Schneider Electric Industries

MODBUS SIO Master Driver

1	System Configuration	3
2	Selection of External Device	9
3	Example of Communication Setting	10
4	Setup Items	
5	Cable Diagram	54
6	Supported Device	
7	Device Code and Address Code	
8	Error Messages	110

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 offline mode.	^{ভেল} "4 Setup Items" (page 46)
5	Cable Diagram This section shows cables and adapters for connecting the Display and the External Device.	ি "5 Cable Diagram" (page 54)
	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 63)
	TSX 37 10 123D1K1 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 64)
Micro		TER port on CPU	RS232C	Setting Example 1 (page 10)	Cable Diagram 2 (page 63)
	TSX 37 21 101 TSX 37 22 101	Accessory box TSX SCA 50	RS485 (2wire)	Setting Example 3 (page 14)	Cable Diagram 3 (page 64)
	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 74)
		PCMCIA card for RS485 TSX SCP 114	RS485 (2wire)	Setting Example 3 (page 14)	Cable Diagram 5 (page 76)
	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 74)
Premium		PCMCIA card for RS485 TSX SCP 114	RS485 (2wire)	Setting Example 5 (page 18)	Cable Diagram 5 (page 76)
	TWD LCAA 10DRF TWD LCAA 16DRF TWD LCAA 24DRF	Programming port on CPU	RS232C	Setting Example 6 (page 20)	Cable Diagram 2 (page 63)
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 54)
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 83)

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 84)
Momentum	171 CCS 780 00 171 CCC 780 10	Modbus port 1 on CPU	RS232C	Setting Example 9 (page 26)	Cable Diagram 7 (page 84)
		Modbus port 2 on CPU	RS485 (4wire)	Setting Example 10 (page 28)	Cable Diagram 8 (page 85)
	171 CCC 980 20 171 CCC 980 30	Modbus port 2 on CPU	RS485 (4wire)	Setting Example 10 (page 28)	Cable Diagram 8 (page 85)

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 89)
FCN		NFLR111-S00	RS232C	Setting Example 12 (page 34)	Cable Diagram 10 (page 90)
		NFLR121-S00	RS485 (4 wire)	Setting Example 13 (page 38)	Cable Diagram 11 (page 91)
			RS485 (2 wire)	Setting Example 14 (page 42)	Cable Diagram 12 (page 97)
FCJ	NFJT100-S100	Serial port on CONTROL UNIT	RS232C	Setting Example 11 (page 30)	Cable Diagram 9 (page 89)

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			
	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 (T41 model), PS-3651A (T41 model)	COM1 ^{*1}	-	-	
PS-3650A (T42 model), PS-3651A (T42 model)	COM1 ^{*1*2} , COM2	COM1*1*2	COM1 ^{*1*2}	
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}	
PS4000 ^{*3}	COM1, COM2	-	-	
PL3000	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.

*3 When making communication between an External Device and COM port on the Expansion slot, only RS-232C is supported. However, ER (DTR/CTS) control cannot be executed because of the specification of COM port.
For connection with External Device, use user-created cables and disable Pin Nos. 1, 4, 6 and 9.

For connection with External Device, use user-created cables and disable Pin Nos. 1, 4, 6 and 9. Please refer to the IPC manual for details of pin layout.

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. R5-252C	
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		

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

7

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

DIP Switch	Setting	Description	
1	OFF	Reserved (always OFF)	
2	ON	SIQ type: RS-422/485	
3	ON	510 type. NS-422/405	
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		

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		
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 📉 🔀					
	Device/PLC					
	Maker	Schneider Electric Industries				
	Driver	MODBUS SIO Master				
	Use System Area Refer to the manual of this Device/PLC					
	-Connection	Method				
	Port	COM1				
		Go to Device/PLU 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 to synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the External Device's ladder program to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)" This feature can also be set in GP-Pro EX or in the Display's offline mode. Cf. GP-Pro EX Reference Manual "Display Unit (System Area) Settings Guide" Cf. Maintenance/Troubleshooting Guide "Main Unit - 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/PLC 1	
Sun	nmary	Change Device/PLC
	Maker Schneider E	lectric Industries Driver MODBUS SIO Master Port COM1
	Text Data Mode	1 Change
Con	nmunication 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	
	Flow Control	NONE C ER(DTR/CTS) C XON/XOFF
	Timeout	3 (sec)
	Retry	2
	Wait To Send	5 [ms] V Default Value
Γ	RI / VCC	© RI C VCC
	In the case of RS2 or VCC (5V Power Isolation Unit, pleas	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 Na	me Settings III. Slave Equipment Address-1 Root of the bits in this word. Do not allow IECC11
	IN I FLUI	In a severe equipment Audress=1, Nest of the bits in this word=Do hot clear, ECOT

[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.

Manager Settings	S Individual Davias Sattings
PLC1	PLC1
Equipment Configuration Max Query	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	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)
have changed the setting.	Single Bit manipulation to Coll/Discrete Input
Variables Double Word word order Low word first(L/H)	
C Low Security Level	
Default	Default
OK (<u>0</u>) Cancel	OK (<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
In the case of RS or VCC (5V Powe Isolation Unit, plea	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	
Allowable No. of De	evice/PLCs 16 Unit(s) 🚮
No. Device N	lame Settings
👗 1 PLC1	Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC61

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 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 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) 1008 * bits
	Input Register (3) Read (04H) 63 📑 words
IEC61131 Syntax	Holding Register (4) Read (03H) 63 📑 words
Address Mode O-based (Default)	Holding Register (4) Write (10H) 61 🐳 words
have changed the setting.	Single Bit manipulation to Coil/Discrete Input
Variables	
Double Word word order Low word first(L/H)	
C Low Security Level	
Default	Default
OK (D) Cancel	OK (<u>D</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 TSX SCP 111 RS232 MP PCMCIA CARD	
CHANNEL		
	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

Device/	PLC 1	
Summa	ary	Change Device/PLC
Ma	aker Schneider Ele	ctric Industries Driver MODBUS SID Master Port COM1
Τe	ext Data Mode	1 Change
Commu	inication Settings	
SI	О Туре	O RS232C
Sp	peed	9600
Da	ata Length	C 7 • 8
Pa	arity	O NONE O EVEN O ODD
St	top Bit	
Flo	ow Control	NONE O ER(DTR/CTS) O XON/XOFF
Tir	meout	3 (sec)
Re	etry	2 🕂
W	/ait To Send	5 (ms) I⊄ Default Value
BI	I / VCC	© RI O VCC
	In the case of RS23 or VCC (5V Power S Isolation Unit, please	2C, you can select the 9th pin to RI (Input) upply). If you use the Digital's RS232C select it to VCC. Default
Device	Coocific Cottings	
All	lowable No. of Devi	e/PLCs 16 Unit(s)
	No. Device Nan	e Settings
, ja	1 PLC1	Islave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC61

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	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.	Single Bit manipulation to Coil/Discrete Input
Variables	
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 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

Device/F	PLC 1	
Summa	ary	Change Device/PLC
Ma	aker SchneiderEle	ctric Industries Driver MODBUS SIO Master Port COM1
Τe	ext Data Mode 🛛 🗍	1 Change
Commu	unication Settings	
SI	О Туре	RS232C C RS422/485(2wire) C RS422/485(4wire)
Sp	peed	9600 💌
Da	ata Length	C 7 • 8
Pa	arity	C NONE C EVEN C ODD
Sti	top Bit	
Flo	ow Control	NONE C ER(DTR/CTS) C X0N/X0FF
Tir	meout	3 (sec)
Re	etry	2 *
W	/ait To Send	5 (ms) 🔽 Default Value
RI	I / VCC	• RI C VCC
l c l	In the case of RS23 or VCC (5V Power S Isolation Unit, please	IC, you can select the 9th pin to RI (Input) upply). If you use the Digital's RS232C select it to VCC. Default
Device	-Specific Settings	
All	lowable No. of Devid	e/PLCs 16 Unit(s) 📷
L.	No. Device Nam	e Settings Risus Equipment Address-1 Rest of the bits in this word-De not clear (ECC11)
d0		In the Equipment Address=1, hest of the bits in this word=bo hot clear, it cont

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 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 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) 1008 * bits
	Input Register (3) Read (04H) 63 📑 words
IEC61131 Syntax	Holding Register (4) Read (03H) 63 📑 words
Address Mode O-based (Default)	Holding Register (4) Write (10H) 61 🐳 words
have changed the setting.	Single Bit manipulation to Coil/Discrete Input
Variables	
Double Word word order Low word first(L/H)	
C Low Security Level	
Default	Default
OK (D) Cancel	OK (<u>D</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
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

Device/PLC 1			
Summary Ch	ange 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 O EVEN C ODD			
Stop Bit			
Flow Control NDNE C ER(DTR/CTS) C X0N/X0FF			
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	De vet elses IECC11		
I FLUI ISIAVE Equipment Address=1, Rest or the bits in this work	ord=Do not clear,IEU611		

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 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 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) 1008 * bits
	Input Register (3) Read (04H) 63 📑 words
IEC61131 Syntax	Holding Register (4) Read (03H) 63 📑 words
Address Mode O-based (Default)	Holding Register (4) Write (10H) 61 🐳 words
have changed the setting.	Single Bit manipulation to Coil/Discrete Input
Variables	
Double Word word order Low word first(L/H)	
C Low Security Level	
Default	Default
OK (D) Cancel	OK (<u>D</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 De	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	e/PLC 1		
Sumr	nary	Change Device/PLC	
	Maker Schneider El	ectric Industries Driver MODBUS SIO Master Port COM1	
	Text Data Mode	1 Change	
Comr	nunication Settings		
	SIO Type	RS232C C RS422/485(2wire) C RS422/485(4wire)	
	Speed	19200	
	Data Length	C 7 @ 8	
	Parity	NONE C EVEN C ODD	
	Stop Bit	© 1 C 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 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		
Devid	ce-Specific Settings		
	Allowable No. of Devi	ce/PLCs 16 Unit(s) 📊	
г	No. Device Nar	ne Settings	
	👗 i jelot	Little Stave Equipment Address=1, Hest of the bits in this word=Do not clear, IEUb11	

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 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 program sets the resulting data may be incorrect.	Discrete Input (1) Read (02H) 2000 ± bits
Tedarwike process, the resulting data may be inconcet.	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) 100 🐳 words
have changed the setting.	Single Bit manipulation to Coil/Discrete Input
Variables	
Double Word word order Low word first(L/H)	
Low Security Level	
Default	Default
OK (D) Cancel	OK (<u>O</u>) Cancel

[Equipment Configuration] tab

[Max Query] tab

Settings of External Device

Use the ladder software "TwidoSoft" for communication settings.

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

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

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

Notes

3.7 Setting Example 7

Settings of GP-Pro EX

♦ Communication Settings

revice/PLC 1	Charac Davies /01 C
Summary	
Maker JSchneider	Liectric Industries Driver MUDBUS SIU Master Port JCDM I
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 C EVEN C 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
In the case of RS2 or VCC (5V Power Isolation Unit, plea	232C, you can select the 9th pin to RI (Input) Supply). If you use the Digital's RS232C se select it to VCC.
	Delauit
Device-Specific Settings	
Allowable No. of De No. Device N	vice/PLUs 16 Unit(s) [11] ame Settings
1 PLC1	Slave Equipment Address=1,Rest of the bits in this word=Do not clear,IEC6

[Max Query] tab

Device Setting

[Equipment Configuration] tab

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 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	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)	
C Low Security Level	
Default	Default
OK (Q) Cancel	OK (<u>0</u>) Cancel

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

Notes

3.8 Setting Example 8

Settings of GP-Pro EX

♦ Communication Settings

Device/PLC 1		
Summary	Change Device/PLC	
Maker Schneider Electric Industries Driver MODBUS SI	IO Master Port COM1	
Text Data Mode 1 Change		
Communication Settings		
SID Type 💿 RS232C 💿 RS422/485(2wire) 🤇	RS422/485(4wire)	
Speed 19200 💌		
Data Length 🔿 7 💿 8		
Parity O NONE O EVEN O OI	DD	
Stop Bit 1 2 		
Flow Control O NONE O ER(DTR/CTS) O ×0	ON/XOFF	
Timeout 3 🙀 (sec)		
Retry 2		
Wait To Send 3 🗮 (ms) 🔽 Default Value		
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	Address-1 Best of the bits in this word-Do not close (ECC11	
in con	Address-r, nest or the bits in this word-Do not clear, in com	

[Max Query] tab

Device Setting

[Equipment Configuration] tab

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 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	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)
have changed the setting.	Single Bit manipulation to Coil/Discrete Input
Variables	
Double Word word order Low word first(L/H)	
C Low Security Level	
Default	Default
OK (<u>0</u>) Cancel	OK (<u>D</u>) Cancel

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	● 1	
	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	
	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	vice-Specific Settings		
	Allowable No. of Dev	ce/PLCs 16 Unit(s) 📷	
	No. Device Nar	ne Settings Slave Equipment Address-1 Best of the bits in this word-Do not close (ECC11	
	l · hreet	Joint Clear, Econ	

[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	×
PLC1	PLC1	
Equipment Configuration Max Query	Equipment Configuration Max Query	
Slave Equipment Address	Address Function Codes Max I	Query
Bit manipulation (set/reset) to Holding Register	Coil (0) Read (01H) 2000) 🕂 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 processes the regulation data may be incorrect.	Discrete Input (1) Read (02H) 2000) 📑 bits
reau/write process, the resulting data may be incontext.	Input Register (3) Read (04H) 125	+ words
EC61131 Syntax	Holding Register (4) Read (03H) 125	+ words
Address Mode 0-based (Default)	Holding Register (4) Write (10H) 100	words
Please reconfirm all of address settings that you are using if you have changed the setting.		
	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	OK (<u>0</u>)	Cancel

[Equipment Configuration] 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

Devic	ce/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) © RS422/485(4wire)		
	Speed	19200		
	Data Length	€7 €8		
	Parity	C NONE © EVEN C ODD		
	Stop Bit			
	Flow Control	NONE O ER(DTR/CTS) O XON/XOFF		
	Timeout	3 <u>•</u> (sec)		
	Retry	2 *		
	Wait To Send	3 (ms) I Default Value		
Γ	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			
Dev	rice-Specific Settings			
	Allowable No. of Dev	ce/PLCs 16 Unit(s) 🔢		
	No. Device Nat	ne Settings		
	I I FLUI	The provide the pr		

Device Setting

[Equipment Configuration] tab

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 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 (OFH)	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
TIEC61131 Syntax	Holding Register (4)	Read (03H)	125 📫	words
Please reconfirm all of address settings that you are using if you	Holding Register (4)	Write (10H)	100 📫	words
have changed the setting.	🔲 Single Bit manipulati	ion to Coil/Discrete Ir	nput	
Variables Double Word word order Low word first(L/H)				
Low Security Level				
Default				Default
OK (<u>D</u>) Cancel		OK	0) 0	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

Devi	ce/PLC 1		
Sun	nmary	Change Device/PLC	
	Maker Schneider El	ectric Industries Driver MODBUS SID Master Port COM1	
	Text Data Mode	1 Change	
Con	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	● 1	
	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	
	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	vice-Specific Settings		
	Allowable No. of Dev	ice/PLCs 16 Unit(s) 📊	
	No. Device Nat V 1 PLC1	ne Settings Slave Equipment Address=1 Bast of the hits in this word=Do not door IECC11	
	100 · [LC I	HELL Islave Equipment Address=1, next of the bits in this Wold=D0 hot clear/iECOTT	

[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
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 program the resulting data may be incorrect.	Discrete Input (1) Read (02H) 2000 * bits
reautivine process, the resoluting data may be inconect.	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 recontirm all of address settings that you are using if you have changed the setting.	
Variables	Single Bit manipulation to Coll/Discrete Input
Double Word word order Low word first(L/H)	
Low Security Level	
Default	Default
OK (<u>0</u>) Cancel	OK (<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".

^C ♦ 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/PLC 1			
Sumi	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	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) 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			
Devi	ce-Specific Settings			
	Allowable No. of Devi	ce/PLCs 16 Unit(s) 🔢		
	No. Device Nar	ne Settings Slave Equipment Address=1 Best of the bits in this word=Do not clear IECG11		
	M PLUI	In this word=Do not clear, iEC611		

[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 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 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 present the resulting data much b increases	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 recontirm 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	OK (<u>0</u>) Cancel

[Equipment Configuration] tab

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.

Device	PLC 1					
Summ	nary	Change Device/PLC				
ł	Maker Schneider El	ectric Industries Driver MODBUS SID Master Port COM1				
	Text Data Mode	1 Change				
Comm	nunication Settings					
9	SIO Type	C RS232C C RS422/485(2wire) RS422/485(4wire)				
9	Speed	19200				
[Data Length	○7 ④8				
F	Parity	○ NONE ● EVEN ○ ODD				
9	Stop Bit					
F	Flow Control	NONE O ER(DTR/CTS) O XON/XOFF				
	Timeout	3 📑 (sec)				
F	Retry	2				
N	Wait To Send	3 (ms) I⊄ Default Value				
F	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					
Devic	e-Specific Settings					
/	Allowable No. of Devi	ce/PLCs 16 Unit(s) 📊				
Г	No. Device Nar	ne Settings				
	δ I I IFLUI	In this word=Do not clear, iEUb 11				

[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 Device Settings
PLC1	PLC1
Equipment Configuration Max Query	Equipment Configuration Max Query
Slave Equipment Address 1	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 present the resulting data much b increases	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 recontirm 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	OK (<u>0</u>) Cancel

[Equipment Configuration] tab

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.

Device/F	PLC 1					
Summar	ry	Change Device/PLC				
Ma	aker Schneider Ele	ectric Industries Driver MODBUS SIO Master Port COM1				
Te	ext Data Mode	1 Change				
Commur	nication Settings					
SIC	О Туре	C RS232C				
Sp	eed	19200				
Da	ata Length	€7 €8				
Pa	arity	C NONE C EVEN C ODD				
Sto	op Bit	© 1 © 2				
Flo	ow Control	NONE O ER(DTR/CTS) C XON/XOFF				
Tin	meout	3 :: (sec)				
Re	etry	2				
Wa	ait To Send	3 → (ms) I Default Value				
BI	/ VCC	C RI C VCC				
lr o Is	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					
Allo	owable No. of Devi	ce/PLCs 16 Unit(s) 📊				
	No. Device Nar	ne Settings				
	, I PLC1	ISlave 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 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 Configuration Max Query
Slave Equipment Address 1	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 present the resulting data much b increases	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 recontirm 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	OK (<u>0</u>) Cancel

[Equipment Configuration] tab

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 offline 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.

Devid	ce/PLC1				
Sum	nmary				Change Device/PLC
	Maker Schneider El	ectric Industries	Driver MO	DBUS SIO Master	Port COM1
	Text Data Mode	1 <u>Change</u>			
Com	munication Settings				
	SIO Type	RS232C	C RS422/485(2wire	e) C RS422/485(4wire)	
	Speed	19200	~		
	Data Length	O 7	• 8		
	Parity	C NONE	EVEN	C ODD	
	Stop Bit	• 1	O 2		
	Flow Control	NONE	C ER(DTR/CTS)	C XON/XOFF	
	Timeout	3 📫 (s	ec)		
	Retry	2			
	Wait To Send	3 ÷ (n	ns) 🔽 Default Va	alue	
	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					E
Dev	ice-Specific Settings				
	Allowable No. of Devi	ice/PLCs 16 Unit(s)		
	No. Device Nar	me	Settings	inment Address=1 Rest of the	bits in this word=Do not clear JEC611
	m , heer		The locate r de	ipmont Address=1, rest of the	exernation word-promoticical (ECOT)

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
	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) = 3500 x (1 + Data Length + Stop Bit + Parity) 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 offline 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.

quipment Configuration Max Q Equipment Address	uery
Slave Equipment Address	1 📫
Bit manipulation (set/reset) to H	olding Register
Rest of the bits in this word	🔿 Clear 💿 Do not clea
Note on when selecting "Do If the ladder program writes i read/write process, the resul	not clear" : data to Holding Register during the ting data may be incorrect.
I IECOTISI Syrilax	
Adaress Mode	U-based (Derault)
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 Holding Resister	(set / reset) to	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 Synta	x	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 wo	rd order	Select the order of storing double word data from "Low word first" or "High word first".	
Low Security Lev	/el	Put a check when lowering the format check level.	

[Max Query] tab

🏂 Individual Devic	e Settings		
PLC1			
Equipment Configuration	n 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 🐳 words	
Holding Register (4)	Read (03H)	125 🐳 words	
Holding Register (4)	Write (10H)	100 🕂 words	
🔲 Single Bit manipul	ation to Coil/Discret	e Input	
		Default	
	(DK (<u>D)</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	
	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 one communication, using 1 to 125 words.	
	Read		
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 to Coil/ Discrete Input		Put a check when writing in or reading out coil or discreet input in bits.	

4.2 Setup Items in Offline Mode

NOTE

• Refer to the Maintenance/Troubleshooting guide for information on how to enter offline mode or about the operation.

- Cf. Maintenance/Troubleshooting Guide "Offline Mode"
- The number of the setup items to be displayed for 1 page in the offline mode depends on the Display in use. Please refer to the Reference manual for details.

Communication Settings

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

Comm.	Device	Option		
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 8 EVEN 2 2 4 3 4	
	Exit		Back	2005/09/02 13:11:46

Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device. MPORTANT 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.

continued to next page

Setup Items	Setup Description
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.
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	Optio	n	-	
	on	-		[COM1]	Page 1/1
Devic	e/PLC Name PL	01		[0011]	Tage 171
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	to HR order el put ter ister gister ulation	Rest o OFF Low wo OFF 2000 b 2000 b 1 1 0 0 5 0 5 0 5 5 0 5 5 5 5 5 5 5 5 5	1 ▼ f bits in word a wrd first wits 125 ▼ 100 ▼	re not cleared
	Exit			Back	2 007/0 6/28 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 offline mode.)	
IEC61131 Syntax	Displays the usage status of the currently set IEC61131 syntax in ON/OFF. (Not available in offline 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 offline mode.)	

Setup Items		Setup Description	
Low Security Level		When an format check level is lowered, ON/OFF is displayed. When the level is lowered, ON is displayed. (Not available to set in offline mode.)	
Coil		Displays the number of max data for device [coil] which can be read for one	
	Read	communication. (Not available to set in offline mode.)	
Coil		Displays the number of max data for device [coil] which can be written for	
Write		one communication. (Not available to set in offline 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 offline mode.)	
Input Register		Set the number of max data for device [input register] which can be read for one communication, using 1 to 125 words.	
Read			
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 offline 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 RI / VCC In the case the 9th pin Power Suppl RS232C Isol it to VCC.	• RI of RS232C, you to RI(Input) or y).If you use th ation Unit, plea	[COM1] can select r VCC(5V ne Digital's ase select	Page 1/1
	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.
NOTE • G	P-4100 series and GP-4*01TM do not have the [Option] setting in the offline mode.

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
GP3000 ^{*1} (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) ST ^{*2} (COM2)	1A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	
	1B	User-created cable	
GP3000 ^{*3} (COM2)	1C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable Online adapter by Pro-face	The cable length must be 200m or less.
	1D	CA4-ADPONL-01 + User-created cable	
IPC*4	1E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	
	1F		
GP-4106 (COM1)	IG	User-created cable	
GP-4107 (COM1)	1H	User-created cable	

GP-Pro EX Device/PLC Connection Manual

- *1 All GP3000 models except AGP-3302B
- *2 All ST models except AST-3211A and AST-3302B
- *3 All GP3000 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)
 - 1A)
 - 1:1 Connection



• 1:n Connection



User-created cable

1B)

• 1:1 Connection





1C)

• 1:1 Connection







1D)



• 1:n Connection



1E)

• 1:1 Connection



• 1:n Connection



User-created cable

1F)

1:1 Connection





1G)

• 1:1 Connection



1:n Connection



*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

1H)

• 1:1 Connection



1:n Connection



Cable Diagram 2

Display (Connection Port)	Cable		Notes
GP3000 (COM1) GP-4*01TM (COM1) ST (COM1) IPC ^{*1} PC/AT	2A	Cable by Schneider Electric Industries TSX PCX 1031 (2.5m) ^{*2}	
GP-4105 (COM1)	2B	User-created cable + 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)".

2A)



2B)



Cable Diagram 3

Display (Connection Port)	Cable		Notes
GP3000 ^{*1} (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) ST ^{*2} (COM2)	3A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable + Accessory box by Schneider Electric Industries TSX SCA 50	
	3B	User-created cable + Accessory box by Schneider Electric Industries TSX SCA 50	
GP3000 ^{*4} (COM2)	3C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable + Accessory box by Schneider Electric Industries TSX SCA 50 Online adapter by Pro-face CA4-ADPONL-01	The cable length must be 10m or less. ^{*3}
	3D	+ User-created cable + Accessory box by Schneider Electric Industries TSX SCA 50	
IPC*5	3E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable + Accessory box by Schneider Electric Industries TSX SCA 50	The cable length must be 10m or less.* ³
	3F	User-created cable + Accessory box by Schneider Electric Industries TSX SCA 50	

Display (Connection Port)		Cable	Notes
GP-4106 (COM1)	3G	User-created cable + Accessory box by Schneider Electric Industries TSX SCA 50	The cable length must be 10m or less.* ³
GP-4107 (COM1)	3Н	User-created cable + Accessory box by Schneider Electric Industries TSX SCA 50	

*1 All GP3000 models except AGP-3302B

*2 All ST models except AST-3211A and AST-3302B

*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 GP3000 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)

3A)

• 1:1 Connection



• 1:n Connection



User-created cable

3B)

• 1:1 Connection



• 1:n Connection



User-created cable

3C)

• 1:1 Connection







3D)

• 1:1 Connection





3E)

• 1:1 Connection





3F)

• 1:1 Connection





3G)

• 1:1 Connection



1:n Connection



*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON
3H)

• 1:1 Connection





IMPORTANT •	The 5V output (Pin #6) on the GP-4107 is the power for the Siemens AG's
	PROFIBUS connector. Do not use it for other devices.

NOTE	• In COM on the GP-4107, the SG and FG terminals are isolated.
------	--

Display (Connection Port)		Cable	Notes
GP3000 (COM1) GP-4*0ITM (COM1) ST (COM1) IPC ^{*1} PC/AT	4A	User-created 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
GP-4105 (COM1)	4B	User-created 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	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 User-created cable.



4B)



Display (Connection Port)		Cable	Notes
GP3000 ^{*1} (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) ST ^{*2} (COM2)	5A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industries TSX SCP 114	
	5B	User-created cable + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industries TSX SCP 114	
GP3000 ^{*3} (COM2)	5C	Online adapter by Pro-face CA3-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industries TSX SCP 114	
	5D	Online adapter by Pro-face CA4-ADPONL-01 + User-created 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}	5E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industries TSX SCP 114	
	5F	User-created 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-4106 (COM1)	5G	User-created 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-4107 (COM1)	5H	User-created cable + Uni-Telway cable by Schneider Electric Industries TSX SCP CU 4030 (3m) + PCMCIA card for RS485 by Schneider Electric Industries TSX SCP 114	

*1 All GP3000 models except AGP-3302B

*2 All ST models except AST-3211A and AST-3302B

*3 All GP3000 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) 5A)



5B)







5D)





5F)

5E)







*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON



NOTE

• In COM on the GP-4107, the SG and FG terminals are isolated.

Display (Connection Port)	Cable		Notes
GP3000 (COM1) GP-4*01TM (COM1) ST (COM1) IPC ^{*1} PC/AT	6A	User-created cable	The cable length must be 15m or less.
GP-4105 (COM1)	6B	User-created cable	

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

6A)



6B)



User-created cable

Display (Connection Port)		Cable			
GP3000 (COM1) GP-4*01TM (COM1) ST (COM1) IPC ^{*1} PC/AT	7A	D-Shell adapter by Schneider Electric 110 XCA 203 00 + RS232 communication cable RJ45 to RJ45 by Schneider Electric 110 XCA 282 01(1m) , 110 XCA 282 02(3m) or 110 XCA 282 03(6m)	The cable		
GP-4105 (COM1)	7B	User-created cable + D-Shell adapter by Schneider Electric 110 XCA 203 00 + RS232 communication cable RJ45 to RJ45 by Schneider Electric 110 XCA 282 01(1m) , 110 XCA 282 02(3m) or 110 XCA 282 03(6m)	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) ■

7A)



Modbus port 1

7B)



Display (Connection Port)		Cable	Notes
GP3000 ^{*1} (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) ST ^{*2} (COM2) IPC ^{*3}	8A	COM port conversion adapter (for COM1) by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	
	8B	User-created cable	
GP3000 ^{*4} (COM2)	8C 8D	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable Online adapter by Pro-face CA4-ADPONL-01	The cable length must be 500m or less.
		User-created cable	
GP-4106 (COM1)	8E	User-created cable	

*1 All GP3000 models except AGP-3302B

*2 All ST models except AST-3211A and AST-3302B

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

*4 All GP3000 models except GP-3200 series and AGP-3302B



8B)

		Displa D-sub 9 p	ay side bin (socket)		Shield	ld	Ext	ternal Device Modbus port 2 D-sub 9 pin (plug)		
Display Terr resis 1009	Termination	Pin Signal name	[Pin	Signal name					
		1	RDA	-			_	1	TXD+	
		2	RDB	-				6	TXD-	
		3	SDA					2	RXD+	
	resistance 100Ω 1/2W	7	SDB				▶	7	RXD-	
		5	SG					3	SG	
		4	ERA	\vdash			-			
		8	CSA	┥						
		9	ERB							
		6	CSB	┫						
		Shell	FG		┥	\mathbf{N}				



8D)





*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

Display (Connection Port)		Cable	Notes
GP3000 (COM1) GP-4*01TM (COM1) ST (COM1) IPC ^{*1} PC/AT	9A	User-created cable	The cable length must be 15m or less.
GP-4105 (COM1)	9B	User-created cable	

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

9A)

	Displa D-sub 9 p	iy side in (socket)	S	Shield	External ا D-sub 9	Device side pin (socket)
	Pin	Signal name		\wedge	Pin	Signal name
	2	RD(RXD)	<	\rightarrow	3	SD
Diaplay	3	SD(TXD)			2	RD
	4	ER(DTR)			6	DR
	5	SG			5	SG
	7	RS(RTS)			7	RS
	8	CS(CTS)	↓ ↓	- ∖ / ┕	8	CS
	Shell	FG	`	V		

9B)

	Display side Terminal block	_	Shie	eld		External I D-sub 9 p	Device side pin (socket)
	Signal name		/	\wedge		Pin	Signal name
	RD(RXD)	←	 	$\frac{1}{1}$		3	SD
Diaplay	SD(TXD)	┣──				2	RD
Display	ER(DTR)	<u> </u>				6	DR
	SG	<u> </u>				5	SG
	RS(RTS)	Н				7	RS
	CS(CTS)	┢┙	\ \	$\backslash /$	L	8	CS
		-	\	<u> </u>			

Display (Connection Port)		Cable	Notes
GP3000 (COM1) GP-4*01TM (COM1) ST (COM1) IPC ^{*1} PC/AT	10A	User-created cable	The cable length must be 15m or less.
GP-4105 (COM1)	10B	User-created cable	

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

10A)

	Displa D-sub 9 p	y side in (socket)	_	Shi	eld		External D-sub 9	Device side pin (plug)
	Pin	Signal name		/	\wedge		Pin	Signal name
	2	RD(RXD)	┥	1	+		3	SD
Diaplay	3	SD(TXD)	<u> </u>				2	RD
4 5	ER(DTR)				• •	6 DR	DR	
	5	SG	<u> </u>				5	SG
	7	RS(RTS)	h				7	RS
	8	CS(CTS)			\setminus /		8	CS
	Shell	FG	┣──	<u>`</u>	. <u>.</u>		1	CD

10B)

	Display side Terminal block	_	Shield		External D-sub 9	Device side pin (plug)
	Signal name		$/ \wedge$		Pin	Signal name
	RD(RXD)				3	SD
Diaglass	SD(TXD)				2	RD
	ER(DTR)	┝┤		! • ►	6	DR
	SG				5	SG
	RS(RTS)	\mathbb{H}		-	7	RS
	CS(CTS)	↓ '		۲ L	8	CS
		-	\¥		1	CD

Display (Connection Port)		Cable	Notes
GP3000 ^{*1} (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) ST ^{*2} (COM2) IPC ^{*3}	11A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	
	11B	User-created cable	
GP3000 ^{*4} (COM2)	11C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	The cable length must be 1000m or less.
	11D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	1
GP-4106 (COM1)	11E	User-created cable	

*1 All GP3000 models except AGP-3302B

*2 All ST models except AST-3211A and AST-3302B

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

*4 All GP3000 models except GP-3200 series and AGP-3302B

11A)

• 1:1 Connection





11B)

• 1:1 Connection





11C)

• 1:1 Connection





11D)

• 1:1 Connection





11E)

• 1:1 Connection



• 1:n Connection



*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

Display (Connection Port)		Cable	Notes
GP3000 ^{*1} (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) ST ^{*2} (COM2)	12A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	
	12B	User-created cable	
GP3000 ^{*3} (COM2)	12C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	The cable length must be 1000m or
	12D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	less.
IPC ^{*4}	12E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	
	12F	User-created cable	
GP-4106 (COM1)	12G	User-created cable	
GP-4107 (COM1)	12H	User-created cable	

*1 All GP3000 models except AGP-3302B

*2 All ST models except AST-3211A and AST-3302B

*3 All GP3000 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)

12A)

• 1:1 Connection





12B)

• 1:1 Connection





12C)

٠

1:1 Connection ٠





User-created cable

12D)

1:1 Connection





12E)

• 1:1 Connection





12F)

• 1:1 Connection





12G)

• 1:1 Connection



1:n Connection



*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

12H)

1:1 Connection ٠



1:n Connection



MPORTANT

The 5V output (Pin #6) on the GP-4107 is the power for the Siemens AG's PROFIBUS connector. Do not use it for other devices.

NOTE

• In COM on the GP-4107, the SG and FG terminals are isolated.

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]	(<u>+16+</u> 1) *2
Input Register		300001 - 365536	or	B i t 15] *2
Holding Register	400001,00 - 465536,15 ^{*3}	400001 - 465536	[H / L] *1	_{(₿1} ,15)

*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 FH / D	<u>₿ i 1</u> 5] *3
Holding Register	400001.00 - 409999.15	400001 - 409999	*1	<u>⊫ i 15</u>]

*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 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.

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

NOTE

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

IEC61131 address syntax

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

Device	Modbus address syntax			IEC61131syntax				
					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



• 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 "LS Area (Direct Access Method Area)"Please refer to the precautions on manual notation for icons in the table.

^{CP} "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 "Display-related errors" in "Maintenance/Troubleshooting Guide" for details on the error messages common to the driver.