

Parameter name	Description	Data type	Value (hex)
Request Path	Request path	Padded EPATH	20742401
Unit No	Unit number	UINT	0000: Not supported 0001 to 0020: NX Unit 0021 or higher: Not supported
Index	Object dictionary index	UINT	Object dictionary index
Sub index	Object dictionary subindex	USINT	Object dictionary subindex
Control Field	Complete access specification	USINT	00: Not specified

Format for Normal Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Read NX object service	USINT	B3
Reserved	Reserved	USINT	00
General Status	Code that indicates normal	USINT	00
Size of Additional Status	Size of Additional status	USINT	00
Length	Read data size	UINT	Read data size in bytes
Read data	Read data	Depends on the type of data.	Read data

Format for Error Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Read NX object service	USINT	B3
Reserved	Reserved	USINT	00
General Status	Current error code defined by CIP	USINT	Current error code
Size of Additional Status	Size of Additional status	USINT	00 or 01*1
Additional status	Additional status	UINT	Additional status*2

*1. If the general status code in the response code is 0x1F (Vendor specific error), the value is 0x01.

*2. The value is stored only when the value of the Size of Additional Status is 0x01.

CIP Error Code

General status code (hex)	Error code*1
02	Resource unavailable
0C	Object state conflict
10	Device state conflict
11	Read data too large
13	Not enough data
15	Too much data
1F	Vendor specific error
20	Invalid parameter

*1. For details of the individual errors, refer to the appendix of *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)*.

● Write NX Object (Service Code: 34 hex)

The request format, format for normal responses, format for error responses, and CIP error codes for the Write NX object are given below.

Request Format

Parameter name	Description	Data type	Value (hex)
Service	Service code	USINT	34
Request Path Size	Size of request path	USINT	02
Request Path	Request path	Padded EPATH	20742401
Unit No	Unit number	UINT	0000: Not supported 0001 to 0020: NX Unit 0021 or higher: Not supported
Index	Object dictionary index	UINT	Object dictionary index
Sub index	Object dictionary subindex	USINT	Object dictionary subindex
Control Field	Complete access specification	USINT	00: Not Specified
Length	Write data size	UINT	Data size in bytes
Write data	Write data	Depends on the type of data.	Write data

Format for Normal Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Write NX object service	USINT	B4
Reserved	Reserved	USINT	00
General Status	Code that indicates normal	USINT	00
Size of Additional Status	Size of Additional status	USINT	00

Format for Error Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Write NX object service	USINT	B4
Reserved	Reserved	USINT	00
General Status	Current error code defined by CIP	USINT	Current error code
Size of Additional Status	Size of Additional status	USINT	00 or 01*1
Additional status	Additional status	UINT	Additional status*2

*1. If the general status code in the response code is 0x1F (Vendor specific error), the value is 0x01.

*2. The value is stored only when the value of the Size of Additional Status is 0x01.

CIP Error Code

General status code (hex)	Error code*1
02	Resource unavailable
0C	Object state conflict
0E	Attribute not settable
10	Device state conflict
13	Not enough data
15	Too much data
1F	Vendor specific error
20	Invalid parameter

*1. For details of the individual errors, refer to the appendix of *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)*.

● Restart NX Unit (Service Code: 35 hex)

The request format, format for normal responses, format for error responses, and CIP error codes for the Restart NX unit are given below.

Request Format

Parameter name	Description	Data type	Value (hex)
Service	Service code	USINT	35
Request Path Size	Size of request path	USINT	02
Request Path	Request path	Padded EPATH	20742401
Unit No	Unit number	UINT	0000: All NX Units (excluding Communication Control Unit) 0001 to 0020: NX Unit 0021 or higher: Not supported

Format for Normal Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Restart NX unit service	USINT	B5
Reserved	Reserved	USINT	00
General Status	Code that indicates normal	USINT	00
Size of Additional Status	Size of Additional status	USINT	00

Format for Error Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Restart NX unit service	USINT	B5
Reserved	Reserved	USINT	00
General Status	Current error code defined by CIP	USINT	Current error code
Size of Additional Status	Size of Additional status	USINT	00 or 01 ^{*1}
Additional status	Additional status	UINT	Additional status ^{*2}

*1. If the general status code in the response code is 0x1F (Vendor specific error), the value is 0x01.

*2. The value is stored only when the value of the Size of Additional Status is 0x01.

CIP Error Code

General status code (hex)	Error code ^{*1}
02	Resource unavailable
0C	Object state conflict
10	Device state conflict
13	Not enough data
15	Too much data
1F	Vendor specific error ^{*2}
20	Invalid parameter

*1. For details of the individual errors, refer to the appendix of *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)*.

*2. A vendor specific error will occur if you execute this service for an NX Unit that does not support restarting.

● Save Parameter (Service Code: 36 hex)

The request format, format for normal responses, format for error responses, and CIP error codes for the Save parameter object are given below.

Request Format

Parameter name	Description	Data type	Value (hex)
Service	Service code	USINT	36
Request Path Size	Size of request path	USINT	02
Request Path	Request path	Padded EPATH	20742401
Unit No	Unit number	UINT	0000: Not supported 0001 to 0020: NX Unit 0021 or higher: Not supported

Format for Normal Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Save parameter service	USINT	B6
Reserved	Reserved	USINT	00
General Status	Code that indicates normal	USINT	00
Size of Additional Status	Size of Additional status	USINT	00

Format for Error Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Save parameter service	USINT	B6
Reserved	Reserved	USINT	00
General Status	Current error code defined by CIP	USINT	Current error code
Size of Additional Status	Size of Additional status	USINT	00 or 01*1
Additional status	Additional status	UINT	Additional status*2

*1. If the general status code in the response code is 0x1F (Vendor specific error), the value is 0x01.

*2. The value is stored only when the value of the Size of Additional Status is 0x01.

CIP Error Code

General status code (hex)	Error code*1
02	Resource unavailable
0C	Object state conflict
13	Not enough data
15	Too much data
19	Store operation failure
1F	Vendor specific error
20	Invalid parameter

*1. For details of the individual errors, refer to the appendix of *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)*.

● Switch Parameter Write Mode (Service Code: 37 hex)

The request format, format for normal responses, format for error responses, and CIP error codes for the Switch parameter write mode object are given below.

Request Format

Parameter name	Description	Data type	Value (hex)
Service	Service code	USINT	37
Request Path Size	Size of request path	USINT	02
Request Path	Request path	Padded EPATH	20742401
Unit No	Unit number	UINT	0000: All NX Units (excluding Communication Control Unit) 0001 to 0020: NX Unit 0021 or higher: Not supported

Format for Normal Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Switch parameter write mode service	USINT	B7
Reserved	Reserved	USINT	00
General Status	Code that indicates normal	USINT	00
Size of Additional Status	Size of Additional status	USINT	00

Format for Error Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Switch parameter write mode service	USINT	B7
Reserved	Reserved	USINT	00
General Status	Current error code defined by CIP	USINT	Current error code
Size of Additional Status	Size of Additional status	USINT	00 or 01 ^{*1}
Additional status	Additional status	UINT	Additional status ^{*2}

*1. If the general status code in the response code is 0x1F (Vendor specific error), the value is 0x01.

*2. The value is stored only when the value of the Size of Additional Status is 0x01.

CIP Error Code

General status code (hex)	Error code ^{*1}
02	Resource unavailable
0C	Object state conflict
10	Device state conflict
13	Not enough data
15	Too much data
1F	Vendor specific error
20	Invalid parameter

*1. For details of the individual errors, refer to the appendix of *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)*.

● Read Total Power On Time (Service Code: 38 hex)

The request format, format for normal responses, format for error responses, and CIP error codes for the Read total power on time object are given below.

Request Format

Parameter name	Description	Data type	Value (hex)
Service	Service code	USINT	38
Request Path Size	Size of request path	USINT	02
Request Path	Request path	Padded EPATH	20742401
Unit No	Unit number	UINT	0000: Not supported 0001 to 0020: NX Unit 0021 or higher: Not supported

Format for Normal Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Read total power on time	USINT	B8
Reserved	Reserved	USINT	00
General Status	Code that indicates normal	USINT	00
Size of Additional Status	Size of Additional status	USINT	00
Total power on time	Total power-ON time	ULINT	Total power-ON time

Format for Error Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Read total power on time	USINT	B8
Reserved	Reserved	USINT	00
General Status	Current error code defined by CIP	USINT	Current error code
Size of Additional Status	Size of Additional status	USINT	00 or 01*1
Additional status	Additional status	UINT	Additional status*2

*1. If the general status code in the response code is 0x1F (Vendor specific error), the value is 0x01.

*2. The value is stored only when the value of the Size of Additional Status is 0x01.

CIP Error Code

General status code (hex)	Error code*1
02	Resource unavailable
0C	Object state conflict
13	Not enough data
15	Too much data
1F	Vendor specific error
20	Invalid parameter

*1. For details of the individual errors, refer to the appendix of *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)*.

● Get Current Error (Service Code: 3A hex)

The request format, format for normal responses, format for error responses, and CIP error codes for the Get current error object are given below.

Request Format

Parameter name	Description	Data type	Value (hex)
Service	Service code	USINT	3A
Request Path Size	Size of request path	USINT	02
Request Path	Request path	Padded EPATH	20742401
Unit No	Unit number	UINT	0000: Communication Control Unit 0001 to 0020: NX Unit 0021 or higher: Not supported
Start number of read record	Number of first record to read	UINT	Number of first record to read
Number of request read record	Requested number of records to read	UINT	Requested number of records to read ^{*1}

*1. For Communication Control Unit, the range of values is 0 to 5. For NX Units, it is 0 to 9.

Format for Normal Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Get current error service	USINT	BA
Reserved	Reserved	USINT	00
General Status	Code that indicates normal	USINT	00
Size of Additional Status	Size of Additional status	USINT	00
Error update count	Total number of errors	UINT	Total number of errors
Record size	Size of one record (bytes)	UINT	0060: Communication Control Unit 0032: NX Unit
Number of registered record	Number of registered records	UINT	Number of registered records
Number of readout record	Number of records that were read ^{*1}	UINT	Number of records that were read
Current error record	Current error	ARRAY[0..8] OF STRUCT OF Current error record ^{*2}	Current error

*1. The number of current error records specified by Number of readout record are stored in the Current error record array. The remaining elements in the Current error record array are not included in the response data.

*2. The structure specifications are given below.

Structure Specifications for Current Error Record

Communication Control Unit Error

Member name	Meaning	Data Type
Index	Index number of current error ^{*1}	UDINT
Event occurred time	Time when error occurred	ULINT
Event source	Event source	UINT

Member name	Meaning	Data Type
Event priority	Event level	UINT
Event code	Event code* ²	UDINT
Code system	Code system	UINT
Event source details	Event source details	UINT
Reserved1	Reserved	UINT
Reserved2	Reserved	UINT
Vendor code	Vendor code of the Unit where an error occurred	UDINT
Device type code	Device type code of the Unit where an error occurred	UDINT
Product code	Product code of the Unit where an error occurred	UDINT
Additional information	Attached information for the error	ARRAY[0.. 31] OF BYTE
Reserved3	Reserved	ARRAY[0...23] OF BYTE

NX Unit Error

Member name	Meaning	Data Type
Index	Index number of current error* ¹	UDINT
Unit number	Unit number 1 to 32: NX Unit	USINT
Event priority	Event Level	UINT
Event occurred time	Time when error occurred	UDINT
Product code	Product code of Unit where error occurred	UDINT
Event code	Event code* ²	UDINT
Additional information	Error additional information	ARRAY[0..31] OF BYTE

*1. These numbers are attached in the order that the errors occurred.

*2. Refer to *Error Descriptions and Corrections* in the *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)* for details.

Format for Error Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Get current error service	USINT	BA
Reserved	Reserved	USINT	00
General Status	Current error code defined by CIP	USINT	Current error code
Size of Additional Status	Size of Additional status	USINT	00 or 01* ¹
Additional status	Additional status	UINT	Additional status* ²

*1. If the general status code in the response code is 0x1F (Vendor specific error), the value is 0x01.

*2. The value is stored only when the value of the Size of Additional Status is 0x01.

CIP Error Code

General status code (hex)	Error code* ¹
02	Resource unavailable
0C	Object state conflict
13	Not enough data
15	Too much data
1F	Vendor specific error

General status code (hex)	Error code*1
20	Invalid parameter

*1. For details of the individual errors, refer to the appendix of *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)*.

● Get Event Log (Service Code: 3B hex)

The request format, format for normal responses, format for error responses, and CIP error codes for the Get event log object are given below.

Request Format

Parameter name	Description	Data type	Value (hex)
Service	Service code	USINT	3B
Request Path Size	Size of request path	USINT	02
Request Path	Request path	Padded EPATH	20742401
Unit No	Unit number	UINT	0000: Communication Control Unit 0001 to 0020: NX Unit 0021 or higher: Not supported
Event log type	Type of event log	UINT	0000: System event log 0001: Access event log
Start index of read record	Index number of first record to read	UDINT	Number of first record to read
Number of read record	Number of records to read	UINT	Number of records to read*1

*1. For Communication Control Unit, the range of values is 0 to 5. For NX Units, it is 0 to 9.

Format for Normal Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Get event log service	USINT	BB
Reserved	Reserved	USINT	00
General Status	Code that indicates normal	USINT	00
Size of Additional Status	Size of Additional status	USINT	00
Record size	Size of one record (bytes)	UINT	0060: Communication Control Unit 0032: NX Unit
Number of registered record	Number of registered records	UINT	Number of registered records
Latest index of registered record	Index number of most recently registered record	UDINT	Index number of most recently registered record
Last index of readout record	Index number of record that was read last	UDINT	Index number of record that was read last
Number of readout record	Number of records that were read*1	UINT	Number of records that were read
Reserved	Reserved	UINT	0000
Event log record[0]	Event log record 0	STRUCT OF Event log record*2	Event log record 0
:	:	:	:

Parameter name	Description	Data type	Value (hex)
Event log record[8]	Event log record 8	STRUCT OF Event log re- cord*2	Event log record 8

*1. The number of event log records specified by Number of readout record are stored in the Event log record array. The remaining elements in the Event log record array are not included in the response data.

*2. The structure specifications are given below.

Structure Specifications for Event Log Record

Communication Control Unit Event

Member name	Meaning	Data Type
Index	Index number of event log record*1	UDINT
Event occurred time	Time when event occurred	ULINT
Event source	Event source	UINT
Event priority	Event level	UINT
Event code	Event code*2	UDINT
Code system	Code system	UINT
Event source details	Event source details	UINT
Reserved1	Reserved	UINT
Reserved2	Reserved	UINT
Vendor code	Vendor code of the Unit where an error occurred	UDINT
Device type code	Device type code of the Unit where an error occurred	UDINT
Product code	Product code of the Unit where an error occurred	UDINT
Additional information	Event additional information	ARRAY[0.. 31] OF BYTE
Reserved3	Reserved	ARRAY[0...23] OF BYTE

NX Unit Event

Member name	Meaning	Data Type
Index	Index number of event log record*1	UDINT
Unit number	Unit number 1 to 32: NX Unit	USINT
Event priority	Event level	UINT
Event occurred time	Time when event occurred	UDINT
Product code	Product code of Unit where event occurred	UDINT
Event code	Event code*2	UDINT
Additional information	Event additional information	ARRAY[0..31] OF BYTE

*1. These numbers are attached in the order that the errors occurred.

*2. Refer to *Error Descriptions and Corrections* in the *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)* for details.

Format for Error Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Get event log service	USINT	BB
Reserved	Reserved	USINT	00

Parameter name	Description	Data type	Value (hex)
General Status	Current error code defined by CIP	USINT	Current error code
Size of Additional Status	Size of Additional status	USINT	00 or 01*1
Additional status	Additional status	UINT	Additional status*2

*1. If the general status code in the response code is 0x1F (Vendor specific error), the value is 0x01.

*2. The value is stored only when the value of the Size of Additional Status is 0x01.

CIP Error Code

General status code (hex)	Error code*1
02	Resource unavailable
0C	Object state conflict
13	Not enough data
15	Too much data
1F	Vendor specific error
20	Invalid parameter

*1. For details of the individual errors, refer to the appendix of *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)*.

● Clear Event Log (Service Code: 3C hex)

The request format, format for normal responses, format for error responses, and CIP error codes for the Clear event log object are given below.

Request Format

Parameter name	Description	Data type	Value (hex)
Service	Service code	USINT	3C
Request Path Size	Size of request path	USINT	02
Request Path	Request path	Padded EPATH	20742401
Unit No	Unit number	UINT	0000: Communication Control Unit 0001 to 0020: NX Unit 0021 or higher: Not supported
Event log type	Type of event log	UINT	0000: System event log 0001: Access event log 0002: Not used 0003: Both system event log and access event log

Format for Normal Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Clear event log service	USINT	BC
Reserved	Reserved	USINT	00
General Status	Code that indicates normal	USINT	00
Size of Additional Status	Size of Additional status	USINT	00

Format for Error Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to Clear event log service	USINT	BC

Parameter name	Description	Data type	Value (hex)
Reserved	Reserved	USINT	00
General Status	Current error code defined by CIP	USINT	Current error code
Size of Additional Status	Size of Additional status	USINT	00 or 01*1
Additional status	Additional status	UINT	Additional status*2

*1. If the general status code in the response code is 0x1F (Vendor specific error), the value is 0x01.

*2. The value is stored only when the value of the Size of Additional Status is 0x01.

CIP Error Code

General status code (hex)	Error code*1
02	Resource unavailable
0C	Object state conflict
13	Not enough data
15	Too much data
1F	Vendor specific error
20	Invalid parameter

*1. For details of the individual errors, refer to the appendix of *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)*.

● Initialize Unit Operation Parameter (Service Code: 3D hex)

The request format, format for normal responses, format for error responses, and CIP error codes for the Initialize unit operation parameter object are given below.

Request Format

Parameter name	Description	Data type	Value (hex)
Service	Service code*1*2*3	USINT	3D
Request Path Size	Size of request path	USINT	02
Request Path	Request path	Padded EPATH	20742401
Unit No	Unit number	UINT	0000: Not supported 0001 to 0020: NX Unit 0021 or higher: Not supported

*1. The initialized parameters are enabled after the Unit is restarted.

*2. After this service is executed, the NX Unit Memory All Cleared event (event code 95810000hex) is registered.

*3. The NX-series Safety CPU Units do not support this service. An error will occur if you execute this service for an NX-series Safety Control Unit.

Format for Normal Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to the Initialize unit operation parameter service	USINT	BD
Reserved	Reserved	USINT	00
General Status	Code that indicates normal	USINT	00
Size of Additional Status	Size of Additional status	USINT	00

Format for Error Response

Parameter name	Description	Data type	Value (hex)
Reply Service	Reply to the Initialize unit operation parameter service	USINT	BD
Reserved	Reserved	USINT	00
General Status	Current error code defined by CIP	USINT	Current error code
Size of Additional Status	Size of Additional status	USINT	00 or 01 ^{*1}
Additional status	Additional status	UINT	Additional status ^{*2}

*1. If the general status code in the response code is 0x1F (Vendor specific error), the value is 0x01.

*2. The value is stored only when the value of the Size of Additional Status is 0x01.

CIP Error Code

General status code (hex)	Error code ^{*1}
02	Resource unavailable
0C	Object state conflict
10	Device state conflict
13	Not enough data
15	Too much data
1F	Vendor specific error
20	Invalid parameter

*1. For details of the individual errors, refer to the appendix of *NX-series Safety Control Unit / Communication Control Unit User's Manual (Cat. No. Z395)*.

Class ID

Specify 74 hex.

Instance ID

Specify 01 hex.

Attribute ID

None

Request Paths (IOIs) to Specify Objects

When you specify an object, specify the request path (IOI) for each service code as given below.

Service code		Class ID	Instance ID	Attribute ID
33 hex	Read NX object	74 hex	01 hex (fixed)	Not required
34 hex	Write NX object			
35 hex	Restart NX Unit			
36 hex	Save parameter			
37 hex	Switch parameter write mode			
38 hex	Read total power on time			
3A hex	Get current error			
3B hex	Get event log			
3C hex	Clear event log			
3D hex	Initialize unit operation parameter			

8-4-4 TCP/IP Interface Object (Class ID: F5 hex)

This object is used to read and write settings such as the IP address, subnet mask, and default gateway.

It is necessary to use the route path of the CIP communications command (the *RoutePath* in-out variable) to specify the port number (1 or 2) of the built-in EtherNet/IP port to access.

Service Codes

Specify the service to execute with the service code.

Service code	Parameter name	Description	Supported service range	
			Class	Instance
01 hex	Get_Attribute_All	Reads the values of the attributes.	Supported	Not supported
0E hex	Get_Attribute_Single	Reads the value of the specified attribute.	Supported	Supported
10 hex	Set_Attribute_Single	Writes a value to the specified attribute. The built-in EtherNet/IP port restarts automatically after the value is written to the attribute. When the next Set_Attribute_Single is executed before the restart process is completed, the general status "0C hex" (Object State Conflict) is returned.	Not supported	Supported

Class ID

Specify F5 hex.

Instance ID

Specify 00 or 01 hex.

00: Specify the class

01: Built-in EtherNet/IP port

Attribute ID

The attribute ID specifies the information to read.

● Class Attribute ID

The class attribute ID specifies the attribute of the entire object.

Attribute ID	Parameter name	Description	Attribute	Read data	
				Data type	Value
01 hex	Revision	Revision of the object	Read	UINT	0004 hex
02 hex	Max Instance	The maximum instance number	Read	UINT	0001 hex
03 hex	Number of Instances	The number of object instances	Read	UINT	0001 hex

● Instance Attribute ID

The instance attribute ID specifies the attribute of the instance.

Attribute ID	Parameter name	Description	Attribute	Write/Read data	
				Data type	Value
01 hex	Interface Configuration Status	Indicates the IP address setting status for the interface.	Read	DWORD	bit 0 to 3: Interface Configuration Status: 0 = IP address is not set. (This includes when BOOTP is starting.) 1 = IP address is set. bit 4 to 5: Reserved (always FALSE) bit 6: AcdStatus: FALSE = IP address collisions have not been detected. TRUE = IP address collisions have been detected. bit 7 to 31: Reserved (always FALSE)

Attribute ID	Parameter name	Description	Attribute	Write/Read data	
				Data type	Value
02 hex	Configuration Capability	Indicates the Controller Configurations and Setup that can be set to the interface.	Read	DWORD	bit 0: BOOTP Client: Always TRUE bit 1: DNS Client: Always TRUE bit 2: DHCP Client: Always FALSE bit 3: DHCP - DNS Update: Always FALSE bit 4: Configuration Settable: Always TRUE bit 5: Hardware Configurable: Always FALSE bit 6: Interface Configuration Change Requires Reset: Always FALSE bit 7: ACD Capable: Always TRUE bit 8 to 31: Reserved (always FALSE)
03 hex	Configuration Control	Sets the method used to set the IP address when the interface starts.	Write	DWORD	bit 0: Static IP address bit 1: Set by BOOTP
04 hex	Physical Link Object	The path to the link object in the physical layer	Read	Struct	---
	Path size	The path size (WORD size).		UINT	0002 hex
	Path	The path to the link object in the physical layer (static).		EPATH	20 F6 24 01 hex
05 hex	Interface Configuration	The interface settings	Write	Struct	---
	IP Address	IP address		UDINT	Set value
	Network Mask	Subnet mask		UDINT	Set value
	Gateway Address	Default gateway		UDINT	Set value
	Name Server	Primary name server		UDINT	Set value
	Name Server2	Secondary name server		UDINT	Set value
	Domain Name	Domain name		STRING	Set value
06 hex	Host Name	Host name (reserved)	Write	STRING	Always 0000 hex

Request Paths to Specify Objects

When you specify an object, specify the request path for each service code as given below.

Service code		Class ID	Instance ID	Attribute ID
01 hex	Get_Attribute_All	F5 hex	<ul style="list-style-type: none"> Specifying a service for a class: 00 hex Specifying a service for an instance: 01 hex 	Not required
0E hex	Get_Attribute_Single			<ul style="list-style-type: none"> Reading a class attribute: 01 to 03 hex
10 hex	Set_Attribute_Single			<ul style="list-style-type: none"> Reading and writing an instance attribute: 01 to 06 hex

● Request Paths (IOIs) to Specify Objects

When you specify an object, specify the request path (IOI) for each service code as given below.

Service code		Class ID	Instance ID	Attribute ID
0E hex	Get_Attribute_Single	C4 hex	00 hex	Specifies the attribute of the class to read or write : 01 hex, 02 hex, or 64 to 66 hex
10 hex	Set_Attribute_Single			

8-4-5 Ethernet Link Object (Class ID: F6 hex)

This object is used to set and read Ethernet communications and to read Ethernet communications status information.

It is necessary to use the route path of the CIP communications command (the *RoutePath* in-out variable) to specify the port number (1 or 2) of the built-in EtherNet/IP port to access.

Service Codes

Specify the service to execute with the service code.

Service code	Parameter name	Description	Supported service range	
			Class	Instance
0E hex	Get_Attribute_Single	Reads the value of the specified attribute.	Supported	Supported
10 hex	Set_Attribute_Single	Writes a value to the specified attribute.	Supported	Supported
4C hex	Get_and_Clear	Specify Attribute4 or Attribute5 to reset the value of the attribute to 0.	Not supported	Supported

Class ID

Specify F6 hex.

Instance ID

Specify 00 or 01 hex.

00: Specify the class

01: Built-in EtherNet/IP port

Attribute ID

The attribute ID specifies the information to read.

● Class Attribute ID

The class attribute ID specifies the attribute of the entire object.

Attribute ID	Parameter name	Description	Attribute	Read data	
				Data type	Value
01 hex	Revision	Revision of the object	Read	UINT	0004 hex
02 hex	Max Instance	The maximum instance number	Read	UINT	0001 hex
03 hex	Number of Instances	The number of object instances	Read	UINT	0001 hex

● Instance Attribute ID

The instance attribute ID specifies the attribute of the instance.

Attribute ID	Parameter name	Description	Attribute	Write/Read data	
				Data type	Value
01 hex	Interface Speed	Gives the baud rate for the interface.	Read	UDINT	Reads the current value.
02 hex	Interface Flags	Gives the status of the interface.	Read	DWORD	Refer to (a) Interface Flags Details, below.
03 hex	Physical Address	Gives the MAC address of the interface.	Read	ARRAY [0...5] OF USINT	Reads the current value of the MAC address.

Attribute ID	Parameter name	Description	Attribute	Write/Read data	
				Data type	Value
04 hex	Interface Counters	The number of packets sent and received through the interface.	Read	Struct	---
	In Octets	The number of octets received through the interface. This includes unnecessary multicast packets and discarded packets counted by InDiscards.		UDINT	Reads the current value.
	In Unicast Packets	The number of unicast packets received through the interface. This does not include discarded packets counted by In Discards.		UDINT	Reads the current value.
	In NonUnicast Packets	The number of non-unicast packets received through the interface. This includes unnecessary multicast packets, but does not include discarded packets counted by InDiscards.		UDINT	Reads the current value.
	In Discards	The number of discarded incoming packets received through the interface.		UDINT	Reads the current value.
	In Errors	The number of incoming packets including errors. This is not included in InDiscards.		UDINT	Reads the current value.
	In Unknown Protos	The number of incoming packets that were of an unknown protocol.		UDINT	Reads the current value.
	Out Octets	The number of octets sent through the interface.		UDINT	Reads the current value.
	Out Unicast Packets	The number of unicast packets sent through the interface.		UDINT	Reads the current value.
	Out NonUnicast Packets	The number of non-unicast packets sent through the interface.		UDINT	Reads the current value.
	Out Discards	The number of discarded sent packets.		UDINT	Reads the current value.
	Out Errors	The number of sent packets that had errors.		UDINT	Reads the current value.

Attribute ID	Parameter name	Description	Attribute	Write/Read data	
				Data type	Value
05 hex	Media Counters	Media counters for the communications port.	Read	Struct	---
	Alignment Errors	Number of frames received that were not octets in length.		UDINT	Reads the current value.
	FCS Errors	Number of frames received that did not pass the FCS check.		UDINT	Reads the current value.
	Single Collisions	Number of frames sent successfully with only one collision.		UDINT	Reads the current value.
	Multiple Collisions	Number of frames sent successfully with two or more collisions.		UDINT	Reads the current value.
	SQE Test Errors	Number of times a SQE test error message was generated.		UDINT	Reads the current value.
	Deferred Transmissions	The number of frames for which the first attempt to send was delayed because the media was busy.		UDINT	Reads the current value.
	Late Collisions	The number of collisions detected in packets that were sent after 512 bit times.		UDINT	Reads the current value.
	Excessive Collisions	The number of frames that failed to be sent because of excessive collisions.		UDINT	Reads the current value.
	MAC Transmit Errors	The number of frames that failed to be sent due to an internal MAC sublayer transmission error.		UDINT	Reads the current value.
	Carrier Sense Errors	The number of times the carrier sense conditions were lost or the number of times an assertion failure occurred when an attempt was made to send the frame.		UDINT	Reads the current value.
	Frame Too Long	The number of frames received that exceeded the maximum allowed frame size.		UDINT	Reads the current value.
MAC Receive Errors	The number of frames that could not be received through the interface due to an internal MAC sublayer reception error.	UDINT	Reads the current value.		
06 hex	Interface Control	Control settings for the interface.	Write	Struct	---
	Control Bits	Specify Auto Nego and full duplex for Ethernet communications.		WORD	Refer to (b) Control Bits Details, below.
	Forced Interface Speed	Gives the set value of the Ethernet baud rate.		UINT	Reads the setting value.

Attribute ID	Parameter name	Description	Attribute	Write/Read data	
				Data type	Value
0C hex	HC Interface Counters	The number of packets sent/received through the HC interface.	Read	Struct	---
	HCInOctets	The number of octets received through the interface. This counter is the 64-bit edition of In Octets.		ULINT	Reads the current value.
	HCInUnicastPkts	The number of unicast packets received through the interface. This counter is the 64-bit edition of In Ucast Packets.		ULINT	Reads the current value.
	HCInMulticastPkts	The number of multicast packets received through the interface.		ULINT	Reads the current value.
	HCInBroadcastPkts	The number of broadcast packets received through the interface.		ULINT	Reads the current value.
	HCOctets	The number of octets sent through the interface.		ULINT	Reads the current value.
	HCOctetsUnicastPkts	The number of unicast packets sent through the interface. This counter is the 64-bit edition of Out Octets.		ULINT	Reads the current value.
	HCOctetsMulticastPkts	The number of multicast packets sent through the interface.		ULINT	Reads the current value.
	HCOctetsBroadcastPkts	The number of broadcast packets sent through the interface.		ULINT	Reads the current value.

Attribute ID	Parameter name	Description	Attribute	Write/Read data	
				Data type	Value
0D hex	HC Media Counters	Media counters for the communications port.	Read	Struct	---
	HCStatsAlignmentErrors	The number of frames received that were not octets in length. This counter is the 64-bit edition of Alignment Errors.		ULINT	Reads the current value.
	HCStatsFCSErrors	The number of frames received that did not pass the FCS check. This counter is the 64-bit edition of FCS Errors.		ULINT	Reads the current value.
	HCStatsInternalMacTransmitErrors	The number of frames that failed to be sent due to an internal MAC sublayer transmission error. This counter is the 64-bit edition of MAC Transmit Errors.		ULINT	Reads the current value.
	HCStatsFrameTooLongs	The number of frames received that exceeded the maximum allowed frame size. This counter is the 64-bit edition of Frame Too Long.		ULINT	Reads the current value.
	HCStatsInternalMacReceiveErrors	The number of frames that could not be received through the interface due to an internal MAC sublayer reception error. This counter is the 64-bit edition of MAC Receive Errors.		ULINT	Reads the current value.
	HCStatsMASymbolErrors	The number of frames that could not be received through the interface due to an internal MAC sublayer rsymbol error.		ULINT	Reads the current value.

(a) Interface Flag Details

Bit	Name	Description
0	LinkStatus	FALSE: The link is down. TRUE: The link is up.
1	Half/FullDuplex	FALSE: Half duplex TRUE: Full duplex
2 to 4	Negotiation Status	00 hex: Auto-negotiation is in progress. 01 hex: Auto-negotiation and speed detection failed. 02 hex: Auto-negotiation failed, but speed detection succeeded. 03 hex: Speed and duplex mode negotiation succeeded. 04 hex: Auto-negotiation was not attempted.
5	Manual Setting Requires Speed	Always FALSE: Changes can be applied automatically.
6	Local Hardware Fault	Always FALSE
7 to 31	Reserved	Always FALSE

(b) Control Bits Details

Bit	Name	Description
0	Auto-negotiate	FALSE: Auto-negotiation is disabled. TRUE: Auto-negotiation is enabled.
1	ForcedDuplex Mode	FALSE: Half duplex TRUE: Full duplex* ¹
2 to 16	Reserved	Always FALSE

*1. When auto-negotiation is enabled (bit 0 is TRUE), this should always be FALSE.

Request Paths (IOIs) to Specify Objects

When you specify an object, specify the request path (IOI) for each service code as given below.

Service code		Class ID	Instance ID	Attribute ID
0E hex	Get_Attribute_Single	F6 hex	<ul style="list-style-type: none"> Specifying a service for a class: 00 hex Specifying a service for an instance: Always 01 hex 	<ul style="list-style-type: none"> Reading a class attribute: 01 to 03 hex Reading and writing a instance attribute: 01 to 06 hex, 0C hex, and 0D hex
10 hex	Set_Attribute_Single			
4C hex	Get_and_Clear			Specify an attribute to clear the value to 0: 04 hex, 05 hex, 0C hex, 0D hex

8-4-6 Controller Object (Class ID: C4 hex)

This object is used to get the status of the Controller or to change the operating mode of the Controller.

Service Codes

Specify the service to execute with the service code.

Service code	Parameter name	Description	Supported service range	
			Class	Instance
0E hex	Get_Attribute_Single	Reads the value of the specified attribute.	Supported	Not supported
10 hex	Set_Attribute_Single	Writes a value to the specified attribute.	Supported	Not supported
51 hex	Reset_System_Alarm_All	Clears all errors of Communication Control Unit.	Supported	Not supported

Class ID

Specify C4 hex.

Instance ID

Specify 00 hex.

● Class Attribute ID

The class attribute ID specifies the attribute (value) of the entire object.

Attribute ID	Parameter name	Description	Attribute	Write/Read data	
				Data type	Value
01 hex	Revision	Revision of the object	Read	UINT	Always 0002 hex
02 hex	Max Instance	The maximum instance number	Read	UINT	Always 0001 hex
65 hex	PLC Error Status	Indicates when there is a Controller error. Changes to TRUE when a fatal or non-fatal error occurs.	Read	UINT	0000 hex: There is no Controller error. 0001 hex: There is a Controller error.
66 hex	PLC Model	Indicates the model of the Controller. The length is always 2 bytes for the size + 20 bytes for the name. Unused area is padded with spaces.	Read	STRING	

● Instance Attribute ID

None

Request Paths (IOIs) to Specify Objects

When you specify an object, specify the request path (IOI) for each service code as given below.

Service code		Class ID	Instance ID	Attribute ID
0E hex	Get_Attribute_Single	C4 hex	00 hex	Specifies the attribute of the class to read or write: 01 hex, 02 hex, or 64 to 66 hex
10 hex	Set_Attribute_Single			