneider Electric 110 XCA 203 00 + Modbus RS485 (RJ45/RJ45) Master Communication cable by Schneider Electric 170 MCI 041 10 (0.3m)	The cable length must be 9.5m or less.

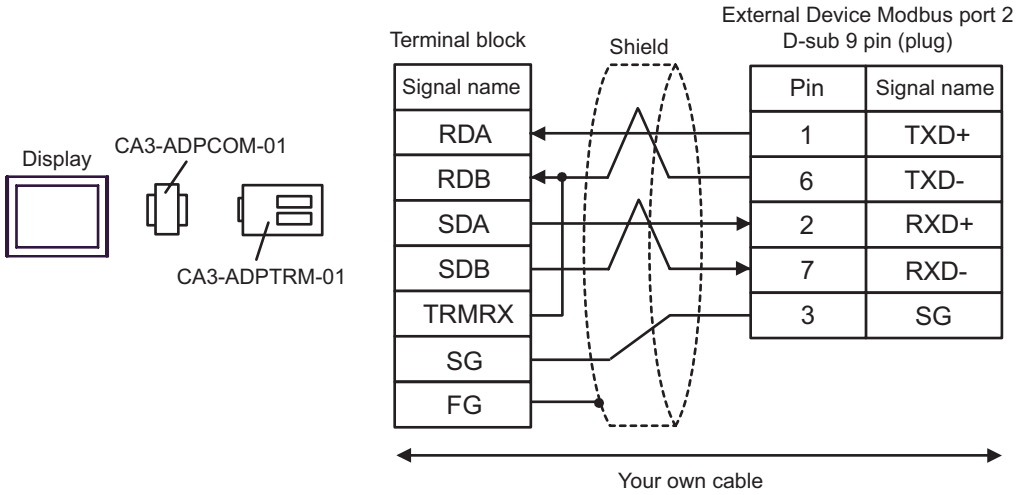


Cable Diagram 8

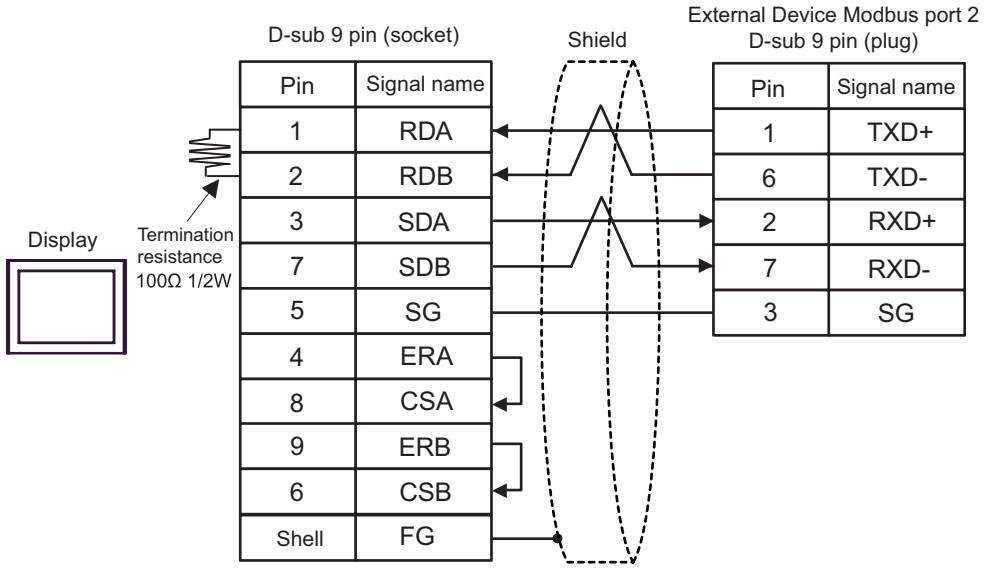
Display (Connection Port)	Cable		Notes
GP*1 (COM1) AGP-3302 (COM2)	A	COM port conversion adapter (for COM1) by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	The cable length must be 500m or less.
	B	Your own cable	
GP*1 (COM2)	C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	

*1 All GP models except AGP-3302

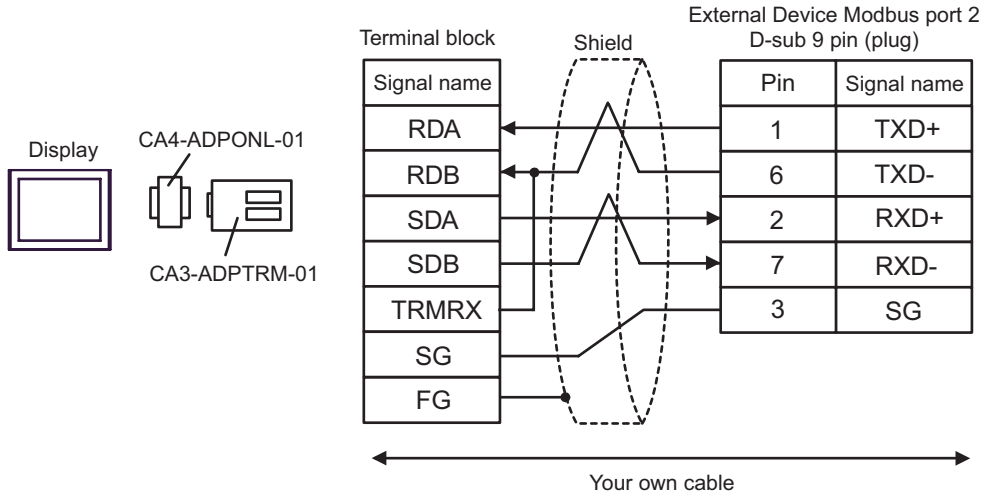
A) When using the COM port conversion adapter (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable



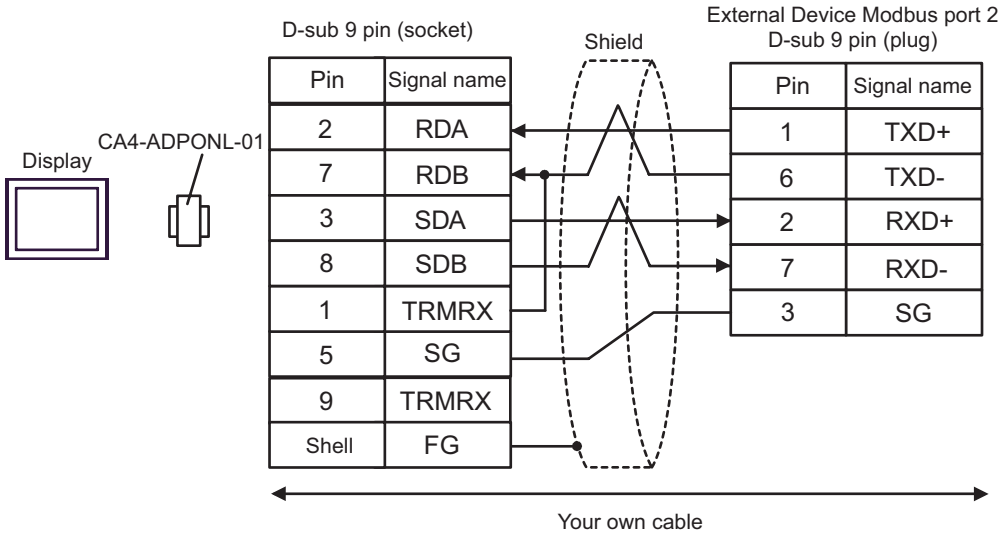
B) When using your own cable



C) When using the online adapter (CA4-ADPONL-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable



D) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable



6 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 connecting equipment.

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Coil	000001 - 065536	000001 - 065521	L/H or H/L *1	16+1
Discrete Input	100001 - 165536	100001 - 165521		16+1 *2
Input Register	-----	300001 - 365536		Bit 15 *2
Holding Register	400001,00 - 465536,15*3	400001 - 465536		Bit 15

*1 High and low relationship of the stored data is specified by the [Double Word word order] setting of [Device Setting].

"4.1 Setup Items in GP-Pro EX" (page 27)

*2 Write disable

*3 An access method at the time of Bit Set varies depending on the [Rest of the bits in this word] setting of [Device Setting].

- Clear..... Bit 15
- Do not clear .... 400001,00 - 465536,15

■ Supported Function Code

Below is the list of Supported Function Code.

Function Code (Hex)	Description
FC01 (0x01)	Reads the ON/OFF status of coils (0X references) in the slave.
FC02 (0x02)	Reads the ON/OFF status of discrete inputs (1X references) in the slave.
FC03 (0x03)	Reads the binary content of holding registers (4X references) in the slave.
FC04 (0x04)	Reads the binary content of input registers (3X references) in the slave.
FC05 (0x05)	Forces a single coil (0X references) to either ON or OFF
FC06 (0x06)	Presets a value into a single holding register (4X references).
FC15 (0x0F)	Forces each coil (0X references) in a sequence of coils to either ON or OFF.
FC16 (0x10)	Presets values into a sequence of holding registers (4X references).

NOTE

- FC15 / FC16 will be used for writing. In case if the connected controller do not support these function codes, then FC05 / FC06 will be used.

■ IEC61131 address syntax

The following table gives the equivalences between the Modbus syntax and the IEC61131 syntax.

Device	Modbus address syntax			IEC61131syntax				
				Format	0-based		1-based	
	Format	Range	First element		Range	First element	Range	First element
Coil	000001+i	i=0 to 65535	000001	%Mi	i=0 to 65535	%M00000	i=1 to 65536	%M00001
Discrete Input	100001+i	i=0 to 65535	100001	-	-	-	-	-
Input register (word)	300001+i	i=0 to 65535	300001	-	-	-	-	-
Input register (word bit)	300001+i,j	i=0 to 65535 j=0 to15	300001,00	-	-	-	-	-
Holding register (word)	400001+i	i=0 to 65535	400001	%MWi	i=0 to 65535	%MW00000	i=1 to 65536	%MW00001
Holding register (word bit)	400001+i,j	i=0 to 65535 j=0 to15	400001,00	%MWi: Xj	i=0 to 65535 j=0 to 15	%MW00000: X00	i=1 to 65535 j=0 to15	%MW00001 :X00

NOTE

- The two areas 100000 and 300000 are not accessible with the IEC syntax.
- Once you change the project which you have setup Discrete Input Register to IEC 61131 Syntax, the address will be undefined.

NOTE

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

7 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
Coil	0	0080	Value of (word address - 1) divided by 16
Discrete Input	1	0081	Value of (word address - 1) divided by 16
Input Register	3	0001	Value of word address from which 1 is deducted
Holding Register	4	0000	Value of word address from which 1 is deducted

8 Error Messages

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

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

Display Examples of Error Messages

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

NOTE • Please refer to the manual of External Device for more detail of received error codes.