

Device/PLC Connection Manuals



About the Device/PLC Connection Manuals

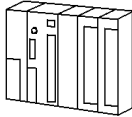


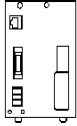
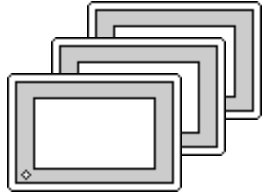
Prior to reading these manuals and setting up your device, be sure to read the "Important: Prior to reading the Device/PLC Connection manual" information. Also, be sure to download the "Preface for Trademark Rights, List of Units Supported, How to Read Manuals and Documentation Conventions" PDF file.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

7.3 Toshiba

7.3.1 System Structure

This section explains the system structure for the Ethernet connection between a PLC made by Toshiba and the GP.

■ PROSEC T Series (using Ethernet unit)

CPU	Link I/F	Cables	Unit	GP/GLC
	Ethernet Unit 			
T3H	EN311	Ethernet cable (conforms to the IEEE802.3)	Digital's GP Ethernet I/F unit (GP070-ET11/GP070-ET41) GP77R Series Multi Unit E (GP077-MLTE11) GP377R Series Multi Unit (GP377-MLTE11)	GP/GLC Series *1
T2N	PU-235N PU-245N			

*1 When using GP/GLC and the optional Ethernet I/F unit, refer to the following List of Connectable GP/GLC Units.

Series Name		Product Name	Optional Ethernet I/F Unit	Built-in Ethernet Port
GP70 Series	GP-470 Series	GP-470E	○	x
	GP-570 Series	GP-570S	○	x
		GP-570T	○	x
		GP-57JS	○	x
		GP-570VM	○	x
	GP-571 Series	GP-571T	○	x
	GP-675 Series	GP-675S	○	x
		GP-675T	○	x
GP-870 Series	GP-870VM	○	x	
GP77R Series	GP-377R Series	GP-377RT	○ ^{*1 *2}	x
	GP-477R Series	GP-477RE	○ ^{*2}	x
	GP-577R Series	GP-577RS	○ ^{*2}	x
		GP-577RT	○ ^{*2}	x
GP2000 Series	GP-2300 Series	GP-2300L	x	○
		GP-2300S	x	○
		GP-2300T	x	○
	GP-2400 Series	GP-2400T	x	○
	GP-2500 Series	GP-2500L	○ ^{*3 *4}	○
		GP-2500S	○ ^{*3 *4}	○
		GP-2500T	○ ^{*3 *4}	○
	GP-2501 Series	GP-2501L	○ ^{*2 *3}	x
		GP-2501S	○ ^{*2 *3}	x
		GP-2501T	○ ^{*2 *3}	x
GP-2600 Series	GP-2600T	○ ^{*3 *4}	○	
GP-2601 Series	GP-2601T	○ ^{*2 *3}	x	
GLC2000 Series	GLC-2300 Series	GLC-2300L	x	○
		GLC-2300T	x	○
	GLC-2400 Series	GLC-2400T	x	○
	GLC-2500 Series	GLC-2500T	○ ^{*3 *4}	○
	GLC-2600 Series	GLC-2600T	○ ^{*3 *4}	○
ST Seires	ST403	x	○	

*1 Only the Multi unit can be used.

*2 The 2-Way Driver (Pro-Server, GP-Web and others) cannot be used.

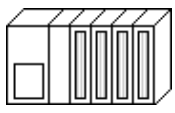


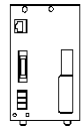

*3 When using the optional Ethernet I/F unit, a bus conversion unit (PSL-CONV00) is required.

*4 Using the optional Ethernet I/F Unit allows you to set up separate Class and Net No.s for 2-Way Driver applications (Pro-Server, GP-Web and others) and the PLC. When doing this, data transfer with the PLC is performed through the optional Ethernet I/F Unit.



- For cable connections, refer to the user's manual for each optional unit. For the GP2000 and GLC2000 series, however, refer to the user's manual for the main unit.

■ V Series (using CPU unit Link I/F)

CPU	Link I/F	Cable	Unit	GP/GLC
	Ethernet Unit 			
S3PU45A S3PU55A S3PU65A	EN 711 EN 721 EN 731 EN 741 EN 751 EN 761 FN 711	Ethernet cable (conforms to the IEEE802.3)	Digital's GP Ethernet I/F unit (GP070-ET11/GP070-ET41) GP77R Series Multi Unit E (GP077-MLTE11) GP377R Series Multi Unit (GP377-MLTE11)	GP/GLC Series
S2PU72A S2PU72D	EN611 EN621 EB621 EN631 EN641 EB641			

*1 When using GP/GLC and the optional Ethernet I/F unit, refer to the following List of Connectable GP/GLC Units.

Series Name		Product Name	Optional Ethernet I/F Unit	Built-in Ethernet Port
GP70 Series	GP-470 Series	GP-470E	○	x
	GP-570 Series	GP-570S	○	x
		GP-570T	○	x
		GP-57JS	○	x
		GP-570VM	○	x
		GP-571 Series	GP-571T	○
	GP-675 Series	GP-675S	○	x
		GP-675T	○	x
GP-870 Series	GP-870VM	○	x	
GP77R Series	GP-377R Series	GP-377RT	○ ^{*1*2}	x
	GP-477R Series	GP-477RE	○ ^{*2}	x
	GP-577R Series	GP-577RS	○ ^{*2}	x
		GP-577RT	○ ^{*2}	x
GP2000 Series	GP-2300 Series	GP-2300L	x	○
		GP-2300S	x	○
		GP-2300T	x	○
	GP-2400 Series	GP-2400T	x	○
	GP-2500 Series	GP-2500L	○ ^{*3*4}	○
		GP-2500S	○ ^{*3*4}	○
		GP-2500T	○ ^{*3*4}	○
	GP-2501 Series	GP-2501L	○ ^{*2*3}	x
		GP-2501S	○ ^{*2*3}	x
		GP-2501T	○ ^{*2*3}	x
GP-2600 Series	GP-2600T	○ ^{*3*4}	○	
	GP-2601 Series	GP-2601T	○ ^{*2*3}	x
GLC2000 Series	GLC-2300 Series	GLC-2300L	x	○
		GLC-2300T	x	○
	GLC-2400 Series	GLC-2400T	x	○
	GLC-2500 Series	GLC-2500T	○ ^{*3*4}	○
	GLC-2600 Series	GLC-2600T	○ ^{*3*4}	○
ST Seires	ST403	x	○	

- *1 Only the Multi unit can be used.
- *2 The 2-Way Driver (Pro-Server, GP-Web and others) cannot be used.
- *3 When using the optional Ethernet I/F unit, a bus conversion unit (PSL-CONV00) is required.
- *4 Using the optional Ethernet I/F Unit allows you to set up separate Class and Net No.s for 2-Way Driver applications (Pro-Server, GP-Web and others) and the PLC. When doing this, data transfer with the PLC is performed through the optional Ethernet I/F Unit.






- **For cable connections, refer to the user's manual for each optional unit. For the GP2000 and GLC2000 series, however, refer to the user's manual for the main unit.**

7.3.2 Supported Devices

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

PROSEC T Series (T3H)

 Setup System Area here.

Device	Bit Address	Word Address	Particular	
Input Device	X0000 ~ X511F	XW000 ~ XW511	L/H	
Output Device	Y0000 ~ Y511F	YW000 ~ YW511		
Auxiliary Relay	R0000 ~ R999F	RW000 ~ RW999		
Special Relay	S0000 ~ S255F	SW000 ~ SW255		
Link Register Relay	Z0000 ~ Z999F	-		
Link Relay	L0000 ~ L255F	LW000 ~ LW255		
Timer (contact)	T000 ~ T999	-		Read only
Counter (contact)	C000 ~ C511	-		Read only
Timer (current value)	-	T000 ~ T999		
Counter (current value)	-	C000 ~ C511		
Data Register	-	D0000 ~ D8191		
Link Register	-	W0000 ~ W2047		
File Register	-	F00000 ~ F32767		



The range of supported devices may be different depending on your CPU. For details, refer to Toshiba PLC's user's manual.



If you Write in Read Only Timer (contact) device or in Read Only Counter (contact) device, the "PLC COM. ERROR (02:10)" message will appear.

■ PROSEC T Series (T2N)

Setup System Area here.

Device	Bit Address	Word Address	Particular	
Input Device	X0000 - X127F	XW000 - XW127		L/H
Output Device	Y0000 - Y127F	YW000 - YW127		
Auxiliary Relay	R0000 - R255F	RW000 - RW255		
Special Relay	S0000 - S255F	SW000 - SW255		
Link Register Relay	Z0000 - Z999F	-		
Link Relay	L0000 - L255F	LW000 - LW255		
Timer (contact)	T000 - T511	-	Read Only	
Counter (contact)	C000 - C511	-	Read Only	
Timer (current value)	-	T000 - T511		
Counter (current value)	-	C000 - C511	Bit 15	
Data Register	-	D0000 - D8191	Bit 15	
Link Register	-	W0000 - W2047	Bit 15	
File Register	-	F0000 - F1023		



If you Write in Read Only Timer (contact) device or in Read Only Counter (contact) device, the “PLC COM. ERROR (02:10)” message will appear.

■ 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.

7.3.3 Environment Setup

■ GP Unit Setup

The following describes GP settings for using Ethernet communication.

SETUP OPERATION SURROUNDINGS MENU		RETURN
1	SETUP OPERATION SURROUNDINGS	
2	SETUP ETHERNET INFORMATION	
3	SETUP ETHERNET EXT. INFORMATION	



Set the station No. to "0" for [1] SET UP OPERATION SURROUNDINGS.

SETUP ETHERNET INFORMATION		SET	CANCEL																																
SRC IP ADDRESS	[] . [] . [] . []																																		
SRC PORT NO.	[]																																		
DEST IP ADDRESS	[] . [] . [] . []																																		
DEST PORT NO.	[]																																		
<table border="1"> <tr> <td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>0</td><td></td><td></td><td>↑</td><td>↓</td><td>BS</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>←</td><td>→</td><td></td> </tr> </table>					1	2	3	4	5	6	7	8	9	0			↑	↓	BS														←	→	
	1	2	3	4	5	6	7	8	9	0			↑	↓	BS																				
													←	→																					

Select "SETUP ETHERNET INFORMATION" and set up the Addresses and Port Numbers.

• SRC IP ADDRESS

Enter GP's SRC IP Address. Input a dot between every 8 bits to divide the IP Address (32 bits all together) into four groups, and enter decimal numbers in each groups.

• SRC PORT NO.

Set the SRC Port No. between 1024 and 65535.

• DEST IP ADDRESS

Set the PROSEC's DST IP Address.

• DEST PORT NO.

Set the DEST Port No. between 1024 and 65535.



The communication method is UDP format.



When using the built-in Ethernet port on a GP2000 or GLC2000 series unit, be sure not to set any duplicate "SRC PORT No." values.

Check the 2-way driver's "SRC PORT No." setting via the following menu:

GP OFFLINE mode's Main menu [INITIALIZE] -> [SETUP OPERATION SURROUNDINGS] -> [EXTENDED SETTINGS] -> [SETUP ETHERNET INFORMATION].

The default value is 8000. The 2-way driver uses this port and the following 9 ports.



Regarding the IP Address and the Port No., please confirm these points with your Network supervisor. You must not duplicate the number you have already used for an IP Address setting.

SETUP ETHERNET EXT. INFORMATION		SET	CANCEL
SEND WAIT TIME	[] (ms)		
TIMEOUT	[] (x 2sec)		
IP ROUTER ADDRESS	[] . [] . [] . []		
SUBNET MASK	[] . [] . [] . []		
UDP RETRY COUNT (0 to 255)	[]		

	1	2	3	4	5	6	7	8	9	0		↑	↓	BS
												←	→	

SEND WAIT TIME

You can display the waiting time while GP's command is actually sent. This function is useful when there is a lot of traffic in your system. If not using, set it to "0".

TIMEOUT

You can set time for waiting for a replay from the destination. If any replay is not made by the destination within time you set to, the communication will be timeout. "0" setting is the default value as 15 second-setting for timeout.

IP ROUTER ADDRESS

Set Router's IP Address. (There is only one setting for Router.) If not using, set all values to "0".

SUBNET MASK

Set the Subnet Mask . If not using, set all values to "0".

UDP RETRY COUNT (0 to 255)

7.9 Protocol Stack Error Codes

Protocol Stack Error Codes are displayed on the GP as follows.

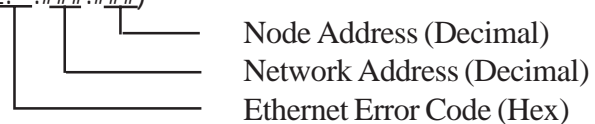
Host communication error (02:FE:**)

** represents one of the following error codes, from 00 to F0.

Error Code	Description	Notes
00	There is a setup error related to the IP address of your station at initialization.	
05	Initialization has failed.	
06	Cancelling of communications has failed.	
07	An attempt was made to establish a connection before initialization was successfully completed.	
08	Your station's port number is incorrect	
09	The destination station's port number is incorrect.	
0A	The IP address of the other station is incorrect.	
0B	The same port number is already being used by UDP for establishing the connection.	
0C	The same port number is already being used by TCP for establishing the connection.	
0D	Protocol stack has refused connection establishment.	
0E	Protocol stack has returned the unsuccessful establishment of a connection.	
0F	The connection has been shut down.	
10	All connections are busy. No connection is available.	
13	Your station was aborted by a different station.	
30	There was no reply from the protocol stack.	
32	There was no reply from the other station.	*1*2
40	No network information exists for the designated node.	*1
41	I/O memory type of the random read-out response data is incorrect.	*1
42	Network information does not exist.	
F0	Undefined error.	

*1 When using an OMRON Corporation CS1/CJ/CJ1M Series unit, the error code will appear on the GP screen as shown below. Also, behind the Ethernet error code will appear the designated Network and Node addresses.

Host Communication Error (02:FE:**:###:###)



*2 When using a Hitachi Industrial Equipment Corporation's HIDIC H Series or a Schneider Corporation MODBUS TCP unit, the error code will appear on the GP screen as shown below. Also, behind the Ethernet error code will appear the designated Node address.

Host Communication Error (02:FE:**:###:###)



