

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

ADDITIONAL MANUAL

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

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.



- ***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)].***

*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.

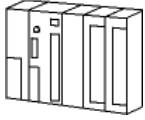


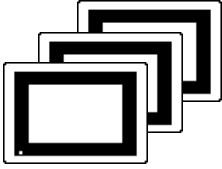
| Maker | Series | CPU | Device/PLC name in GP-PRO/PBIII |
|----------|--------------|---|-------------------------------------|
| GE Fanuc | 90-30 Series | CPU311, CPU313, CPU323, CPU331, CPU340, CPU341, CPU350, CPU351, CPU352, CPU360, CPU363, CPU364, CPU374, CSE311, CSE313, CSE323, CSE331, CSE340 | 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 | |

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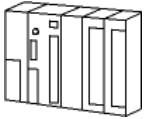


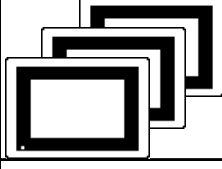
System Structure

The following describes the system structure used when connecting the GP/GLC to the GE Fanuc PLC.

■ **Series 90-30**

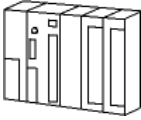

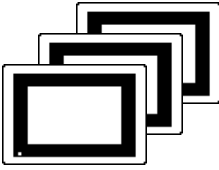
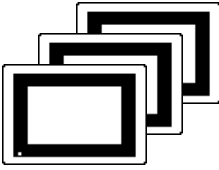
| CPU | Link I/F | Cable | Supported Models *1 |
|--|--|---|--|
|  | Ethernet unit  |  |  |
| CPU311, CPU313 CPU323, CPU331 CPU340, CPU341 CPU350, CPU351 CPU352, CPU360 CPU363, CSE311 CSE313, CSE323 CSE331, CSE340 CPU364, CPU374 | IC693CMM321 Ethernet I/F on CPU unit | Ethernet Cable IEEE802.3 standard | GP/GLC Series Factory Gateway |

■ **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 Standard | 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 Standard | 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.

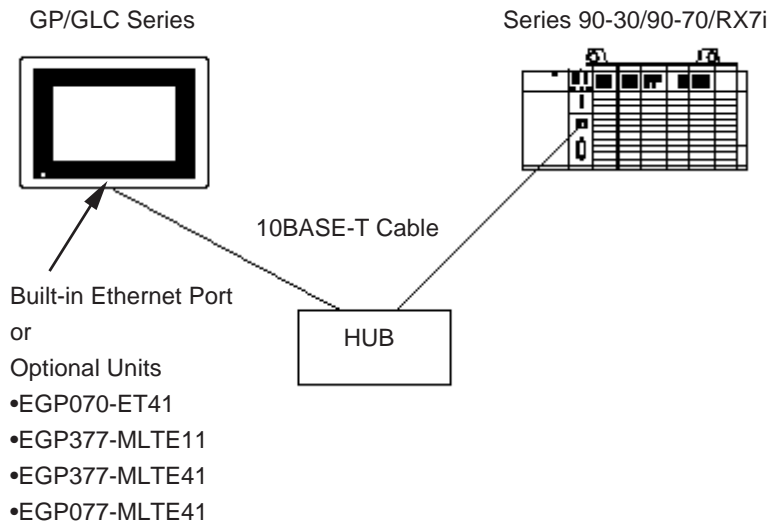
*4 Using the optional Ethernet I/F unit allows you to set up separate Class and Net No.s for 2-Way Driver applications (Pro-Server, GP-Web and others) and the PLC. When doing this, data transfer with the PLC is performed through the optional Ethernet I/F Unit.



- 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.

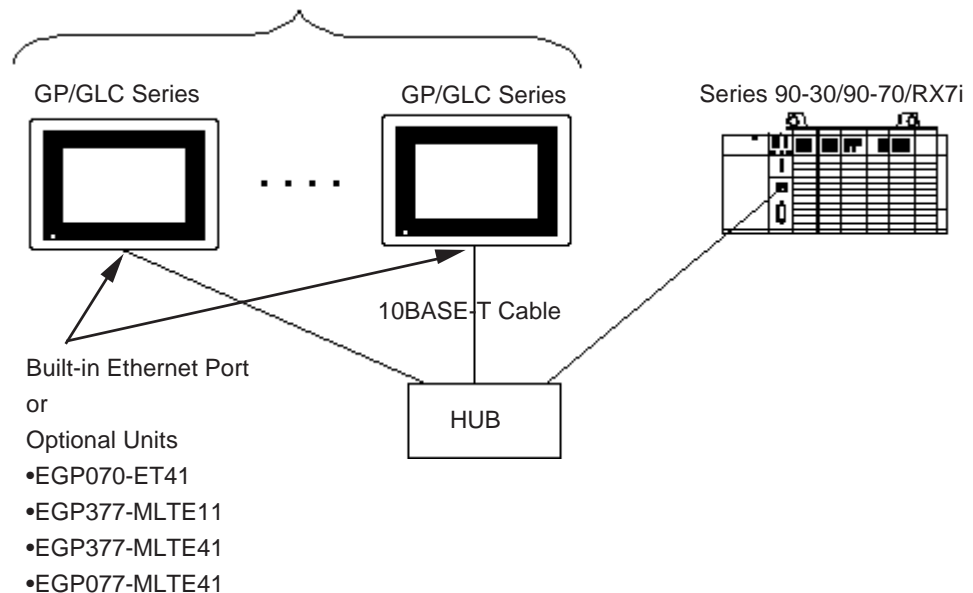
◆ Connection Structure

<1 : 1 connection>



<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



- **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.

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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+1 |
| Output Relay (Q) | Q00001 ~ Q32768 | Q0001 ~ Q32753 | ÷16+1 |
| Internal Relay (M) | M00001 ~ M32768 | M0001 ~ M32753 | ÷16+1 |
| Global Relay (G) | G0001 ~ G7680 | G0001 ~ G7665 | ÷16+1 |
| Momentary Relay (T) | T0001 ~ T1024 | T0001 ~ T1009 | ÷16+1 |
| System Function Relay (SA) | SA001 ~ SA128 | SA001 ~ SA113 | ÷16+1 |
| System Function Relay (SB) | SB001 ~ SB128 | SB001 ~ SB113 | ÷16+1 |
| System Function Relay (SC) | SC001 ~ SC128 | SC001 ~ SC113 | ÷16+1 |
| System Function Relay (S) | S001 ~ S128 | S001 ~ S113 | ÷16+1 *1 |
| Register (R) | --- | R00001 ~ R32640 | Bit 5 |
| Analog Input (AI) | --- | AI0001 ~ AI32640 | Bit 5 |
| Analog Output (AO) | --- | AQ0001 ~ AQ32640 | Bit 5 |

L/H

(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 | Bit 5 | *2 L/H |
| | | 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 | | | | |

*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



- Depending on the CPU used, the devices address ranges may differ.
- Word (W) can be used for RX7i only.

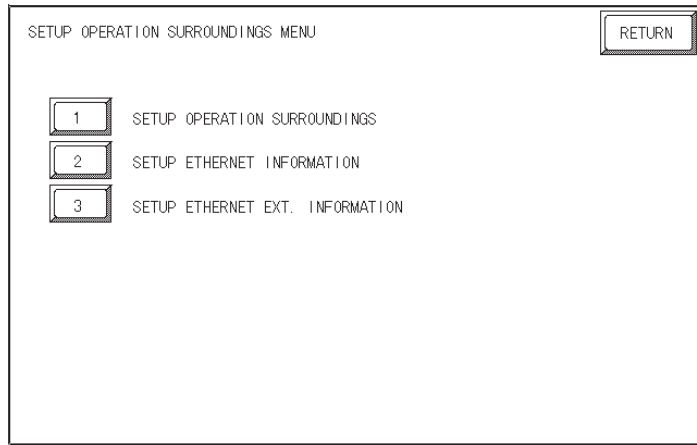
4

Environment Setup

■ GP Settings

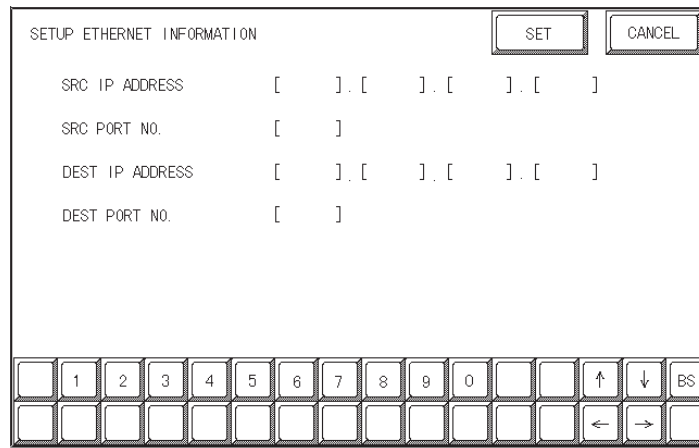
The GP's Ethernet communication settings are as follows.

◆ 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.

- **SUBNET MASK**

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



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.*



• **Protocol Type is TCP/IP Connection.**

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Error Codes

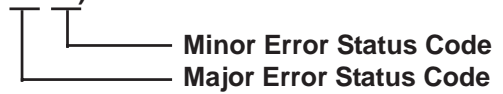
Reference *About the GP Ethernet Specific Error Codes, refer to Device/PLC Connection Manual’s “Protocol Stack Error Codes”.*

■ 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 : ** : **)



◆ 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. |

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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) | |
| Analog Input (AI) | |
| Analog Output (AO) | |
| Word (W) | |



- **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 | |



• 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 |
| Conversion | Input Relay (I) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | 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) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Analog Input (AI) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Analog Output (AQ) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Word | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |



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