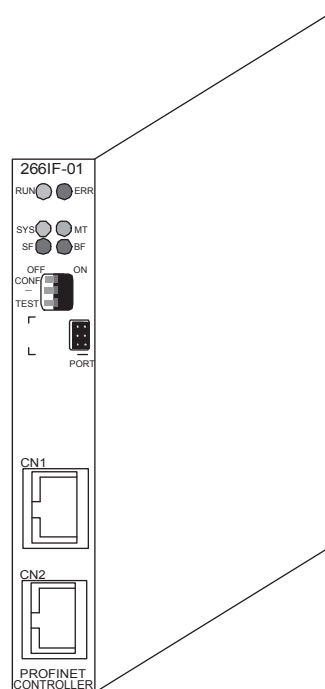


Machine Controller MP2000 Series 266IF-01 PROFINET Controller Module USER'S MANUAL

Model JAPMC-CM2306-E



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Using this Manual

This manual describes the 266IF-01 PROFINET Controller Module for MP2000-series Machine Controllers. Read this manual thoroughly before using the 266IF-01 Module. Keep this manual in a safe place for future reference.

■ Basic Terms

Unless otherwise specified, the following definitions are used:

- 266IF-01 Module: 266IF-01 PROFINET Controller Module
- MP2□00: A generic name for the MP2100M, MP2200, MP2300, MP2310, MP2300S, and MP2500MD Machine Controllers
- PLC: Programmable Logic Controller
- MPE720: The Engineering Tool or a computer running the Engineering Tool
- Master: A generic name for PROFINET Controllers
- Slave: A generic name for PROFINET Devices

■ Manual Configuration

This manual consists of the chapters listed in the following table. Read the chapters of this manual as required by the purpose.

Chapter	Purpose					
	Selecting Models and Peripheral Devices	Studying Specifications and Ratings	Designing the System	Panel Installation and Wiring	Trial Operation	Maintenance and Inspection
Chapter 1 PROFINET Overview	√		√			
Chapter 2 266IF-01 Module Overview	√	√	√	√	√	√
Chapter 3 Setting Up the 266IF-01 Module		√	√	√	√	√
Chapter 4 PROFINET Transmission Definitions Window		√	√		√	√
Chapter 5 PROFINET Communications for the 266IF-01 Module	√		√	√	√	√
Chapter 6 Troubleshooting		√	√	√	√	√

■ Graphic Symbols Used in this Manual

The graphic symbols used in this manual indicate the following type of information.



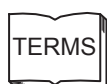
- Indicates important information that should be memorized.
- Indicates alarm displays and other precautions that will not result in machine damage.



- Indicates supplemental information.



- Indicates concrete examples.



- Indicates definitions of difficult terms or terms that have not been previously explained in this manual.

■ Related Manuals

The following table lists the manuals that are related to the 266IF-01 Module for MP2000-series Machine Controllers. Refer to these manuals as required.

Manual Name	Manual Number	Contents
Machine Controller MP2100/MP2100M User's Manual Design and Maintenance	SIEP C880700 01	Describes how to use the MP2100 and MP2100M Machine Controllers.
Machine Controller MP2200 User's Manual	SIEP C880700 14	Describes how to use the MP2200 Machine Controller and the Modules that can be connected.
Machine Controller MP2300 Basic Module User's Manual	SIEP C880700 03	Describes how to use the MP2300 Basic Module and the Modules that can be connected.
Machine Controller MP2310 Basic Module User's Manual	SIEP C880732 01	Describes how to use the MP2310 Basic Module and the Modules that can be connected.
Machine Controller MP2300S Basic Module User's Manual	SIEP C880732 00	Describes how to use the MP2300S Basic Module and the Modules that can be connected.
Machine Controller MP2500/MP2500M/ MP2500D/MP2500MD User's Manual	SIEP C880752 00	Describes how to use the MP2500, MP2500M, MP2500D, and MP2500MD Machine Controllers.
Machine Controller MP2000 Series Motion Module Built-in SVB/SVB-01 User's Manual	SIEP C880700 33	Provides a detailed description of the MP2000-series Machine Controller built-in SVB Module and slot-mounting optional SVB-01 Module.
Machine Controller MP2000 Series Communication Module User's Manual	SIEP C880700 04	Describes the Communications Modules that can be connected in an MP2000-series Machine Controller.
Machine Controller MP900/MP2000 Series User's Manual: Ladder Programming	SIEZ-C887-1.2	Describes the instructions used in MP900/MP2000 ladder programming.
Machine Controller MP900/MP2000 Series User's Manual: Motion Programming	SIEZ-C887-1.3	Describes the instructions used in MP900/MP2000 motion programming.
Machine Controller MP2000 Series User's Manual for Motion Programming	SIEP C880700 38	Describes the instructions used in MP2000 motion programming.
Engineering Tool for MP2000 Series Machine Controllers MPE720 Version 6 User's Manual	SIEP C880700 30	Describes how to install and operate MPE720 version 6.
Machine Controller MP2000/MP3000 Series Engineering Tool MPE720 Version 7 User's Manual	SIEP C880761 03	Describes how to install and operate MPE720 version 7.
Machine Controller MP2000 Series 266IF-02 PROFINET Device Module User's Manual	SIEP C880700 48	Describes the PROFINET Device Module that can be connected in an MP2000-series Machine Controller.

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- Other product names and company names are the trademarks or registered trademarks of the respective company. "TM" and the ® mark do not appear with product or company names in this manual.

Safety Information


The following conventions are used to indicate precautions in this manual. Information marked as shown below is important for the safety of the user. Always read this information and heed the precautions that are provided. The conventions are as follows:




Indicates precautions that, if not heeded, could possibly result in loss of life or serious injury.




Indicates precautions that, if not heeded, could result in relatively serious or minor injury, or property damage.

If not heeded, even precautions classified under  CAUTION can lead to serious results depending on circumstances.



Indicates prohibited actions. Specific prohibitions are indicated inside .

For example,  indicates no fire or open flame.



Indicates mandatory actions. Specific actions are indicated inside .

For example,  indicates that grounding is required.

Safety Precautions

The following precautions are for checking products on delivery, storage, transportation, installation, wiring, operation, application, inspection, and disposal. These precautions are important and must be observed.

■ General Precautions

WARNING

- ♦ Before starting operation while connected to the machine, ensure that an emergency stop procedure has been provided and is working correctly.
There is a risk of injury.
- ♦ Do not touch anything inside the product.
There is a risk of electrical shock.
- ♦ Always keep the front cover attached when power is being supplied.
There is a risk of electrical shock.
- ♦ Observe all procedures and precautions given in this manual for trial operation.
Operating mistakes while the Servomotor and machine are connected can cause damage to the machine or even accidents resulting in injury or death.
- ♦ Do not remove the front cover, cables, connector, or options while power is being supplied.
There is a risk of electrical shock.
- ♦ Do not damage, pull on, apply excessive force to, place heavy objects on, or pinch cables.
There is a risk of electrical shock, operational failure of the product, or burning.
- ♦ Do not attempt to modify the product in any way.
There is a risk of injury or device damage.
- ♦ Do not approach the machine when there is a momentary interruption to the power supply. When power is restored, the MP2□00 Series Machine Controller or machine connected to it may start operation suddenly. Provide suitable safety measures to protect people when operation restarts.
There is a risk of injury.
- ♦ Do not allow installation, disassembly, or repairs to be performed by anyone other than specified personnel.
There is a risk of electrical shock or injury.

■ Storage and Transportation

CAUTION

- ♦ Do not store or install the product in locations subject to the following. There is a risk of fire, electric shock, and machine product damage.
 - Direct sunlight
 - Ambient temperatures exceeding the storage or operating conditions
 - Ambient humidity exceeding the storage or operating conditions
 - Extreme changes in temperature that would result in condensation
 - Corrosive or flammable gas
 - Excessive dust, dirt, salt, or metallic powder
 - Water, oil, or chemicals
 - Vibration or shock
- ♦ Do not overload the product during transportation.
There is a risk of injury or an accident.
- ♦ Never subject the product to an atmosphere containing halogen (fluorine, chlorine, bromine, or iodine) during transportation or installation.
There is a risk of device damage or an accident.
- ♦ If disinfectants or insecticides must be used to treat packing materials such as wooden frames, pallets, or plywood, the packing materials must be treated before the product is packaged, and methods other than fumigation must be used.
Example: Heat treatment, where materials are kiln-dried to a core temperature of 56°C for 30 minutes or more.

If the electronic products, which include stand-alone products and products installed in machines, are packed with fumigated wooden materials, the electrical components may be greatly damaged by the gases or fumes resulting from the fumigation process. In particular, disinfectants containing halogen, which includes chlorine, fluorine, bromine, or iodine can contribute to the erosion of the capacitors.

■ Installation

CAUTION

- ♦ Never use the product in locations subject to water, corrosive atmospheres, or flammable gas, or near burnable objects.
There is a risk of electrical shock or fire.
- ♦ Do not step on the product or place heavy objects on the product.
There is a risk of injury.
- ♦ Do not block the air exhaust port on the product. Do not allow foreign objects to enter the product.
There is a risk of element deterioration inside, an accident, or fire.
- ♦ Always mount the product in the specified orientation.
There is a risk of an accident.
- ♦ Do not subject the product to strong shock.
There is a risk of an accident.

■ Wiring

CAUTION

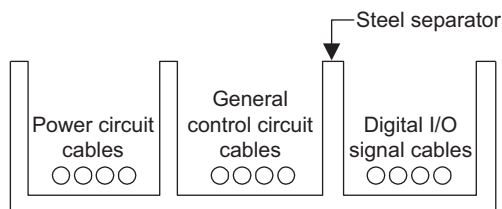
- ♦ Check the wiring to be sure it has been performed correctly.
There is a risk of motor run-away, injury, or an accident.
- ♦ Always use a power supply of the specified voltage.
There is a risk of burning.
- ♦ In places with poor power supply conditions, take all steps necessary to ensure that the input power is supplied within the specified voltage range.
There is a risk of device damage.
- ♦ Install breakers and other safety measures to provide protection against shorts in external wiring.
There is a risk of fire.
- ♦ Provide sufficient shielding when using the product in the locations subject to the following.
There is a risk of device damage.
 - Noise, such as from static electricity
 - Strong electromagnetic or magnetic fields
 - Radiation
 - Near power lines

■ Selecting, Separating, and Laying External Cables

CAUTION

- ♦ Consider the following items when selecting the I/O signal lines (external cables) to connect the product to external devices.
 - Mechanical strength
 - Noise interference
 - Wiring distance
 - Signal voltage, etc.
- ♦ Separate the I/O signal lines from the power lines both inside and outside the control box to reduce the influence of noise from the power lines.
If the I/O signal lines and power lines are not separated properly, malfunctioning may result.

Example of Separated External Cables



■ Maintenance and Inspection Precautions

 CAUTION

- ♦ Do not attempt to disassemble the product.
There is a risk of electrical shock or injury.
- ♦ Do not change wiring while power is being supplied.
There is a risk of electrical shock or injury.

■ Disposal Precautions

 CAUTION

- ♦ Dispose of the product as general industrial waste.

■ General Precautions

Observe the following general precautions
to ensure safe application.

- ♦ The products shown in illustrations in this manual are sometimes shown without covers or protective guards. Always replace the cover or protective guard as specified first, and then operate the products in accordance with the manual.
- ♦ The drawings presented in this manual are typical examples and may not match the product you received.
- ♦ If the manual must be ordered due to loss or damage, inform your nearest Yaskawa representative or one of the offices listed on the back of this manual.

Warranty

(1) Details of Warranty

■ Warranty Period

The warranty period for a product that was purchased (hereinafter called “delivered product”) is one year from the time of delivery to the location specified by the customer or 18 months from the time of shipment from the Yaskawa factory, whichever is sooner.

■ Warranty Scope

Yaskawa shall replace or repair a defective product free of charge if a defect attributable to Yaskawa occurs during the warranty period above. This warranty does not cover defects caused by the delivered product reaching the end of its service life and replacement of parts that require replacement or that have a limited service life.

This warranty does not cover failures that result from any of the following causes.

1. Improper handling, abuse, or use in unsuitable conditions or in environments not described in product catalogs or manuals, or in any separately agreed-upon specifications
2. Causes not attributable to the delivered product itself
3. Modifications or repairs not performed by Yaskawa
4. Abuse of the delivered product in a manner in which it was not originally intended
5. Causes that were not foreseeable with the scientific and technological understanding at the time of shipment from Yaskawa
6. Events for which Yaskawa is not responsible, such as natural or human-made disasters

(2) Limitations of Liability

1. Yaskawa shall in no event be responsible for any damage or loss of opportunity to the customer that arises due to failure of the delivered product.
2. Yaskawa shall not be responsible for any programs (including parameter settings) or the results of program execution of the programs provided by the user or by a third party for use with programmable Yaskawa products.
3. The information described in product catalogs or manuals is provided for the purpose of the customer purchasing the appropriate product for the intended application. The use thereof does not guarantee that there are no infringements of intellectual property rights or other proprietary rights of Yaskawa or third parties, nor does it construe a license.
4. Yaskawa shall not be responsible for any damage arising from infringements of intellectual property rights or other proprietary rights of third parties as a result of using the information described in catalogs or manuals.

(3) Suitability for Use

1. It is the customer's responsibility to confirm conformity with any standards, codes, or regulations that apply if the Yaskawa product is used in combination with any other products.
2. The customer must confirm that the Yaskawa product is suitable for the systems, machines, and equipment used by the customer.
3. Consult with Yaskawa to determine whether use in the following applications is acceptable. If use in the application is acceptable, use the product with extra allowance in ratings and specifications, and provide safety measures to minimize hazards in the event of failure.
 - Outdoor use, use involving potential chemical contamination or electrical interference, or use in conditions or environments not described in product catalogs or manuals
 - Nuclear energy control systems, combustion systems, railroad systems, aviation systems, vehicle systems, medical equipment, amusement machines, and installations subject to separate industry or government regulations
 - Systems, machines, and equipment that may present a risk to life or property
 - Systems that require a high degree of reliability, such as systems that supply gas, water, or electricity, or systems that operate continuously 24 hours a day
 - Other systems that require a similar high degree of safety
4. Never use the product for an application involving serious risk to life or property without first ensuring that the system is designed to secure the required level of safety with risk warnings and redundancy, and that the Yaskawa product is properly rated and installed.
5. The circuit examples and other application examples described in product catalogs and manuals are for reference. Check the functionality and safety of the actual devices and equipment to be used before using the product.
6. Read and understand all use prohibitions and precautions, and operate the Yaskawa product correctly to prevent accidental harm to third parties.

(4) Specifications Change

The names, specifications, appearance, and accessories of products in product catalogs and manuals may be changed at any time based on improvements and other reasons. The next editions of the revised catalogs or manuals will be published with updated code numbers. Consult with your Yaskawa representative to confirm the actual specifications before purchasing a product.

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PROFINET Overview

This chapter provides an overview of PROFINET.

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1.1 Outline

PROFINET is a communications standard that is designed to provide general-purpose compatibility across all of the applications that are shown in the following figure over a single bus. *Fig. 1.1* shows an configuration example of a PROFINET network.

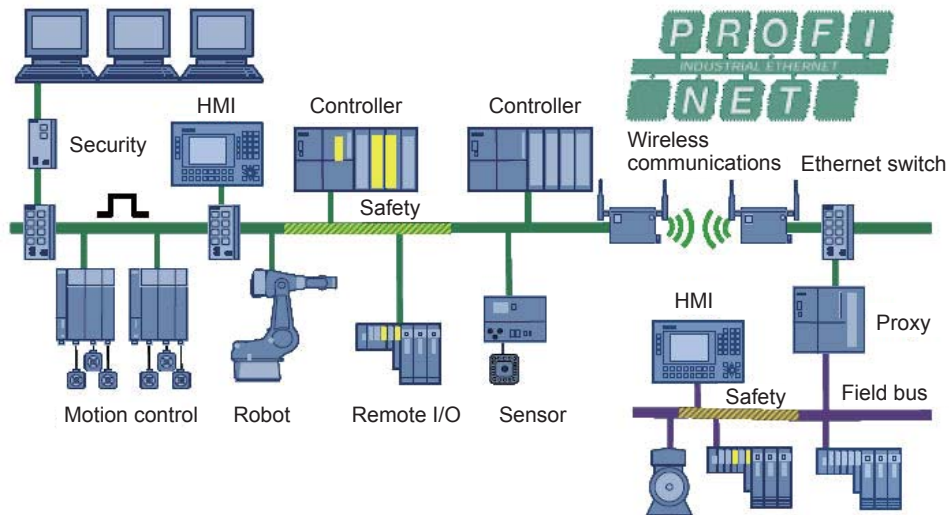


Fig. 1.1 PROFINET Network Configuration Example

1.2 Features

This section describes the major features of PROFINET.

■ Network Flattening

Traditional hierarchical-model networks can be integrated via Ethernet (wired or wireless). All stations can be accessed directly. (On a Siemens wireless LAN, a communications cycle of 4 ms is ensured for IEEE 802.11a/b/g/h.)

■ Coexistence with IT Devices (TCP/IP Communications)

Configuration and maintenance can be performed from a Web-based interface and parameters can be downloaded with FTP.

■ Realtime Communications (PROFINET Versions)

Version 1: PROFINET IO NRT (Non Real Time: Fixed cyclic communications in the order of 100 ms)

Version 2: PROFINET IO RT (Real Time: Fixed cyclic communications in the order of 10 ms)

Version 3: PROFINET IO IRT (Isochronous Real Time: Cyclic communications with a communications cycle of 1 ms or lower and jitter of less than 1 μ s)

■ PROXY (Gateway) Function

An existing fieldbus (e.g., PROFIBUS-DP or a fieldbus from another manufacturer) can be used without any modifications.

■ Functional Safety and Low Energy Consumption

PROFIsafe provides functional safety, and PROFIenergy helps save energy.

1.3 Communications

PROFINET provides the following two types of communications.

■ I/O Data Communications

I/O data communications are used for realtime control. The slaves that will perform I/O data communications are assigned in the master. The refresh cycle for I/O data communications is specified for each slave by using the Configuration Tool.

■ Message Communications

Non-cyclic data communications can be performed one-to-one between a master and a slave for applications that do not require realtime control. This type of communications is used, for example, to read and write PROFINET device parameters or to load diagnostic information.

266IF-01 Module Overview

This chapter provides an overview of the 266IF-01 Module. It provides the Module specifications and describes the parts of the Module.

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2.1 Outline

The 266IF-01 Module is a PROFINET master device. The 266IF-01 Module performs the following communications with slaves.

- I/O message communications
- Message communications

2.1.1 I/O Data Communications

The 266IF-01 Module can perform cyclic communications with PROFINET slaves through I/O data communications.

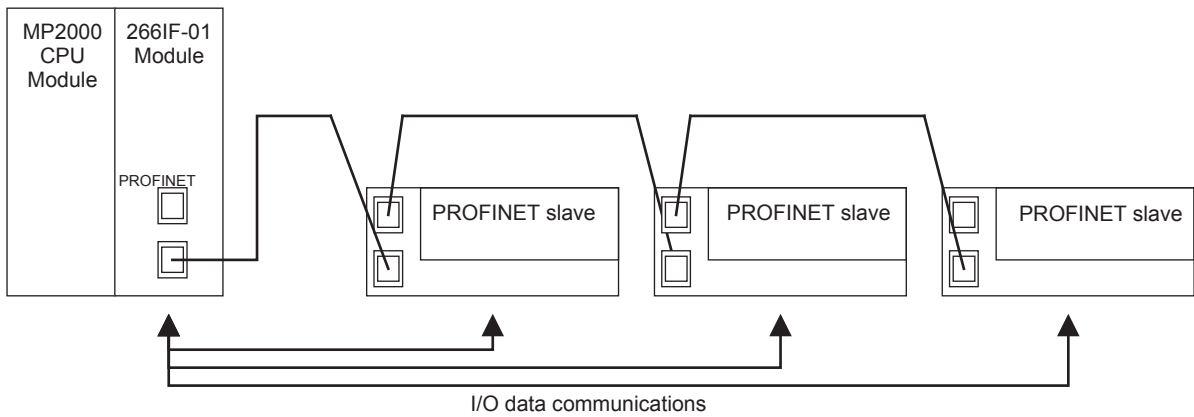


Fig. 2.1 I/O Data Communications between the 266IF-01 Module and Slaves with Cascade Connections

2.1.2 Message Communications

You can implement message communications with the Send Message function (MSG-SND) in ladder programs to send messages to the required slaves.

- The messages that you can send depend on the slave. Refer to the manuals for the PROFINET slaves for details.

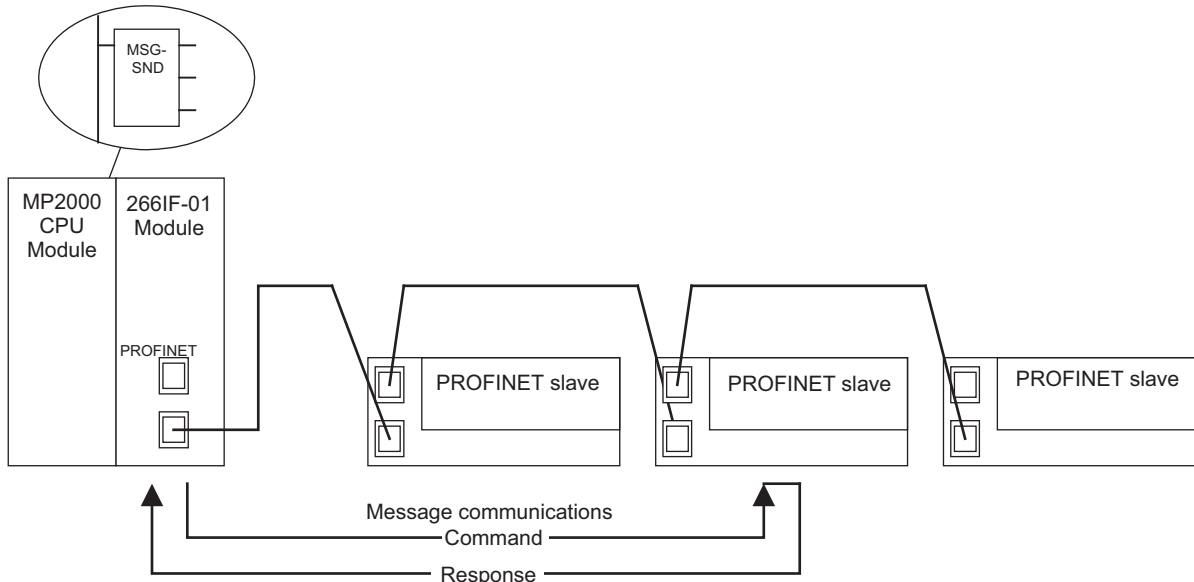


Fig. 2.2 Message Communications between the 266IF-01 Module and a Slave with Cascade Connections

2.2 Specifications

2.2.1 Basic Specifications

This section provides the basic specifications of the 266IF-01 Module.

Table 2.1 Basic Specifications

	Item	Specification
Environmental Conditions	Ambient Operating Temperature	0 to 55°C
	Ambient Storage Temperature	-25 to 85°C
	Ambient Operating Humidity	30% to 95% RH (with no condensation)
	Ambient Storage Humidity	5% to 95% RH (with no condensation)
	Pollution Level	Pollution level 1 (conforming to JIS B 3501)
	Operating Altitude	2,000 m above sea level or lower
Mechanical Operating Conditions	Vibration Resistance	Conforms to JIS B 3502. ①Frequency: 16.7 Hz Amplitude: 14.7 m/s ² ②Frequency: 10 to 57 Hz Amplitude: Single-amplitude of 0.075 mm ③Frequency: 57 to 150 Hz Amplitude: Fixed acceleration of 9.8 m/s ²
	Shock Resistance	Peak acceleration: 147 m/s ² (15G), Duration: 11 ms 2 times each in X, Y, and Z directions
Electrical Operating Conditions	Noise Resistance	Power supply noise (FT noise): ±2 kV min., for one minute Radiation noise (FT noise): ±1 kV min., for one minute Ground noise (impulse noise): ±1 kV min., for 10 minutes Electrostatic noise (contact discharge method): ±6 kV or more, 10 times
Installation Requirements	Ground	Ground to 100 Ω max.
	Cooling Method	Natural cooling

2.2.2 Transmission Specifications

This section provides the transmission specifications of the 266IF-01 Module.

Table 2.2 Specifications of the 266IF-01 Module

Item		Specification	Remarks	
PROFINET	Applicable PROFINET Version Classes	Version	Ver2: Real Time	Supports cyclic communications of 1 ms or greater.
		Applicable Realtime Classes	RT_CLASS_1, RT_CLASS_2	Non-cyclic communications
		Applicable PROFINET IO Class (Authentication Conformance Class)	CC-A (Conformance Class - A)	–
	Ethernet Communications Specifications	Communications Medium	Ethernet version 2/DIX specification, 100Base-TX/ Full duplex	Category 5 cable
		Access Mode	CSMA/CD	–
		Baud Rate	100 Mbps	–
		Segment Length	100 m	–
		Maximum Number of Stations Connected	128	–
	Media Access Control Method	Star connections and cascade connections	A switching hub that supports VLAN is used.	
	PROFINET Communications Specifications	Master/Slave	Master	–
		I/O Communications	√	–
		Communications between Controllers	×	–
	PROFINET Protocols	DCP	√ (Discovery and Configuration Protocol)	–
		PTCP	×	Cannot be used with version 2 RT.
		MRP	×	–
		RTC	√ (Real time Cyclic Protocol)	Used in I/O communications.
RTA		√ (Real time Acyclic Protocol)	–	
CL-RPC		√ (Connectionless Remote Procedure Call)	Used in message communications.	
LLDP		×	–	
RSTP		×	–	
VLAN		√	–	
TCP/UDP/IP/ARP/ICMP/IP Multicast		△	Only UDP, IP, and ARP are supported. Used for CL-RPC.	
DHCP	×	–		
SNMP	×	–		

Table 2.2 Specifications of the 266IF-01 Module (cont'd)

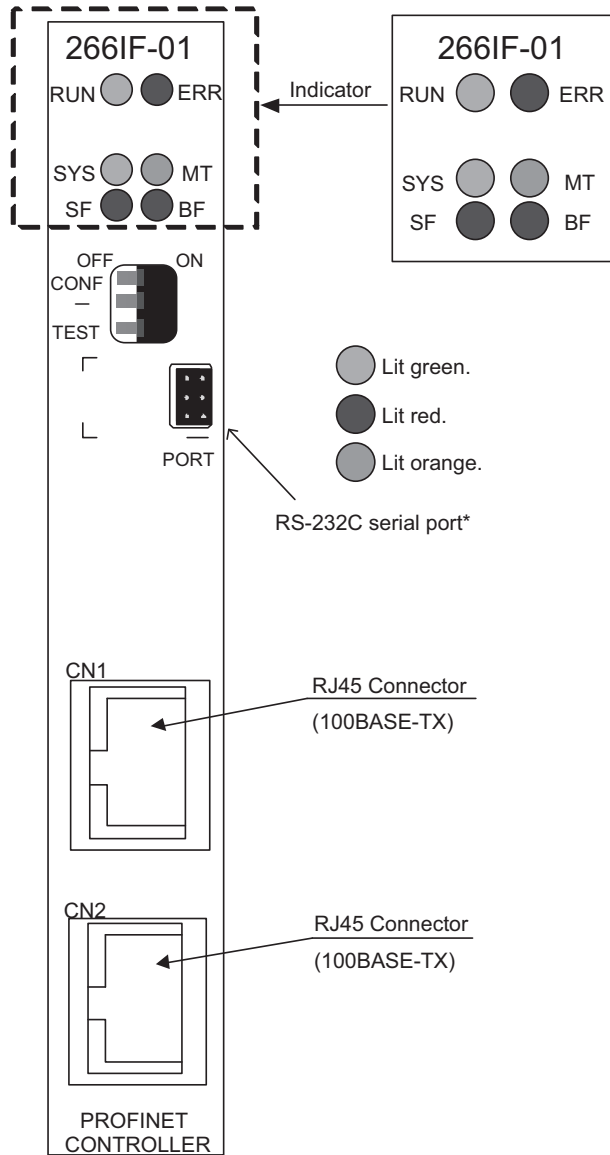
		Item	Specification	Remarks
PROFINET	I/O Communications	Communications Cycles	Set for each slave station. (Set from Configuration Tool (SYCON.net) to 1, 2, 4, 8, 16, 32, 64, 128, 256, or 512 ms.)	The specified cycles may not be possible depending on the number of slaves and the data sizes.
		Number of Assigned Stations	128 stations	–
		I/O Data Sizes	Maximum size per station: 1,024 bytes, Maximum assignments: 5,712 bytes for inputs and 5,760 bytes for outputs	–
	Message Communications	Number of Message Channels	5 (number of simultaneous message communications)	–
		Message Services	Nine services are supported.	Refer to <i>Chapter 5</i> .
		Data Exchange	1:1 (between 266IF-01 Module and slave)	–
		Number of Transmission Bytes	1,392 bytes	–

- The symbols in the table have the following meanings.
√: Supported, ×: Not supported, △: Partially supported

2.3 Appearance and Parts

2.3.1 External Appearance

This section shows the appearance of the 266IF-01 Module.



* After you have set up the 266IF-01 Module, attach the enclosed seal to cover the RS-232C serial port.

Fig. 2.3 Appearance of the Module

2.3.2 Indicators

Table 2.3 lists the status indicators on the 266IF-01 Module.

Table 2.3 Indicators

Indicator	Name	Color	Description	Status	
RUN	Module Normal	Green	Module startup	Lit	Startup was completed successfully.
				Not lit	Error detected.
ERR	Module Error	Red	Module error (initialization error, watchdog timeout error, etc.)	Lit	Error detected.
				Not lit	Normal
				Flashing	Shows the cause of the error.
SYS	Communications Status	Green	Communications initialization and connection	Lit	Connection established.
				Not lit	Initialization with the CPU Module is in progress.
				Flashing	Communications is being initialized.
MT	–	Orange	–	For future use. No meaning is assigned to lit/not lit status.	
SF	System Failure	Red	Slave status	Lit	<ul style="list-style-type: none"> • Data exchange is not possible with one or more connected slaves. • The error bit is set in the communications frame. • The expected module or submodule does not exist. (A ModDiffBlock event was detected.) • A parameter setting error occurred. • The module or submodule was removed. • There is no normal module or submodule. • An diagnostics alarm was detected. • Some other error was detected.
				Flashing	<ul style="list-style-type: none"> • Preparations to reset to the factory settings were completed. • The firmware update failed.
				Not lit	No errors have been detected.
BF	Bus Failure	Red	Bus status	Lit	<ul style="list-style-type: none"> • The bus connector is not inserted. • Data exchange is not possible with one or more slaves. • The same IP address was assigned twice. • The same name (NameOfStation) was used twice. • The IP address is not set.
				Flashing	<ul style="list-style-type: none"> • Initialization with the slaves started. • Data exchange is not possible with one or more slaves.
				Not lit	No errors have been detected.

2.3.3 Switch Settings

Table 2.4 shows the settings of the DIP switch on the 266IF-01 Module.

Table 2.4 Switch Settings

Device Label	Name	Status	Operating Mode	Factory Setting	Remarks
SW-4	-	ON	MAC Address Write Mode	OFF	System use Always leave set to OFF.
		OFF	-		
SW-3	CONF	ON	-	OFF	-
		OFF	-		
SW-2	-	ON	System Write Mode	OFF	System use Always leave set to OFF.
		OFF	-		
SW-1	TEST	ON	Test Mode	OFF	The status of this pin is detected only when the power supply is turned ON. When this pin is set to ON, PROFINET communications are not performed.
		OFF	Normal Operation Mode		

2.3.4 Offline Self-diagnostic Test

The offline self-diagnostic test will be performed if the power is turned ON when the TEST pin is set to ON and all other pins are set to OFF. If the result of self-diagnosis is normal, the indicators repeatedly light and go out in the following sequence: RUN (green), ERR (red), SYS (green), MT (orange), SF (red), BF (red), and then All OFF.

The indicators will operate as shown in the following table if the offline self-diagnostic test finds an error in the 266IF-01 Module.

Table 2.5 Offline Self-diagnostic Test

Indicator Status When Error Is Detected		Error
ERR (red)	Others	
Flashing (1 time)	Not lit	ROM diagnosis error
Flashing (2 times)	Not lit	RAM diagnosis error
Flashing (3 times)	Not lit	Shared memory diagnosis error
Flashing (4 times)	Not lit	Communications ASIC diagnostic error

- The ERR indicator flashes the designated number of times to indicate the error as shown in the above table, with 500 ms between each flash. After it completes this sequence, the indicator turns OFF for 1,000 ms and then the sequence is repeated.

2.3.5 Ethernet Connector

The Ethernet connector is used to connect the 266IF-01 Module to computers and to PROFINET slave stations via an Ethernet (100Base-TX) connection.

(1) Specifications

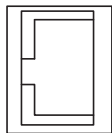
The following table gives the specifications of the Ethernet connector.

Name	Connector Name	No. of Pins	Connector Models		
			Module Side	Cable Side	Manufacturer
Ethernet	Ethernet	8	TM11R-5M2-88	RJ-45 Category 5 Plug	Hirose Electric

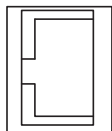
(2) Pin Arrangements

The following table gives the pin arrangements for the Ethernet connector.

CN1



CN2



Pin No.	Signal Name	Description
1	TXD+	Send data +
2	TXD-	Send data -
3	RXD+	Receive data +
4	TRES1	Terminating resistor 75 Ω
5	TRES1	Terminating resistor 75 Ω
6	RXD-	Receive data -
7	TRES2	Terminating resistor 75 Ω
8	TRES2	Terminating resistor 75 Ω

(3) Ethernet Cable

Use a twisted-pair Ethernet cable with RJ-45 connectors.

2.3.6 RS-232C Serial Connector

The configuration files are downloaded from the computer through RS-232C serial communications.

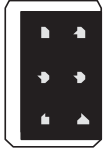
(1) Specifications

The following table gives the specifications of the RS-232C serial connector.

Name	Connector Name	No. of Pins	Connector Models		
			Module Side	Cable Side	Manufacturer
RS-232C serial connector	DF11 connector	6	DF11-6DP-2DS	DF11-6DS-2C	Hirose Electric

(2) Pin Arrangements

The following table gives the pin assignments of the RS-232C serial connector.



Pin No.	Signal Name	Description
1	TXD	Send data
2	RXD	Receive data
3	RTS	Ready to send
4	CTS	Clear to send
5	GND	Ground
6	DTR	Data terminal ready

(3) RS-232C Serial Cable

Use a MP2500, MP2500M, MP2500B, or MP2500MB Programming Cable (JEPMC-W2010-□□) for the RS-232C serial cable.

For information on the MP2500, MP2500M, MP2500B, or MP2500MB Programming Cables (JEPMC-W2010-□□), refer to the *Machine Controller MP2000 Series* (Document No.: KAEP C880700 15)

2.4 Compatible Machine Controllers and Versions

2.4.1 Compatible Machine Controllers

The MP2000-series Machine Controllers to which the 266IF-01 Module can be mounted are given in the following table.

Name		Model	Max. No. of Mountable Modules	Remarks
MP2200	Base Unit with 100/200-VAC input* ¹	JEPMC-BU2200	For CPU-01, CPU-02, CPU-03, or CPU-04: 8 Modules	The maximum number of mountable Modules is the total for the maximum expansion* ² to four Racks.
	Base Unit with 24-VDC input* ¹	JEPMC-BU2210		
MP2300		JEPMC-MP2300	2 Modules	–
MP2310		JEPMC-MP2310-E	3 Modules	–
MP2300S		JEPMC-MP2300S-E	1 Module	–
MP2100M		JAPMC-MC2140	8 Modules	The 266IF-02 Modules can be mounted to Expansion Racks (which use the MP2200 Base Unit) connected to an Expansion Interface Board (MP2100MEX, model: JAPMC-EX2100) mounted to the Machine Controller. The maximum number of mountable Modules is the total for the maximum expansion* ² to three Racks.
MP2500MD		JAPMC-MC2540-D	8 Modules	

- * 1. A special CPU Module (the CPU-01, CPU-02, CPU-03, or CPU-04) is required.
 - CPU-01: JAPMC-CP2200
 - CPU-02: JAPMC-CP2210 (with one slot for CF card and one USB port).
 - CPU-03: JAPMC-CP2220 (with one slot for CF card and one Ethernet port).
 - CPU-04: JAPMC-CP2230 (with one Ethernet port)
- * 2. An EXIOIF Inter-Rack Connection Module (model: JAPMC-EX2200) is required to add Expansion Racks. The 266IF-01 Module cannot be mounted on the following MP2000-series Machine Controllers: MP2100, MP2400, MP2500, MP2500M, and MP2500D.

2.4.2 Compatible CPU Module and MPE720 Versions

The following table shows the versions of the CPU Module of the Machine Controller and the MPE720 versions that are required to use the 266IF-01 Module.

Machine Controller		Compatible Versions		
		CPU	MPE720 Ver.6 (CPMC-770)	MPE720 Ver.7 (CPMC-780)
MP2200	CPU-01	Ver. 2.81 or later	Ver. 6.33 or later	Ver. 7.13 or later
	CPU-02	Ver. 2.81 or later	Ver. 6.33 or later	Ver. 7.13 or later
	CPU-03	Ver. 2.81 or later	Ver. 6.33 or later	Ver. 7.13 or later
	CPU-04	Ver. 2.81 or later	Ver. 6.33 or later	Ver. 7.13 or later
MP2300		Ver. 2.81 or later	Ver. 6.33 or later	Ver. 7.13 or later
MP2310		Ver. 2.81 or later	Ver. 6.33 or later	Ver. 7.13 or later
MP2300S		Ver. 2.81 or later	Ver. 6.33 or later	Ver. 7.13 or later
MP2100M		Ver. 2.81 or later	Ver. 6.33 or later	Ver. 7.13 or later
MP2500MD		Ver. 2.81 or later	Ver. 6.33 or later	Ver. 7.13 or later

2.4.3 Compatible SYCON.net and 266IF Loader Versions

Download the most recent versions of the software that is used to set up the 266IF-01 Module (i.e., SYCON.net and 266IF Loader) from Yaskawa's Products and Technical Information Website (URL: <http://www.e-mechatronics.com/en/>).

Setting Up the 266IF-01 Module

This chapter describes how to connect the 266IF-01 Module and start the system, including installing the 266IF-01 Module, setting the communications process, using self configuration.

3.1 Flow of the Setup	3-2
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3.10.2 Precautions for Register Input	3-45

3.1 Flow of the Setup

The following table gives the procedure for setting up the 266IF-01 Module.

No.	Item	Detailed Information
1	Install the software on a computer.	<i>3.2 Installing the Software</i>
2	Mount the 266IF-01 Module to the Machine Controller.	<i>3.3.1 Mounting</i>
3	Connect PROFINET communications.	<i>3.4 Connecting PROFINET Communications</i>
4	Self-configure the Machine Controller.	<i>3.5 Self Configuration of the Machine Controller</i>
5	Create the configuration files.	<i>3.6 Starting SYCON.net and Creating the Configuration Files</i>
6	Download the configuration files.	<i>3.7 Downloading the Configuration Data File (.nxd) and Configuration ID File (_nwid.nxd)</i>
7	Import the configuration files.	<i>3.8 Setting Up the Communications Process 3.9 Importing an Address Table File (.csv)</i>

This concludes the setup procedure.

IMPORTANT

- If you download the configuration data file (.nxd) and configuration ID file (_nwid.nxd) to the 266IF-01 Module during Machine Controller operation, the I/O data may change abruptly. Stop the Machine Controller before you download the configuration files.
- The 266IF-01 Module will not operate normally if the contents of the configuration data file (.nxd) and configuration ID file (_nwid.nxd) that are downloaded to the 266IF-01 Module do not agree with contents of the address table file (.csv) that is imported to the MPE720. Incorrect data may be transmitted. Always create the following three files from the same SYCON.net project: configuration data file, configuration ID file, and address table file. Also, manage these three files so that they remain together as one set.



When you replace the 266IF-01 Module, you must download the configuration files to the new 266IF-01 Module. We recommend that you save the configuration files in advance on the computer or a data storage device.

3.2 Installing the Software

You use three software applications to set up the 266IF-01 Module. This section gives the software installation procedures.

3.2.1 Installing SYCON.net

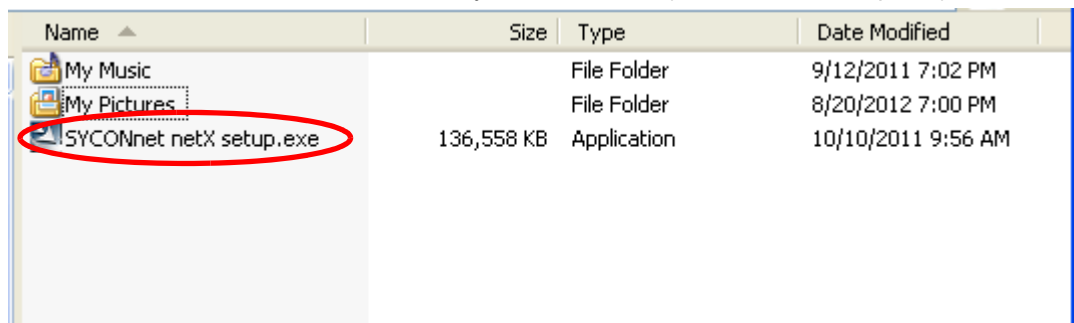
(1) Downloading the SYCON.net Installer

Download the SYCON.net Installer from the Support Tools on Yaskawa's Products and Technical Information Website (URL: <http://www.e-mechatronics.com/en/>).

(2) Installing SYCON.net

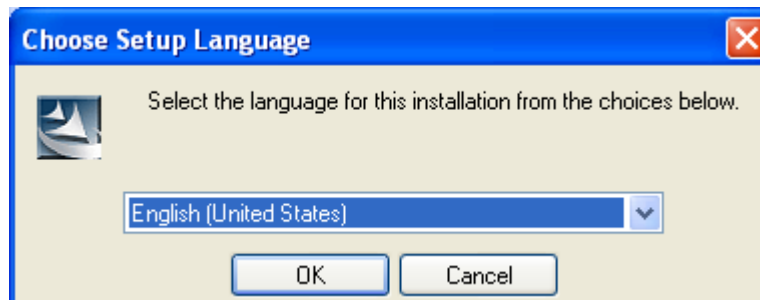
This section gives the SYCON.net installation procedure.

1. Double-click the SYCON.net Installer that you downloaded (SYCON.netX setup.exe).



The **Choose Setup Language** Dialog Box will be displayed.

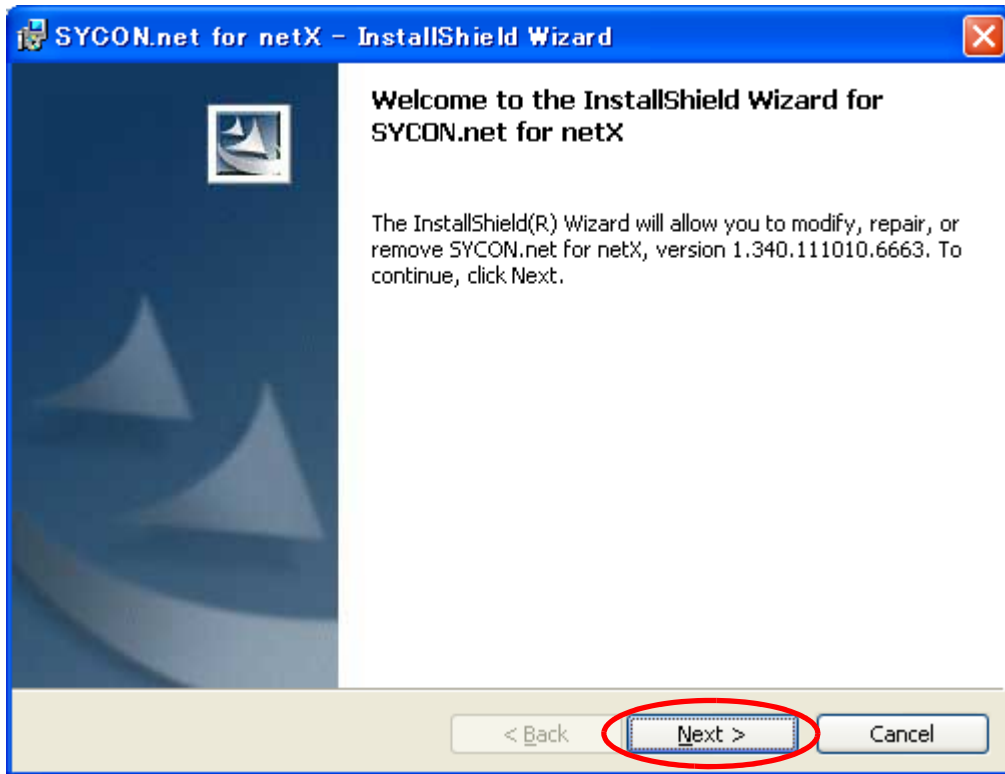
2. Select either **English** or **German** as the language.



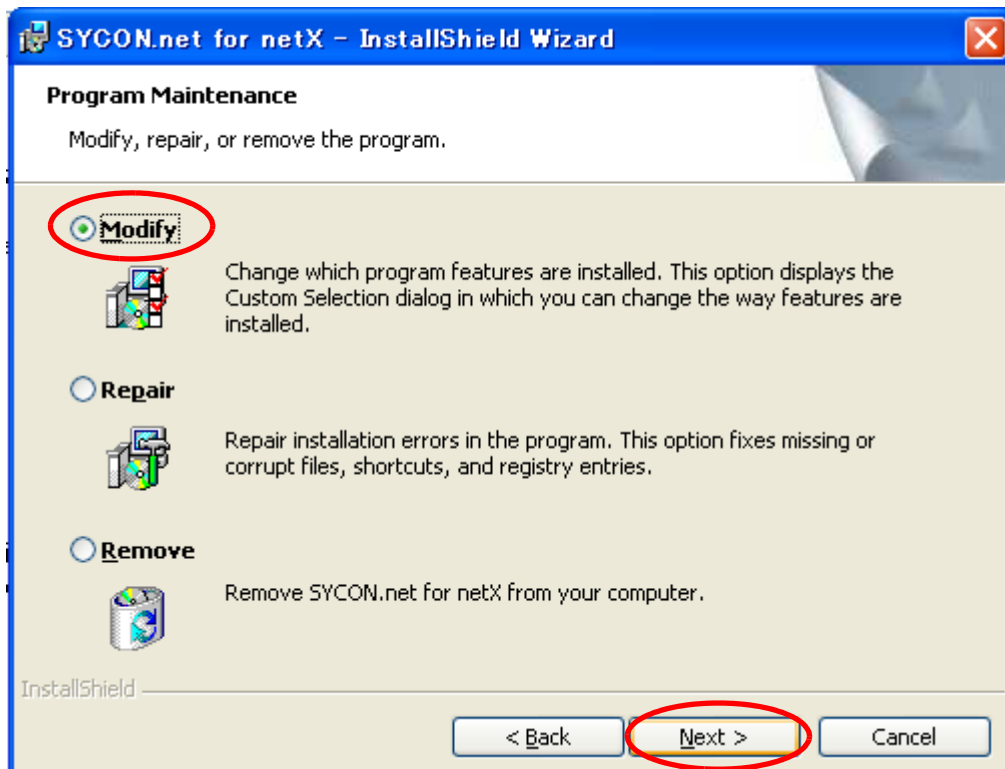
3. Click the **OK** Button.

The Install Shield Wizard will be displayed.

4. Click the **Next** Button.

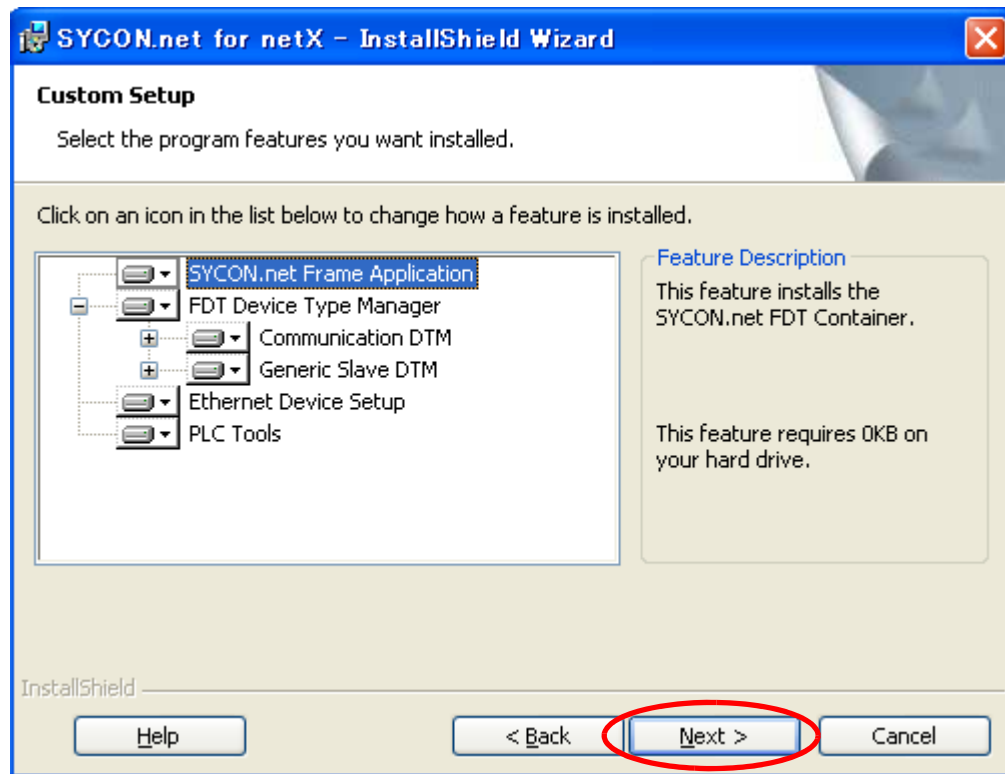


5. Click the **Modify** Button.

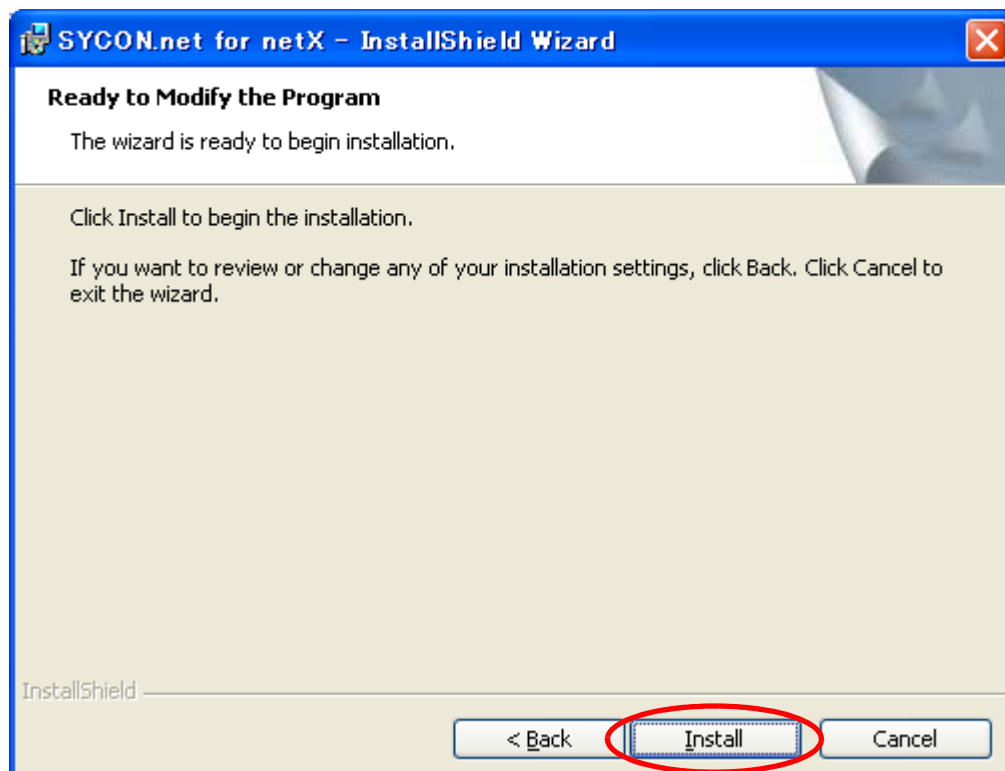


6. Click the **Next** Button.

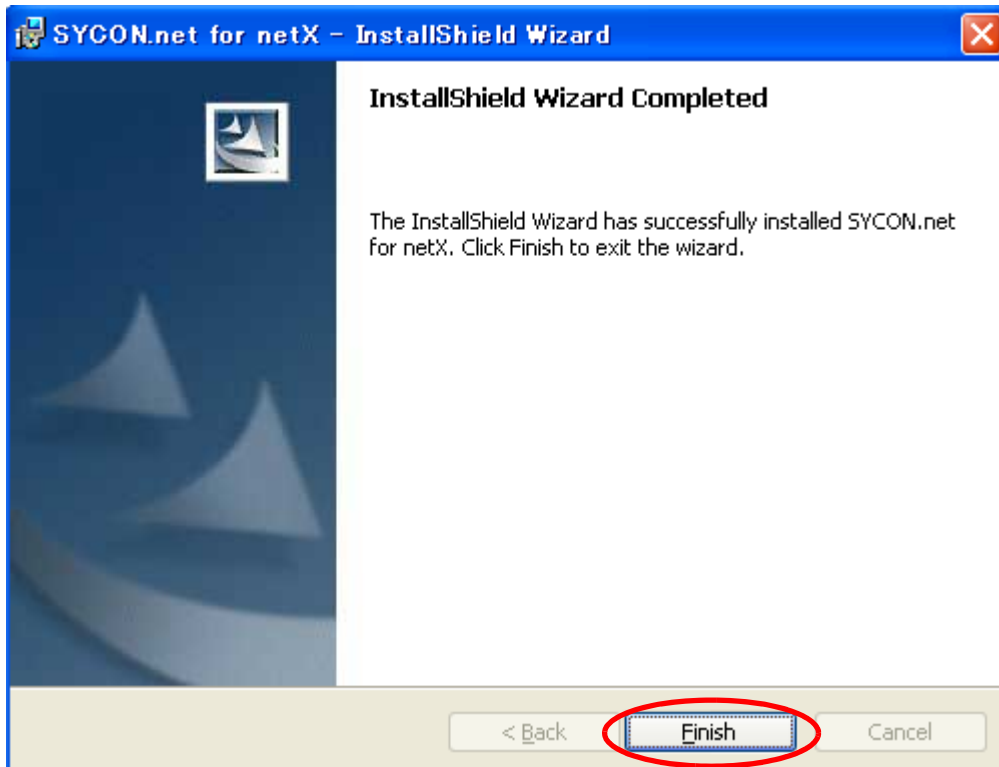
7. Click the **Next** Button.



8. Click the **Install** Button.



9. Click the **Finish** Button.



This concludes the installation of SYCON.net.

3.2.2 Installing the 266IF Loader

Save the 266IF Loader to your desktop from the MPE720 installation disk or by downloading the 266IF loader.exe file from the Support Tools on Yaskawa's Products and Technical Information Website (URL: <http://www.e-mechatronics.com/en/>).

3.2.3 Installing the MPE720

Refer to one of the following manuals for the procedure to install the MPE720.

- *Engineering Tool for MP2000 Series Machine Controllers MPE720 Version 6 User's Manual* (Manual No.: SIEP C880700 30)
- *Machine Controllers MP2000/MP3000 Series Engineering Tool MPE720 Version 7 User's Manual* (Manual No.: SIEP C880761 03)

3.3 Mounting and Removing a Module on the Machine Controller

This section describes how to mount and remove the 266IF-01 Module. The figures and illustrations that are used in this section may vary from the actual product.

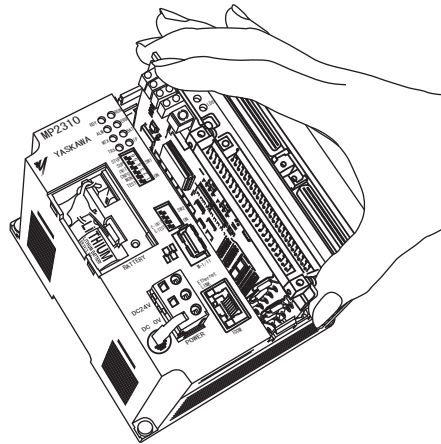
3.3.1 Mounting

Use the following procedure to mount the 266IF-01 Module.

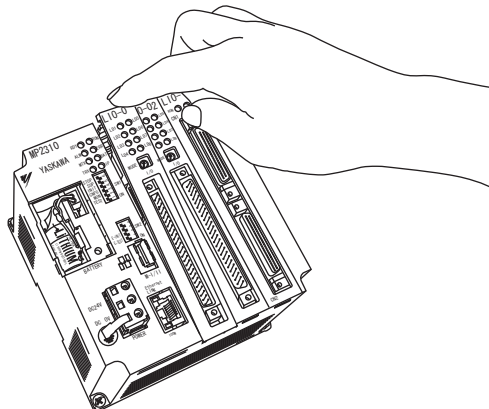
1. Hold onto the top and bottom of the 266IF-01 Module, align the 266IF-01 Module with the left side of the guide rail inside the option slot, and insert the 266IF-01 Module straight in.

CAUTION

- If the 266IF-01 Module is not inserted on the guide rail, the FG bar on the bottom of the slot may be damaged.



2. After inserting the 266IF-01 Module all the way to the back, press the 266IF-01 Module firmly until it connects securely to the Mounting Base connectors. If the 266IF-01 Module is connected securely, the front of the 266IF-01 Module should approximately align with the hooks.
3. Insert the hole on the bottom of the 266IF-01 Module panel into the bottom hook and then securely attach the hole to the top hook.



This concludes the mounting procedure.

IMPORTANT

Always attach an Option Cover (JEPMC-OP2300) to any unused slot.

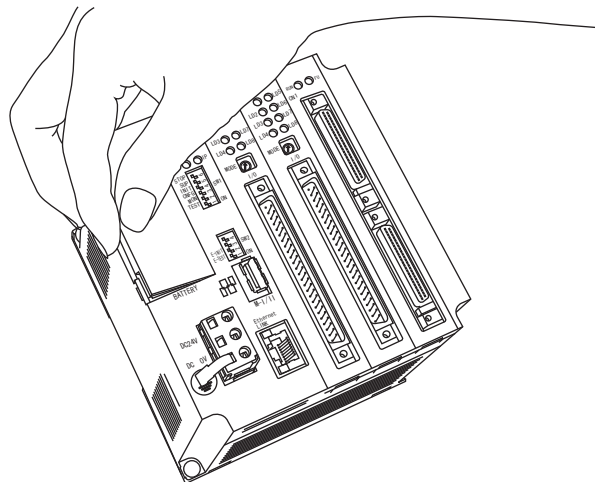
3.3.2 Removing

Use the following procedure to replace or add a 266IF-01 Module.

IMPORTANT

Always create a backup before replacing or adding a 266IF-01 Module. Back up the program from the MP2000-series Controller to the computer using the MPE720.

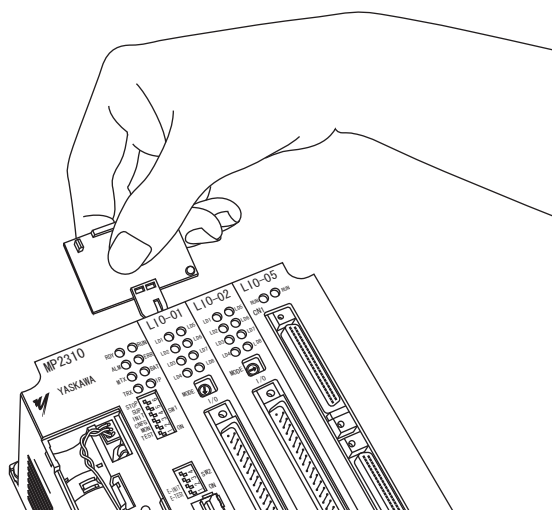
1. Turn OFF the power supply and disconnect all cables from the MP2000-series Machine Controller.
2. Pull the notch on the side toward you to remove the battery cover.



3. Insert the protruding part of the battery cover into the slot on top of the 266IF-01 Module panel to unhook the tab. Face the front of the battery cover toward you for this operation.

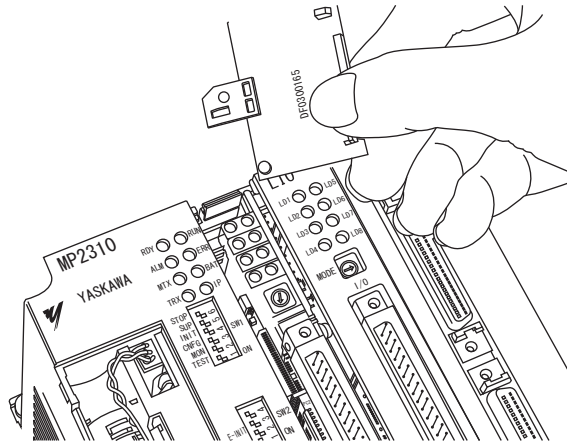


Use the same method to remove the Option Cover from an unused slot before adding an Optional Module.

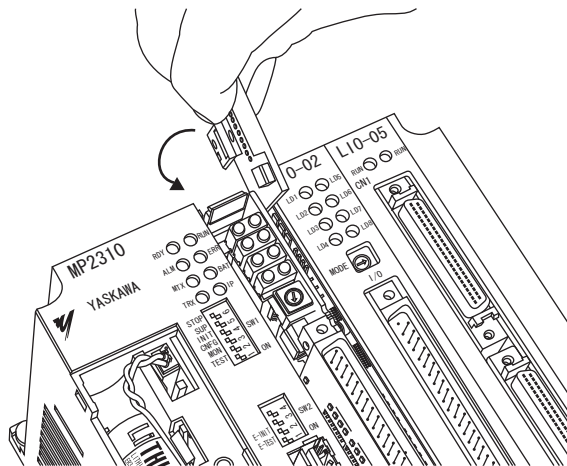


Unhook the bottom tab in the same way.

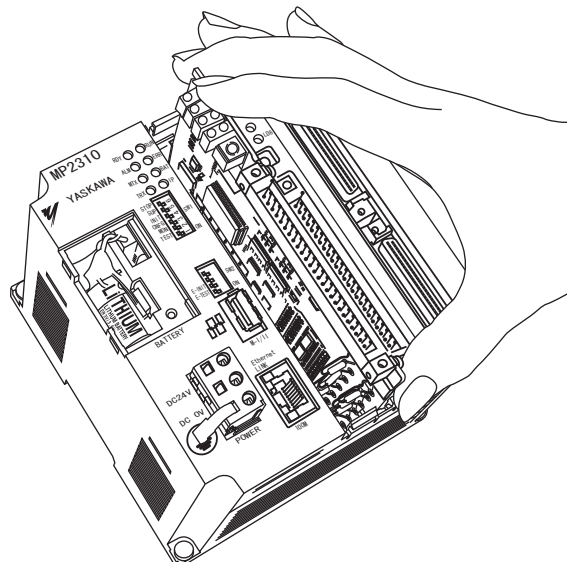
4. Pull out on the top of the 266IF-01 Module panel and remove it. A notch can be seen in the 266IF-01 Module from the gap. Insert the round projection on the battery cover into the gap so that it is inserted in the notch in the 266IF-01 Module.



5. Hold the center of the battery cover and use it to gently pull back on the 266IF-01 Module, rotating it indicated by the arrows, to disconnect the 266IF-01 Module from the Mounting Base. The 266IF-01 Module will move towards you.



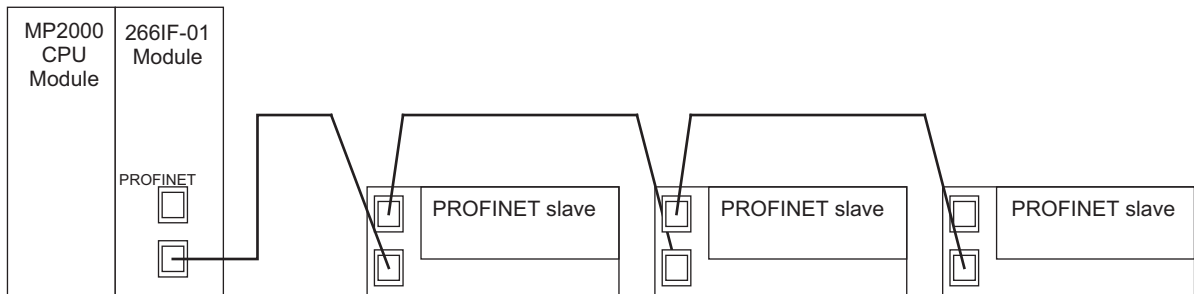
6. Hold onto the top and bottom of the 266IF-01 Module with your fingers and pull the 266IF-01 Module straight out. Be sure to hold onto the edges of the 266IF-01 Module. Do not touch the components mounted to the 266IF-01 Module.



- Place the 266IF-01 Module that you removed into the bag that it was delivered in and store it.

3.4 Connecting PROFINET Communications

The following diagram shows an example of PROFINET communications connections.



1. Connect the 266IF-01 Module to the first PROFINET slave with Ethernet cable.
2. Connect the PROFINET slaves to each other with Ethernet cable.



- You can use either a straight or cross cable for the Ethernet cable that connects to the 266IF-01 Module to the first PROFINET slave.
 - Refer to the manuals for the slaves for the specifications of the Ethernet cables that connect the PROFINET slaves to each other.
-

3.5 Self Configuration of the Machine Controller

You can use self configuration of the MP2000-series Machine Controller to automatically recognize all the Optional Modules that are installed in the Machine Controller and create the module configuration definition files based on that information. Self configuration greatly reduces the steps that are required to set up the system. There are two ways to perform self configuration.

- Self configuration using the DIP switch on the MP2000-series Machine Controller
- Self configuration using the MPE720

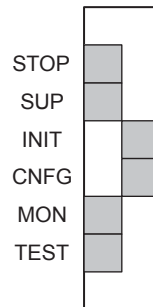
IMPORTANT

Always save the data to flash memory after you perform self configuration.

3.5.1 Self Configuration Using the DIP Switch

Use the following procedure to execute the self configuration using the DIP switch on the MP2000-series Machine Controller.

1. Confirm that the power supply to the MP2000-series Machine Controller is turned OFF and that any peripheral devices are turned ON.
2. Turn ON only the INIT and CNFG pins on the DIP switch (SW1) on the MP2000-series Machine Controller.



1. INIT Pin

If the power supply to the Machine Controller is turned ON while the INIT pin is ON, all of the following data will be deleted from the Machine Controller.

- Definition files
- User programs
- Registers

2. CNFG Pin

If the power supply to the Machine Controller is turned ON while the CNFG pin is ON, self configuration will begin and the following data will be treated as follows:

- Definition files: Created again or updated.
- User programs: Not affected by ON/OFF state of CNFG pin.
- Registers: Not affected by ON/OFF state of CNFG pin.

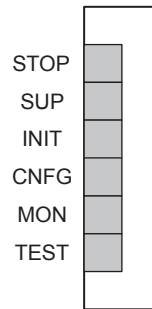
3. Turn ON the power supply to the MP2000-series Machine Controller.

Self configuration will be executed.

4. Confirm that the indicators on the MP2000-series Machine Controller change in the following way:

- RDY: Goes out, and then lights.
- RUN: Goes out, flashes, and then lights.

5. Turn OFF the INIT and CNFG pins on the DIP switch (SW1) on the MP2000-series Machine Controller.



This concludes the settings.

IMPORTANT

1. INIT Pin on the DIP Switch and RAM Data

If the power supply is turned OFF and ON again when the INIT pin on the SW1 DIP switch on the Machine Controller is ON, the data in RAM will be cleared. If the power supply is turned OFF and ON again when the INIT pin is OFF, the data from the flash memory will be loaded and will overwrite the RAM data.

Therefore, if the power supply must be turned OFF while writing or editing a program, make sure you save the data to the Machine Controller's flash memory to protect the RAM data.

2. Power Interruption after Self Configuration

After performing self configuration, turn OFF the power supply to the Machine Controller only after the definition data has been saved to flash memory. If by chance, the power supply is turned OFF before the data is saved, perform self configuration again. Refer to 3.9.5 *Saving to Flash Memory* for how to save to flash memory.

3.5.2 Self Configuration Using the MPE720

Refer to one of the following manuals for information on performing self configuration with the MPE720.

- *Engineering Tool for MP2000 Series Machine Controllers MPE720 Version 6 User's Manual*
(Manual No.: SIEP C880700 30)
- *Machine Controllers MP2000/MP3000 Series Engineering Tool MPE720 Version 7 User's Manual*
(Manual No.: SIEP C880761 03)



You must set up the communications process on the computer to connect the MPE720 to an MP2000-series Machine Controller. Refer to 3.8 *Setting Up the Communications Process* for the procedure to set the communications process.

3.6 Starting SYCON.net and Creating the Configuration Files

Use the following procedure to use the SYCON.net to create the configuration files for the 266IF-01 Module.

3.6.1 Creating the Address Table File (.csv)

You use the SYCON.net to create an Address Table File of the 266IF-01 Module and slave stations on the PROFINET network. For details on the SYCON.net, refer to the SYCON.net manual.

(1) Preparing the GSD File

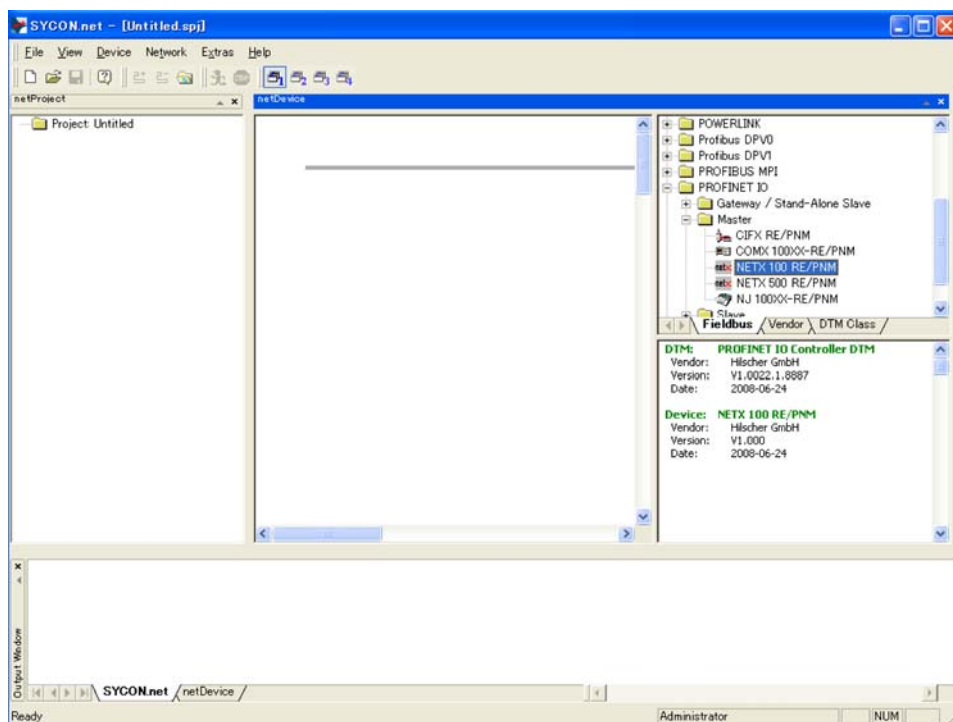
Download the GSD (General Station Description) files for the 266IF-01 Module and slave stations on the PROFINET network from the website of PROFIBUS & PROFINET International.

(2) Importing GSD Files

This section gives the procedure to import GSD files.

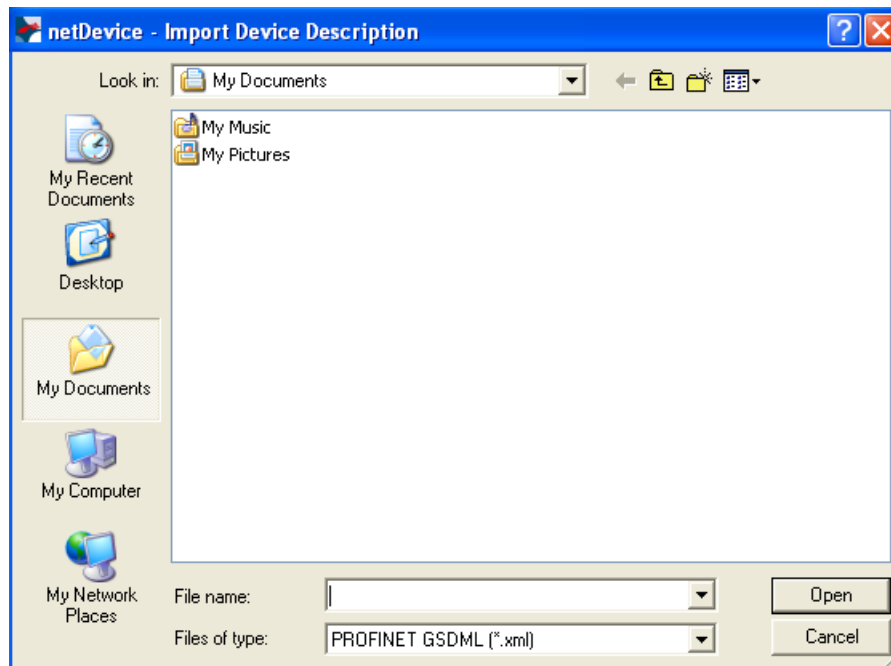
1. Select **Programs – SYCON.net System Configurator – SYCON.net** from the Windows Start Menu.

The **SYCON.net** Window will be displayed.



2. Select **Import Device Descriptions** from the Network Menu.

The **Import Device Description** Dialog Box will be displayed.

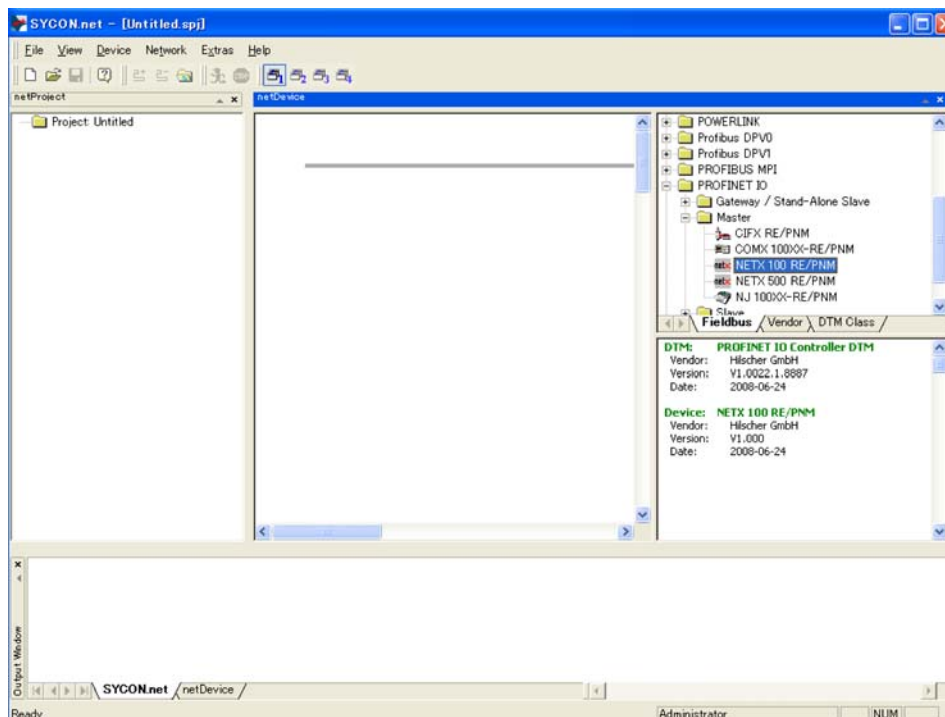


3. Select the files to import and click the **Open** Button.

This concludes importing the GSD files.

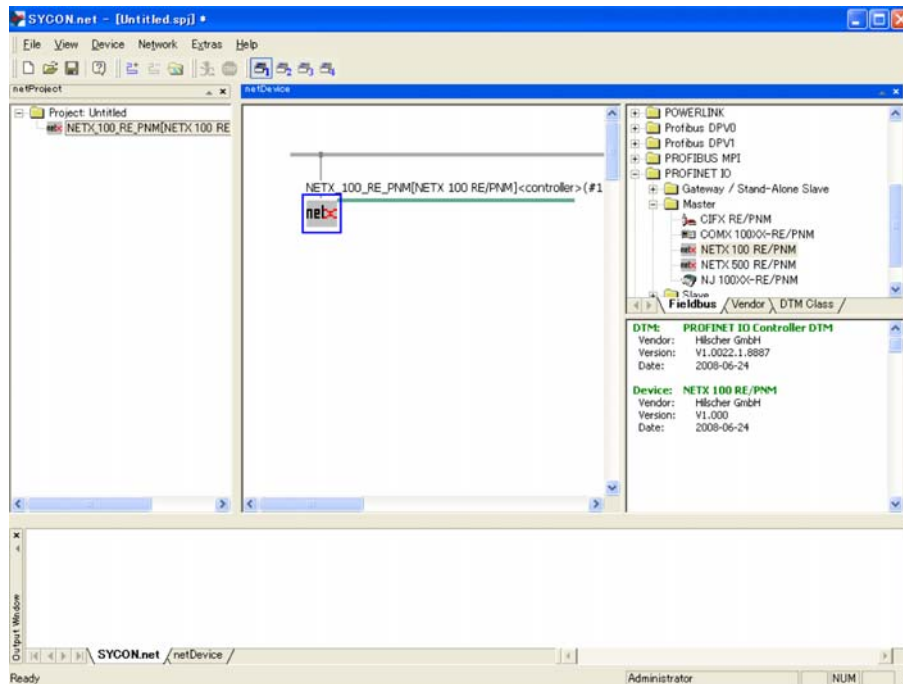
(3) Selecting the Device for the 266IF-01 Module.

Select **PROFINET IO – Master – NETX 100 RE/PNM** from the **netDevice** Pane in the **SYCON.net** Window.



(4) Positioning the 266IF-01 Module

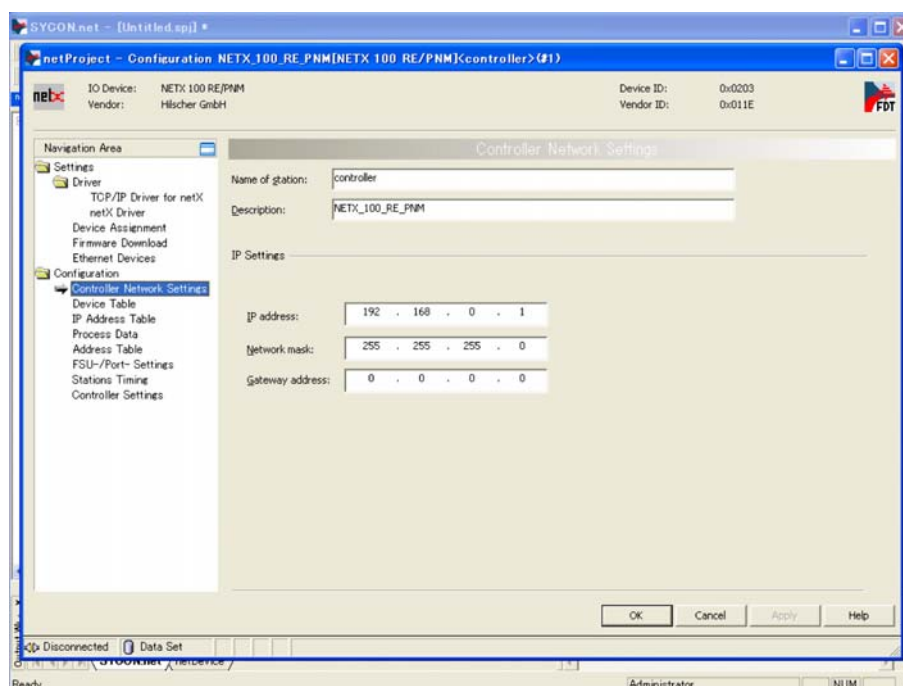
Drag the **NETX 100 RE/PNM** Icon to the center of the pane.



(5) Setting the Name of the 266IF-01 Module

Use the following procedure to set the name of the 266IF-01 Module.

1. Double-click the icon for the 266IF-01 Module in the **SYCON.net** Window.
The **Configuration** Window will be displayed.
2. Select **Controller Network Settings** in the **Navigation Area** of the **Configuration** Window.
The **Controller Network Settings** View will be displayed.



3. Enter the name of the 266IF-01 Module in the **Names of station** Box.

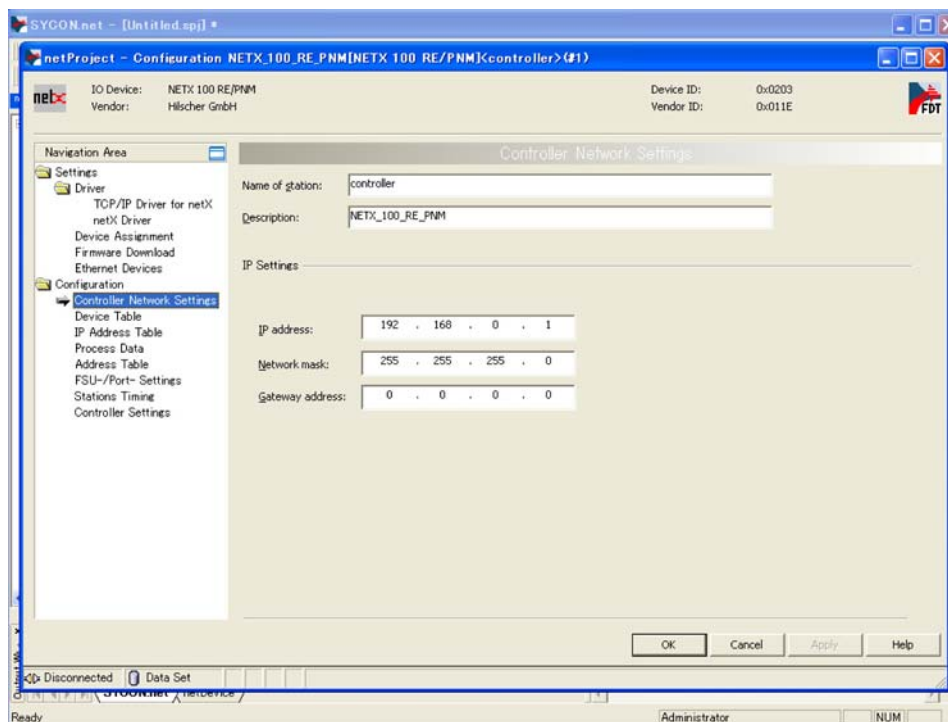
4. Click the **OK** Button.

This concludes setting the name of the 266IF-01 Module.

(6) Setting the IP Address of the 266IF-01 Module

Use the following procedure to set the IP address of the 266IF-01 Module.

- 1.** Double-click the icon for the 266IF-01 Module in the **SYCON.net** Window.
The **Configuration** Window will be displayed.
- 2.** Select **Controller Network Settings** in the **Navigation Area** of the **Configuration** Window.
The **Controller Network Settings** View will be displayed.

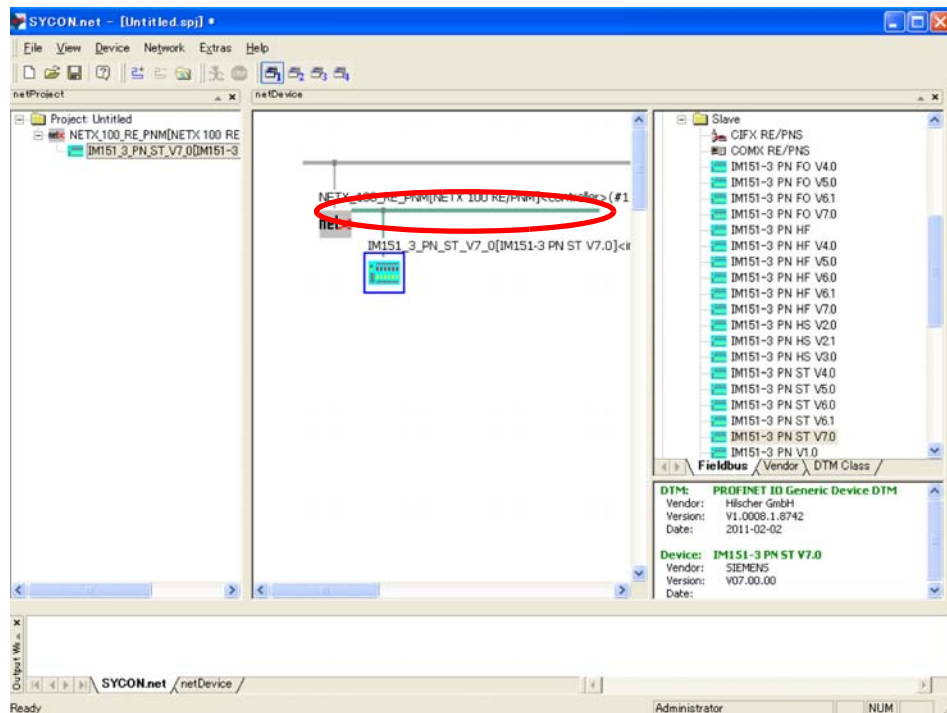


- 3.** Enter the IP address of the 266IF-01 Module in the **IP address** Box.
 - Do not set the same IP address more than once within the same network.
- 4.** Click the **OK** Button.

This concludes setting the IP address of the 266IF-01 Module.

(7) Positioning the PROFINET Slaves

Drag the required slaves from under **PROFINET IO – Slave** in the **netDevice** Area of the **SYCON.net** Window and position them in the center pane. The icon for a slave will be displayed when you drag the slave to the green line.



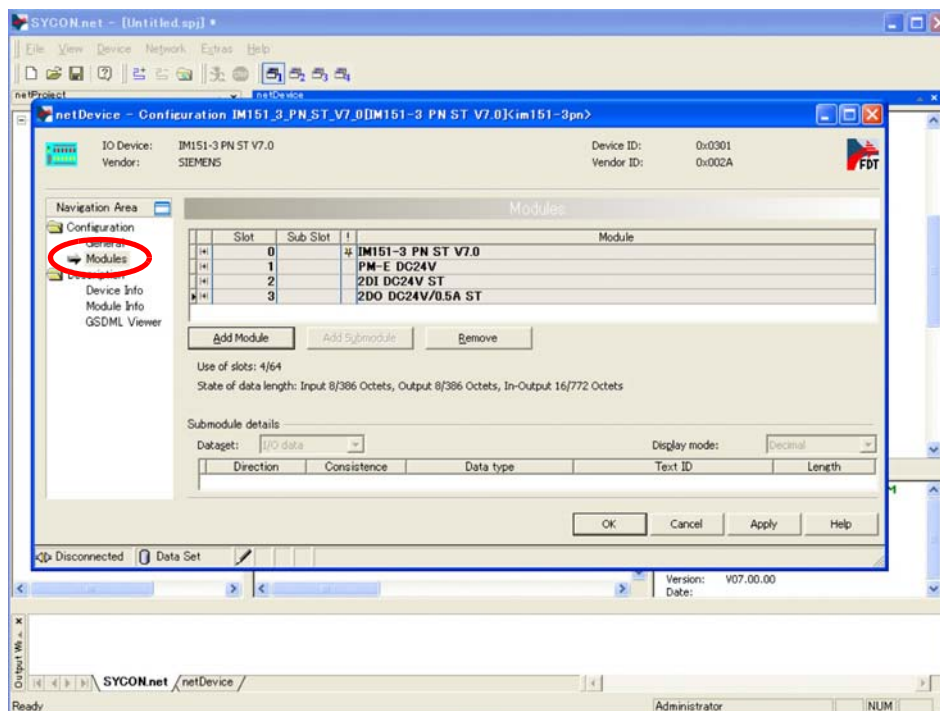
(8) Module Settings for Slave Devices

Use the following procedure to set the Module names of the slave devices.

1. Double-click the icon for a slave in the **SYCON.net** Window.
The **Configuration** Window for the slave will be displayed.
2. Select **Modules** in the **Navigation Area** of the **Configuration** Window.
The **Modules** View will be displayed.



This view is used to set the slot configuration for modular remote I/O, such as the Siemens ET 200S.



3. Sets the slot configuration.

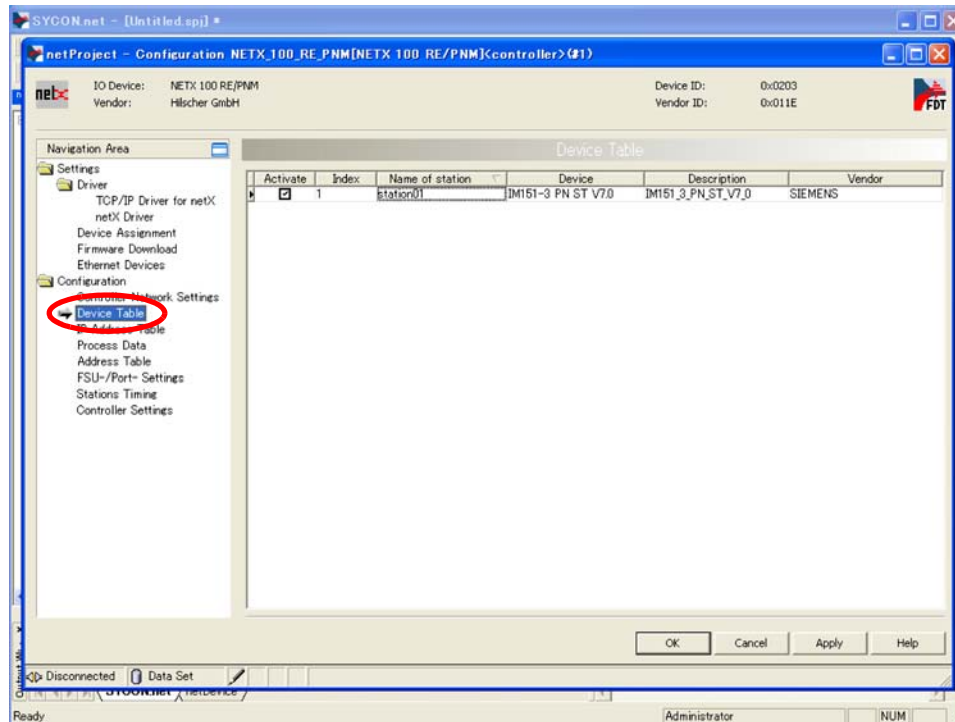
4. Click the **OK** Button.

This concludes the Module settings for the slave devices.

(9) Setting the Names of the Slave Stations

Use the following procedure to set the names of the slave stations.

1. Double-click the icon for the 266IF-01 Module in the **SYCON.net** Window.
The **Configuration** Window will be displayed.
2. Select **Device Table** in the **Navigation Area** of the **Configuration** Window.
The **Device Table** View will be displayed.



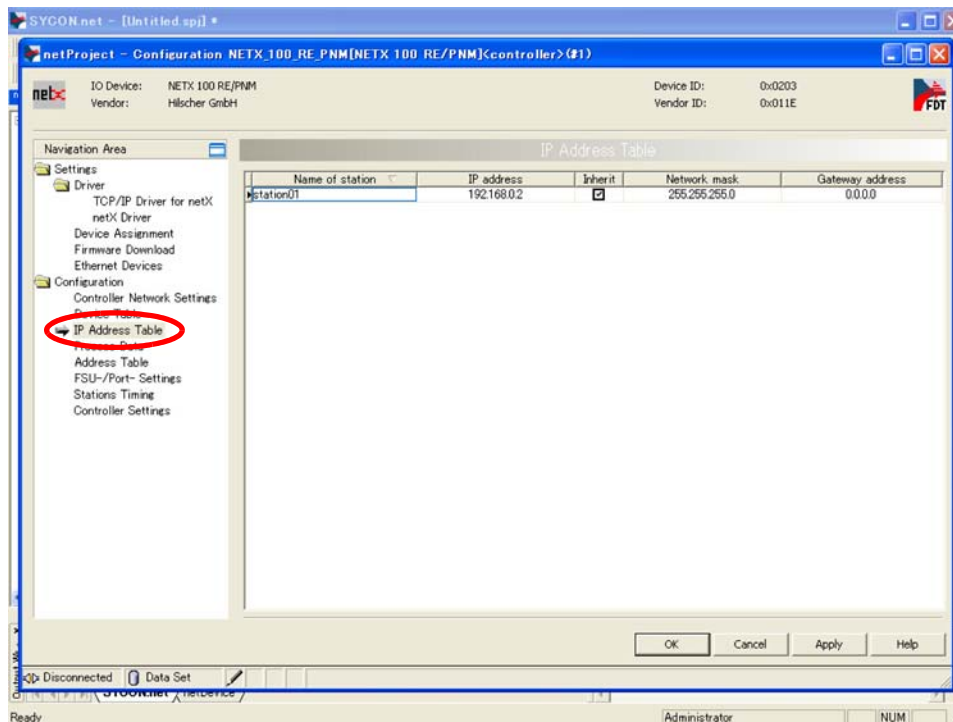
3. Set the name of the slave station.
 - ♦ Use the same name for both the slave and the slave station. Communications may not be possible if a different name is used.
4. Set a slave station name for each slave that is assigned.
 - ♦ Leave the **Activate** Check Box in a selected state.
 - ♦ The index settings must be in ascending order. (The index settings are normally made automatically in ascending order. There is no need to change them. However, they may change when slave stations are added or deleted. If the index settings become out of order, change them so that they are in ascending order.)
5. Click the **OK** Button.

This concludes setting the names of the slave stations.

(10) Setting the IP Addresses of the Slave Stations

Use the following procedure to set the IP addresses of the slave stations.

- 1.** Double-click the icon for the 266IF-01 Module in the **SYCON.net** Window.
The **Configuration** Window will be displayed.
- 2.** Select **IP Address Table** in the **Navigation Area** of the **Configuration** Window.
The **IP Address Table** View will be displayed.



- 3.** Set the IP address of the slave station.
 - Do not set the same IP address more than once, including the IP address of the 266IF-01 Module.
- 4.** Click the **OK** Button.

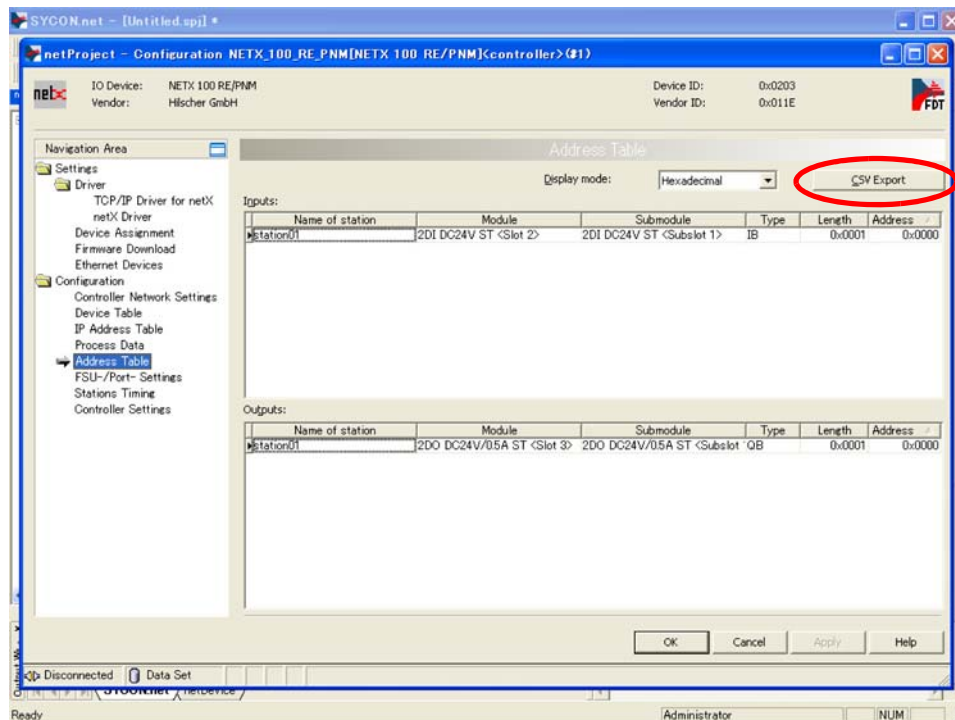
This concludes setting the IP addresses of the slave stations.

If there is more than one slave, repeat steps (7) to (10) for each of the other slaves.

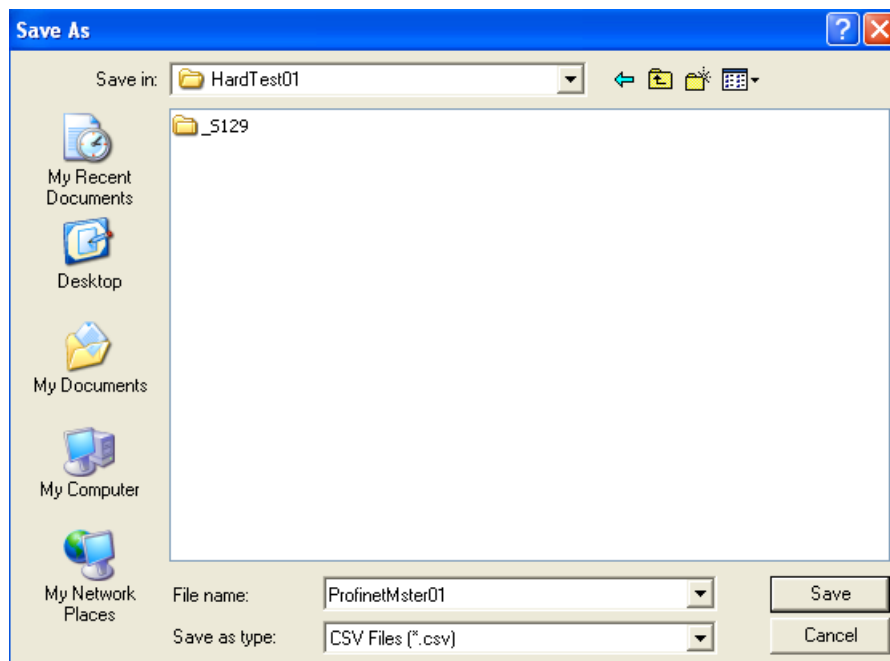
(11) Creating the Address Table File (.csv)

Use the following procedure to create the address table file (.csv).

1. Double-click the icon for the 266IF-01 Module in the **SYCON.net** Window.
The **Configuration** Window will be displayed.
2. Select **Address Table** in the **Navigation Area** of the **Configuration** Window.
The **Address Table** View will be displayed.
3. Click the **CSV Export** Button.



The **Save As** Dialog Box will be displayed.



4. Enter the file name.
5. Click the **Save** Button.

This concludes creating the address table file (.csv).

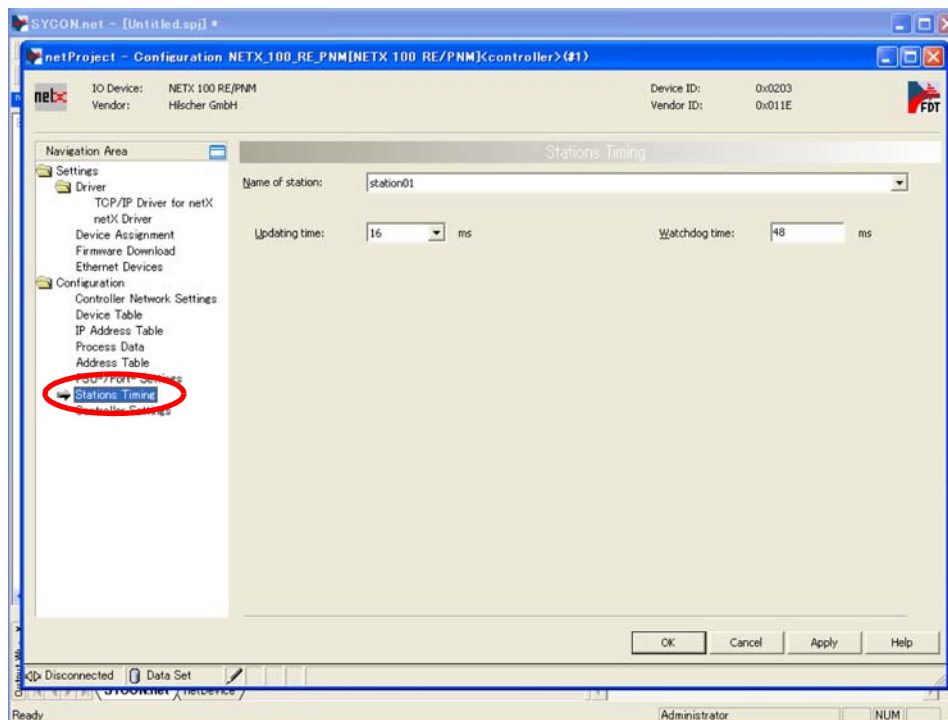
3.6.2 Creating the Configuration Data File (.nxd) and Configuration ID File (_nwid.nxd)

You use the SYCON.net to create a configuration data file (.nxd) and configuration ID file (_nwid.nxd) of the 266IF-01 Module and slave stations on the PROFINET network.

(1) Setting the Communications Cycles

Use the following procedure to set the communications cycles for communications between the 266IF-01 Module and the slave stations.

1. Double-click the icon for the 266IF-01 Module in the **SYCON.net** Window.
The **Configuration** Window will be displayed.
2. Select **Station Timing** in the **Navigation** Area of the **Configuration** Window.
The **Station Timing** View will be displayed.



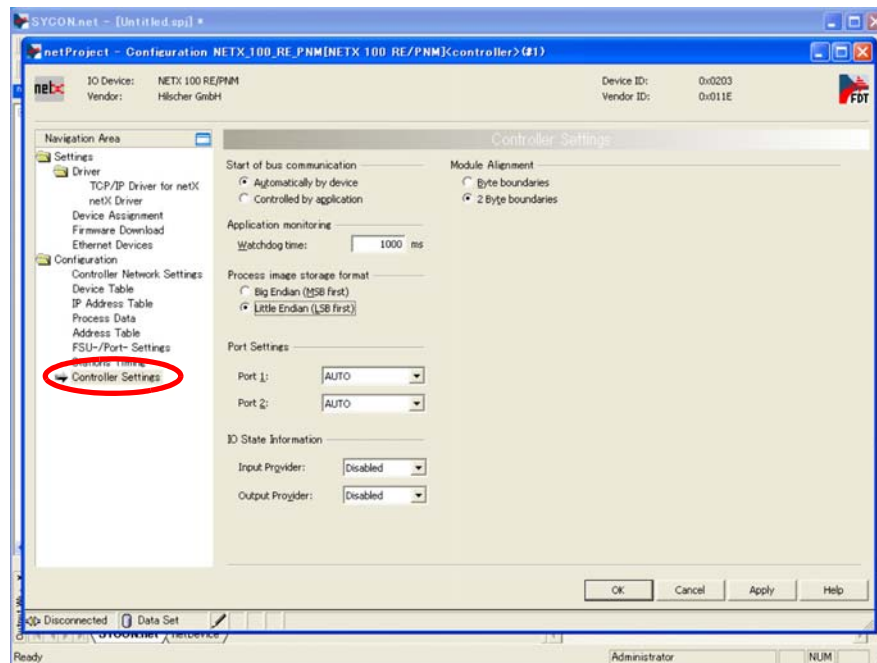
3. Select the name of the slave station for which to set the communications cycle in the **Name of station** Box.
4. Set the communications cycle for the selected slave station in the **Updating time** Box.
5. To set the communications cycle for more than one slave stations, select each slave station in the **Name of station** Box and set the communications cycle in the **Updating time** Box.
 - The **Updating time** Box sets the communications cycle for communications between the 266IF-01 Module and the slave stations. The watchdog time will change when the setting in the **Updating time** Box is changed. You can change the watchdog time setting as required, but we recommend that you use the default value for the setting in the **Updating time** Box.
6. Click the **OK** Button.

This concludes setting the communications cycles.

(2) Other Settings

Use the following procedure to set other parameters for PROFINET communications.

1. Double-click the icon for the 266IF-01 Module in the **SYCON.net** Window.
The **Configuration** Window will be displayed.
2. Select **Controller Settings** in the **Navigation Area** of the **Configuration** Window.
The **Controller Settings** View will be displayed.



3. Use the above settings. Unless otherwise specified, do not change the default settings.

IMPORTANT

PROFINET communications may not be possible if any of the above settings is changed.

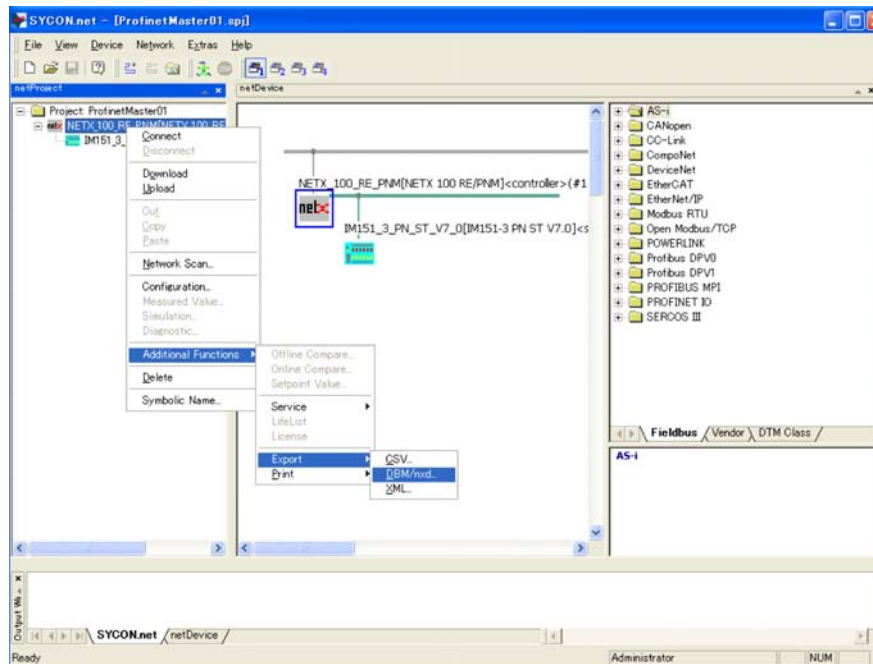
4. Click the **OK** Button.

This concludes setting the other parameters.

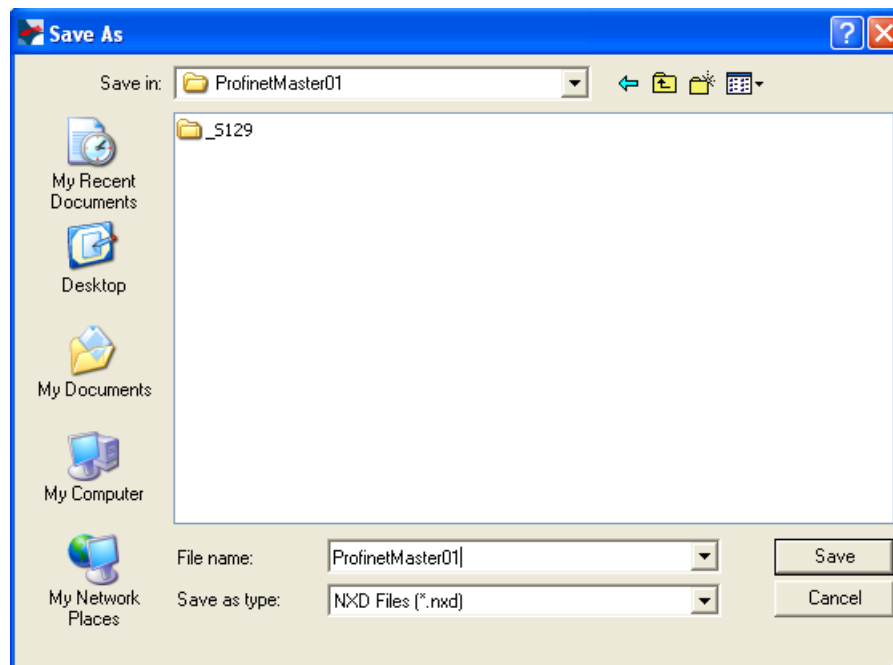
(3) Creating the Configuration Data File (.nxd) and Configuration ID File (_nwid.nxd)

Use the following procedure to create the configuration data file (.nxd) and configuration ID file (_nwid.nxd).

1. Select **NETX_100_RE_PNM** in the **netProject** Area of the **SYCON.net** Window.
2. Right-click and select **Additional Functions – Export – DBM/nxd ...**



The **Save As** Dialog Box will be displayed.



3. Enter the file name.
4. Click the **Save** Button.
 - Both the configuration data file and the configuration ID file will be created when you click the **Save** Button. This concludes creating the configuration data file and the configuration ID file.

3.7 Downloading the Configuration Data File (.nxd) and Configuration ID File (_nwid.nxd)

3.7.1 Setup

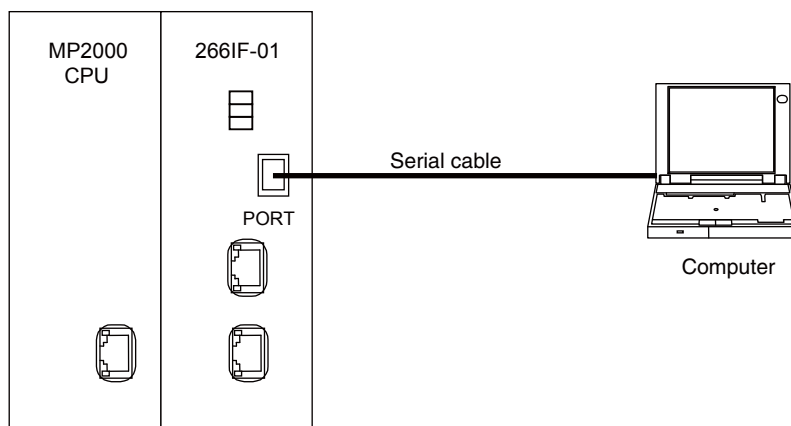
(1) Setting the CONF Pin on the 266IF-01 Module

Set the CONF pin on the 266IF-01 Module to ON to set the 266IF-01 Module to PROFINET Configuration File Write Mode.

(2) Connecting the Serial Cable

Connect the serial port on the 266IF-01 Module to the computer with a JEPMC-W2010-□□ Serial Cable.

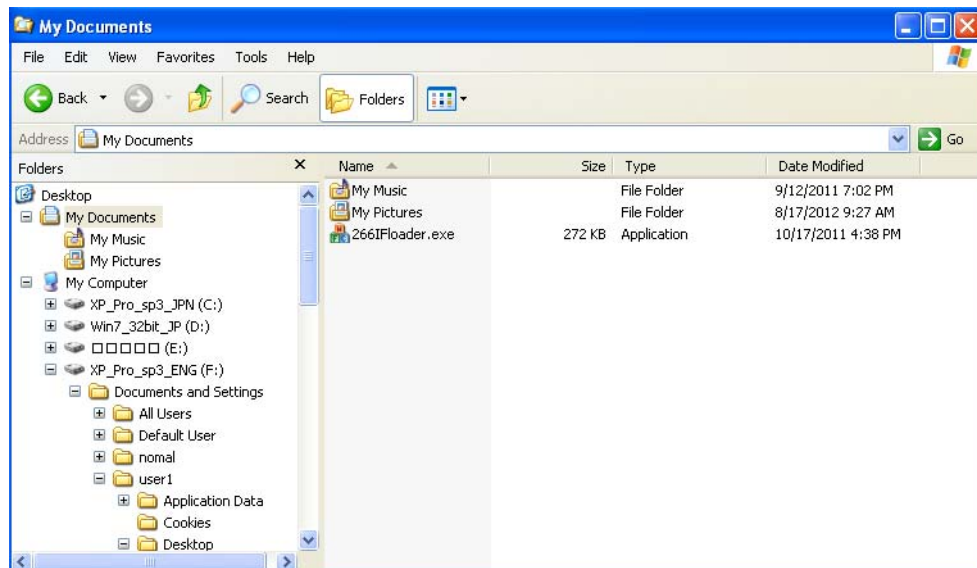
For information on the Serial Cable, refer to the *Machine Controller MP2000 Series* (Document No.: KAEP C880700 15)



3.7.2 Downloading the Configuration Data File (.nxd) and Configuration ID File (_nwid.nxd)

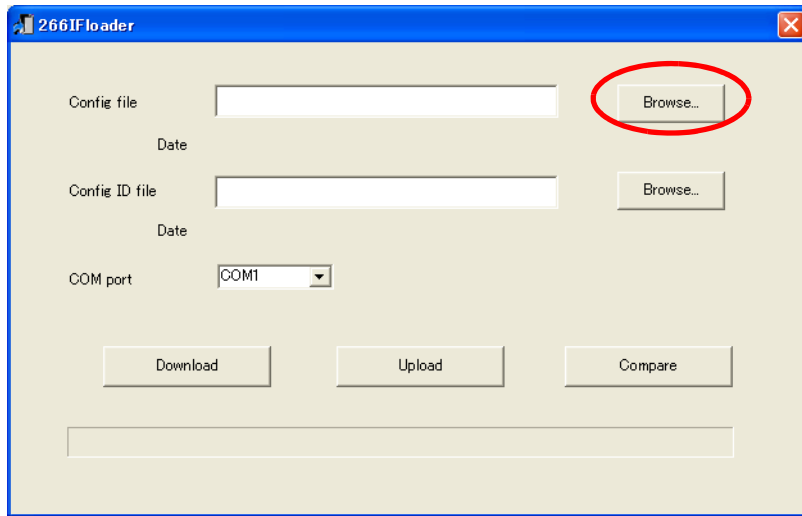
Use the following procedure to download the configuration data file (.nxd) and configuration ID file (_nwid.nxd).

1. Double-click the 266IF loader.exe file that you downloaded in 3.2.2 *Installing the 266IF Loader*.



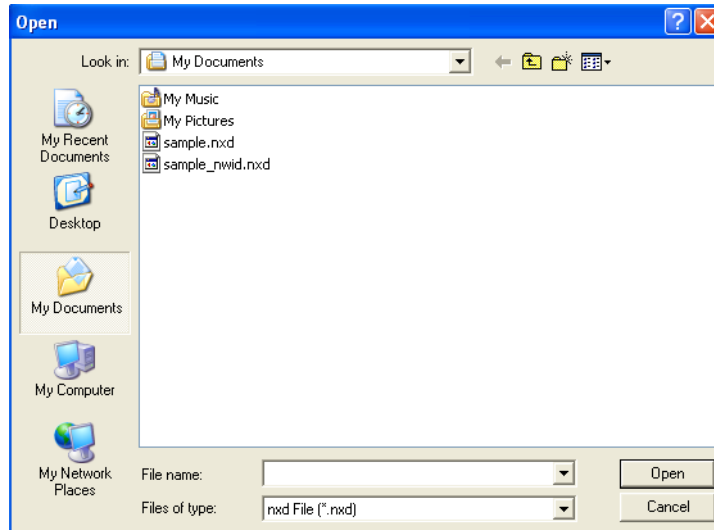
The **266IFloader** Dialog Box will be displayed.

2. Click the **Details** Button by the **Config file** Box.

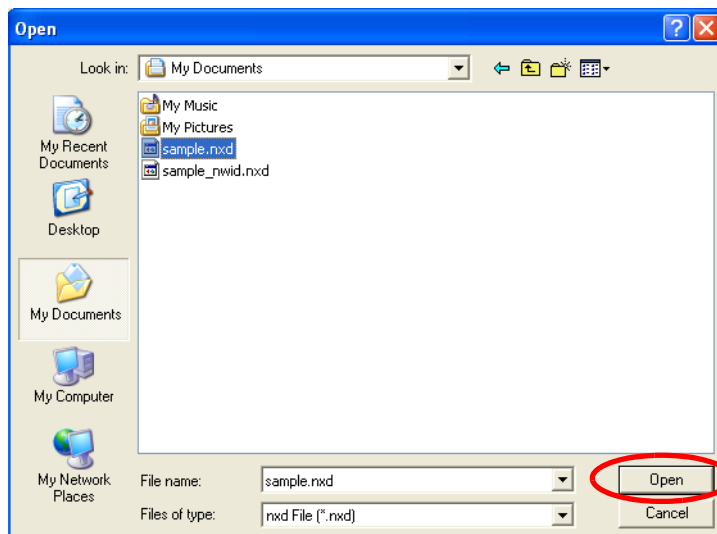


The **Open** Dialog Box will be displayed.

3. Select the configuration data file (.nxd) to download to the 266IF-01 Module.

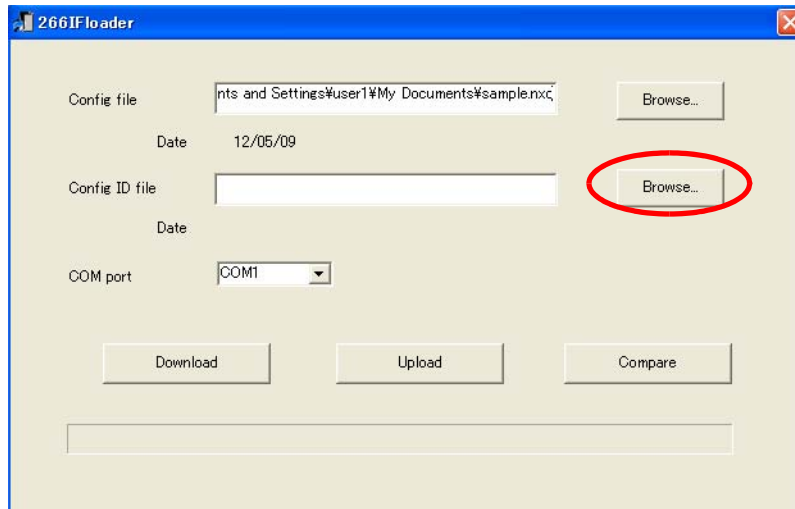


4. Click the **Open** Button.



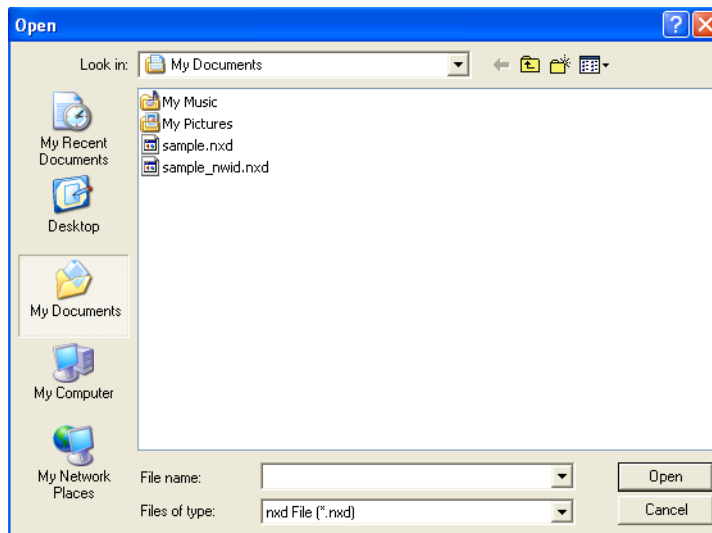
The **266IFloader** Dialog Box will be displayed again.

5. Click the **Details** Button by the **Config ID file** Box.

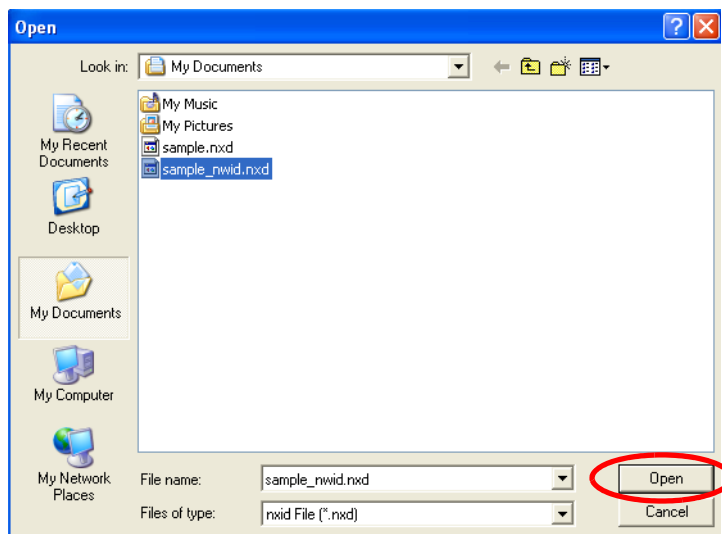


The **Open** Dialog Box will be displayed.


6. Select the configuration ID file (_nwid.nxd) to download to the 266IF-01 Module.

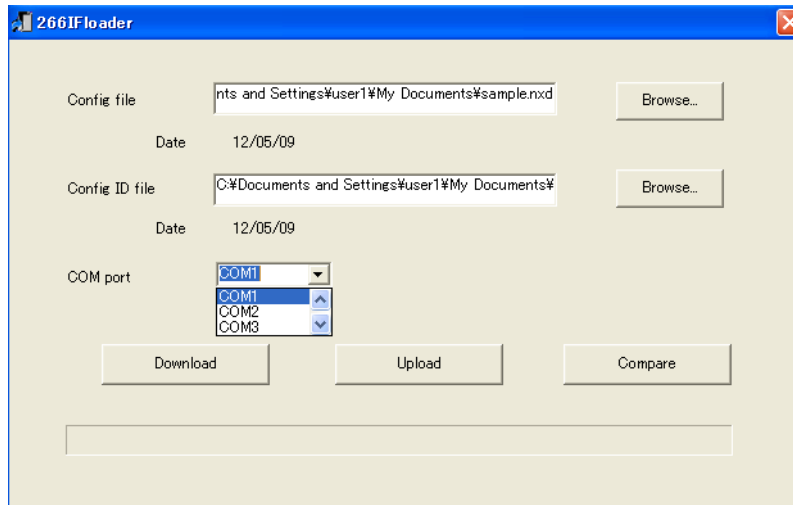


7. Click the **Open** Button.



The **266IFloader** Dialog Box will be displayed again.

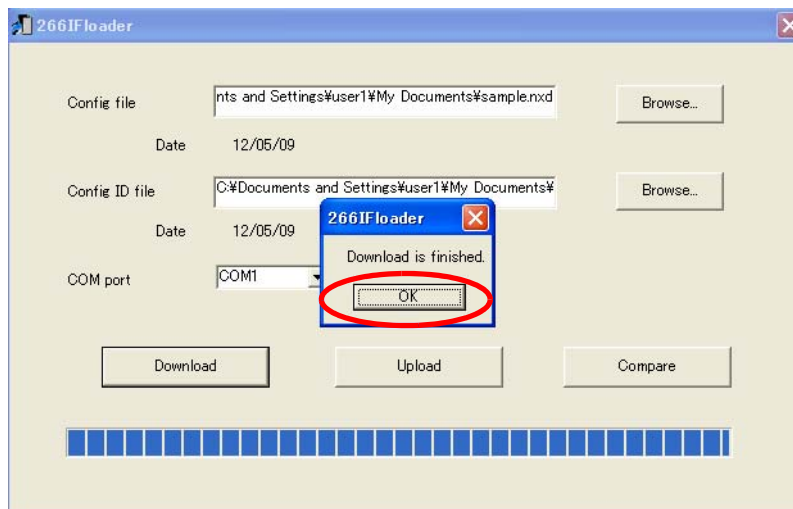
8. Click the down arrow () in the **COM port** Box and select the COM port that is connected to the MP2000.



9. Click the **Download** Button.

A confirmation dialog box will be displayed when the download has been completed.

10. Click the **OK** Button.



11. Turn OFF the CONF pin that you turned ON in 3.7.1 (1) *Setting the CONF Pin on the 266IF-01 Module*.

12. Disconnect the Serial Cable that you connected in 3.7.1 (2) *Connecting the Serial Cable*.

13. Attach the enclosed seal to the serial port on the 266IF-01 Module.

This concludes downloading the configuration data file (.nxd) and configuration ID file (_nwid.nxd).

IMPORTANT

- Do not turn OFF the power supply to the Machine Controller while the configuration data file and the configuration ID file are being downloaded.
- After the configuration data file and the configuration ID file are downloaded, attach the enclosed seal to the serial port to prevent dust from entering the serial port. Leave the seal attached during operation.

3.8 Setting Up the Communications Process

3.8.1 Setting Up Communications

(1) Overview of Communications Settings

Communications settings are used to set the communications port and the logical port that are required to connect the MPE720 to the Machine Controller. All the operations from the communications port setting to connection to the Machine Controller can be performed easily without worrying about the communications process.

The examples in the following sections assume that an Ethernet LP connection is used.

(2) Setting the Communications Port

This setting is necessary for engineering using an Ethernet connection via an Ethernet CP-218 communications port. There are three types of ports that you can use for Ethernet connections: the communications port on the 218IF-01 Module (10 MB Ethernet), the communications port on the 218IFA Module (100 MB Ethernet), and the communications port on the 218IF-02 Module (100 MB Ethernet).

The 218IFA Module is the 218 Module that is built into the Machine Controller.

For an Ethernet connection, the IP address of the computer and the MPE720 need to be set properly.

For IP address setting on the computer, refer to 3.8.1 (2) [a] *Setting the IP Address*.

For the MPE720 settings, refer to 3.8.1 (2) [b] *Setting the Ethernet LP Port*.

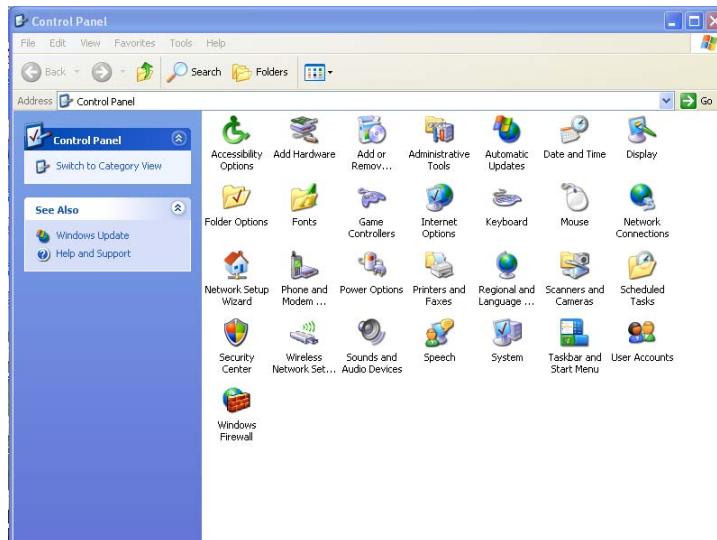
[a] Setting the IP Address

The IP address of the computer must be set before setting up the Ethernet connection. Use the following procedure to set the IP address.

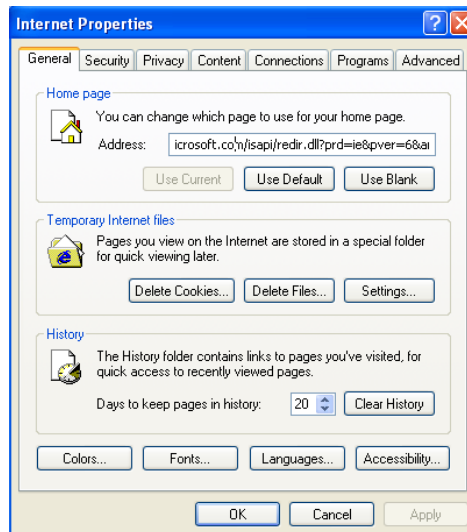
- Make the following settings with the LAN cable connected.

1. Select **Settings – Control Panel** from the Windows Start Menu.

The Control Panel will be displayed.



2. Double-click the **Internet Options** Icon.



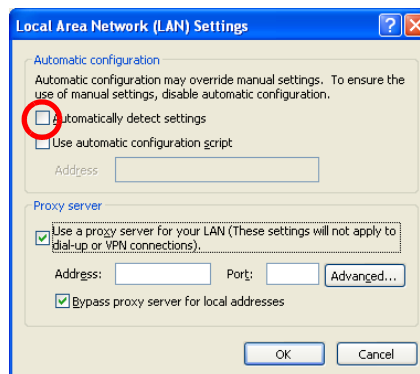
The **Internet Properties** Dialog Box will be displayed.

3. Click the **Connections** Tab to display the tab page, and then click the **LAN Settings** Button.



The **Local Area Network (LAN) Settings** Dialog Box will be displayed.

4. Make sure that the **Automatically detect settings** Check Box is cleared, and click the **OK** Button.



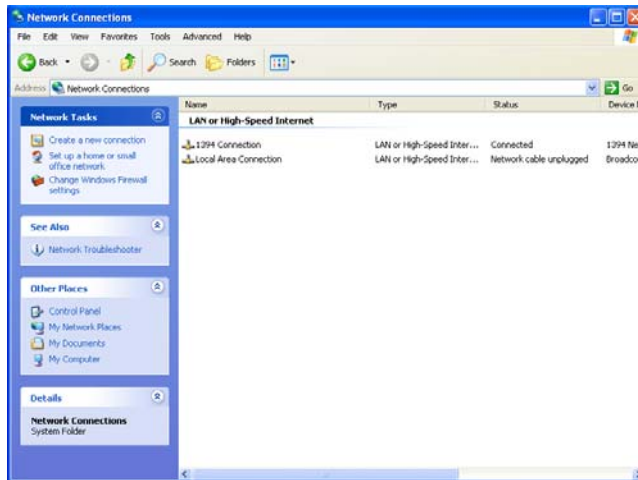
This takes you back to the **Internet Properties** Dialog Box.

5. Click the **OK** Button.

The **Internet Properties** Dialog Box will close.

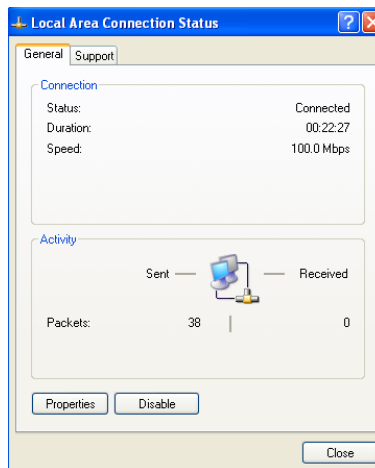
6. Select **Settings – Control Panel – Network Connections** from the Windows Start Menu.

The **Network Connections** Window will be displayed.



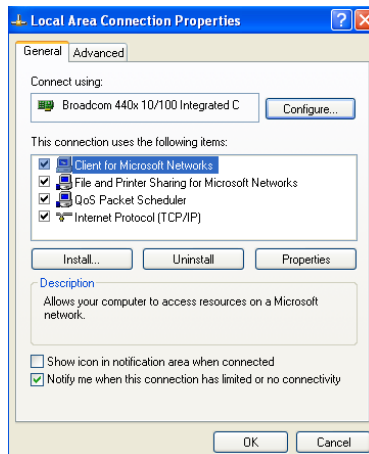
7. Double-click **Local Area Connection**.

The **Local Area Connection Status** Dialog Box will be displayed.

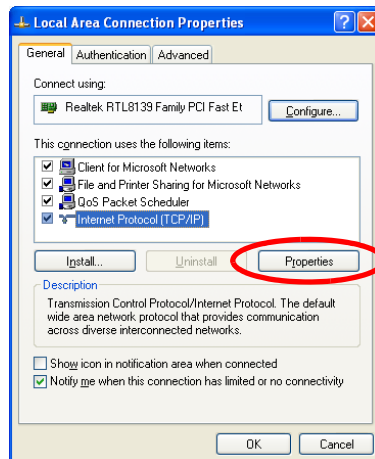


8. Click the **Properties** Button.

The **Local Area Connection Properties** Dialog Box will be displayed.

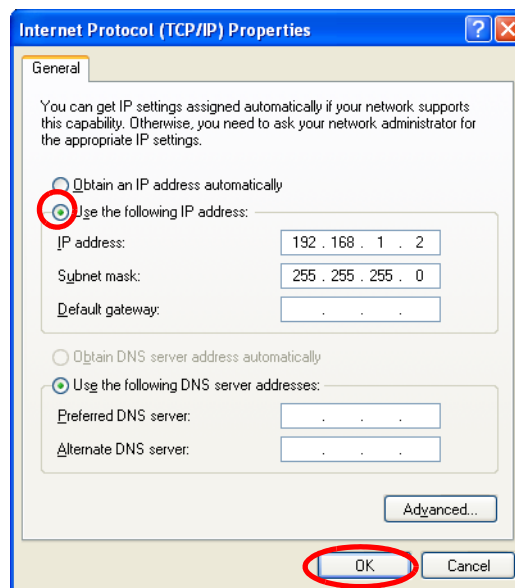


9. Select **Internet Protocol (TCP/IP)** and then click the **Properties** Button.



The **Internet Protocol (TCP/IP) Properties** Dialog Box will be displayed.

10. Select the **Use the following IP address** Check Box and enter the IP address.
For example, enter 192.168.1.2 in the **IP address** Box, and 255.255.255.0 in the **Subnet mask** Box.



11. Click the **OK** Button.

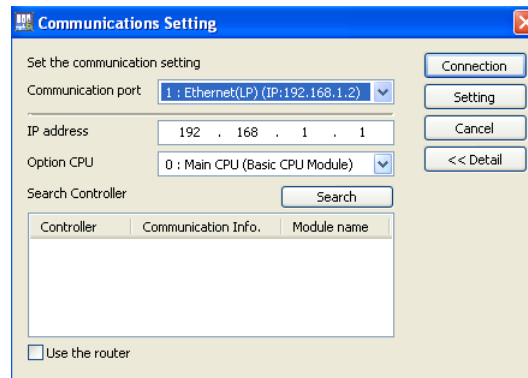
This concludes setting the IP address of the computer.

[b] Setting the Ethernet LP Port

Use the following procedure to connect the computer in which the MPE720 is installed to the Machine Controller through Ethernet.

1. Start the MPE720.
2. Select **Online – Communications Setting** from the Main Menu of the MPE720.

The **Communications Setting Dialog Box** will be displayed.



3. Select the communications port to use to connect to the Machine Controller.



1. If you select Ethernet LP in step 3 above, a Machine Controller search list will be displayed.
2. When you click the **Search** Button in step 3, a search is made for the Machine Controllers that are connected to the Ethernet LP network. The search results are displayed in a list.
3. When you select a Machine Controller from the search list, the IP address of the selected Machine Controller is automatically set in the **IP address** Box.
4. The **Connection** and **Setting** Buttons are disabled and the communications settings cannot be changed while the Machine Controller is connected.

4. Click the **Connection** Button.

The **Communications Setting** Dialog Box will close and the MPE720 will be connected to the Machine Controller.

This concludes the setup of the Ethernet LP port.



If a connection to the Machine Controller cannot be established, perform the following:

- Setting the Communications Port
 1. Open the **Communications Setting** Dialog Box and click the **Search** Button.
 2. The name and IP address of the Machine Controllers that can be connected are listed in the Machine Controller search list.
 3. Confirm that the IP address of the target Machine Controller displayed in step 2 is identical to the one set for the **IP address** Box, and then click the **Connection** Button.
- Setting the Ethernet Port

Make sure that the port settings of the computer made in 3.8.1 (2) [b] *Setting the Ethernet LP Port* are correct.

3.8.2 Setting the Communications Process

The Communication Manager (for the communications process) that is installed along with the MPE720 is used to set the communications port on the computer that will be used to connect to the Machine Controller. The examples in the following sections assume that an Ethernet LP connection is used.

(1) Setting the Communications Port

1. Select **Programs – YE_Applications – Communication Manager** from the Windows Start Menu.

The **Communication Manager** Icon will be displayed in the task tray at the right bottom of the window.

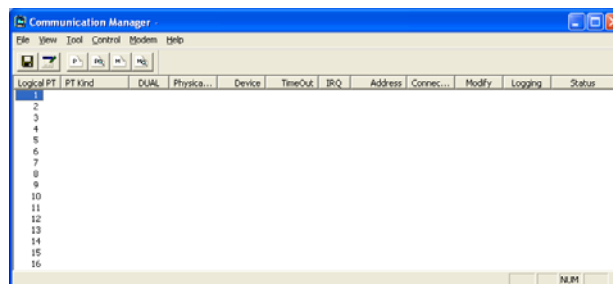
2. Double-click the **Communications Process** Icon in the taskbar tray.



The **Communication Manager** Window will be displayed.

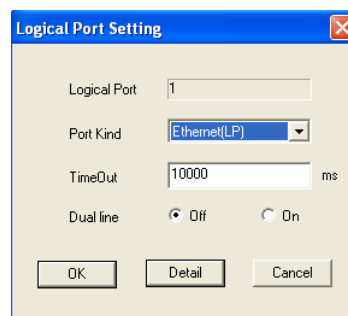
- If the window is not displayed when the **Communication Manager** Icon is double-clicked, then right-click the icon and select **Application Display** from the pop-up menu.

3. Double-click the logical port number (logical PT) to set up.



The **Logical Port Settings** Dialog Box will be displayed.

4. Select **Ethernet (LP)** in the **Port Kind** Box.

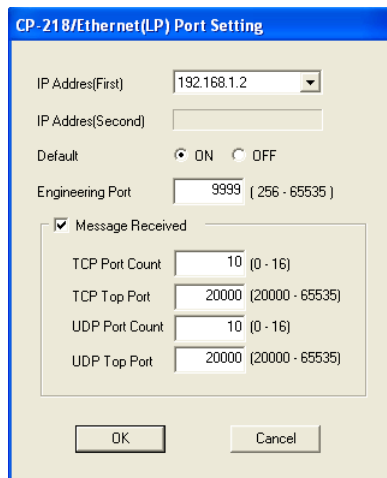


5. Set the timeout and duel line settings.

6. Click the **Detail** Button.

The **CP-218/Ethernet (LP) Port Setting** Dialog Box will be displayed.

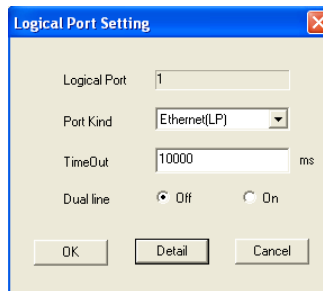
7. Select the communications port you set in 3.8.2 (1) *Setting the Communications Port* in the **IP Address (First)** Box.



8. Click the **OK** Button.

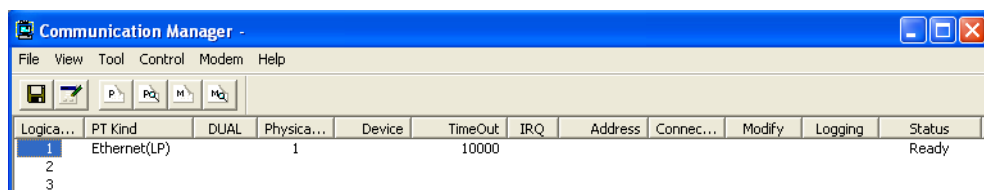
This returns you to the **Logical Port Setting** Dialog Box.

9. Click the **OK** Button in the Logical Port Setting Dialog Box.

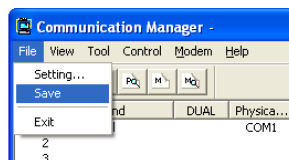


This will return you to the Communication Manager.

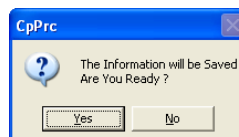
Ethernet (LP) will be displayed for the logical port as set in step 3, above.



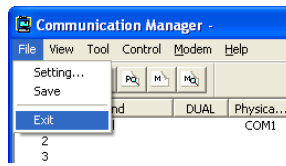
10. Select **File – Save** from the menu.



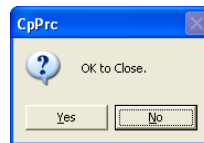
11. A confirmation message will be displayed. Click the **Yes** Button to save the settings.



12. Select **File – Exit** from the menu.



13. Click the **Yes** Button in the confirmation dialog box.



This concludes the setup of the communications process.

3.9 Importing an Address Table File (.csv)

3.9.1 Starting the MPE720 and Setting Up Communications

This section describes how to start the MPE720 and set the communications parameters in the project file. Refer to one of the following manuals for details on the MPE720.

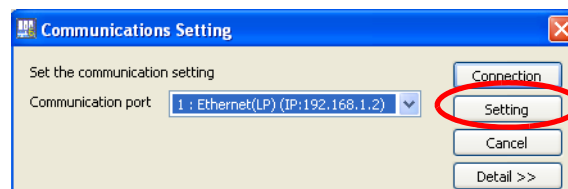
- *Engineering Tool for MP2000 Series Machine Controllers MPE720 Version 6 User's Manual* (Manual No.: SIEP C880700 30)
- *Machine Controllers MP2000/MP3000 Series Engineering Tool MPE720 Version 7 User's Manual* (Manual No.: SIEP C880761 03)
- Disconnect the software connection to the Machine Controller when setting the parameters.
- Create the project file in advance.

1. Select **Online – Communications Setting** from the Main Menu.

The **Communications Setting** Dialog Box will be displayed.

2. Select the logical port number to use to connect the Machine Controller and click the **Setting** Button.

- Settings for the logical port numbers are made with the Communication Manager. Refer to *3.8.2 Setting the Communications Process* for the procedure to set the communications process.
- The **Connection** and **Setting** Buttons will be disabled while the Machine Controller is connected.



Communications will be set up and the dialog box will close.

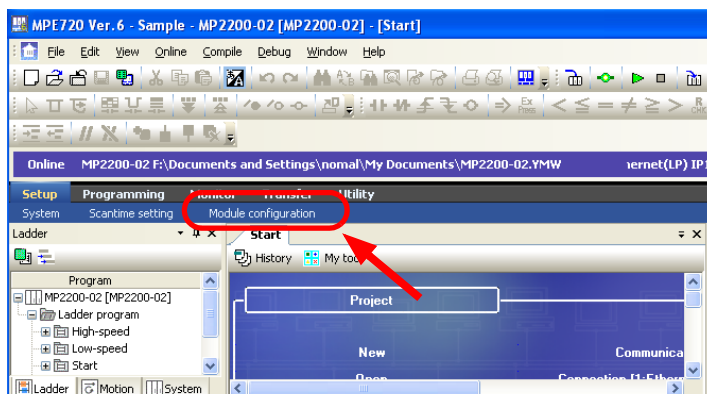
3.9.2 Displaying the PROFINET Transmission Definitions Window

To define the PROFINET transmissions, first you open the **Module Configuration** Window on the MPE720, and then you open the PROFINET Transmission Definitions Window.

(1) Displaying the Module Configuration Window

Use the following procedure to display the **Module Configuration** Window.

1. Start the MPE720 on the computer connected to the Machine Controller and open the project file.
 - For information on starting the MPE720, refer to *Engineering Tool for MP2000 Series Machine Controllers MPE720 Version 6 User's Manual* (Manual No.: SIEP C880700 30) or *Machine Controllers MP2000/MP3000 Series Engineering Tool MPE720 Version 7 User's Manual* (Manual No.: SIEP C880761 03).
2. Select **Setup – Module Configuration Definitions** from the Launcher.



The Engineering Manager will be started and the **Module Configuration** Window (see (2), below) will be displayed.

(2) Displaying the PROFINET Transmission Definitions Window from the Module Configuration Window

As the result of executing self configuration, all Optional Modules that are connected to the Machine Controller will be displayed in the **Controller** Area of the **Module Configuration** Window.

MP2100M, MP2200, or MP2500MD Module Configuration Window

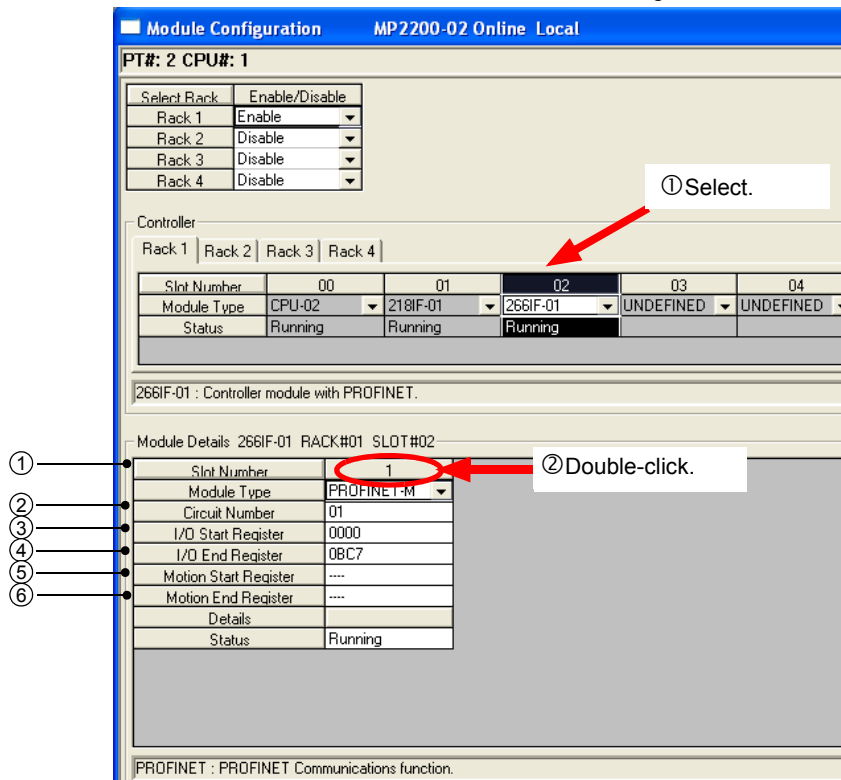


Fig. 3.1 Module Configuration Window

In the **Controller** Area, select the cell for 266IF-01, and then double-click the slot number cell for the PROFINET in the **Module Details** Area. The PROFINET Transmission Definitions Window will be displayed (see Fig. 3.2).

- If the PROFINET Transmission Definitions Window is being opened for the first time, a new file message box will be displayed and the PROFINET Transmission Definitions Window will be displayed when the **OK** Button is clicked.

In Online Mode, the PROFINET transmission definitions data that is saved in the Machine Controller are displayed. In Offline Mode, the definitions data that is saved in the computer on which PROFINET is running is displayed. For details on the PROFINET Transmission Definitions Window, refer to *Chapter 4 PROFINET Transmission Definitions Window*

Table 3.1 Module Configuration Setting Items

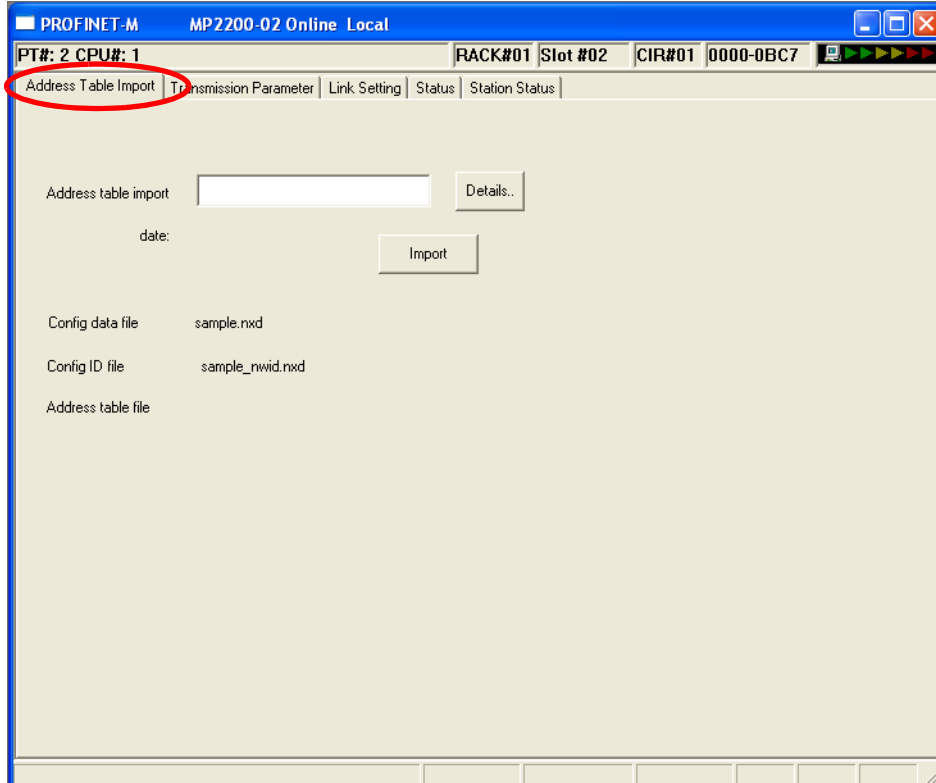
No.	Item	Description	Setting Range
①	Slot Number	Set the slot number of the CPU Module that controls the PROFINET Module.	Always 1.
②	Circuit Number	Set the circuit number of the PROFINET Module.	1 to 8
③	I/O Start Register	Specify the address of the first I/O register to use for I/O data communications by the PROFINET Module.	0000 to 7FFF hex
④	I/O End Register	Specify the address of the last I/O register to use for I/O data communications by the PROFINET Module. The size of the I/O registers that can be used for PROFINET (i.e., the size between the first and last I/O register addresses)* is 3,016 (BC8 hex) words maximum.	0000 to 7FFF hex
⑤	Motion Start Register	This setting cannot be used for PROFINET.	–
⑥	Motion End Register	This setting cannot be used for PROFINET.	–

* When the 266IF-01 Module is assigned, 3,016 words are assigned to it. Do not exceed the maximum I/O register size of 7FFF hex if you use other Optional Modules that use I/O registers.

3.9.3 Importing an Address Table File (.csv)

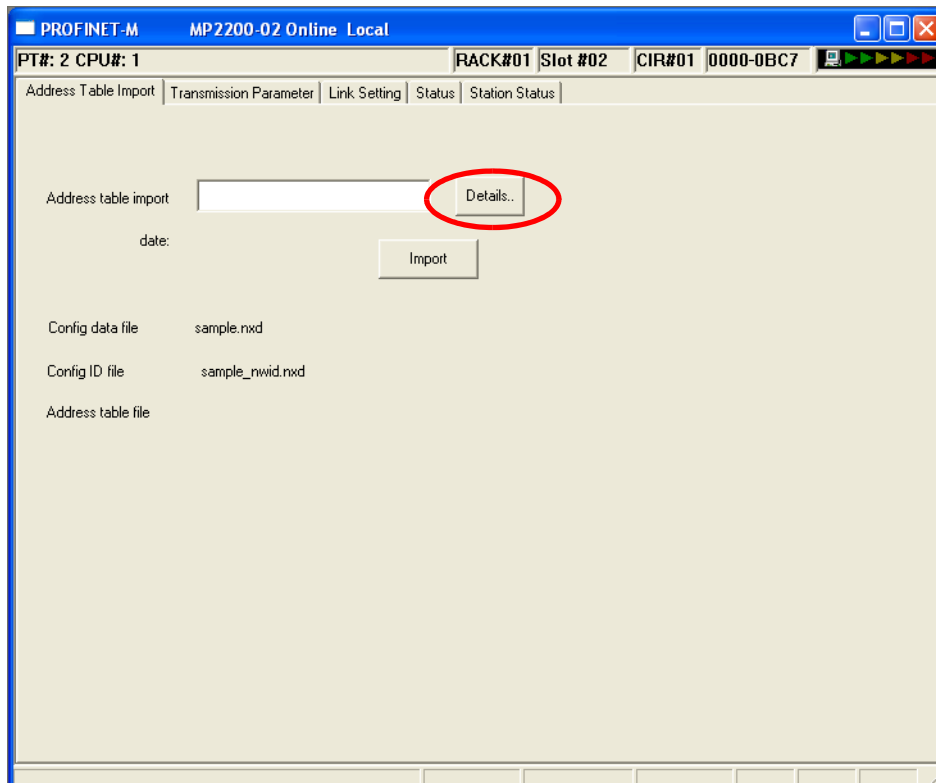
Use the following procedure to import an address table file (.csv).

1. Click the **Address Table Import** Tab in the PROFINET Transmission Definitions Window.



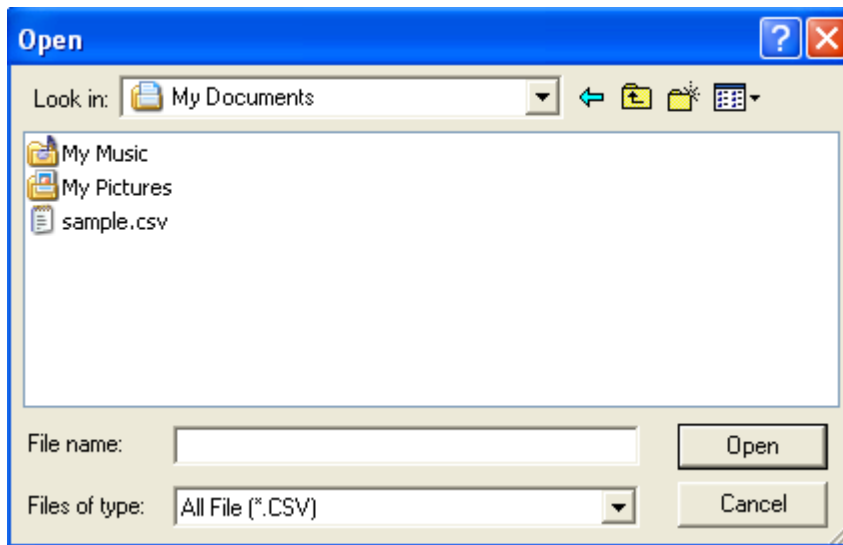
The **Address Table Import** Tab Page will be displayed.

2. Click the **Details** Button.

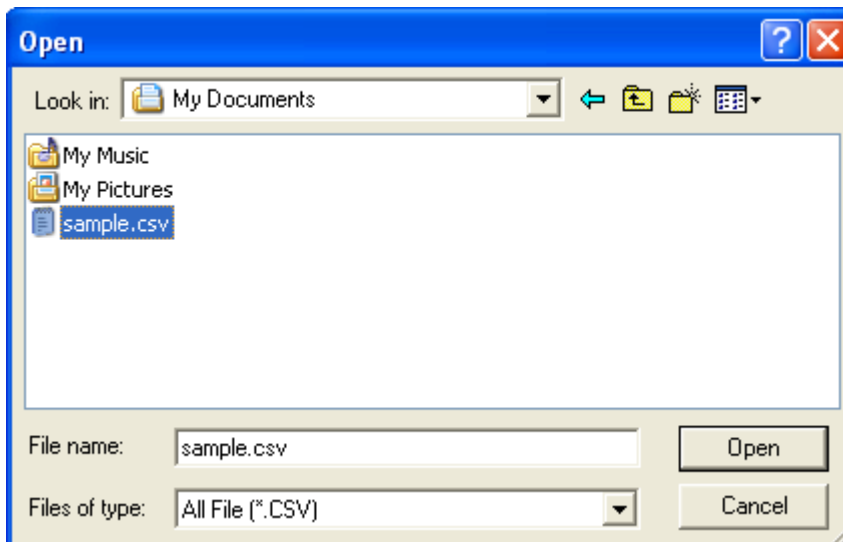


The **Open** Dialog Box will be displayed.

3. Select the address table file (.csv) to import.



4. Click the **Open** Button.



The **Address Table Import** Tab Page will be displayed again.

5. Click the **Import** Button.

This concludes importing the address table file (.csv).

3.9.4 Setting the PROFINET Transmission Definitions

This section describes how to set the PROFINET communications parameters and assign slaves.

(1) Setting PROFINET Communications Parameters

Use the following procedure to set the parameters for PROFINET communications.

Refer to 4.2 *Transmission Parameter Tab Page* for details on the **Transmission Parameter** Tab Page.

1. Click the **Transmission Parameter** Tab in the PROFINET Transmission Definitions Window.

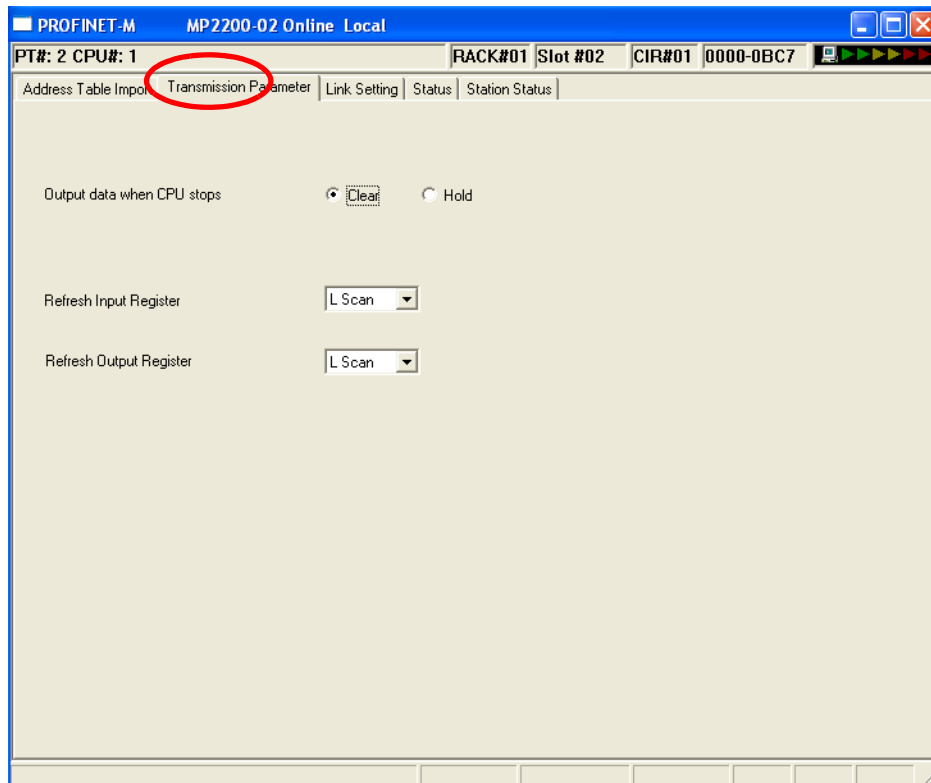


Fig. 3.2 PROFINET Transmission Definitions Window

The **Transmission Parameter** Tab Page will be displayed.

2. Select the **Clear** or **Hold** Option for the **Output data when CPU stops** setting.
3. Select either **L Scan** or **H Scan** in the **Refresh Input Register** Box.
4. Select either **L Scan** or **H Scan** in the **Refresh Output Register** Box.

This concludes setting the PROFINET communications parameters.

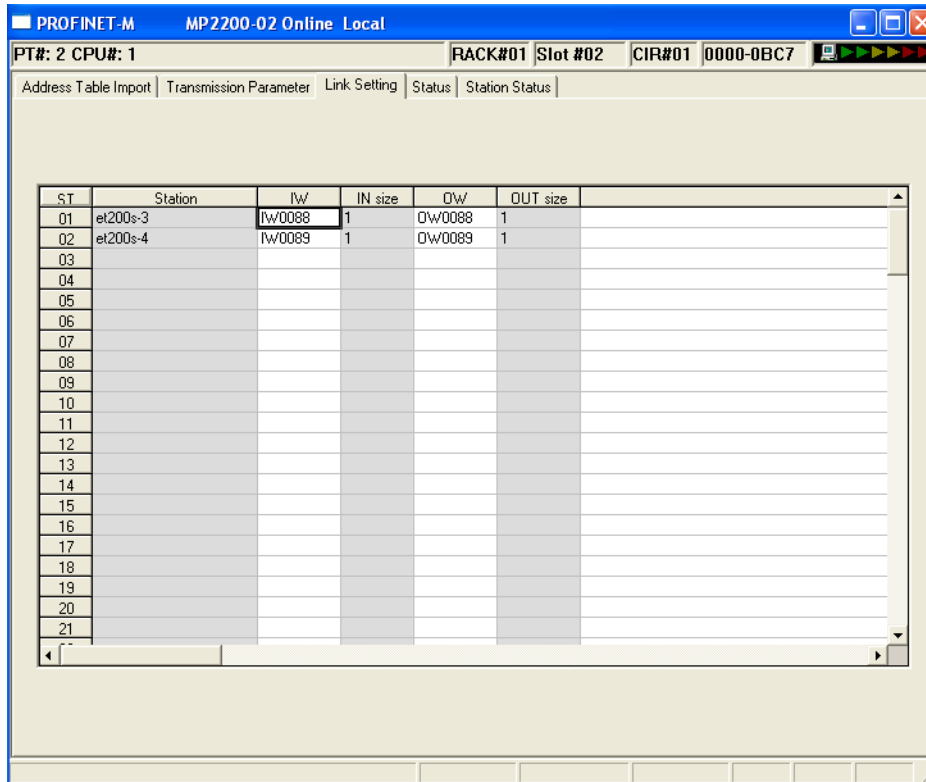
(2) Setting PROFINET Communications Links


Use the following procedure to set links for PROFINET communications.

Refer to 4.3 *Link Setting Tab Page* for details on the **Link Setting** Tab Page.

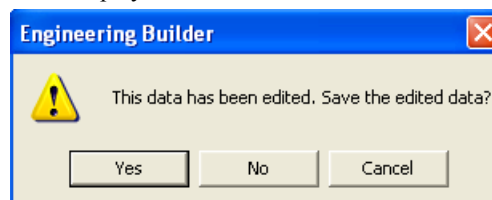
1. Click the **Link Setting** Tab in the PROFINET Transmission Definitions Window.

The **Link Setting** Tab Page will be displayed.



2. Double-click the cell in the **IW** Column for the station for which to change the setting.
3. Set the IW address.
4. Double-click the cell in the **OW** Column for the station for which to change the setting.
5. Set the OW address.
6. Click the close button () for the window.

A confirmation dialog box will be displayed.



7. Click the **Yes** Button.

This concludes setting the links for PROFINET communications.

3.9.5 Saving to Flash Memory

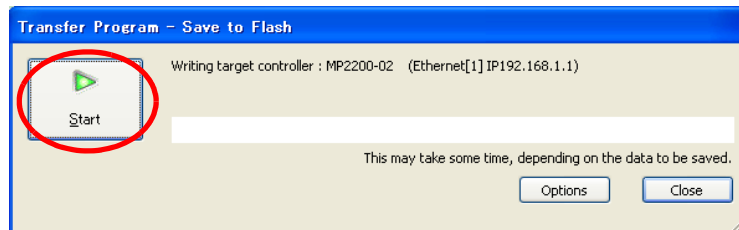
You can save the Machine Controller RAM data to the flash memory of the Machine Controller. You can save the data to flash memory only when the Machine Controller is connected (online).

Use the following procedure to save the data.

1. Select **Online – Save to Flash** from the main menu.

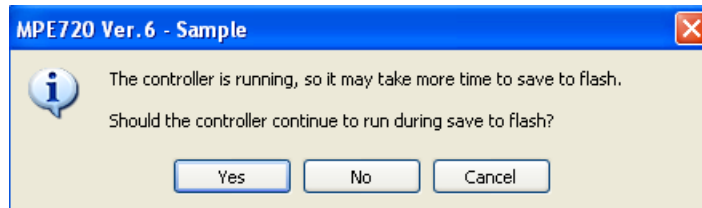
The **Transfer Program – Save to Flash** Dialog Box will be displayed.

2. Click the **Start** Button.



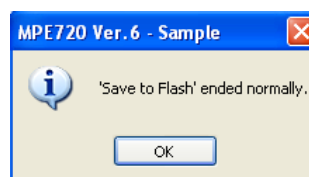
Saving the data to flash memory in the target Machine Controller will start. If the CPU Module is in RUN status, go to step 3. If the CPU Module is in STOP status, go to step 4 after saving the data to flash memory has been completed.

3. If the CPU Module is in RUN mode, the following message will be displayed. Click the **Yes** Button or the **No** Button to start saving the data to flash memory in the target Machine Controller.



After the data has been saved to flash memory, the **MPE720 Ver. 6** Dialog Box will be displayed.

4. Click the **OK** Button.

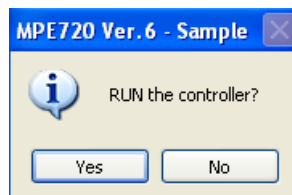


The **MPE720 Ver. 6** Dialog Box will be closed.

This concludes the procedure to save data to flash memory.



If you clicked the **No** Button in step 3, the following message will be displayed.



Click the **Yes** Button to return the CPU Module to RUN status. Click the **No** Button to keep the CPU Module in STOP status.

3.10 Displaying a Register List and Precautions for Register Input

3.10.1 Displaying a Register List

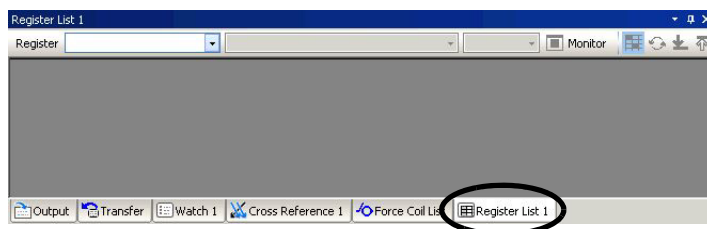
Top view the I/O data (IW registers and OW registers) with the MPE720, use the register list.

The following describes how to display the register list and gives precautions for register input.

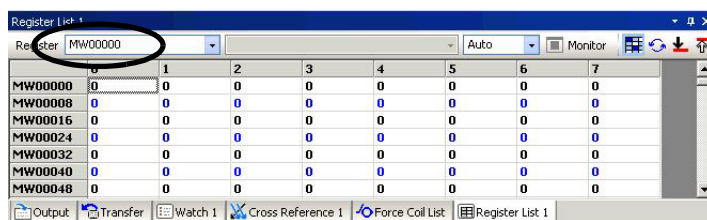
Use the following procedure to display the MPE720 Ver. 6.□□ register list.

1. Open the Register List sub-window from the MPE720 Ver. 6.□□ main window.

The **Register List 1** Tab is provided by default in the sub-window displayed on the bottom of the window.



2. Enter the first register address of the system register “MW□□□□□” (or “DW□□□□□”) to be accessed in the **Register** Box and press the **ENTER** key. The contents of the system register will be displayed starting from the first register address.



- Enter the drawing number for the D register as follows:



- The data type is set by default to decimal. Place the cursor anywhere in the list, and then right-click. Select **Hex** (hexadecimal) from the pop-up menu that appears. The data will then be displayed in hexadecimal.

3.10.2 Precautions for Register Input

(1) Decimal/Hexadecimal Numbers

DW and MW registers are signed integer registers, and their input ranges in decimal notation are from -32768 to $+32767$ (hexadecimal: 0 to FFFF hex).

You cannot input integers of 32,768 or higher into these registers as decimal values. To input the remote address or transaction code, change the display to hexadecimal and input hexadecimal values.

(2) Negative Value Representation in Decimal Numbers

When a register input with a hexadecimal value is displayed as a decimal number, its value may be represented as a negative value as shown below.

Hexadecimal

Register	0	1	2	3	4	5	6	7	8	9	10	11	12
MW00000	FEDE	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00013	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00026	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00039	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00052	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00065	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000



Decimal

Register	0	1	2	3	4	5	6	7	8
MW00000	-531	0	0	0	0	0	0	0	0
MW00009	0	0	0	0	0	0	0	0	0
MW00018	0	0	0	0	0	0	0	0	0
MW00027	0	0	0	0	0	0	0	0	0
MW00036	0	0	0	0	0	0	0	0	0
MW00045	0	0	0	0	0	0	0	0	0

This is because the hexadecimal input value is greater than $+32768$ (decimal number) and it is represented as a negative value through bit inversion. In spite of negative value representation, processing is performed as a positive value.

To convert a negative decimal number into a positive decimal number, the following expression is used.

$$|-32768| + 32767 + 1 + (\text{displayed negative value})$$

In the above display example (-531), the following would be used.

$$|-32768| + 32767 + 1 + (-531) = 65005$$

PROFINET Transmission Definitions Window

The PROFINET Transmission Definitions Window consists of five tab pages: Address Table Import, Transmission Parameter, Link Setting, Status, and Station Status. These tab pages are used to set the definitions and monitor the settings.

4.1 Address Table Import Tab Page	4-2
4.2 Transmission Parameter Tab Page	4-4
4.3 Link Setting Tab Page	4-5
4.4 Status Tab Page	4-6
4.5 Station Status Tab Page	4-8

4.1 Address Table Import Tab Page

To set the assignments for PROFINET communications, you import the address table (.csv) to the MPE720 with the Configuration Tool.

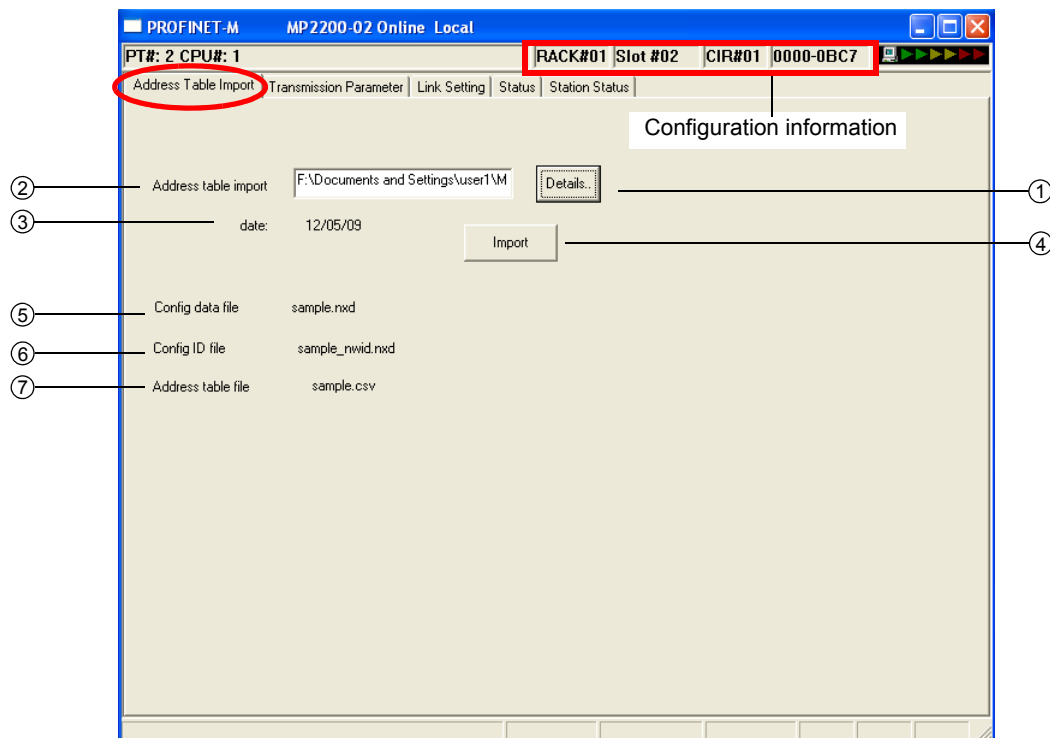


Fig. 4.1 Address Table Import Tab Page

■ Configuration Information

The configuration information for the 266IF-01 Module is displayed here. The configuration information is the same as the information that is displayed in the **Module Details** Area in the **Module Configuration** Window.

RACK#: The number of the rack in which the 266IF-01 Module is defined.

Slot#: The slot number of the slot in which the 266IF-01 Module is defined.

CIR#: The circuit number of the PROFINET port of the 266IF-01 Module.

The following table describes the details of the **Address Table Import** Tab Page.

Table 4.1 Address Table Import Tab Page Items

No.	Item	I/O	Description
①	Details	Button	Click this button to display the Open Dialog Box that is shown in Figure 4.2 and select the address table file (.csv).
②	Address table import	IN	This box displays the path and name of the file that was selected in the Open Dialog Box.
③	date	OUT	The last date that the selected file was updated is displayed.
④	Import	Button	Click this button to read the selected file, analyze the file contents, and display the contents in the Link Setting Tab Page.
⑤	Config data file	OUT	Online: The name of the configuration data file that was downloaded to the 266IF-01 Module is displayed. If there is no configuration data file, nothing will be displayed. Offline: Nothing is displayed.
⑥	Config ID file	OUT	Online: The name of the configuration ID file that was downloaded to the 266IF-01 Module is displayed. If there is no configuration ID file, nothing will be displayed. Offline: Nothing is displayed.
⑦	Address table file	OUT	Online: The name of the address table file that was downloaded to the 266IF-01 Module is displayed. If there is no address table file, nothing will be displayed. Offline: The name of the address table file that was imported to the MPE720 is displayed. If a file has not been imported, nothing will be displayed.

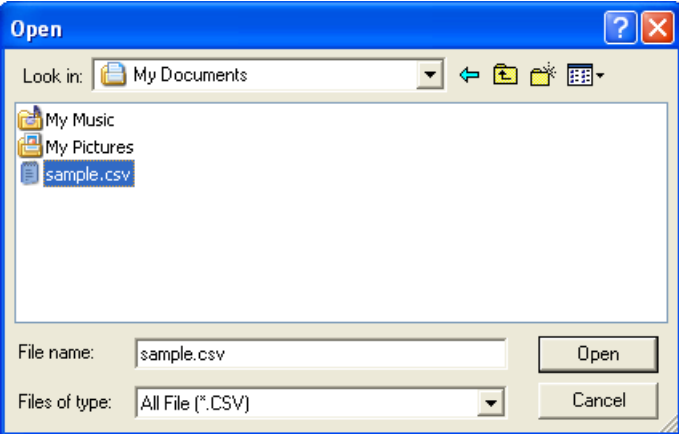


Fig. 4.2 Open Dialog Box to Import Address Table File

4.2 Transmission Parameter Tab Page

This tab page is used to set the PROFINET parameters.

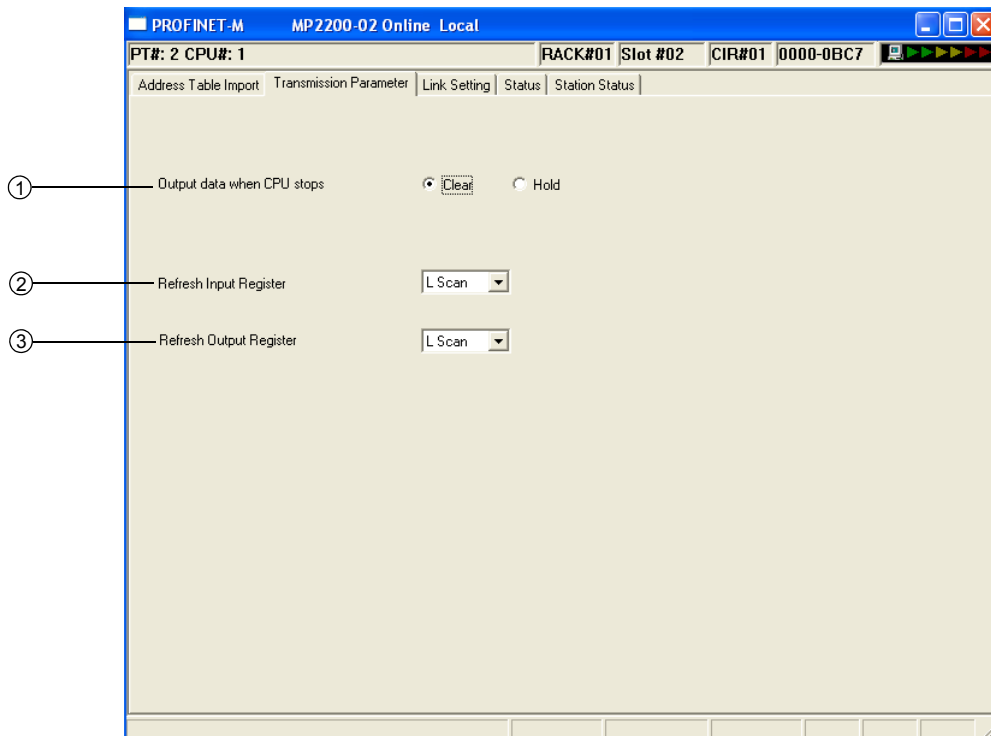


Fig. 4.3 Transmission Parameter Tab Page

The following table describes the details of the **Transmission Parameter** Tab Page.

Table 4.2 Transmission Parameter Tab Page Items

No.	Item	Setting	Description	Default
①	Output data when CPU stops	Clear or Hold	Set the output status when the CPU Module is in STOP status. If you select the Clear Option, all zeros is output to the output slaves. If you select the Hold Option, the last data from before the CPU Module entered STOP status is output to the output slaves.	Clear
②	Refresh Input Register	H Scan or L Scan	Set the scan in which the CPU Module will refresh the input registers with the data from the slaves.	L Scan
③	Refresh Output Register	H Scan or L Scan	Set the scan in which the CPU Module will refresh the 266IF-01 Module with the data for slaves in the output registers.	L Scan

- The same settings apply to all of the slaves.

4.3 Link Setting Tab Page

This tab page is used to set assignments for the PROFINET slaves.

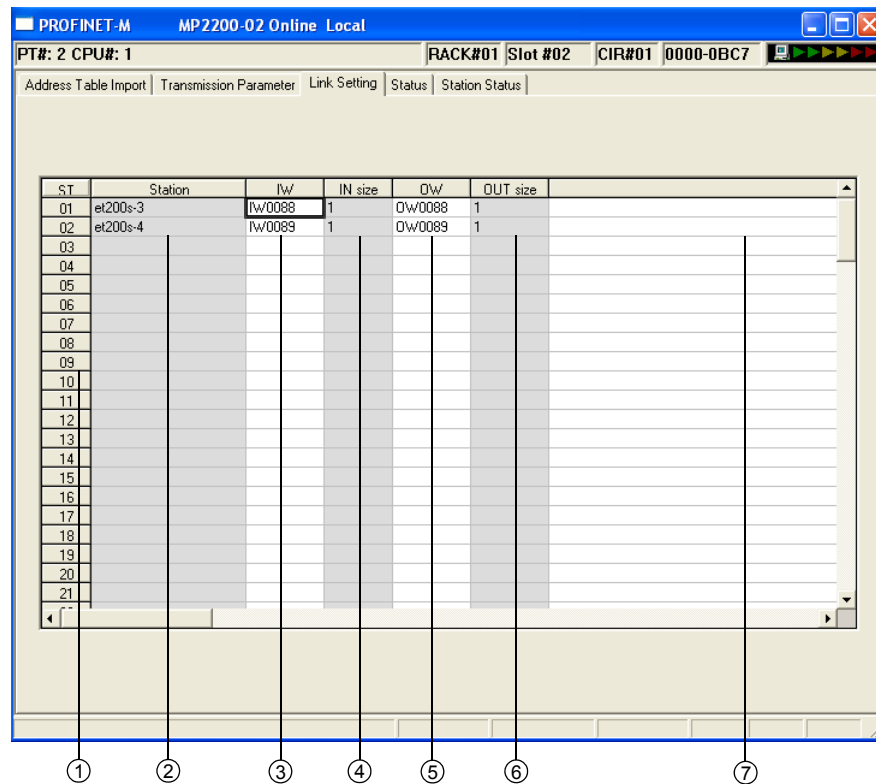


Fig. 4.4 Link Setting Tab Page

The following table describes the details of the **Link Setting** Tab Page.

Table 4.3 Link Setting Tab Page Items

No.	Item	I/O	Setting	Description
①	ST	OUT	1 to 128	The number of the slave station is displayed.
②	Station	OUT	64 single-byte characters (32 double-byte characters)	The station name from the address table file that was imported is displayed.
③	IW	IN	IW0000 to IW7FFF	You assign the registers for the input data from the slave station. Set the first address of the input register to assign to the slave station.
④	IN size (words)	OUT	–	The word size of the input data for the slave station from the address table file that was imported is displayed.
⑤	OW	IN	OW0000 to OW7FFF	You assign the registers for the output data that is sent to the slave station. Set the first address of the output register to assign to the slave station.
⑥	OUT size (words)	OUT	–	The word size of the output data for the slave station from the address table file that was imported is displayed.
⑦	Comment	IN	255 single-byte characters (127 double-byte characters)	Enter a comment for the slave station as required.

4.4 Status Tab Page

This tab page displays the PROFINET communications status.

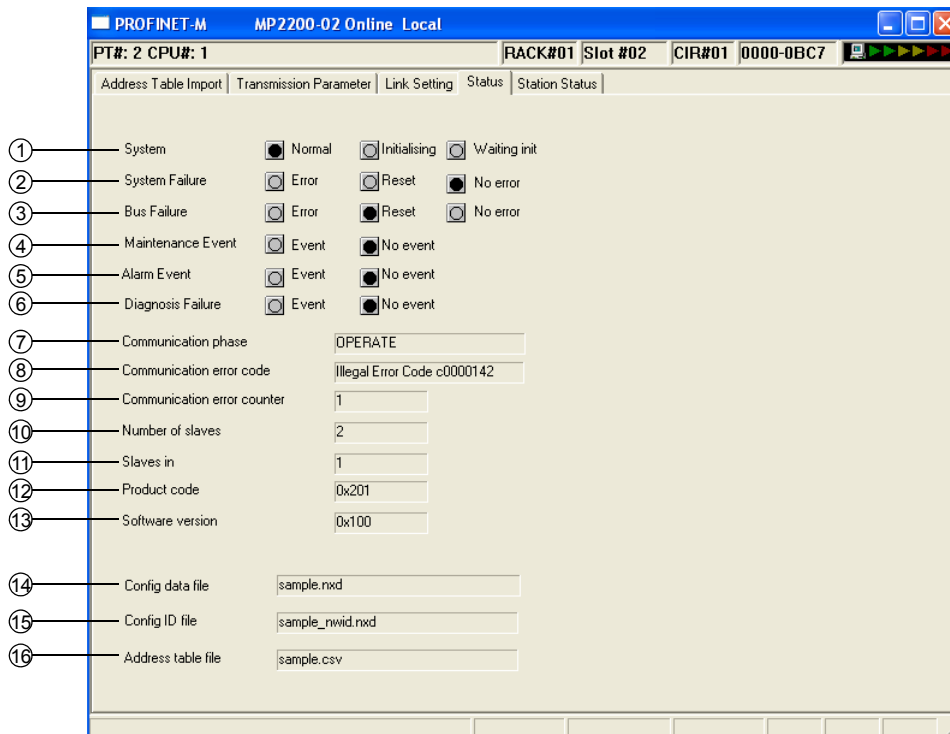


Fig. 4.5 Status Tab Page

The following table describes the details of the **Status** Tab Page.

Table 4.4 Status Tab Page Items

No.	Item	Description
①	System	The status of the 266IF-01 Module is displayed. The current status is designated by the indicator that is lit. This is the same as the hardware SYS indicator. When the 266IF-01 Module is offline, all of the indicators are not lit.
②	System Failure	The system status of the slaves connected via PROFINET is displayed. This is the same as the hardware SF indicator. When the 266IF-01 Module is offline, all of the indicators are not lit.
③	Bus Failure	The status of the PROFINET communications bus is displayed. This is the same as the hardware BF indicator. When the 266IF-01 Module is offline, all of the indicators are not lit.
④	Maintenance Event	The status of maintenance request events from the slaves is displayed. This is the same as the hardware MT indicator. When the 266IF-01 Module is offline, all of the indicators are not lit.
⑤	Alarm Event	The status of alarm events from the slaves is displayed. When the 266IF-01 Module is offline, all of the indicators are not lit.
⑥	Diagnosis Failure	The status of diagnosis events from the slaves is displayed. When the 266IF-01 Module is offline, all of the indicators are not lit.
⑦	Communications phase	The communications phase of PROFINET is displayed. When the 266IF-01 Module is offline, nothing will be displayed.

Table 4.4 Status Tab Page Items (cont'd)

No.	Item	Description	
⑧	Communication error code	-	When the 266IF-01 Module is offline, nothing will be displayed.
		No errors	No errors
		Illegal Error Code c00000c	Watchdog timeout
		Illegal Error Code c0000100	Initialization error
		Illegal Error Code c0000101	Database error
		Illegal Error Code c0000119	Not configured
		Illegal Error Code c0000120	Configuration error
		Illegal Error Code c0000121	Data inconsistency
		Illegal Error Code c0000122	Data mismatch
		Illegal Error Code c0000123	Invalid license
		Illegal Error Code c0000124	Parameter error
		Illegal Error Code c0000125	Network address error
		Illegal Error Code c0000126	Security memory error
		Illegal Error Code c0000140	Network error
		Illegal Error Code c0000141	Connection broken
		Illegal Error Code c0000142	Connection timeout
Illegal Error Code c0000143	No slave node		
Illegal Error Code c0000144	Duplicated nodes		
Illegal Error Code c0000145	Cable disconnected		
⑨	Communication error counter	The number of errors that have occurred since the power supply was turned ON is displayed. When the 266IF-01 Module is offline, nothing will be displayed.	
⑩	Number of slaves	The total number of slaves that have been configured is displayed. When the 266IF-01 Module is offline, nothing will be displayed.	
⑪	Slaves in	The number of slaves that are currently participating in communications is displayed. When the 266IF-01 Module is offline, nothing will be displayed.	
⑫	Product code	The product code of the 266IF-01 Module is displayed. When the 266IF-01 Module is offline, nothing will be displayed.	
⑬	Software version	The software version of the 266IF-01 Module is displayed. When the 266IF-01 Module is offline, nothing will be displayed.	
⑭	Config data file	The name of the configuration data file that was downloaded to the 266IF-01 Module is displayed. If a file has not been downloaded, nothing will be displayed. When the 266IF-01 Module is offline, nothing will be displayed.	
⑮	Config ID file	The name of the configuration ID file that was downloaded to the 266IF-01 Module is displayed. If a file has not been downloaded, nothing will be displayed. When the 266IF-01 Module is offline, nothing will be displayed.	
⑯	Address table file	The name of the address table file that was downloaded to the 266IF-01 Module is displayed. If a file has not been downloaded, nothing will be displayed. When the 266IF-01 Module is offline, nothing will be displayed.	

4.5 Station Status Tab Page

This tab page displays the status of each PROFINET station.

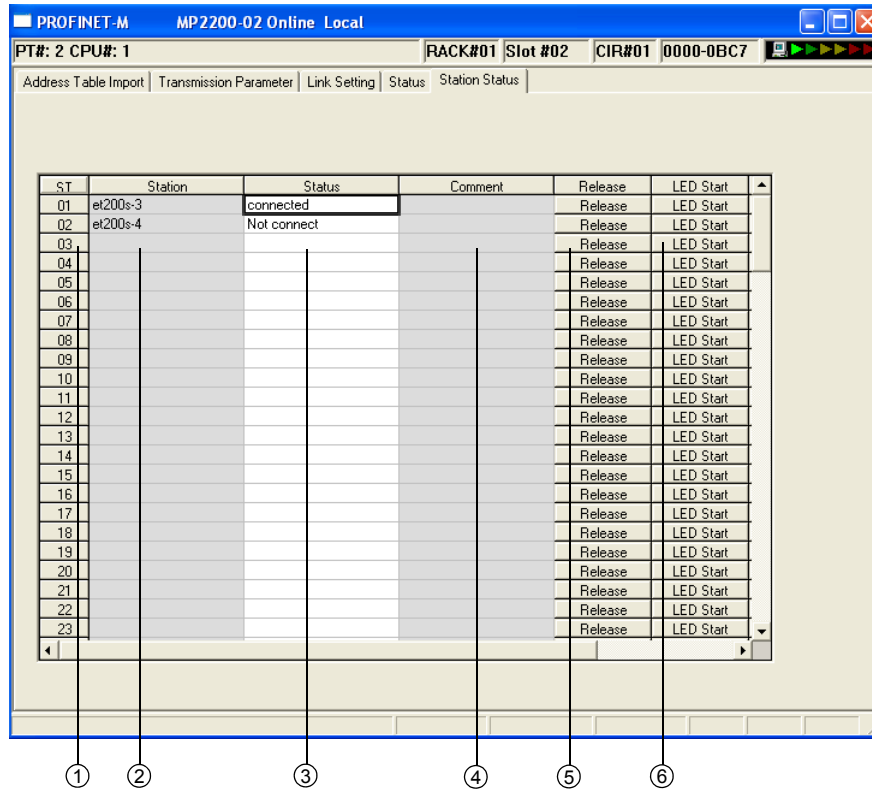


Fig. 4.6 Station Status Tab Page

The following table describes the details of the **Station Status** Tab Page.

Table 4.5 Station Status Tab Page Items

No.	Item	I/O	Display	Description
①	ST	OUT	1 to 128	The number of the slave station is displayed.
②	Station	OUT	64 single-byte characters (32 double-byte characters)	The station name from the address table file that was imported is displayed.
③	Status	OUT	–	The status of the slave is displayed. When the 2661F-01 Module is offline, nothing will be displayed.
			Not connect	The 2661F-01 Module is waiting for a connection with the slave.
			connected	I/O is being exchanged normally.
			Alarm event	An alarm notification was received from the slave.
			Diagnosis event	A diagnosis event notification was received from the slave.
	Maintenance event	A maintenance event notification was received from the slave.		
④	Comment	OUT	255 single-byte characters (127 double-byte characters)	The comment that was entered in the link settings is displayed.
⑤	Communications control	Buttons	–	Use these buttons to start, stop, or release communications for each slave.
			Release	Communications are stopped and the connection is released.
⑥	LED flashing	Buttons	–	Use these buttons to flash or stop the indicators on each slave.
			LED Start	The indicators on the slave are flashed. This button cannot be used when the slave is not connected.
			LED Stop	Flashing the indicators on the slave is stopped. This button cannot be used when the slave is not connected.

PROFINET Communications for the 266IF-01 Module

This chapter describes PROFINET communications for the 266IF-01 Module.

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5.1 I/O Data Communications

I/O data is exchanged on a fixed cycle. A provider/consumer model is used under PROFINET to handle all exchanges between the Machine Controller and the slaves. A connection is established between both parties, and the provider sends data to the consumer on a fixed cycle even if the provider has not received a request for data from the consumer. The consumer only processes the data that it receives. Confirmation of the transmission is not performed. Mapping between the provider and consumer is set up with the Configuration Tool.

5.1.1 Data Refresh Timing

The data refresh timing of the MP2000-series Machine Controller and PROFINET transmission lines is shown below.

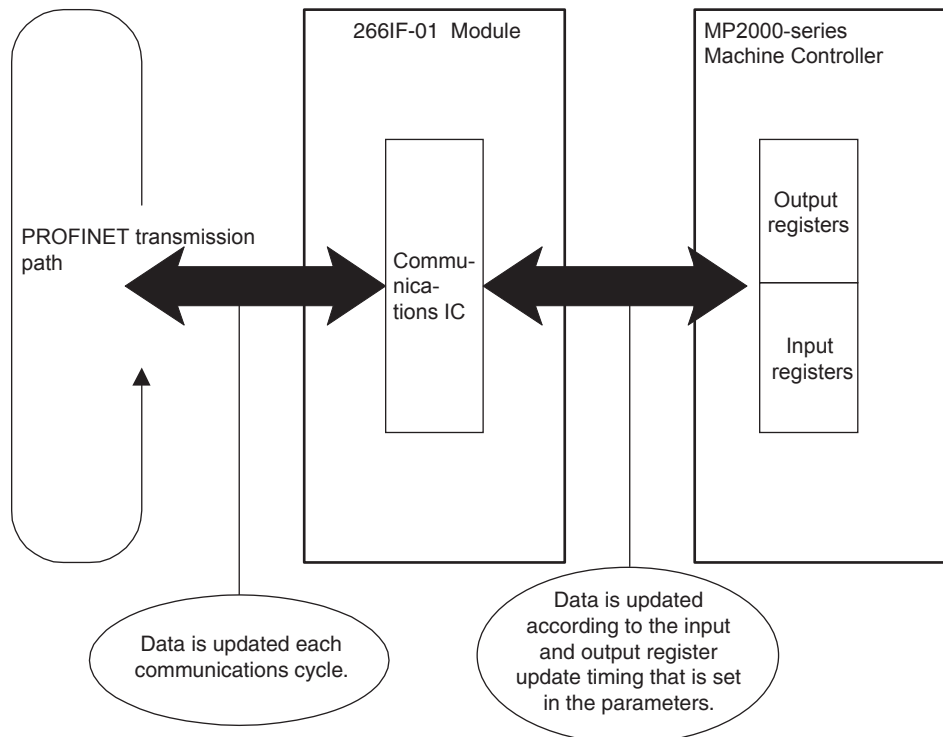


Fig. 5.1 I/O Data Refresh Timing of the 266IF-01 Module

■ Data Refresh Timing between the MP2000-series Machine Controller and the 266IF-01 Module

The scan settings for the Input Register Setting and Output Register Setting on the **Transmission Parameters** Tab Page in the PROFINET Transmission Definitions Window are used to set the refresh timing. Refer to 4.2 *Transmission Parameter Tab Page* for details on the **Transmission Parameters** Tab Page.

■ Data Refresh Timing between the PROFINET Transmission Path and the 266IF-01 Module

Data is refreshed according to the PROFINET communications cycle. Refer to 3.6.2 (1) *Setting the Communications Cycles* for details on the PROFINET communications cycle.

Asynchronous operation is performed between the MP2000-series Machine Controller and a 266IF-01 Module and between the PROFINET transmission path and the 266IF-01 Module through a communications IC.

5.1.2 Data Concurrency

Data for each station is always concurrent between the MP2000-series Machine Controller and the PROFINET transmission lines.

5.1.3 Data Refreshing When the CPU Module Is Stopped

If the CPU Module has been set to STOP status, the 266IF-01 Module performs the following processing.

Table 5.1 Data Refreshing When the CPU Is Stopped

Setting of The Output in CPU STOP Parameter	Output Data	Input Data
Hold	The 266IF-01 Module will continue to output the last data that was output from before the CPU Module was stopped.	No data is refreshed for the input registers. The last data in the input registers before the CPU Module was stopped will be retained.
Clear	The 266IF-01 Module outputs 0 for as long as the CPU Module is stopped.	

5.1.4 Data Refresh at Reception Errors

When a reception error has been detected for a slave station, the 266IF-01 Module performs the following processing for data I/O.

Table 5.2 Data Refreshing at Reception Errors

Output Data	Input Data
The output registers are not refreshed. The output register values that are set by the application are used, regardless of the reception error.	The data is cleared to all zeros.

- The specification to hold previous values (the number of scans to hold the previous value when an input error occurs) in the system settings of the CPU Module does not apply to the 266IF-01 Module.

5.1.5 Precautions on Assigned Sizes

The number of words of I/O registers that are assigned to one slave can be calculated with the following formulas.

Number of input words for one slave = (Number of slave input bytes + 1) ÷ 2 [words]

Number of output words for one slave = (Number of slave output bytes + 1) ÷ 2 [words]

- Refer to the manuals of the I/O manufacturers for the number of slave I/O bytes.

For example, if one DI or one DO is assigned, the assigned size is calculated as shown below.

Number of input words = (Number of slave input bytes + 1) ÷ 2 = (1 + 1) ÷ 2 = 1 word

Number of output words = (Number of slave output bytes + 1) ÷ 2 = (1 + 1) ÷ 2 = 1 word

Assume that the following I/O registers are assigned:

1 word from IW0800 and 1 word from OW0900.

The relationship between the input register and the DI will be as follows:

Bit 0 of IW0800 is the input data for the DI on the slave.

The relationship between the output register and the DO will be as follows:

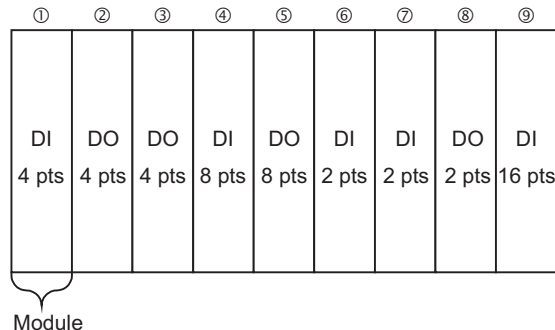
Bit 0 of OW0900 is the input data for the DO on the slave.

The other bits in the I/O registers will be reserved (i.e., cannot be used).

The following figure shows the concept that is used for the assigned sizes for modular remote I/O.

As an example, the assigned sizes are calculated for the modular remote I/O stations in the following configuration.

They would apply to remote I/O, such as the Siemens ET 200. The number of words of I/O registers that are assigned to one slave are calculated with the following formulas.



Input Size Calculations

Number of words assigned to module (1) = (Number of slave input bytes for module (1) + 1) ÷ 2 = (1 + 1) ÷ 2 = 1 word

Number of words assigned to module (4) = (Number of slave input bytes for module (4) + 1) ÷ 2 = (1 + 1) ÷ 2 = 1 word

Number of words assigned to module (6) = (Number of slave input bytes for module (6) + 1) ÷ 2 = (1 + 1) ÷ 2 = 1 word

Number of words assigned to module (7) = (Number of slave input bytes for module (7) + 1) ÷ 2 = (1 + 1) ÷ 2 = 1 word

Number of words assigned to module (9) = (Number of slave input bytes for module (9) + 1) ÷ 2 = (2 + 1) ÷ 2 = 1 word

Input size = Sum of words assigned to modules (1), (4), (6), (7), and (9) = 1 + 1 + 1 + 1 + 1 = 5 words

Output Size Calculations

Number of words assigned to module (2) = (Number of slave output bytes for module (2) + 1) ÷ 2 = (1 + 1) ÷ 2 = 1 word

Number of words assigned to module (3) = (Number of slave output bytes for module (3) + 1) ÷ 2 = (1 + 1) ÷ 2 = 1 word

Number of words assigned to module (5) = (Number of slave output bytes for module (5) + 1) ÷ 2 = (1 + 1) ÷ 2 = 1 word

Number of words assigned to module (8) = (Number of slave output bytes for module (8) + 1) ÷ 2 = (1 + 1) ÷ 2 = 1 word

Output size = Sum of words assigned to modules (2), (3), (5), and (8) = 1 + 1 + 1 + 1 = 4 words

- For a bit module, enter the byte sizes that are given in the address region in the manual from the manufacturer of the remote I/O for the numbers of input bytes and output bytes for the corresponding modules.

Based on the above, the station assignments on the MPE720 would be 5 input words and 4 output words. Assume that the following I/O registers are assigned: 5 words from IW0800 and 4 words from OW0900.

The relationship between the input registers and the remote inputs would be as follows:

Bits 0 to 3 of IW0800 are the 4 DI input data for module (1).

Bits 0 to 7 of IW0801 are the 8 DI input data for module (4).

Bits 0 and 1 of IW0802 are the 2 DI input data for module (6).

Bits 0 and 1 of IW0803 are the 2 DI input data for module (7).

Bits 0 to F of IW0804 are the 16 DI input data for module (9).

The relationship between the output registers and the remote outputs would be as follows:

Bits 0 to 3 of OW0900 are the 4 DO output data for module (2).

Bits 0 to 3 of OW0901 are the 4 DO output data for module (3).

Bits 0 to 7 of OW0902 are the 8 DO output data for module (5).

Bits 0 and 1 of OW0903 are the 2 DO output data for module (8).

The other bits in the I/O registers will be reserved (i.e., cannot be used).

5.1.6 Behavior When I/O Configuration of Slave Station Does Not Agree with the Assigned Sizes

If the size that is assigned to the slot in the configuration data file in the 266IF-01 Module does not agree with the assignment for the actual slave station, the 266IF-01 Module cannot detect the disagreement in the size that is assigned to the slot.

A communications error will occur for I/O data communications according to the specifications of the slave station.

- The 266IF-01 Module will discard or read the I/O data according to the data enabled status in the I/O data packet from the slave station.

5.2 Message Communications

Message communications are used for event-driven data transmissions. Unlike cyclic data communications, asynchronous data communications are performed. You can implement message communications with message functions in the ladder applications or, for some functions, from the MPE720.

5.2.1 Functions

The following message functions are supported for message communications.

The **Operation from MPE720** Column in the following table indicates whether button operations from the MPE720 can be used to send messages without using the message functions in a ladder application.

Table 5.3 Supported Message Communications

No	Function	Description	Remarks	Operation from MPE720
1	Read Alarm Information	Reads details on alarms.	–	×
2	Read Diagnostic Information	Reads a diagnosis request.	–	×
3	Stop Communications	Stops I/O data exchange with the specified slave.	Communications can be started online.	×
4	Start Communications	Starts I/O data exchange with the specified slave.	Communications can be stopped online.	×
5	Release Slave	Disconnects the specified slave.	Communications cannot be restarted online. The power supply must be turned OFF and ON again.	√
6	Flash Slave Indicator	Flashes the Ethernet Link indicator on a slave.	–	√
7	Read Data Block	Reads a data block from the slave.	Status information and other information.	×
8	Write Data Block	Writes data to a data block in the slave.	Parameters and other data.	×

- Message communications for functions 1 to 6 use cyclic data communications frames. Message communications for functions 7 and 8 use UDP/IP frames.

(1) Read Alarm Information

This message reads detailed information on an alarm in a slave. It is used to notify the 266IF-01 Module about detailed information when an alarm occurs in the slave.

Operation: When the 266IF-01 Module detects an alarm notification from a slave, it sets the ALARM bit in the input register that is assigned to status information. When the ALARM bit in the input register is set, the user application executes the message function to read alarm information from the corresponding slave.

- The Read Alarm Information command is not sent to the slave. Rather, the slave information is read from the 266IF-01 Module. If the Read Alarm Information command is executed for a slave for which there is no alarm notification, the MSG-SND function will end in an error.

(2) Read Diagnostic Information

This message reads detailed information for a diagnosis request. It is used to notify the 266IF-01 Module about detailed information when a diagnosis request occurs at the slave.

Operation: When the 266IF-01 Module detects a diagnosis notification from a slave, it sets the DIAG bit in the input register that is assigned to status information. When the DIAG bit in the input register is set, the user application executes the message function to read diagnostic information from the corresponding slave.

- The Read Diagnostic Information command is not sent to the slave. Rather, the slave information is read from the 266IF-01 Module. If the Read Diagnostic Information command is executed for a slave for which there is no diagnosis notification, the MSG-SND function will end in an error.

(3) Stop Communications

This message stops I/O data exchange for a slave.

Operation: The Stop Communications message function is executed in the user application.

IMPORTANT

Do not turn OFF the power supply to the MP Controller or to the slave station for which communications were stopped between executing the Stop Communications command and executing the Start Communications command. If you do so, communications will not be possible after the power supply is turned ON again.

If the power supply is turned OFF after executing the Stop Communications command, check the station name of the slave station for which communications were stopped. If the name has changed, reset it to the original station name.

This is necessary because the station name is changed in the system when communications is stopped and then restored to the original name when communications are started again.

(4) Start Communications

This message starts I/O data exchange for a slave.

Operation: The Start Communications message function is executed in the user application.

(5) Release Slave

This message releases the connection with the slave. If you release the connection, I/O data exchange with the slave cannot be restarted. (A connection cannot be established again after it is released.)

Operation: The Release Slave message function is executed in the user application. You can also release a connection with the release operation in the communications controls on the **Status** Tab Page of the PROFINET Transmission Definitions Window.

(6) Flash Slave Indicator

This message starts or stops flashing the Ethernet indicator on a slave.

Operation: The Start Flashing Indicator and Stop Flashing Indicator message functions are executed in the user application. You can also start and stop flashing indicators with the start and stop operations in the communications controls on the **Station Status** Tab Page of the PROFINET Transmission Definitions Window.

IMPORTANT

You cannot start flashing the indicator for more than one slave station at the same time.

If you start flashing the indicator on a different slave station without stopping flashing the indicator on a previous slave station, the indicator on the previous slave station will stop and the indicator will start flashing on the next slave station.

(7) Read Data Block

The message reads the data for the specified slot, subplot, index, and number of read data from the specified slave.

Operation: The Read Data Block message function is executed in the user application.

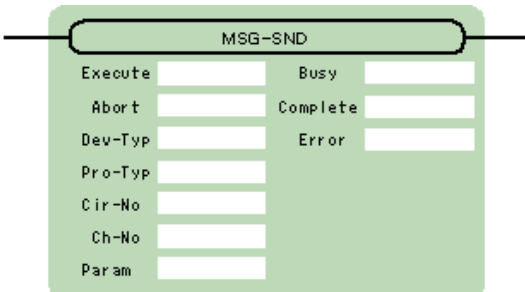
(8) Write Data Block

The message writes the data for the specified slot, subplot, index, number of write data, and write data to the specified slave.

Operation: The Write Data Block message function is executed in the user application.

5.2.2 MSG-SND Function

Use the Send Message function (MSG-SND) to send messages from the 266IF-01 Module. The settings of the MSG-SND function that are required to use the message communications service for PROFINET communications are described in this section.

Function Name	MSG-SND			
Function	Sends a message to a remote station on the line specified by the Transmission Device Type parameter (Dev-Typ). The Execute command must be held ON until the Complete or Error output turns ON.			
Function Definition				
I/O Definition	No.	Name	I/O Designation*	Description
Input Items	1	Execute	B-VAL	Send Message Command
	2	Abort	B-VAL	Send Message Abort Command
	3	Dev-Typ	I-REG	Transmission Device Type PROFINETM = 22
	4	Pro-Typ	I-REG	Transmission Protocol (Communications Protocol) MEMOBUS = 1
	5	Cir-No	I-REG	Circuit Number PROFINETM = 1 to 8
	6	Ch-No	I-REG	Transmission Buffer Channel Number PROFINETM = 1 to 5
	7	Param	Address input	First Address of Parameter List (MA or DA)
Output Items	8	Busy	B-VAL	Processing in progress.
	9	Complete	B-VAL	Processing completed.
	10	Error	B-VAL	Error occurred.

* The I/O designations are as follows:

B-VAL: I/O is specified as bit data.

I-REG: I/O is specified as integer data. Specify the address of an integer register.

Constants (immediate data) can also be specified for inputs.

Address input: The address of the specified register (any integer register) is passed to the function.

5.2.3 Details on I/O Items for the MSG-SND Function

(1) Input Items

[a] Execute (Send Message Command)

Specify the bit that will be used to control execution of the Message Send function.

Message send processing is started when the Execute command turns ON. To execute processing, this bit must be turned ON and OFF, e.g., from a ladder program.

- The Execute command must be held ON until the Complete or Error output turns ON. The message is sent when the Execute command turns ON. To send another message, always turn OFF the Execute command for at least one scan.

[b] Abort (Send Message Abort Command)

Specify the bit that will be used to abort the Message Send function.

Sending the message will be aborted when the Abort command turns ON. The Abort command takes priority over the Execute command.

To abort processing, this bit must be turned ON and OFF, e.g., from a ladder program.

[c] Dev-Typ (Transmission Device Type)

The Dev-Typ input specifies the transmission device type as shown in the following table.

Table 5.4 Dev-Typ

Transmission Device	Type Code
PROFINETM	22

[d] Pro-Typ (Communications Protocol)

The Pro-Typ input specifies the communications protocol as shown in the following table. To send a message on PROFINET, specify MEMOBUS (type code: 1).

Table 5.5 Pro-Typ

Type Code	Transmission Protocol (Communications Protocol)	Remarks
1	MEMOBUS	Select when sending on the message service.
2	Non-procedure 1 for word units	This setting cannot be used for PROFINET.
3	Non-procedure 2 for byte units	This setting cannot be used for PROFINET.

[e] Cir-No (Circuit Number)

The Cir-No input specifies the circuit number of the transmission device.

Set the circuit number to the value displayed in the **MPE720 Module Configuration** Window.

The valid circuit number ranges are given in the following table.

Table 5.6 Cir-No

Transmission Device	Valid Circuit Numbers
PROFINET	1 to 8

[f] Ch-No (Transmission Buffer Channel Number)

The Ch-No input specifies the channel number of the transmission buffer.

Any channel number can be specified as long as it is within the valid range. If more than one function is being executed at the same time, do not specify the same channel number more than once for the same circuit number. (The same channel number can be used as long as the functions are not executed at the same time.)

The valid channel number ranges are given in the following table.

Table 5.7 Table 5.7 Ch-No

Transmission Device	Valid Channel Numbers
PROFINET	1 to 5

Example

If the 266IF-01 Module is the transmission device, there are five channels of transmission buffers from 1 to 5 for sending and receiving combined, so up to five messages can be sent and received at the same time.

- One MSG-SND function must be programmed for each circuit that is used at the same time.

[g] Param (First Address of Parameter List)

The Param input specifies the first address of the parameter list. A parameter list will be automatically created from the 17 words starting with the specified address. Use the parameter list to input the function code and other related parameters. The processing result and status are also output to the parameter list.

- Refer to 5.2.4 *Parameter List of MSG-SND Function* for information on the parameter list.

Example: The following parameter list will be created when the first address of the parameter list is set to DA00000.

Register	Parameter List F • • • • • • • 0
DW00000	PARAM00
DW00001	PARAM01
DW00002	PARAM02
DW00003	PARAM03
DW00004	PARAM04
DW00005	PARAM05
DW00006	PARAM06
DW00007	PARAM07
DW00008	PARAM08
DW00009	PARAM09
DW00010	PARAM10
DW00011	PARAM11
DW00012	PARAM12
DW00013	PARAM13
DW00014	PARAM14
DW00015	PARAM15
DW00016	PARAM16

(2) Output Items**[a] Busy (Processing in Progress)**

Specify the bit that will report when sending the message is being processed. The Busy output will be ON while message send processing or abort processing is in progress. Keep the Execute command or Abort command ON while the Busy output is ON.

[b] Complete (Processing Completed)

Specify the bit that will report when processing to send the message has been completed. The Complete output will be ON for only one scan after message send processing or abort processing has been completed normally.

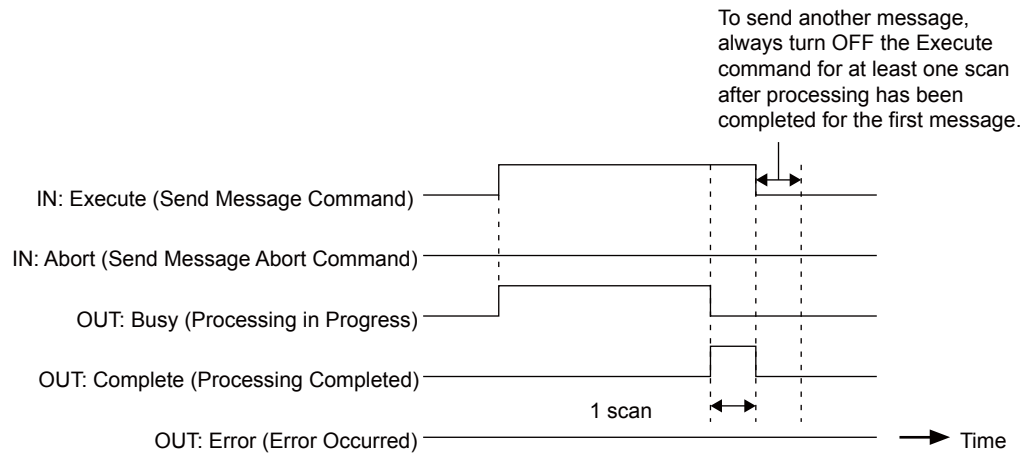
[c] Error (Error Occurred)

Specify the bit that will report when an error has occurred while sending the message. The Error output will turn ON for only one scan when an error occurs.

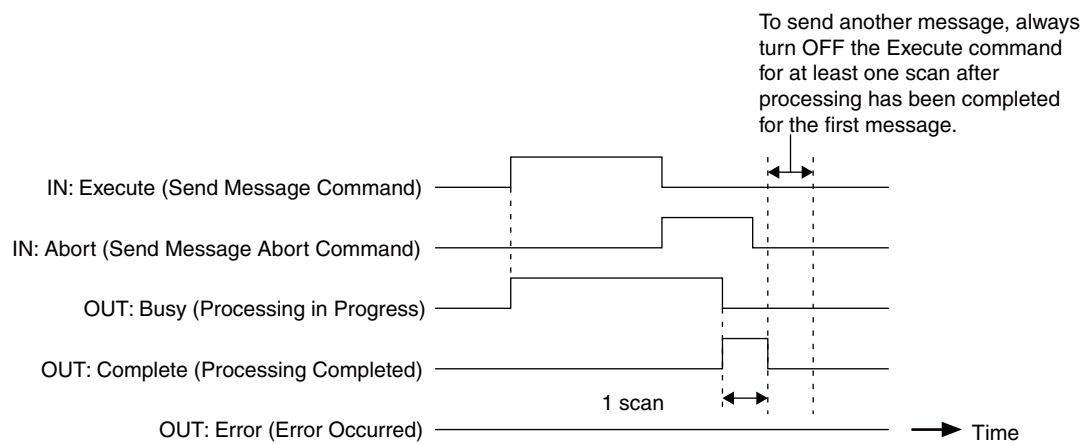
(3) I/O Timing Chart

The following timing charts show the bit inputs and outputs that are used with the MSG-SND function.

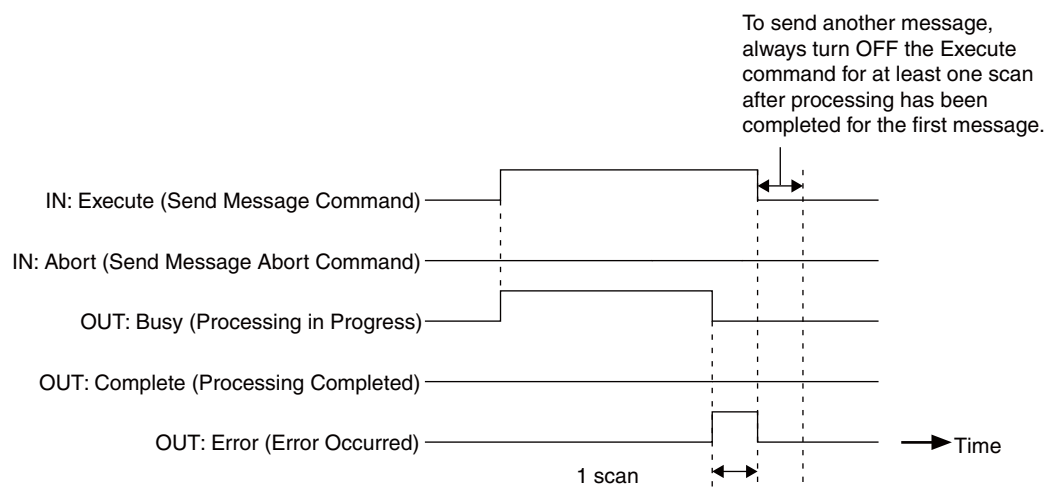
<Normal Processing>



<Abort Processing>



<Error Processing>



5.2.4 Parameter List of MSG-SND Function

The Param input to the MSG-SND function is a parameter list structure that consists of 17 words. The value of the Param input is the first address (MA or DA) of the parameter list.

Use the parameter list to input the remote station number, function code, and other related parameters. The processing result and status are also output to the parameter list.

The parameter list for the MEMOBUS communications protocol is given below.

Table 5.8 MSG-SND Parameter List

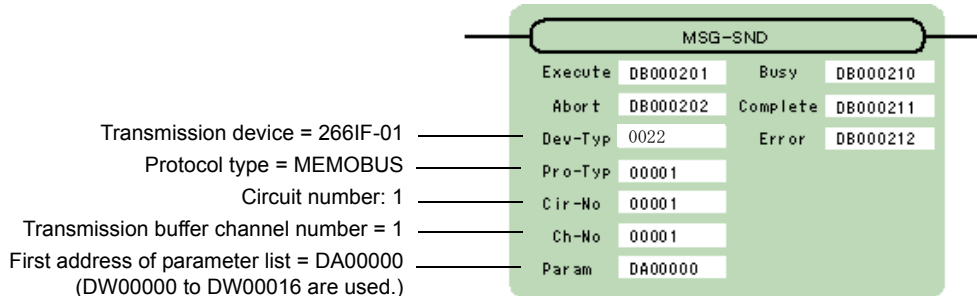
Parameter No.	IN/OUT	Contents	Description
00	OUT	Processing Result	The processing result is output here.
01	OUT	Status	The status of the transmission device is output here.
02	IN	Remote Station Number	Specify the remote station number.
03	IN	Options	Set the options specific to the transmission device.
04	IN	Function Code	Set the function code to send.
05	IN	Data Address	Specify the first address of the data.
06	IN/OUT	Data Size	Set the data size to read or write.
07	IN	Remote CPU Number	This parameter is not used.
08	IN	Coil Offset	This parameter is not used.
09	IN	Input Relay Offset	This parameter is not used.
10	IN	Input Register Offset	This parameter is not used.
11	IN	Holding Register Offset	Set the word offset to the addresses of the holding registers.
12	SYS	Reserved by the system 1.	This parameter is used by the system.
13 to 16	SYS	Reserved by the system 2.	These parameters are used by the system.

- IN: Input, OUT: Output, SYS: Used by the system.

5.2.5 Message Communications Format

(1) MSG-SND Function Setting Example

This section provides an example of setting the message communications function for PROFINETM (266IF).



The protocol type is set to MEMOBUS.

The circuit number is set to the circuit number that is assigned to the 266IF-01 Module.

All of the transmission buffer channel numbers on the same line must be unique.

For details on the settings, refer to 5.2.3 *Details on I/O Items for the MSG-SND Function*.

(2) Message Communications Parameters

This section describes the parameter list in detail for using message communications.

[a] PARAM00: Processing Result

The processing result is output to the upper byte. The lower byte is for system analysis.

Value of Processing Result	Meaning
00□□ hex	Processing in progress (Busy)
10□□ hex	Processing completed (Complete)
8y□□ hex	Error occurred (Error)

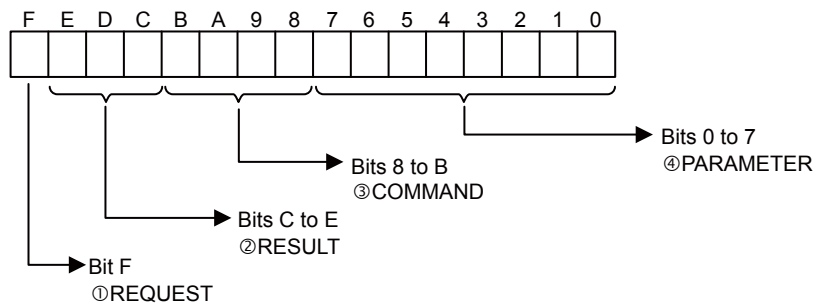
If an error occurs, troubleshoot the problem according to the value of the processing result as listed below.

Error Code	Error	Description
80□□ hex	–	Reserved by the system.
81□□ hex	Function code error	An attempt was made to send an undefined function code. Check PARAM04 (Function Code).
82□□ hex	Address setting error	One of the following parameters is not within the valid range. Check the settings. PARAM05 (Data Address) PARAM11 (Holding Register Offset)
83□□ hex	Data size error	The size of the sent or received data is not within the valid range. Check PARAM06 (Data Size).
84□□ hex	Circuit number setting error	The circuit number is not within the valid range. Check the circuit number in the MSG-SND function.
85□□ hex	Channel number setting error	The transmission buffer channel number is not within the valid range. Check the transmission buffer channel number (Ch-No) in the MSG-SND function.
86□□ hex	Station number error	The node number is not within the valid range. Check PARAM02 (Remote Station Number).
87□□ hex	–	Reserved by the system.
88□□ hex	Transmission device error	An error response was returned from the transmission device. Check the connection to the device. Also, make sure that the remote device can communicate.
89□□ hex	Device selection error	An unavailable device was set. Check the transmission device type (Dev-Typ) in the MSG-SND function.

[b] PARAM01: Status

The status of the transmission device is output to PARAM01.

Bit allocations are shown in the following figure and described after the figure (① to ④).



①REQUEST

The status of the processing request for the MSG-SND function is output to this bit.

Bit Status	Meaning
1	Processing is being requested.
0	Processing request has been accepted.

②RESULT

The result of executing MSG-SND function is output to these bits.

Code	Abbreviation	Meaning
1	SEND_OK	Sending has been completed normally.
2	REC_OK	Receiving has been completed normally.
3	ABORT_OK	Abort completed.
4	FMT_NG	Parameter format error occurred.
5	SEQ_NG	Command sequence error occurred.
6	RESET_NG	Reset status achieved.
7	REC_NG	Data receive error occurred. (Error detected by a lower-layer program.)

③COMMAND

The processing command for the MSG-SND function is output to these bits. The processing that is executed depends on the setting of the COMMAND bits.

Code (Hex)	Abbreviation	Meaning
1	U_SEND	Send General-purpose Message with Non-procedure Protocol
2	U_REC	Receive General-purpose Message with Non-procedure Protocol
3	ABORT	Abort
8	M_SEND	Send MEMOBUS Command: Executing the command is completed upon receiving a response.
9	M_REC	Receive MEMOBUS Command: Executing the command is followed by sending a response.
C	MR_SEND	Send MEMOBUS Response

④PARAMETER

The following error code is output if RESULT is set to 4 (FMT_NG: parameter format error). In other cases, the remote station number is output.

RESULT	Code	Meaning
RESULT = 4 (FMT_NG: parameter format error)	00	No error
	01	Remote node number outside the valid range
	02	MEMOBUS response receive monitor time error
	03	Retry count setting error
	04	Cyclic area setting error
	05	CPU number error
	06	Data address error
	07	Data size error
	08	Function code error
	10 hex	Function code error or format conversion error
Other values of RESULT	XX	Lower byte of remote station number

[c] PARAM02: Remote Station Number

Set the station number of the remote destination. The valid setting range is given in the following table.

Transmission Device	Remote Station Number	Remarks
PROFINETM (266IF)	1 to 128	The remote station number is the ST number in the link settings in the detail definitions of the 266IF-01 in MPE720. Set ST number that corresponds to the station name of the remote destination.

[d] PARAM03: Options

Set the options specific to the transmission device. This parameter is not used for PROFINETM. There is no need to set it.

[e] PARAM04: Function Code

Set the function code to send. Only function code 03 hex is used for PROFINETM message communications. The function code that is used for message communications is given in the following table.

Table 5.9 Function Code List for Message Communications

Function Code	Applicable Data Type	Function	Protocol Type
03 hex	–	Message communications	Can be set.
Others	–	–	Cannot be set.

- Setting the function code to 03 hex for PROFINETM (266IF) does not indicate the MEMOBUS command for reading holding registers.

[f] PARAM05: Data Address

PARAM05 specifies the first address of the M registers that contain the request message. The response message that is received is also stored in the same registers.

The address is input as a decimal or hexadecimal value.

- Example: To set a first address of MW01000, set 1000 (decimal) or 3E8H (hexadecimal).

The setting range for the data addresses that can be used for message communications is given in the following table.

Table 5.10 Data Address Setting Range for Message Communications

Function Code	Applicable Data Type	Function	Data Address Setting Range
03 hex	–	Message communications	0 to 65534 (0 to FFFE hex)

[g] PARAM06: Data Size

PARAM06 specifies the data size (number of bytes) for the request message. When a response message is received, the data size (number of bytes) of the response message is given in this parameter. Do not allow the final address of the data, which is determined by the offset, data address, and data size, to exceed the valid range of addresses. The data size depends on the function of the message (i.e., on the request command code). These values are specific to the PROFINET device. For details, ask the manufacturer of the PROFINET device. The setting range for the data size that can be used for message communications is given in the following table.

Table 5.11 Data Size Setting Range

Function Code	Applicable Data Type	Function	Data Address Setting Range
03 hex	–	Message communications	2 to 506 bytes

- The data sizes given in the table are decimal values.
- The data size setting ranges are restricted by the 266IF-01 Module. They differ from PROFINET specifications.

[h] PARAM07: Remote CPU Number

This parameter is not used. There is no need to set it.

[i] PARAM08, PARAM09, PARAM10, and PARAM11: Offsets

These parameters set the offsets for the data read or write location at the device that sends the message. The position of the data is shifted backward by the number of words that is set for the offset at the device that sends the message.

- Negative offsets cannot be set.

There is an offset parameter for each register type. The following offset parameter is used for message communications.

Table 5.12 Offset Parameters

Parameter	Contents	Description
PARAM08	Coil Offset	Not used.
PARAM09	Input Relay Offset	Not used.
PARAM10	Input Register Offset	Not used.
PARAM11	Holding Register Offset	Set the word offset to the addresses of the holding registers.

[j] PARAM12: Reserved by the System 1

PARAM12 is used by the system. (The current transmission buffer channel number is held here.)

- Make sure that the user program sets this parameter to 0 in the first scan after the power is turned ON. Thereafter, do not change the value that is set for this parameter because the system will use it.

[k] PARAM13 to PARAM16: Reserved by the System 2

These parameters are used by the system. Do not change the values that are set for these parameters.

(3) Message Communications Formats

The request message is written to the registers starting from the register that is specified for PARAM05 (Data Address) in the parameter list of the MSG-SND function. The format of the message depends on the function that is requested. A list of the request command codes, the request message formats, and the response message formats for the functions are given below. The addresses that are given are based on a Data Address setting of 1000.

Table 5.13 Request Command Codes

Message Function	Request Command Code	Format
Read Alarm Information	0001 hex	Table 5.2 Format A
Read Diagnostic Information	0002 hex	Table 5.2 Format A
Read Data Block	0004 hex	Table 5.4 Format C
Write Data Block	0005 hex	Table 5.5 Format D
Stop Communications	0006 hex	Table 5.3 Format B
Start Communications	0007 hex	Table 5.3 Format B
Release Slave	0008 hex	Table 5.3 Format B
Start Flashing Slave Indicator	0009 hex	Table 5.3 Format B
Stop Flashing Slave Indicator	000A hex	Table 5.3 Format B

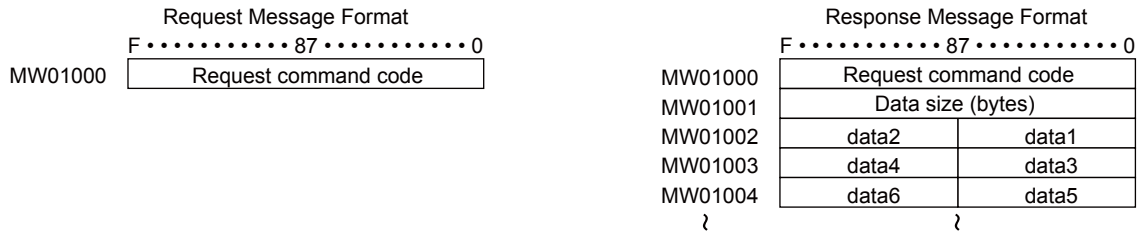


Fig. 5.2 Format A



Fig. 5.3 Format B

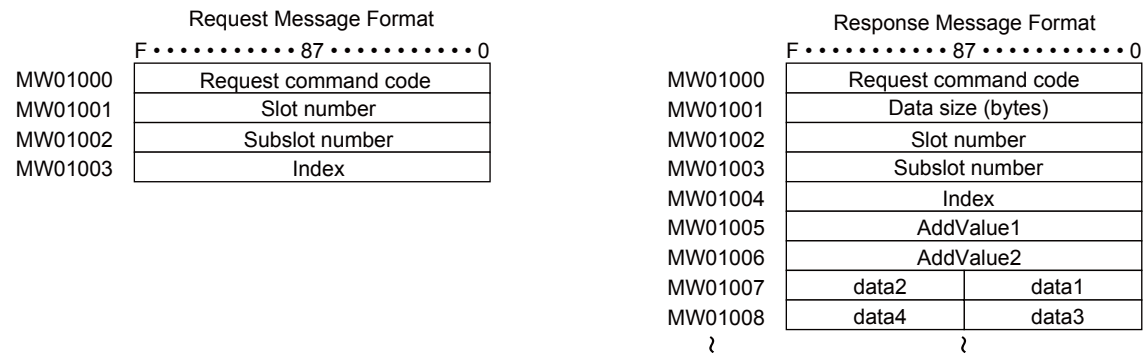


Fig. 5.4 Format C

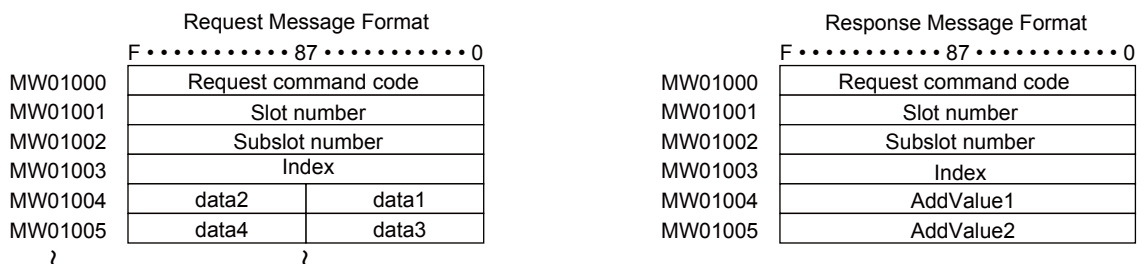


Fig. 5.5 Table 5.5 Format D

The slot number, subslot number, index, AddValue1, and AddValue2 are unique to the slave. Refer to the manuals from the manufacturers of the slaves for details. The data size in bytes that is given in the response message format is the size of only the data section. The slot number, subslot number, index, AddValue1, and AddValue2 are not included in the size.

5.2.6 Message Communications Setting Example

The MSG-SND function is used to send and receive messages. It sends a request message and receives a response message in one execution.

(1) Setting the MSG-SND Function

To use message communications, the MSG-SND function must be set as shown below. For details on the MSG-SND function, refer to 5.2.2 *MSG-SND Function*.

[a] Parameter List

Parameter No.	IN/OUT	Contents	Remarks
02	IN	Remote Destination Station Number	Set the remote station number to participate in message communications.
04	IN	Function Code	Set 3* to perform message communications.
12	SYS	System Use	The channel number of the current channel is stored here. Always set this parameter to 0 from the user program in the first scan after turning ON the power.

* Usually, function code 3 is used to read the contents of holding registers. With message communications, however, it does not have any specific meaning.

[b] Input Items

No.	Name	I/O Designation	Contents	Remarks
03	DEV-TYPE	I-REG	Transmission Device Type	Set 22 to use a 266IF-01 Module.
04	PRO-TYPE	I-REG	Transmission Protocol (Communications Protocol)	Set 1* to use a 266IF-01 Module.

* Usually, protocol type 1 is MEMOBUS. With message communications, however, it does not have any specific meaning.

(2) Request Messages

[a] Request Message Format

Write the request message in the registers that are specified by the data address that is described in 5.2.5 (2) [f] *PARAM05: Data Address* using the following format.

[b] Request Message Example to Read a Data Block

If 1000 is specified as the data address in the parameter list (see 5.2.5 (2) [f] *PARAM05: Data Address*), the request message is written in the following format.

(Offset word addresses)

MW01000: 0004 hex (Request command code: Read Data Block)

MW01001: 0001 hex (slot number)

MW01002: 0001 hex (subslot number)

MW01003: 8000 hex (index)

The slot number, subslot number, and index are unique to PROFINET. For details, ask the manufacturer of the PROFINET device. The size that is read is determined by the index. The 266IF-01 Module can read up to 493 bytes in the data section.

(3) Response Message

[a] Response Message Format

The response message is written in the registers that are specified by the data address that is described in 5.2.5 (2) [f] PARAM05: Data Address using the following format.

[b] Response Message Example to Read Data Block Command

If 1000 is specified as the data address in the parameter list (see 5.2.5 (2) [f] PARAM05: Data Address), the response message is written in the following format.

(Offset word addresses)

MW01000: 0004 hex (Request command code: Read Data Block)

MW01001: 0001 hex (data size (bytes))

MW01002: 0001 hex (slot number)

MW01003: 0001 hex (subslot number)

MW01004: 8000 hex (index)

MW01005: 0000 hex (AddValue1)

MW01006: 0000 hex (AddValue2)

MW01007: 0000 hex (data 1 (The data size specified in MW01001 is 1 byte, so only the lower byte is valid.))

Here, 16 is written for the data size in the parameter list (see 5.2.5 (2) [f] PARAM05: Data Address).

(4) Procedure to Start Communications

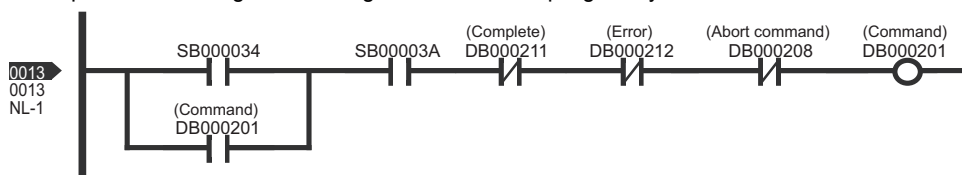
Use the following procedure to start communications.

1. Start the PROFINET slave devices.
2. Turn ON the Execute parameter in the MSG-SND function in the 266IF-01 Module to send a message.

Example ladder programming using the MSG-SND function is shown in 5.2.6 (5) Programming Example. In this programming example, a message is sent when the register that is set for Execute in the MSG-SND function (DB000201) turns ON to start communications with the slave.

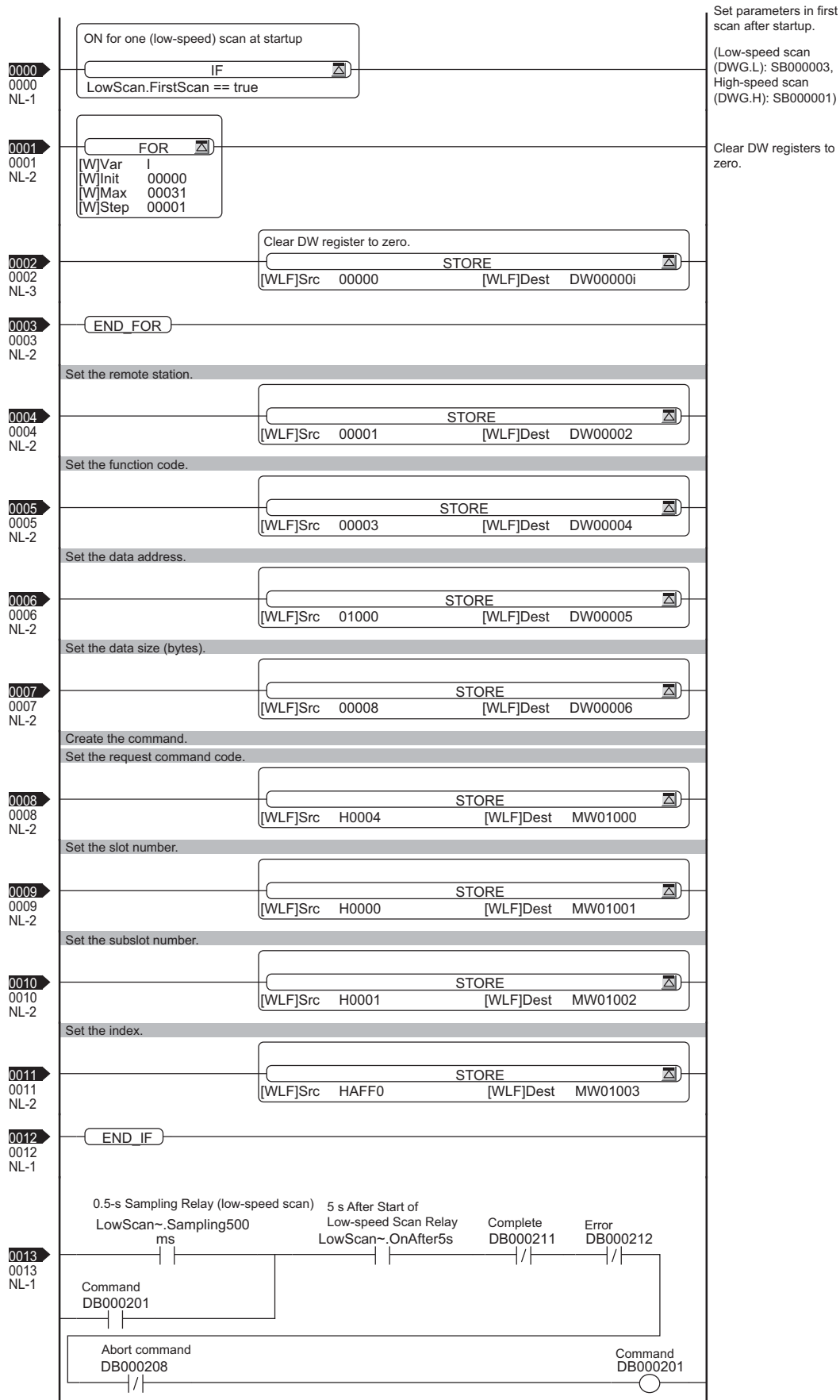
I/O Definition	No.	Name	Setting Example	Description
Input Item	1	Execute	DB000201	Message send processing is started when the send command (Execute) turns ON.

- In 5.2.6 (5) Programming Example, the programming example is written so that a message is sent five seconds after the low-speed (or high-speed) scan has started. If the MSG-SND function finishes normally, it is started again according to the timing of SB000034 (0.5-s Sampling Relay). Each time sending the message ends normally, it is repeated according to the timing of the 0.5-s Sampling Relay.

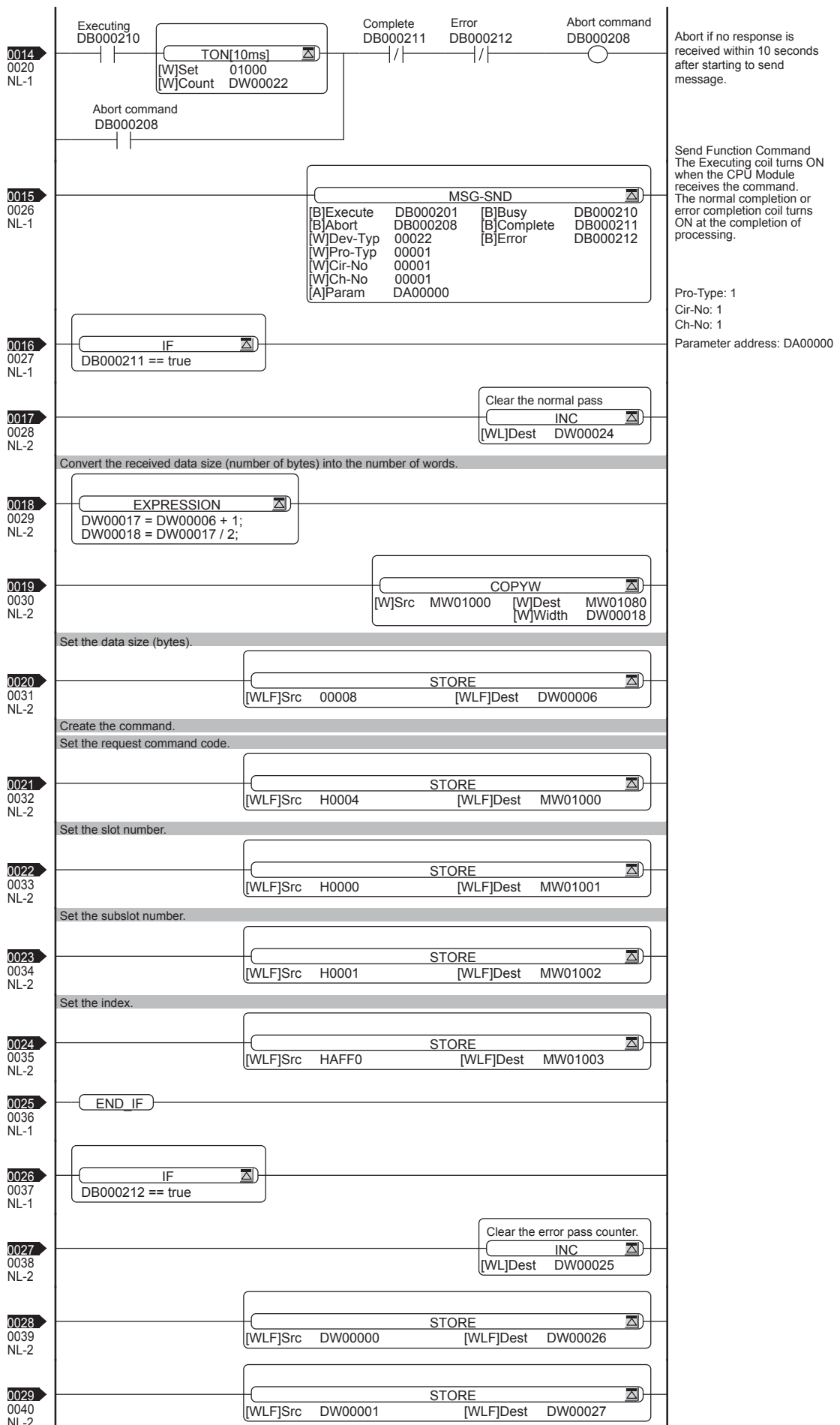


(5) Programming Example

A programming example for message communications is shown below.

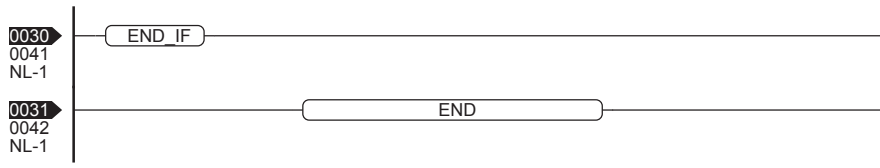


5.2.6 Message Communications Setting Example



5.2 Message Communications

5.2.6 Message Communications Setting Example



5.3 Registers

5.3.1 System Registers

You can use registers to monitor the PROFINET communications status.

(Bit number)	F	.	.	.	.	.	.	8	7	.	.	.	.	.	.	0
SW00xxx	Error Status							Subslot (Function) Number								
SW00xxx+1	Reserved.															
SW00xxx+2	Communications Phase															
SW00xxx+3	Communications Status Flags															
SW00xxx+4	Not used.															
SW00xxx+5	Not used.															
SW00xxx+6	Not used.															
SW00xxx+7	Not used.															

- The addresses of system registers depend on the rack and slot in which the Module is mounted. (For example, the first address (SW00□□□) for rack 1, slot 1 is SW00224.)

Status Details

Item	Code	Remarks
Subslot Number	1	1 : PROFINET
Error Status	0	Normal
	1	Station error

Communications Phase Details

Word	Meaning
0	Unknown
1	Not Configured
2	STOP (communications stopped)
3	IDLE (idle status)
4	OPERATE (communications in progress)

Communications Status Flag Details

Bit	Meaning (When the Relevant Bit Is ON)
0	0: Initialization in progress, 1: Initialization completed normally
1	0: System failure, 1: Normal
2	0: Bus failure, 1: Normal
3	0: Alarm event, 1: No alarm event
4	0: Diagnostic event, 1: No diagnostic event
5	0: Maintenance event, 1: No maintenance event
6 to F	Not used.

5.3.2 Input Registers

The configuration of the input registers that are assigned to the 266IF-01 Module is shown below.

Table 5.14 Input Register Configuration

Word Offset for Input Register Address	Specification
0000 to 0007 hex	Data Valid Flags (8 words) (1 bit per station for 128 stations)
0008 to 0087 hex	Slave Status (128 words) (1 word per station for 128 stations)
0088 hex and higher	Input data area (2,944 words max.) (512 words max. per station)

The following figure shows the Data Valid Flags and Slave Status.

(Bit number)	F	8	7	0
IWxxxx+0	16	Data Valid Flags for Stations 1 to 16												1		
IWxxxx+1	32	Data Valid Flags for Stations 17 to 32												17		
IWxxxx+2	48	Data Valid Flags for Stations 33 to 48												33		
IWxxxx+3	64	Data Valid Flags for Stations 49 to 64												49		
IWxxxx+4	80	Data Valid Flags for Stations 65 to 80												65		
IWxxxx+5	96	Data Valid Flags for Stations 81 to 96												81		
IWxxxx+6	112	Data Valid Flags for Stations 97 to 112												97		
IWxxxx+7	128	Data Valid Flags for Stations 113 to 128												113		
IWxxxx+8	Slave Status for Station 1															
IWxxxx+9	Slave Status for Station 2															
IWxxxx+A	Slave Status for Station 3															
IWxxxx+B	Slave Status for Station 4															
IWxxxx+84	Slave Status for Station 125															
IWxxxx+85	Slave Status for Station 126															
IWxxxx+86	Slave Status for Station 127															
IWxxxx+87	Slave Status for Station 128															

- The first address of the input registers depends on the system configuration.

Data Valid Flag Details

Bit	Meaning
0 to 15	0: Station error or no assignment. 1: Station data is valid.

Slave Status Details

Bit	Meaning
0	0: Initialization in progress, 1: Initialization completed normally.
1	0: System failure, 1: Normal
2	0: Bus failure, 1: Normal
3	0: Alarm event, 1: No alarm event
4	0: Diagnostic event, 1: No diagnostic event
5	0: Maintenance event, 1: No maintenance event
6 to 15	Not used.

5.3.3 Output Registers

The configuration of the output registers that are assigned to the 266IF-01 Module is shown below.

Table 5.15 Output Register Configuration

Word Offset for Output Register Address	Contents
0000 to 0087 hex	Not used.
0088 hex and higher	Output Data Area (2,944 words max.) Output data area (512 words max.) (512 words max. per station)

6

Troubleshooting

This chapter describes how to troubleshoot problems when they occur.

6.1 Status Indicators	6-2
6.2 System I/O Error Status	6-3
6.2.1 System I/O Error Status for Each Model of Machine Controller	6-3
6.2.2 I/O Error Status Details	6-7

6.1 Status Indicators

The following table describes the 266IF-01 Module status as shown by the indicators.

Table 6.1 Indicator Items

Classification	Indicator						Meaning	Description
	RUN	ERR	SYS	MT	SF	BF		
Power ON	Not lit	Lit	Not lit	Not lit	Not lit	Not lit	Power ON	This is the status immediately after turning ON the power.
Self-diagnosis	Not lit	Not lit	Not lit	Not lit	Not lit	Not lit	Self-diagnosis	After initialization is completed, self diagnosis is executed. The ERR indicator turns OFF if there are no errors.
Module Initialization	Lit	Not lit	Not lit	Not lit	Not lit	Not lit	Initialization completion	Initialization with the CPU Module was completed. The RUN indicator is lit.
Communications Initialization	Lit	Not lit	Flash-ing	Not lit	Not lit	Not lit	Communications initialization is completed.	PROFINET communications (netX) initialization was completed. (This status is not visible because connecting to the slaves is started immediately after Module initialization.)
Connecting to Slaves	Lit	Not lit	Lit	Not lit	Not lit	Flash-ing	Slave connections	Connections are being established with the slave stations.
Bus Failure Detected	Lit	Not lit	Lit	Not lit	Not lit	Lit	Bus failure	A bus failure (Ethernet cable disconnection, duplicate IP address, or other error) was detected.
Normal Communications	Lit	Not lit	Lit	Not lit	Not lit	Not lit	Normal communications	Communications are operating normally. I/O data is being exchanged with the slaves.
Maintenance Request Detection	Lit	Not lit	Lit	Not lit	Not lit	Not lit	Maintenance request	A maintenance request from a slave was detected. ♦ The MT indicator is for future expansion. It will not light.
System Failure Detection	Lit	Not lit	Lit	Not lit	Lit	Not lit	System failure	A system failure (module error, submodule error, diagnosis request, or other error) was detected at a slave.
Module Error	Lit	Flash-ing	–	–	–	–	Critical hardware failure	Number of flashes when an error is detected: 1: ROM diagnosis error 2: RAM diagnosis error 3: Shared memory diagnosis error 4: Communications ASIC diagnostic error
	Not lit	Flash-ing	–	–	–	–	Critical software error	Number of flashes when an error is detected: 3: Address error when reading 4: Address error when writing 5: FPU error 6: General illegal instruction error 7: Slot illegal instruction error 8: General FPU prohibition error 9: Slot FPU prohibition error 10: Watchdog timeout error

6.2 System I/O Error Status

6.2.1 System I/O Error Status for Each Model of Machine Controller

The following tables give the system I/O error status of the MP2000-series Machine Controllers. Refer to 3.10.1 *Displaying a Register List* and specify the system register address (SW□□□□□) that you want to access.

(1) MP2100M

Name	Register Address	Remarks
I/O Error Count	SW00200	Contains the number of I/O error occurrences. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Count	SW00201	Contains the number of input errors. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Address	SW00202	Contains the first register address (IW□□□□□) of the latest input error address.*1
Output Error Count	SW00203	Contains the number of output errors. This value is never incremented for errors that are caused by the 266IF-01 Module.
Output Error Address	SW00204	Contains the first register address (OW□□□□□) of the latest output error address. The output data address of the 266IF-01 Module is not given.
Reserved by the system.	SW00205	Not used.
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	MP2100M Error Status
	SW00216 to SW00223	Reserved by the system.
	SW00224 to SW00228	SVB-01 Error Status
	SW00229 to SW00239	Reserved by the system.
	SW00240 to SW00247	Error Status of Rack 2,*2 Slot 1 (Depends on the Module that is mounted and the error code.)
	SW00248 to SW00255	Error Status of Rack 2,*2 Slot 2 (Depends on the Module that is mounted and the error code.)
	SW00256 to SW00263	Error Status of Rack 2,*2 Slot 3 (Depends on the Module that is mounted and the error code.)
	SW00264 to SW00271	Error Status of Rack 2,*2 Slot 4 (Depends on the Module that is mounted and the error code.)
	⋮	⋮
SW00448 to SW00455	Error Status of Rack 4,*2 Slot 9 (Depends on the Module that is mounted and the error code.)	

* 1. If an input error occurs in PROFINET communications, the address of the first I/O register of the 266IF-01 Module is recorded. To identify the station with the error, use the Data Valid Flags and slave status in the input registers.

* 2. Racks 2 to 4 can be used for the MP2100MEX.

(2) MP2200

Name	Register Address	Remarks
I/O Error Count	SW00200	Contains the number of I/O error occurrences. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Count	SW00201	Contains the number of input errors. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Address	SW00202	Contains the first register address (IW□□□□□) of the latest input error address.*1

(cont'd)

Name	Register Address	Remarks
Output Error Count	SW00203	Contains the number of output errors. This value is never incremented for errors that are caused by the 266IF-01 Module.
Output Error Address	SW00204	Contains the first register address (OW□□□□) of the latest output error address. The output data address of the 266IF-01 Module is not given.
Reserved by the system.	SW00205	Not used.
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	Not used.
	SW00216 to SW00223	Reserved by the system.
	SW00224 to SW00228	Error Status of Rack 1, Slot 1 (Depends on the Module that is mounted and the error code.)
	SW00229 to SW00239	Error Status of Rack 1, Slot 2 (Depends on the Module that is mounted and the error code.)
	SW00240 to SW00247	Error Status of Rack 1, Slot 3 (Depends on the Module that is mounted and the error code.)
	SW00248 to SW00255	Error Status of Rack 1, Slot 4 (Depends on the Module that is mounted and the error code.)
	⋮	⋮
	SW00496 to SW00503	Error Status of Rack 4, ^{*2} Slot 9 (Depends on the Module that is mounted and the error code.)

* 1. If an input error occurs in PROFINET communications, the address of the first I/O register of the 266IF-01 Module is recorded. To identify the station with the error, use the Data Valid Flags and slave status in the input registers.

* 2. Racks 2 to 4 can be used for the EXIOIF.

(3) MP2300

Name	Register Address	Remarks
I/O Error Count	SW00200	Contains the number of I/O error occurrences. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Count	SW00201	Contains the number of input errors. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Address	SW00202	Contains the first register address (IW□□□□) of the latest input error address.*
Output Error Count	SW00203	Contains the number of output errors. This value is never incremented for errors that are caused by the 266IF-01 Module.
Output Error Address	SW00204	Contains the first register address (OW□□□□) of the latest output error address. The output data address of the 266IF-01 Module is not given.
Reserved by the system.	SW00205	Not used.
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	Error Status of Slot 0 (Depends on the Modules that are mounted and the error code.)
	SW00216 to SW00223	Reserved by the system.
	SW00224 to SW00231	Error Status of Slot 1 (Depends on the Modules that are mounted and the error code.)
	SW00232 to SW00239	Error Status of Slot 2 (Depends on the Modules that are mounted and the error code.)
	SW00240 to SW00247	Error Status of Slot 3 (Depends on the Modules that are mounted and the error code.)

* If an input error occurs in PROFINET communications, the address of the first I/O register of the 266IF-01 Module is recorded. To identify the station with the error, use the Data Valid Flags and slave status in the input registers.

(4) MP2310

Name	Register Address	Remarks
I/O Error Count	SW00200	Contains the number of I/O error occurrences. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Count	SW00201	Contains the number of input errors. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Address	SW00202	Contains the first register address (IW□□□□) of the latest input error address.*
Output Error Count	SW00203	Contains the number of output errors. This value is never incremented for errors that are caused by the 266IF-01 Module.
Output Error Address	SW00204	Contains the first register address (OW□□□□) of the latest output error address. The output data address of the 266IF-01 Module is not given.
Reserved by the system.	SW00205	Not used.
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	Slot 0 Error Status
	SW00216 to SW00223	Reserved by the system.
	SW00224 to SW00231	Slot 1 Error Status
	SW00232 to SW00239	Slot 2 Error Status
	SW00240 to SW00247	Slot 3 Error Status
	SW00248 to SW00255	Reserved by the system (Slot 4 Error Status).
	⋮	⋮
	SW00456 to SW00463	Reserved by the system (Slot 30 Error Status).

* If an input error occurs in PROFINET communications, the address of the first I/O register of the 266IF-01 Module is recorded. To identify the station with the error, use the Data Valid Flags and slave status in the input registers.

(5) MP2300S

Name	Register Address	Remarks
I/O Error Count	SW00200	Contains the number of I/O error occurrences. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Count	SW00201	Contains the number of input errors. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Address	SW00202	Contains the first register address (IW□□□□) of the latest input error address.*
Output Error Count	SW00203	Contains the number of output errors. This value is never incremented for errors that are caused by the 266IF-01 Module.
Output Error Address	SW00204	Contains the first register address (OW□□□□) of the latest output error address. The output data address of the 266IF-01 Module is not given.
Reserved by the system.	SW00205	Not used.
	SW00206	
	SW00207	

(cont'd)

Name	Register Address	Remarks
I/O Error Status	SW00208 to SW00215	Slot 0 Error Status
	SW00216 to SW00223	Reserved by the system.
	SW00224 to SW00231	Slot 1 Error Status
	SW00232 to SW00239	Reserved by the system (Slot 2 Error Status).
	SW00240 to SW00247	Reserved by the system (Slot 3 Error Status).
	SW00248 to SW00255	Reserved by the system (Slot 4 Error Status).
	⋮	⋮
	SW00456 to SW00463	Reserved by the system (Slot 30 Error Status).

* If an input error occurs in PROFINET communications, the address of the first I/O register of the 266IF-01 Module is recorded. To identify the station with the error, use the Data Valid Flags and slave status in the input registers.

(6) MP2500MD

Name	Register Address	Remarks
I/O Error Count	SW00200	Contains the number of I/O error occurrences. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Count	SW00201	Contains the number of input errors. This value is incremented any time a reception error is detected by the 266IF-01 Module.
Input Error Address	SW00202	Contains the first register address (IW□□□□) of the latest input error address.* ¹
Output Error Count	SW00203	Contains the number of output errors. This value is never incremented for errors that are caused by the 266IF-01 Module.
Output Error Address	SW00204	Contains the first register address (OW□□□□) of the latest output error address. The output data address of the 266IF-01 Module is not given.
Reserved by the system.	SW00205	Not used.
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	MP2500MD Error Status
	SW00216 to SW00223	Reserved by the system.
	SW00224 to SW00228	SVB-01 Error Status
	SW00229 to SW00239	Reserved by the system.
	SW00240 to SW00247	Error Status of Rack 2,* ² Slot 1 (Depends on the Module that is mounted and the error code.)
	SW00248 to SW00255	Error Status of Rack 2,* ² Slot 2 (Depends on the Module that is mounted and the error code.)
	SW00256 to SW00263	Error Status of Rack 2,* ² Slot 3 (Depends on the Module that is mounted and the error code.)
	SW00264 to SW00271	Error Status of Rack 2,* ² Slot 4 (Depends on the Module that is mounted and the error code.)
	⋮	⋮
	SW00448 to SW00455	Error Status of Rack 4,* ² Slot 9 (Depends on the Module that is mounted and the error code.)

* 1. If an input error occurs in PROFINET communications, the address of the first I/O register of the 266IF-01 Module is recorded. To identify the station with the error, use the Data Valid Flags and slave status in the input registers.

* 2. Racks 2 to 4 can be used for the MP2100MEX.

6.2.2 I/O Error Status Details

When an error that is related to system I/O occurs, the error status is written to a system register. The register assignments of the error status when a LIO-01/LIO-02 I/O Module, a 266IF-01 PROFINET Controller Module, and a 260IF-01 DeviceNet Communications Module are set for slots 1, 2 and 3 of the MP2300 Machine Controller are shown below.

Table 6.2 MP2300 Machine Controller Basic Module Error Status

Name	Register Address	Remarks
Slot 0 Error Status	SW00208 to SW00215	Depends on the installed Module and error code.
Reserved by the system.	SW00216 to SW00223	Depends on the installed Module and error code.
Slot 1 Error Status	SW00224 to SW00231	Depends on the installed Module and error code.
Slot 2 Error Status	SW00232 to SW00239	Depends on the installed Module and error code.
Slot 3 Error Status	SW00240 to SW00247	Depends on the installed Module and error code.

(1) Register Assignments for Slot 0 (Always the Basic Module)

(Bit number)	F	.	.	.	.	.	.	8	7	.	.	.	.	.	0	
SW00208	Error Code (I/O error = 2)							Subslot Number (= 2)								
SW00209	Error Code (station error = 1)							Subslot Number (= 3)								
SW00210	ST#15	.....						ST#2	ST#1	Not used.						
SW00211	Not used.	ST#30	.....						ST#17	ST#16	Not used.					
SW00212	Not used.	.....											Not used.			
SW00213	Not used.	.....											Not used.			
SW00214	Not used.	.....											Not used.			
SW00215	Not used.	.....											Not used.			

(2) LIO-01/LIO-02 I/O Module Error Status (Slot 1)

(Bit number)	F	8	7	0	
SW00224	Error Code (I/O error = 2)							Subslot Number (= 1)								
SW00225	Error Code (I/O error = 2)							Subslot Number (= 2)								
SW00226	ST#15						ST#2	ST#1	Not used.						
SW00227	Not used.	.....											Not used.		
SW00228	Not used.	.....											Not used.		
SW00229	Not used.	.....											Not used.		
SW00230	Not used.	.....											Not used.		
SW00231	Not used.	.....											Not used.		

(3) 266IF-01 PROFINET Controller Module Error Status (Slot 2)

(Bit number)	F	.	.	.	.	.	.	8	7	.	.	.	.	.	.	0
SW00232	Error Status							Subslot (Function) Number								
SW00233	Reserved.															
SW00234	Communications Phase															
SW00235	Communications Status Flags															
SW00236	Not used.															
SW00237	Not used.															
SW00238	Not used.															
SW00239	Not used.															

- The addresses of system registers depend on the rack and slot in which the Module is mounted. (For example, the first address (SW00□□□) for rack 1, slot 1 is SW00224.)

Status Details

Item	Code	Remarks
Subslot Number	1	1 : PROFINET
Error Status	0	Normal
	1	Station error

Communications Phase Details

Word	Meaning
0	Unknown
1	Not Configured
2	STOP (communications stopped)
3	IDLE (idle status)
4	OPERATE (communications in progress)

Communications Status Flag Details

Bit	Meaning (When the Relevant Bit Is ON)
0	0: Initialization in progress, 1: Initialization completed normally
1	0: System failure, 1: Normal
2	0: Bus failure, 1: Normal
3	0: Alarm event, 1: No alarm event
4	0: Diagnostic event, 1: No diagnostic event
5	0: Maintenance event, 1: No maintenance event
6 to F	Not used.

(4) 260IF-01 DeviceNet Communications Module Error Status (Slot 3)

(Bit number)	F	8	7	0
SW00240	Error Code (station error = 1)							Subslot Number (= 2)								
SW00241	ST#15	.....										ST#0			
SW00242	ST#31	.....										ST#16			
SW00243	ST#47	.....										ST#32			
SW00244	ST#63	.....										ST#48			

Error Status Details

Item	Code	Remarks
ST#n	0	Normal Communications
	1	Communications error at station n (n = local station for slaves)

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