

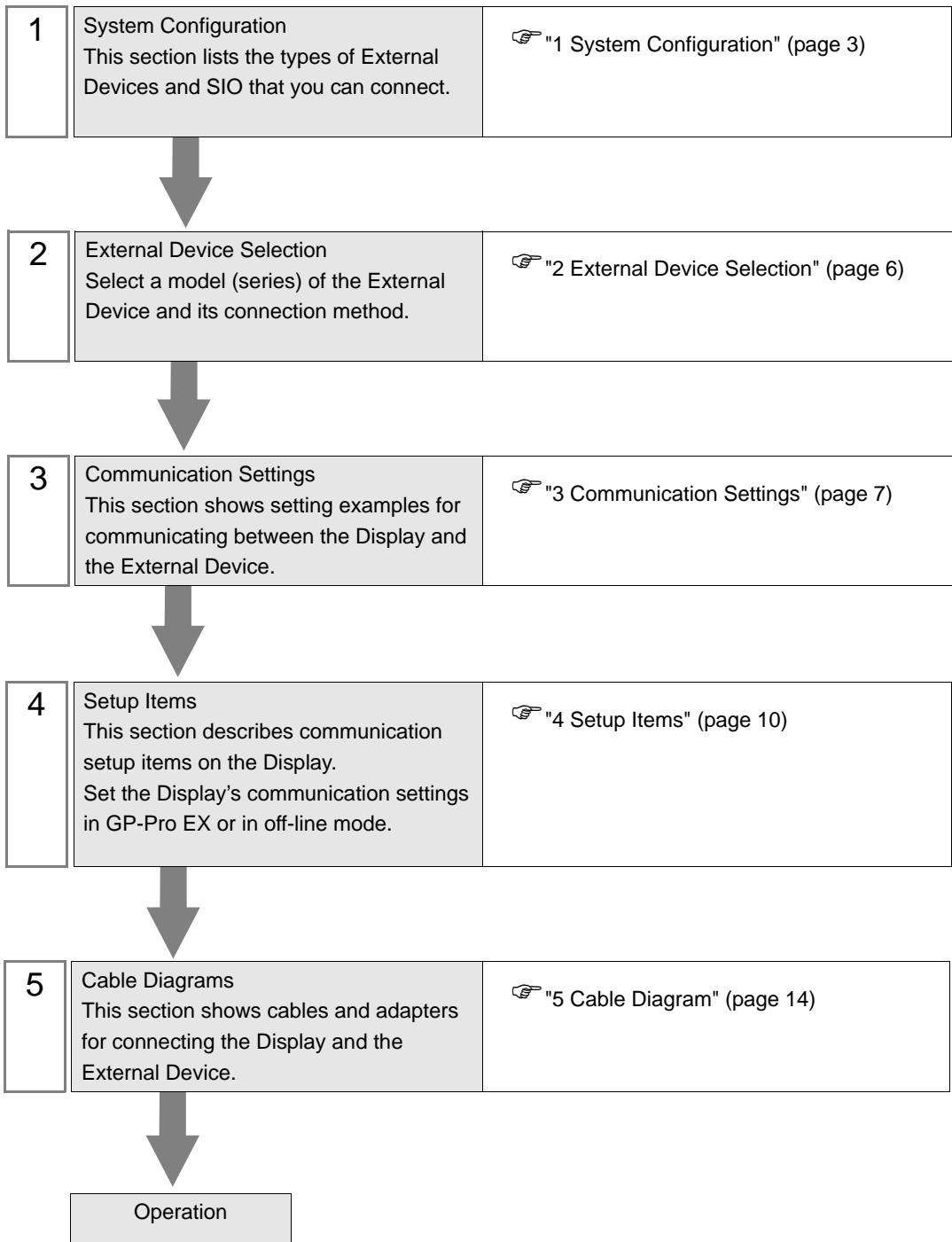
# SIMATIC S5 3964(R) Driver

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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 is described in the sections identified below:



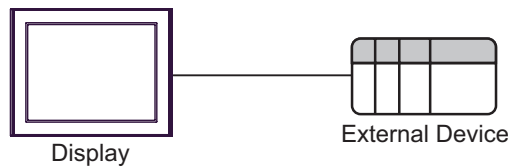
# 1 System Configuration

The following section shows system configurations for connecting the Siemens AG External Device and the Display.

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
SIMATIC S5 Series	90U 95U 100U	CP521 SI	RS-232C	Setting Example 1 (page 7)	Cable Diagram 1 (page 14)
	115U 135U 155U	CP524 CP525	RS-232C		
	115U(CPU 944) 135U/155U(CPU 928B)	SI2 port on CPU unit	RS-232C		

## ■ Connection Configuration

- 1:1 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 <sup>*1</sup> , COM2, COM3 <sup>*1</sup> , COM4	-	-
PS-3450A, PS-3451A, PS3000-BA, PS3001-BD	COM1, COM2 <sup>*1*2</sup>	COM2 <sup>*1*2</sup>	COM2 <sup>*1*2</sup>
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>
PL-3000B, PL-3600T, PL-3600K, PL-3700T, PL-3700K, PL-3900T	COM1 <sup>*1*2</sup> , COM2 <sup>*1</sup> , COM3, COM4	COM1 <sup>*1*2</sup>	COM1 <sup>*1*2</sup>

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

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

### DIP Switch setting: RS-232C

DIP Switch	Setting	Description
1	OFF <sup>*1</sup>	Reserved (always OFF)
2	OFF	SIO type: RS-232C
3	OFF	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) 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.

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

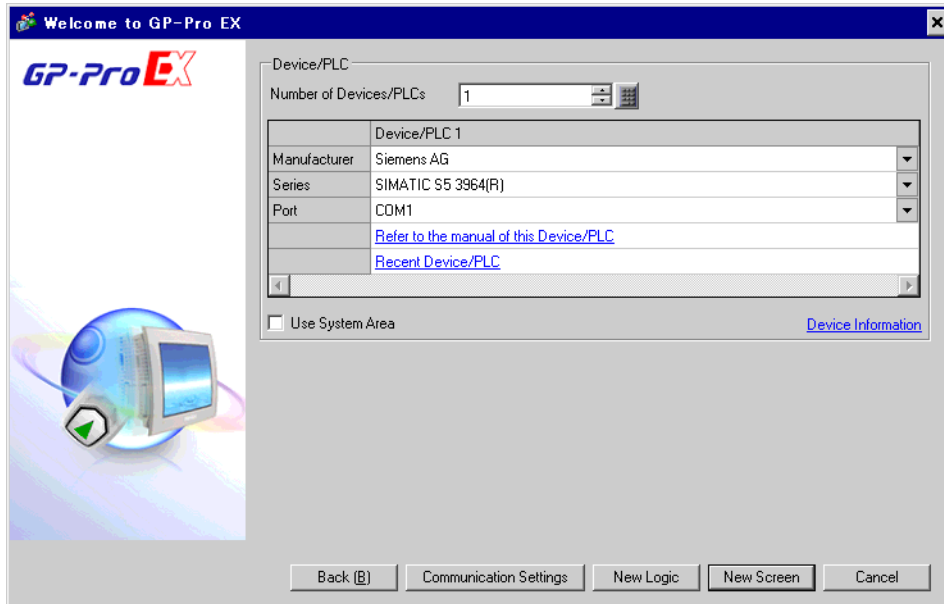
DIP Switch	Setting	Description
1	OFF	Reserved (always OFF)
2	ON	SIO type: RS-422/485
3	ON	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) insertion to RD (RXD): None
7	OFF	Short-circuit of SDA (TXA) and RDA (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 (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) 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 External Device Selection

Select the External Device to be connected to the Display.



Setup Items	Setup Description
Number of Devices/PLCs	Use an integer from 1 to 4 to enter the number of Devices/PLCs to connect to the display.
Manufacturer	Select the manufacturer of the External Device to be connected. Select "Siemens AG".
Series	Select the model (series) of the External Device to be connected and connection method. Select "SIMATIC S5 3964(R)". In System configuration, check to make sure the external device to which you are connecting is supported in "SIMATIC S5 3964(R)". ☞ "1 System Configuration" (page 3)
Port	Select the Display port to be connected to the External Device.
Use System Area	Check this option to synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the ladder program of the External Device to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)" This can be also set with GP-Pro EX or in the Display's off-line mode. Cf. GP-Pro EX Reference Manual "5.17.6 [System Settings] Setting Guide, [Display Unit] Settings Guide, System Area Settings" Cf. Maintenance/Troubleshooting Manual "2.15.1 Settings common to all Display models, [Main Unit Settings] Settings Guide, System Area Settings"

## 3 Communication Settings

This section provides examples of communication settings recommended by Pro-face for the Display and the External Device.

### 3.1 Setting Example 1

#### ■ GP-Pro EX Settings

#### ◆ Communication Settings

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

Device/PLC 1

Summary [Change Device/PLC](#)

Manufacturer  Series  Port

Text Data Mode  [Change](#)

Communication Settings

SIO Type  RS232C  RS422/485(2wire)  RS422/485(4wire)

Speed

Data Length  7  8

Parity  NONE  EVEN  ODD

Stop Bit  1  2

Flow Control  NONE  ER(DTR/CTS)  XON/XOFF

Timeout  (sec)

Retry

Wait To Send  (ms)

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.

Device-Specific Settings

Allowable Number of Devices/PLCs 1

Number	Device Name	Settings
1	PLC1	There is no setting item.

## ■ External Device Settings

Use the program controller (SIMATIC PG615) to configure communication settings for the External Device.  
Refer to your External Device manual for details.

- 1 Set the RUN/STOP switch on the CPU unit to STOP.
- 2 Turn the program controller power ON to check that it is configured as shown below.

Setup Items	Setting Value
ON-LINE	YES
SYSTEM OP	YES
WORD ADDR	YES

### NOTE

- If there are any items set differently from the above settings, set the cursor to the item using the up key or the down key and press key 1.

- 3 Define the BLOCK OB.  
Press the ENTER key to move to the INIT.STATE menu.

- 4 Select the INPUT menu.

- 5 Select the INPUT PC menu.

- 6 Select the DX.

- 7 Press key 2.

- 8 Press the ENTER key to display [KH•••KC].

- 9 Press key 1 to display the first address [0000:KH=].

- 10 Set each address as shown below.

To move the address, press the down key.

Address	Setting Value	Address	Setting Value
0000	4D41	0008	0000
0001	534B	0009	0000
0002	5832	0010	0000
0003	0020	0011	0000
0004	4409	0012	0000
0005	0000	0013	0000
0006	0000	0014	4D00
0007	0000	0015	0020

- 11 After all addresses are set, press the ENTER key to display [OVERWRITE?].

- 12 Press the ENTER key to move to the INIT.STATE menu.

- 13 Define the BLOCK DB.

Press key 1 to move to the INPUT menu.

- 14 Select the INPUT PC menu.

- 15 Select the DB.

- 16 Press key 9.

- 17 Press the ENTER key to display [KH•••KC].



18 Press key 1 to display the first address [0000:KH=].

19 Set each address as shown below.

To move the address, press the down key.

Address	Setting Value	Address	Setting Value
0000	0009	0006	0000
0001	0002	0007	0000
0002	0008	0008	0000
0003	0001	0009	0000
0004	0000	0010	0000
0005	0002		

20 After all addresses are set, press the ENTER key to display [OVERWRITE?].

21 Press the ENTER key to move to the INIT.STATE menu.

22 Once the communication settings are complete, set the RUN/STOP switch on the CPU to RUN.

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**NOTE**

- If input was unsuccessful, press the CE key to clear, or press the BRK key to return to the original menu.
  - If the RUN/STOP switch on the CPU is not set to RUN, communication is not executed.
-

## 4 Setup Items

Set up the Display's communication settings in GP-Pro EX or in the Display's off-line mode.

The setting of each parameter must match that of the External Device.

☞ "3 Communication Settings" (page 7)

### 4.1 Setup Items in GP-Pro EX

#### ■ Communication Settings

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

Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device. <b>IMPORTANT</b> In the communication settings, set [SIO Type] correctly according to the serial interface specifications of the Display. If you select an SIO type that the serial interface does not support, proper operation cannot be guaranteed. Refer to your Display manual for details on the serial interface specifications.
Speed	Select the communication speed between the External Device and the Display.
Data Length	Display the data length.
Parity	Select how to check parity.
Stop Bit	Select the stop bit length.
Flow Control	Select the communication control method to prevent transmission and reception data overflow.

continued on next page

Setup Items	Setup Description
Timeout	Enter the time (seconds) for which the Display waits for the response from the External Device, from "1 to 127".
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	Enter the standby time (milliseconds) from when the Display receives packets until it transmits the next command, from "0 to 255".
RI/VCC	You can switch RI/VCC of the 9th pin when you select RS-232C for SIO type. When connecting with the IPC, change RI/5V with the IPC changeover switch. Please refer to the IPC manual for more details.

## 4.2 Setup Items in Off-line Mode

### NOTE

- Refer to the Maintenance/Troubleshooting manual for information on how to enter off-line mode or about the operation.  
Cf. Maintenance/Troubleshooting Manual "2.2 Off-line Mode"
- The number of the setup items to be displayed for 1 page in the off-line 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 Equipment Settings] in off-line mode.

Touch the External Device you want to set from the displayed list.

Comm.	Option			
SIMATIC S5 3964(R)		[COM1]	Page 1/1	
SIO Type	RS232C			
Speed	19200			
Data Length	8			
Parity	<input type="radio"/> NONE <input checked="" type="radio"/> EVEN <input type="radio"/> ODD			
Stop Bit	<input checked="" type="radio"/> 1 <input type="radio"/> 2			
Flow Control	NONE			
Timeout(s)		3	▼	▲
Retry		2	▼	▲
Wait To Send(ms)		3	▼	▲
Exit		Back		2008/08/20 10:07:20

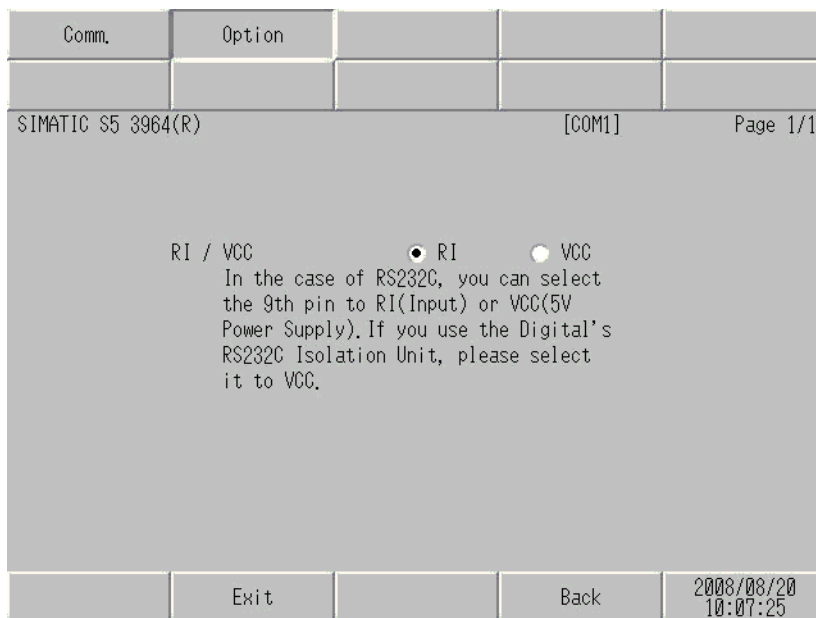
Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device. <b>IMPORTANT</b> In the communication settings, set [SIO Type] correctly according to the serial interface specifications of the Display. If you select an SIO type that the serial interface does not support, proper operation cannot be guaranteed. Refer to your Display manual for details on the serial interface specifications.
Speed	Select the communication speed between the External Device and the Display.
Data Length	Display the data length.
Parity	Select how to check parity.
Stop Bit	Select the stop bit length.
Flow Control	Select a communication control method to prevent transmission and reception data overflow.

continued on next page

Setup Items	Setup Description
Timeout (s)	Enter the time (seconds) for which the Display waits for the response from the External Device, from "1 to 127"
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 (ms)	Enter the standby time (milliseconds) from when the Display receives packets until it transmits the next command, from "0 to 255".

## ■ Option

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



Setup Items	Setup Description
RI/VCC	You can switch RI/VCC of the 9th pin when you select RS232C for SIO type. When connecting with the IPC, change RI/5V with the IPC changeover switch. Please refer to the IPC manual for more details.

### NOTE

- GP-4100 series do not have the [Option] setting in the off-line mode.

## 5 Cable Diagram


The following cable diagram may be different from the cable diagram recommended by Siemens AG. Please be assured there is no operational problem in applying the cable diagram shown in this manual.

- Please ground the FG pin of the External Device body. Use a grounding resistance of  $100\Omega$   $2\text{mm}^2$  or thicker wire, or your country's applicable standard. Refer to your External Device manual for more details.
- The SG and FG are connected inside the Display. When connecting the External Device to the SG, design your system to avoid short-circuit loops.
- Connect an isolation unit if the communication is not stable due to noise or other factors.

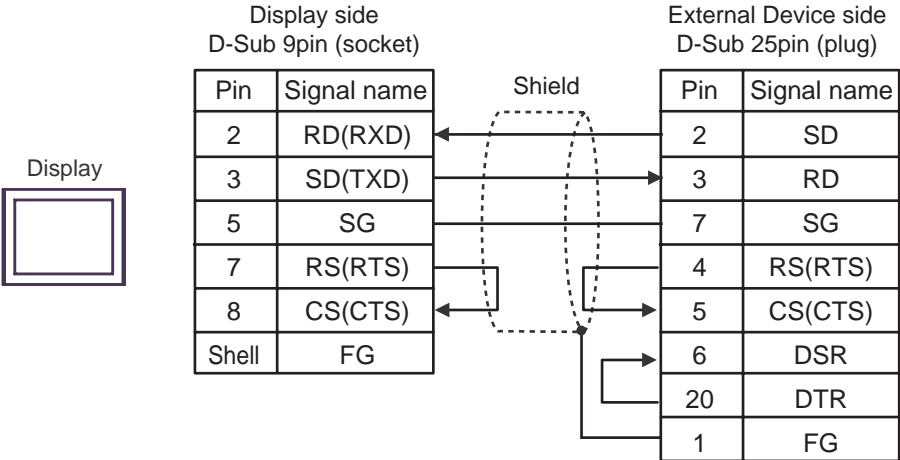
Cable Diagram 1

Display (Connection Port)	Cable		Notes
GP3000 (COM1) ST (COM1) IPC*1 PC/AT	1A	User-created cable	Cable length: 15m or less.
GP-4105 (COM1)	1B	User-created cable	

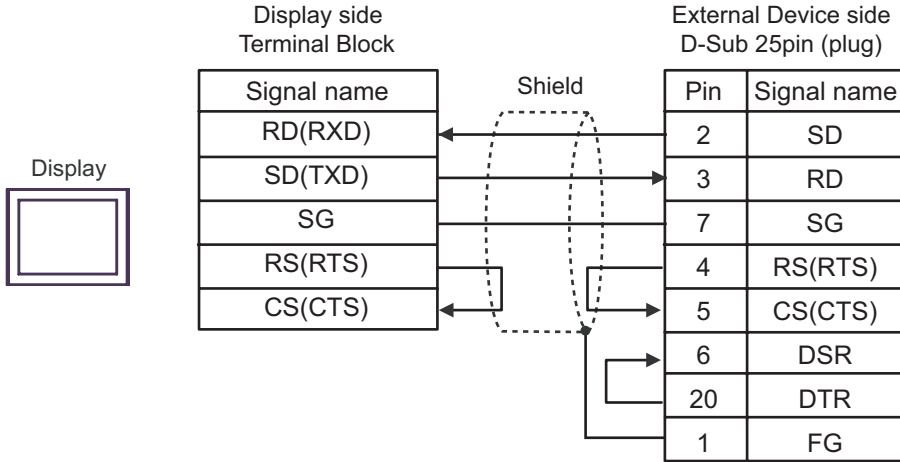
\*1 Only the COM port which can communicate by RS-232C can be used.

 ■ IPC COM Port (page 4)

1A)







1B)



## 6 Supported Device Addresses

The following section shows the range of supported device addresses. Please note that the actual supported range of the devices vary depending on the External Device to be used. Please check the actual range in the manual of your External Device.

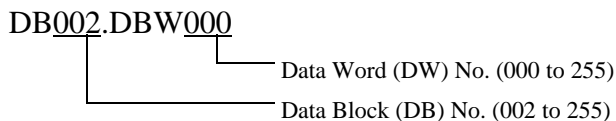
 : This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Data Block	DB002.DBX000.0 - DB255.DBX255.15	 DB002.DBW000 -  DB255.DBW255		*1*2*3

\*1 When changing bit addresses, the Display reads the corresponding word address from the External Device, then changes the defined bit in the word, and then returns the updated word value to the word address. In the meantime, if the word address on the External Device is edited as a result of a ladder program or other means, this value is overwritten with the word value from the Display.

\*2 To use Data Blocks and Extended Data Blocks, allocate them on the External Device.

\*3 Data Block addressing is as follows:  
Example: In the case of DB002.DBW000:



### NOTE

- Refer to the GP-Pro EX Reference Manual for system data area.  
Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
- 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 if you select "Device Type & Address" for the address type in Data Displays.

Device	Device Name	Device Code (HEX)	Address Code
Data Block	DB	0000	Value of (Data Block (DB) No. $\times$ 0x10000) + Data Word (DW) No.

## 8 Error Messages

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

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

Examples of Error Messages

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

**NOTE**

- Refer to your External Device manual for details on received error codes.
- Refer to "When an error is displayed (Error Code List)" in "Maintenance/Troubleshooting manual" for details on the error messages common to the driver.

### ■ Error Codes Unique to External Device

Error Code	Error Description
0x0A	Parameter error Definition error by data exchange process
0x0C	Parameter error Command (packet) error
0x14	Parameter error Command (packet) error
0x2A	Communication process error other than command (packet) error
0x32	DB/DX access error
0x34	Command (packet) error
0x36	Communication process error other than command (packet) error