

Device/PLC Connection Manuals



About the Device/PLC Connection Manuals

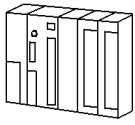


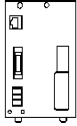
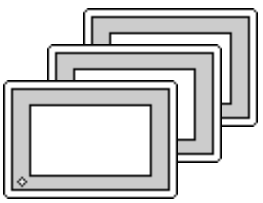
Prior to reading these manuals and setting up your device, be sure to read the "Important: Prior to reading the Device/PLC Connection manual" information. Also, be sure to download the "Preface for Trademark Rights, List of Units Supported, How to Read Manuals and Documentation Conventions" PDF file. 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 | EN 311 | 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 | | | |

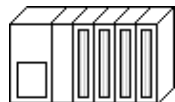


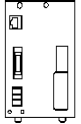

*1 When using GP/GLC and extended units, refer to

Reference Toshiba Connectable Devices.



- i 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.

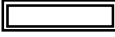
■ V Series (using CPU unit Link I/F)




| CPU | Link I/F | Cable | Unit | GP/GLC |
|---|--|---|--|---|
|  | Ethernet Unit  |  |  |  |
| S3PU45A S3PU55A S3PU65A S2PU72A S2PU72D | EN 711 EN 721 EN 731 EN 741 EN 751 EN 761 EN 611 EN 621 EB621 EN 631 EN 641 EB641 | 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 |

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) | T 000 ~ T 511 | - | Read Only | |
| Counter (contact) | C000 ~ C511 | - | Read Only | |
| Timer (current value) | - | T 000 ~ T 511 | | |
| Counter (current value) | - | C000 ~ C511 | Bit15 | |
| Data Register | - | D0000 ~ D8191 | Bit15 | |
| Link Register | - | W0000 ~ W2047 | Bit15 | |
| 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.

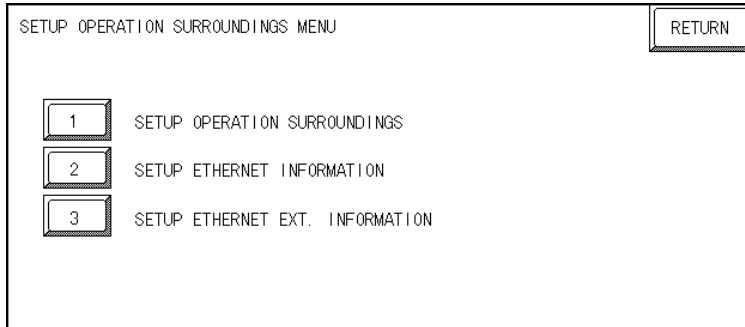
| GP Device Name | | PLC Controller Memory Variable Name | Details |
|----------------|----|-------------------------------------|--|
| X, XW | ←→ | I/O Variable (IQ) | X, XW and Y, YW use the same memory area (have the same range). |
| Y, YW | | | |
| R, RW | ←→ | Data Register Variable (DW) | R, RW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

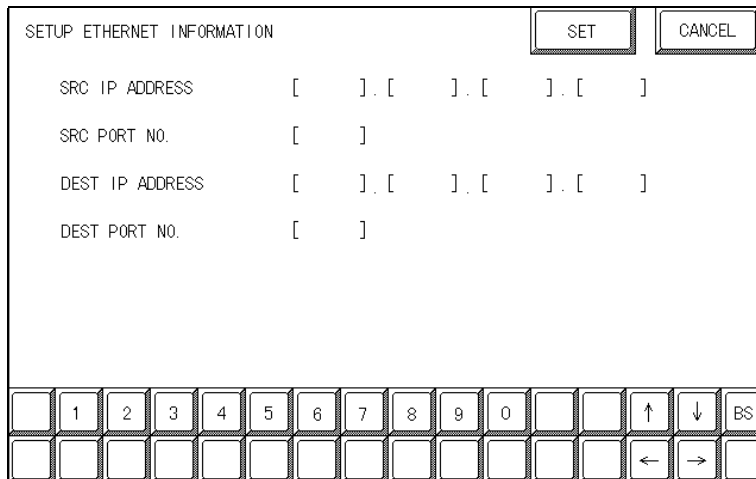
7.3.3 Environment Setup

■ GP Unit Setup

The following describes GP settings for using Ethernet communication.



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



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)



- *If you initialize the memory from the OFFLINE mode, some values might be automatically set to the factory settings. Please confirm all values after initialization.*
- *Refer to the PLC's users manual for PLC settings.*
- *Set the Ethernet module to the RUN mode after you have set the IP Address and the Port No.*

■ PLC Setup

◆ PROSEC T Series

The following is the Sample Program shown in the Toshiba's Ethernet Module Users Manual.

IP Address \ Port No. settings

```

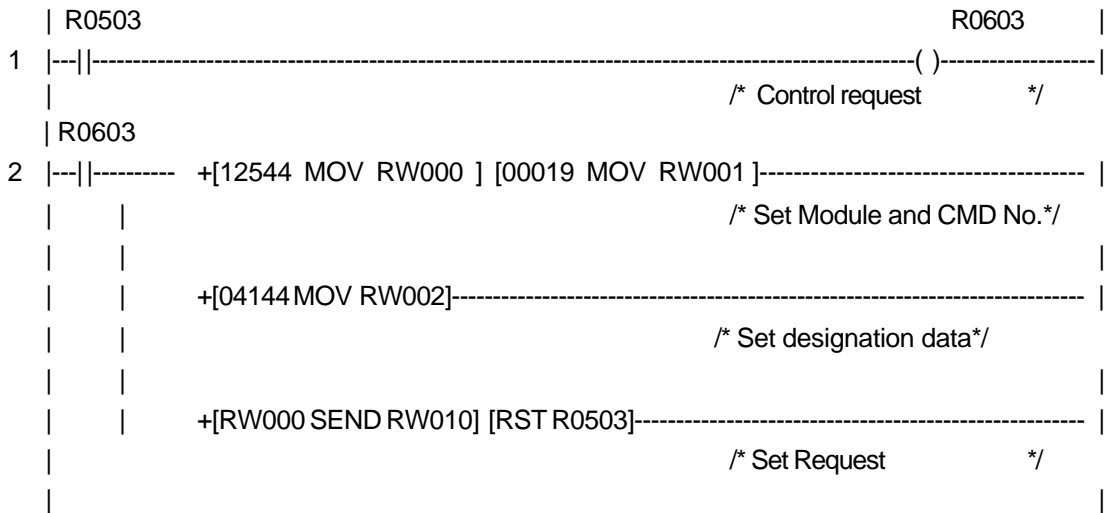
| R0502                                     R0602 |
1 |---||-----(-)-----|
|                                           /* Parameter setting request */
| R0602
2 |---||-----+[12544 MOV RW000 ] [00018 MOV RW001 ]-----|
|                                           /* Set Module and CMD No.*/
| |
| | +[**** MOV RW002] [**** MOV RW003] [**** MOV RW004]-----|
| |                                           /* Set IP Address and Port No.*/
| |
| | +[RW000 SEND RW010] [RST R0502]-----|
| |                                           /* Set Request */
|

```



Please contact your computer network supervisor to confirm your IP Address and Port No.

◆ **Operation Mode control**



After setting an IP Address, you need to switch the system to LINE Mode.

◆ **V Series**

To perform the following settings, use a ladder program.

| Items | PLC Setup |
|--------------------|------------------------------|
| IP Address Primary | PLC IP Address ^{*1} |
| UDP Port No. | PLC Port No. |

**1 Set the IP Address last byte (192. 168, 0, 1) from the rotary switch on the side of PLC Ethernet Module.*



- **For Ethernet communication with the GP unit, use the Ethernet module's EN-A connector.**

It is not possible to communicate with the GP unit using the EN-B connector.

- **Note that for the V Series, it is possible to connect up to 8 GP units to a single PLC.**

7.7 Protocol Stack Error Codes

The error codes related to the protocol stack are displayed on the GP screen as follows:

PLC COM. ERROR (02:FE:**)

“**” represents any of the error codes 00 to F0 shown in the above table.

| Error code | Description | Other |
|------------|---|-------|
| 00 | There is a setup error related to the IP address of your station at initialization. | |
| 05 | Initialization has failed. | |
| 06 | Abortion of communications has failed. | |
| 07 | An attempt was made to establish a connection before initialization was successfully completed. | |
| 08 | The port number of your station is abnormal. | |
| 09 | The port number of the destination station is abnormal. | |
| 0A | The IP address of the other station is abnormal. | |
| 0B | The same port number is already being used by the UDP for establishing the connection. | |
| 0C | The same port number is already being used by the TCP for establishing the connection. | |
| 0D | The protocol stack has refused connection establishment. | |
| 0E | The protocol stack has returned the unsuccessful establishment of a connection. | |
| 0F | The connection has been shut down. | |
| 10 | All the connections are busy. No connection is available. | |
| 13 | Your station is aborted by the other station | |
| 30 | There is no reply from the protocol stack | |
| 32 | There is no reply from the other station | *1 |
| 40 | The designated Node Addresses do not exist in Network Information. | *1 |
| 41 | I/O Memory Type for Random Read Out response data is wrong. | *1 |
| 42 | Network Information does not exist. | |
| F0 | Undefined error. | |

**1 When using an Omron CSI Series unit, the error code display is as shown below. The Network Addresses and Node Addresses also are displayed.*

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



