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# 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.

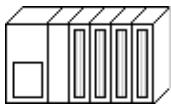


## 2.10 Toshiba

### 2.10.1 System Structure

The following describes the system structure for connecting the GP to Toshiba PLCs.

**Reference** The Cable Diagrams mentioned in the following tables are listed in the section titled "2.10.2 Cable Diagrams".

#### ■ PROSEC EX Series (using CPU unit Link I/F)

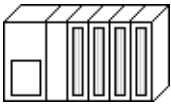



CPU	Cable Diagram	GP
		
EX2000 <sup>*1</sup>	RS-422 (Cable Diagram 1)	GP series

\*1 Connect to the Main Processor module (MPU6620).



**Note:** Areas noted as using RS-422 can also use RS-485 on the PLC side.

#### ■ PROSEC T Series (using CPU unit Link I/F)

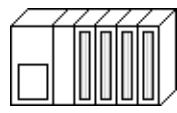


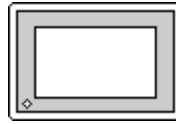
CPU	Link I/F	Cable Diagram	GP
	 Link Master Module		
T3 <sup>*1</sup> , T3H,	CPU Link I/Funit	RS-422 (Cable Diagram2)	GP Series
T2E	CPU Programming Port	RS-232C (Cable Diagram4)	
T2N	CPU Link I/Funit	RS-422 (Cable Diagram2)	
		RS-232C (Cable Diagram5)	
T2E	CM231E	RS-422 (Cable Diagram1)	

\*1 Connect to the CPU module's computer link port.

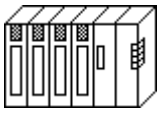


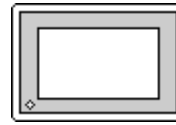


**Note:** Areas noted as using RS-422 can also use RS-485 on the PLC side.

■ **V Series** (using CPU unit Link I/F)

CPU	Link I/F	Cable Diagram	GP
	 Link Master Module		
S3PU45A S3PU55A S3PU65A	CPU Link I/Funit	RS-422 (Cable Diagram2)	GP Series
S2PU22A S2PU32A S2PU72A S2PU72D	CPU Link I/Funit	RS-422 (Cable Diagram1)	

■ **PROVISOR B Series** (using CPU unit Link I/F)

CPU	Link I/F	Cable Diagram	GP
	 Link Master Module		
B200CU, B200CUF, B200CURM, B200CUFRM	B 2000LM	RS-232C (Cable Diagram 3)	GP Series



When connecting the GP and B200 Series, setup the Link I/F's Mode Setup/Delimiter to **CR**.

**2.10.2 Cable Diagrams**

The cable diagrams illustrated below and the cable diagrams recommended by Toshiba may differ; however, using these cables for your PLC operations will not cause any problems.



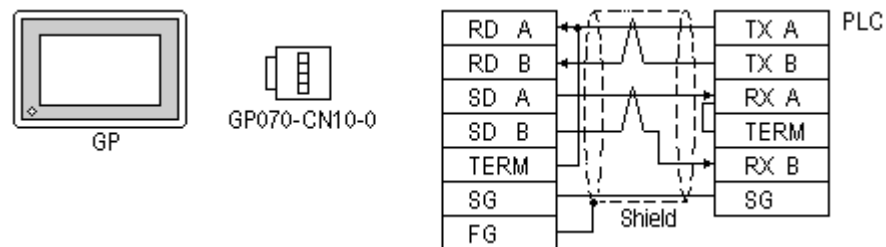
Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



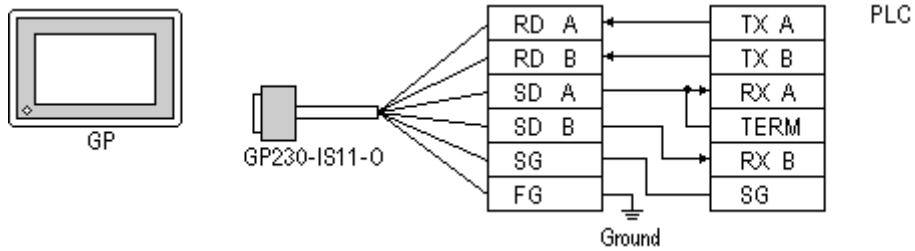
- **Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.**
- **For the RS-232C connection, use a cable length less than 15m.**
- **If a communications cable is used, it must be connected to the SG (signal ground).**
- **When using RS422 connection, please check the length of the cable with Toshiba PLC's users manual.**

**Cable Diagram 1 (RS-422)**

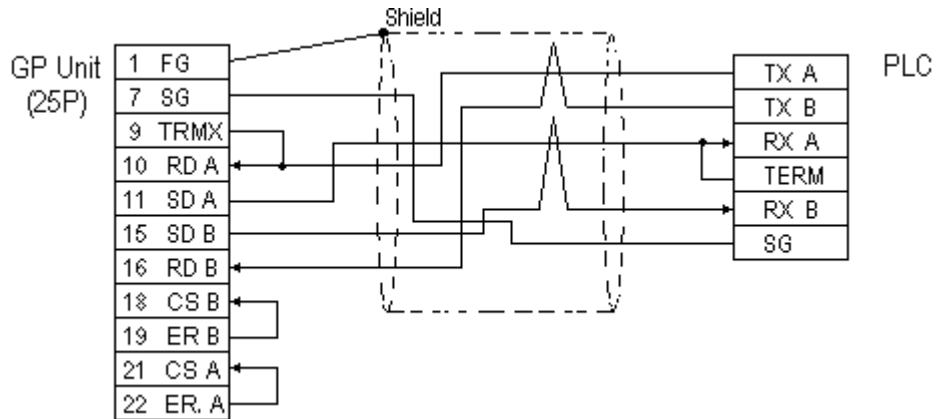
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



- When using Digital's RS-422 Cable, GP230-IS11-0



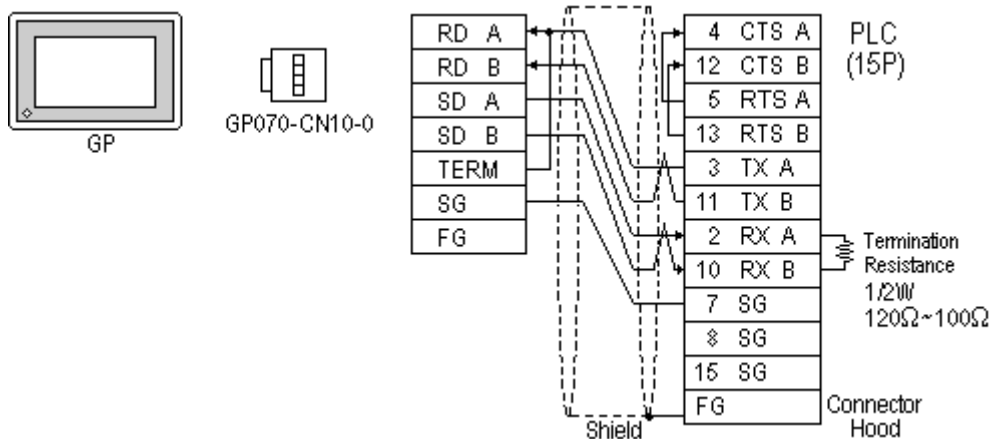
- When making your own cable connections



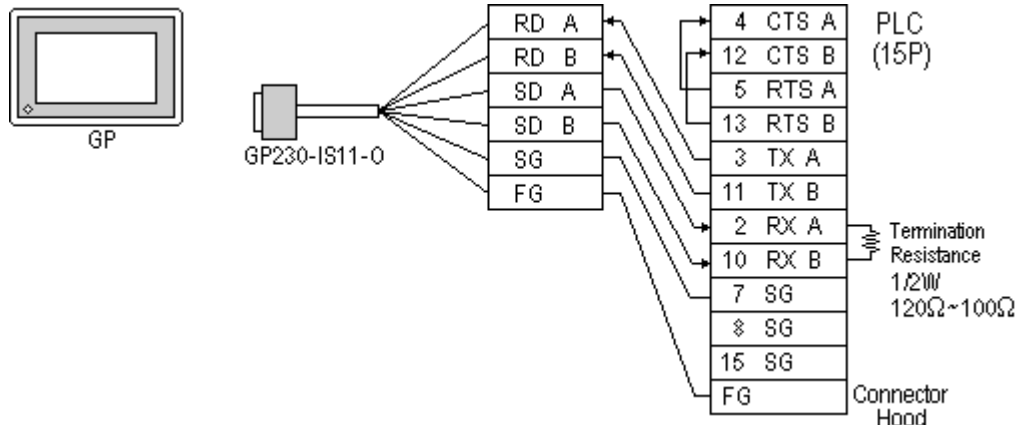
- When making your own connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P\*0.5 cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

**Cable Diagram 2 (RS-422)**

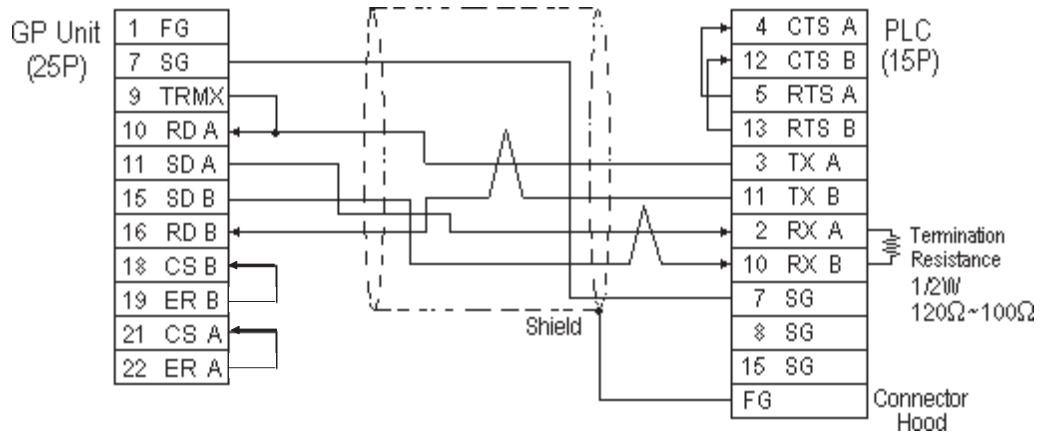
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



- When using Digital's RS-422 Cable, GP230-IS11-0

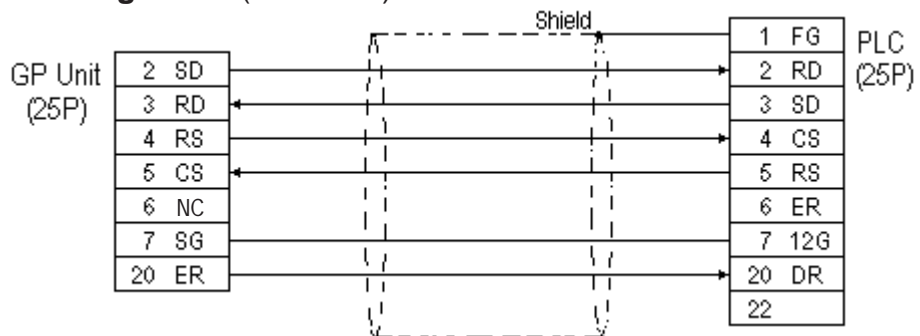


- When making your own cable connections

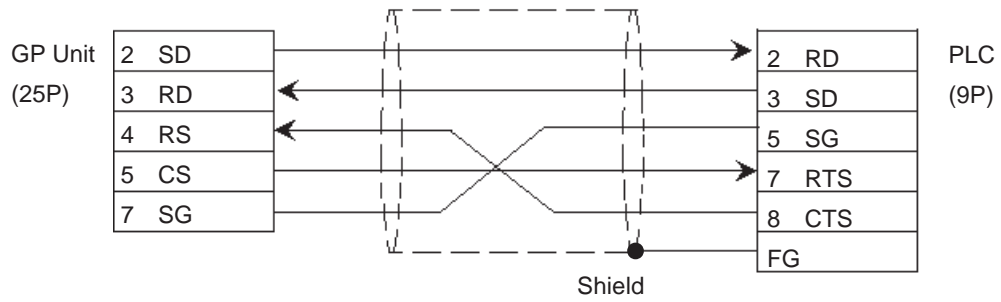


- When making your own connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P\*0.5 cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- When using RS422 connection, please check the length of the cable with Toshiba PLC's users manual.

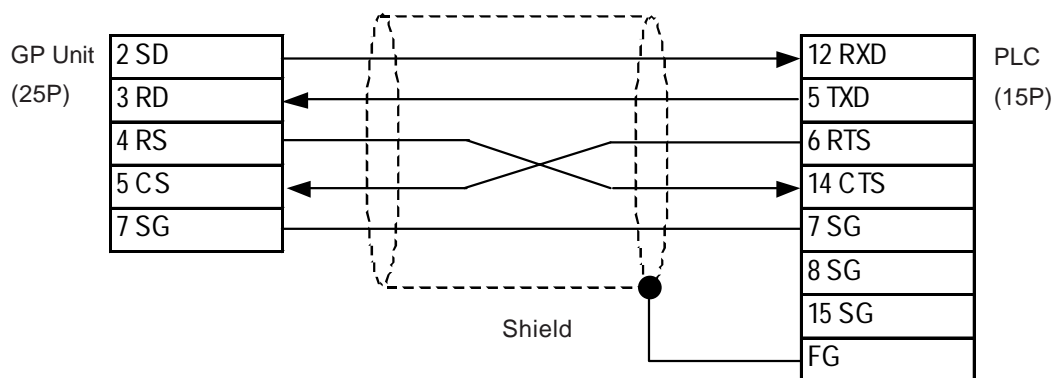
Cable Diagram 3 (RS-232C)



**Cable Diagram 4 (RS-232C)**



**Cable Diagram 5 (RS-232C)**



**2.10.3 Supported Devices**

The following describes the range of devices supported by the GP.

**PROSEC EX Series**

 Setup System Area here.

Device	Bit Address	Word Address	Particulars
External Input	X00000 ~ X0499F	XW0000 ~ XW0499	H/L
External Output	Y00000 ~ Y0499F	YW0000 ~ YW0499	
Auxiliary Relay	R00000 ~ R0999F	RW0000 ~ RW0999	
Link Register (relay)	Z00000 ~ Z0999F	ZW0000 ~ ZW1999	
Timer (contact)	T0000 ~ T0499	---	
Counter (contact)	C0000 ~ C0499	---	
Timer (current value)	---	T0000 ~ T0499	L/H
Counter (current value)	---	C0000 ~ C0499	
Data Register	---	D00000 ~ D16383	Bit 5 H/L

**PROSEC T Series(T3,T3H,T2N,T2E)**

 Setup System Area here.

Device	Bit Address	Word Address	Particulars	
External Input	X0000 ~ X511F	XW0000 ~ XW511	H/L	
External Output	Y0000 ~ Y511F	YW0000 ~ YW511		
Internal Relay	R0000 ~ R999F	RW000 ~ RW999		
Special Relay	S0000 ~ S255F	SW000 ~ SW255		
Link Register Relay	Z0000 ~ Z999F	---		
Link Relay	L0000 ~ L255F	---		
Timer (contact)	T000 ~ T999	---		*1
Counter (contact)	C000 ~ C511	---		*1
Timer (current value)	---	T000 ~ T999		Bit 5
Counter (current value)	---	C000 ~ C511		
Data Register	---	D0000 ~ D8191		
Link Register	---	W0000 ~ W2047	Bit 5	
File Register	---	F0000 ~ F32767	Bit 5	

\* 1 Data cannot be written.



**Note:** The Device Range may differ depending on the CPU type. For the details, refer to the Toshiba's PLC manual.



■ V Series

  Setup System Area here.

Device	Bit Address	Word Address	Particulars
External Input	X00000 ~ X8191FF	XW0000 ~ XW8191	L/H
External Output	Y00000 ~ Y8191F	YW0000 ~ YW8191	
Auxiliary Relay	R00000 ~ R4095F	RW0000 ~ RW4095	
Special Relay	S00000 ~ S511F	SW000 ~ SW511	
Data Register	---	D00000 ~ D4095	



The Device Range may differ depending on the CPU type. For the details, refer to the Toshiba's PLC manual.



- **PLC I/O and Controller Internal Memory data is treated as a variable. The variables that the GP unit can handle are as follows. When handling all PLC variables with the GP, use the following variables in the ladder program.**

**Please note that memory variables differ from GP unit's device name.**

GP Device Name	PLC Controller Memory Variable Name	Details
X, XW Y, YW	I/O Variable (IQ)	X, XW and Y, YW use the same memory area (have the same range).
R, RW D	Data Register Variable (DW)	R, RW device and D device use the same area. Designate the R device when doing bit write from the GP unit.
S, SW	Special Register Variable	

\* Although local variables, control global variables and station global variables exist outside of the above-mentioned device, they are not accessible from the GP unit.

■ **PROVISOR B Series**

Setup System Area here.

Device	Bit Address	Word Address	Particulars
Input Relay	X000 ~ XF7F	XW00 ~ XWF7	*1
Output Relay	Y000 ~ YF7F	YW00 ~ YWF7	*1
Internal Relay	R000 ~ R77F	RW00 ~ RW77	*1
Extended Internal Relay-1	G000 ~ GF7F	GW00 ~ GWF7	*1
Extended Internal Relay-2	H000 ~ HF7F	HW00 ~ HWF7	*1
Special AUX Relay	A000 ~ A16F	AW00 ~ AW16	*1
Latch Relay	L000 ~ L07F	LW00 ~ LW07	*1
Shift Register	S000 ~ S07F	SW00 ~ SW07	*1
Edge Relay	E000 ~ E77F	EW00 ~ EW77	*1
Timer (contact)	T000 ~ T77F	TW00 ~ TW77	*1
Counter (contact)	C000 ~ C77F	CW00 ~ CW77	*1
Timer/Counter (current value)	P0000 ~ P77FF	P000 ~ P77F	
Timer/Counter (setup value)	V0000 ~ V77FF	V000 ~ V77F	
Generic Register 1	D0000 ~ DF7FF	D000 ~ DF7F	
Generic Register 2	B0000 ~ BF7FF	B000 ~ BF7F	

L/H

\* 1 Be careful as the Word Address fields differ between the GP screen editing software GP-PRO/PBIII for Windows and the corresponding PLC manual.

E.g. InputRelay

PRO-PBIII	PLC Manual
XW00 ~ XWF7	X00W ~ XF7W



When the *Input Relay* address is setup in a ladder program input field, Set/Reset cannot be performed from the GP. The same holds true for an address (all devices) setup in an output field.

### 2.10.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

#### ■ PROSEC EX Series

GP Setup		Main Processor Module/CPU Module Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control	---	
Communication Format	4-wire type	---	
Unit No.	1	Station Number	1

#### ■ PROSEC T Series

GP Setup		CPU Module Setup	
Baud Rate	19200 bps <sup>*1*2</sup>	Baud Rate	19200 bps <sup>*1*2</sup>
Data Length	8 bits <sup>*2</sup>	Data Bit	8 bits <sup>*2</sup>
Stop Bit	2 bits <sup>*2</sup>	Stop Bit	2 bits <sup>*2</sup>
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control	---	
Communication Format (RS-232C)	RS-232C	---	
Communication Format (RS-422)	4-wire type	---	
Unit No.	1	Station Number	1

\*1 PLC specifications state that when a PROSEC T3 (Ver. 1.4 or lower) is used, data transmission is possible only at speeds of 9600 bps or less.

\*2 The T2E uses a baud rate of 9600bps, a data length of 8bits and the stop bit is 1(fixed).

#### ■ V Series

GP Setup		PLC Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control	---	
Communication Format	4-wire type	---	
Unit No.	1	Station Number	1

■ PROVISOR B Series

GP Setup		Link Master Module Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control	---	
Communication Format	RS-232C	---	
---		Operation Mode	Link Mode
Unit No.	0	Station Number	0

