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 8)
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 9)
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.	<sup>ব্লে</sup> "4 Setup Items" (page 29)
5	Cable Diagram This section shows cables and adapters for connecting the Display and the External Device.	ি "5 Cable Diagram" (page 38)
	Operation	

## 1 System Configuration

The system configuration in the case when the External Device of Schneider Electric Industries and the Display are connected is shown.

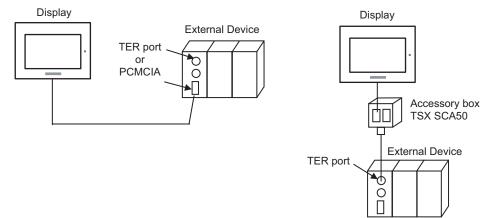
Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
	TSX 37 05 028DR1 TSX 37 08 056DR1 TSX 37 10 128DT1 TSX 37 10 128DR1 TSX 37 10 128DR1 TSX 37 10 128DTK1	TER port on CPU	RS232C	Setting Example 1 (page 9)	Cable Diagram 2 (page 45)
	TSX 37 10 123DTK1 TSX 37 10 164DTK1 TSX 37 10 028AR1 TSX 37 10 028DR1	Accessory box TSX SCA 50	RS485 (2wire)	Setting Example 3 (page 13)	Cable Diagram 3 (page 46)
Micro		TER port on CPU	RS232C	Setting Example 1 (page 9)	Cable Diagram 2 (page 45)
	TSX 37 21 101 TSX 37 22 101	Accessory box TSX SCA 50	RS485 (2wire)	Setting Example 3 (page 13)	Cable Diagram 3 (page 46)
	TSX 37 21 001 TSX 37 22 001	PCMCIA card for RS232C TSX SCP 111	RS232C	Setting Example 2 (page 11)	Cable Diagram 4 (page 53)
		PCMCIA card for RS485 TSX SCP 114	RS485 (2wire)	Setting Example 3 (page 13)	Cable Diagram 5 (page 54)
	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 15)	Cable Diagram 4 (page 53)
Premium		PCMCIA card for RS485 TSX SCP 114	RS485 (2wire)	Setting Example 5 (page 17)	Cable Diagram 5 (page 54)
	TWD LCAA 10DRF TWD LCAA 16DRF TWD LCAA 24DRF TWD LMDA 20DTK TWD LMDA 20DUK TWD LMDA 20DRT TWD LMDA 40DTK TWD LMDA 40DUK	Programming port on CPU	RS232C	Setting Example 6 (page 19)	Cable Diagram 2 (page 45)
Twido		TWD NAC 485T	RS485 (2wire)	Setting Example 7 (page 21)	Cable Diagram 1 (page 38)
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 23)	Cable Diagram 6 (page 59)

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 25)	Cable Diagram 7 (page 60)
Momentum	171 CCS 780 00 171 CCC 780 10 171 CCC 980 20 171 CCC 980 30	Modbus port 1 on CPU	RS232C	Setting Example 9 (page 25)	Cable Diagram 7 (page 60)
		Modbus port 2 on CPU	RS485 (4wire)	Setting Example 10 (page 27)	Cable Diagram 8 (page 61)
		Modbus port 2 on CPU	RS485 (4wire)	Setting Example 10 (page 27)	Cable Diagram 8 (page 61)

## Connection Configuration

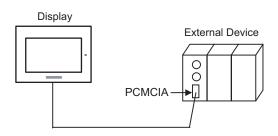
#### Micro Series

• 1:1 Connection



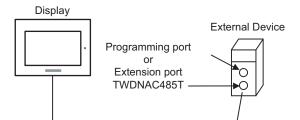
#### Premium Series

• 1:1 Connection

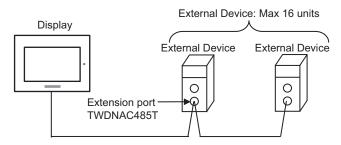


#### Twido Series

1:1 Connection

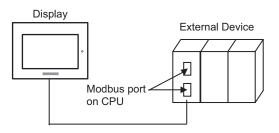


• 1:n Connection

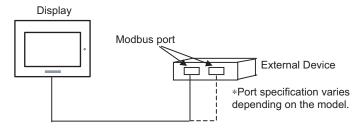


#### Quantum Series

1:1 Connection



- Momentum Series
  - 1:1 Connection



## COM Port of IPC

When connecting IPC with External Device, the COM port which can be used changes with series and SIO type. Please refer to the manual of IPC for details.

#### Usable port

Series	Usable port				
Conco	RS-232C	RS-422/485(4 wire)	RS-422/485(2 wire)		
PS-2000B	COM1 <sup>*1</sup> , COM2, COM3 <sup>*1</sup> , COM4	-	-		
PS-3650A, PS-3651A	COM1 <sup>*1</sup>	-	-		
PS-3700A (Pentium®4-M) PS-3710A	COM1 <sup>*1</sup> , COM2 <sup>*1</sup> , COM3 <sup>*2</sup> , COM4	COM3 <sup>*2</sup>	COM3 <sup>*2</sup>		
PS-3711A	COM1 <sup>*1</sup> , COM2 <sup>*2</sup>	COM2 <sup>*2</sup>	COM2 <sup>*2</sup>		

\*1 The RI/5V can be switched. Please switch with the change switch of IPC.

\*2 It is necessary to 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	Reserve (always OFF)	
2	OFF	SIO type: RS-232C	
3	OFF	510 type. K5-252C	
4	OFF	Output mode of SD (TXD) data: Always output	
5	OFF	Terminal resistance (220 $\Omega$ ) insertion to SD (TXD): None	
6	OFF	Terminal resistance (220 $\Omega$ ) insertion to RD (RXD): None	
7	OFF	Short-circuit of SDA (TXA) and RDA (RXA): Does not Exist	
8	OFF	Short-circuit of SDB (TXB) and RDB (RXB): Does not Exist	
9	OFF	- RS (RTS) Auto control mode: Disable	
10	OFF	KS (KIS) Auto control mode. Disable	

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

Dip switch	Setting	Description	
1	OFF	Reserve (always OFF)	
2	ON	SIO type: RS-422/485	
3	ON	510 type. K5-422/485	
4	OFF	Output mode of SD (TXD) data: Always output	
5	OFF	Terminal resistance (220 $\Omega$ ) insertion to SD (TXD): None	
6	OFF	Terminal resistance (220 $\Omega$ ) insertion to RD (RXD): None	
7	OFF	Short-circuit of SDA (TXA) and RDA (RXA): Does not Exist	
8	OFF	Short-circuit of SDB (TXB) and RDB (RXB): Does not Exist	
9	OFF	- RS (RTS) Auto control mode: Disable	
10	OFF	KS (KIS) Auto control mode. Disable	

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

Dip switch	Setting	Description	
1	OFF	Reserve (always OFF)	
2	ON	SIO type: RS-422/485	
3	ON	510 type. K5-422/485	
4	OFF	Output mode of SD (TXD) data: Always output	
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None         Terminal resistance (220Ω) insertion to RD (RXD): None	
6	OFF		
7	ON	Short-circuit of SDA (TXA) and RDA (RXA): Exist	
8	ON	Short-circuit of SDB (TXB) and RDB (RXB): Exist	
9	ON	- RS (RTS) Auto control mode: Enable	
10	ON	KS (K15) Auto control mode. Endole	

## 2 Selection of External Device

Select the External Device to be connected to the Display.

ð	New Proje	ct File	\		
	Device/PLC				
	Maker	Schneider Electric Industries			
	Driver	MODBUS SIO Master			
	Use System Area     Refer to the manual of this Device/PLt				
	Connection Method				
	Port	COM1			
		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	<ul> <li>Check this option when you synchronize the system data area of Display and the device (memory) of External Device. When synchronized, you can use the ladder program of External Device to switch the display or display the window on the display.</li> <li>Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (only for direct access method)"</li> <li>This can be also set with GP-Pro EX or in off-line mode of Display.</li> <li>Cf. GP-Pro EX Reference Manual " 5.14.6 Setting Guide of [System Setting Window]■[Main Unit Settings] Settings Guide System Area Setting"</li> <li>Cf. Maintenance/Troubleshooting "2.14.1 Settings common to all Display models System Area Settings"</li> </ul>		
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

Summary Change Device/PLC
Maker Schneider Electric Industries Driver MODBUS SID Master Port COM1
Text Data Mode 1 Change
Communication Settings
SIO Type
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 © 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           Image: PLC1         Image: Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IE

[Max Query] tab

#### Device Setting

To display the setting screen, click III ([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 Devic	e Settings		×
PLC1	PLC1			
Equipment Configuration   Max Query   Equipment Address	Equipment Configuratio	n 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 💿 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
	Input Register (3)	Read (04H)	63 🕂	words
EC61131 Syntax	Holding Register (4)	Read (03H)	63 🕂	words
Address Mode O-based (Default) Please reconfirm all of address settings that you are using if you have changed the setting.	Holding Register (4)	Write (10H)	61 🕂	words
Variables Double Word word order Low word first(L/H)				
Default				Default
OK (D) Cancel		C	IK ( <u>D)</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	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/PLC 1	
Summary	Change Device/PLC
Maker Schneider	Electric Industries Driver MODBUS SIO Master Port COM1
Text Data Mode	1 Change
Communication Settings	
SIO Type	RS232C C RS422/485(2wire) C RS422/485(4wire)
Speed	9600
Data Length	C 7 C 8
Parity	O NONE O EVEN O ODD
Stop Bit	© 1 O 2
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 O VCC
or VCC (5V Powe	232C, you can select the 9th pin to RI (Input) er Supply). If you use the Digital's RS232C ase select it to VCC. Default
Device-Specific Settings	
	evice/PLCs 16 Unit(s) 📷
NoDevice N	lame Settings
👗 1 PLC1	Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC61

To display the setting screen, click III ([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 Setti	ngs 🔼
1	
quipment Configuration Max Q Equipment Address	luery
Slave Equipment Address	1 🗄
Bit manipulation (set/reset) to H	lolding Register
Rest of the bits in this word	⊂ Clear ● Do not clear
read/write process, the resu	data to Holding Register during the
EC61131 Syntax	
Address Mode	0-based (Default)
Please reconfirm all of address have changed the setting.	settings that you are using if you
/ariables	
/ariables Double Word word order	Low word first(L/H)
	Low word first(L/H)

[Equipment Configuration] tab

Equipment Configuration	n Max Query	
Address	Function Codes	Max Query
Coil (0)	Read (01H)	1008 🕂 bits
Coil (0)	Write (0FH)	800 🕂 bits
Discrete Input (1)	Read (02H)	1008 📫 bits
Input Register (3)	Read (04H)	63 🔹 words
Holding Register (4)	Read (03H)	63 🔹 words
Holding Register (4)	Write (10H)	61 🔹 words

#### [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 De	escription
	CHANNEL 1	
CHANNEL	TSX SCP 111 RS232 MP PCMCIA CA	RD
	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

evice/PLC 1
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 💿 RS422/485(2wire) O RS422/485(4wire)
Speed 9600
Data Length O 7 💿 8
Parity C NONE 👁 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 © 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
Device-Specific Settings Allowable No. of Device/PLCs 16 Unit(s)
No. Device Name Settings
🛛 🔏 1 PLC1 👔 Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IECE

To display the setting screen, click III ([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 Sett	ings X
PLC1	
Equipment Configuration Max	Query
Equipment Address	
Slave Equipment Address	1 😳
Bit manipulation (set/reset) to I	Holding Register
Rest of the bits in this word	C Clear 💿 Do not clear
	o not clear": ata to Holding Register during the ulting data may be incorrect.
EC61131 Syntax	
Address Mode	0-based (Default)
Please reconfirm all of addres have changed the setting.	is settings that you are using if you
Variables	
Double Word word order	Low word first(L/H)
	Default
	OK (O) Cancel

[Equipment Configuration] tab

Equipment Configuratio	n Max Query	
Address	Function Codes	Max Query
Coil (0)	Read (01H)	1008 📑 bit
Coil (0)	Write (OFH)	800 📑 bit
Discrete Input (1)	Read (02H)	1008 📑 bit
Input Register (3)	Read (04H)	63 🔹 wa
Holding Register (4)	Read (03H)	63 🔹 wa
Holding Register (4)	Write (10H)	61 📑 we

[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 De	escription
	CHANNEL 1	
CHANNEL	TSX SCP 114 RS485 MP PCMCIA CA	RD
	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

Device/	/PLC1	
Summa	ary	Change Device/PLC
м	laker Schneider Ele	ectric Industries Driver MODBUS SIO Master Port COM1
Т	ext Data Mode 🛛	1 Change
Comm	unication Settings	
S	Ю Туре	● RS232C   ○ RS422/485(2wire)   ○ RS422/485(4wire)
S	peed	9600
D	ata Length	C 7 C 8
P	arity	O NONE O EVEN O ODD
S	top Bit	© 1 © 2
F	low Control	NONE     O ER(DTR/CTS)     O X0N/X0FF
Т	imeout	3 📑 (sec)
R	etry	2 -
W	/ait To Send	5 (ms) I⊄ Default Value
R	I / VCC	RI     VCC
		2C, you can select the 9th pin to RI (Input) Supply). If you use the Digital's RS232C s select it to VCC. Default
Device	e-Specific Settings	
A		ce/PLCs 16 Unit(s) 🔢
	No. Device Nam	ne Settings Intel Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611
	h ruci	In this word=Do not clear, it control of the bits in this word=Do not clear, it control

To display the setting screen, click III ([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 🛛 🗙	💣 Individe
PLC1	PLC1
Equipment Configuration Max Query Equipment Address Slave Equipment Address 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.	Equipment Address Coil (0) Coil (0) Discrete I Input Ret
IEC61131 Syntax         Address Mode       D-based (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)         Default	Holding F
OK ( <u>0</u> ) Cancel	

[Equipment Configuration] tab

Individual Device			
Equipment Configuration	Max Query		
Address	Function Codes	Max Query	
Coil (0)	Read (01H)	1008 📑 b	its
Coil (0)	Write (OFH)	800 📑 b	its
Discrete Input (1)	Read (02H)	1008 📑 b	its
Input Register (3)	Read (04H)	63 📫 v	vords
Holding Register (4)	Read (03H)	63 📫 v	vords
Holding Register (4)	Write (10H)	61 🕂 v	vords
		D	efault
		K ( <u>0</u> ) Car	ncel

#### 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.

#### [Max Query] tab

## 3.5 Setting Example 5

Settings of GP-Pro EX

♦ Communication Settings

Device/PLC 1				
Summary Change Device/PLC				
Maker Schneider Electric Industries Driver MODBUS SID Master Port COM1				
Text Data Mode 1 Change				
Communication Settings				
SIO Type C RS232C 💿 RS422/485(2wire) C RS422/485(4wire)				
Speed 9600 💌				
Data Length © 7 💿 8				
Parity C NONE O EVEN C ODD				
Stop Bit				
Flow Control  O NONE O ER(DTR/CTS) O XON/X0FF				
Timeout 3 😑 (sec)				
Retry 2 🕂				
Wait To Send 5 👘 (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.				
Device-Specific Settings				
Allowable No. of Device/PLCs 16 Unit(s) 🔢				
No. Device Name Settings           No.         Device Name         Settings           Image:	611			
1 PLC1 III Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC	,011			

To display the setting screen, click III ([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	🞽  💣 Indivi	idual Devic
PLC1	PLC1	
Equipment Configuration Max Query Equipment Address Slave Equipment Address I Bit manipulation (set/reset) to Holding Register Rest of the bits in this word Clear C D Note on when selecting "Do not clear": If the ladder program writes data to Holding Register read/write process, the resulting data may be incorrect IEC61131 Syntax Address Mode D-based (Default) Please reconfirm all of address settings that you are us have changed the setting.	Addres Coil (0) Do not clear Coil (0) during the ct. Input F Holding	•
Variables Double Word word order Low word first(L/H)		
<u>ОК (D)</u>	Default Cancel	

[Equipment Configuration] tab

[Max	Query]	tab
LIVIAN	Queryj	uau

🇯 Individual Device	e Settings			2
LC1				
Equipment Configuration	Max Query			
Address	Function Codes	Max Que	ry.	
Coil (0)	Read (01H)	1008	÷ bits	
Coil (0)	Write (OFH)	800	÷ bits	
Discrete Input (1)	Read (02H)	1008	🕂 bits	
Input Register (3)	Read (04H)	63	+ words	
Holding Register (4)	Read (03H)	63	+ words	
Holding Register (4)	Write (10H)	61	+ words	
			Default	_
		OK ( <u>0)</u>	Cancel	1

#### 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	NNEL TSX SCP 114 RS485 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

## 3.6 Setting Example 6

Settings of GP-Pro EX

♦ Communication Settings

Device	/PLC 1	
Summ	ary	Change Device/PLC
N	laker Schneider El	ectric Industries Driver MODBUS SIO Master Port COM1
Т	ext Data Mode	1 Change
Comm	unication Settings	
S	NO Type	RS232C C RS422/485(2wire) C RS422/485(4wire)
S	peed	19200 💌
0	)ata Length	C 7 C 8
F	Parity	NONE C EVEN C ODD
S	itop Bit	© 1 © 2
F	low Control	NONE     O ER(DTR/CTS)     O XON/XOFF
Т	imeout	3 🔆 (sec)
F	Retry	2
V	Vait To Send	2 (ms) 🔽 Default Value
F	RI / VCC	RI C VCC
		2C, you can select the 9th pin to RI (Input) Supply). If you use the Digital's RS232C e select it to VCC. Default
Devic	e-Specific Settings	
A	Allowable No. of Devi	ce/PLCs 16 Unit(s) 📊
П	No. Device Nar	
	👗 1 PLC1	Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611

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.

PLC1     PLC       Equipment Configuration     Max Query       Equipment Address	C1 Equipment Configu Address
Equipment Address	
Bit manipulation (set/reset) to Holding Register         Rest of the bits in this word       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       O-based (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)	Coil (0) Coil (0) Discrete Input (1 Input Register (3 Holding Registe Holding Registe
Default Cancel	

[Equipment Configuration] tab

[Max	Ouerv1	tah

#### vice Settings ration Max Query Function Codes Max Query 2000 Read (01H) 🗧 bits Write (OFH) 800 🕂 bits 2000 🕂 bits Read (02H) Read (04H) 125 ÷ words 125 🕂 words (4) Read (03H) 100 Write (10H) (4) 🕂 words Default OK (<u>O</u>) 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
1 1010001	Address	1
Baud Rate		19200
Parameters	Data Bits	8
	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

evice/PLC 1	Charac Davies /01 C
Summary	Change Device/PLC     Change Device/PLC     Driver MODBUS SID Master Port COM1
Maker Schneider B	Electric Industries Driver MODBUS SID Master Port COM1
Text Data Mode	1 <u>Change</u>
Communication Settings	
SIO Type	C RS232C  © RS422/485(2wire)  C RS422/485(4wire)
Speed	19200
Data Length	07 08
Parity	NONE O EVEN O ODD
Stop Bit	© 1 © 2
Flow Control	NONE     O ER(DTR/CTS)     O XON/XOFF
Timeout	3 💼 (sec)
Retry	2
Wait To Send	2 (ms) 🔽 Default Value
RI / VCC	© RI O VCC
or VCC (5V Power	232C, you can select the 9th pin to RI (Input) Supply, If you use the Digital's RS232C se select it to VCC. Default
	Delauit
Device-Specific Settings	
Allowable No. of De No. Device Na	vice/PLCs 16 Unit(s) 🛄 ame Settings
3 1 PLC1	Incomparing Statutings Statuting Sta

×

#### Device Setting

To display the setting screen, click III ([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 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 O 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 O-based (Default) Please reconfirm all of address settings that you are using if you have changed the setting. Variables	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 + bits         Holding Register (4)       Read (03H)       125 + bits         Holding Register (4)       Write (10H)       100 + bits
Double Word word order Low word first(L/H) Default OK (D) Cancel	Defaul

#### [Equipment Configuration] tab

#### [Max Query] tab

#### Settings of External Device

Use the ladder software "TwidoSoft" for communication settings.

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

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

Setup Items		Setup Description
Protocol	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

To display the setting screen, click III ([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	Se
PLC1		PLC1	
Equipment Configuration Max Query Equipment Address		Equipment Configuration	M
Slave Equipment Address 1		Coil (0) Coil (0) Discrete Input (1)	Re Wr Re
IEC61131 Syntax     Address Mode     Debased (Default)     Please reconfirm all of address settings that you are using if you have changed the setting.		Input Register (3) Holding Register (4) Holding Register (4)	Re Re Wr
Variables Double Word word order Low word first(L/H)			
OK (D) Cancel			

[Equipment Configuration] tab

[Max Query] tab
-----------------

🎋 Individual Devic	e Settings		>
LC1			
Equipment Configuration	n Max Query		
Address	Function Codes	Max Query	
Coil (0)	Read (01H)	2000 🕂 bit	s
Coil (0)	Write (0FH)	800 📑 bit	s
Discrete Input (1)	Read (02H)	2000 📑 bit	s
Input Register (3)	Read (04H)	125 📑 wa	ords
Holding Register (4)	Read (03H)	125 📑 wa	ords
Holding Register (4)	Write (10H)	100 🕂 wa	ords
		De	fault
		K ( <u>D)</u> Cano	el

#### 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 @ 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] ✓ Default Value
Γ	RI / VCC	RI © 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 Dev	ice/PLCs 16 Unit(s) 📷
	No. Device Nar	me Settings Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611
	l · hreet	Joint Clear, Econ

To display the setting screen, click III ([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 🛛 🛛 🔀	💣 Individu
PLC1	PLC1
Equipment Configuration Max Query Equipment Address Slave Equipment Address Bit manipulation (set/reset) to Holding Register	Equipment 0 Address Coil (0)
Rest of the bits in this word C Clear O 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.	Coil (0) Discrete li Input Reg
IEC61131 Syntax       Address Mode       O-based (Default)       Please reconfirm all of address settings that you are using if you have changed the setting.	Holding R Holding R
Variables Double Word word order Low word first(L/H)	
Default           DK ( <u>0</u> )	

[Equipment Configuration] tab

[Max	Query]	tab
L	C	

💰 Individual Device	e Settings		×
PLC1			
Equipment Configuration	Max Query		
Address	Function Codes	Max Query	
Coil (0)	Read (01H)	2000 🕂 I	oits
Coil (0)	Write (OFH)	800 ÷ I	pits
Discrete Input (1)	Read (02H)	2000 🕂 I	pits
Input Register (3)	Read (04H)	125 📫	words
Holding Register (4)	Read (03H)	125 📫	words
Holding Register (4)	Write (10H)	100 🕂	words
		D	efault
		OK ( <u>O</u> ) Ca	ncel

#### 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

Device	/PLC1	
Summ	hary	Change Device/PLC
h	Maker Schneider Ele	ectric Industries Driver MODBUS SIO Master Port COM1
١	Fext Data Mode	1 Change
Comm	nunication Settings	
9	610 Туре	C RS232C C RS422/485(2wire)      RS422/485(4wire)
9	Speed	19200
[	Data Length	C 7 C 8
F	Parity	○ NONE ● EVEN ○ ODD
9	Stop Bit	
F	Flow Control	NONE     O ER(DTR/CTS)     O XON/XOFF
٦	Fimeout	3 📑 (sec)
F	Retry	2 📫
١	Wait To Send	3 (ms) I Default Value
F	RI / VCC	© RI C VCC
		2C, you can select the 9th pin to RI (Input) Supply). If you use the Digital's RS232C e select it to VCC. Default
Devic	e-Specific Settings	
		ce/PLCs 16 Unit(s)
_	No. <u>Device Nar</u>	ne Settings
	👗 1 PLC1	Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC611

[Max Query] tab

Query

bits
 bits
 bits
 bits
 words
 words
 words
 words

Default Cancel

#### Device Setting

To display the setting screen, click III ([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 Slave Equipment Address 1 Bit manipulation (set/reset) to Holding Register Rest of the bits in this word Clear O 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 O-based (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)	Equipment Configuration       Max Query         Address       Function Codes       Ma         Coil (0)       Read (01H)       200         Coil (0)       Write (0FH)       800         Discrete Input (1)       Read (02H)       200         Input Register (3)       Read (04H)       125         Holding Register (4)       Read (03H)       125         Holding Register (4)       Write (10H)       100
OK (0) Cancel	OK ( <u>0</u> )

#### Settings of External Device

Use the ladder software "Concept" for communication settings.

[Equipment Configuration] tab

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

## 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 9)

## 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.

Devid	ce/PLC1			
Sum	nmary			Change Device/PLC
	Maker Schneider El	ectric Industries Dri	iver MODBUS SIO Master	Port COM1
	Text Data Mode	1 Change		
Com	nmunication Settings			
	SIO Type	• RS232C C RS422	/485(2wire) O RS422/485(4wire)	
	Speed	19200 💌		
	Data Length	C 7 C 8		
	Parity	○ NONE ● EVEN	C ODD	
	Stop Bit	© 1 © 2		
	Flow Control	NONE     O ER(DT	R/CTS) O XON/XOFF	
	Timeout	3 📫 (sec)		
	Retry	2 ÷		
	Wait To Send	3 📩 (ms) 🔽	Default Value	
	RI / VCC	RI C VCC		
		2C, you can select the 9th pin supply). If you use the Digital's select it to VCC.		
Dev	vice-Specific Settings			
		ce/PLCs 16 Unit(s) 📷		
	No. Device Nar		ngs Slave Equipment Address=1,Rest of the bits in	n this word=Do not clear JEC611
	le i heer		orano Equipment Address=1, nest of the bits in	n allo nora-bo nor cicar, 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 and reception data.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command.

continued to next page

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

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 Sett	ings
C1	
quipment Configuration Max I	Query
Equipment Address	· · ·
Slave Equipment Address	1 📑
Bit manipulation (set/reset) to I	Holding Register
Rest of the bits in this word	🔿 Clear 🛛 💿 Do not clea
If the ladder program writes read/write process, the res	edata to Holding Register during the ulting data may be incorrect.
read/write process, the res	data to Holding Register during the ulting data may be incorrect.
read/write process, the res	ulting data may be incorrect.
read/write process, the rest	ulting data may be incorrect.
read/write process, the rest	ulting data may be incorrect.
read/write process, the res IEC61131 Syntax Address Mode Please reconfirm all of addres have changed the setting.	ulting data may be incorrect.
read/write process, the res IEC61131 Syntax Address Mode Please reconfirm all of addres have changed the setting.	ulting data may be incorrect.
read/write process, the resing in the rest of the rest	Ilting data may be incorrect.

[Equipment Configuration] tab

Setu	p Items	Setup Description
Slave Equipmen	t Address	Use an integer from 1 to 247 to enter the slave equipment address of the External Device.
Bit manipulation Holding Resister	Rest of the bits in	From "Clear" or "Do not clear", select treatment of the rest of the bits in the same word when the bit manipulation to Holding Register is performed.
IEC61131 Synta	this word	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".

EN Æ	0 1	1.1
Max	Query]	tab

.C1			
Equipment Configuration	n Max Query		
Address	Function Codes	Max Query	
Coil (0)	Read (01H)	2000	÷ bits
Coil (0)	Write (OFH)	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
		ко) –	Cancel

Setu	p Items	Setup Description	
Coil		Set the number of max data for device [coil] which can be read for one	
	Read	communication, using 16 to 2000 bits.	
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 fo	
	Read	one communication, using 16 to 2000 bits.	
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.	
		Set the number of max data for device [holding register] which can be written	
		for one communication, using 1 to 100 words.	

#### 4.2 Setup Items in Off-Line Mode

NOTE

• Please refer to Maintenance/Troubleshooting for more information on how to enter off-line mode or about operation.

Cf. Maintenance/Troubleshooting "2.2 Offline 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		
MODBUS SIO Mast	SIO Type Speed Data Length Parity Stop Bit	RS232C 19200 7 NONE 1	[COM1] • 8 • EVEN • 2	Page 1/1
	Flow Control Timeout(s) Retry Wait To Send(ms)			
	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. When each value of Speed/Data Length/Parity/Stop Bit is changed, calculate the Wait To Send value in the formula below and set it. Wait To Send (ms) = $\frac{3500 \text{ x} (1 + \text{Data Length} + \text{Stop Bit} + \text{Parity})}{\text{Speed (bps)}}$ Value for the parity setting is shown below. No Parity = 0 Parity Even = 1 Parity Odd = 1		

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		
Device/PLC Name PLC1						
	Slave Address Bit manipulatior IEC61131 Syntax Double Word word	0FF	1 ▼ of bits in word a ord first			
Max Query Read Coil Write Coil Read Discrete Input Read Input Register Read Holding Register Write Holding Register		ster ister	2000 ▼ 800 ▼ 2000 ▼ 125 ▼ 125 ▼ 100 ▼			
	Exit		Back	2021/01/31 07:00:08		

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

continued to next page

Setup Items		Setup Description	
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 writte	
	Write	for one communication, using 1 to 100 words.	

## Option

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

Comm.	Device	Option	en e	
MODBUS SIO Mast	er	<u> 0</u>	[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 • VCC(5V ne Digital's	
	Exit	e i	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.

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

- The FG pin of the External Device body must be D-class grounded. Please refer to the manual of the External Device for more details.
- SG and FG are connected inside the Display. When connecting SG to the External Device, design the system not to form short-circuit loop.
- Connect the isolation unit, when communication is not stabilized under the influence of a noise etc.

#### Cable Diagram 1

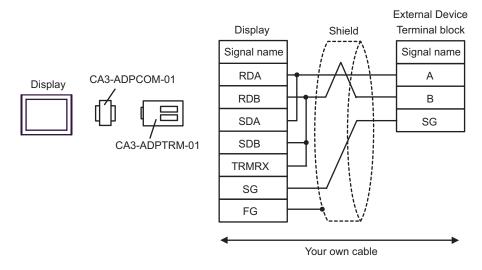
Display (Connection Port)	Cable		Notes
GP <sup>*1</sup> (COM1) AGP-3302B (COM2) ST <sup>*2</sup> (COM2)	А	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	В	Your own cable	
GP <sup>*3</sup> (COM2)	С	Online 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 <sup>*4</sup>	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	
	F	Your own cable	

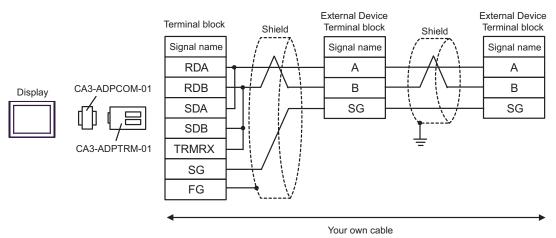
\*1 All GP models except AGP-3302B

\*2 All ST models except AST-3211A

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

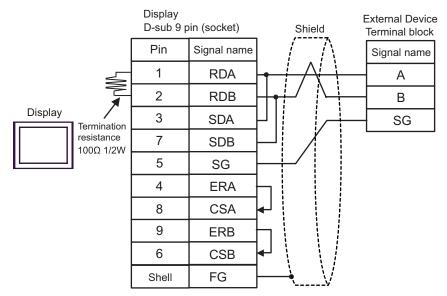
- \*4 Only the COM port which can communicate by RS-422/485 (2 wire) can be used. ☞ ■ COM Port of IPC (page 6)
  - A) When using the COM port conversion adapter (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
  - 1:1 Connection



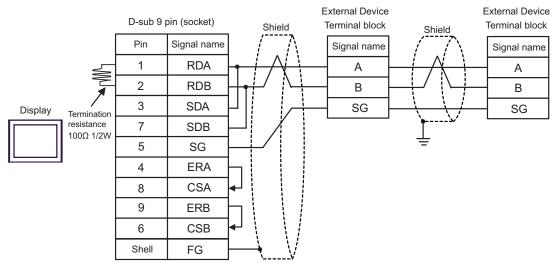


#### B) When using your own cable

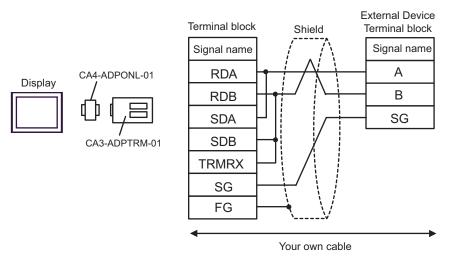
• 1:1 Connection



• 1:n Connection

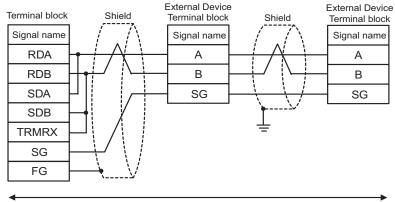


- C) When using the online adapter (CA4-ADPONL-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
- 1:1 Connection



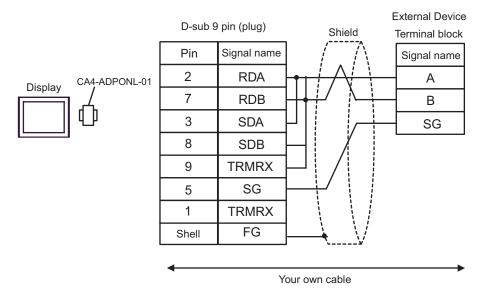


CA4-ADPONL-01

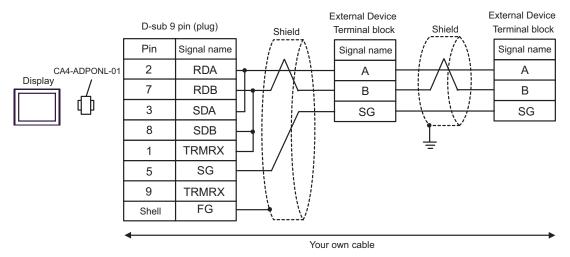


D) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable

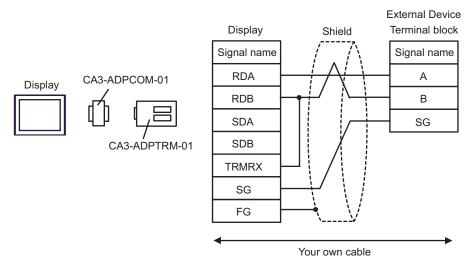
• 1:1 Connection



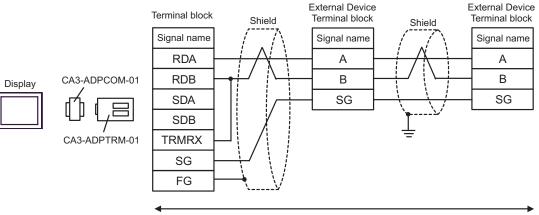
• 1:n Connection



- 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

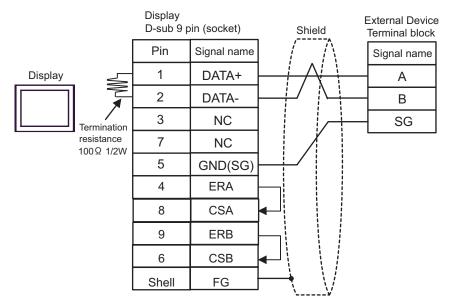


1:n Connection

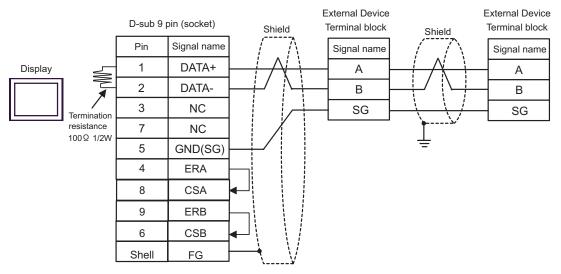


#### F) When using your own cable

• 1:1 Connection



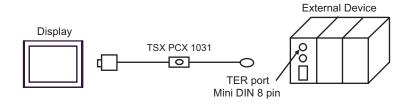
1:n Connection



Display (Connection Port)	Cable	Notes
GP (COM1) ST (COM1) IPC <sup>*1</sup>	Cable by Schneider Electric Industries TSX PCX 1031 (2.5m) <sup>*2</sup>	

\*1 Only the COM port which can communicate by RS-232C can be used. ☞ ■ COM Port of IPC (page 6)

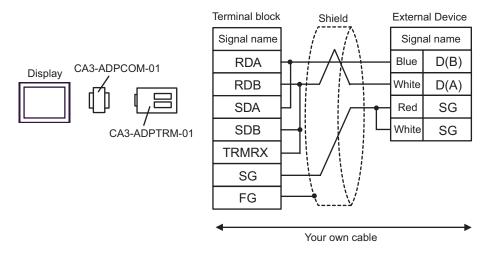
\*2 Set the rotary switch to "3 (OTHER DIRECT)".

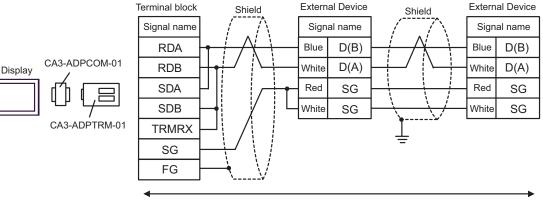


Display (Connection Port)	Cable	Notes
GP <sup>*1</sup> (COM1) AGP-3302B (COM2) ST <sup>*2</sup> (COM2)	A COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face A CA3-ADPTRM-01 + Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	
	B Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	
GP <sup>*4</sup> (COM2)	C Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face C CA3-ADPTRM-01 + Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	The cable length must be 10m or less. <sup>*3</sup>
	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 E CA3-ADPTRM-01 + Your own cable + Accessory box by Schneider Electric Industries TSX SCA 50	The cable length must be 10m or less.* <sup>3</sup>
*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

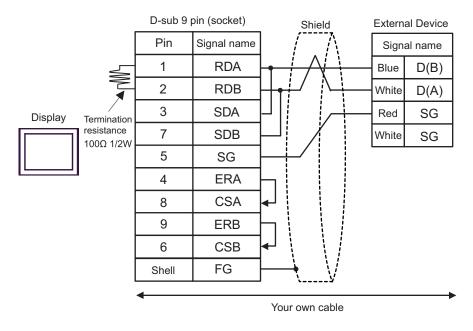
- \*2 All ST models except AST-3211A
- \*3 Max length between the "GP" and the "Accessory Box connected to GP". Total cable length between accessory boxes must be 1000m or less.
- \*4 All GP models except GP-3200 series and AGP-3302B
- \*5 Only the COM port which can communicate by RS-422/485 (2 wire) can be used.
   I COM Port of IPC (page 6)
  - 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



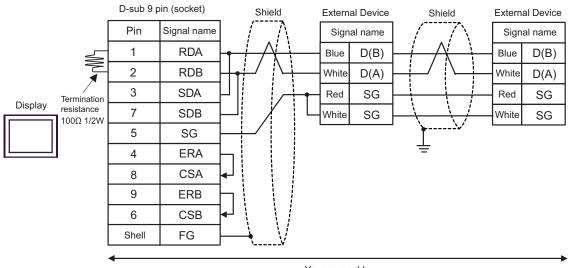


B) When using the accessory box (TSX SCA 50) by Schneider Electric and your own cable

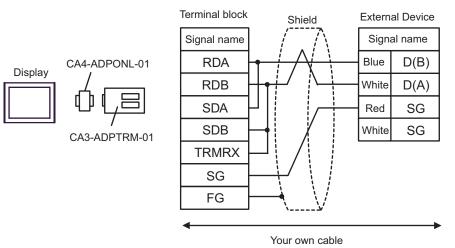
#### • 1:1 Connection

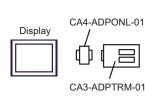


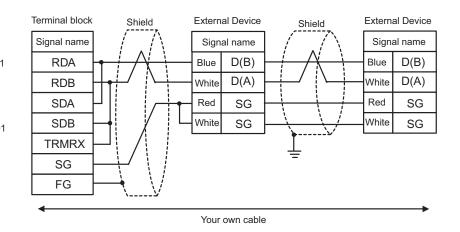
• 1:n Connection



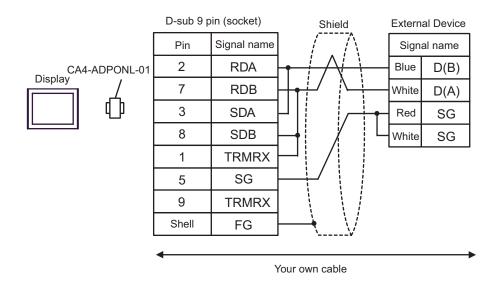
- C) When using the online adapter (CA4-ADPONL-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face, your own cable and the accessory box (TSX SCA 50) by Schneider Electric
- 1:1 Connection

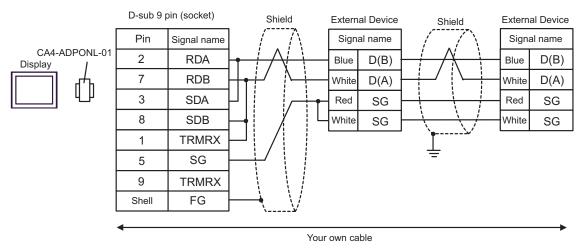




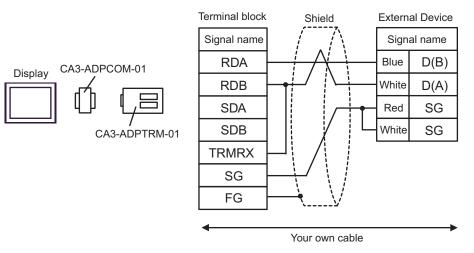


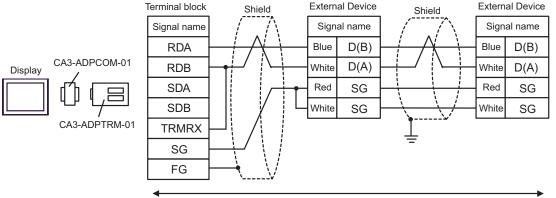
- D) When using the online adapter (CA4-ADPONL-01) by Pro-face and the accessory box (TSX SCA 50) by Schneider Electric
- 1:1 Connection





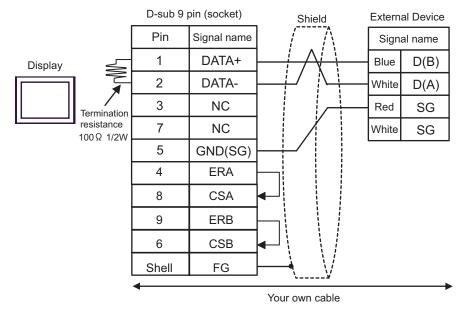
- E) When using the COM port conversion adapter (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and the accessory box (TSX SCA 50) by Schneider Electric
- 1:1 Connection



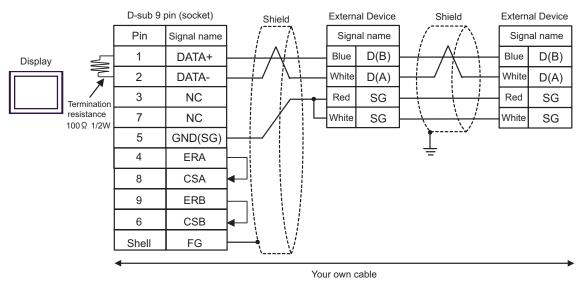


F) When using the accessory box (TSX SCA 50) by Schneider Electric and your own cable

• 1:1 Connection



• 1:n Connection

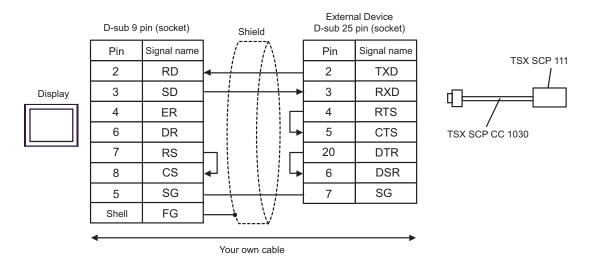


Display (Connection Port)	Cable	Notes
GP (COM1) ST (COM1) IPC <sup>*1</sup>	Your own cable + RS 232 D tap link cable by Schneider Electric TSX SCP CC 1030 (3m) + PCMCIA card for RS232C by Schneider Electric TSX SCP 111	The cable length must be 15m or less. *2

\*1 Only the COM port which can communicate by RS-232C can be used.
 G<sup>™</sup> ■ COM Port of IPC (page 6)

\*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



Display (Connection Port)	Cable		Notes
GP <sup>*1</sup> (COM1) AGP-3302B (COM2) ST <sup>*2</sup> (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 <sup>*3</sup> (COM2)		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	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 + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industries TSX SCP 114	s
	F Vour own cable + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industrie TSX SCP 114	s

\*1 All GP models except AGP-3302B

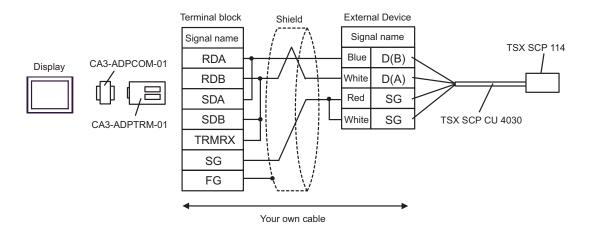
\*2 All ST models except AST-3211A

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

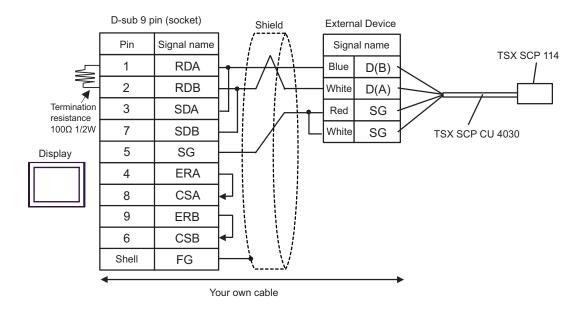
\*4 Only the COM port which can communicate by RS-422/485 (2 wire) can be used.

COM Port of IPC (page 6)

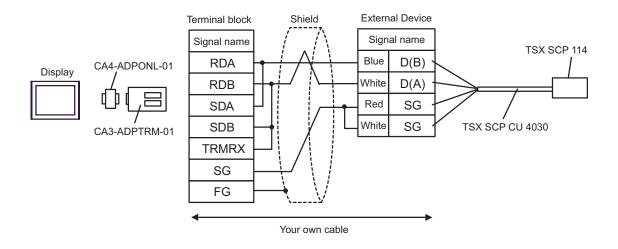
A) When using the COM port conversion adapter (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



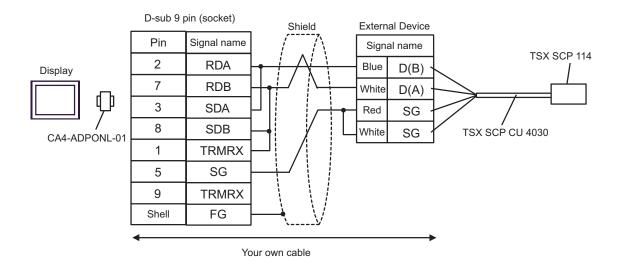
B) When using your own cable, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



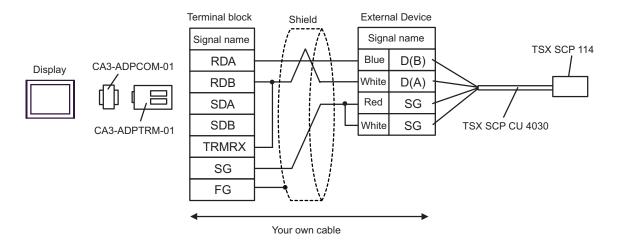
C) When using the online adapter (CA4-ADPONL-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



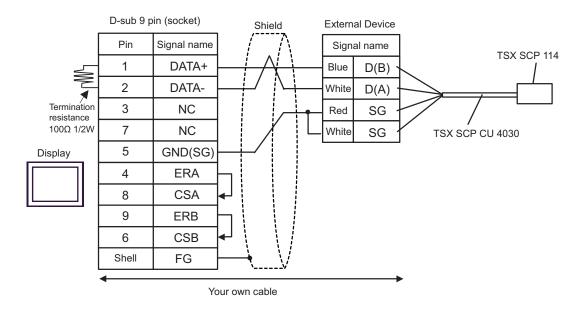
D) When using the online adapter (CA4-ADPONL-01) by Pro-face, your own cable, the Uni-Telway connection cable (TSX SCP CU 4030) and the PCMCIA card for RS485 (TSX SCP 114) by Schneider Electric



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 <sup>*1</sup>	Your own cable	The cable length must be 15m or less.

Only the COM port which can communicate by RS-232C can be used. <sup>CP</sup> ■ COM Port of IPC (page 6) \*1

	D-sub 9 pi	n (socket)	Shield		al Device pin (plug)
Display	Pin	Signal name		Pin	Signal name
	2	RD		2	RXD
	3	SD		3	TXD
	4	ER		5	SG
	5	SG		4	DTR
	6	DR	4	6	DSR
	7	RS		7	RTS
	8	CS	<sub>┫</sub> ┙╷╷╷╷ <sub>┝</sub>	8	CTS
	Shell	FG	$\rightarrow$ $\vee$ .		
•					

Display (Connection Port)	Cable	Notes
GP (COM1) ST (COM1) IPC <sup>*1</sup>	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.

> Display 170 MCI 041 10 110 XCA 203 00 Modbus port 1

Display (Connection Port)	Cable		Notes
GP <sup>*1</sup> (COM1) AGP-3302B (COM2) ST <sup>*2</sup> (COM2) IPC <sup>*3</sup>	A Connector terminal block conversion adapter CA3-ADPCOM-01 + A Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable		
	3 Your own cable		
GP <sup>*4</sup> (COM2)	Online adapter CA4-ADP + Connector terminal blo by Pro CA3-ADP + Your ow	ONL-01 sk conversion adapter face FRM-01	The cable length must be 500m or less.
	Online adapter CA4-ADP + Your own	ONL-01	

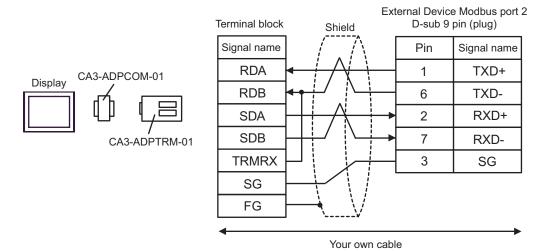
\*1 All GP models except AGP-3302B

\*2 All ST models except AST-3211A

\*3 Only the COM port which can communicate by RS-422/485 (4 wire) can be used. <sup>™</sup> ■ COM Port of IPC (page 6)

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

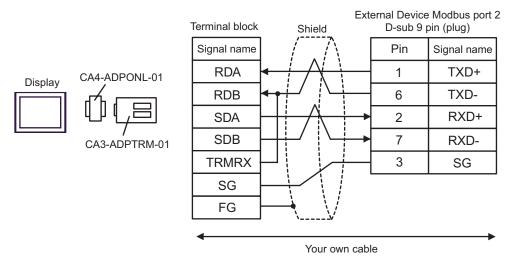
A) When using the COM port conversion adapter (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable



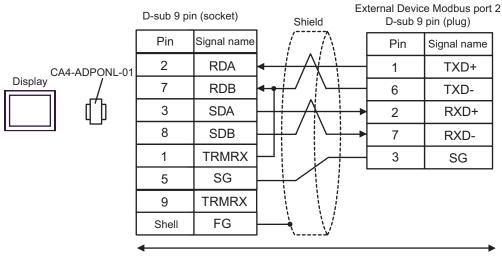
B) When using your own cable

	D-sub 9 pin (socket)			Shield			e Modbus port 2 pin (plug)
	Pin	Signal name	]		^\ \	Pin	Signal name
Display Termination resistance 100Ω 1/2W	. 1	RDA	┣━─	A		1	TXD+
	2	RDB	<b>↓</b> /\	4	6	TXD-	
	3	SDA	<u> </u>	$\square$		2	RXD+
	, 7	SDB			┶	7	RXD-
	5	SG				3	SG
	4	ERA					
	8	CSA					
	9	ERB	Ь				
	6	CSB	┣┛				
	Shell	FG	<u>}</u>	<u> </u>	$\int$		

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



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



# 6 Supported Device

Range of supported device address is shown in the table below. Please note that the actually supported range of the devices varies depending on the External Device to be used. Please check the actual range in the manual of your connecting equipment.

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Coil	000001 - 065536	000001 - 065521		<u>+18+</u>
Discrete Input	100001 - 165536	100001 - 165521	[L/H]	+1B+ <b>1</b> *2
Input Register		300001 - 365536	or	B i t <b>15</b> *2
Holding Register	400001,00 - 465536,15 <sup>*3</sup>	400001 - 465536	[ <b>Н/Ц</b> *1	<sub>₿17</sub> 15)

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

"4.1 Setup Items in GP-Pro EX" (page 29)

- \*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

## Supported Function Code

Below is the list of Supported Function Code.

Function Code (Hex)	Description			
FC01 (0x01)	Reads the ON/OFF status of coils (0X references) in the slave.			
FC02 (0x02)	Reads the ON/OFF status of discrete inputs (1X references) in the slave.			
FC03 (0x03)	Reads the binary content of holding registers (4X references) in the slave.			
FC04 (0x04)	4 (0x04) Reads the binary content of input registers (3X references) in the slave.			
FC05 (0x05)	Forces a single coil (0X references) to either ON or OFF			
FC06 (0x06)	Presets a value into a single holding register (4X references).			
FC15 (0x0F)	Forces each coil (0X references) in a sequence of coils to either ON or OFF.			
FC16 (0x10)Presets values into a sequence of holding registers (4X references).				
NOTE • FC15	/ FC16 will be used for writing. In case if the connected controller do not support these			

function codes, then FC05 / FC06 will be used.

## ■ IEC61131 address syntax

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

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.

NOTE

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

Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (only for direct access method)"

• Please refer to the precautions on manual notation for icons in the table.

"Manual Symbols and Terminology"

# 7 Device Code and Address Code

Use device code and address code when you select "Device Type & Address" for the address type in data displays.

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

# 8 Error Messages

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

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

#### Display Examples of Error Messages

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

NOTE
Please refer to the manual of External Device for more detail of received error codes.
Please refer to "When an error message is displayed (Error code list)" of "Maintenance/ Troubleshooting" for a common error message to the driver.