Schneider Electric Industries

MODBUS SIO Master 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 This section shows the types of External Devices which can be connected and SIO type.	"1 System Configuration" (page 3)
2	Selection of External Device Select a model (series) of the External Device to be connected and connection method.	"2 Selection of External Device" (page 9)
3	Example of Communication Settings This section shows setting examples for communicating between the Display and the External Device.	"3 Example of Communication Setting" (page 10)
4	Setup Items This section describes communication setup items on the Display. Set communication settings of the Display with GP-Pro Ex or in off-line mode.	^{ভেল} "4 Setup Items" (page 46)
5	Cable Diagram This section shows cables and adapters for connecting the Display and the External Device.	^{ক্লে} "5 Cable Diagram" (page 55)
	Operation	

1 System Configuration

1.1 Schneider Electric Industries External Devices

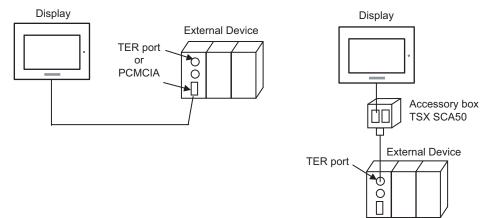
The following table lists system configurations for connecting Schneider Electric Industries External Devices and the Display.

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
	TSX 37 05 028DR1 TSX 37 08 056DR1 TSX 37 10 128DT1 TSX 37 10 128DR1	TER port on CPU	RS232C	Setting Example 1 (page 10)	Cable Diagram 2 (page 62)
	TSX 37 10 128DTK1 TSX 37 10 164DTK1 TSX 37 10 028AR1 TSX 37 10 028DR1	Accessory box TSX SCA 50	RS485 (2wire)	Setting Example 3 (page 14)	Cable Diagram 3 (page 63)
Micro		TER port on CPU	RS232C	Setting Example 1 (page 10)	Cable Diagram 2 (page 62)
	TSX 37 21 101 TSX 37 22 101	Accessory box TSX SCA 50	RS485 (2wire)	Setting Example 3 (page 14)	Cable Diagram 3 (page 63)
	TSX 37 21 001 TSX 37 22 001	PCMCIA card for RS232C TSX SCP 111	RS232C	Setting Example 2 (page 12)	Cable Diagram 4 (page 70)
		PCMCIA card for RS485 TSX SCP 114	RS485 (2wire)	Setting Example 3 (page 14)	Cable Diagram 5 (page 71)
Deresion	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 16)	Cable Diagram 4 (page 70)
Premium		PCMCIA card for RS485 TSX SCP 114	RS485 (2wire)	Setting Example 5 (page 18)	Cable Diagram 5 (page 71)
	TWD LCAA 10DRF TWD LCAA 16DRF TWD LCAA 24DRF TWD LMDA 20DTK	Programming port on CPU	RS232C	Setting Example 6 (page 20)	Cable Diagram 2 (page 62)
Twido	TWD LMDA 20DTK TWD LMDA 20DUK TWD LMDA 20DRT TWD LMDA 40DTK TWD LMDA 40DUK	TWD NAC 485T	RS485 (2wire)	Setting Example 7 (page 22)	Cable Diagram 1 (page 55)
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 24)	Cable Diagram 6 (page 76)

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
	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 26)	Cable Diagram 7 (page 77)
Momentum	n 171 CCS 780 00 171 CCC 780 10	Modbus port 1 on CPU	RS232C	Setting Example 9 (page 26)	Cable Diagram 7 (page 77)
		Modbus port 2 on CPU	RS485 (4wire)	Setting Example 10 (page 28)	Cable Diagram 8 (page 78)
	171 CCC 980 20 171 CCC 980 30	Modbus port 2 on CPU	RS485 (4wire)	Setting Example 10 (page 28)	Cable Diagram 8 (page 78)

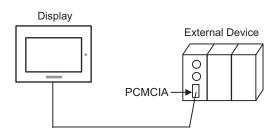
Connection Configuration

- Micro Series
 - 1:1 Connection



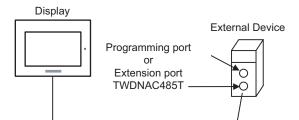
Premium Series

• 1:1 Connection

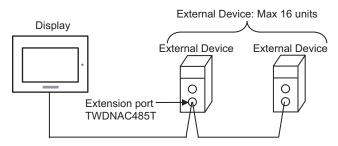


♦ Twido Series

1:1 Connection

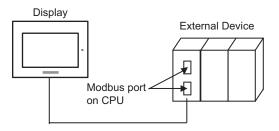


• 1:n Connection

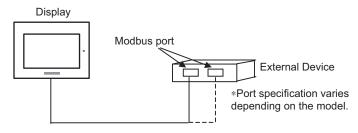


Quantum Series

1:1 Connection



- Momentum Series
 - 1:1 Connection



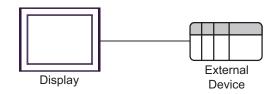
1.2 YOKOGAWA Electric Corporation External Devices

The following table lists system configurations for connecting YOKOGAWA Electric Corp. External Devices and the Display.

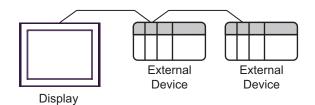
Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
	NFCP100-S00	Serial port on CPU	RS232C	Setting Example 11 (page 30)	Cable Diagram 9 (page 81)
FCN		NFLR111-S00	RS232C	Setting Example 12 (page 34)	Cable Diagram 10 (page 82)
		NFLR121-S00	RS485 (4 wire)	Setting Example 13 (page 38)	Cable Diagram 11 (page 83)
			RS485 (2 wire)	Setting Example 14 (page 42)	Cable Diagram 12 (page 88)
FCJ	NFJT100-S100	Serial port on CONTROL UNIT	RS232C	Setting Example 11 (page 30)	Cable Diagram 9 (page 81)

Connection Configuration

- ◆ FCN/FCJ Series
 - 1:1 Connection



• 1:n Connection



■ IPC COM Port

When connecting IPC with an External Device, the COM port used depends on the series and SIO type. Please refer to the IPC manual for details.

Usable port

Series	Usable Port				
Genes	RS-232C	RS-422/485(4 wire)	RS-422/485(2 wire)		
PS-2000B	COM1 ^{*1} , COM2, COM3 ^{*1} , COM4	-	-		
PS-3450A, PS-3451A, PS3000-BA, PS3001-BD	COM1, COM2 ^{*1*2}	COM2 ^{*1*2}	COM2 ^{*1*2}		
PS-3650A, PS-3651A	COM1 ^{*1}	-	-		
PS-3700A (Pentium®4-M) PS-3710A	COM1 ^{*1} , COM2 ^{*1} , COM3 ^{*2} , COM4	COM3 ^{*2}	COM3 ^{*2}		
PS-3711A	COM1 ^{*1} , COM2 ^{*2}	COM2 ^{*2}	COM2 ^{*2}		
PL-3000B, PL-3600T, PL-3600K, PL-3700T, PL-3700K, PL-3900T	COM1 ^{*1*2} , COM2 ^{*1} , COM3, COM4	COM1 ^{*1*2}	COM1 ^{*1*2}		

*1 The RI/5V can be switched. Use the IPC's switch to change if necessary.

*2 Set up the SIO type with the DIP switch. Please set up as follows according to SIO type to be used.

DIP switch setting: RS-232C

DIP switch	Setting	Description	
1	OFF ^{*1}	Reserved (always OFF)	
2	OFF	SIO type: RS-232C	
3	OFF	510 type. R5-252e	
4	OFF	Output mode of SD (TXD) data: Always output	
5	OFF	Terminal resistance (220 Ω) insertion to SD (TXD): None	
6	OFF	Terminal resistance (220 Ω) insertion to RD (RXD): None	
7	OFF	Short-circuit of SDA (TXA) and RDA (RXA): Not available	
8	OFF	Short-circuit of SDB (TXB) and RDB (RXB): Not available	
9	OFF	- RS (RTS) Auto control mode: Disabled	
10	OFF	KS (KIS) Auto control mode. Disabled	

*1 When using PS-3450A, PS-3451A, PS3000-BA and PS3001-BD, turn ON the set value.

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DIP switch setting: RS-422/485 (4 wire)

DIP switch	Setting	Description	
1	OFF	Reserved (always OFF)	
2	ON	SIO type: RS-422/485	
3	ON	SIO type. KS-422/465	
4	OFF	Output mode of SD (TXD) data: Always output	
5	OFF	Terminal resistance (220 Ω) insertion to SD (TXD): None	
6	OFF	Terminal resistance (220 Ω) insertion to RD (RXD): None	
7	OFF	Short-circuit of SDA (TXA) and RDA (RXA): Not available	
8	OFF	Short-circuit of SDB (TXB) and RDB (RXB): Not available	
9	OFF	RS (RTS) Auto control mode: Disabled	
10	OFF	- KS (K13) Auto control mode. Disabled	

DIP switch setting: RS-422/485 (2 wire)

DIP switch	Setting	Description	
1	OFF	Reserved (always OFF)	
2	ON	SIO type: RS-422/485	
3	ON	510 type. NS-422/403	
4	OFF	Output mode of SD (TXD) data: Always output	
5	OFF	Terminal resistance (220 Ω) insertion to SD (TXD): None	
6	OFF	Terminal resistance (220 Ω) insertion to RD (RXD): None	
7	ON	Short-circuit of SDA (TXA) and RDA (RXA): Available	
8	ON	Short-circuit of SDB (TXB) and RDB (RXB): Available	
9	ON	– RS (RTS) Auto control mode: Enabled	
10	ON		

2 Selection of External Device

Select the External Device to be connected to the Display.

ð	💰 New Project File 🛛 🗙 🗙					
Γ	-Device/PL	C	1			
	Maker	Schneider Electric Industries				
	Driver	MODBUS SIO Master				
Use System Area Refer to the manual of this Devi		ystem Area Refer to the manual of this Device/PLC				
Γ	Connection	n Method	1			
	Port	COM1				
L		Go to Device/PLC Manual]			
	Back	Communication Detail Settings New Screen Cancel				

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.	
Use System Area	 Check this option when you synchronize the system data area of Display and the devi (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 (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 " 5.17.6 [System Settings] Setting Guide [Display Unit] Settings Guide, System Area Settings" Cf. Maintenance/Troubleshooting Manual "2.15.1 Settings common to all Display models, [Main Unit Settings] Settings Guide, System Area Settings" 	
Port	Select the Display port to be connected to the External Device.	

3 Example of Communication Setting

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

When 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

Devi	ce/PLC1	
Sur	nmary	Change Device/PLC
	Maker Schneider B	Electric Industries Driver MODBUS SIO Master Port COM1
	Text Data Mode	1 Change
Cor	nmunication Settings	
	SIO Type	• RS232C C RS422/485(2wire) C RS422/485(4wire)
	Speed	9600
	Data Length	C 7 C 8
	Parity	C NONE C EVEN C ODD
	Stop Bit	
	Flow Control	NONE C ER(DTR/CTS) C XON/XOFF
	Timeout	3 (sec)
	Retry	2
	Wait To Send	5 (ms) 🔽 Default Value
	RI / VCC	© RI C VCC
		I32C, you can select the 9th pin to RI (Input) Supply). If you use the Digital's RS232C se select it to VCC. Default
Dev	vice-Specific Settings	
		vice/PLCs 16 Unit(s) 📷
	No. Device Na	ame Settings In Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611
	I 201	

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 if from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

[Equipment Configuration] tab	[Max Query] tab
💰 Individual Device Settings 🛛 🗙	💰 Individual Device Settings 🛛 🗙
PLC1	PLC1
Equipment Configuration Max Query Equipment Address	Equipment Configuration Max Query
Slave Equipment Address 1	Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 1008 📑 bits
Rest of the bits in this word C Clear Do not clear 	Coil (0) Write (0FH) 800 🚊 bits
Note on when selecting "Do not clear": If the ladder program writes data to Holding Register during the read/write process, the resulting data may be incorrect.	Discrete Input (1) Read (02H) 1008 👘 bits
EC61131 Syntax	Input Register (3) Read (04H) 63 👘 words
Address Mode O-based (Default)	Holding Register (4) Read (03H) 63 🚔 words
Please reconfirm all of address settings that you are using if you	Holding Register (4) Write (10H) 61 🐳 words
have changed the setting. Variables Double Word word order Low word first(L/H) ▼	Single Bit manipulation to Coil/Discrete Input
Low Security Level	
Default	Default
OK (<u>D</u>) Cancel	OK (<u>D</u>) Cancel

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

3.2 Setting Example 2

Settings of GP-Pro EX

Communication Settings

Device/PLC1	Change Device/PLC
	Electric Industries Driver MODBUS SIO Master Port COM1
, Text Data Mode	1 Change
Communication Settings	3
SIO Type	• RS232C C RS422/485(2wire) C RS422/485(4wire)
Speed	9600 💌
Data Length	07 08
Parity	O NONE O EVEN O ODD
Stop Bit	
Flow Control	NONE O ER(DTR/CTS) O XON/XOFF
Timeout	3 (sec)
Retry	2 *
Wait To Send	5 (ms) 🔽 Default Value
RI / VCC	© RI C VCC
or VCC (5V Pow	5232C, you can select the 9th pin to RI (Input) er Supply). If you use the Digital's RS232C ease select it to VCC. Default
Device-Specific Setting	s evice/PLCs 16 Unit(s)
No. Device N	
👗 1 PLC1	Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC6

Device Setting

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

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

[Equipment Configuration] ato	[
💰 Individual Device Settings 🛛 🗙	💰 Individual Device Settings 💦 👌
PLC1	PLC1
Equipment Configuration Max Query Equipment Address	Equipment Configuration Max Query
Slave Equipment Address	Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 1008 💼 bits
Rest of the bits in this word O Clear O Do not clear	Coil (0) Write (0FH) 800 📑 bits
Note on when selecting "Do not clear" : If the ladder program writes data to Holding Register during the	Discrete Input (1) Read (02H) 1008 📑 bits
read/write process, the resulting data may be incorrect.	Input Register (3) Read (04H) 63 🚔 words
EC61131 Syntax	Holding Register (4) Read (03H) 63 😴 words
Address Mode O-based (Default)	Holding Register (4) Write (10H) 61 💼 words
have changed the setting.	
Variables	Single Bit manipulation to Coil/Discrete Input
Double Word word order Low word first(L/H)	
C Low Security Level	
Default	Default
OK (<u>D</u>) Cancel	OK (<u>0</u>) Cancel

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

Notes

3.3 Setting Example 3

Settings of GP-Pro EX

Communication Settings

Devid	ce/PLC 1	
Sum	nmary	Change Device/PLC
	Maker Schneider El	lectric Industries Driver MODBUS SID Master Port COM1
	Text Data Mode	1 Change
Corr	nmunication Settings	
	SIO Type	C RS232C © RS422/485(2wire) C RS422/485(4wire)
	Speed	9600
	Data Length	C 7 © 8
	Parity	© NONE
	Stop Bit	
	Flow Control	NONE O ER(DTR/CTS) O XON/XOFF
	Timeout	3
	Retry	2 *
	Wait To Send	5 (ms)
	RI / VCC	© RI O VCC
		32C, you can select the 9th pin to RI (Input) Supply). If you use the Digital's RS232C e select it to VCC. Default
Dev	vice-Specific Settings	
		ice/PLCs 16 Unit(s) 📷
	No. Device Nar	me Settings IIII Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611
	· · · · · · · · · · · · · · · · ·	

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 if from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

[Equipment Configuration] tab	[Max Query] tab
💰 Individual Device Settings 🛛 🗙	💰 Individual Device Settings 🛛 🗙
PLC1	PLC1
Equipment Configuration Max Query Equipment Address	Equipment Configuration Max Query
Slave Equipment Address 1	Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 1008 🚔 bits
Rest of the bits in this word C Clear	Coil (0) Write (0FH) 800 🚎 bits
Note on when selecting "Do not clear": If the ladder program writes data to Holding Register during the read/write process, the resulting data may be incorrect.	Discrete Input (1) Read (02H) 1008 * bits
	Input Register (3) Read (04H) 63 🚔 words
Address Mode	Holding Register (4) Read (03H) 63 🔹 words
Please reconfirm all of address settings that you are using if you have changed the setting.	Holding Register (4) Write (10H) 51 📩 words
	Single Bit manipulation to Coil/Discrete Input
Variables Double Word word order Low word first(L/H)	
C Low Security Level	
Default	Default
OK (0) Cancel	OK (D) Cancel

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

Notes

3.4 Setting Example 4

Settings of GP-Pro EX

Communication Settings

evice/PLC 1	
Summary Change Device/PLC	2
Maker Schneider Electric Industries Driver MODBUS SID Master Port COM1	
Text Data Mode 1 Change	
Communication Settings	
SIO Type 💿 RS232C 🔘 RS422/485(2wire) 🔿 RS422/485(4wire)	
Speed 9600	
Data Length C 7 📀 8	
Parity C NONE C EVEN C ODD	
Stop Bit 💿 1 🔿 2	
Flow Control NONE C ER(DTR/CTS) C X0N/X0FF	
Timeout 3 🔹 (sec)	
Retry 2	
Wait To Send 5 is (ms) 🔽 Default Value	
RI/VCC RI C VCC	
In the case of RS232C, you can select the 9th pin to RI (Input) or VCC (5V Power Supply). If you use the Digital's RS232C Isolation Unit, please select it to VCC. Default	
Device-Specific Settings	
Allowable No. of Device/PLCs 16 Unit(s)	
No. Device Name Settings X 1 PLC1	ECC11
🛛 👗 1 PLC1 🔤 International	ECOII

[Max Ouerv] tab

Device Setting

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

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

[Equipment Configuration] ato	[
💰 Individual Device Settings 🛛 🗙	💰 Individual Device Settings 💦 👌
PLC1	PLC1
Equipment Configuration Max Query Equipment Address	Equipment Configuration Max Query
Slave Equipment Address	Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 1008 💼 bits
Rest of the bits in this word O Clear O Do not clear	Coil (0) Write (0FH) 800 📑 bits
Note on when selecting "Do not clear" : If the ladder program writes data to Holding Register during the	Discrete Input (1) Read (02H) 1008 📑 bits
read/write process, the resulting data may be incorrect.	Input Register (3) Read (04H) 63 🚔 words
EC61131 Syntax	Holding Register (4) Read (03H) 63 😴 words
Address Mode O-based (Default)	Holding Register (4) Write (10H) 61 💼 words
have changed the setting.	
Variables	Single Bit manipulation to Coil/Discrete Input
Double Word word order Low word first(L/H)	
C Low Security Level	
Default	Default
OK (<u>D</u>) Cancel	OK (<u>0</u>) Cancel

[Equipment Configuration] 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 1	
CHANNEL	TSX SCP 111 RS232 MP PCMCIA CARD	
	MODBUS/JBUS LINK	MAST
Туре	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

evice/PLC1
Summary Change Device/PLC
Maker Schneider Electric Industries Driver MODBUS SIO Master Port COM1
Text Data Mode 1 Change
Communication Settings
SIO Type O RS232C O RS422/485(2wire) O RS422/485(4wire)
Speed 9600 💌
Data Length C 7 📀 8
Parity C NONE C EVEN C ODD
Stop Bit 💿 1 🔿 2
Flow Control O NONE O ER(DTR/CTS) O XON/XOFF
Timeout 3 💼 (sec)
Retry 2
Wait To Send 5 (ms) 🔽 Default Value
RI/VCC C RI O VCC
In the case of RS232C, you can select the 9th pin to RI (Input) or VCC (5V Power Supply). If you use the Digital's RS232C Isolation Unit, please select it to VCC.
Device-Specific Settings
Allowable No. of Device/PLCs 16 Unit(s)
No. Device Name Settings No. Device Name Image: PLC1 Image: State Equipment Address=1, Rest of the bits in this word=Do not clear, IEC6

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 if from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

[Equipment Configuration] tab	[Max Query] tab
💰 Individual Device Settings 🛛 🗙	💰 Individual Device Settings 🛛 🗙
PLC1	PLC1
Equipment Configuration Max Query Equipment Address	Equipment Configuration Max Query
Slave Equipment Address	Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 1008 🚔 bits
Rest of the bits in this word C Clear O not clear	Coil (0) Write (0FH) 800 🙀 bits
Note on when selecting "Do not clear": If the ladder program writes data to Holding Register during the read/write process, the resulting data may be incorrect.	Discrete Input (1) Read (02H) 1008 - bits
IEC61131 Syntax	Input Register (3) Read (04H) 63 🔹 words
Address Mode O-based (Default)	Holding Register (4) Read (03H) 63 🚔 words
Please reconfirm all of address settings that you are using if you have changed the setting.	Holding Register (4) Write (10H) 61 👘 words
	Single Bit manipulation to Coil/Discrete Input
Variables Double Word word order Low word first(L/H)	
C Low Security Level	
Default	Default
OK (0) Cancel	OK (D) Cancel

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 D	escription
	CHANNEL 1	
CHANNEL	TSX SCP 114 RS485 MP PCMCIA CA	RD
	MODBUS/JBUS LINK	MAST
Туре	Slave	·
Slave number	1	
Transmission speed	9600bps	
Delay between characters	4msec	
Data	RTU (8 bit)	
Stop	1 bit	
Parity	Even	

Notes

3.6 Setting Example 6

Settings of GP-Pro EX

Communication Settings

Device/PLC 1
Summary Change Device/PLC
Maker Schneider Electric Industries Driver MODBUS SIO Master Port COM1
Text Data Mode 1 Change
Communication Settings
SID Type
Speed 19200 💌
Data Length C 7 🕞 8
Parity 💿 NONE 🔿 EVEN 🔿 ODD
Stop Bit 💿 1 🔿 2
Flow Control NDNE C ER(DTR/CTS) C X0N/X0FF
Timeout 3 💼 (sec)
Retry 2
Wait To Send 2 (ms) 🔽 Default Value
RI / VCC RI VCC
In the case of RS232C, you can select the 9th pin to RI (Input) or VCC (5V Power Supply). If you use the Digital's RS232C Isolation Unit, please select it to VCC. Default
Device-Specific Settings
Allowable No. of Device/PLCs 16 Unit(s)
No. Device Name Settings No. Device Name Settings 1 PLC1 Image Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611
In Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in the bits in this word=b of hot clear, in Equipment Address=1; nest of the bits in the bit

Device Setting

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

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

[Equipment Configuration] tab	[Max Query] tab
💰 Individual Device Settings 🛛 🗙	💰 Individual Device Settings 🛛 🗙
PLC1	PLC1
Equipment Configuration Max Query Equipment Address Slave Equipment Address 1	Equipment Configuration Max Query Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register Rest of the bits in this word C Clear C Do not clear Note on when selecting "Do not clear": If the ladder program writes data to Holding Register during the read/write process, the resulting data may be incorrect. IEC61131 Syntax Address Mode Debased (Default) Please reconfirm all of address settings that you are using if you have changed the setting. Variables Double Word word order Low word first(L/H) Low Security Level	Address Function Codes Max duery Coil (0) Read (01H) 2000 ± bits Coil (0) Write (0FH) 800 ± bits Discrete Input (1) Read (02H) 2000 ± bits Input Register (3) Read (04H) 125 ± words Holding Register (4) Read (03H) 125 ± words Holding Register (4) Write (10H) 100 ± words
Default	Default Cancel

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	Туре	Modbus
1100001	Address	1
	Baud Rate	19200
Parameters	Data Bits	8
T alameters	Parity	None
	Stop Bits	1
End of Frame		10
Response Timeout		10 x 100msec
Frame Timeout		4msec

Notes

3.7 Setting Example 7

Settings of GP-Pro EX

Communication Settings

Devid	ce/PLC 1	
Sum	mary	Change Device/PLC
	Maker Schneider El	lectric Industries Driver MODBUS SID Master Port COM1
	Text Data Mode	1 Change
Corr	munication Settings	
	SIO Type	C RS232C
	Speed	19200
	Data Length	C 7 C 8
	Parity	NONE C EVEN C ODD
	Stop Bit	
	Flow Control	NONE O ER(DTR/CTS) O XON/XOFF
	Timeout	3
	Retry	2
	Wait To Send	2 → (ms) IV Default Value
Γ	RI / VCC	© RI O VCC
		32C, you can select the 9th pin to RI (Input) Supply). If you use the Digital's RS232C e select it to VCC. Default
Dev	rice-Specific Settings	
501		ice/PLCs 16 Unit(s)
	No. Device Nat	me Settings
	👗 1 PLC1	Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611

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 if from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

[Equipment Configuration] tab	[Max Query] tab
💰 Individual Device Settings 🛛 🗙	💰 Individual Device Settings 🛛 🗙
PLC1	PLC1
Equipment Configuration Max Query	Equipment Configuration Max Query
Slave Equipment Address	Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 2000 🚔 bits
Rest of the bits in this word C Clear 💿 Do not clear	Coil (0) Write (0FH) 800 📻 bits
Note on when selecting "Do not clear": If the ladder program writes data to Holding Register during the read/write process, the resulting data may be incorrect.	Discrete Input (1) Read (02H) 2000 🔹 bits
	Input Register (3) Read (04H) 125 👘 words
lec61131 Syntax	Holding Register (4) Read (03H) 125 🛨 words
Address Mode O-based (Default)	Holding Register (4) Write (10H) 100 📑 words
Variables Double Word word order Low word first(L/H)	Single Bit manipulation to Coil/Discrete Input
Cow Security Level	
Default	Default
OK (<u>O</u>) Cancel	OK (<u>D</u>) Cancel

[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	Туре	Modbus
1 1010001	Address	1
	Baud Rate	19200
Parameters	Data Bits	8
1 arameters	Parity	None
	Stop Bits	1
End of Frame		10
Response Timeout		10 x 100msec
Frame Timeout		10msec

Notes

3.8 Setting Example 8

Settings of GP-Pro EX

Communication Settings

Device	e/PLC 1	
Sumr	mary	Change Device/PLC
	Maker Schneider El	ectric Industries Driver MODBUS SID Master Port COM1
	Text Data Mode	1 Change
Comr	munication Settings	
	SIO Type	RS232C O RS422/485(2wire) O RS422/485(4wire)
	Speed	19200
	Data Length	C 7 @ 8
	Parity	C NONE C EVEN C ODD
	Stop Bit	
	Flow Control	NONE O ER(DTR/CTS) O XON/XOFF
	Timeout	3
	Retry	2 🛓
	Wait To Send	3 → (ms) I Default Value
	RI / VCC	RI O VCC
		32C, you can select the 9th pin to RI (Input) Supply). If you use the Digital's RS232C e select it to VCC. Default
Devi	ce-Specific Settings	
		ice/PLCs 16 Unit(s) 📊
ſ	No. Device Nar	
	👗 1 PLC1	Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611

[Max Query] tab

Device Setting

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

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

Individual Device Settings	💰 Individual Device Settings	
.c1	PLC1	
Equipment Configuration Max Query Equipment Address	Equipment Configuration Max Query	
Slave Equipment Address	Address Function Cod	es Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H)	2000 🕂 bits
Rest of the bits in this word C Clear O Do not clear	Coil (0) Write (0FH)	800 📑 bits
Note on when selecting "Do not clear" : If the ladder program writes data to Holding Register during the read/write process, the resulting data may be incorrect.	Discrete Input (1) Read (02H)	2000 📑 bits
read/write process, the resulting data may be incorrect.	Input Register (3) Read (04H)	125 🕂 words
IEC61131 Syntax	Holding Register (4) Read (03H)	125 🔹 words
ddress Mode O-based (Default)	Holding Register (4) Write (10H)	100 ÷ words
lease reconfirm all of address settings that you are using if you ave changed the setting.		
ariables	Single Bit manipulation to Coil/Dis	crete Input
Double Word word order Low word first(L/H)		
Low Security Level		
Default		Default
OK (D) Cancel	Γ	OK (<u>O</u>) Cancel

[Equipment Configuration] 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

3.9 Setting Example 9

Settings of GP-Pro EX

Communication Settings

Devid	ce/PLC 1	
Sum	nmary	Change Device/PLC
	Maker Schneider El	ectric Industries Driver MODBUS SID Master Port COM1
	Text Data Mode	1 Change
Corr	nmunication Settings	
	SIO Type	RS232C C RS422/485(2wire) C RS422/485(4wire)
	Speed	19200
	Data Length	C 7 C 8
	Parity	C NONE C EVEN C ODD
	Stop Bit	
	Flow Control	NONE O ER(DTR/CTS) O XON/XOFF
	Timeout	3 : (sec)
	Retry	2 *
	Wait To Send	3 (ms)
	RI / VCC	RI O VCC
		32C, you can select the 9th pin to RI (Input) Supply). If you use the Digital's RS232C e select it to VCC. Default
Dev	vice-Specific Settings	
	Allowable No. of Devi	
	No. Device Nar	me Settings Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611
	1 P CO1	

Device Setting

[Equipment Configuration] tab

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

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

🖇 Individual Device Settings 🛛 🗙	💣 Individual Device Settings	×
PLC1	PLC1	
Equipment Configuration Max Query Equipment Address	Equipment Configuration Max Query	
Slave Equipment Address	Address Function Codes Max Query	
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 2000 🗾 bits	
Rest of the bits in this word O Clear O Do not clear	Coil (0) Write (0FH) 800 👘 bits	
Note on when selecting "Do not clear": If the ladder program writes data to Holding Register during the read/write process, the resulting data may be incorrect.	Discrete Input (1) Read (02H) 2000 📩 bits	
read/write process, the resulting data may be incorrect.	Input Register (3) Read (04H) 125 🚔 words	
IEC61131 Syntax	Holding Register (4) Read (03H) 125 🐳 words	
Address Mode O-based (Default)	Holding Register (4) Write (10H)	
Please reconfirm all of address settings that you are using if you have changed the setting.		
Variables	Single Bit manipulation to Coil/Discrete Input	
Double Word word order Low word first(L/H)		
C Low Security Level		
Default	Default	
OK (<u>0</u>) Cancel	0K (<u>0</u>) Cancel	

[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

3.10 Setting Example 10

- Settings of GP-Pro EX
- Communication Settings

wice/PLC1		
ummary Change Device/PLC		
Maker Schneider Electric Industries Driver MODBUS SIO Master Port COM1		
Text Data Mode 1 Change		
Communication Settings		
SIO Type C RS232C C RS422/485(2wire) 💿 RS422/485(4wire)		
Speed 19200		
Data Length O 7 💿 8		
Parity C NONE C EVEN C ODD		
Stop Bit 💿 1 🔿 2		
Flow Control NONE C ER(DTR/CTS) C X0N/X0FF		
Timeout 3 📑 (sec)		
Retry 2		
Wait To Send 3 🔆 (ms) 🔽 Default Value		
RI/VCC © RI O VCC		
In the case of RS232C, you can select the 9th pin to RI [Input] or VCC (5V Power Supply]. If you use the Digital's RS232C Isolation Unit, please select it to VCC. Default		
levice-Specific Settings		
Allowable No. of Device/PLCs 16 Unit(s)		
No. Device Name Settings Settings 1 PLC1 Image State Stat		

Device Setting

[Equipment Configuration] tab

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

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

🖇 Individual Device Settings 🛛 🗙	💣 Individual Device Settings	×
PLC1	PLC1	
Equipment Configuration Max Query Equipment Address	Equipment Configuration Max Query	
Slave Equipment Address	Address Function Codes Max Query	
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 2000 🗾 bits	
Rest of the bits in this word O Clear O Do not clear	Coil (0) Write (0FH) 800 👘 bits	
Note on when selecting "Do not clear": If the ladder program writes data to Holding Register during the read/write process, the resulting data may be incorrect.	Discrete Input (1) Read (02H) 2000 📩 bits	
read/write process, the resulting data may be incorrect.	Input Register (3) Read (04H) 125 🚔 words	
IEC61131 Syntax	Holding Register (4) Read (03H) 125 🐳 words	
Address Mode O-based (Default)	Holding Register (4) Write (10H)	
Please reconfirm all of address settings that you are using if you have changed the setting.		
Variables	Single Bit manipulation to Coil/Discrete Input	
Double Word word order Low word first(L/H)		
C Low Security Level		
Default	Default	
OK (<u>0</u>) Cancel	0K (<u>0</u>) Cancel	

[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

3.11 Setting Example 11

- Settings of GP-Pro EX
- Communication Settings

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[Max Ouerv] tab

Device Setting

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

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

🖇 Individual Device Settings 🛛 🗙	💰 Individual Device Settings
PLC1	PLC1
Equipment Configuration Max Query Equipment Address	Equipment Configuration Max Query
Slave Equipment Address	Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 2000 📻 bits
Rest of the bits in this word C Clear O not clear	Coil (0) Write (0FH) 800 🚔 bits
Note on when selecting "Do not clear" : If the ladder program writes data to Holding Register during the	Discrete Input (1) Read (02H) 2000 🗮 bits
read/write process, the resulting data may be incorrect.	Input Register (3) Read (04H) 125 🐳 words
EC61131 Syntax	Holding Register (4) Read (03H) 125 🛫 words
Address Mode O-based (Default)	Holding Register (4) Write (10H)
Please reconfirm all of address settings that you are using if you have changed the setting.	
Variables	Single Bit manipulation to Coil/Discrete Input
Double Word word order Low word first(L/H)	
Low Security Level	
Default	Default
OK (<u>D</u>) Cancel	0K (<u>0</u>) Cancel

[Equipment Configuration] tab

Settings of External Device

Use the Web browser and ladder software (Logic Designer) for communication settings.

<Communication Settings for the Serial Port on CPU>

1 Set IP address of the External Device to "192.168.1.1".

• For more details on how to set IP address of the External Device, refer to the online help of the dedicated tool for the FCN/FCJ basic settings (Resource Configurator).

- 2 Connect both the Ethernet ports between a PC and the External Device using the LAN cable. (Connect via HUB.)
- **3** Start up the Web browser.
- 4 Enter "http://192.168.1.1/mnt" in the address input box.
- 5 Enter [User Name] and [Password] in the displayed dialog box to login.
- 6 Click [Maintenance Menu] to display the [FCX Maintenance Menu] screen.
- 7 Click [Reboot] to display the [Reboot FCX] screen.
- 8 Check the [Reboot(Maintenance Mode)] option.
- 9 Click [OK] to display the [Reboot] screen.
- **10** Reboot the External Device. Confirm the reboot is complete.
- 11 Click [Maintenance Homepage] to display the [STARDOM FCX Maintenance Page] screen.
- 12 Click [OK] to display the [FCX Maintenance Menu] screen.
- **13** Click [Edit] to display the [Edit System Setting Files] screen.
- 14 Check the [COM1 Port Setting File] option and click [OK].

15 Set each item as follows:

Setup Items	Setup Description
Baudrate	19200
DataBitLength	8
StopBitLength	1
Parity	EVEN

- **16** Click [OK] to display the [Edit System Setting Files(RESULT)] screen.
- 17 Click [Maintenance Menu] to display the [FCX Maintenance Menu] screen.
- 18 Click [Reboot] to display the [Reboot FCX] screen.
- **19** Check the [Reboot(Online Mode)] option and click [OK]. The External Device is rebooted.

<Control Logic Download Procedures>

- **1** Start up the ladder software.
- 2 Create the control logic in order to start the MODBUS communication (RTU mode) slave function. For the example of control logic, refer to "♦Control Logic Example".

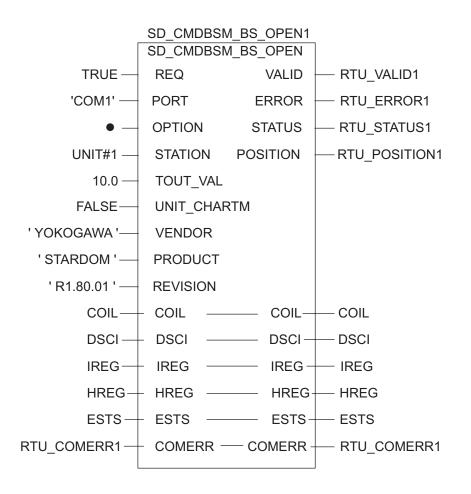
^G " ♦ Control Logic Example" (page 33)

- **3** Double-click ['COM1'] next to [PORT] to display the [Variable Properties] dialog box.
- 4 Enter the connecting port name in [Name], and click [OK].
- 5 Double-click [UNIT#1] next to [STATION] to display the [Variable Properties] dialog box.
- 6 Enter the connecting station name in [Name], and click [OK].
- 7 Select [Rebuild Project] from the [Build] menu.
- **8** Double-click [Target Setting] in the project tree window to display the [Target] dialog box.
- 9 Enter "192.168.1.1" in [Host Name/IP Address].
- 10 Click [OK].
- **11** Download the communication settings to the External Device.
- **12** Reboot the External Device.

♦ Control Logic Example

To connect the Display to the External Device, the control logic is requred.

The control logic example is shown below.



3.12 Setting Example 12

- Settings of GP-Pro EX
- Communication Settings

Devic	e/PLC1		
Sum	imary	Change Device/PLC	
	Maker Schneider El	ectric Industries Driver MODBUS SID Master Port COM1	
	Text Data Mode	1 Change	
Com	munication Settings		
	SIO Type	RS232C C RS422/485(2wire) C RS422/485(4wire)	
	Speed	19200	
	Data Length	C 7 @ 8	
	Parity	C NONE C EVEN C ODD	
	Stop Bit		
	Flow Control	NONE O ER(DTR/CTS) O XON/XOFF	
	Timeout	3 😴 (sec)	
	Retry	2 *	
	Wait To Send	3 (ms) ✓ Default Value	
	RI / VCC © RI © VCC		
	In the case of RS232C, you can select the 9th pin to RI (Input) or VCC (5V Power Supply). If you use the Digital's RS232C Isolation Unit, please select it to VCC. Default		
Dev	ice-Specific Settings		
		ice/PLCs 16 Unit(s) 📊	
	No. Device Nar	me Settings Settings Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611	
	👗 1 PLC1	HUE I prove a quipment Address=1, hest of the bits in this word=bo hot clear, it cont	

[Max Query] tab

Device Setting

[Equipment Configuration] tab

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

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

Individual Device Settings	💰 Individual Device Settings
LC1	PLC1
Equipment Configuration Max Query	Equipment Configuration Max Query
Slave Equipment Address	Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 2000 📑 bits
Rest of the bits in this word O Clear O Do not clear	Coil (0) Write (0FH) 800 📑 bits
Note on when selecting "Do not clear" : If the ladder program writes data to Holding Register during the read/write process: the resulting data may be incorrect.	Discrete Input (1) Read (02H) 2000 * bits
read/write process, the resulting data may be incorrect.	Input Register (3) Read (04H) 125 🚔 words
EC61131 Syntax	Holding Register (4) Read (03H) 125 🐳 words
Address Mode O-based (Default)	Holding Register (4) Write (10H)
Please reconfirm all of address settings that you are using if you have changed the setting.	
Variables	Single Bit manipulation to Coil/Discrete Input
Double Word word order Low word first(L/H)	
Low Security Level	
Default	Default
OK (<u>0</u>) Cancel	0K (<u>0</u>) Cancel

Settings of External Device

Use the dedicated tool for basic settings (Resource Configurator) and ladder software (Logic Designer) for communication settings.

<Communication Settings for the Communication Module>

1 Set IP address of the External Device to "192.168.1.1".

• For more details on how to set IP address of the External Device, refer to the online help of the dedicated tool for the FCN/FCJ basic settings.

- 2 Start up the dedicated tool for the basic settings.
- **3** From the [File] menu, select [Connection] to display the [Connect] dialog box.
- 4 Enter "192.168.1.1" in [Host].
- 5 Enter [User Name] and [Password] to login.
- 6 Select the link I/F to use from the [Controller Configuration] tree view.
- 7 Enter the port name in [Port Name].
- **8** Select [Port1] from the link I/F to use the [Controller Configuration] tree view.

9 Set specifications as follows:

Specifications	Setting
Wiring Method	-
Duplex Operation	Full-duplex
Baud Rate	19200
Data Bits	8
Parity Setting	EVEN
Stop Bits	1
Send Signal Check	NONE
Recieve Flow Control	NONE
API Error Detection	YES

- 10 Download the communication settings to the External Device.
- **11** Reboot the External Device.

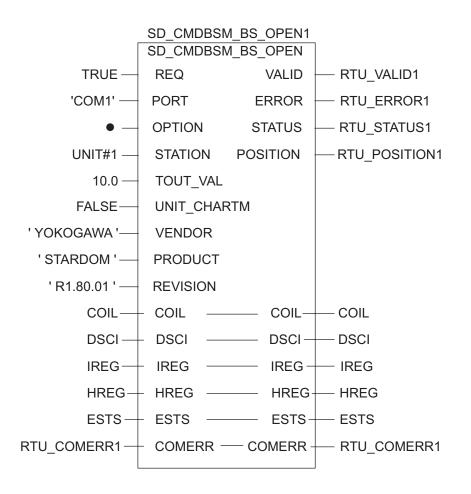
<Control Logic Download Procedures>

- 1 Start up the ladder software.
- 2 Create the control logic in order to start the MODBUS communication (RTU mode) slave function. For the example of control logic, refer to "♦Control Logic Example".
 - G " ◆ Control Logic Example" (page 37)
- **3** Double-click ['COM1'] next to [PORT] to display the [Variable Properties] dialog box.
- 4 Enter the connecting port name in [Name], and click [OK].
- 5 Double-click [UNIT#1] next to [STATION] to display the [Variable Properties] dialog box.
- 6 Enter the connecting station name in [Name], and click [OK].
- 7 Select [Rebuild Project] from the [Build] menu.
- 8 Double-click [Target Setting] in the project tree window to display the [Target] dialog box.
- 9 Enter "192.168.1.1" in [Host Name/IP Address].
- 10 Click [OK].
- 11 Download the communication settings to the External Device.
- **12** Reboot the External Device.

♦ Control Logic Example

To connect the Display to the External Device, the control logic is requred.

The control logic example is shown below.



3.13 Setting Example 13

- Settings of GP-Pro EX
- Communication Settings

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

Devic	æ/PLC 1					
Sum	mary	Change Device/PLC				
	Maker Schneider El	ectric Industries Driver MODBUS SID Master Port COM1				
	Text Data Mode	1 Change				
Com	munication Settings					
	SIO Type	C RS232C C RS422/485(2wire)				
	Speed	19200				
	Data Length	C 7 C 8				
	Parity	© NONE				
	Stop Bit					
	Flow Control	NONE C ER(DTR/CTS) C XON/XOFF				
	Timeout	3 🔆 (sec)				
	Retry	2 4				
	Wait To Send	3 (ms) I Default Value				
	RI / VCC	© RI O VCC				
	In the case of RS232C, you can select the 9th pin to RI (Input) or VCC (5V Power Supply). If you use the Digital's RS232C Isolation Unit, please select it to VCC. Default					
Devi	Device-Specific Settings					
	Allowable No. of Device/PLCs 16 Unit(s)					
	No. Device Nar	ne Settings				
	👗 1 PLC1	Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611				

[Max Query] tab

Device Setting

[Equipment Configuration] tab

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

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

Individual Device Settings	💰 Individual Device Settings
LC1	PLC1
Equipment Configuration Max Querv	Equipment Configuration Max Query
Slave Equipment Address	Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 2000 📑 bits
Rest of the bits in this word O Clear O Do not clear	Coil (0) Write (0FH) 800 📑 bits
Note on when selecting "Do not clear" : If the ladder program writes data to Holding Register during the read/write process: the resulting data may be incorrect.	Discrete Input (1) Read (02H) 2000 🚊 bits
read/write process, the resulting data may be incorrect.	Input Register (3) Read (04H) 125 📑 words
IEC61131 Syntax	Holding Register (4) Read (03H) 125 🐳 words
Address Mode O-based (Default)	Holding Register (4) Write (10H)
Please reconfirm all of address settings that you are using if you have changed the setting.	
Variables	Single Bit manipulation to Coil/Discrete Input
Double Word word order Low word first(L/H)	
Low Security Level	
Default	Default
OK (<u>D</u>) Cancel	OK (<u>D</u>) Cancel

Settings of External Device

Use the dedicated tool for basic settings (Resource Configurator) and ladder software (Logic Designer) for communication settings.

<Communication Settings for the Communication Module>

1 Set IP address of the External Device to "192.168.1.1".

• For more details on how to set IP address of the External Device, refer to the online help of the dedicated tool for the FCN/FCJ basic settings.

- 2 Start up the dedicated tool for the basic settings.
- **3** From the [File] menu, select [Connection] to display the [Connect] dialog box.
- 4 Enter "192.168.1.1" in [Host].
- 5 Enter [User Name] and [Password] to login.
- 6 Select the link I/F to use from the [Controller Configuration] tree view.
- 7 Enter the port name in [Port Name].
- **8** Select [Port1] from the link I/F to use the [Controller Configuration] tree view.

9 Set specifications as follows:

Specifications	Setting
Wiring Method	-
Duplex Operation	Full-duplex
Baud Rate	19200
Data Bits	8
Parity Setting	EVEN
Stop Bits	1
Send Signal Check	NONE
Recieve Flow Control	NONE
API Error Detection	YES

- 10 Download the communication settings to the External Device.
- **11** Reboot the External Device.

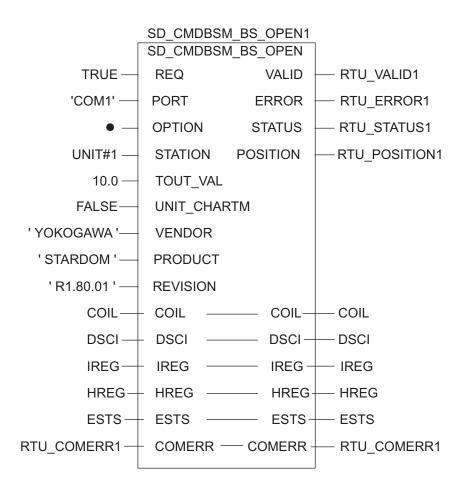
<Control Logic Download Procedures>

- 1 Start up the ladder software.
- 2 Create the control logic in order to start the MODBUS communication (RTU mode) slave function. For the example of control logic, refer to "♦Control Logic Example".
 - G " ◆ Control Logic Example" (page 41)
- **3** Double-click ['COM1'] next to [PORT] to display the [Variable Properties] dialog box.
- 4 Enter the connecting port name in [Name], and click [OK].
- 5 Double-click [UNIT#1] next to [STATION] to display the [Variable Properties] dialog box.
- 6 Enter the connecting station name in [Name], and click [OK].
- 7 Select [Rebuild Project] from the [Build] menu.
- 8 Double-click [Target Setting] in the project tree window to display the [Target] dialog box.
- 9 Enter "192.168.1.1" in [Host Name/IP Address].
- 10 Click [OK].
- 11 Download the communication settings to the External Device.
- **12** Reboot the External Device.

♦ Control Logic Example

To connect the Display to the External Device, the control logic is requred.

The control logic example is shown below.



3.14 Setting Example 14

- Settings of GP-Pro EX
- Communication Settings

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

LC				
_				
In the case of RS232C, you can select the 9th pin to RI (Input) or VCC (SV Power Supply). If you use the Digital's RS232C Isolation Unit, please select it to VCC. Default				
Device-Specific Settings				
Allowable No. of Device/PLCs 16 Unit(s)				
JEC611				

[Max Query] tab

Device Setting

[Equipment Configuration] tab

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

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

Individual Device Settings	💰 Individual Device Settings
LC1	PLC1
Equipment Configuration Max Querv	Equipment Configuration Max Query
Slave Equipment Address	Address Function Codes Max Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 2000 📑 bits
Rest of the bits in this word O Clear O Do not clear	Coil (0) Write (0FH) 800 📑 bits
Note on when selecting "Do not clear" : If the ladder program writes data to Holding Register during the read/write process: the resulting data may be incorrect.	Discrete Input (1) Read (02H) 2000 👘 bits
read/write process, the resulting data may be incorrect.	Input Register (3) Read (04H) 125 📑 words
IEC61131 Syntax	Holding Register (4) Read (03H) 125 🐳 words
Address Mode O-based (Default)	Holding Register (4) Write (10H)
Please reconfirm all of address settings that you are using if you have changed the setting.	
Variables	Single Bit manipulation to Coil/Discrete Input
Double Word word order Low word first(L/H)	
Low Security Level	
Default	Default
OK (<u>D</u>) Cancel	OK (<u>D</u>) Cancel

Settings of External Device

Use the dedicated tool for basic settings (Resource Configurator) and ladder software (Logic Designer) for communication settings.

<Communication Settings for the Communication Module>

1 Set IP address of the External Device to "192.168.1.1".

• For more details on how to set IP address of the External Device, refer to the online help of the dedicated tool for the FCN/FCJ basic settings.

- 2 Start up the dedicated tool for the basic settings.
- **3** From the [File] menu, select [Connection] to display the [Connect] dialog box.
- 4 Enter "192.168.1.1" in [Host].
- 5 Enter [User Name] and [Password] to login.
- 6 Select the link I/F to use from the [Controller Configuration] tree view.
- 7 Enter the port name in [Port Name].
- **8** Select [Port1] from the link I/F to use the [Controller Configuration] tree view.

9 Set specifications as follows:

Specifications	Setting
Wiring Method	-
Duplex Operation	Full-duplex
Baud Rate	19200
Data Bits	8
Parity Setting	EVEN
Stop Bits	1
Send Signal Check	NONE
Recieve Flow Control	NONE
API Error Detection	YES

- 10 Download the communication settings to the External Device.
- **11** Reboot the External Device.

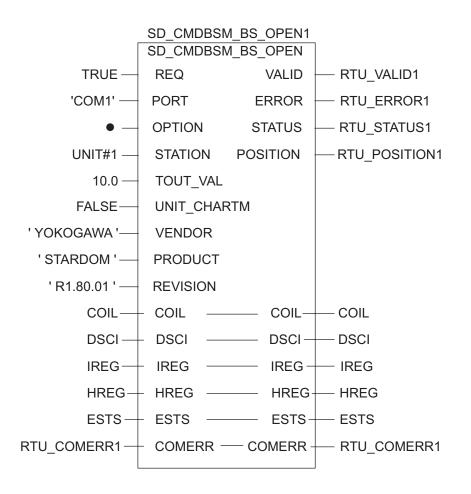
<Control Logic Download Procedures>

- 1 Start up the ladder software.
- 2 Create the control logic in order to start the MODBUS communication (RTU mode) slave function. For the example of control logic, refer to "♦Control Logic Example".
 - G " ◆ Control Logic Example" (page 45)
- **3** Double-click ['COM1'] next to [PORT] to display the [Variable Properties] dialog box.
- 4 Enter the connecting port name in [Name], and click [OK].
- 5 Double-click [UNIT#1] next to [STATION] to display the [Variable Properties] dialog box.
- 6 Enter the connecting station name in [Name], and click [OK].
- 7 Select [Rebuild Project] from the [Build] menu.
- 8 Double-click [Target Setting] in the project tree window to display the [Target] dialog box.
- 9 Enter "192.168.1.1" in [Host Name/IP Address].
- 10 Click [OK].
- 11 Download the communication settings to the External Device.
- **12** Reboot the External Device.

♦ Control Logic Example

To connect the Display to the External Device, the control logic is requred.

The control logic example is shown below.



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 10)

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.

Devic	e/PLC1			
Sum	mary			Change Device/PLC
	Maker Schneider El	ctric Industries Driver M	ODBUS SIO Master	Port COM1
	Text Data Mode	1 Change		
Com	munication Settings			
	SIO Type	RS232C C RS422/485(2w)	ire) C RS422/485(4wire)	
	Speed	19200 💌		
	Data Length	C 7 C 8		
	Parity	O NONE O EVEN	O ODD	
	Stop Bit	© 1 C 2		
	Flow Control	NONE O ER(DTR/CTS)	O XON/XOFF	
	Timeout	3 📫 (sec)		
	Retry	2		
	Wait To Send	3 🕂 (ms) 🔽 Default	Value	
	RI / VCC	RI O VCC		
		2C, you can select the 9th pin to RI (Ir upply). If you use the Digital's RS232 select it to VCC.		
Devi	ice-Specific Settings			
		e/PLCs 16 Unit(s) 📷		
	No. Device Nar		quipment Address=1,Rest of the bits i	a this word-Do not clear IECC11
	👗 1 PLC1	TE Diave F	quipment Address=1, hest of the bits if	This word-borriot clear, iECOTT

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 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		
	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.		
	Wait To Send (ms) = <u>3500 x (1 + Data Length + Stop Bit + Parity)</u> Speed (bps)		
Wait To Send	Value for the parity setting is shown below. No Parity = 0 Parity Even = 1 Parity Odd = 1		
	 NOTE After changing the Wait To Send value for the project, of which [Default Value] is checked, in the off-line mode, the Wait To Send value will be recalculated when the project is received and communication settings are displayed. 		
RI/VCC	You can switch RI/VCC of the 9th pin when you select RS232C for SIO type. It is necessary to change RI/5V by changeover switch of IPC when connect with IPC. Please refer to the manual of the IPC for more detail.		

Device Setting

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

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

Equipment Address	
Slave Equipment Address	1
Bit manipulation (set/reset) to H	olding Register
Rest of the bits in this word	C Clear 💿 Do not clear
read/write process, the result	data to Holding Register during the ting data may be incorrect.
Address Mode	0-based (Default)
Please reconfirm all of address have changed the setting.	settings that you are using if you
Variables	
Double Word word order	Low word first(L/H)
Low Security Level	

[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	
Rest of the bits in this word	same word when the bit manipulation to Holding Register is performed.		
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".	
Low Security Level		Put a check when lowering the format check level.	

[Max Query] tab

💕 Individual Devic	e Settings		×		
PLC1					
Equipment Configuration Max Query					
Address	Function Codes	Max Query			
Coil (0)	Read (01H)	2000 📑 bits			
Coil (0)	Write (0FH)	800 📑 bits			
Discrete Input (1)	Read (02H)	2000 🛨 bits			
Input Register (3)	Read (04H)	125 🔹 wor	ds		
Holding Register (4)	Read (03H)	125 🔹 wor	ds		
Holding Register (4)	Write (10H)	100 🔹 wor	ds		
Single Bit manipulation to Coil/Discrete Input					
		Defa	ault		
OK (<u>0</u>) Cancel					

Setup Items		Setup Description		
Coil		Set the number of max data for device [coil] which can be read for one communication, using 16 to 2000 bits.		
	Read	 NOTE When [Single Bit manipulation to Coil/Discrete Input] is checked, set the data maximum number from 1 to 2000. 		
Coil		Set the number of max data for device [coil] which can be written for one		
	Write	communication, using 1 to 800 bits.		
Discrete Input		Set the number of max data for device [discrete input] which can be read for one communication, using 16 to 2000 bits.		
	Read	 • When [Single Bit manipulation to Coil/Discrete Input] is checked, set the data maximum number from 1 to 2000. 		
Input Register		Set the number of max data for device [input register] which can be read for		
	Read	one communication, using 1 to 125 words.		
Holding Registe	r	Set the number of max data for device [holding register] which can be read		
	Read	for one communication, using 1 to 125 words.		
Holding Register		Set the number of max data for device [holding register] which can be written		
	Write	for one communication, using 1 to 100 words.		
Single Bit manipulation to Coil/ Discrete Input		Put a check when writing in or reading out coil or discreet input in bits.		

4.2 Setup Items in Off-Line Mode

NOTE

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

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

Communication Settings

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

Comm.	Device	Option		
			[oout]	
MODBUS SIO Mast	er		[COM1]	Page 1/1
	SIO Type Speed Data Length Parity Stop Bit Flow Control Timeout(s) Retry Wait To Send(ms)	RS232C 19200 7 NONE 1 NONE	8 EVEN 2 3 4	
	Exit		Back	2005/09/02 13:11:46

Setup Items	Setup Description
	Select the SIO type to communicate with the External Device.
SIO Type	To make the communication settings correctly, confirm the serial interface specifications of Display unit for [SIO Type]. We cannot guarantee the operation if a communication type that the serial interface does not support is specified. For details concerning the serial interface specifications, refer to the manual for Display unit.
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.

continued to next page

Setup Items	Setup Description
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	Option		-
MODBUS SIO Mast	.er		[COM1]	Page 1/1
Devic	e/PLC Name PLC	01		
Ma	Slave Address Bit manipulation IEC61131 Syntax Double Word word Low Security Lev X Query Read Coil Write Coil Read Discrete In Read Input Regis Read Holding Reg Write Holding Re Single Bit manip	OFF order Low el OFF 2000 800 put 2000 ter ister gister	1 ▼ of bits in word a word first bits bits 125 ▼ 100 ▼	re not cleared
	Exit		Back	2007/06/28 12:26:16

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	x	Displays the usage status of the currently set IEC61131 syntax in ON/OFF. (Not available in off-line mode.)	
Double Word wo	rd 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.)	
Low Security Lev	/el	When an format check level is lowered, ON/OFF is displayed. When the level is lowered, ON is displayed. (Not available to set in off-line mode.)	
Coil		Displays the number of max data for device [coil] which can be read for one communication. (Not available to set in off-line mode.)	
Coil Write		Displays the number of max data for device [coil] which can be written for	
		one communication. (Not available to set in off-line mode.)	
Discrete Input		Displays the number of max data for device [discrete input] which can be	
	Read	read for one communication. (Not available to set in off-line mode.)	

continued to next page

Setup Items		Setup Description		
Input Register		Set the number of max data for device [input register] which can be read for		
	Read	one communication, using 1 to 125 words.		
Holding Register		Set the number of max data for device [holding register] which can be read		
Read		for one communication, using 1 to 125 words.		
Holding Register		Set the number of max data for device [holding register] which can be written		
Write		for one communication, using 1 to 100 words.		
Single Bit manipulation		ON/OFF display shows whether the coil or discreet input is written or read out in bits. If ON is displayed, writing or reading can be executed in bits. (Not available to set in off-line mode.)		

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].

Comm.	Device	Option		
MODBUS SIO Mast	;er		[COM1]	Page 1/1
	the 9th pin Power Suppl	 RI of RS232C, you to RI(Input) or y). If you use th ation Unit, plea 	can select r VCC(5V ne Digital's	
	Exit		Back	2005/09/02 13:11:50

Setup Items Setup Description	
RI/VCC	You can switch RI/VCC of the 9th pin when you select RS232C for SIO type. It is necessary to change RI/5V by changeover switch of IPC when connect with IPC. Please refer to the manual of the IPC for more detail.

5 Cable Diagram

The cable diagram shown below may be different from the cable diagram recommended by Schneider Electric Industries or YOKOGAWA Electric Corporation. 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.
- Connect the isolation unit, when communication is not stabilized under the influence of a noise etc.

Cable Diagram 1

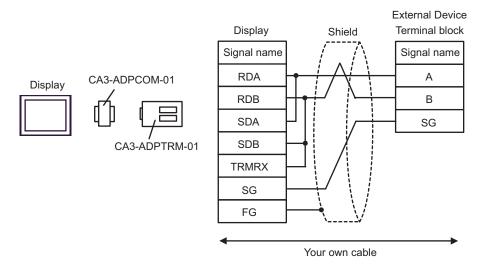
Display (Connection Port)	Cable		Notes
GP ^{*1} (COM1) AGP-3302B (COM2) ST ^{*2} (COM2)	А	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	В	Your own cable	
GP ^{*3} (COM2)	С	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	The cable length must be 200m or less.
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	
IPC ^{*4}	Е	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	F	Your own cable	

*1 All GP models except AGP-3302B

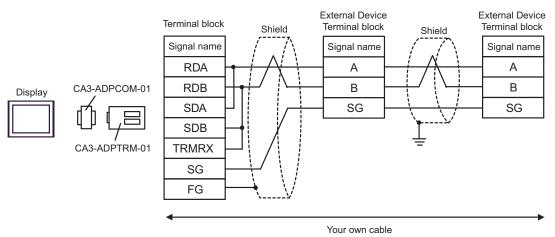
*2 All ST models except AST-3211A

*3 All GP models except GP-3200 series and AGP-3302B

- *4 Only the COM port which can communicate by RS-422/485 (2 wire) can be used. ⁽³⁷⁾ ■ IPC COM Port (page 7)
 - 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

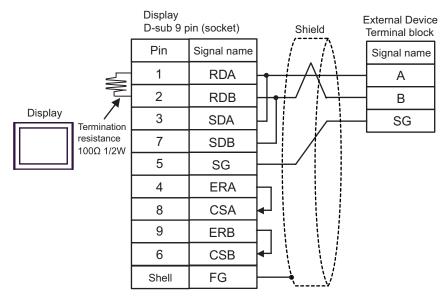


• 1:n Connection

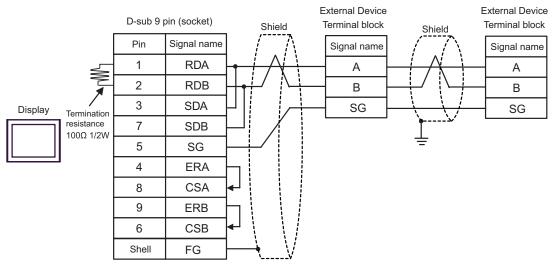


B) When using your own cable

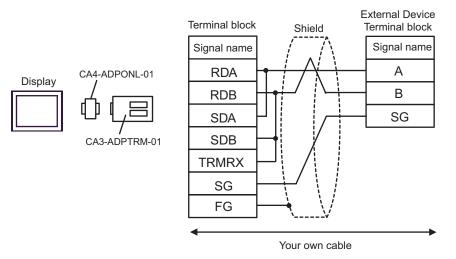
• 1:1 Connection



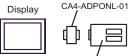
• 1:n Connection



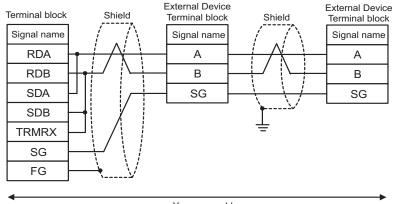
- C) When using the online adapter (CA4-ADPONL-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
- 1:1 Connection •



1:n Connection ٠

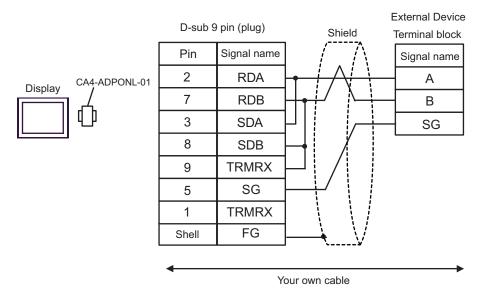




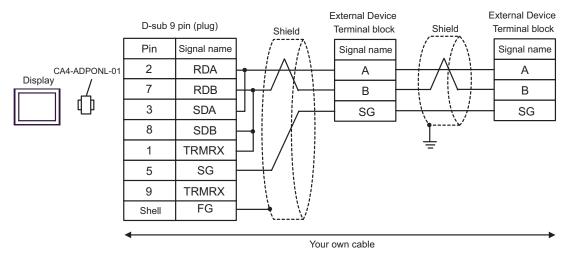


Your own cable

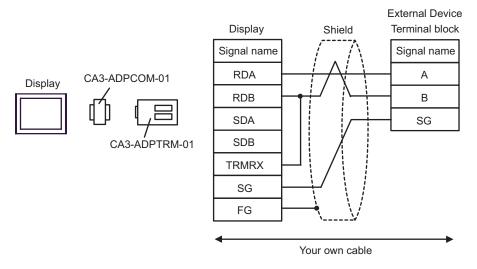
- D) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable
- 1:1 Connection



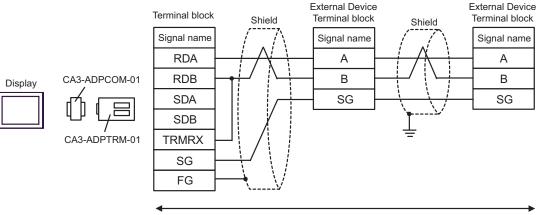
• 1:n Connection



- E) 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



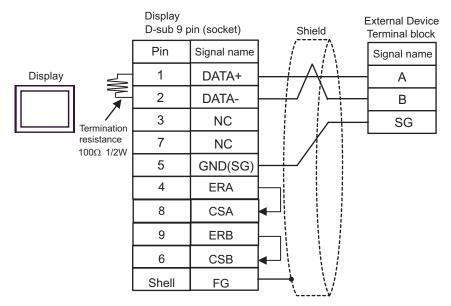
1:n Connection



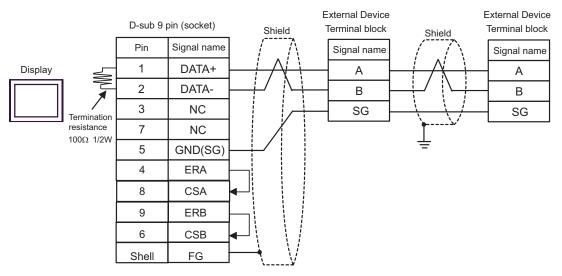
Your own cable

F) When using your own cable

• 1:1 Connection



1:n Connection

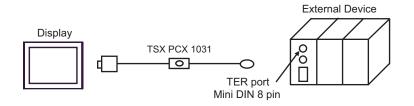


Cable Diagram 2

Display (Connection Port)	Cable	Notes
GP (COM1) ST (COM1) IPC ^{*1} PC/AT	Cable by Schneider Electric Industries TSX PCX 1031 (2.5m) ^{*2}	

*1 Only the COM port which can communicate by RS-232C can be used. ☞ ■ IPC COM Port (page 7)

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



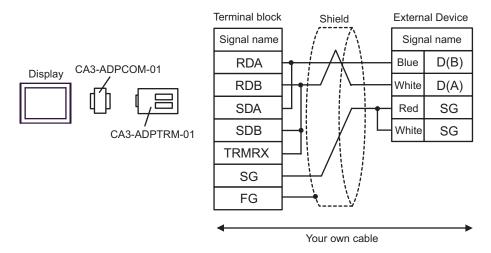
Cable Diagram 3

Display (Connection Port)	Cable	Notes
GP ^{*1} (COM1) AGP-3302B (COM2) ST ^{*2} (COM2)	A COM port conversion adapter 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	
	B Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	_
GP*4 (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	The cable length must be 10m or less. ^{*3}
	D Online adapter by Pro-face CA4-ADPONL-01 + Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	
IPC*5	E COM port conversion adapter 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.* ³
*1 All GP models exce	F Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	

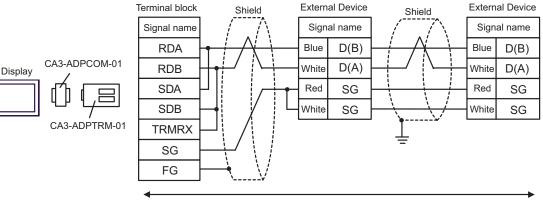
*1 All GP models except AGP-3302B

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- *2 All ST models except AST-3211A
- *3 Max length between the "GP" and the "Accessory Box connected to GP". Total cable length between accessory boxes must be 1000m or less.
- *4 All GP models except GP-3200 series and AGP-3302B
- *5 Only the COM port which can communicate by RS-422/485 (2 wire) can be used.
 IPC COM Port (page 7)
 - 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



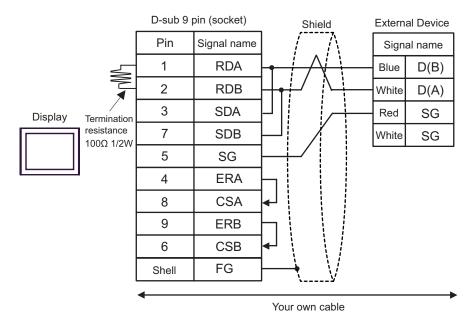
• 1:n Connection



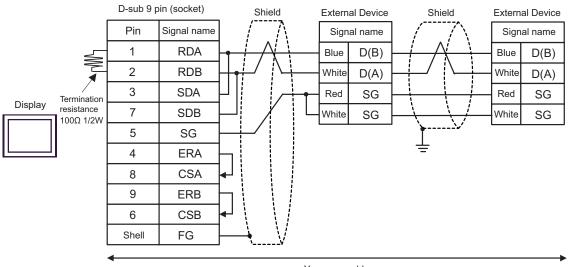
Your own cable

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

• 1:1 Connection

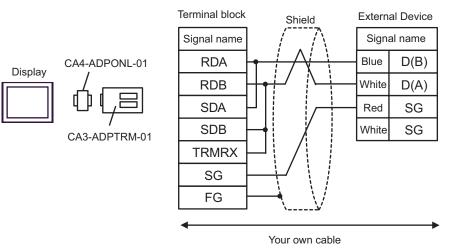


• 1:n Connection

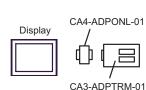


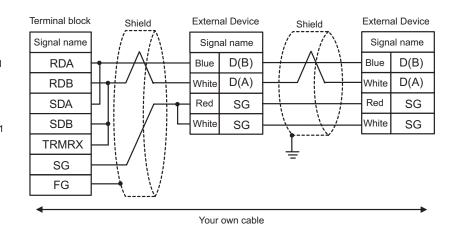
Your own cable

- 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

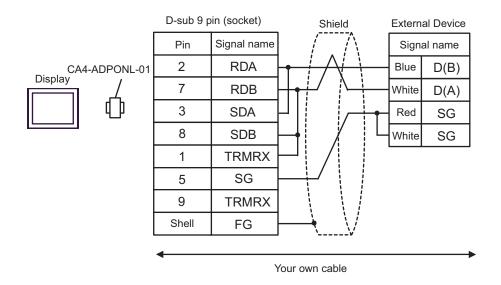


• 1:n Connection

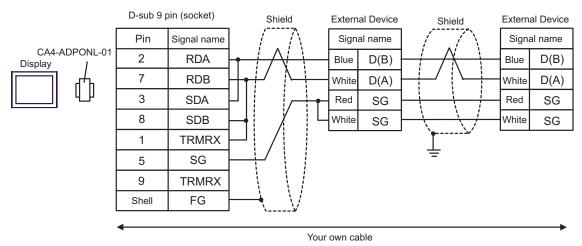




- D) When using the online adapter (CA4-ADPONL-01) by Pro-face and the accessory box (TSX SCA 50) by Schneider Electric
- 1:1 Connection



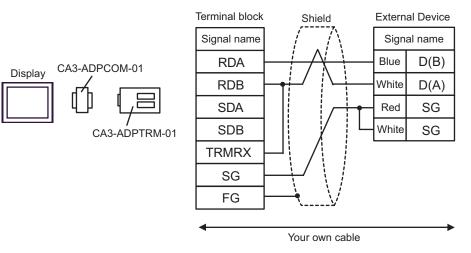
• 1:n Connection



External Device

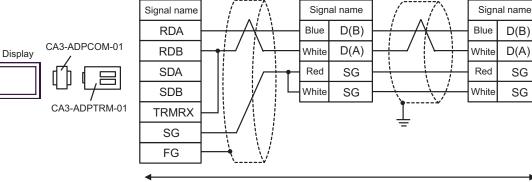
Shield

- E) 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

Terminal block



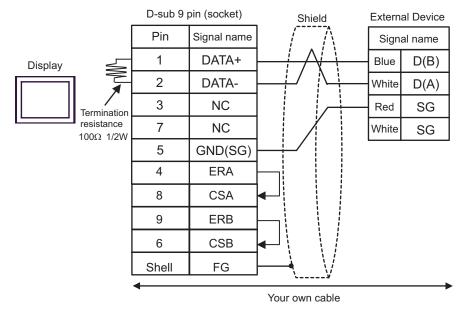
Shield

Your own cable

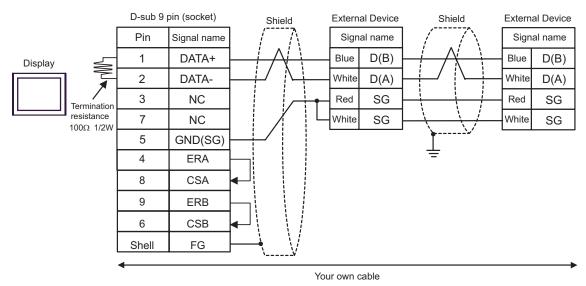
External Device

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

• 1:1 Connection



• 1:n Connection



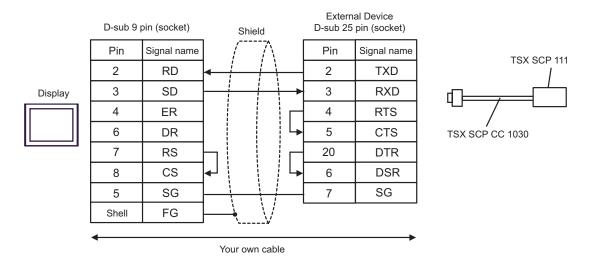
Cable Diagram 4

Display (Connection Port)	Cable	Notes
GP (COM1) ST (COM1) IPC ^{*1} PC/AT	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. *2

*1 Only the COM port which can communicate by RS-232C can be used.
 IPC COM Port (page 7)

*2 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-3302B (COM2) ST ^{*2} (COM2)	A	COM port conversion adapter 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	
	В	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*3 (COM2)	С	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	

Display (Connection Port)	Cable		Notes
IPC*4	COM port conversion a CA3-ADPC + Connector terminal block by Pro-f CA3-ADPT + Your own + Uni-Telway cable by Schne TSX SCP CU 4 + PCMCIA card for RS485 by Sc TSX SCP	DM-01 conversion adapter ace RM-01 cable der Electric Industries 030 (3m) hneider Electric Industries	
	Your own + Uni-Telway cable by Schne TSX SCP CU + PCMCIA card for RS485 by Sc TSX SCP	der Electric Industries 030 (3m) hneider Electric Industries	

*1 All GP models except AGP-3302B

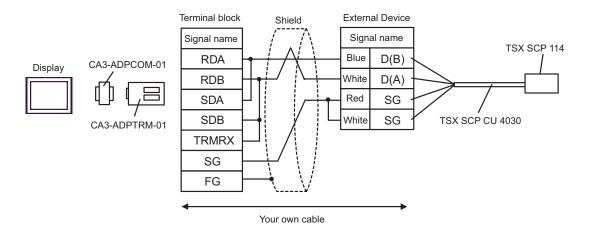
*2 All ST models except AST-3211A

*3 All GP models except GP-3200 series and AGP-3302B

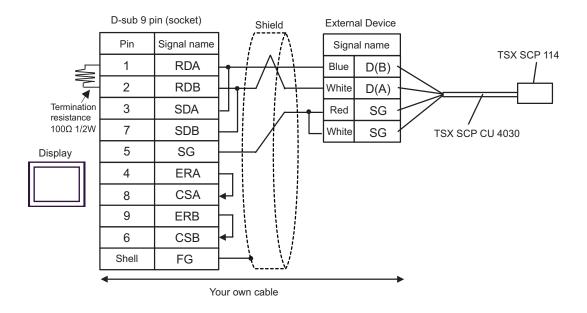
*4 Only the COM port which can communicate by RS-422/485 (2 wire) can be used.

IPC COM Port (page 7)

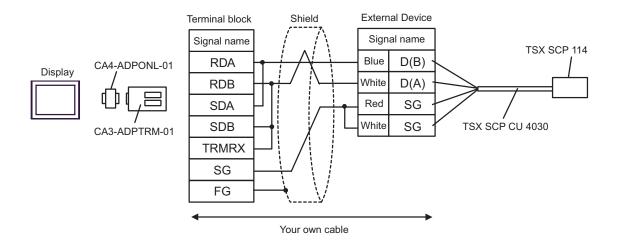
A) When using the COM port conversion adapter (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



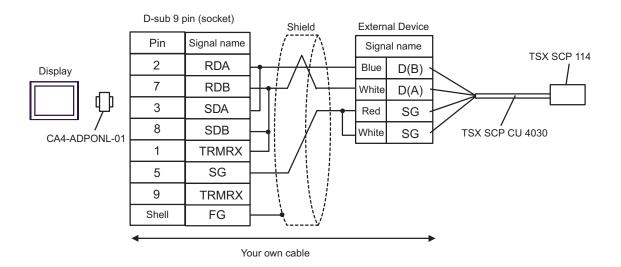
B) When using your own cable, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



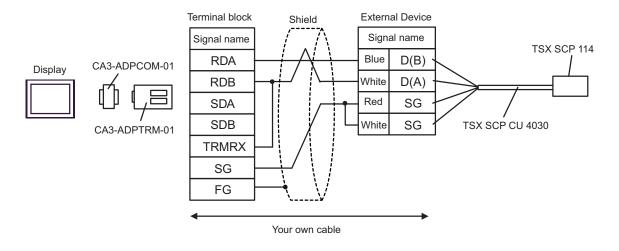
C) When using the online adapter (CA4-ADPONL-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



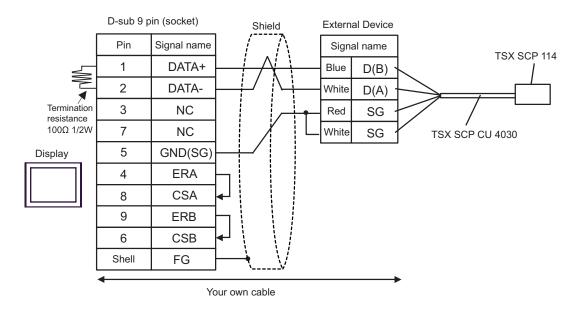
D) When using the online adapter (CA4-ADPONL-01) by Pro-face, your own cable, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



E) 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



F) 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



Display (Connection Port)	Cable	Notes
GP (COM1) ST (COM1) IPC ^{*1} PC/AT	Your own cable	The cable length must be 15m or less.

*1 Only the COM port which can communicate by RS-232C can be used. ☞ ■ IPC COM Port (page 7)

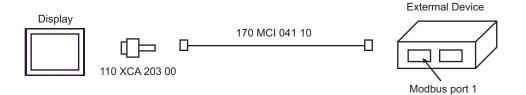
	D-sub 9 pi	n (socket)	Shield		al Device pin (plug)
	Pin	Signal name		Pin	Signal name
2 3 Display 4 5 6	RD		2	RXD	
	3	SD		3	TXD
	4	ER		5	SG
	5	SG		4	DTR
	6	DR	L,	6	DSR
	7	RS		7	RTS
	8	CS	_┫ ┙╷╷╷└╞	8	CTS
	Shell	FG	\rightarrow V		
•					

Your own cable

Display (Connection Port)	Cable	Notes
GP (COM1) ST (COM1) IPC ^{*1} PC/AT	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.

*1 Only the COM port which can communicate by RS-232C can be used.

IPC COM Port (page 7)



Display (Connection Port)		Cable	Notes
GP ^{*1} (COM1) AGP-3302B (COM2) ST ^{*2} (COM2) IPC ^{*3}	A Connector terminal block conversion adapter CA3-ADPCOM-01 + A Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable		
	В	Your own cable	
GP ^{*4} (COM2)	С	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	The cable length must be 500m or less.
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	

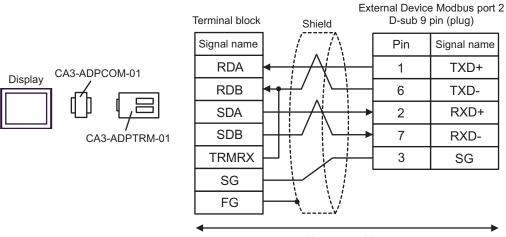
*1 All GP models except AGP-3302B

*2 All ST models except AST-3211A

*3 Only the COM port which can communicate by RS-422/485 (4 wire) can be used. ☞ ■ IPC COM Port (page 7)

*4 All GP models except GP-3200 series and AGP-3302B

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

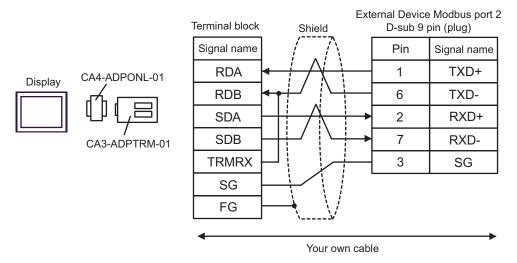


Your own cable

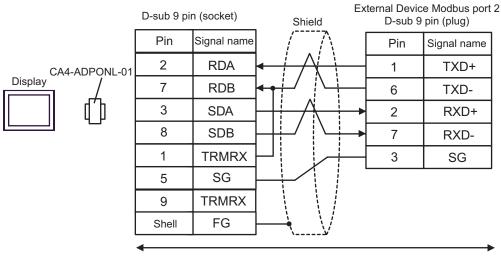
B) When using your own cable

	D-sub 9 p	oin (socket)		Shield	Ext		e Modbus port 2 pin (plug)
	Pin	Signal name		$\left(\right)$	\	Pin	Signal name
	1	RDA	-	$+\Lambda$		1	TXD+
	2	RDB	◀			6	TXD-
Display Termination	3	SDA				2	RXD+
resistance 100Ω 1/2W	7	SDB		L/ \		7	RXD-
	5	SG				3	SG
	4	ERA	$ \vdash $				
	8	CSA	┥				
	9	ERB					
	6	CSB	┫				
	Shell	FG		4	/		

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



Your own cable

Display (Connection Port)	Cable	Notes
GP (COM1) ST (COM1) IPC ^{*1} PC/AT	Your own cable	The cable length must be 15m or less.

*1 Only the COM port which can communicate by RS-232C can be used. ^{CP}■ IPC COM Port (page 7)

	Display side D-sub 9 pin (socket)			Shie	eld		External Device side D-sub 9 pin (socket)		
	Pin	Signal name		1	\wedge		Pin	Signal name	
	2	RD(RXD)	┥—	+	+		3	SD	
Diamlary	3	SD(TXD)	<u> </u>				2	RD	
Display	4	ER(DTR)		<u> </u>			6	DR	
	5	SG	<u> </u>				5	SG	
	7	RS(RTS)	H			\neg	7	RS	
	8	CS(CTS)	┝┛	\ \	$\backslash /$	4	8	CS	
	Shell	FG	<u> </u>	<u> </u>	<u></u>				

GP-Pro EX Device/PLC Connection Manual

Display (Connection Port)	Cable	Notes
GP (COM1) ST (COM1) IPC ^{*1} PC/AT	Your own cable	The cable length must be 15m or less.

Only the COM port which can communicate by RS-232C can be used. *1 IPC COM Port (page 7)

	Displa D-sub 9 pi	y side in (socket)	Sł	nield		External Device side D-sub 9 pin (plug)		
	Pin	Signal name		\wedge		Pin	Signal name	
	2	RD(RXD)	↓	+	-	3	SD	
Dianlay	3	SD(TXD)			-▶[2	RD	
Display	4	ER(DTR)		+ +	→	6	DR	
	5	SG			-	5	SG	
	7	RS(RTS)	H		Ч	7	RS	
	8	CS(CTS)	┥┊	$\langle $	4	8	CS	
	Shell	FG	├ ──`	<u> </u>	→	1	CD	

Display (Connection Port)		Cable	Notes
GP ^{*1} (COM1) AGP-3302B (COM2) ST ^{*2} (COM2) IPC ^{*3}	А	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	В	Your own cable	
GP ^{*4} (COM2)	С	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	The cable length must be 1000m or less.
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	

*1 All GP models except AGP-3302B

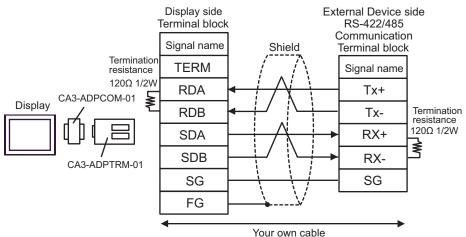
*2 All ST models except AST-3211A

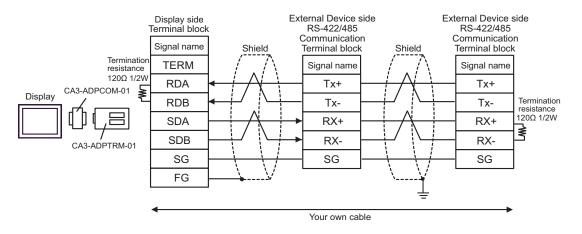
*3 Only the COM port which can communicate by RS-422/485 (4 wire) can be used. ☞ ■ IPC COM Port (page 7)

*4 All GP models except GP-3200 series and AGP-3302B

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

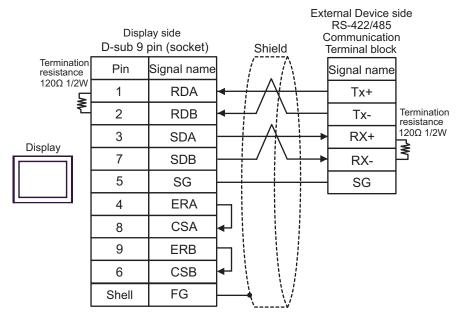




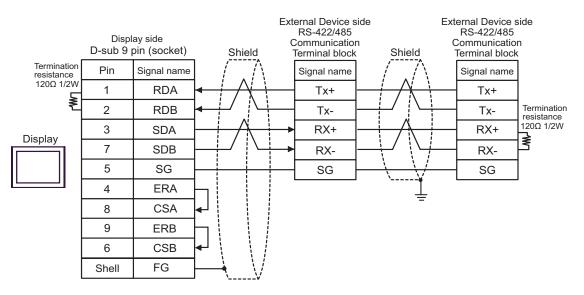


B) When using your own cable

• 1:1 Connection

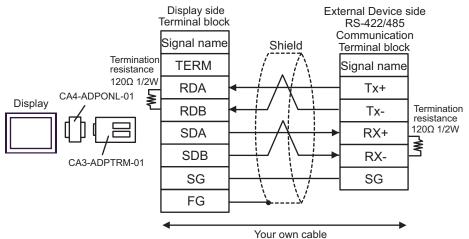


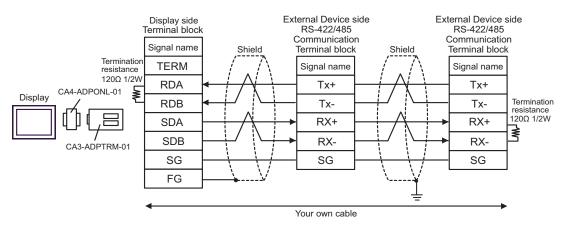
1:n Connection



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

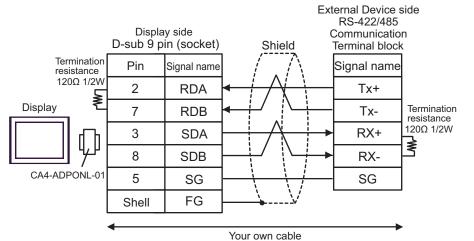
• 1:1 Connection

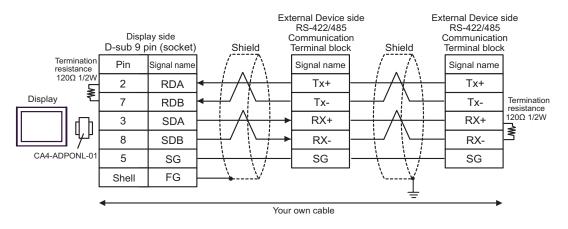




D) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable

• 1:1 Connection





Display (Connection Port)		Cable	Notes
GP ^{*1} (COM1) AGP-3302B (COM2) ST ^{*2} (COM2)	А	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	В	Your own cable	
GP ^{*3} (COM2)	С	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	The cable length must be 1000m or less.
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	
IPC*4	Е	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	F	Your own cable	

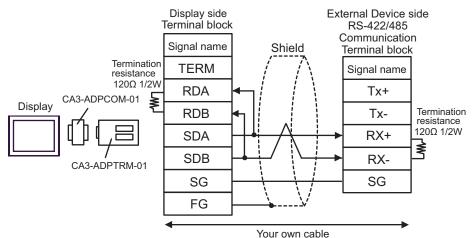
*1 All GP models except AGP-3302B

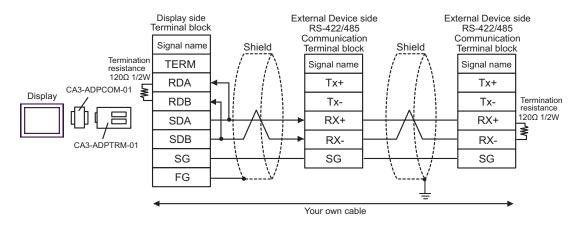
*2 All ST models except AST-3211A

*3 All GP models except GP-3200 series and AGP-3302B

*4 Only the COM port which can communicate by RS-422/485 (2 wire) can be used. [™] ■ IPC COM Port (page 7) 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

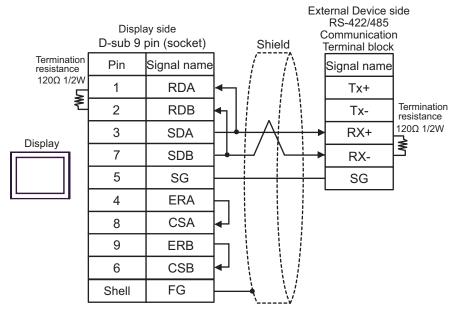
• 1:1 Connection



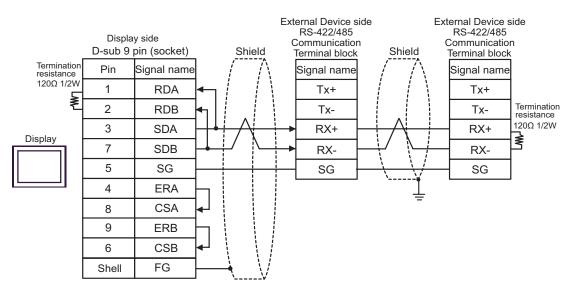


B) When using your own cable

• 1:1 Connection

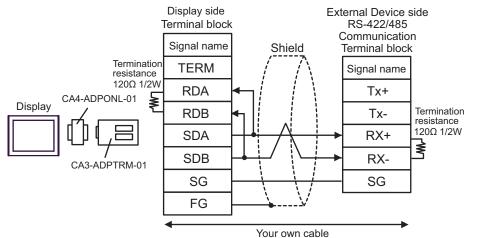


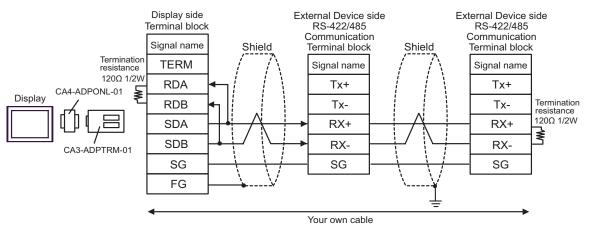
1:n Connection



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

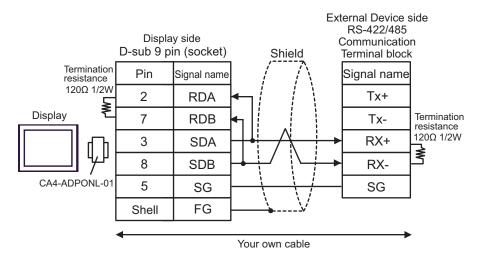
• 1:1 Connection



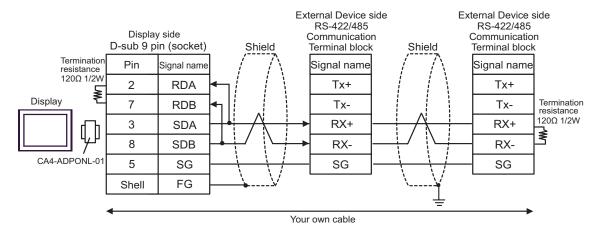


D) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable

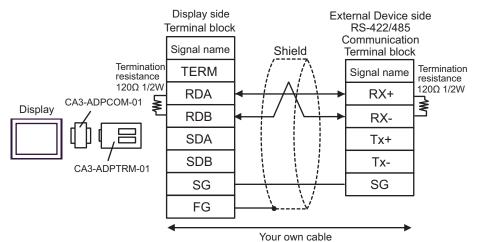
• 1:1 Connection

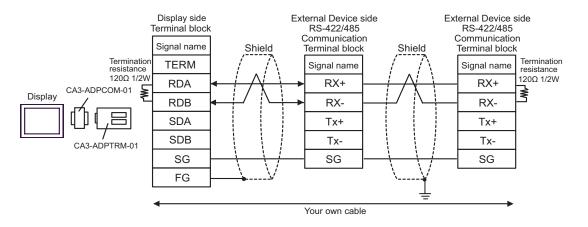


1:n Connection



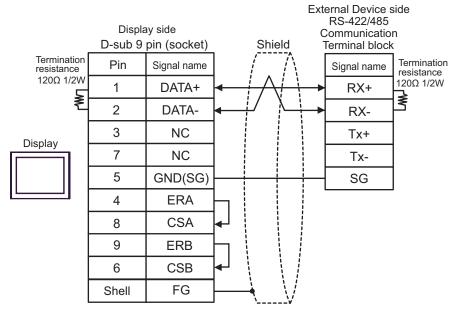
- E) When using the COM port conversion adapter (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
- 1:1 Connection



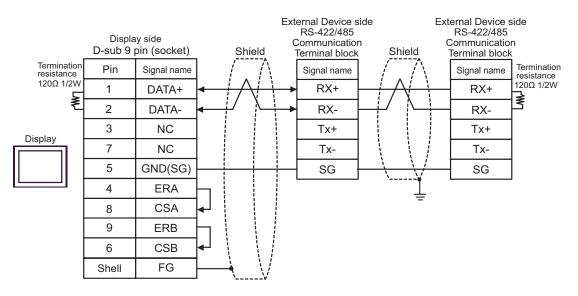


F) When using your own cable

• 1:1 Connection



1:n Connection



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.

■ Micro/Premium/Twido/Quantum/Momentum Series

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Coil	000001 - 065536	000001 - 065521		+1B+ 1
Discrete Input	100001 - 165536	100001 - 165521	[L/H]	(+1B+ 1) *2
Input Register		300001 - 365536	or	B i 15 *2
Holding Register	400001,00 - 465536,15 ^{*3}	400001 - 465536	[H / L] *1	<u>⊪⊤15</u>]

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

⁽³⁾ "4.1 Setup Items in GP-Pro EX" (page 46)

*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..... B i t 15

- Do not clear 400001,00 - 465536,15

■ FCN/FCJ Series

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Coil	000001 - 009984	000001 - 009969		+1B+ 1 *2
Discrete Input	100001 - 109984	100001 - 109969	[L/H]	+1B+ 1 *2 *3
Input Register	300001.00 - 309999.15	300001 - 309999	or [H/L]	<u>₿ ; ;15</u>] *3
Holding Register	400001.00 - 409999.15	400001 - 409999	*1	<u>⊪, 15</u>)

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

⁽³⁾ "4.1 Setup Items in GP-Pro EX" (page 46)

*2 The device access range of the External Device is spcified as 1 to 9999, that of the Display, however, as up to 9984, since the Display device is accessible in 16-bit units.

*3 Write disable

Supported Function Code

Below is the list of Supported Function Code.

Description		
Reads the ON/OFF status of coils (0X references) in the slave.		
Reads the ON/OFF status of discrete inputs (1X references) in the slave.		
Reads the binary content of holding registers (4X references) in the slave.		
Reads the binary content of input registers (3X references) in the slave.		
Forces a single coil (0X references) to either ON or OFF		
Presets a value into a single holding register (4X references).		
Forces each coil (0X references) in a sequence of coils to either ON or OFF.		
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.

	Modbus address syntax		IEC61131syntax					
Device				0-based		1-based		
	Format	Range	First element	Format	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.



• Please refer to the GP-Pro EX Reference Manual for system data area.

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

"Manual Symbols and Terminology"

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.

■ Micro/Premium/Twido/Quantum/Momentum Series

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

FCN/FCJ Series

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 IP address is displayed such as "IP address(Decimal): MAC address(Hex)". Device address is diplayed 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 "When an error is displayed (Error Code List)" in "Maintenance/Troubleshooting Manual" for details on the error messages common to the driver.