Mitsubishi Electric

Melsec-Q
Ethernet (UDP) Driver

- 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.

1 System Structure

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

Series	CPU	Ethernet Module
MELSEC-Q Series	Q00CPU Q00JCPU Q01CPU Q02CPU Q02HCPU Q06HCPU Q12HCPU Q25HCPU	QJ71E71 QJ71E71-B2

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.

Device	Bit Address	Word Address	16 bit	32 bit
Input Relay	X0000-XFFFF	X0000-XFFF0[*1]		
Output Relay	Y0000-YFFFF	Y0000-YFFF0[*1]		
Internal Relay	M00000-M65535	M00000-M65520[*2]		
Latch Relay	L00000-L65535	L00000-L65520[*2]		
Special Relay	SM0000-SM9999	SM0000-SM9984[*2]		
Annunciator	F00000-F65535	F00000-F65520[*2]		
Edge Relay	V00000-V65535	V00000-V65520[*2]		
Step Relay	S0000-S9999	S0000-S9984[*2]		
Link Relay	B0000-BFFFF	B0000-BFFF0[*1]		
Special Link Relay	SB000-SBFFF	SB000-SBFF0[*1]		
Timer (contact)	TS00000-TS65535	--		
Timer (coil)	TC00000-TC65535	--		
Retentive Timer (contact)	SS00000-SS65535	--		
Retentive Timer (coil)	SC00000-SC65535	--		
Counter (contact)	CS00000-CS65535	--		
Counter (coil)	CC00000-CC65535	--	L/H[*6]	L/H[*6]
Timer (current value)	--	TN00000-TN65535		
Retentive Timer (current value)	--	SN00000-SN65535		
Counter (current value)	--	CN00000-CN65535		
Data Register[*3]	D00000:0-D65535:15	D00000-D65535[*4]		
Special Register[*3]	SD0000:0-SD9999:15	SD0000-SD9999[*4]		
Link Register[*3]	W0000:0-WFFFF:F	W0000-WFFFF[*5]		
Special Link Register[*3]	SW000:0-SWFFF:F	SW000-SWFFF[*5]		
File Register(Normal)[*3]	R00000:0-R65535:15	R00000-R65535[*4]		
File Register(0R-31R)[*3]	0R0000:0-0R7FFF:F	0R0000-0R7FFF[*5]		
	1R0000:0-1R7FFF:F	1R0000-1R7FFF[*5]		
	2R0000:0-2R7FFF:F	2R0000-2R7FFF[*5]		
	...	...		
	30R0000:0-30R7FFF:F	30R0000-30R7FFF[*5]		
	31R0000:0-31R7FFF:F	31R0000-31R7FFF[*5]		

*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.

Byte	16 bit			
0	7	...	0	L (Low)
1	15	...	8	H (High)

Word	32 bit			
0	15	...	0	L (Low)
1	31	...	16	H (High)

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*.

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)	2000 bits	47 bits
Output Relay (Y)		
Internal Relay (M)		
Latch Relay (L)		
Link Relay (B)		
Timer [contact] (TS)		
Timer [coil] (TC)		
Counter [contact] (CS)		
Counter [coil] (CC)		
Data Register (D)	480 words	48 words
Link Register (W)		
File Register (R)		
Extended File Register (R)		
Timer [current value] (TN)		
Counter [current value] (CN)		

4 Environment Setup

Prior to the target machine starting communcation with a Melsec-Q PLC, the MNET/10H Ethernet settings must be set in the PLC's ladder logic software. The setting values are as shown below.

1. Network Parameter MNET/10H Ethernet Settings
2. Ethernet Operation Settings
3. OPEN Settings

1. Network Parameter MNET/10H Ethernet Settings

Items	PLC Settings
Network Classification	Ethernet
First I/O No.	Any number [1]
Network No.	Any number [1]
Group No.	Any number [1]
Machine No.	Any number [1]
Mode	Online

[1] This setting does not effect the communication with the target machine.

2. Ethernet Operation Settings

Items	PLC Settings
Data Code Settings	BINARY Code
Initial Timing Settings	Always waiting for OPEN
IP Address Settings	Any number
Write Possible in RUN mode [1]	Any number

[1] When performing Write from the target machine in RUN mode, set the Write Possible in RUN mode to "Allowed".

MEMO Be sure to make sure the IP address to your network administrator.
Do not specify the duplicate IP address.

3. OPEN Settings

Items	PLC Settings
Protocol	UDP/IP
SRC Port No.	Should be the same DEST Port No. as set in the [Protocol Configuration] dialogbox.
DEST IP Address	Should be the same IP Address as the target machine's.
DEST Port Address	Should be the same UDP Port No. as set in the [Driver Configuration] dialogbox.
Fixed Buffer	Any number [1]
Fixed Buffer Method	Any number [1]
Paring Open	Any number [1]
Confirming	Any number [1]

*1   This setting does not effect the communication with the target machine.

MEMO   Be sure to make sure the IP address to your network administrator.
Do not specify the duplicate IP address.

When the Auto Open UDP Port feature is used, the Table 3. OPEN Settings are not needed.
When these settings are used, however, the PLC's port number is 5000 (default setting).
For details, refer to Mitsubishi Electric's Q and QnA Series Ethernet Interface User Manuals.

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.
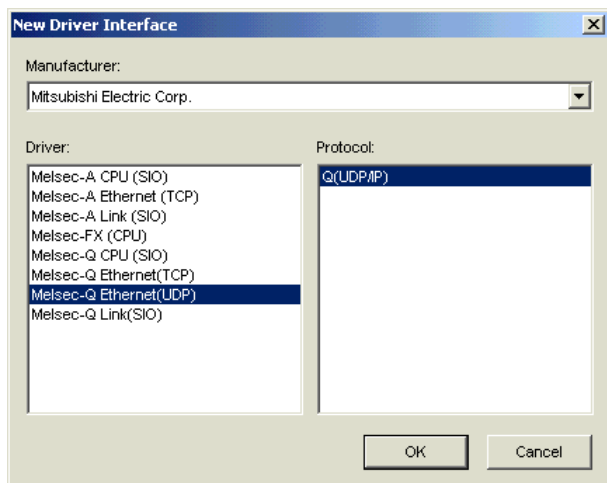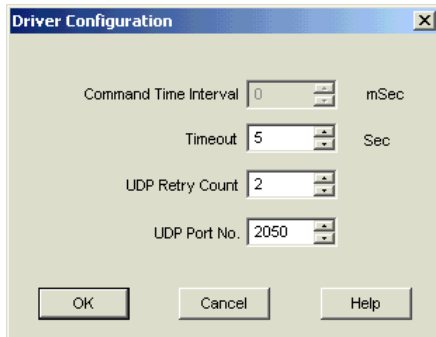
6   Driver Configuration

Use the [Driver Configuration] dialog box to define communication settings on the target machine.

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

Command Time Interval
  Not applicable.

Timeout
  Defines the length of time the target machine waits for a communication packet before it retries communication or outputs an error. (1-180)

UDP Retry Count
  Defines the number of times the target machine resends a packet before it outputs an error. (0-255)

UDP Port No.
  Enter a value to identify on the target machine, the port number used for UDP communication. (1024-65535)

7 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.
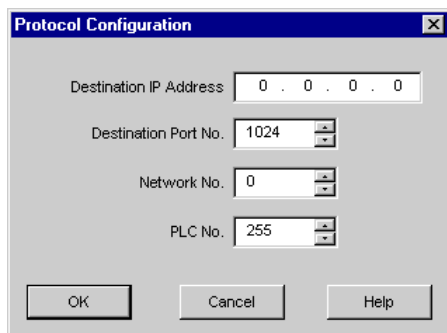
Destination IP Address
Specifies the Destination IP address (PLC), devided 32 bits into 4 parts, each part is consisted of 8 bits and devided by dots. Enter an integer value between 0 and 255, both inclusive.

MEMO Be sure to make sure the IP address to your network administrator.
Do not specify the duplicate IP address.

Destination Port No.
Enter a value (1024-65535) to match the PLC's Ethernet port number.
Port No. 5001 and 5002 are not available. They are used only for the ethernet unit system and the PLC's ladder logic software. When using the Auto Open UDP Port feature, enter 5000 (defaut setting value) for the Port No.

Network No.
Designates the network number when communicating via the network. Specify an integer value between 1 and 239, both inclusive, or 254, to identify the communicating PLC. If not communicating via the network, enter 0.

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.

8   Device Address Configuration

To set up a PLC variable in the Variable List, use the Device Address Keypad from the variable properties.
See Section 3 – *Supported Device Addresses.*

> For information on how to display the Device Address Keypad, see the online help.
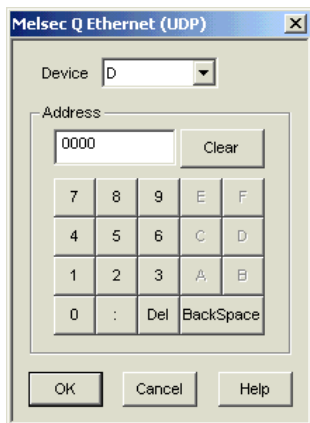
Device
    Lists the PLC's discrete and word device types.

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