

Yokogawa Electric

FA-M3 Ethernet (TCP) Driver

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- This manual explains how to connect the target machine with devices from other manufacturers. For information about how to use the Pro-Designer software, please refer to the Pro-Designer Online Help.
- The types of target machines that are compatible with Pro-Designer depends on the Pro-Designer version. For information about target machine compatibility, please refer to the Pro-Designer Online Help.

1 System Structure

The following table describes the basic system setup for connecting the target machine to Yokogawa PLCs using an Ethernet connection.

| Series | CPU | Ethernet Module |
|--------------|---|-------------------------|
| FA-M3 Series | F3SP21-0N F3SP25-2N F3SP28-3N F3SP28-3S F3SP35-5N F3SP38-6N F3SP38-6S F3SP53-4H F3SP53-4S F3SP58-6H F3SP58-6S | F3LE01-5T ^{*1} |

*1 Supports a maximum eight F3LE01-5T ethernet modules.

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Use a 10BASE-T connection for PS Series Type G, PS Series Type P, and GP2000 Series target machines.

2 Supported Device Addresses

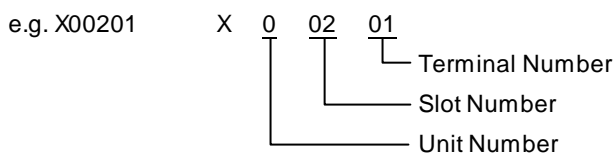
The following table lists the device address ranges you can enter from the [Device Address keypad](#). For actual device address ranges supported by the PLC, refer to the corresponding PLC manual.

| Device | Bit Address ^{*1} | Word Address | 16 bit | 32 bit |
|------------------------------|---------------------------|-------------------------------|-------------------|-------------------|
| Input Relay ^{*2} | X00201-X71664 | X00201-X71649 ^{*3} | L/H ^{*7} | L/H ^{*7} |
| Output Relay | Y00201-Y71664 | Y00201-Y71649 ^{*3} | | |
| Internal Relay | I00001-I32768 | I00001-I32753 ^{*4} | | |
| Joint Relay ^{*5} | E0001-E4096 | E0001-E4081 ^{*4} | | |
| Special Relay | M0001-M9984 | M0001-M9969 ^{*4} | | |
| Link Relay | L00001-L78192 | L00001-L78177 ^{*4} | | |
| Timer (Timer Flag) | TU0001-TU3072 | -- | | |
| Timer (Current Value) | -- | TP0001-TP3072 | | |
| Timer (Setup Value) | -- | TS0001-TS3072 ^{*2} | | |
| Counter (Counter Flag) | CU0001-CU3072 | -- | | |
| Counter (Current Value) | -- | CP0001-CP3072 | | |
| Counter (Setup Value) | -- | CS0001-CS3072 ^{*2} | | |
| Data Register | D00001:00-D32768:15 | D00001-D32768 ^{*6} | | |
| Joint Register ^{*5} | R1024:00-R4096:15 | R1024-R4096 ^{*6} | | |
| File Register | B000001:00-B:262144:15 | B000001-B262144 ^{*6} | | |
| Link Register | W00001:00-W74096:15 | W00001-W74096 ^{*6} | | |
| Special Register | Z0001:00-Z1024:15 | Z0001-Z1024 ^{*6} | | |

*1 Read-modify-write. When you write to one of these bit addresses, the target machine reads the entire word address, sets the defined bit, then returns the word address to the PLC. If the ladder program writes data to this word address during the bit read/write process, the resulting data may be incorrect.

*2 Read-only.

*3 The last two digits represent the terminal number.



To use as a word address, the terminal number must be 49 or less, and a multiple of 16 plus 1.

*4 To use as a word address, the bit number must be a multiple of 16 plus 1.

*5 You cannot write to the Joint Register or Joint Relay when the same device area exists on the CPU. The CPU area has precedence, so if you write values to a R or E device address that also exists in the CPU, it's overwritten by the CPU.

*6 You can define a bit address by adding a colon followed by the bit position (0-15) at the end of the word. (e.g. D0001:15)

*7 16-bit and 32-bit data, High and Low, refer to data as defined in the following examples.

| Byte | 16 bit | Word | 32 bit |
|------|----------------|------|-----------------|
| 0 | 7 ... 0 | 0 | 15 ... 0 |
| 1 | 15 ... 8 | 1 | 31 ... 16 |
| | L (Low) | | L (Low) |
| | H (High) | | H (High) |

3 Consecutive Device Addresses

The following table lists the maximum number of consecutive addresses that can be read by each PLC. Refer to this table when using block transfers.

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- To speed up data communication, use consecutive device addresses on the same panel screen.
- The following situations increase the number of times that the device is read, and reduces the data communication speed between the target machine and the PLC:
 - when the number of consecutive addresses exceeds the maximum
 - when an address is designated for division
 - when different device types are used

| Device | Max. Consecutive Addresses | Gap Span |
|------------------------------|----------------------------|----------|
| Input Relay (X) | 256 bits | 31 bits |
| Output Relay (Y) | | |
| Internal Relay (I) | | |
| Joint Relay (E) | | |
| Special Relay (M) | | |
| Link Relay (L) | | |
| Timer [Timer Flag] (TU) | | |
| Counter [Counter Flag] (CU) | | |
| Timer [Setup Value] (TS) | 64 words | 16 words |
| Counter [Setup Value] (CS) | | |
| Timer [Current Value] (TP) | | |
| Counter [Current Value] (CP) | | |
| Data Register (D) | | |
| Joint Register (R) | | |
| File Register (B) | | |
| Link Register (W) | | |
| Special Register (Z) | | |

4 Environment Setup

The following table lists the communication settings, recommended by Pro-face, for the target machine and Yokogawa Electric PLCs.

For details, see Section 6 - [Protocol Configuration](#).

| Target Machine | | PLC Settings | | |
|----------------|------------------------|-----------------------|------------------|-------------------------|
| Protocol | Destination IP Address | x.x.x.x ^{*1} | IP Address | Set via Rotary Switches |
| | -- | -- | Data Code Switch | ON (Binary) |
| | -- | -- | Write Protect | OFF (Not Protected) |
| | -- | -- | TCP Timeout | OFF (Close) |
| | -- | -- | RUN Mode | OFF (RUN) |

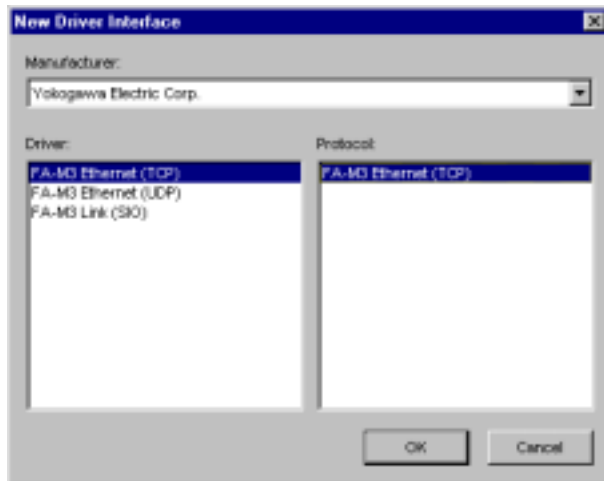
*1 Set the Destination IP Address the same as the IP Address on the PLC.

5 I/O Manager Configuration

The driver and protocol, which enable communication between the target machine and the PLC, depends on the PLC type.

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For information on how to display the [New Driver Interface] dialog box, see the online help.



6 Protocol Configuration

To set up details about the communication process between the target machine and the PLC, use the [Protocol Configuration] dialog box.

For an overview of the protocol settings, see Section 4, [Environment Setup](#).

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For information on how to display the [Protocol Configuration] dialog box, see the online help.



Destination IP Address

Enter the IP address of the PLC unit.

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Contact your network administrator for a valid IP address.

CPU No.

Select the slot number of the CPU that the protocol communicates with.

To communicate with multiple CPUs in the same module, add a Protocol for each CPU and configure the CPU No. so that it's different for each protocol.

7 Device Address Configuration

To set up a PLC variable in the Variable List, use the Device Address Keypad from the variable properties.

See Section 2 – [Supported Device Addresses](#).

MEMO

For information on how to display the Device Address Keypad, see the online help.



Device

Lists the PLC's discrete and word device types.

Address

Enter the device address for the PLC variable. The keypad ensures that you enter the correct format for bit and word devices.