Mitsubishi Electric

Melsec-A Ethernet (TCP) Driver

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- This manual explains how to connect the target machine with other manufacturer devices. 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 version of Pro-Designer. For information about the compatibility of target machines, please refer to the Pro-Designer Online Help.

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1 System Structure

The following table describes the basic system setup for connecting the target machine to Mitsubishi Melsec-A Series PLCs.

Series	CPU	Ethernet Module*1
MELSEC-A Series	A2A A3A A2U-S1 A2N	AJ71E71
	A2US A1SJH	A1SJ71E71

*1 If the Ethernet module has a Binary/ASCII switch, make sure it's set to Binary.

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

2 Supported Device Addresses

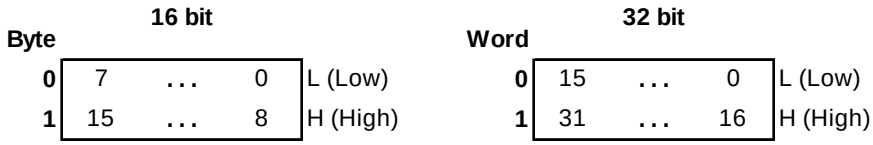
The following table lists the device address ranges you can enter from the Device Address keypad. For actual device address ranges supported by the PLC, refer to the corresponding PLC manual. Supported device addresses differ from protocol to protocol and between PLC models.

2.1 AnA Series

Device	Bit Address	Word Address	16 bit	32 bit
Input Relay	X00000-XFFFFF	X0000-XFFFF0[*1]	L/H[*6]	L/H[*6]
Output Relay	Y00000-YFFFFF	Y0000-YFFFF0[*1]		
Internal Relay	M0000-M8991	M0000-M8976[*2]		
Latch Relay	L000000-L999999	L000000-L999984[*2]		
Special Relay	M9000-M9991	M9000-M9976[*2]		
Annunciator	F000000-F999999	F000000-F999984[*2]		
Link Relay	B00000-BFFFFF	--		
Timer (contact)	TS00000-TS65535	--		
Timer (coil)	TC00000-TC65535	--		
Counter (contact)	CS00000-CS65535	--		
Counter (coil)	CC00000-CC65535	--		
Timer (current value)	--	TN00000-TN65535		
Counter (current value)	--	CN00000-CN65535		
Data Register[*3]	D0000:0-D65535:15	D0000-D65535[*4]		
Special Register[*3]	D0000:0-D65535:15	D0000-D65535[*4]		
Link Register[*3]	W0000:0-WFFFF:F	W0000-WFFFF[*5]		
File Register[*3]	R0000:0-R8191:15	R0000-R8191[*4]		
Expanded File Register (0R-28R)[*3]	0R0000:0-0R8191:15	0R0000-0R8191[*4]		
	1R0000:0-1R8191:15	1R0000-1R8191[*4]		
	2R0000:0-2R8191:15	2R0000-2R8191[*4]		
	3R0000:0-3R8191:15	3R0000-3R8191[*4]		
	...	...		
	27R0000:0-27R8191:15	27R0000-27R8191[*4]		
	28R0000:0-28R8191:15	28R0000-28R8191[*4]		

*1 To use as word address, the bit number (last digit) must be 0.
*2 To use as word address, must be multiple of 16.
*3 When the bit write operation is performed, the Target Machine reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.
*4 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. D0000:15)
*5 You can define a bit address by adding a colon followed by the bit position (0~F) at the end of the word. (e.g. W0000:F)

*6 16-bit and 32-bit data, High and Low, refer to data as defined in the following examples.

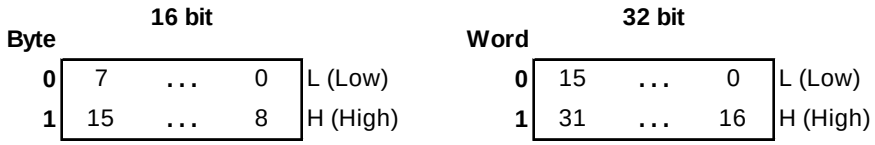


2.2 AnN Series

Device	Bit Address	Word Address	16 bit	32 bit
Input Relay	X0000-XFFFF	X0000-XFFF0*1	L/H*6	L/H*6
Output Relay	Y0000-YFFFF	Y0000-YFFF0*1		
Internal Relay	M0000-M8991	M0000-M8976*2		
Latch Relay	L0000-L8991	L0000-L8976*2		
Special Relay	M9000-M9991	M9000-M9976*2		
Annunciator	F0000-F9999	F0000-F9984*2		
Link Relay	B00000-BFFFFF	--		
Timer (contact)	TS000-TS999	--		
Timer (coil)	TC000-TC999	--		
Counter (contact)	CS000-CS999	--		
Counter (coil)	CC000-CC999	--		
Timer (current value)	--	TN000-TN999		
Counter (current value)	--	CN000-CN999		
Data Register*3	D0000:0-D9999:15	D0000-D9999*4		
Link Register*3	W0000:0-WFFFF:F	W0000-WFFFF*5		
File Register*3	R0000:0-R8191:15	R0000-R8191*4		
Expanded File Register (0R-28R)*3	0R0000:0-0R8191:15	0R0000-0R8191*4		
	1R0000:0-1R8191:15	1R0000-1R8191*4		
	2R0000:0-2R8191:15	2R0000-2R8191*4		
	3R0000:0-3R8191:15	3R0000-3R8191*4		
	...	...		
	27R0000:0-27R8191:15	27R0000-27R8191*4		
	28R0000:0-28R8191:15	28R0000-28R8191*4		

*1 To use as word address, the bit number (last digit) must be 0.
*2 To use as word address, must be multiple of 16.
*3 When the bit write operation is performed, the Target Machine reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.
*4 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. D0000:15)
*5 You can define a bit address by adding a colon followed by the bit position (0~F) at the end of the word. (e.g. W0000:F)

*6 16-bit and 32-bit data, High and Low, refer to data as defined in the following examples.



3 Consecutive Device Addresses

The following table lists the maximum number of consecutive addresses and the gap span (the maximum gap span between PLC device addresses that are used as consecutive device addresses) that be read by each PLC. Refer to these tables to utilize *Block Transfer*. Consecutive device addresses are the same for both AnA and AnN protocols.

MEMO

- 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	47 bits
Output Relay (Y)		
Internal Relay (M)		
Latch Relay (L)		
Special Relay (M)		
Annunciator (F)		
Link Relay (B)		
Timer [contact] (TS)		
Timer [coil] (TC)		
Counter [contact] (CS)		
Counter [coil] (CC)		
Data Register (D)	256 words	25 words
Special Register (D)		
Link Register (W)		
File Register (R)		
Expanded File Register (0R-28R)		
Timer [current value] (TN)		
Counter [current value] (CN)		

4 Sample Ladder

The following ladder program illustrates Pro-face's recommended communication settings for the PLC.

MELSEC-A Series (AJ71E71, A1SJ71E71 Ethernet Interface Unit)

```
LD M9038
DMOVP Haabbccdd D100 (PLC IP address)*1
MOVP K0 D110
MOV H8000 D116 (TCP Unpassive communication configuration)
MOV K1024 D124 (PLC port No. <example uses 1024>)
LD M9036
TOP H0000 H0000 D100 K50
LD X0019
MOV K5 D113
TOP H0000 K13 D113 K1
LD M9036
OUT Y0019
LD M9036
OUT Y0008
END
```

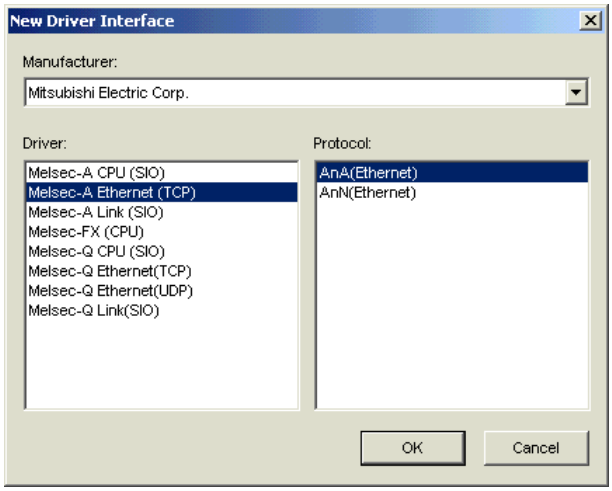
MEMO Refer to the Mitsubishi AJ71E71 or A1SJ71E71 Ethernet Interface Unit User's Manual for configuration details.

*1 Confirm the IP address with your network administrator. **aabbccdd** is the IP address in hexadecimal. Do not set the duplicate address.

5 I/O Manager Configuration

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

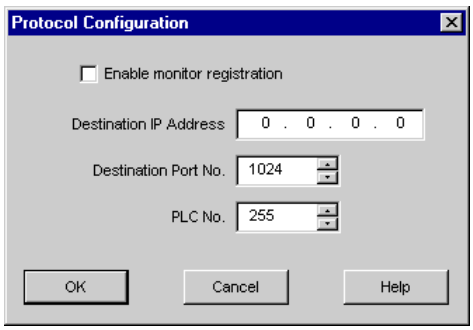
MEMO For information on how to display the [New Driver Interface] dialog box, see the online help.



6 Protocol Configuration

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

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



Enable monitor registration

Select to use Monitor Registration with the PLC. To increase communication efficiency, use monitor registration so the target machine registers, with the PLC, which device addresses to monitor.

MEMO

- Only one target machine using one protocol is allowed to be registered to one PLC. If registering multiple protocols to the same PLC, the operation will not be succeeded.

Destination IP Address

Specifies the Destination IP address (PLC), devided 32 bits into 4 parts, each part is consisted of 8 bits and devided by dots. Enter an integer value between 0 and 255, both inclusive.

Destination Port No.

Enter a integer value (1024-65535) to match the PLC's Ethernet port number.

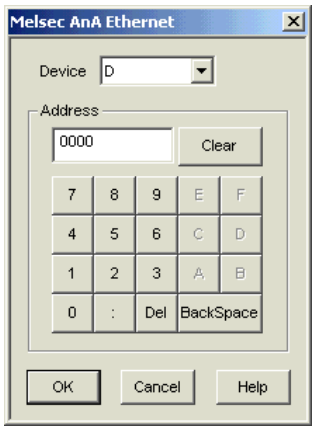
PLC No.

Designates the PLC number when communicating via the network. Specify an integer value between 0 and 64, both inclusive to identify the communicating PLC. If not communicating via the network, enter 255.

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.