GP-PRO/PBIII for Windows
Device/PLC CONNECTION MANUAL

ADDITIONAL MANUAL
GE Fanuc Automation PLC
Series 90-30/90-70/RX7i
(Ethernet Communication)

Pro-face
Human Machine Interface

Reading the Device/PLC Connection Manual

This additional manual provides connection information for the GE Fanuc Automation's PLCs [Ethernet Communication], and is a supplement to the GP-PRO/PBIII for Windows Device/PLC Connection Manual.

For information concerning general type PLC connections and this document's documentation conventions, please refer to your Device/PLC Connection manual.

When connecting a Factory Gateway unit, please substitute the words "Factory Gateway" for this document's "GP/GLC".

The information in this document will be included in the next version of the Device/PLC Connection manual. Therefore, please consider this a provisional document.

Installation

This CD-ROM includes all the protocol files required by the GP/GLC to communicate with an GE Fanuc Automation's PLC. Also, you will need to have one or more of the following software applications installed. The screen and data transfer file included in the CD-ROM must be installed in each of those applications. For information about the installation of the software, refer to that software's Operation Manual.

■ Software Applications
• GP-PRO/PBIII for Windows Ver. 2.1 or later [*1]
• Pro-Server with Pro-Studio for Windows Ver. 3.0 or later [*2]

1) Be sure to confirm that GP-PRO/PBIII for Windows is installed in your PC prior to starting this driver installation.

2) To install the new driver, double-click on "GEF_ETH.exe" when using a Series 90-30/90-70/RX7i unit Ethernet connection.

3) Once the installation program starts, follow the instructions given to install the protocol files.

Important

• ***When using the Series 90-30/90-70/RX7i unit Ethernet protocol, select [GE Fanuc Automation]-[GE Fanuc Series 90-30/70(Ether)] for the "Device/PLC Type" of GP-PRO/PBIII for Windows. If the version of the GP-PRO/PBIII for Windows is earlier than Ver.7.2, select [Others]-[GE Fanuc Series 90-30/70 (Ether)].***

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*1 When using the GP2000/GLC2000 Series unit, GP-PRO/PBIII for Windows Ver.5.0 or later is required.

*2 When using the Factory Gateway unit, GP-Web Ver.1.0 or later or GP-Viewer Ver.1.0 or later, be sure to select Pro-Server with Pro-Studio for Windows as the "Destination Folder".

1   List of Connectable PLCs
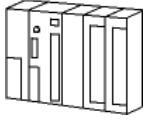
The following PLCs can be connected to a GP/GLC unit.
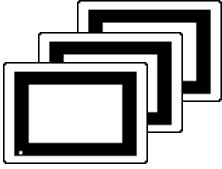
Maker	Series	CPU	Device/PLC name in GP-PRO/PBIII
GE Fanuc	90-30 Series	CPU311, CPU313, CPU323, CPU331, CPU340, CPU341, CPU350, CPU351, CPU352, CPU360, CPU363, CPU364, CPU374, CSE311, CSE313, CSE323, CSE331, CSE340	GE Fanuc Series 90-30/70 (ETHER)
	90-70 Series	CPU731, CPU771, CPU772, CPU780, CPU781, CPU782, CPU788, CPU789, CPM915, CPM925, CPM790, CSE784, CSE924, CSE925, CPX772, CPX782, CPX928, CPX935, CGR772, CGR935	
	RX7i	CPE010 CPE020 CRE020	
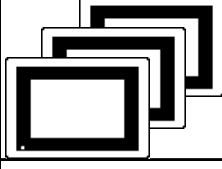
2 | System Structure

The following describes the system structure used when connecting the GP/GLC to the GE Fanuc PLC.
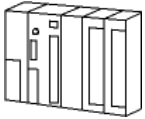
■ Series 90-30
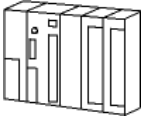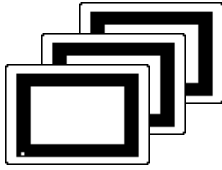
CPU	Link I/F	Cable	Supported Models [1]
	Ethernet unit	↔	
CPU311, CPU313 CPU323, CPU331 CPU340, CPU341 CPU350, CPU351 CPU352, CPU360 CPU363, CSE311 CSE313, CSE323 CSE331, CSE340	IC693CMM321	Ethernet Cable IEEE802.3 standard	GP/GLC Series Factory Gateway
CPU364, CPU374	Ethernet I/F on CPU unit		

■ Series 90-70

CPU	Link I/F	Cable	Supported Modles [1]
	Ethernet Unit	↔	
CPU731, CPU771, CPU772, CPU780, CPU781, CPU782, CPU788, CPU789, CPM915, CPM925, CPM790, CSE784, CSE924, CSE925, CPX772, CPX782, CPX928, CPX935, CGR772, CGR935	IC697CMM742	Ethernet Cable IEEE802.3 Satndard	GP/GLC Series Factory Gateway

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

■ **RX7i**

CPU	Link I/F	Cable	Supported Models [1]
CPE010 CPE020 CRE020	Ethernet I/F on CPU unit	Ethernet Cable IEEE802.3 Satndard	GP/GLC Series Factory Gateway

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

■ **Compatible GP/GLC Types**

Series		Product Name	Optional Ethernet Unit	Built-in Ethernet Port
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-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-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	GLC2300 Series	GLC2300L	X	○
		GLC2300T	X	○
	GLC2400 Series	GLC2400T	X	○
	GLC2600 Series	GLC2600T	○ [3][4]	○
Factory Gateway		—	X	○
ST Series		ST403	X	○

1 Only Multi unit can be used.

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

3 When using 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.

Note:
- **For cable connection and Optional Unit information, refer to the User Manual for each optional unit. For GP2000 and GLC2000 series units, refer to that unit's User Manual.**

◆**Connection Structure**

<1 : 1 connection>

GP/GLC Series
Series 90-30/90-70/RX7i

10BASE-T Cable

HUB

Built-in Ethernet Port
or
Optional Units
•EGP070-ET41
•EGP377-MLTE11
•EGP377-MLTE41
•EGP077-MLTE41

<n :1 connection>
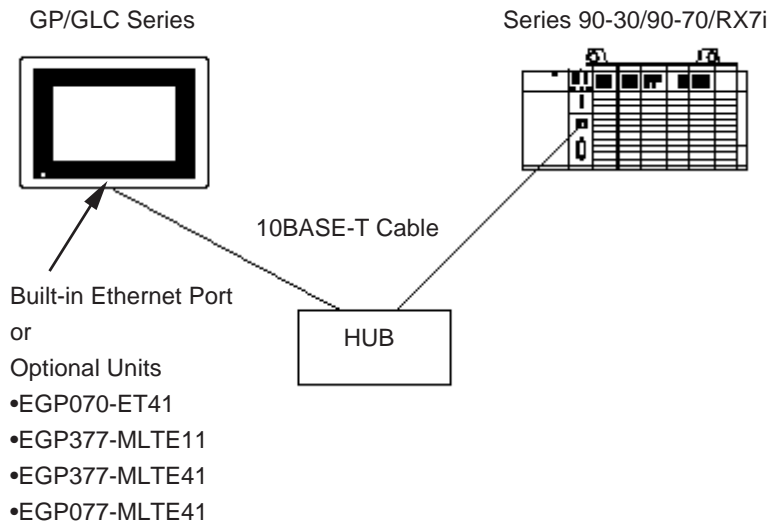
Series 90-30 : Up to 32 units per a PLC unit
Series 90-70/RX7i : Up to 16 units per a PLC unit

GP/GLC Series   GP/GLC Series   Series 90-30/90-70/RX7i

• • • •

10BASE-T Cable

HUB

Built-in Ethernet Port
or
Optional Units
•EGP070-ET41
•EGP377-MLTE11
•EGP377-MLTE41
•EGP077-MLTE41
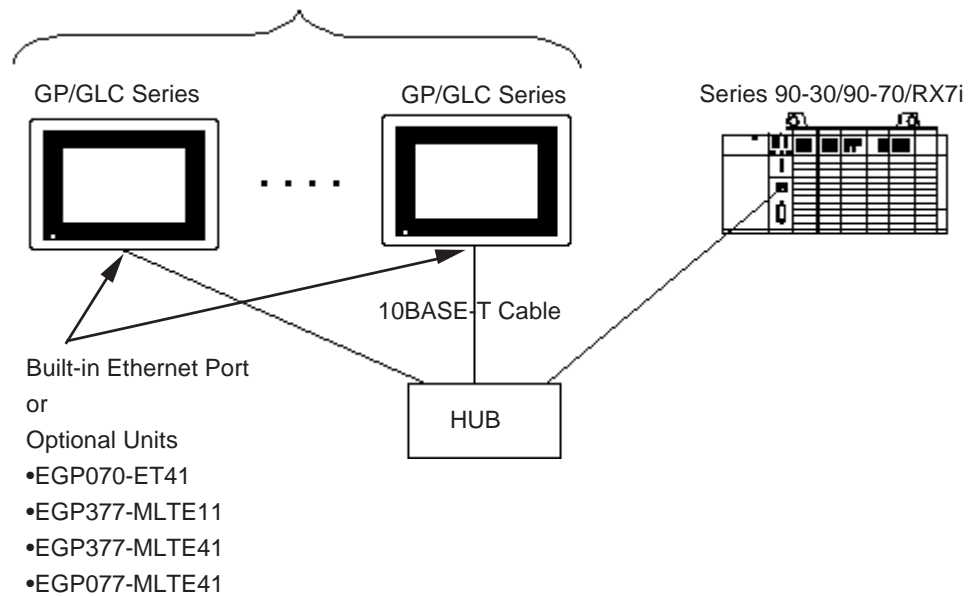
Important
- *When connecting plural units of Series 90-30, CPU with V6.50 and more is required.*

  The version of CPU can be checked from the [Status Info] menu of ladder software.

*1 In RX7i, 2 Ethernet I/Fs have been installed and any of them can be connected.

3   Supported Devices

The following list shows the range of devices supported by the GP/GLC.

■ Series 90-30/90-70/RX7i

⬜ Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay (I)	I0001 ~ I32768	I00001 ~ I32753	÷16+⎤	
Output Relay (Q)	Q00001 ~ Q32768	Q0001 ~ Q32753	÷16+⎤	
Internal Relay (M)	M00001 ~ M32768	M0001 ~ M32753	÷16+⎤	
Global Relay (G)	G0001 ~ G7680	G0001 ~ G7665	÷16+⎤	
Momentary Relay (T)	T0001 ~ T1024	T0001 ~ T1009	÷16+⎤	
System Function Relay (SA)	SA001 ~ SA128	SA001 ~ SA113	÷16+⎤	L/H
System Function Relay (SB)	SB001 ~ SB128	SB001 ~ SB113	÷16+⎤	
System Function Relay (SC)	SC001 ~ SC128	SC001 ~ SC113	÷16+⎤	
System Function Relay (S)	S001 ~ S128	S001 ~ S113	÷16+⎤ *1	
Register (R)	---	R00001 ~ R32640	Bit 15⎤	
Analog Input (AI)	---	AI0001 ~ AI32640	Bit 15⎤	
Analog Output (AQ)	---	AQ0001 ~ AQ32640	Bit 15⎤	

(Continued on following page.)

1 Data cannot be written to this relay. If data is written, a host communication error (02:02:05) will be displayed.

■ **Series 90-30/90-70/RX7i** (Continued from previous page)

Device	Bit Address	Word Address	Particulars	
Word (W)	---	W0000001 ~ W0065536 W0065537 ~ W0131072 W0131073 ~ W0196608 W0196609 ~ W0262144 W0262145 ~ W0327680 W0327681 ~ W0393216 W0393217 ~ W0458752 W0458753 ~ W0524288 W0524289 ~ W0589824 W0589825 ~ W0655360 W0655361 ~ W0720896 W0720897 ~ W0786432 W0786433 ~ W0851968 W0851969 ~ W0917504 W0917505 ~ W0983040 W0983041 ~ W1048576 W1048577 ~ W1114112 W1114113 ~ W1179648 W1179649 ~ W1245184 W1245185 ~ W1310720 W1310721 ~ W1376256 W1376257 ~ W1441792 W1441793 ~ W1507328 W1507329 ~ W1572864 W1572865 ~ W1638400 W1638401 ~ W1703936 W1703937 ~ W1769472 W1769473 ~ W1835008 W1835009 ~ W1900544 W1900545 ~ W1966080 W1966081 ~ W2031616 W2031617 ~ W2048000	Bit 1 5] *2	L/H

*2 Word (W) are each 65536 words on your GP application.

Therefore, you cannot extend over more than a single data block when performing some features.

For example, when using the following features, be sure to set these features' settings so they are within a single data block.

1) "a-tag" settings

2) Block Write/Read from Pro-Server

3) Designating the "Convert from Before" and "Convert to After" addresses for the "Address Conversion" features.

4) PLC Device Read/Write using D-Script's Memory Operation Feature

5) Write from SRAM to PLC Device using Filing Data Feature

Important

• **Depending on the CPU used, the devices address ranges may differ.**

• **Word (W) can be used for RX7i only.**

4 Environment Setup

■ GP Settings

The GP's Ethernet communication settings are as follows.

◆ SET UP OPERATION SURROUNDINGS Menu
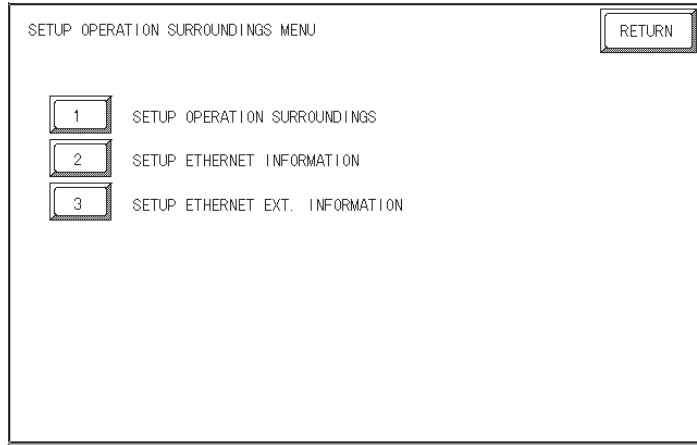
◆ SET UP ETHERNET INFORMATION

Select "SETUP ETHERNET INFORMATION," and then enter the necessary information for each item.
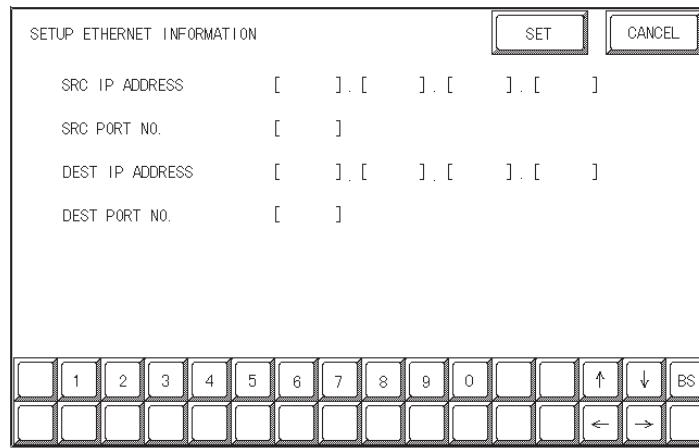
• **SRC IP ADDRESS**

Enter the IP address for the GP at your station. To do this, separate the 32 bits of the IP address into four segments of eight bits each, delimit those segments with a dot, and then enter them as decimal numbers.

• **SRC PORT NO.**

Enter your station port number in the range from 1024 to 65535.

• **DEST IP ADDRESS**

Enter the PLC IP address.

• **DEST PORT NO.**

Enter the PLC port number. Set the PLC port number to 18245.

STOP | For the IP addresses, check with the network manager. Do not specify any duplicate IP addresses.

Important | ***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 (8000 ~ 8009).

◆ SET UP NETWORK EXT. INFORMATION

```
SETUP NETWORK EXT. INFORMATION              [  SET  ]  [ CANCEL ]

   SEND WAIT TIME                  [     ] (ms)

   TIMEOUT                         [     ] (x 2sec)

   IP ROUTER ADDRESS               [     ].[     ].[     ].[     ]

   SUBNET MASK                     [     ].[     ].[     ].[     ]



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

- **SEND WAIT TIME (0 to 255)**

   Wait time can be added when a command is transmitted from the GP. Use the wait time if the traffic on the communications line is heavy. If no wait time is required, enter "0."

- **TIMEOUT (0 to 65535)**

   Enter the desired timeout value. If no response is received from the other station within the specified time, a timeout occurs. If "0" is specified, the default time is 15 seconds.

- **IP ROUTER ADDRESS**

   Enter the IP address of the router (only one). If no router is used, enter "0" in all fields.

- **SUBNET MASK**

  Enter subnet masks. If no subnet mask is used, enter "0" in all fields.

> ⚠ **Important** *If the memory is initialized in the OFFLINE mode, random values may be included. Be sure to check the displayed values.*

■ PLC Settings

The communications settings for the GP/GLC, which are required for communications via the Ethernet, as shown below:

◆ **Series 90-30/90-70/RX7i**

GP/GLC Setting		PLC Setting	
SRC IP Address	GP IP Address [*1]	———————	———————
SRC Port No.	GP Port Number [*2]	———————	———————
Target IP Address	PLC IP Address [*1]	IP Address	PLC IP Address
Target Port No.	PLC Port Number [*3]	———————	———————

1 Contact your network administrator about setting values. When the SRC IP Address is 0.0.0.0, the IP address set in the 2-Way driver is effective.

2 When using the following function on a GP2000 Series unit, be sure not to use duplicate port number values. Check the 2-Way driver's port number setting via the following menu:

From the 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 nine ports for a total of 10 (8000 ~ 8009).

3 Set the PLC Port Number to 18245.

> ✎ **Note:** • **Protocol Type is TCP/IP Connection.**

5   Error Codes

▽*Reference*△ *About the GP Ethernet Specific Error Codes, refer to De-vice/PLC Connection Manual's "Protocol Stack Error Codes".*

■ PLC SPECIFIC ERROR CODES

The PLC error codes are displayed by the " Host Communication Error (02:**:##)", and are indicated in the left lower corner of the GP screen.

Error codes are displayed using 2-byte codes; Major Error Status Code and Minor Error Status Code.

"Host Communication Error (02 : ** : **)

                             Minor Error Status Code
                             Major Error Status Code
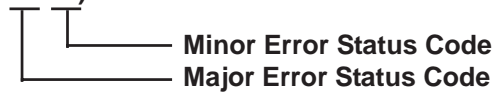
◆ Series 90-30/90-70

Major Error Status Code	Minor Error Status Code	Reason
02	05	Data is written in System Function Relay (S).
05	F4	Designated device is out side allowable range.

◆ RX7i

Major Error Status Code	Minor Error Status Code	Reason
05	E9	Data is written in System Function Relay (S).
05	90	Designated device is out side allowable range.

6 Maximum No. of Consecutive Addresses

The following table lists the maximum number of consecutive addresses that can be read by a GP from a Controller. *Refer to this table when using Block Transfer.*

■ Series 90-30/90-70/RX7i

Device	Max. No. of Consecutive Addresses
Input Relay (I)	60 Words
Output Relay (Q)	
Internal Relay (M)	
Global Relay (G)	
Momentary Relay (T)	
System Function Relay (SA)	
System Function Relay (SB)	
System Function Relay (SC)	
System Function Relay (S)	
Register (R)	250 Words
Analog Input (AI)	
Analog Output (AQ)	
Word (W)	

Important • *Word (W) can be used for RX7i only.*

7 Device Codes and Address Codes

Device codes and address codes are used to specify indirect addresses for E-tags and K-tags. The word addresses of data to be displayed are coded and stored in the word address specified by the E-tags and K-tags. (Code storage is done either by the PLC, or with T-tag and K-tags)

■ Series 90-30/90-70/RX7i

Device	Word Address	Device Code
Input Relay (I)	I00001 ~	0x8000
Output Relay (Q)	Q00001 ~	0x8800
Internal Relay (M)	M00001 ~	0x9000
Global Relay (G)	G0001 ~	0xC200
Momentary Relay (T)	T0001 ~	0x9400
System Status Relay (SA)	SA001 ~	0xA200
System Function Relay (SB)	SB001 ~	0xA400
System Function Relay (SC)	SC001 ~	0xA800
System Function Relay (S)	S001 ~	0xAA00
Register (R)	R00001 ~	0x0000
Analog Input (AI)	AI00001 ~	0x0A00
Analog Output (AQ)	AQ00001 ~	0x0C00
Word (W)	W0000001 ~	0x1000
	W0065537 ~	0x1200
	W0131073 ~	0x1400
	W0196609 ~	0x1600
	W0262145 ~	0x1800
	W0327681 ~	0x1A00
	W0393217 ~	0x1C00
	W0458753 ~	0x1E00
	W0524289 ~	0x2000
	W0589825 ~	0x2200
	W0655361 ~	0x2400
	W0720897 ~	0x2600
	W0786433 ~	0x2800
	W0851969 ~	0x2A00
	W0917505 ~	0x2C00
	W0983041 ~	0x2E00
	W1048577 ~	0x3000
	W1114113 ~	0x3200
	W1179649 ~	0x3400
	W1245185 ~	0x3600
	W1310721 ~	0x3800
	W1376257 ~	0x3A00
	W1441793 ~	0x3C00
	W1507329 ~	0x3E00
	W1572865 ~	0x4200
	W1638401 ~	0x4400
	W1703937 ~	0x4600
	W1769473 ~	0x4800
	W1835009 ~	0x4A00
	W1900545 ~	0x4C00
	W1966081 ~	0x4E00
	W2031617 ~	0x5000

Important • *Word (W) can be used for RX7i only.*

8 Address Conversion Table

Addresses can or cannot be converted depending on the address combination used. Address combinations which cannot be converted vary between Controller manufacturers. Refer to the following Address Conversion Table to convert the addresses correctly.

■ Series 90-30/90-70/RX7i

The symbols used in the table have the following meanings:

❍: When the address conversion device type is set to [Word], the system converts both word and bit devices. When the [Bit] setting is used, only bit device addresses are changed.

		After Conversion												
		I	Q	M	G	T	SA	SB	SC	S	R	AI	AQ	W
B e f o r e	Input Relay (I)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	Output Relay (Q)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	Internal Relay (M)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	Global Relay (G)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	Momentary Relay (T)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
C o n v e r s i o n	System Function Relay (SA)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	System Function Relay (SB)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	System Function Relay (SC)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	System Function Relay (S)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	Register (R)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	Analog Input (AI)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	Analog Output (AQ)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
	Word	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

⚠ **Important** • *Word (W) can be used for RX7i only.*