Device/PLC Connection Manuals

About the Device/PLC Connection Manuals

Prior to reading these manuals and setting up your device, be sure to read the "Important: Prior to reading the Device/PLC Connection manual" information. Also, be sure to download the "Preface for Trademark Rights, List of Units Supported, How to Read Manuals and Documentation Conventions" PDF file. Furthermore, be sure to keep all manual-related data in a safe, easy-to-find location.

1 ▶ Connecting an ST Unit

1.1 ▶ Connecting an ST Unit

■ ST Optional Items

The following optional cables can be used to connect a PLC to your ST unit.

Item	Description
RS232C Cable CA3-CBL232/5M-01 (5m)	I/F cable used for data transfer between each Device/PLC and your ST unit
RS422 Cable CA3-CBL422/5M-01 (5m)	
Mitsubishi PLC FX-Series Connection Cable CA3-CBLFX/1M-01 (1m)	I/F cable used for data transfer between Mitsubishi FX-Series PLCs and your ST unit
Mitsubishi PLC FX-Series Connection Cable CA3-CBLFX/5M-01 (5m)	
Mitsubishi PLC A-Series Connection Cable CA3-CBLA-01 (5m)	I/F cable used for data transfer between Mitsubishi A/QnA-Series PLCs and your ST unit
Mitsubishi PLC Q-Series Connection Cable CA3-CBLQ-01 (5m)	I/F cable used for data transfer between Mitsubishi Q-Series PLCs and your ST unit
Omron PLC SYSMAC Link Connection Cable CA3-CBLFX/5M-01 (5m)	I/F cable used for data transfer between Omron SYSMAC Series PLCs and your ST unit

■ Connection Method

This manual includes connection diagram(s) of the wiring connections to be used between the GP and a PLC. However, the pin number assigned to each connector pin on the ST's interface will differ from that of other GP Series units. Therefore, be sure to use the following Connector Pin Comparison Tables 1, 2 and 3 when creating a cable. Setup procedures are similar to those for GP Series units.

Table 1: RS232C I/F (ST401/ST403[*1])

ST Unit Pin No.	ST Signal Name	GP Series Unit Pin No.
1	CD	8
2	RD	3
3	SD	2
4	ER	20
5	SG	7
6	DR	6
7	RS	4
8	CS	5
9	RI	17[*2]
Connector Shell	FG	1

*1 When connecting to ST403, please change the communication type to RS232C with software.

*2 Only GP2000 Series units.

Table 2: RS422 I/F (ST400/ST403[*1])

ST Unit Pin No.	ST Signal Name	GP Series Unit Pin No.
1	RDA	10
2	RDB	16
3	SDA	11
4	ERA	22
5	SG	7
6	CSB	18
7	SDB	15
8	CSA	21
9	ERB	19
Connector Shell	FG	1

*1 When connecting to ST403, please change the communication type to RS422 with software.

Note:

- **Be sure to connect this unit's pin #5 (SG) to the other unit's SG terminal.**

- **When creating a cable for the ST, please be aware of the following:**

<When using an RS422 Cable>

- **When connecting FG lines, Digital recommends connecting FG wires on both sides of the cable. If, however, power level differences or data transfer problems occur, connect only one side's FG wire.**

Table 3: RS485 I/F (MPI Direct Connection) (ST402 (X-port))

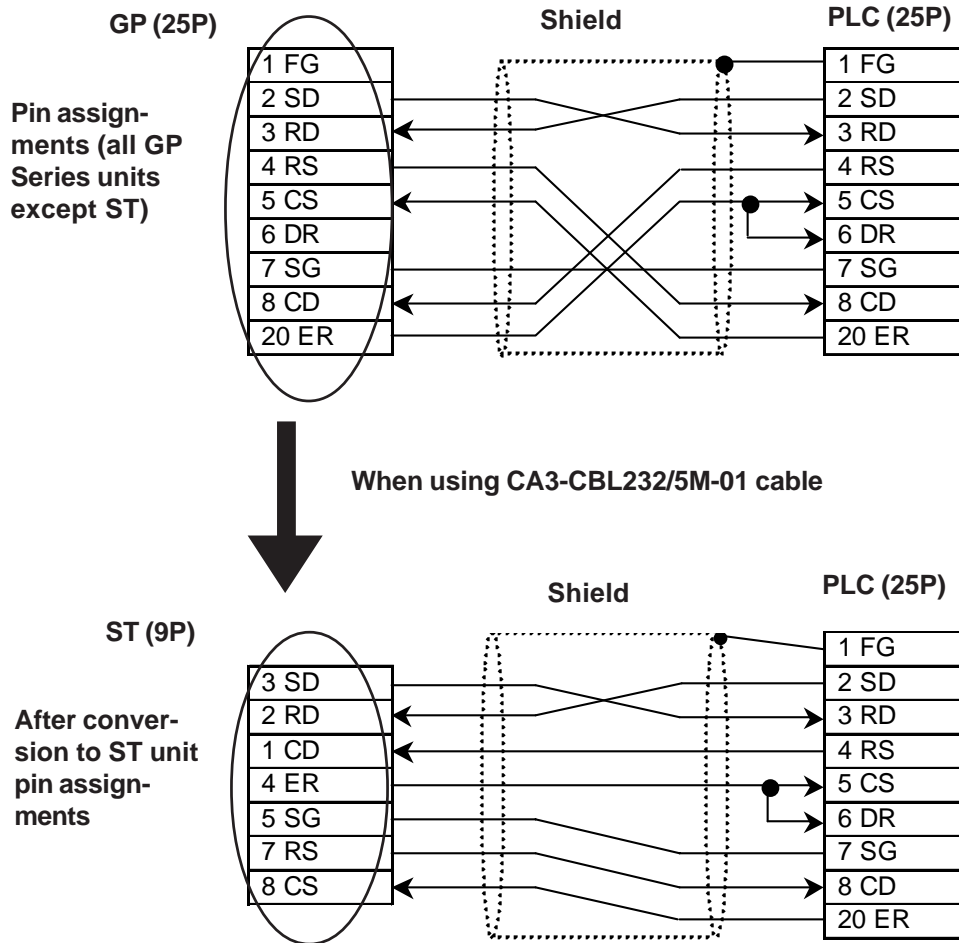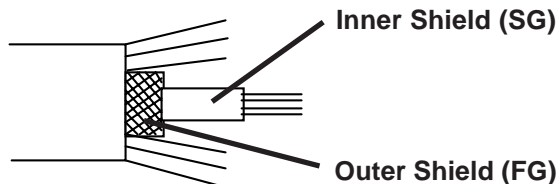| ST Unit Pin No.	ST Signal Name	GP Series Unit Pin No.
1	NC	
2	NC	
3	LINE (+)	10, 11
4	Reserve	
5	GND	7
6	+5V	
7	NC	
8	LINE (-)	15, 16
9	NC	
Connector Shell[*1]	FG	1

*1 Used when Serial I/F Switch is set to [Yes].

For SIEMENS S7-200/300/400 Series units, be sure to use a SIEMENS Co. Profibus Connector when connecting directly to an
Important *MPI Port.*

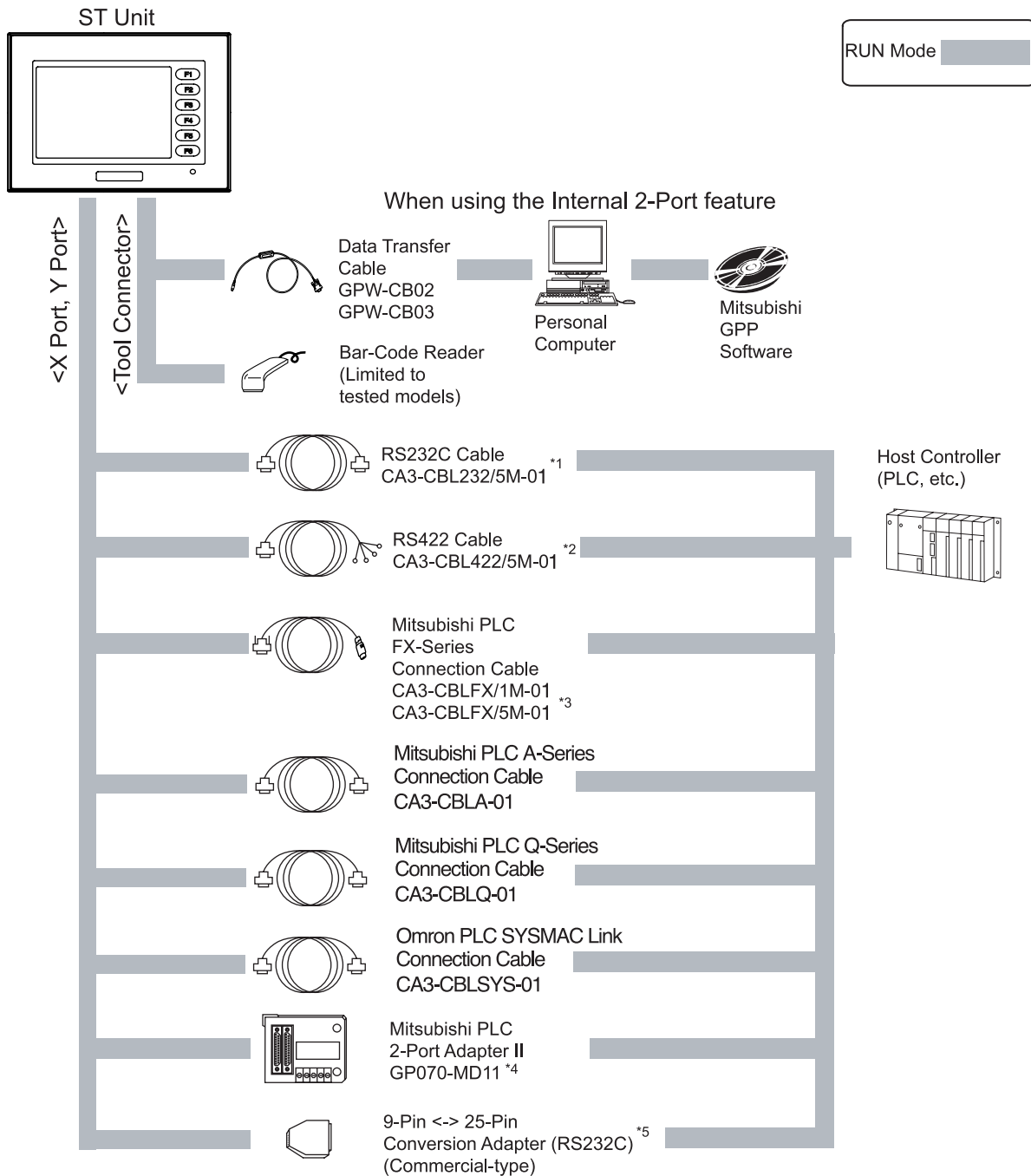## ◆ Example - Converting GP/GLC Pin Numbers to ST Pin Numbers

The following example connects an ST unit to a Mitsubishi PLC (1:1 connection - Cable Diagram 1) and describes how to convert the pin assignments for other GP Series units to those on the ST unit.

GP (25P)   **Shield**   **PLC (25P)**

Pin assign-ments (all GP Series units except ST)

GP (25P)	PLC (25P)
1 FG	1 FG
2 SD	2 SD
3 RD	3 RD
4 RS	4 RS
5 CS	5 CS
6 DR	6 DR
7 SG	7 SG
8 CD	8 CD
20 ER	20 ER

When using CA3-CBL232/5M-01 cable

ST (9P)   **Shield**   **PLC (25P)**

After conver-sion to ST unit pin assign-ments

ST (9P)	PLC (25P)
	1 FG
3 SD	2 SD
2 RD	3 RD
1 CD	4 RS
4 ER	5 CS
5 SG	6 DR
7 RS	7 SG
8 CS	8 CD
	20 ER

⚠ **Important**

- *Check that unused wires do not touch other signal wires or the connector case.*

- *Be sure to connect the cable's outer shield to the FG wire.*

Inner Shield (SG)

Outer Shield (FG)

- *Be sure to connect the inner shield to the Device/PLC's SG, in the same way as Pin #5's SG.*

ST Unit

RUN Mode

<X Port, Y Port> <Tool Connector>

When using the Internal 2-Port feature

Data Transfer Cable
GPW-CB02
GPW-CB03

Bar-Code Reader
(Limited to tested models)

Personal Computer

Mitsubishi GPP Software

RS232C Cable
CA3-CBL232/5M-01 *1

RS422 Cable
CA3-CBL422/5M-01 *2

Mitsubishi PLC
FX-Series
Connection Cable
CA3-CBLFX/1M-01
CA3-CBLFX/5M-01 *3

Mitsubishi PLC A-Series
Connection Cable
CA3-CBLA-01

Mitsubishi PLC Q-Series
Connection Cable
CA3-CBLQ-01

Omron PLC SYSMAC Link
Connection Cable
CA3-CBLSYS-01

Mitsubishi PLC
2-Port Adapter II
GP070-MD11 *4

9-Pin <-> 25-Pin
Conversion Adapter (RS232C) *5
(Commercial-type)

Host Controller
(PLC, etc.)

*1 Equivalent to the optional cable GP410-IS00-O. PLCs that can be connected to the GP410-IS00-O optional cable can also be connected to this cable.

*2 Equivalent to the optional cable GP230-IS11-o. Pins #1 (RDA) and #2 (RDB) have termination resistance (1/2W, 100Ω). Therefore, when usingthis cable for multi-link communication, be sure to remove this termination resistance.

*3 Mitsubishi FX-Series PLC Direct Connection Cable. This cable is equivalent to Pro-face's GP2000-CBLFX/1M-01 and GP2000-CBLFX/5M-01 cables, and is used for a D-sub25 pin connection.
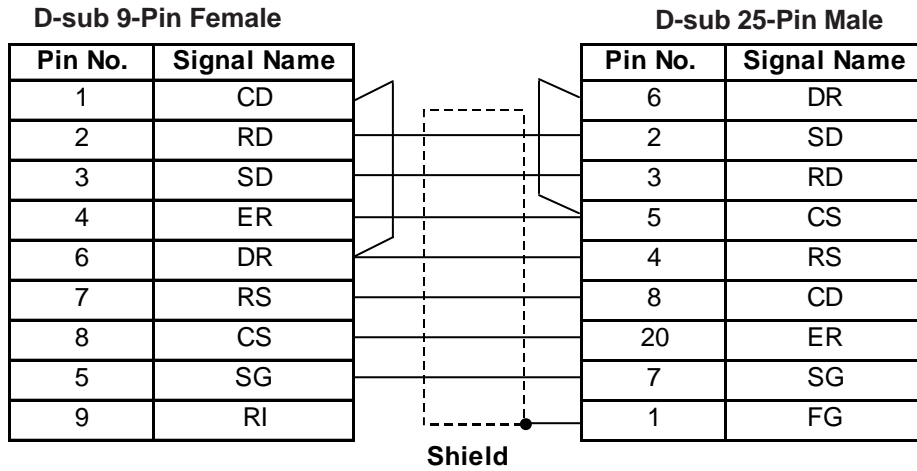
*4 For connection method details,
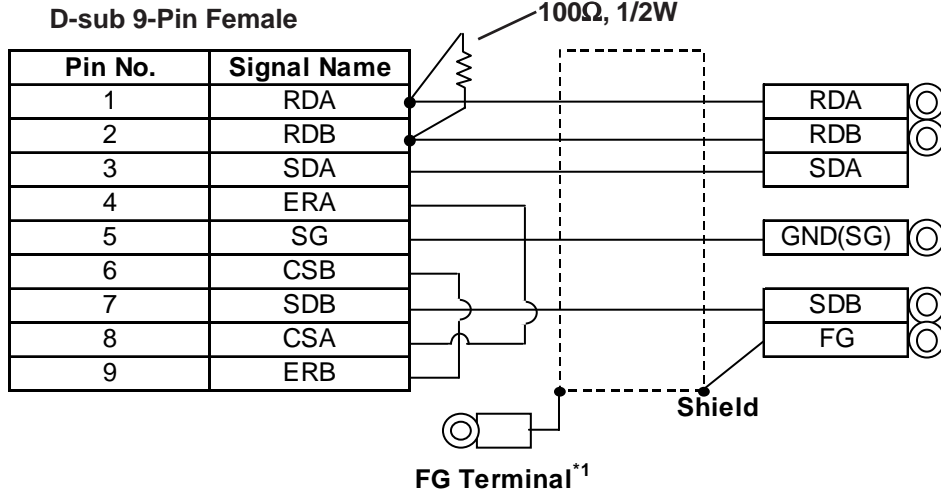▼*Reference*▲ 1.3 Cable Diagrams, ■ 2-Port Adapter II (GP070-MD11)

*5 For connection method details,
▼*Reference*▲ 1.3 Cable Diagrams, ■ 9-Pin <-> 25-Pin Conversion Adapter
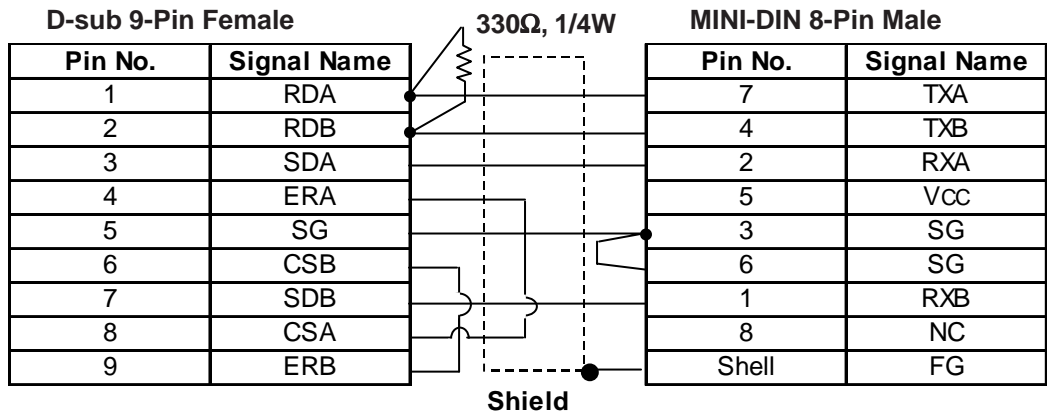
■ RS232C (CA3-CBL232/5M-01)

D-sub 9-Pin Female   **D-sub 25-Pin Male**

Pin No.	Signal Name
1	CD
2	RD
3	SD
4	ER
6	DR
7	RS
8	CS
5	SG
9	RI

Pin No.	Signal Name
6	DR
2	SD
3	RD
5	CS
4	RS
8	CD
20	ER
7	SG
1	FG

Shield

■ RS422 (CA3-CBL422/5M-01)

D-sub 9-Pin Female   **100Ω, 1/2W**

Pin No.	Signal Name
1	RDA
2	RDB
3	SDA
4	ERA
5	SG
6	CSB
7	SDB
8	CSA
9	ERB

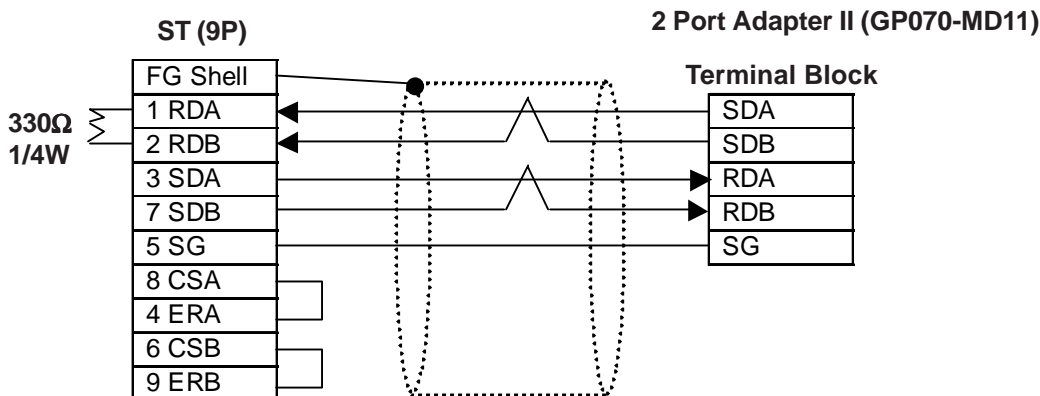RDA
RDB
SDA

GND(SG)

SDB
FG

Shield

FG Terminal*1

*1 Be sure to connect the ST unit's FG terminal to the other unit's FG terminal. To do this, remove the D-sub 9-Pin's fastener screws, insert the FG terminal, and replace the fastener screws. If, however, power level differences or data transfer problems occur, connect only one side's FG wire.

■ FX Connection (CA3-CBLFX/1M-01, CA3-CBLFX/5M-01)

The cable diagram given below is for the option cables, however be sure to use an option cable when connecting to the Device/PLC.

D-sub 9-Pin Female   **330Ω, 1/4W**   **MINI-DIN 8-Pin Male**

Pin No.	Signal Name
1	RDA
2	RDB
3	SDA
4	ERA
5	SG
6	CSB
7	SDB
8	CSA
9	ERB

Pin No.	Signal Name
7	TXA
4	TXB
2	RXA
5	VCC
3	SG
6	SG
1	RXB
8	NC
Shell	FG

Shield

■ 2-Port Adapter II (GP070-MD11)

ST (9P)

2 Port Adapter II (GP070-MD11)

Terminal Block

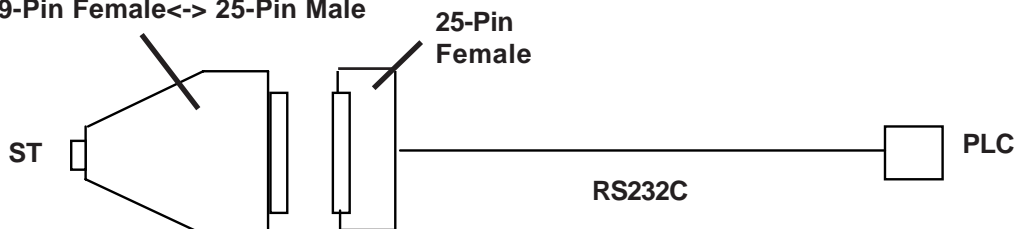| ST (9P)		Terminal Block
FG Shell		
1 RDA	◄	SDA
2 RDB	◄	SDB
3 SDA	►	RDA
7 SDB	►	RDB
5 SG		SG
8 CSA		
4 ERA		
6 CSB		
9 ERB		

330Ω
1/4W

Note:
- **When using the 2-Port feature, select the "2-Port Feature | CPU Direct" menu's "Adapter + GPH" feature. For setting details,**

  ▼ *Reference* ◄ *"2-1-5 2-Port Feature"*
- **For recommended cable and terminal block information, see the 2-Port Adaptor II Installation Guide (GP2000 Series Wiring Diagram).**

■ 9-Pin <-> 25-Pin Conversion Adapter

When using the PLC manufacturer's cable with a RS232 connection, if the ST side of the cable uses a 25-pin connector, be sure to attach a RS232C 9-Pin <-> 25-Pin Conversion Adapter.

**Commercial-type straight conversion adapter
9-Pin Female<-> 25-Pin Male**

25-Pin Female

ST

PLC

RS232C

D-sub 25-Pin Male <-> D-sub 9-Pin Female Conversion Adapter Pin Assignments

D-sub 25-Pin Male	D-sub 9-Pin Female
Shell	Shell
1	
8	1
3	2
2	3
20	4
7	5
6	6
4	7
5	8
22	9