

A-1 Supported CIP Objects

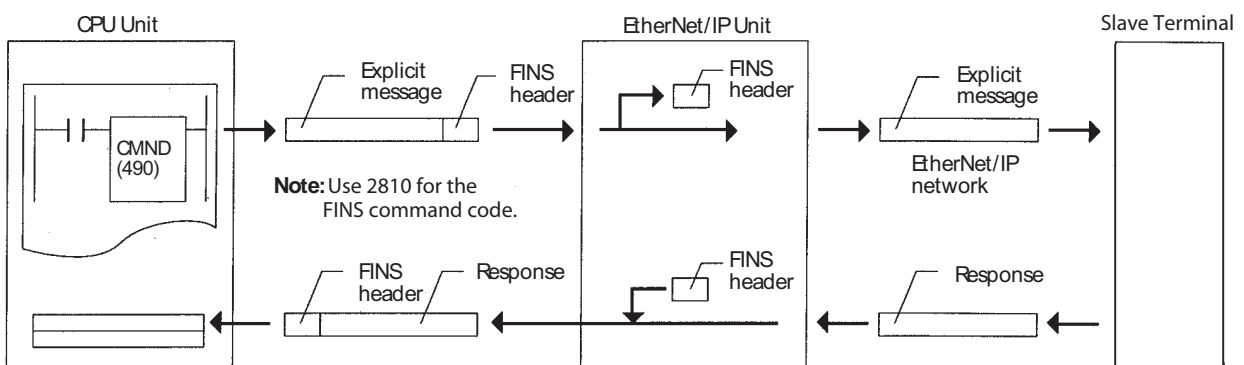
The following table provides details of the supported CIP objects for a Slave Terminal. All values are in hexadecimal format.

Services	Service Code	Class ID	Instance ID	Attribute ID	Name	Details	Value
Get Attribute Single	0E	04	64	03	Data	Read the Input Data of the EtherNet/IP Coupler Unit	Input Data (See Note 2)
			94	03	Data	Read the Output Data of the EtherNet/IP Coupler Unit	Output Data (See Note 2)
		74	01	01	Output data size	Read the byte size of the Output Data	0 to 01F8
				02	Input data size	Read the byte size of the Input Data	0 to 01F8
Set Attribute Single	10	04	94	03	Data	Write the Output Data of the EtherNet/IP Coupler Unit (See Note 1)	Output Data (See Note 2)
Clear Error	32	74	01	---	Clear error	Clears the NX Error Status (See Note 3)	---

- Note 1. Writing output data is only possible when a Safety Control Unit is included in the Slave Terminal. Refer to the *NX-series Safety Control Unit User's Manual* (Cat. No. Z930) for more information.
- 2. Refer to *9-2-3 I/O Allocation Information* on page 9-12 for more information.
- 3. Refer to *12-4 Resetting Errors* on page 12-45 for more information.

A-1-1 Clear Error Explicit Message Example Using CMND(490)

With an EtherNet/IP Unit, a CMND(490) instruction in the PLC CPU Unit's ladder program can send explicit messages to a Slave Terminal.



The clear error service code (0x32 hex) is sent to the Slave Terminal at IP address 192.168.250.1, using the CIP UCMM MESSAGE SEND command, 2810. The network number assigned to the EtherNet/IP network is 1. The IP address and node number of the EtherNet/IP Unit is 33.

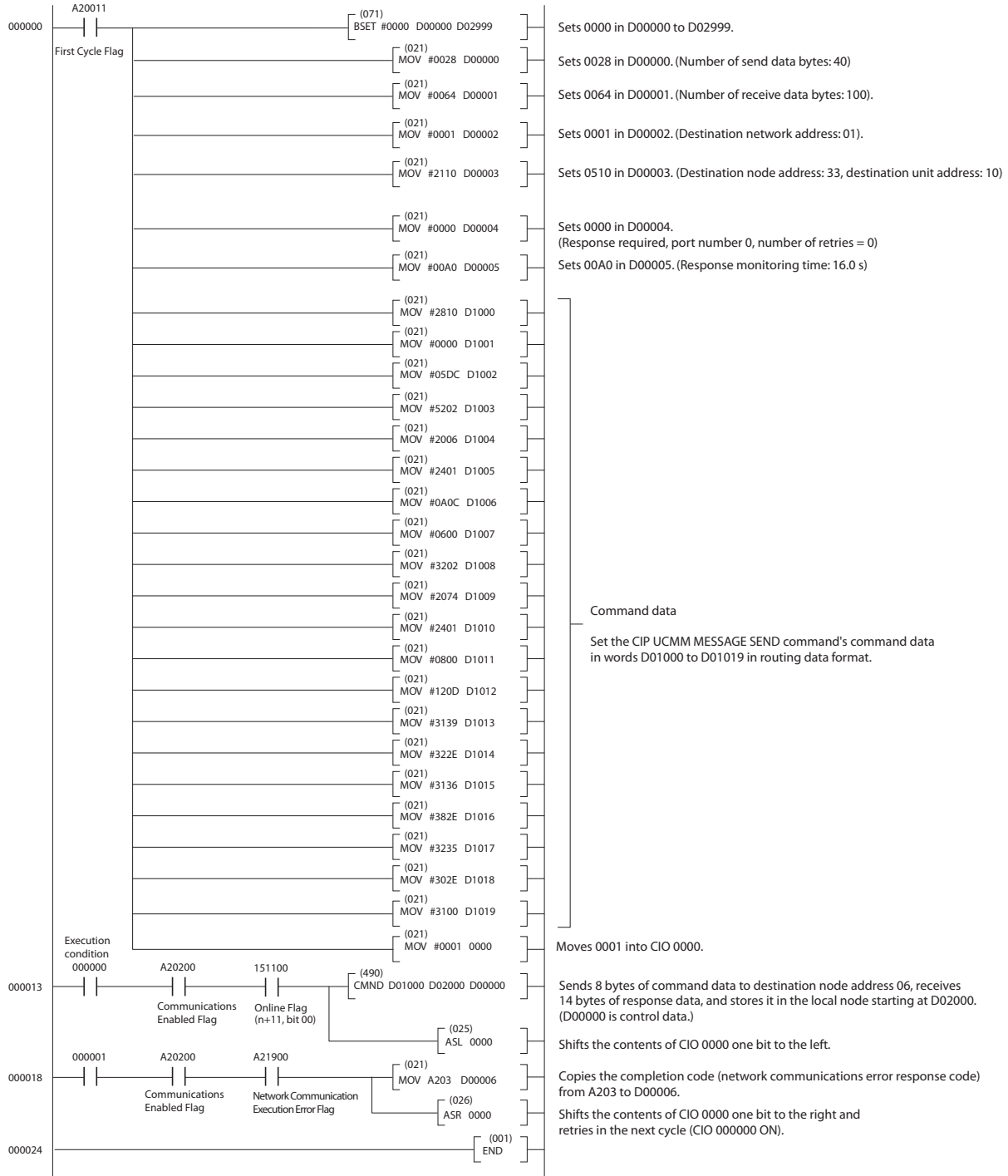
The command data is stored in the DM Area starting at DM01000, and the response data is stored in the DM Area starting at D02000. If the command ends with an error, the end code is stored in D00006 and command transmission is retried.

Command Details

CMND Word	Address	Value (hex)	Description
S	D01000 (first command word)	2810	Command Code
	D01001	0000	Transport ID: 0000 hex
	D01002	05DC	Message monitoring time: 15.00 s
	D01003	5202	<ul style="list-style-type: none"> Slave code: 52 hex (Unconnected Send) Request path size: 2 words
	D01004	2006	<ul style="list-style-type: none"> Request path: 20 06 24 01 hex (Connection Manager) Class ID: 06 hex Instance ID: 01 hex
	D01005	2401	
	D01006	0A0C	<ul style="list-style-type: none"> Priority/Time_Tick: 0A hex Timeout Ticks: 0C hex
	D01007	0600	Message request size: 6 bytes
	D01008	3202	<ul style="list-style-type: none"> Service: 32 hex (Clear Error) Request path size: 2 words
	D01009	2074	<ul style="list-style-type: none"> 8-bit class ID: 20 hex Class ID: 74 hex
	D01010	2401	<ul style="list-style-type: none"> 8-bit instance ID: 24 hex Instance ID: 01 hex (Identity Object)
	D01011	0800	Route path size: 8 words
	D01012	120D	<ul style="list-style-type: none"> Extended link address size: 1 hex Route path size: 13 bytes (characters) = 0D hex
	D01013	3139	IP address: "19"
	D01014	322E	IP address: "2."
	D01015	3136	IP address: "16"
	D01016	382E	IP address: "8."
	D01017	3235	IP address: "25"
	D01018	302E	IP address: "0."
D01019	3100	<ul style="list-style-type: none"> IP address: "1" Padding data: 00 hex 	
D	D2000 (first response word at local node)		
C	D0000 (first control word)	0028	Number of command bytes: 40 bytes
	D0001	0064	Number of response bytes: 100 bytes
	D0002	0001	Destination network address: 1
	D0003	2110	<ul style="list-style-type: none"> Destination node address: 33 Destination unit address: FE hex (or 10 hex)
	D0004	0000	Response, communications port 0, no retries
	D0005	00A0	Response monitoring time: 16.0 s

Words C+6 to C+18 contain the service response data. The service code 32 returns 0000s as response data for normal execution. Other service codes return response data such as assembly object input/output data and size.

Program Example



A-1-2 Response Codes

General Status Code

The General Status Code is stored in the response data after execution of the CMND instruction has been completed.

General status code (hex)	Status name	Description
00	Success	Service was successfully performed by the object specified.
01	Connection failure	A connection related service failed along the connection path.
02	Resource unavailable	Resources needed for the object to perform the requested service were unavailable.
03	Invalid parameter value	See Status Code 20 hex, which is the preferred value to use for this condition.
04	Path segment error	The path segment identifier or the segment syntax was not understood by the processing node. Path processing shall stop when a path segment error is encountered.
05	Path destination unknown	The path is referencing an object class, instance or structure element that is not known or is not contained in the processing node. Path processing shall stop when a path destination unknown error is encountered.
06	Partial transfer	Only part of the expected data was transferred.
07	Connection lost	The messaging connection was lost.
08	Service not supported	The requested service was not implemented or was not defined for this Object Class/Instance.
09	Invalid attribute value	Invalid attribute data detected.
0A	Attribute list error	An attribute in the Get_Attribute_List or Set_Attribute_List response has a non-zero status.
0B	Already in requested mode/state	The object is already in the mode/state being requested by the service.
0C	Object state conflict	The object cannot perform the requested service in its current mode/state.
0D	Object already exists	The requested instance of object to be created already exists.
0E	Attribute not settable	A request to modify a non-modifiable attribute was received.
0F	Privilege violation	A permission/privilege check failed.
10	Device state conflict	The device's current mode/state prohibits the execution of the requested service.
11	Reply data too large	The data to be transmitted in the response buffer is larger than the allocated response buffer
12	Fragmentation of a primitive value	The service specified an operation that is going to fragment a primitive data value, i.e. half a REAL data type.
13	Not enough data	The service did not supply enough data to perform the specified operation.

General status code (hex)	Status name	Description
14	Attribute not supported	The attribute specified in the request is not supported.
15	Too much data	The service supplied more data than was expected.
16	Object does not exist	The object specified does not exist in the device.
17	Service fragmentation sequence not in progress	The fragmentation sequence for this service is not currently active for this data.
18	No stored attribute data	The attribute data of this object was not saved prior to the requested service.
19	Store operation failure	The attribute data of this object was not saved due to a failure during the attempt.
1A	Routing failure (request packet too large)	The service request packet was too large for transmission on a network in the path to the destination. The routing device was forced to abort the service.
1B	Routing failure (response packet too large)	The service response packet was too large for transmission on a network in the path from the destination. The routing device was forced to abort the service.
1C	Missing attribute list entry data	The service did not supply an attribute in a list of attributes that was needed by the service to perform the requested behavior.
1D	Invalid attribute value list	The service is returning the list of attributes supplied with status information for those attributes that were invalid.
1E	Embedded service error	An embedded service resulted in an error.
1F	Vendor specific error	A vendor specific error has been encountered. The Additional Code Field of the Error Response defines the particular error encountered. Use of this General Error Code should only be performed when none of the Error Codes presented in this table or within an Object Class definition accurately reflect the error.
20	Invalid parameter	A parameter associated with the request was invalid. This code is used when a parameter does not meet the requirements of this specification and/or the requirements defined in an Application Object Specification.
21	Write-once value or medium already written	An attempt was made to write to a write-once medium (e.g. WORM drive, PROM) that has already been written, or to modify a value that cannot be changed once established.
22	Invalid Reply Received	An invalid reply is received (e.g. reply service code does not match the request service code, or reply message is shorter than the minimum expected reply size). This status code can serve for other causes of invalid replies.
23-24	---	Reserved by CIP for future extensions
25	Key Failure in path	The Key Segment that was included as the first segment in the path does not match the destination module. The object specific status shall indicate which part of the key check failed.
26	Path Size Invalid	The size of the path which was sent with the Service Request is either not large enough to allow the Request to be routed to an object or too much routing data was included.

General status code (hex)	Status name	Description
27	Unexpected attribute in list	An attempt was made to set an attribute that is not able to be set at this time.
28	Invalid Member ID	The Member ID specified in the request does not exist in the specified Class/Instance/Attribute.
29	Member not settable	A request to modify a non-modifiable member was received.
2A	Group 2 only server general failure	This error code may only be reported by DeviceNet group 2 only servers with 4K or less code space and only in place of Service not supported, Attribute not supported and Attribute not settable.
2B-CF	---	Reserved by CIP for future extensions
D0-FF	Reserved for Object Class and service errors	This range of error codes is to be used to indicate Object Class specific errors. Use of this range should only be performed when none of the Error Codes presented in this table accurately reflect the error that was encountered.

Example of Additional Status in Case That General Status is 01 Hex (Status of Connection Manager Object)

General status code (hex)	Additional status code (hex)	Description
01	0100	Connection in Use or Duplicate Forward Open.
01	0103	Transport Class and Trigger combination not supported
01	0106	Ownership Conflict
01	0107	Connection not found at target application.
01	0108	Invalid Connection Type. Indicates a problem with either the Connection Type or Priority of the Connection.
01	0109	Invalid Connection Size
01	0110	Device not configured
01	0111	RPI not supported. May also indicate problem with connection time-out multiplier, or production inhibit time.
01	0113	Connection Manager cannot support any more connections
01	0114	Either the Vendor Id or the Product Code in the key segment did not match the device
01	0115	Product Type in the key segment did not match the device
01	0116	Major or Minor Revision information in the key segment did not match the device
01	0117	Invalid Connection Point
01	0118	Invalid Configuration Format
01	0119	Connection request fails since there is no controlling connection currently open.
01	011A	Target Application cannot support any more connections
01	011B	RPI is smaller than the Production Inhibit Time.
01	0203	Connection cannot be closed since the connection has timed out

General status code (hex)	Additional status code (hex)	Description
01	0204	Unconnected Send timed out waiting for a response.
01	0205	Parameter Error in Unconnected Send Service
01	0206	Message too large for Unconnected message service
01	0207	Unconnected acknowledge without reply
01	0301	No buffer memory available
01	0302	Network Bandwidth not available for data
01	0303	No Tag filters available
01	0304	Not Configured to send real-time data
01	0311	Port specified in Port Segment Not Available
01	0312	Link Address specified in Port Segment Not Available
01	0315	Invalid Segment Type or Segment Value in Path
01	0316	Path and Connection not equal in close
01	0317	Either Segment not present or Encoded Value in Network Segment is invalid.
01	0318	Link Address to Self Invalid
01	0319	Resources on Secondary Unavailable
01	031A	Connection already established
01	031B	Direct connection already established
01	031C	Miscellaneous
01	031D	Redundant connection mismatch
01	031F	No connection resources exist for target path
01	0320-07FF	Vendor specific

A-2 UDP/IP and TCP/IP Message Service Interface

The EtherNet/IP Coupler Unit supports a message service interface alternative to the standard EtherNet/IP Tag Data Link interface. Message services can be used to send/receive data between general-purpose applications and Slave Terminals. You can use these communications services to send and receive any data to and from remote nodes, i.e., between host computers and Slave Terminals.

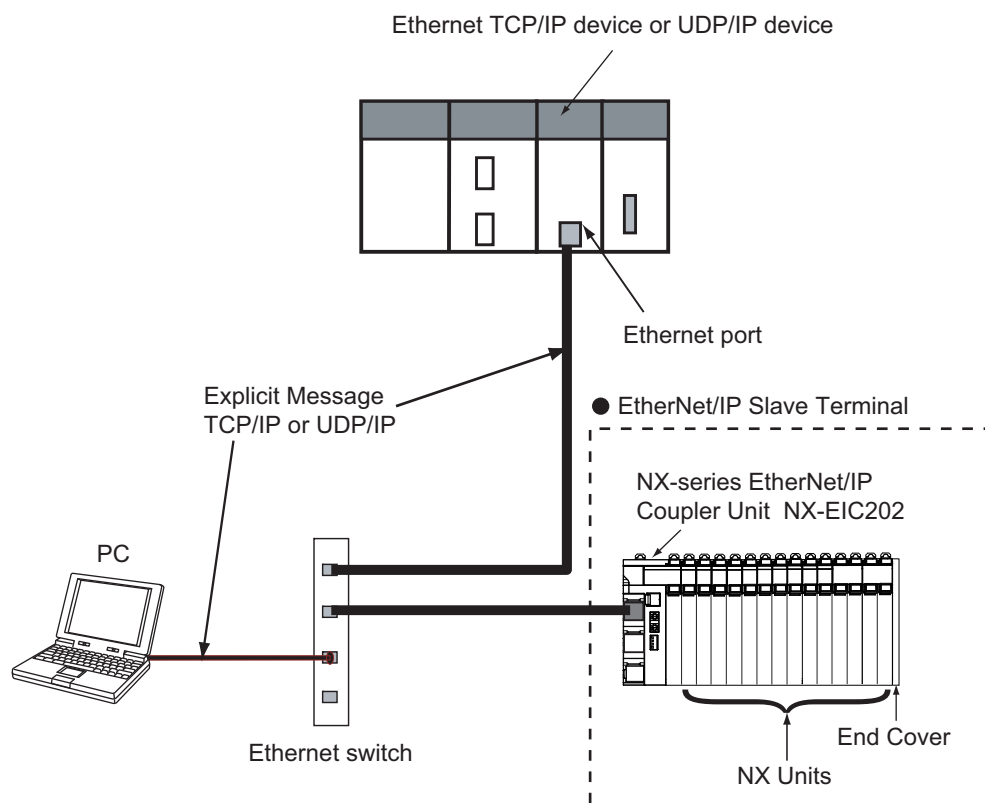
A device that supports explicit messaging with TCP/IP or UDP/IP protocol can access CIP objects in the EtherNet/IP Coupler Unit to issue request commands (refer to *A-1 Supported CIP Objects* on page A-2 for details on request commands).

Precautions for Correct Use

Writing output data is only possible when a Safety Control Unit is included in the Slave Terminal. Refer to the *NX-series Safety Control Unit User's Manual* (Cat. No. Z930) for more information.

A-2-1 General Message Service Applications

Use the message service function when devices that do not support EtherNet/IP need to communicate with an EtherNet/IP Coupler Unit. Devices such as PCs or other controllers can send and receive Omron specific TCP/IP commands and UDP/IP commands to access CIP objects (refer to *A-1 Supported CIP Objects* on page A-2 for details on CIP objects) as shown in the image below.



A-2-2 General Message Service Configuration Procedure

This section describes how to use EtherNet/IP Slave Terminals with message services.

Refer to the *NX-series Safety Control Unit User's Manual* (Cat. No. Z930) for the procedures to use Safety Control Units.

Procedure	Sections
1. Preparing for Work	<ul style="list-style-type: none"> • 2-2-2 Types of NX Units on page 2-7 • 3-1 Specifications on page 3-2 • Section 5 Designing the Power Supply System • 6-1-3 Installation Orientation on page 6-8 • Manuals for the specific NX Units
2. Making Hardware Settings and Wiring the Slave Terminal	<ul style="list-style-type: none"> • 4-3 Hardware Switch Settings on page 4-8 • 6-1 Installing Units on page 6-2 • Section 7 Wiring
3. Configuring the Slave Terminal and Making the Operation Settings	9-2 Setting Slave Terminal Parameters on page 9-7
4. Transferring and Comparing EtherNet/IP Coupler Unit Parameter Settings	9-3 Transferring and Comparing Settings on page 9-28
5. Setting the EtherNet/IP Coupler Unit's IP Address, Automatic Clock and Port Number.	<ul style="list-style-type: none"> • 9-4 Setting IP Address on page 9-31 • 11-3-3 Automatic Clock Adjustment on page 11-11 • A-2-5 TCP/IP and UDP/IP Port Number Setting on page A-15
6. Checking Indicators	4-2 Indicators on page 4-5
7. Confirming Operation by Checking the Wiring	Manual for the specific NX Units
8. Programming for TCP/IP or UDP/IP communications with message services.	Manual for the Controller

A-2-3 Detailed Message Service Configuration Procedure

Procedure	Item	Description	Reference
1	Preparing for Work	Selecting NX Units Select the NX Units and the quantity and types of I/O that are required.	<ul style="list-style-type: none"> 2-2-2 <i>Types of NX Units</i> on page 2-7 <i>Manuals for the specific NX Units</i>
	Confirming Suitability of Slave Terminal Specifications	Confirm that the following specific restrictions for the Slave Terminal are met. <ul style="list-style-type: none"> Number of NX Units Send/receive PDO data sizes Design conditions for the NX Unit power supply and I/O power supply Installation orientation 	<ul style="list-style-type: none"> 3-1 <i>Specifications</i> on page 3-2 Section 5 <i>Designing the Power Supply System</i> 6-1-3 <i>Installation Orientation</i> on page 6-8
2	Making Hardware Settings and Wiring the Slave Terminal	Switch Settings	Set the IP address of the EtherNet/IP Coupler Unit with the hardware switches. You can also use the Network Configurator to set the IP address. Refer to 9-4 <i>Setting IP Address</i> on page 9-31.
			Set the network interface type of the EtherNet/IP Coupler with the hardware switches to enable UDP/IP communications and TCP/IP communications.
	Installation	Connect the NX Units and End Cover to the EtherNet/IP Coupler Unit and secure the Slave Terminal to a DIN Track to install it.	<ul style="list-style-type: none"> 4-3 <i>Hardware Switch Settings</i> on page 4-8 9-4 <i>Setting IP Address</i> on page 9-31 4-3-2 <i>DIP Switch</i> on page 4-8
	Wiring	Wire the Slave Terminal. <ul style="list-style-type: none"> Connect the communications cables. Connect the Unit power supply. Connect the I/O power supply. Connect the ground wire. Connect the external I/O devices. 	6-1 <i>Installing Units</i> on page 6-2 <i>Section 7 Wiring</i>
3	Configuring the Slave Terminal and Making the Operation Settings	Set up the Slave Terminal (create the configuration and set the parameters) with the Sysmac Studio.	9-2 <i>Setting Slave Terminal Parameters</i> on page 9-7
	Creating the Unit Configuration Information	Create the Slave Terminal configuration information such as number and order of NX Units, individual NX Unit information and information about the EtherNet/IP Coupler Unit.	9-2-2 <i>Setting the NX Unit Configuration Information</i> on page 9-7
	Setting the I/O Allocation Information	Make the I/O allocations for the EtherNet/IP Coupler Unit and NX Units as required.	9-2-3 <i>I/O Allocation Information</i> on page 9-12
	Unit Operation Settings	Make the Unit operation settings for the EtherNet/IP Coupler Unit and NX Units as required.	9-2-4 <i>Unit Operation Settings</i> on page 9-22
	Setting Unit Application Data	Create the Unit application data. This step applies only to Units that have Unit application data.	9-2-5 <i>Unit Application Data</i> on page 9-23
4	Transferring and Comparing EtherNet/IP Coupler Unit Parameter Settings	Transfer and compare Slave Terminal settings with Sysmac Studio.	9-3 <i>Transferring and Comparing Settings</i> on page 9-28

Procedure	Item	Description	Reference
5	Setting the EtherNet/IP Coupler's IP Address, Automatic Clock and Port Number.	Set the IP address of the EtherNet/IP Coupler Unit with the Network Configurator. You can also use the switch settings to set the IP address. Refer to <i>9-4 Setting IP Address</i> on page 9-31. Set the Automatic Clock with the Network Configurator. Set the Port Number with the Network Configurator.	<ul style="list-style-type: none"> • <i>9-4 Setting IP Address</i> on page 9-31 • <i>11-3-3 Automatic Clock Adjustment</i> on page 11-11 • <i>A-2-5 TCP/IP and UDP/IP Port Number Setting</i> on page A-15
6	Checking Indicators	Ethernet Unit Check the following indicators on the Ethernet Unit. <ul style="list-style-type: none"> • RUN • 100M • ERC • ERH • SD • RD • LNK • TCP • FTP • HOST 	<i>Ethernet Units Operation Manual Construction of Networks</i> (Cat. No. W420).
		EtherNet/IP Coupler Unit Check the following indicators on the EtherNet/IP Coupler Unit. <ul style="list-style-type: none"> • MS • NS • TS • L/A P1 • L/A P2 • UNIT PWR • I/O PWR 	<ul style="list-style-type: none"> • <i>4-2 Indicators</i> on page 4-5 • <i>12-2 Checking for Errors and Troubleshooting with the Indicators</i> on page 12-3
7	Confirming Operation by Checking the Wiring	Check the wiring by monitoring inputs or using forced outputs.	<ul style="list-style-type: none"> • <i>Manual for the Controller</i> • <i>Manual for the specific NX Units</i>
8	Programming	Write the program for TCP/IP or UDP/IP communications with message services.	<i>Manual for the Controller</i>

A-2-4 General Message Services Specifications

The EtherNet/IP Coupler Unit provides message service functions based on the following specifications.

Item	Specification
Number of buffers (sockets)	8 message buffers for server functions are shared for UDP/IP messages and TCP/IP messages. No message buffers are available for client functions.
Maximum message size	Request: 492 bytes Response: 496 bytes
Maximum NX output data size	490 bytes Note: 2 bytes are used for the attribute field in the explicit message UDP/IP command and TCP/IP command.

Item	Specification
Maximum NX input data size	496 bytes Note: 2 bytes are used for the attribute field in the explicit message UDP/IP command and TCP/IP command.
Port number	Default: 64000 decimal The port number can be changed by Network Configurator (restart required). Acceptable port number ranges are shown below in decimal format. <ul style="list-style-type: none"> • 1024 to 2221 • 2223 to 44817 • 44819 to 65535
Keep-alive	Use the keep-alive function for TCP/IP and UDP/IP sockets at the EtherNet/IP Coupler Unit. The keep alive function checks whether a connection is normally established when no data is sent or received for a certain period on the communications line where the connection was established. The keep-alive timeout is 5.5 minutes.

UDP/IP and TCP/IP Message Formats

● Command Format

The following format is used to send commands (TCP/IP messages or UDP/IP messages) from a device on Ethernet. The least-significant byte for multi-byte parameters is in the lower address.

The command format is shown below.

+0	Message sequence number	2 bytes
+2	Reserved 1	2 bytes
+4	Data size	2 bytes
+6	Reserved 2	1 byte
+7	Service code	1 byte
+8	Class ID	2 bytes
+10	Instance ID	2 bytes
+12	Data	492 bytes max.

Parameter *1	Byte offset	Size (bytes)	Description
Message sequence number	0	2	Numbers are set to differentiate frames when there is more than one send frame. An arbitrary value is assigned by the device that sends the message. The same value is stored in the corresponding response. Setting range: 0 to 65535
Reserved 1	2	2	Always set to 0.
Data size	4	2	The data size from Reserved 2 (or next data) to the end of the data is set. The unit is bytes. Setting range: 6 to 498
Reserved 2	6	1	Always set to 0.

Parameter ^{*1}	Byte offset	Size (bytes)	Description
Service code	7	1	The service code for the destination object is set. The service code that is set here is sent to the destination node as is.
Class ID	8	2	The class ID of the destination object is set. The class ID that is set here is sent to the destination node as is.
Instance ID	10	2	The instance ID of the destination object is set. The instance ID that is set here is sent to the destination node as is.
Data ^{*2}	12	492 max.	The data is set here. The data that is set depends on the service code.

*1. Parameters in the command are in little endian order.

*2. If the command service requires identifying an attribute ID, it is set in the data parameter with a size of 2 bytes.

● Response Format

When a response is returned from the destination device on the network, the EtherNet/IP Coupler Unit sends the response (a TCP/IP message or UDP/IP message) to the device on Ethernet that sent the command.

The response format is shown below.

+0	Message sequence number	2 bytes
+2	Data size	2 bytes
+4	Reserved	1 byte
+5	Service code	1 byte
+6	General status	1 byte
+7	Size of additional status	1 byte
+6	Data	496 bytes max.

Parameter ^{*1}	Byte offset	Size (bytes)	Description
Message sequence number	0	2	The sequence number that was set when the command was sent is returned.
Data size	2	2	The data size from the next parameter to the end of the data is stored. The unit is bytes. Size range: 4 to 500
Reserved	4	1	Always set to 0.
Service code	5	1	The service code for the destination object that was set when the command was sent is stored. For a normal response, the most-significant bit in the requested service code is turned ON.
General Status	6	1	General status code.
Size of additional status	7	1	The number of 16 bit words in additional status array.
Data	8	496 max.	The response data. If there is no error, the response data is returned here. If there is an error (general status > 0x00), this parameter contains the data for the additional status array.

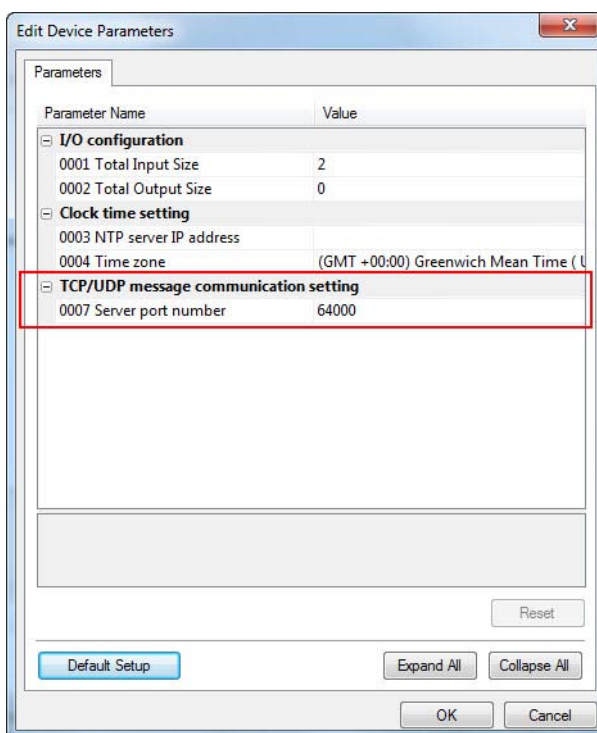
*1. Parameters in the command are in little endian order.

A-2-5 TCP/IP and UDP/IP Port Number Setting

The TCP/IP port number or UDP/IP port number can be set with Network Configurator.

Procedure

- 1** Open the Network Configurator file that contains the EtherNet/IP Coupler Unit.
- 2** Display the Edit Device Parameters area with either of the following methods.
 - Double-click the EtherNet/IP Coupler Unit in the network.
 - Right-click the EtherNet/IP Coupler Unit in the network and select **Parameter - Edit**.
- 3** Enter the value for Server port number and click **OK** (refer to *A-2-4 General Message Services Specifications* on page A-12 for port number ranges).



- 4** Go online and download the parameters to the EtherNet/IP Coupler Unit.
- 5** Restart the EtherNet/IP Coupler Unit to enable the setting.



Additional Information

Refer to *A-2-4 General Message Services Specifications* on page A-12 for information on TCP/IP port number and UDP/IP port number setting ranges.

A-2-6 Troubleshooting Message Services

Use the following information to determine the cause and corrective actions of message service communication problems.

Observation	Error	Cause	Corrective action
Reading or writing data is not possible. An error response is returned by the EtherNet/IP Coupler Unit.	NOT_ENOUGH_DATA (0x13)	The total frame size is larger than 504 bytes (UDP/IP interface). The data-field size value does not match the actual received frame size (UDP/IP interface).	Ensure the frame size field is correctly calculated. Refer to <i>A-2-4 General Message Services Specifications</i> on page A-12 for more information.
	TOO_MUCH_DATA (0x15)	The data field size value does not match the actual received frame size (UDP/IP interface).	
	Standard CIP error	An unsupported class, instance or attribute ID is used. The frame size is valid, but contains an incorrect amount of data required by the class, instance or attribute ID.	Use only supported class, instance or attribute ID. Refer to <i>A-1 Supported CIP Objects</i> on page A-2 for more information.
	Use of an unsupported Function Code.	Use only supported service codes. Refer to <i>A-1 Supported CIP Objects</i> on page A-2 for more information.	

Observation	Error	Cause	Corrective action
Reading or writing data is not possible. No error response is returned by the EtherNet/IP Coupler Unit.	---	The frame length is smaller than the minimum frame length of 12 bytes.	Ensure the size of the frame is within specifications.
	---	The data field size value does not match the actual transmitted number of bytes.	Ensure the size of the frame is the same as the specified number of bytes in the data field.
	---	Unstable network communications (UDP/IP interface).	Check network connections and other sources of interference. Refer to <i>Section 7 EtherNet/IP Network Wiring</i> for more information.
	---	UDP/IP communications and TCP/IP communications have not been enabled on the EtherNet/IP Coupler Unit (Tag Data Links enabled).	Check the position of DIP switch pin 3. Refer to <i>4-3-2 DIP Switch</i> on page 4-8 for more information.
	---	The frame is sent to an EtherNet/IP Coupler Unit with an incorrect port number setting.	Check the port number setting. Refer to <i>A-2-5 TCP/IP and UDP/IP Port Number Setting</i> on page A-15.
While using UDP/IP communications, an unexpected limitation of frame size occurs.	---	The MTU/maximum data-gram size is less than the required frame length.	Ensure the maximum frame size is the same or less than the maximum allowed data-gram size on the client.
Cannot establish a TCP/IP connection.	Standard TCP error	A total of 8 active TCP clients are already connected with the EtherNet/IP Coupler Unit.	Ensure there are less than 8 active connections when trying to establish a new TCP/IP connection.
		UDP/IP communications and TCP/IP communications have not been enabled on the EtherNet/IP Coupler Unit (Tag Data Links enabled).	Check the position of DIP switch pin 3. Refer to <i>4-3-2 DIP Switch</i> on page 4-8.
A TCP/IP connection is lost and the client must reconnect.		The TCP/IP connection was idle for more than 30 seconds and a 9th client attempted a connection. In this condition, an idle active client will be automatically closed.	Ensure the client connection remains active by setting the idle time to less than 30 seconds.