Omron

Sysmac FINS (Ethernet) Driver

- 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 describes the system system setup for connecting the target machine to Omron PLCs.

Series	CPU	Link I/F
SYSMAC CS1 Series	CS1H-CPU□□ CS1G-CPU□□ CS1H-CPU□□H CS1G-CPU□□H	CS1W-ETN01
SYSMAC CJ Series	CJ1G-CPU□□ CJ1M-CPU□□	CJ1W-ETN11

2   Supported Device Addresses

The following list is the device address ranges you can enter from in Pro-Designer. For actual device address ranges supported by the PLC, refer to the PLC's manual.

Device	Bit Address [1]	Word Address	16 bit	32 bit
Channel I/O[2]	0000:00-9999:15	0000-9999		
Internal Auxiliary Relay[2]	W000:00-W999:15	W000-W999		
Special Auxiliary Relay[2][3]	A000:00-A999:15	A000-A999		
Hold Relay[2]	H000:00-H999:15	H000-H999		
Timer (Contact)[4]	T0000-T9999	-		
Counter (Contact)[4]	C0000-C9999	-		
Timer (Current Value)	-	T0000-T9999		
Counter (Current Value)	-	C0000-C9999	[9] L/H	[9] L/H
Data Memory[2][5]	D00000:00-D99999:15	D00000-D99999		
Exp. Data Memory[2][6][7]	E000000:00-EC99999:15	E000000-EC99999		
Exp. Data Memory (Current Bank)[7]	-	EM00000-EM99999		
Task Flag[2][4]	TK0:00-TK31:07	TK0-TK31		
Index Register[2][4]	IR0:00-IR15:31[8]	IR0-IR15		
Data Register[2][4]	DR0:00-DR15:15	DR0-DR15		

*1   You can define a bit address by adding a colon followed by the bit position (0-15) at the end of the word address.

*2   When the bit write operation is performed, the target machine reads the PLC's corresponding word address and turns a bit ON, then sends it back to the PLC. Do not write to the word address from the ladder program in the middle of this operation.

*3   Addresses A000 to A447 cannot be written to.

*4   Cannot be written to during RUN.

*5   When using the Communication Unit (CS1W-SCU21), addresses D30000 to D31599, since they are used for PLC system settings, should not be written to from the GP.
When using the Communication Board (CS1W-SCU21/41), addresses D32000 to D32767 are used for PLC settings, should not be written to from the GP.

*6   You can use a maximum of 13 banks (E0-EC). A bank contains 32,768 words. The number of usable banks depends on the CPU unit.

*7   Note that the Exp. Data Memory (E0 to EC, Current Bank EM) does not exist in the CJM 1 Series.

*8   An index register is a 32-bit device having bit position range from 0 to 31. Only word addresses (32-bit) can be written into it.

*9   16-bit and 32-bit data, High and Low, refer to data as defined in the following examples.

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

	32 bit			
Word				
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 size between PLC device addresses that are used as consecutive device addresses) that can be read by each PLC. Refer to these tables to utilize *Block Transfer*.

MEMO

- When the device is setup using the methods below, the Data Communication Speed slows because the number of times the device is read increases.
  - When consecutive addresses exceed the maximum data number range
  - When an address is designated for division
  - When device types are different

To speed up data communication, use consecutive device addresses on a single target machine.

Device	Maximum Consecutive Address	Gap Span
Timer (Contact) (T)	538 bits	32 bits
Counter (Contact) (C)		
Timer (Initial Value) (T)	269 words	32 words
Counter (Initial Value) (C)		
Channel I/O (CIO)		
Internal Auxiliary Relay (W)		
Special Auxiliary Relay (A)		
Hold Relay (H)		
Data Memory (D)		
Exp. Data Memory (E-EC)		
Exp. Data Memory (Current Bank) (EM)		
Task Flag (TK)	32 words	
Index Register (IR)	16 words	
Data Register (DR)	16 words	

4   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.
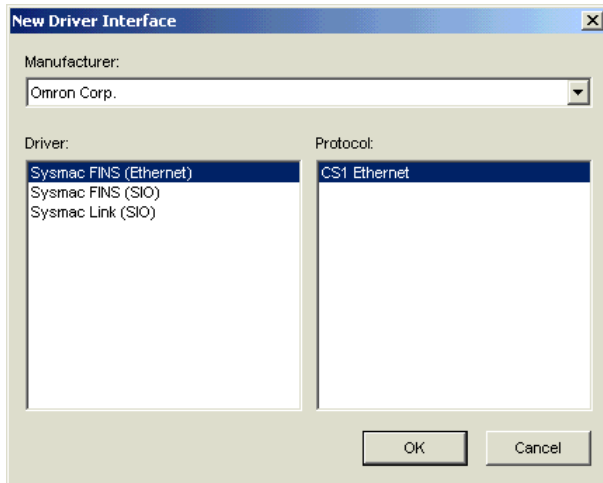
5 Environment Setup

The following tables list Pro-face's recommended communication settings for the target machine and PLC.

For details, see Section 7 – *Protocol Configuration*.

Target Machine Setup			PLC Setup	
Protocol Configuration	IP Address	IP Address of the PLC, PLC on the network	IP Address Setting Switch	PLC's IP Address
	--		IP Address Table	Target Machine IP Address
	UDP Port No. [*1]	9600	FINS UDP Port [*1]	9600
	Partner Address	Network	PLC's Network Address	Local Network Address	PLC's Network Address
		Node	PLC's Node Address	Node NO. Switch	PLC's Node NO.
	Destination Address	Network	Target's Network Address	--	--
		Node	Target's Node Address	IP Address Table	Target's Node Address

*1 The PLC's default number of the UDP Port is 9600. Be sure to specify the same number as the target machine's.

MEMO   The target machine's IP Address is specified in the Runtime Settings Menus. For details, see the online help.

6   Driver Configuration

To configure the communication settings of the serial driver in the target machine, use the [Driver Configuration] dialog box. Make sure the settings match those of the PLC.

MEMO   For information on how to display the [Driver Configuration] dialog box, see the online help.
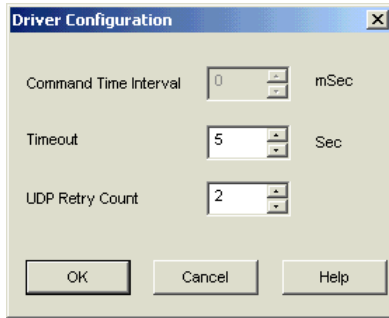
Command Time Interval
Not available for this version.
Specifies the time interval in ms [0 to 10000] taken for sending data to the PLC.

Timeout
Defines the length of time (in seconds) the target machine waits for a response before it outputs a timeout error or sends another data. Specify an integer value between 0 and 180, both inclusive.

UDP Retry Count
Defines the number of times the target machine tries to send data when a timeout or PLC transmission error occurs. Specify an integer value between 0 and 255, both inclusive.

7   Protocol Configuraton

To set up details about the communication process between the target machine and the PLC, use the [Protocol Configuration] dialog box. For details, see Section 5 – *Environment Setup.*

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

IP Address
Specifies the IP address of the PLC that communicates through the target machine, or the IP address of the relay PLC when communicating via network.

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

UDP Port Number
Specifies the UDP Port Number of the PLC that communicates through the target machine, or the UDP Port Number of the relay PLC when communicating via a network.
Specify an integer value between 1 and 65535, both inclusive. The default value is 9600.

Destination Address
Specifies the PLC's network node.

Network
Specify an integer value between 0 and 127, both inclusive. Designates the network number when multiple networks are being used. All nodes in the same network will have the same network address.

Node
Specify an integer value between 1 and 126, both inclusive. Specify the network node of the PLC that directly communicates through the target machine.

Source Address
Specifies the network node of the target machine.

Network
Specify an integer value between 0 and 127, both inclusive. Designates the network number when multiple networks are being used. All nodes in the same network will have the same network address.

Node
Specify an integer value between 1 and 126, both inclusive. Specify the network node of the target machine.
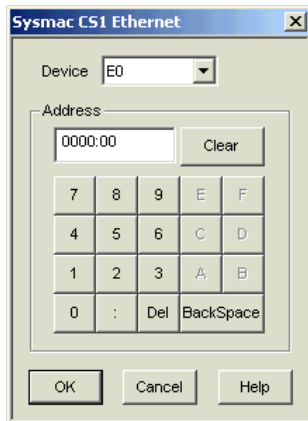
8 Device Address Configuration

To set up a PLC variable in the Variable List, use the device address keypad from the variable properties.
See Section 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.