MITSUBISHI ELECTRIC

Programmable Controller

MELSEC iQ-F series

MELSEC iQ-F
FX5-ENET User's Manual

SAFETY PRECAUTIONS

(Read these precautions before use.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety in order to handle the product correctly.

This manual classifies the safety precautions into two categories: [⚠WARNING] and [⚠CAUTION].

⚠ **WARNING**	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ **CAUTION**	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Depending on the circumstances, procedures indicated by [⚠CAUTION] may also cause severe injury.

It is important to follow all precautions for personal safety.

Store this manual in a safe place so that it can be read whenever necessary. Always forward it to the end user.

[DESIGN PRECAUTIONS]

⚠WARNING

- Make sure to set up the following safety circuits outside the PLC to ensure safe system operation even during external power supply problems or PLC failure. Otherwise, malfunctions may cause serious accidents.
  - Most importantly, set up the following: an emergency stop circuit, a protection circuit, an interlock circuit for opposite movements (such as normal vs. reverse rotation), and an interlock circuit (to prevent damage to the equipment at the upper and lower positioning limits).
  - Note that when the CPU module detects an error, such as a watchdog timer error, during self-diagnosis, all outputs are turned off. Also, when an error that cannot be detected by the CPU module occurs in an input/output control block, output control may be disabled. External circuits and mechanisms should be designed to ensure safe machinery operation in such a case.
  - Note that when an error occurs in a relay, transistor or triac of an output circuit, the output might stay on or off. For output signals that may lead to serious accidents, external circuits and mechanisms should be designed to ensure safe machinery operation in such a case.
- In an output circuit, when a load current exceeding the current rating or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
- For the operating status of each station after a communication failure of the network, refer to relevant manuals for the network. Incorrect output or malfunction may result in an accident.
- Construct an interlock circuit in the program so that the whole system always operates on the safe side before executing the control (for data change) of the PLC in operation. Read the manual thoroughly and ensure complete safety before executing other controls (for program change, parameter change, forcible output and operation status change) of the PLC in operation. Otherwise, the machine may be damaged and accidents may occur due to erroneous operations.
- Especially, in the case of a control from an external device to a remote programmable controller, immediate action cannot be taken for a problem on the programmable controller due to a communication failure. Determine the handling method as a system when communication failure occurs along with configuration of interlock circuit on a program, by considering the external equipment and CPU module.

⚠WARNING

- Do not write any data to the "system area" and "write-protect area" of the buffer memory in the intelligent function module. Executing data writing to the "system area" or "write-protect area" may cause malfunction of the programmable controller alarm. For the "system area" or "write-protect area", refer to ☞ Page 75 Buffer Memory.
- If a communication cable is disconnected, the network may be unstable, resulting in a communication failure of multiple stations. Construct an interlock circuit in the program so that the system always operates on the safe side even if communications fail. Incorrect output or malfunction may result in an accident.

[DESIGN PRECAUTIONS]

⚠CAUTION

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100 mm or more between them. Failure to do so may result in malfunction due to noise.
- When an inductive load such as a lamp, heater, or solenoid valve is controlled, a large current (approximately ten times greater than normal) may flow when the output is turned from off to on. Take proper measures so that the flowing current dose not exceed the value corresponding to the maximum load specification of the resistance load.
- Do not power off the CPU module or reset the CPU module while the settings are being written. Doing so will make the data in the flash ROM undefined. The values need to be set in the buffer memory and written to the flash ROM again. Doing so also may cause malfunction or failure of the module.

[SECURITY PRECAUTIONS]

⚠WARNING

- To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from unreliable networks and devices via network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

[INSTALLATION PRECAUTIONS]

⚠WARNING

- Make sure to cut off all phases of the power supply externally before attempting installation or wiring work.
  Failure to do so may cause electric shock or damage to the product.
- Use the product within the generic environment specifications described in the User's Manual (Hardware) of the CPU module used.
  Never use the product in areas with excessive dust, oily smoke, conductive dusts, corrosive gas (salt air, Cl_2, H_2S, SO_2 or NO_2), flammable gas, vibration or impacts, or expose it to high temperature, condensation, or rain and wind.
  If the product is used in such conditions, electric shock, fire, malfunctions, deterioration or damage may occur.

[INSTALLATION PRECAUTIONS]

⚠CAUTION

- Do not touch the conductive parts of the product directly. Doing so may cause device failures or malfunctions.
- When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits of the PLC. Failure to do so may cause fire, equipment failures or malfunctions.
- For the product supplied together with a dust proof sheet, the sheet should be affixed to the ventilation slits before the installation and wiring work to prevent foreign objects such as cutting and wiring debris. However, when the installation work is completed, make sure to remove the sheet to provide adequate ventilation.
  Failure to do so may cause fire, equipment failures or malfunctions.
- Install the product on a flat surface. If the mounting surface is rough, undue force will be applied to the PC board, thereby causing nonconformities.
- Install the product securely using a DIN rail or mounting screws.
- Work carefully when using a screwdriver such as installation of the product. Failure to do so may cause damage to the product or accidents.
- Connect the extension cables, peripheral device cables, input/output cables and battery connecting cable securely to their designated connectors. Loose connections may cause malfunctions.
- Turn off the power to the PLC before attaching or detaching the following devices. Failure to do so may cause equipment failures or malfunctions.
  - Peripheral devices, expansion board, expansion adapter, and connector conversion adapter
  - Extension modules, bus conversion module, and connector conversion module
  - Battery

[WIRING PRECAUTIONS]

⚠WARNING

- Make sure to cut off all phases of the power supply externally before attempting installation or wiring work. Failure to do so may cause electric shock or damage to the product.
- Make sure to attach the terminal cover, provided as an accessory, before turning on the power or initiating operation after installation or wiring work. Failure to do so may cause electric shock.
- The temperature rating of the cable should be 80℃ or more.
- Make sure to properly wire to the spring clamp terminal block in accordance with the following precautions. Failure to do so may cause electric shock, equipment failures, a shortcircuit, wire breakage, malfunctions, or damage to the product.
  - The disposal size of the cable end should follow the dimensions described in the manual.
  - Twist the ends of stranded wires and make sure that there are no loose wires.
  - Do not solder-plate the electric wire ends.
  - Do not connect more than the specified number of wires or electric wires of unspecified size.
  - Affix the electric wires so that neither the terminal block nor the connected parts are directly stressed.

[WIRING PRECAUTIONS]

⚠CAUTION

- Perform class D grounding (grounding resistance: 100 Ω or less) of the grounding terminal on the CPU module and extension modules with a wire 2 mm^2 or thicker. Do not use common grounding with heavy electrical systems (refer to the User's Manual (Hardware) of the CPU module used).
- Individually ground the FG terminal of the programmable controller with a ground resistance of 100 Ω or less. Failure to do so may result in electric shock or malfunction.
- Install module so that excessive force will not be applied to terminal blocks, or communication cables. Failure to do so may result in wire damage/breakage or PLC failure.
- Make sure to observe the following precautions in order to prevent any damage to the machinery or accidents due to malfunction of the PLC caused by abnormal data written to the PLC due to the effects of noise.
  - Do not bundle the control line and communication cables together with or lay them close to the main circuit, high-voltage line, load line or power line. As a guideline, lay the power line, control line and communication cables at least 100 mm away from the main circuit, high-voltage line, load line or power line.
  - Ground the shield of the shielded wire or shielded cable at one point on the PLC. However, do not use common grounding with heavy electrical systems.
- For Ethernet cables to be used in the system, select the ones that meet the specifications described in ☞ Page 27 Wiring Products. If not, normal data transmission is not guaranteed.

[STARTUP AND MAINTENANCE PRECAUTIONS]

⚠WARNING

- Do not touch any terminal while the PLC's power is on. Doing so may cause electric shock or malfunctions.
- Before cleaning or retightening terminals, cut off all phases of the power supply externally. Failure to do so in the power ON status may cause electric shock.
- Before modifying the program in operation, forcible output, running or stopping the PLC, read through this manual carefully, and ensure complete safety. An operation error may damage the machinery or cause accidents.
- Do not change the program in the PLC from two or more peripheral equipment devices at the same time. (i.e. from an engineering tool and a GOT) Doing so may cause destruction or malfunction of the PLC program.

[STARTUP AND MAINTENANCE PRECAUTIONS]

⚠CAUTION

- When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents.
- Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.
- Do not disassemble or modify the PLC. Doing so may cause fire, equipment failures, or malfunctions. For repair, contact your local Mitsubishi Electric representative.
- Turn off the power to the PLC before attaching or detaching the following devices. Failure to do so may cause equipment failures or malfunctions.
  - Peripheral devices, expansion board, expansion adapter, and connector conversion adapter
  - Extension modules, bus conversion module, and connector conversion module
  - Battery
- Read relevant manuals carefully and ensure the safety before performing online operations (operation status change) with peripheral devices connected to the CPU modules of other stations. Improper operation may damage machines or cause accidents.

[OPERATION PRECAUTIONS]

⚠CAUTION

- Construct an interlock circuit in the program so that the whole system always operates on the safe side before executing the control (for data change) of the PLC in operation.
  Read the manual thoroughly and ensure complete safety before executing other controls (for program change, parameter change, forcible output and operation status change) of the PLC in operation. Otherwise, the machine may be damaged and accidents may occur by erroneous operations.
- Do not power off the CPU module or reset the CPU module while the setting values in the buffer memory are being written to the flash ROM in the intelligent function module. Doing so will make the data in the flash ROM card undefined. The values need to be set in the buffer memory and written to the flash ROM again. Doing so can cause malfunction or failure of the module.
- Note that the whole system may not be reset by the RUN/STOP/RESET switch when the CPU module or intelligent function module detects an error, such as a watchdog timer error, during self-diagnosis. In such cases, turn the power off and on again.

[DISPOSAL PRECAUTIONS]

⚠CAUTION

- Please contact a certified electronic waste disposal company for the environmentally safe recycling and disposal of your device.

[TRANSPORTATION PRECAUTIONS]

⚠CAUTION

- The PLC is a precision instrument. During transportation, avoid impacts larger than those specified in the general specifications of the User's Manual (Hardware) of the CPU module by using dedicated packaging boxes and shock-absorbing palettes. Failure to do so may cause failures in the PLC. After transportation, verify operation of the PLC and check for damage of the mounting part, etc.

INTRODUCTION

This manual contains text, diagrams and explanations which will guide the reader in the correct installation, safe use and operation of the FX5-ENET Ethernet module of iQ-F series.
It should be read and understood before attempting to install or use the unit. Store this manual in a safe place so that you can read it whenever necessary.
Always forward it to the end user.

Regarding use of this product

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult Mitsubishi Electric.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

Note

- If in doubt at any stage during the installation of the product, always consult a professional electrical engineer who is qualified and trained in the local and national standards. If in doubt about the operation or use, please consult the nearest Mitsubishi Electric representative.
- Mitsubishi Electric will not accept responsibility for actual use of the product based on these illustrative examples.
- This manual content, specification etc. may be changed, without a notice, for improvement.
- The information in this manual has been carefully checked and is believed to be accurate; however, if you notice a doubtful point, an error, etc., please contact the nearest Mitsubishi Electric representative. When doing so, please provide the manual number given at the end of this manual.

CONTENTS

RELEVANT MANUALS

Manual name <manual number>	Description
MELSEC iQ-F FX5UJ User's Manual (Hardware) <SH-082206ENG>	Describes the details of hardware of the FX5UJ CPU module, including input/output specifications, wiring, installation, and maintenance.
MELSEC iQ-F FX5U User's Manual (Hardware) <JY997D55301>	Describes the details of hardware of the FX5U CPU module, including input/output specifications, wiring, installation, and maintenance.
MELSEC iQ-F FX5UC User's Manual (Hardware) <JY997D61401>	Describes the details of hardware of the FX5UC CPU module, including input/output specifications, wiring, installation, and maintenance.
MELSEC iQ-F FX5 User's Manual (Application) <JY997D55401>	Describes the basic knowledge required for program design, functions of the CPU module, devices/labels, and parameters.
MELSEC iQ-F FX5 Programming Manual (Program Design) <JY997D55701>	Describes the specifications of ladder, ST, FBD/LD, and SFC programs, and labels.
MELSEC iQ-F FX5 Programming Manual (Instructions, Standard Functions/Function Blocks) <JY997D55801>	Describes the specifications of instructions and functions that can be used in programs.
MELSEC iQ-F FX5 User's Manual (Ethernet Communication) <JY997D56201>	Describes the Ethernet communication function of the CPU module built-in and the Ethernet module.
MELSEC iQ-F FX5-ENET User's Manual <SH-082026ENG> (This manual)	Describes the FX5-ENET.
MELSEC iQ-F FX5 User's Manual (BACnet) <SH-082218ENG>	BACnet functions of the Ethernet module.
MELSEC iQ-F FX5 User's Manual (SLMP) <JY997D56001>	Explains methods for the device that is communicating with the CPU module by SLMP to read and write the data of the CPU module.
GX Works3 Operating Manual <SH-081215ENG>	Describes the system configuration, parameter settings, and online operations of GX Works3.

TERMS

Unless otherwise specified, this manual uses the following terms.

Terms	Description
RAS	The abbreviation for Reliability, Availability, and Serviceability. This term refers to usability of automated equipment.
Engineering tool	The product name of the software package for the MELSEC programmable controllers
Disconnection	A process of stopping data link if a data link error occurs
Cyclic transmission	A function by which data are periodically exchanged among stations on the same network using link devices on CC-Link IE Field Network Basic
Slave station	A station that performs cyclic transmission with the master station on CC-Link IE Field Network Basic. I/O signals in units of bits and I/O data in units of words are exchanged.
Return	A process of restarting data link when a station recovers from an error
Master station	A station that controls the entire CC-Link IE Field Network Basic. Only one master station can be used in a network.
Remote input (RX)	Bit data input from a slave station to the master station
Remote output (RY)	Bit data output from the master station to a slave station
Remote register (RWr)	Word data input from a slave station to the master station
Remote register (RWw)	Word data output from the master station to a slave station
Link scan (link scan time)	The master station of CC-Link IE Field Network Basic sends requests to all slave stations. After receiving responses from all the slave stations, the master station sends next requests. The time taken from when requests are sent to when the next requests are started to send by the master station.
Link device	A device (RX, RY, RWr, or RWw) in a CPU module for the purpose of communicating with slave stations
Link refresh	Automatic data transfer between a user device and a link device

GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this manual uses the following generic terms and abbreviations.

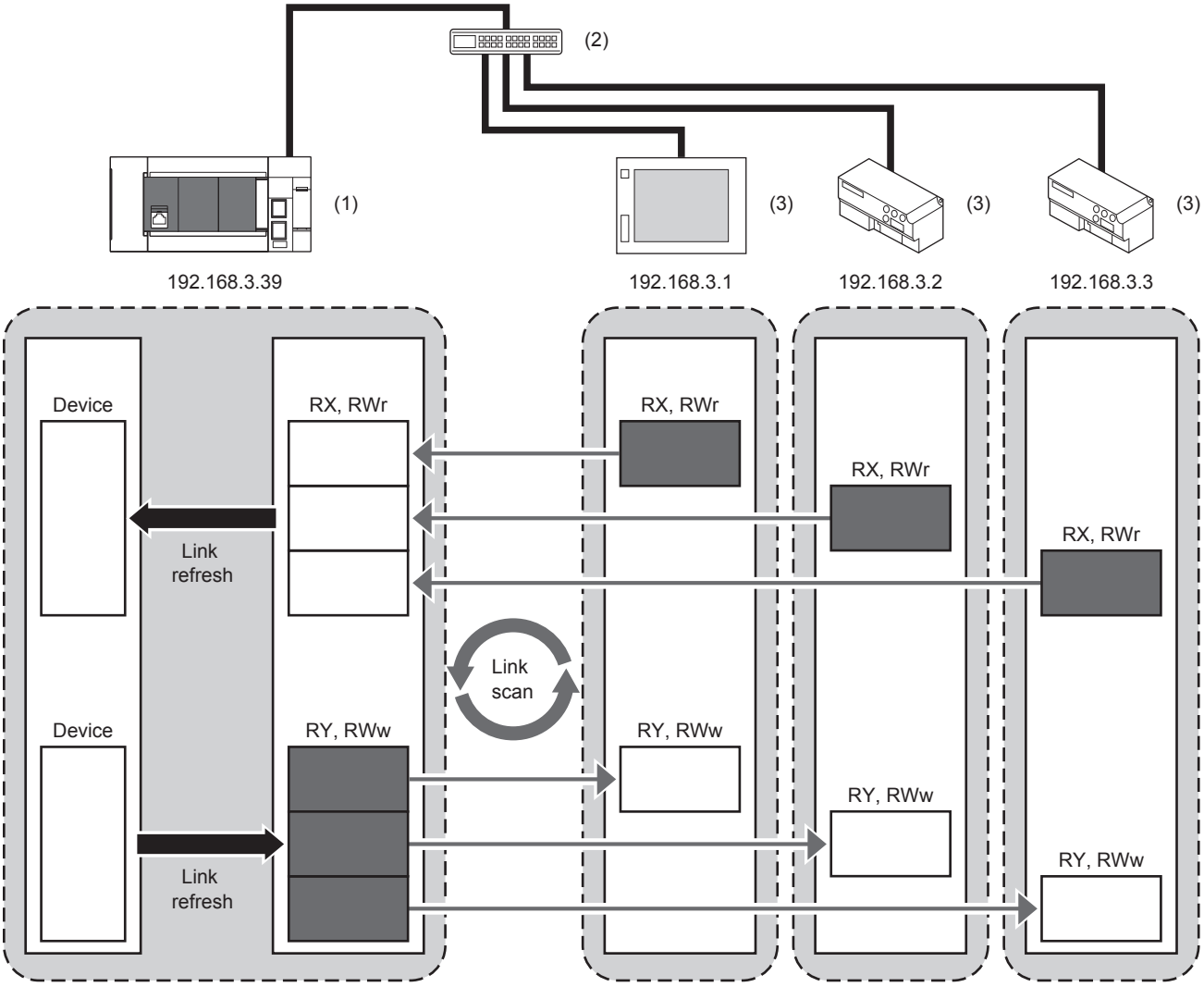
Generic term/abbreviation	Description
Extension module	Generic term for FX5 extension modules, FX3 extension modules, Extension modules (extension cable type and extension connector type)
FX5	Generic term for FX5UJ, FX5U and FX5UC programmable controllers
FX5U CPU module	Generic term for FX5U-32MR/ES, FX5U-32MT/ES, FX5U-32MT/ESS, FX5U-64MR/ES, FX5U-64MT/ES, FX5U-64MT/ESS, FX5U-80MR/ES, FX5U-80MT/ES, FX5U-80MT/ESS, FX5U-32MR/DS, FX5U-32MT/DS, FX5U-32MT/DSS, FX5U-64MR/DS, FX5U-64MT/DS, FX5U-64MT/DSS, FX5U-80MR/DS, FX5U-80MT/DS, and FX5U-80MT/DSS
FX5UC CPU module	Generic term for FX5UC-32MT/D, FX5UC-32MT/DSS, FX5UC-64MT/D, FX5UC-64MT/DSS, FX5UC-96MT/D, FX5UC-96MT/DSS, FX5UC-32MT/DS-TS, FX5UC-32MT/DSS-TS, and FX5UC-32MR/DS-TS
FX5UJ CPU module	Generic term for FX5UJ-24MR/ES, FX5UJ-24MT/ES, FX5UJ-24MT/ESS, FX5UJ-40MR/ES, FX5UJ-40MT/ES, FX5UJ-40MT/ESS, FX5UJ-60MR/ES, FX5UJ-60MT/ES, and FX5UJ-60MT/ESS
GX Works3	The product name of the software package, SWnDND-GXW3, for the MELSEC programmable controllers (The 'n' represents a version.)
SD memory card	Generic term for NZ1MEM-2GBSD, NZ1MEM-4GBSD, NZ1MEM-8GBSD, NZ1MEM-16GBSD, L1MEM-2GBSD, and L1MEM-4GBSD SD memory cards Abbreviation of Secure Digital Memory Card. Device that stores data using flash memory.
Intelligent function module	Generic term for FX5 intelligent function modules and FX3 intelligent function modules
Peripheral device	Generic term for engineering tools and GOTs
Ethernet module	Different name for FX5-ENET
Battery	Different name for FX3U-32BL

1 OUTLINE

FX5-ENET Ethernet module (hereinafter referred to as FX5-ENET) is an intelligent function module for connecting to a CC-Link IE Field network Basic and general-purpose Ethernet.

CC-Link IE Field Network Basic

CC-Link IE Field Network Basic is an factory automation network using the standard Ethernet.
Data is periodically communicated between the master station and slave stations using link devices (cyclic transmission).



(1) FX5-ENET (master station)
(2) Hub
(3) External device (slave station)

Point

CC-Link IE Field Network Basic can be used with other Ethernet protocols.

Precautions

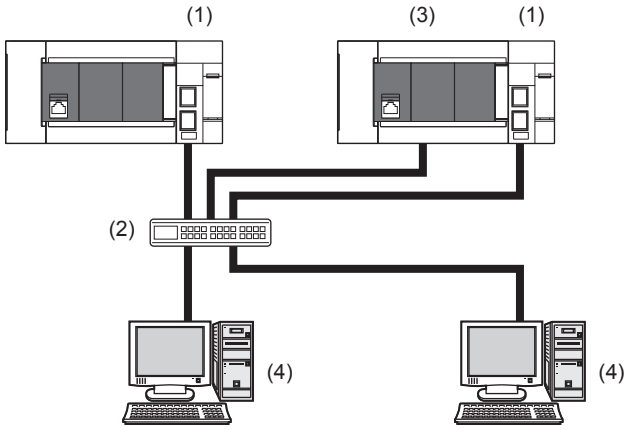
The link scan time of cyclic transmission is increased by executing following functions:

- Ethernet functions such as socket communication and communication via SLMP
- Communications with other Ethernet devices on the same line

Use the Ethernet function above or other Ethernet devices so that the system being used is not affected.

General-purpose Ethernet communication

The module can be connected with a host system, such as a personal computer, by using the communication protocol TCP/UDP.



(1) FX5-ENET
(2) Hub
(3) CPU module
(4) External device (personal computer)

2 SPECIFICATIONS

This chapter describes the FX5-ENET specifications.

2.1 General Specifications

The items other than the following are equivalent to those of the CPU module.

For the general specification, refer to the following manual.

MELSEC iQ-F FX5UJ User's Manual (Hardware)

MELSEC iQ-F FX5U User's Manual (Hardware)

MELSEC iQ-F FX5UC User's Manual (Hardware)

Items	Specifications	
Dielectric withstand voltage	500 V AC for 1 minute	Between all terminals and ground terminal
Insulation resistance	10 MΩ or higher by 500 V DC insulation resistance tester	

2.2 Power Supply Specifications

The following table lists the power supply specifications.

Items		Specifications
Internal power supply	Power supply voltage	24 V DC
	Current consumption	110 mA

2.3 Performance Specifications

The following table lists the performance specifications.

Items					Specifications
CC-Link IE Field Network Basic	Station type				Master station
	Maximum number of connectable stations[*1]				32
	Number of stations occupied by a slave station				1 to 4
	Maximum number of link points per network			RX	2048
				RY	2048
				RWr	1024
				RWw	1024
	Maximum number of link points per station		Master station	RX	2048
				RY	2048
				RWr	1024
				RWw	1024
			Slave station[*2]	RX	64/128/192/256
				RY	64/128/192/256
				RWr	32/64/96/128
				RWw	32/64/96/128
	UDP port number used in the cyclic transmission				61450
	UDP port number used in the automatic detection of connected device				Master station: An unused port number is assigned automatically. Slave station: 61451
	Transmission specifications	Data transmission speed			100 Mbps
		Interface			RJ45 connector
		Maximum station-to-station distance			100 m
		Overall cable distance			Depends on the system configuration
		Number of cascade connections	100BASE-TX		For the number of the connectable stages when using a switching hub, check with the manufacturer of the switching hub used.
	Network topology				Star topology
	Hub[*3]				Hubs with 100BASE-TX ports[*4] can be used.
	Connection cable[*5]		100BASE-TX		Ethernet cable of category 5 or higher (STP cable)
General-purpose Ethernet communication	Transmission specifications	Data transfer speed			100/10 Mbps
		Communication mode			Full-duplex or half-duplex[*3]
		Transmission method			Base band
		Interface			RJ45 connector
		Maximum segment length			100 m (length between hub and node)[*6]
		Number of cascade connections	100BASE-TX		2 levels maximum[*7]
			10BASE-T		4 levels maximum[*7]
	Protocol type[*8]				MELSOFT connection, SLMP server (3E/1E frame), socket communication, simple CPU communication, BACnet/IP
	Number of connections				Total of 32 connections[*9] (Up to 32 external devices can access one FX5-ENET module at the same time.)
	Hub[*3]				Hubs with 100BASE-TX or 10BASE-T ports[*10] can be used.
	Connection cable[*5]		100BASE-TX		Ethernet cable of category 5 or higher (STP cable)
			10BASE-T		Ethernet cable of category 3 or higher (STP/UTP cable)
Number of ports					2[*11]
Number of occupied I/O points					8 points
Applicable CPU module					• FX5UJ CPU module (From the first) • FX5U CPU module (Ver. 1.110 or later) • FX5UC CPU module[*12] (Ver. 1.110 or later)
Applicable engineering tool					• FX5UJ CPU module: GX Works3 (Ver.1.060N or later) • FX5U/FX5UC CPU module: GX Works3 (Ver.1.050C or later)
Number of connectable units					1 module

*1 Maximum number of connected slave stations that FX5-ENET (master station) can manage.
*2 Value for 1-station occupation, 2-station occupation, 3-station occupation, or 4-station occupation.
*3 IEEE802.3x flow control is not supported.
*4 The ports must comply with the IEEE802.3 100BASE-TX standards.
*5 A straight/cross cable can be used.
*6 For maximum segment length (length between hubs), consult the manufacturer of the hub used.
*7 This number applies when a repeater hub is used. When using a switching hub, check the number of cascaded stages with the manufacturer of the hub to be used.
*8 For the versions compatible with each protocol, refer to ☞ Page 98 Added and Changed Functions.
*9 The first device for MELSOFT connection is not included in the number of connections. (The second and the following devices are included.)
The CC-Link IE field network Basic is not included in the number of connections.
*10 The ports must comply with the IEEE802.3 100BASE-TX or IEEE802.3 10BASE-T standards.
*11 Since the IP address is shared by two ports, only one address can be set.
*12 FX5-CNV-IFC or FX5-C1PS-5V is necessary to connect FX5-ENET to the FX5UC CPU module.

Point

- If the destination device of the FX5-ENET does not respond due to power off or other reasons, Ethernet communication of the FX5-ENET may get delayed by up to 500 ms.
- In the case of general-purpose Ethernet communication, when FX5-ENET is connected with a hub, it distinguishes between 100BASE-TX and 10BASE-T and between full-duplex and half-duplex communication modes according to the hub. Set the hub to half-duplex mode if the hub does not have the auto-negotiation function.

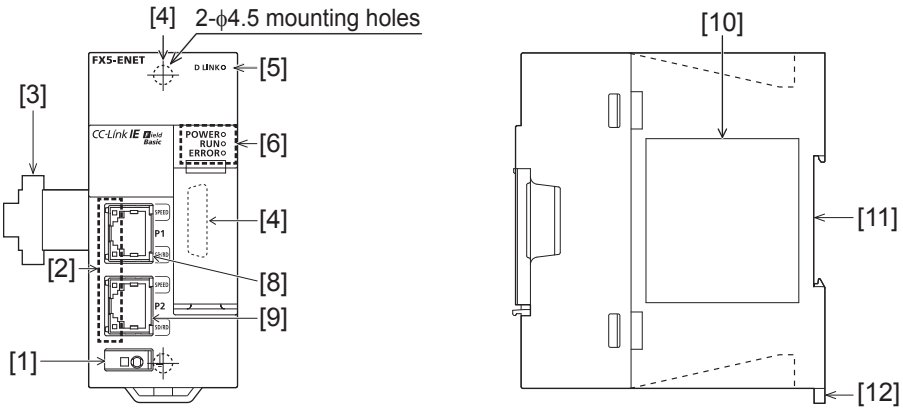
Precautions

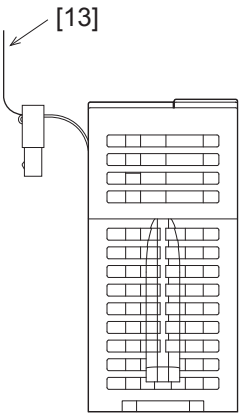
The operation of the following connections is not guaranteed. Check the operation before using the module.

- Connection using internet (general public line) (Internet-access service offered by an Internet service provider or a telecommunications carrier)
- Connection using firewall device(s)
- Connection using broadband router(s)
- Connection using wireless LAN

2.4 Part Names

This chapter describes the names of each part of the FX5-ENET.





No.	Name	Description
[1]	External ground terminal	Connect an external ground. (Spring clamp terminal block)
[2]	Link status display LEDs	Displays the link status of module. (☞ Page 18 LED display)
[3]	Extension cable	Cable for connecting the module when adding the FX5-ENET.
[4]	Direct mounting hole	Screw holes (2-ϕ4.5, mounting screw: M4 screw) for direct installation
[5]	Network status display LEDs	Displays the network status. (☞ Page 18 LED display)
[6]	Operation status display LEDs	Refer to ☞ Page 18 LED display.
[9]	Extension connector (for next module)	Connector for connecting the extension cable of an extension module.
[10]	Modular jack for P1 (RJ-45) (with cap)	A port 1 connector for Ethernet network. Connect an Ethernet cable.
[11]	Modular jack for P2 (RJ-45) (with cap)	A port 2 connector for Ethernet network. Connect an Ethernet cable.
[12]	Name plate	The product model name, manufacturer's serial number etc. are shown.
[13]	DIN rail mounting groove	The module can be installed on DIN46277 rail (35 mm wide).
[14]	DIN rail mounting hook	Hook for mounting the module on a DIN rail of DIN46277 (35 mm wide).
[15]	Pullout tab	They are used when drawing out an extension cable.

LED display

The following table lists the LED display.

LED display		LED color	Description
D LINK		Green	Indicates the operating status of the slave station. • On: Communicating with one or more slave stations • Off: All stations error (Not communicating with any slave station)
POWER		Green	Indicates the power supply status. • On: Power on • Off: Power off or module failure
RUN		Green	Indicates the operating status. • On: Normal operation • Off: Error
ERROR		Red	Indicates the module error status. • On: Minor error or major error • Flashing: Moderate error or major error • Off: Normal operation
P1	SPEED	Green	Indicates the transmission speed of P1. • On: Link-up (100 Mbps) • Off: Link-up (10 Mbps)
	SD/RD	Green	Indicates the data sending/receiving status of P1. • On: Flashing: Data being sent or received • Off: Data not transmitted or received
P2	SPEED	Green	Indicates the transmission speed of P2 • On: Link-up (100 Mbps) • Off: Link-up (10 Mbps)
	SD/RD	Green	Indicates the data sending/receiving status of P2. • On: Flashing: Data being sent or received • Off: Data not transmitted or received

3 PROCEDURES BEFORE OPERATION

This chapter describes the procedures before operation.

CC-Link IE Field Network Basic

1. Checking the specifications of the FX5-ENET

Check the specifications of the FX5-ENET. (☞ Page 14 SPECIFICATIONS)

2. Installation of the FX5-ENET

Connect the FX5-ENET to the CPU module. For details, refer to the following.

📖MELSEC iQ-F FX5UJ User's Manual (Hardware)

📖MELSEC iQ-F FX5U User's Manual (Hardware)

📖MELSEC iQ-F FX5UC User's Manual (Hardware)

3. Configuring a network

Configure a network and set parameters which are required for start-up.

- Wiring (☞ Page 24 WIRING)
- Parameter setting (☞ Page 28 PARAMETER SETTINGS)

4. Network diagnostics

Check the status of a network by executing the CC-Link IE Field Network Basic diagnostics. (☞ Page 52 CC-Link IE Field Network Basic Diagnostics)

5. Programming

Create a program. (☞ Page 41 PROGRAMMING)

6. Check the communication status

Check the communication status of FX5-ENET. (☞ Page 45 Checking the Module Status)

General-purpose Ethernet communication

1. Checking the specifications of the FX5-ENET

Check the specifications of the FX5-ENET. (☞ Page 14 SPECIFICATIONS)

2. Installation of the FX5-ENET

Connect the FX5-ENET to the CPU module. For details, refer to the following.

📖MELSEC iQ-F FX5UJ User's Manual (Hardware)

📖MELSEC iQ-F FX5U User's Manual (Hardware)

📖MELSEC iQ-F FX5UC User's Manual (Hardware)

3. Configuring a network

Configure a network and set parameters which are required for start-up.

- Wiring (☞ Page 24 WIRING)
- Parameter setting (☞ Page 28 PARAMETER SETTINGS)

In the following steps, refer to the following manual for each function.

📖MELSEC iQ-F FX5 User's Manual (Ethernet Communication)

📖MELSEC iQ-F FX5 User's Manual (BACnet)

4 FUNCTION LIST

The following table lists the function available for the FX5-ENET.

4.1 CC-Link IE Field Network Basic

For details on function of CC-Link IE Field Network Basic, refer to 📖CC-Link IE Field Network Basic Reference Manual.

Cyclic transmission

Function	Description
Data communication using link devices (RX/RY/RWr/RWw)	Periodically performs data communication between the master station and slave stations using link devices (RX/RY/RWr/RWw).
Link refresh	Automatically transfers data between devices and link devices of the master station.
Cyclic data integrity assurance	Assures cyclic data integrity in station-based units or 32 bit-based units.
Group number setting	Divides slave stations into groups by setting a group number to each slave station and each of groups performs the cyclic transmission. By organizing groups separating slave stations with shorter response processing time from ones with longer response processing time, the differences of the reference response times of each slave station does not badly affect the cyclic transmission.
Constant link scan	Maintains constant 1-link scan time for each group.

RAS

Function	Description
Slave station disconnection	The corresponding slave station is disconnected if no response is returned within the timeout time or number of times set with the Slave station disconnect detected setting, or if an abnormal response or disconnection request is received from the slave station.
Automatic return	Automatically returns a disconnected station to the network and restarts the data link when the station returns to normal.

4.2 General-purpose Ethernet Communication Functions

For details on general-purpose Ethernet communication functions, refer to the following.

📖MELSEC iQ-F FX5 User's Manual (Ethernet Communication)

📖MELSEC iQ-F FX5 User's Manual (BACnet)

Function	Description
Direct connection with MELSOFT	FX5-ENET and MELSOFT product (GX Works3, etc.) are connected by single Ethernet cable without using a hub. Communication is done by simply specifying the connection destination; setting the IP address is not required.
MELSOFT connection	Communication with MELSOFT products (GX Works3, etc.) is performed via FX5-ENET.
Connected module search function	Searches for FX5-ENET connected with personal computer using GX Works3 within the same hub. Acquires IP address by selecting from search results list.
MELSOFT diagnosis function	Diagnoses Ethernet port of CPU module and FX5-ENET from GX Works3. (Ethernet diagnostics)
SLMP communication function	Reads and writes PLC data from other device.
Socket communication function	By using socket communication instructions, any data can be transferred from and to the external devices connected through Ethernet using TCP or UDP.
IP filter function	Identifies the IP address of the access source to limit access to the FX5-ENET.
Simple CPU communication function	Allows data communications between specified devices at the specified timing just by doing simple parameter settings from an engineering tool for the FX5-ENET.
IP address change function	The IP address of FX5-ENET can be changed by operating a peripheral device without using GX Works3.
BACnet function	Uses a PLC system as a BACnet device.

4.3 Other Functions

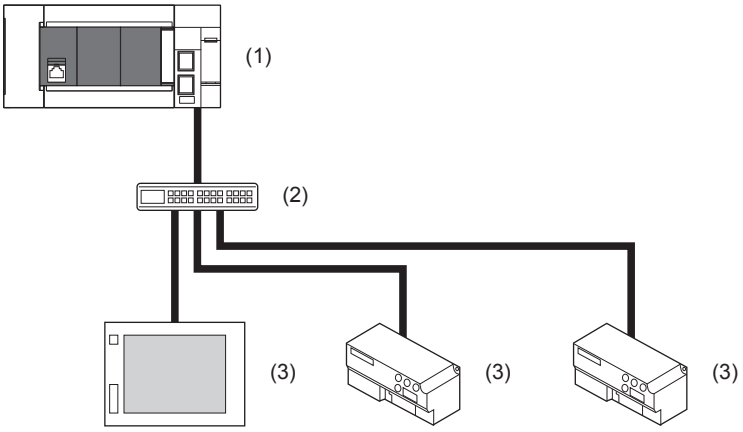
The following shows an other functions.

Function	Description	Reference
CC-Link IE Field Network Basic diagnostics	Checks the status of CC-Link IE Field Network Basic.	Page 52
Hardware test	Performs hardware tests (RAM and ROM) of FX5-ENET.	Page 54
Ethernet diagnostics	Diagnoses the Ethernet port from GX Works3.	Page 47
Event history function	Collects errors from FX5-ENET, and stores them as event information into the CPU module.	Page 51
Firmware update function	Updates the firmware version of FX5-ENET.	MELSEC iQ-F FX5 User's Manual (Application)

5 SYSTEM CONFIGURATION

5.1 CC-Link IE Field Network Basic System Configuration

Configure a network system using modules and partner products supporting CC-Link IE Field Network Basic.
Connect the modules in a star topology using a switching hub and Ethernet cables. Line and ring topologies are not possible.

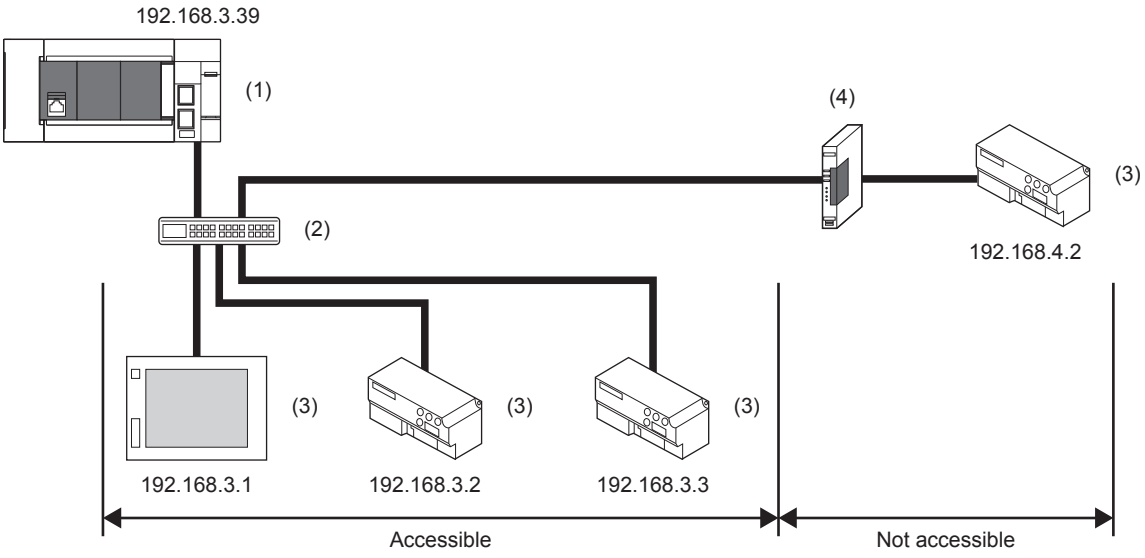


(1) FX5-ENET (master station)
(2) Hub
(3) External device (slave station)

Access range

The access range of CC-Link IE Field Network Basic is within the same network address of Ethernet. The device connected beyond the router is not accessible.

Ex.
When the subnet mask is 255.255.255.0 and the network address is 192.168.3.☐



(1) FX5-ENET (master station)
(2) Hub
(3) External device (slave station)
(4) Router

Point

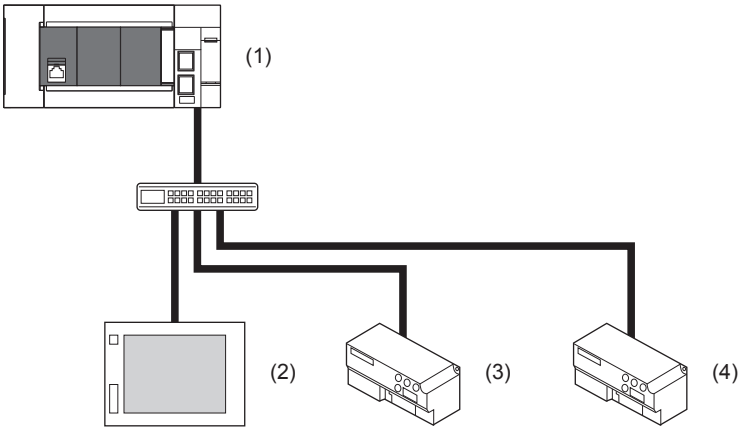
Use the same subnet mask value and do not assign the same IP address for each slave station.

Number of link points

The number of link points per slave station is 64 points for RX/RY and 32 points for RWr/RWw. (☞ Page 15 Performance Specifications)

However, by changing the number of occupied stations, RX/RY can be set to a maximum of 256 points in increments of 64 points and RWr/RWw can be set to a maximum of 128 points in increments of 32 points. For details on the number of occupied stations (whether or not the number can be changed), refer to the manual for the slave station used.

If the number of link points for the slave station is changed, the assignment range and station number are changed.



(1) Master station
(2) Slave station 1: 1 station occupied
(3) Slave station 2: 2 stations occupied
(4) Slave station 3: 4 stations occupied

The following table lists the number of link points.

Slave station	Number of occupied stations	RX/RY			RWr/RWw		
		Number of points	Start	End	Number of points	Start	End
1	1 stations occupied	64	0	3F	32	0	1F
2	2 stations occupied	128	40	BF	64	20	5F
3	4 stations occupied	256	C0	1BF	128	60	DF

Point

Setting the number of link points for a slave station to 2 stations occupied means that two slave stations are connected. Thus, if the number of link points is increased, the number of connectable slave stations per network is decreased.

5.2 General-purpose Ethernet Communication Configuration

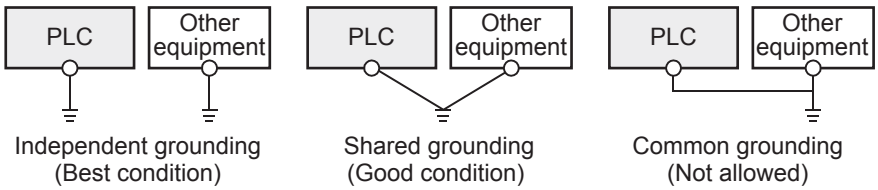
For details on general-purpose Ethernet communication configuration, refer to MELSEC iQ-F FX5 User's Manual (Ethernet Communication).

6 WIRING

6.1 Grounding

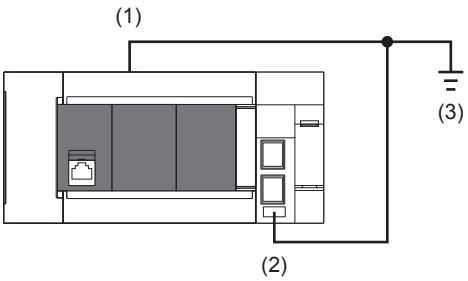
Perform the following.

- Perform class D grounding (Grounding resistance: 100 Ω or less).
- Ground the PLC independently when possible.
- If the PLC cannot be grounded independently, perform the "Shared grounding" shown below.



- Bring the grounding point close to the PLC as much as possible so that the ground cable can be shortened.

Grounding of FX5-ENET



(1) Ground terminal of CPU module
(2) FG terminal of FX5-ENET
(3) D grounding (Grounding resistance: 100 Ω or less)

Terminal name	Content
⏚ FG (Ground terminal)	Perform class D grounding. (Grounding resistance: 100 Ω or less)

The connection destination for the FG terminal of FX5-ENET is a spring clamp terminal block.
To connect to the terminal block, there are two ways: by using single wires/strand wires or by using ferrules. Make sure to properly connect in accordance with the following specifications.

■Ferrule

The following table shows wire ferrules and its associated tools compatible with the terminal block. The shape of the wire ferrule differs depending on the crimp tool to be used, use the reference product. If the product other than referenced products is used, the wire ferrule cannot be removed. Sufficiently confirm that the wire ferrule can be removed before use.
<Reference product>

Manufacturer	Sleeve	Ferrules model	Suitable wiring size	Crimp tool
PHOENIX CONTACT GmbH & Co. KG	Ferrules with insulation sleeve	AI 0.25-8 YE	0.25 mm^2	CRIMPFOX 6
		AI 0.34-8 TQ	0.3, 0.34 mm^2	
		AI 0.5-8 WH	0.5 mm^2	
		AI 0.75-8 GY	0.75 mm^2	
	Ferrules without insulation sleeve	A 0,25-7	0.25 mm^2	
		A 0,34-7	0.3, 0.34 mm^2	
		A 0,5-8	0.5 mm^2	
		A 0,75-8	0.75 mm^2	
		AI 1.0-8	1.0 mm^2	
		AI 1.5-7	1.25, 1.5 mm^2	

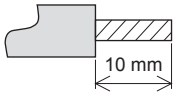
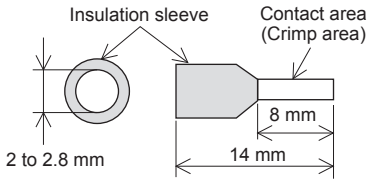
The wires to connect the spring clamp terminal block are described below.

No. of wire per terminal	Wire size	
	Single wire, strand wire	Ferrule with insulation sleeve
One wiring	AWG24 to 16 (0.2 to 1.5 mm^2)	AWG23 to 19 (0.25 to 0.75 mm^2)

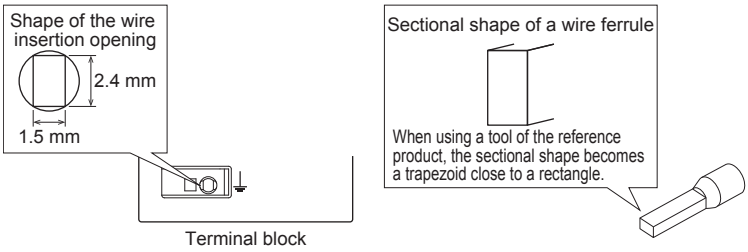
■Wire end treatment

Strip the cable about 10 mm from the tip to connect a wire ferrule at the stripped area. Failure to do so may result in electric shock due to the conductive part. If the wire strip length is too short, it may result in the poor contact to the spring clamp terminal part.

Depending on the thickness of the sheath, it may be difficult to insert into the insulation sleeve, so select the wires by referring to the appearance diagram.

Strand wire/single wire	Ferrule with insulation sleeve
	

Check the shape of the wire insertion opening with the following chart, and use the smaller wire ferrule than the described size. Also, insert the wire with care so that the wire ferrule is in proper orientation. Failure to do so may cause the bite of the terminal and the damage of the terminal block.



■Connection and disconnection of the cable

• Connection of the cable

Fully insert a cable whose end has been properly processed into the wire insertion opening.

If the cable cannot be inserted with this procedure, fully insert the cable while pushing the open/close button with a flathead screwdriver having a tip width of 2.0 to 2.5 mm. After fully inserting the cable, remove the screwdriver.

<Reference>

Manufacturer	Model
PHOENIX·CONTACT GmbH & Co. KG	SZS 0.4 × 2.5 VDE

Precautions

Pull the cable or wire ferrule slightly to check that the cable is securely clamped.

• Disconnection of the cable

Push the open/close button of the wire to be disconnected with a flathead screwdriver. Pull out the wire with the open/close button pushed.

6.2 Wiring Method

This section describes how to connect and disconnect the Ethernet cable.

Connecting the cable

1. Turn the power supply of FX5-ENET (CPU module) and external device off.
2. Push the Ethernet cable connector into the FX5-ENET until it clicks. Pay attention to the orientation of the connector.
3. Lightly pull the connector to check that the connector is securely connected.
4. Turn the power supply of FX5-ENET (CPU module) and external device on.
5. Check whether the SPEED LED of the port connected with an Ethernet cable is on.*1

*1 The time between the cable connection and the turning on of the SPEED LED may vary. The SPEED LED usually turns after a few seconds. Note, however, that the time may be extended further if the link-up processing is repeated depending on the status of the device on the line.

Disconnecting the cable

1. Turn the power supply of FX5-ENET (CPU module) off.
2. Unplug the Ethernet cable while pressing the latch connector down.

Precautions

- Place the Ethernet cable in a duct or clamp it. If the cable is not placed in a duct or secured with clamps, the cable may swing, drag or be carelessly pulled, and the module or cable may be damaged, or cable contact failure may cause malfunction.
- Do not touch the core of the cable-side or module-side connector, and protect them from dirt or dust. If oil on your hands, dirt, or dust adheres to the core, transmission loss may increase, causing communication problems.
- Check that the Ethernet cable is not disconnected or not shorted and check that the cable is connected properly.
- Do not use Ethernet cables with broken latch connectors. Doing so may cause the Ethernet cables to be disconnected or the module to malfunction.
- Hold the connector part of the Ethernet cable when connecting and disconnecting it. Pulling the cable connected to the module may result in damage to the module or the cable or malfunction due to poor contact.
- For connectors without Ethernet cable, attached connector cover should be placed to prevent foreign matter such as dirt or dust.
- The maximum station-to-station distance of the Ethernet cable is 100 m. However, the acceptable length may be shorter depending on the environment where the cable is used. For details, contact the cable manufacturer.
- The bending radius of the Ethernet cable is limited. For details, check the specifications of the Ethernet cable to be used.

6.3 Wiring Products

This section describes the devices used to comprise a network.

Ethernet cable

Use Ethernet cables that meet the following standards.

■CC-Link IE Field Network Basic

Communication speed	Specifications	Connector	Ethernet standard
100 Mbps	Ethernet cable: Category 5 or higher (STP cable*1)	RJ45 connector	100BASE-TX

■General-purpose Ethernet

Communication speed	Specifications	Connector	Ethernet standard
100 Mbps	Ethernet cable: Category 5 or higher (STP cable*1)	RJ45 connector	100BASE-TX
10 Mbps	Ethernet cable: Category 3 or higher (STP/UTP cable*1)	RJ45 connector	10BASE-T

*1 Shielded twisted pair cable.

A straight/cross cable can be used.

Point

Depending on the connection environment, communication errors may occur due to high-frequency noise from devices other than programmable controllers. The following describes precautionary measures to be taken on the FX5-ENET to avoid the influence of high-frequency noise.

[Wiring]

- When wiring cables, do not bundle them together with or keep them in close proximity to the main circuit lines or power cables.
- Place cables in a duct.
- Use STP cables in place of UTP cables.

Hub

Use hubs which satisfy all the following conditions. If hubs not satisfying the conditions are used, operation is not guaranteed.

- IEEE802.3 (100BASE-TX) compliant
- The auto MDI/MDI-X function equipped
- The auto-negotiation function equipped
- Switching hub (layer 2 switch)*1

*1 A repeater hub cannot be used.

For switching hubs that can be used for CC-Link IE Field Network Basic, refer to the following.

Applicable products (switching hubs) for CC-Link IE Field Network Basic module (FA-A-0234)

7 PARAMETER SETTINGS

This section explains the parameter settings required to perform CC-Link IE Field network Basic and general-purpose Ethernet communication with FX5-ENET.

For details on each operation of GX Works3, refer to GX Works3 Operating Manual.

7.1 Procedure for Setting Parameters

1. Add the "Information Module (FX5-ENET)" in the GX Works3.*1

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Right-click ⇨ [Add New Module]

2. Select the "FX5-ENET".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [FX5-ENET]

3. Set the parameter.

4. Write the parameter settings to the CPU module.

[Online] ⇨ [Write to PLC]

5. The settings are reflected by resetting the CPU module or powering off and on the system.

*1 FX5-ENET can be added to GX Works3 also from the module configuration diagram.

Writing parameters

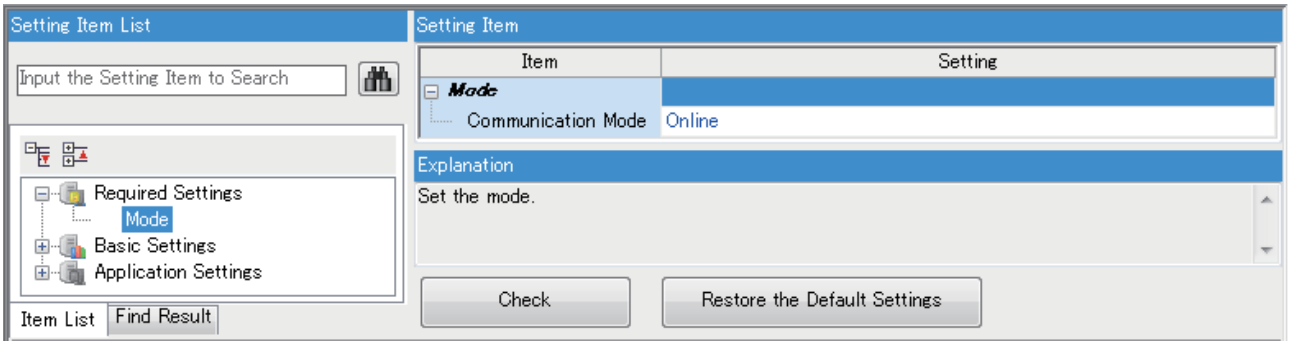
The FX5-ENET parameters are written to the CPU module.

For writing parameters to the CPU module, refer to the following.

GX Works3 Operating Manual

7.2 Required Setting

Set the operation mode of the FX5-ENET.



Mode

Set the operation mode of the FX5-ENET.

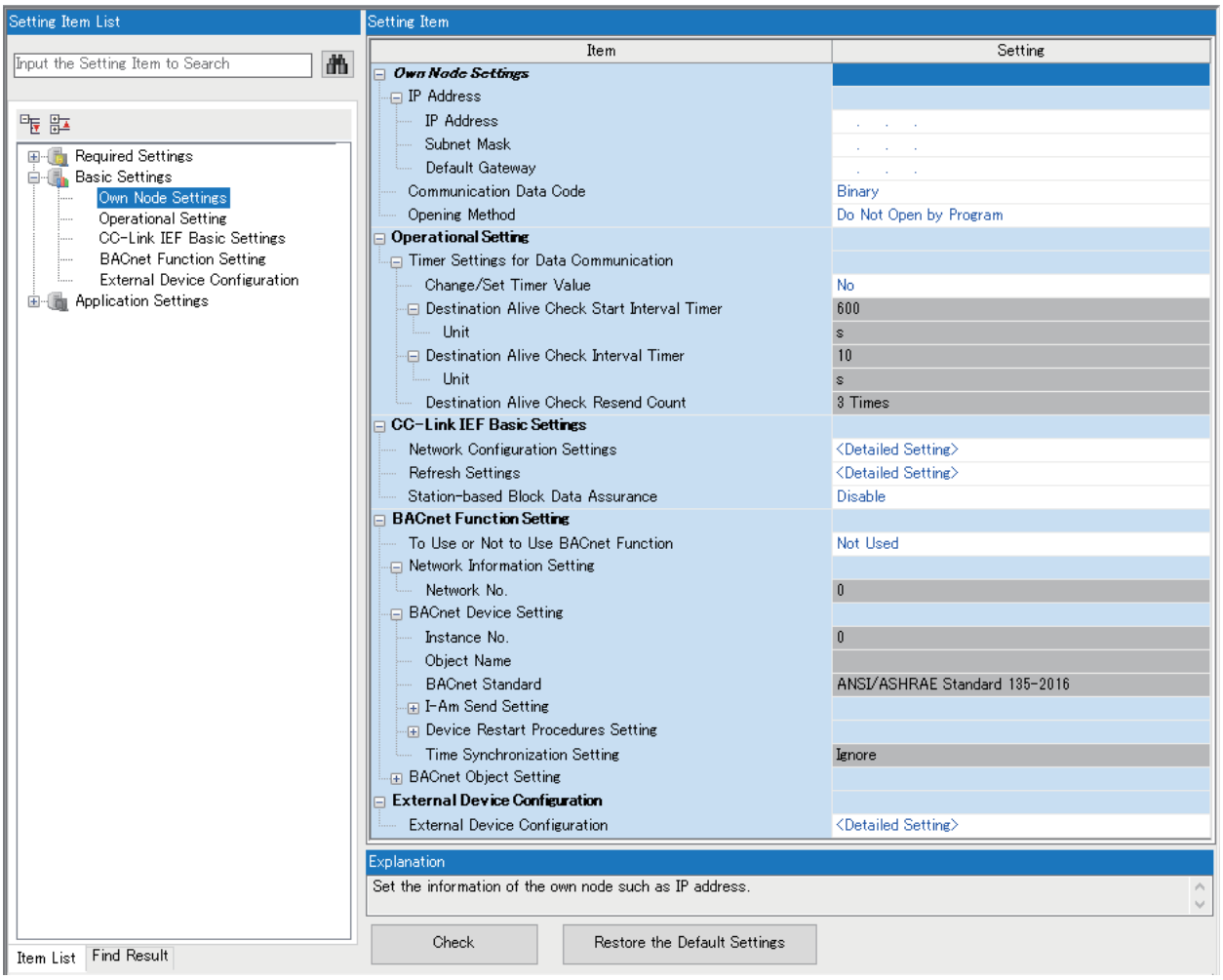
Item	Description	Setting range
Communication Mode	Sets the operation mode of the FX5-ENET. • Online: Normal operation mode • Hardware Test: Mode in which the module performs a self-diagnostics test. Select this mode when checking the operation of the module due to an error or similar problem. (☞ Page 54 Hardware Test)	• Online • Hardware Test (Default: Online)

Restriction

In the hardware test mode, other parameters cannot be set.

7.3 Basic Setting

Set the IP address and functions of FX5-ENET.



Own Node Setting

Set the IP address of the FX5-ENET.

Item		Description	Setting range
IP Address Setting	IP Address	Sets the IP address of the FX5-ENET.*1 Set the class and subnet address of the FX5-ENET to the same settings as those of the external devices that communicate with the FX5-ENET. Contact the network administrator before setting the IP address.	• Blank • 0.0.0.1 to 223.255.255.254 (Default: Blank)
	Subnet Mask	Sets the subnet mask of the FX5-ENET. When setting the IP address of the default gateway and performing communication with an external device in another network through a router, set the subnet mask pattern of the default gateway. All the devices in the same subnetwork should have a common subnet mask. The subnet mask setting is not required for communication in a single network.	• Blank • 0.0.0.1 to 255.255.255.255 (Default: Blank)
	Default Gateway	Sets the default gateway of the FX5-ENET. Set the IP address of the relay device (default gateway) to access the external device in another network. Set a value that satisfies the following conditions as the IP address of the default gateway. • The class of the IP address is A, B, or C. • The subnet address of the default gateway is the same as that of the FX5-ENET. • The host address part is not a sequence of "0" or "1".	• Blank • 0.0.0.1 to 223.255.255.254 (Default: Blank)
Communication Data Code		Select the format of the data to be used for communication. • Binary: communicating data in binary code • ASCII (X, Y octal): Communicating in ASCII code (X, Y octal) • ASCII (X, Y hexadecimal): Communicating in ASCII code (X, Y hexadecimal)	• Binary • ASCII (X, Y octal) • ASCII (X, Y hexadecimal) (Default: Binary)
Opening Method		Select how to open a connection. • Do Not Open by Program: Select this item to perform open processing and open the connection by the external device. Program for open/close processing is not required. • Open by Program: Select this item to perform open/close processing and open/close the connection by a program.	• Do Not Open by Program • Open by Program (Default: Do Not Open by Program)

*1 When the parameter is written without the IP address setting (blank), the following address is set.
192.168.3.251

Operational Setting

Set the destination alive check conditions for socket communication.

Item		Description	Setting range
Timer Settings for Data Communication	Change/Set Timer Value	Select whether to change timer values from the default. The timer operates with its default value when "No" is selected.	• No • Yes (Default: No)
	Destination Alive Check Start Interval Timer	Set the time interval between the reception of the last message from the external device and the start of alive check.	• Unit [s]: 1 to 16383 • Unit [ms]: 100 to 16383000 (Default: 600 s)
	Destination Alive Check Interval Timer	Set the time interval for performing alive check again when no response is returned from the external device of alive check target.	• Unit [s]: 1 to 16383 • Unit [ms]: 100 to 16383000 (Default: 10 s)
	Destination Alive Check Resend Count	Set the number of times to perform alive check when no response is returned from the external device of alive check target.	1 to 32767 (Default: 3 Times)

CC-Link IEF Basic Setting

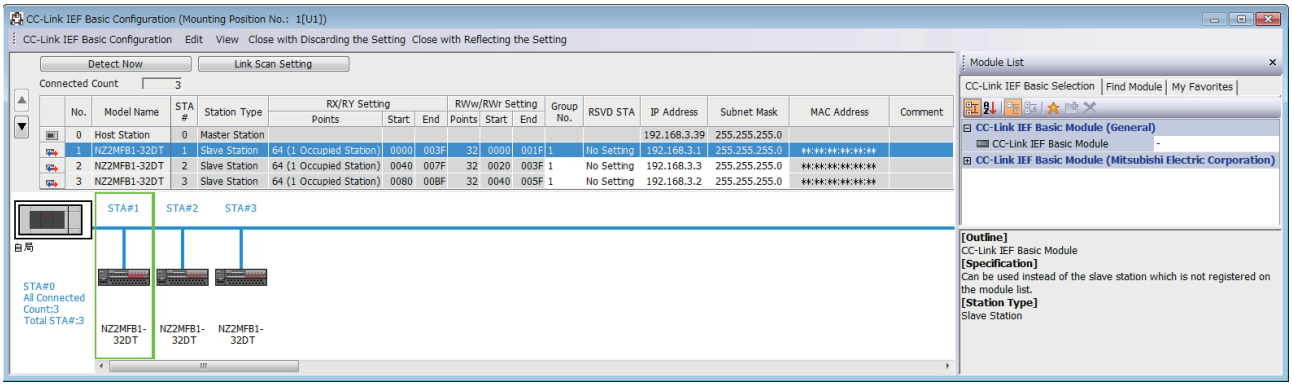
Set the CC-Link IE Field Network Basic.

Item	Description	Setting range
Network Configuration Settings	Set the information of the slave station to the master station. Moreover, configure link scan settings (timeout time and number of retries for slave station disconnection detection). (☞ Page 31)	—
Refresh Settings	Configure the settings to automatically link refresh RX/RY/RWr/RWw data to the devices. (☞ Page 35)	—
Station-based Block Data Assurance	Set whether to assure the data in station units when refreshing the link between the host station and CPU module. This prevents the data that is read/written for each slave is not separated into the new data and old data.	• Enable • Disable (Default: Disable)

Network Configuration Settings

Set the network configuration.

Double-click <Detailed Setting> of the "Network Configuration Settings".



Item		Description	Setting range
[Detect Now] button		Connected devices are automatically detected.	—
[Link Scan Setting] button		Configure link scan settings.	—
Connected Count		The total number of connected slave stations is displayed.	—
No.		The station number of the slave station is displayed.	—
Model Name		Module model name is displayed. When there is no module information, "Module With No Profile Found" is displayed.	—
STA#		The start station number of the slave station is displayed.	—
Station Type		The station type (master station/slave station) is displayed.	—
RX/RY Setting	Points	Set the assignment of the number of points for RX/RY in increments of 64 points.	• 64 (1 Occupied Station) • 128 (2 Occupied Station) • 192 (3 Occupied Station) • 256 (4 Occupied Station) (Default: 64 (1 Occupied Station))
	Start	The start number of RX/RY is displayed.	—
	End	The end number of RX/RY is displayed.	—
RWw/RWr Setting	Points	The number of points for the number of stations in increments of 32 points is displayed.	—
	Start	The start number of RWw/RWr is displayed.	—
	End	The end number of RWw/RWr is displayed.	—
Group No.		Set group numbers of slave stations.	1 to 2 (Default: 1)
RSVD STA		Set whether to set the slave station as a reserved station.	• No Setting • Reserved Station (Default: No Setting)
IP Address		Specify the IP address of the slave station.	0.0.0.1 to 223.255.255.254 (Default: *1)

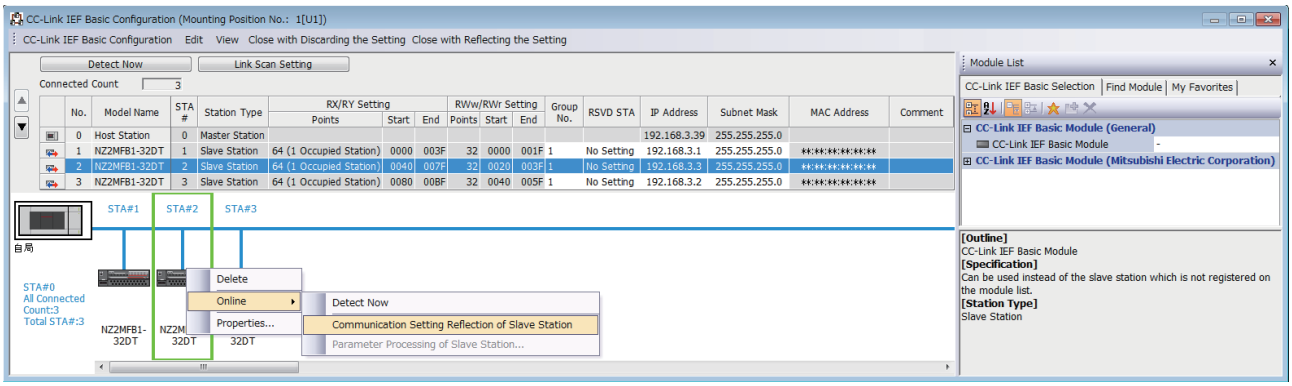
Item	Description	Setting range
Subnet Mask	Specify the subnet mask of the slave station.	0.0.0.1 to 255.255.255.255 (Default: Subnet mask of the master station)
MAC Address	The MAC address of the slave station is displayed.	—
Comment	The information entered in "Comment1" on the "Properties" window displayed by right-clicking the module in the list of stations or the network map is displayed.	Up to 32 one-byte characters/16 two-byte characters (Default: Blank)

*1 First to third octet: first to third octet of the IP address of the master station
Fourth octet: automatically numbered from the number not in use from 1 to 254 in ascending order

■Automatic detection of connected device

Detects the connected slave stations and reflects to the network configurations setting.

In the network configuration setting, communication settings such as IP addresses and subnet masks can be configured for the detected slave stations. Parameters that are inherent in the slave stations can also be read/written from/to the network configuration setting. (Some slave stations do not support these features.) Various settings of all slave stations can be configured in parameters of the master station (the settings do not need to be configured in each individual slave station) and therefore the man-hour for the setting will be reduced.



Follow the operating procedure below to use the automatic detection of connected device.

1. Start up a new project in GX Works3 and execute the automatic detection of connected device.
2. Detected slave stations are reflected in the network configuration setting. Change the items such as the connection order and numbers of occupied stations and set station numbers.
3. Configure IP addresses and subnet masks of slave stations in the network configuration setting. And then, reflect the settings to the slave stations.

Select a module on the list of stations or the network map ⇨ [Online] ⇨ [Communication Setting Reflection of Slave Station]

4. Parameters that are inherent in the slave stations can be read/written from/to the network configuration setting.*1 For details on the parameters inherent in each slave station, refer to the manuals of the slave station used.

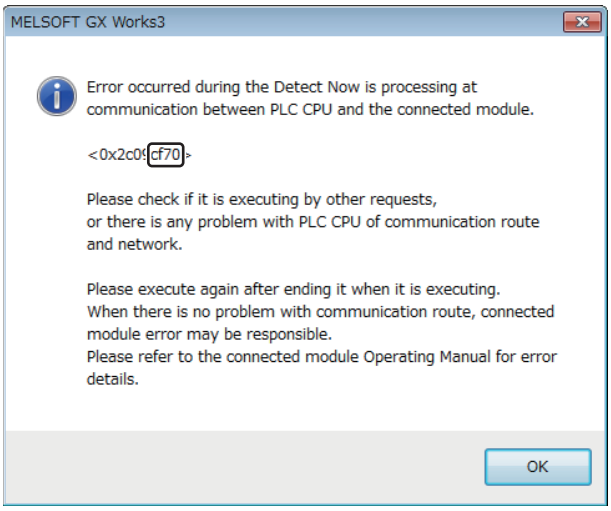
Select a module on the list of stations or the network map ⇨ [Online] ⇨ [Parameters Processing of Slave Station]

*1 To read parameters, select "Parameter read" from "Method selection" and click the [Execute] button. Parameters read are displayed in the column of "Read Value". To write parameters, select "Parameter write" from "Method selection", input data to the column of "Write Value", and then click the [Execute] button.

Point

Slave station settings in the network configuration setting must be configured after executing the automatic detection of connected device.
If not, contents of setting items that have been already configured in the network configuration setting are overwritten by ones detected by the automatic detection. Detected slave stations are reflected in the network configuration setting in ascending order of MAC address and values such as the number of occupied stations becomes initial value.

If an error occurs while the automatic detection of connected device is being executed, the window shown below appears.



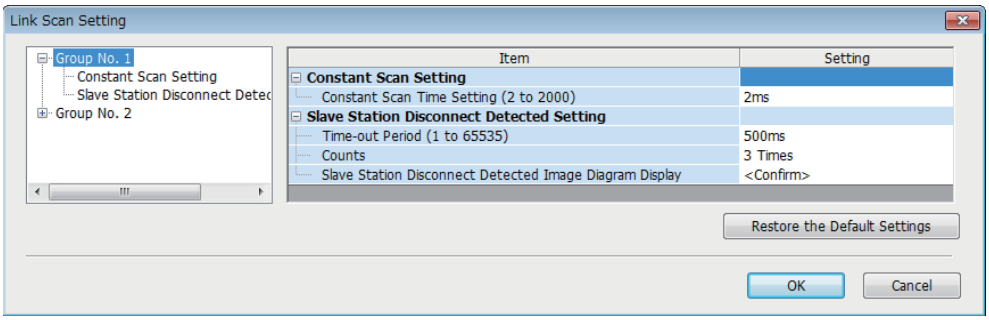
Each of the error codes listed below fills the last four digits of <0x2c09****>.

Error code	Error details and cause	Action
C055H and C056H	System error	• Check the precautions for the function executed. • Check the operating status and connection status of the target device. • Check the connection of the Ethernet cable and the hub. • Check the line status of Ethernet. • Reset the CPU module and target device, and execute the function again. If the above actions do not solve the problem, contact the manufacturer of the target device.
C059H	The function which is not supported by the target device was executed.	Check whether the function executed is supported by the target device.
C05CH	• The setting value of the communication setting is out of range. • Items of communication setting which cannot be set on the target device are set. • The required setting items have not been set to the target device.	Correct the setting details, and retry the operation.
C061H	System error	• Check the precautions for the function executed. • Check the operating status and connection status of the target device. • Check the connection of the Ethernet cable and the hub. • Check the line status of Ethernet. • Reset the CPU module and target device, and execute the function again. If the above actions do not solve the problem, contact the manufacturer of the target device.
CEE0H	The detection or another online function was executed by another peripheral.	Execute the other function after the automatic detection of connected devices is completed.
CEE1H and CEE2H CF10H	System error	• Check the precautions for the function executed. • Check the operating status and connection status of the target device. • Check the connection of an Ethernet cable and a hub. • Check the line status of Ethernet. • Reset the CPU module and target device, and execute the function again. If the above actions do not solve the problem, contact the manufacturer of the target device.
CF20H	• The setting value of the communication setting is out of range. • Items of communication setting which cannot be set on the target device are set. • The required setting items have not been set to the target device.	Correct the setting details, and retry the operation.
CF30H	The parameter which is not supported by the target device was specified.	Check the version of the target device.
CF31H CF50H	System error	• Check the precautions for the function executed. • Check the operating status and connection status of the target device. • Check the connection of the Ethernet cable and the hub. • Check the line status of Ethernet. • Reset the CPU module and target device, and execute the function again. If the above actions do not solve the problem, contact the manufacturer of the target device.

Error code	Error details and cause	Action
CF51H	The function cannot be executed because the function from another peripheral is being executed.	Execute the function again after a while.
CF53H to CF56H	System error	• Check the precautions for the function executed. • Check the operating status and connection status of the target device. • Check the connection of the Ethernet cable and the hub. • Check the line status of Ethernet. • Reset the CPU module and target device, and execute the function again. If the above actions do not solve the problem, contact the manufacturer of the target device.
CF70H	An error has occurred on the Ethernet communication path.	• Check the operation of the target device. • Check if the connection cable is disconnected.
CF71H	Timeout error	• Check the precautions for the function executed. • Check the operation of the target device. • Since there may be congestion of packets on the line, send data after a certain period of time.

■Link Scan Setting

Set constant scan time, timeout time and number of retries for slave station disconnection detection.



Item		Description	Setting range
Constant Scan Time Setting	Constant Scan Time Setting (2 to 2000)	Set the constant scan time (ms).*1	2 to 2000 (Default: 2)
Slave Station Disconnect Detected Setting	Time-out Period (1 to 65535)	Set the timeout time (ms) for slave station disconnection detection.*2	1 to 65535 (Default: 500)
	Counts	Set the number of retries for slave station disconnection detection.*2*3	3, 5, 10 (Default: 3)
	Slave Station Disconnect Detected Image Diagram Display	The operation image regarding the slave station disconnection detection period is displayed. Refer to this at the setting of "Time-out Period".	—

*1 Set so that the time out time is shorter than the constant link scan time.
*2 Constant scan time, timeout time and the number of times for disconnection detection are counted for each slave station.
*3 Disconnection occurs in the event that no response is received from the slave station for the specified number of times in succession within the timeout time.

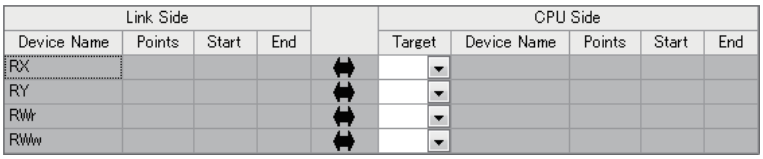
Point

- For setting of constant scan time and timeout time, specify an adequate value according to the actual system used.
- Constant scan time, time-out Period and Counts can be set for each group.

Refresh Settings

Set refresh parameters.

Double-click <Detailed Setting> of the "Refresh Settings".



Item		Description	Setting range
Link Side		The number of points for the link devices (RX/RY, RWr/RWw) for the number of occupied stations and start/end device number set in the network configuration settings are displayed.	—
CPU Side	Target	The target destination to be link refreshed is displayed.	Specify Device (Default: Blank)
	Device Name	Set the device of the link refresh target.	X, Y, M, L, B, D, W, R*1 (Default: Blank)
	Points	The number of device points for the link refresh target is displayed. (The same value as the number of points on the link side is displayed.)	—
	Start	Set the start device number within the link refresh range.	Follow the device settings of the CPU parameters.*2 (Default: Blank)
	End	The end device number within the link refresh range is displayed.	—

*1 If the slave stations are more than 16 units, since the number of device points of X and Y for the refresh target is short, assign the devices to M, L, B and other devices.

*2 For device settings,refer to MELSEC iQ-F FX5 User's Manual (Application).

BACnet function setting

Set the BACnet functions.

Item		Description	Setting range
Whether the BACnet functions are used or not		Indicates the usage status of the BACnet/IP connection modules in the external device configuration. (This setting is automatically configured according to the setting details in the external device configuration.)	• Not used • Used (Default: Not used)
Network information setting	Network number	Set a BACnet network number.	0 to 65534 (Default: 0)
BACnet device setting		☞ Page 36 BACnet device setting	—
BACnet object setting		☞ Page 37 BACnet object setting	—

BACnet device setting

Set a BACnet device.

Item		Description	Setting range
Instance No.		Set a BACnet instance number.	0 to 4194303 (Default: 0)
Object Name		Set a device name. (The same value cannot be set in a module.)	16 one-byte alphanumeric characters maximum (Default: Empty)
BACnet standards		Set the BACnet standards.	• ANSI/ASHRAE Standard 135-2016 • ANSI/ASHRAE Standard 135-2012 • ANSI/ASHRAE Standard 135-2010 • ANSI/ASHRAE Standard 135-2004 • IEIEJ-G-0006:2006 Addendum a (Default: ANSI/ASHRAEStandard 135-2016)
I-Am send setting	Send control	Set whether or not to send I-Am only when the device is set to Operational.	• Send I-Am only at the Operational status. • Send I-Am even at other statuses than Operational. (Default: Send I-Am only at the Operational status.)
	Send I-Am when the status changes to Operational	Set whether or not to send I-Am when the device status changes to Operational.	• Do not send • Send (Default: Send)
	Enable/disable fixedcycle send	Set whether or not to send I-Am at a fixed-cycle.	• Disable • Enable (Default: Disable)
	Fixed-cycle send interval (second)	Set the interval (second) for sending I-Am. (Available when the enable/disable fixed-cycle send is set to Enable)	1 to 4095 (Default: 60)
	I-Am response setting	Set how to send I-Am and I-Have for Who-Is and Who-Has.	• RemoteBroadcast • GlobalBroadcast • LocalBroadcast • Unicast (Default: LocalBroadcast)
	I-Am send setting	Set how to send the spontaneous I-Am.	• LocalBroadcast • GlobalBroadcast (Default: LocalBroadcast)
Device restart procedure setting	Device restart procedure	Set the device restart procedure.	• Do not support • Support (Default: Do not support)
	Notification destination network number	Set a network number to which notification is sent at device restart. (Available when device restart is set to "Support")	0 to 65534 (Default: 0)
	Notification destination IP address	Set the IPv4 address to which notification is sent at device restart. (Available when device restart is set to "Support")	0.0.0.1 to 223.255.255.254 (Default: 192.168.0.254)
	Notification destination port number	Set a port number to which notification is sent at device restart. (Available when device restart is set to "Support")	0 to 65535 (Default: 47808)

Item	Description	Setting range
Time synchronization setting	Set the response for receiving wild card.	• Ignore • Output to buffer memory (Default: Ignore)

BACnet object setting

Set the instance No., etc. of each object.

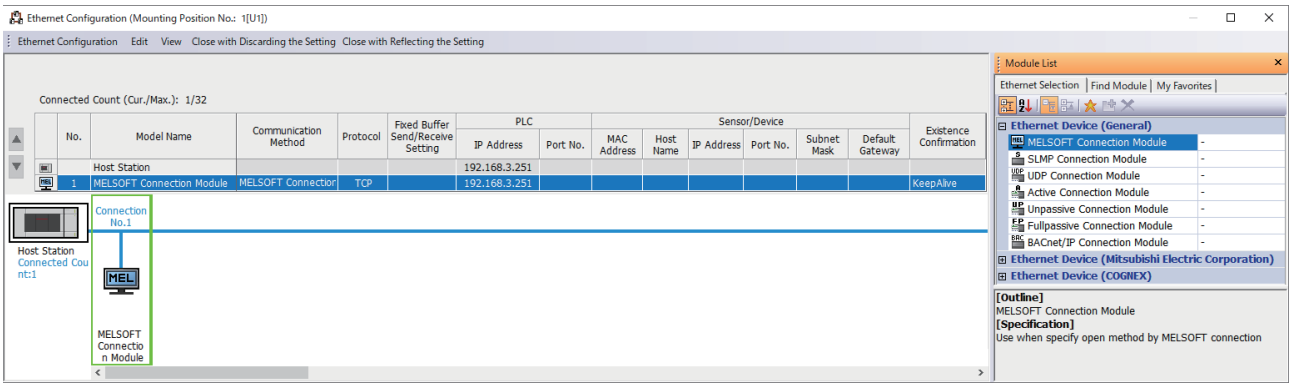
For details, refer to 📖MELSEC iQ-F FX5 User's Manual (BACnet).

Item	Description	Setting range
Accumulator object setting	Set the Accumulator object.	—
AnalogInput object setting	Set AnalogInput object.	—
AnalogOutput object setting	Set AnalogOutput object.	—
AnalogValue object setting	Set AnalogValue object.	—
BinaryInput object setting	Set inaryInput object.	—
BinaryOutput object setting	Set BinaryOutput object.	—
BinaryValue object setting	Set BinaryValue object.	—
Multi-stateInput object setting	Set Multi-state Input object.	—
Multi-stateOutput object setting	Set Multi-state Output object.	—

External Device Configuration

Set the conditions of the external devices with which the module will communicate through general-purpose Ethernet.

Double-click <Detailed Setting> of the "External Device Configuration".



Drag and drop an "Ethernet Device" in the "Module List" to the left side of the screen, and set the following items. The setting items vary depending on the “Ethernet Device” and “Communication Method”.

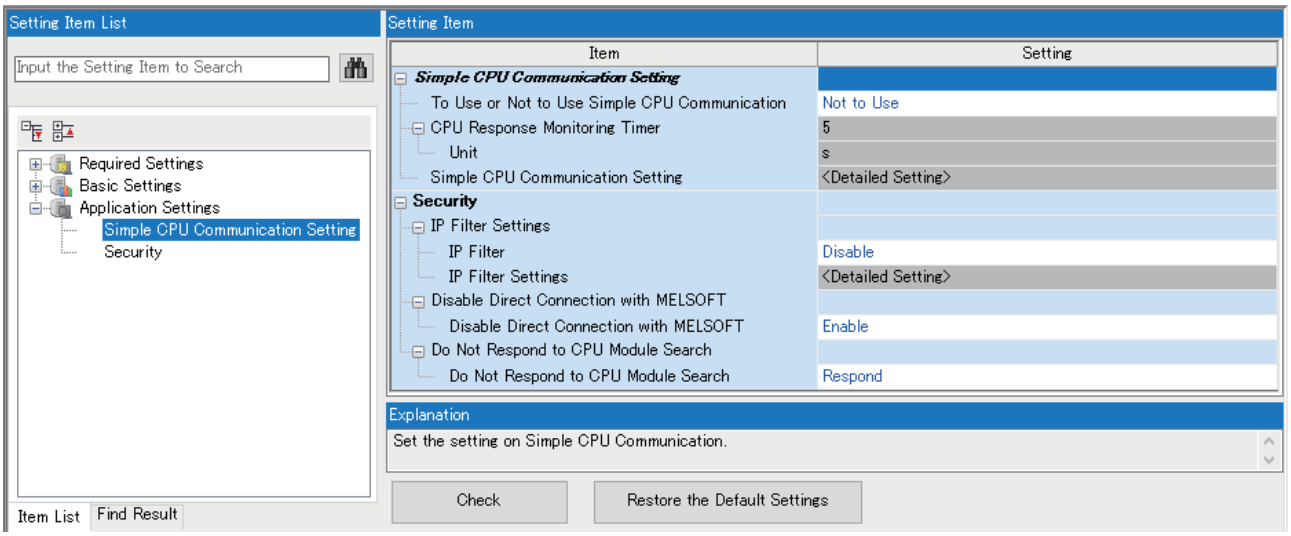
Item		Description	Setting range
No.		Connection number for distinguishing settings for each user connection.	—
Model Name		The name of the external device is displayed.	—
Communication Method		Set the method for communication with the external device.*1	• MELSOFT Connection • SLMP • Socket communication • BACnet/IP
Protocol		Select the communication protocol for the external device.*1	• TCP • UDP
Fixed Buffer Send/Receive Setting		Not supported.	—
PLC	IP Address	The IP address of host station (FX5-ENET) is displayed.	—
	Port No.	The port no. of host station (FX5-ENET) is displayed.	• Blank • 1 to 5548, 5570 to 65534*2 (Default: Blank)
Sensor/Device	MAC Address	Not supported.	—
	Host Name	Not supported.	—
	IP Address	Set the IP address of the external device.	• Blank • 0.0.0.1 to 223.255.255.254 (Default: Blank)
	Port No.	Set the port no. of the external device.	• Blank • 1 to 65534 (Default: Blank)
	Subnet Mask	Set the subnet mask of the external device.	—
	Default Gateway	Set the default gateway of the external device.	—
Existence Confirmation		Select the method of alive check which is performed when the Ethernet-equipped module has not communicated with the external device for a certain period of time. When the module cannot communicate with the external device, the connection will be closed.*1	• KeepAlive • Do not confirm existence

*1 Automatically set by the “Ethernet Device”.
The protocol can be selected only when “Communication Method” is “SLMP”.

*2 Do not specify 5549 to 5569 because these ports are used by the system.

7.4 Application Settings

Set the following parameters when the functions of the general-purpose Ethernet will be used on FX5-ENET.



Simple CPU communication settings

Set the simple CPU communication.

Item	Description	Setting range
To Use or Not to Use Simple CPU Communication	Set whether to enable the simple CPU communication function.	• Not to Use • To Use (Default: Not to Use)
CPU Response Monitoring Timer	Set the time for monitoring the response from the FX5-ENET. If the FX5-ENET does not respond within the set time, the response wait state will be canceled.	• Unit [s]: 1 to 16383 • Unit [ms]: 100 to 16383000 (Default: 5 s)
Simple CPU Communication Setting	Set the details for simple CPU communication. For details, refer to MELSEC iQ-F FX5 User's Manual (Ethernet Communication).	—

Security

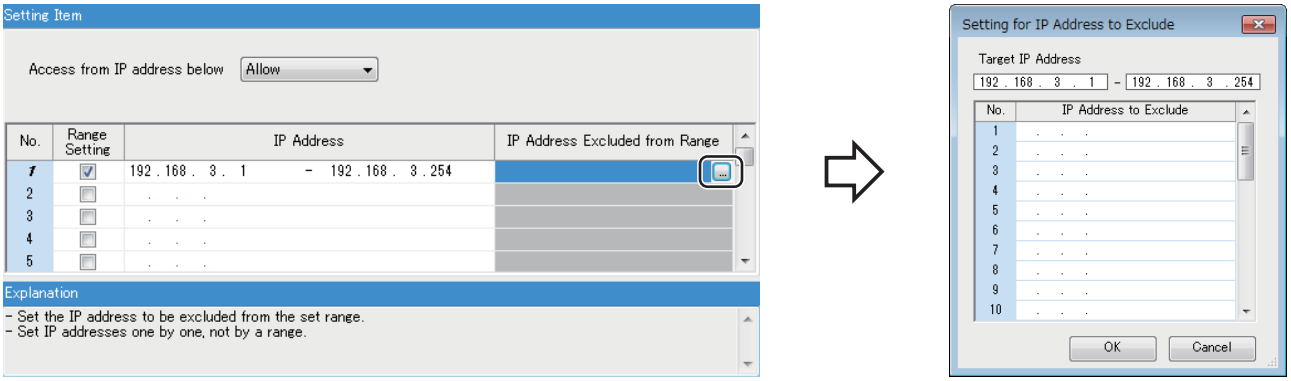
Set the security function.

Item		Description	Setting range
IP Filter Settings	IP Filter	Set whether to enable the IP filter function.	• Disable • Enable (Default: Disable)
	IP Filter Settings	Set the IP address to be allowed or denied. (☞ Page 40)	—
Disable Direct Connection with MELSOFT		Permit/prohibit direct connection with the engineering tool.	• Disable • Enable (Default: Enable)
Do Not Respond to CPU Module Search		Set whether to respond to search for the CPU modules on the network.	• Do Not Respond • Respond (Default: Respond)

IP Filter Settings

Set the IP address for which the IP filter function will be used.

Double-click <Detailed Setting> of the "IP Filter Settings".



Item	Description	Setting range
Access from IP address below	Select whether to allow or deny the access from the specified IP addresses.	• Allow • Deny (Default: Allow)
Range Setting	Select this item when specifying the IP addresses by range.	—
IP Address	Set the IP address to be allowed or denied. When selecting "Range Setting", enter the start IP address (left field) and end IP address (right field) of the range.	• Blank • 0.0.0.1 to 223.255.255.254 (Default: Blank)
IP Address Excluded from Range	When selecting "Range Setting", set the IP address to be excluded from the set range. Up to 32 IP addresses can be set.	• Blank • 0.0.0.1 to 223.255.255.254 (Default: Blank)

8 PROGRAMMING

This chapter describes program examples of CC-Link IE Field Network Basic.
For program examples of general-purpose Ethernet communication, refer to MELSEC iQ-F FX5 User's Manual (Ethernet Communication).

8.1 Interlock Programs of Cyclic Transmission

When creating a cyclic transmission program, configure an interlock such that the processing is performed when normal cyclic transmission between the master station and slave stations is performed.

Program using labels

A program using labels is provided below.

Labels used in the program

Classification	Label name	Description	Device
Module label	FX5ENET_1.bnSts_uval_Various_states_D[0]	Cyclic transmission status	U1\G4160.b0
	FX5ENET_1.bnSts_CyclicTransmission_Station_D[1]	Cyclic transmission status of each station (station No.1)	U1\G4100.b0
	FX5ENET_1.bnSts_CyclicTransmission_Station_D[2]	Cyclic transmission status of each station (station No.2)	U1\G4100.b1
Label to be defined	Define global labels as shown below.		

	Label Name	Data Type		Class	Assign (Device/Label)
1	bStartDirection_1	Bit	...	VAR_GLOBAL	M200
2	bStartDirection_2	Bit	...	VAR_GLOBAL	M201

Program example

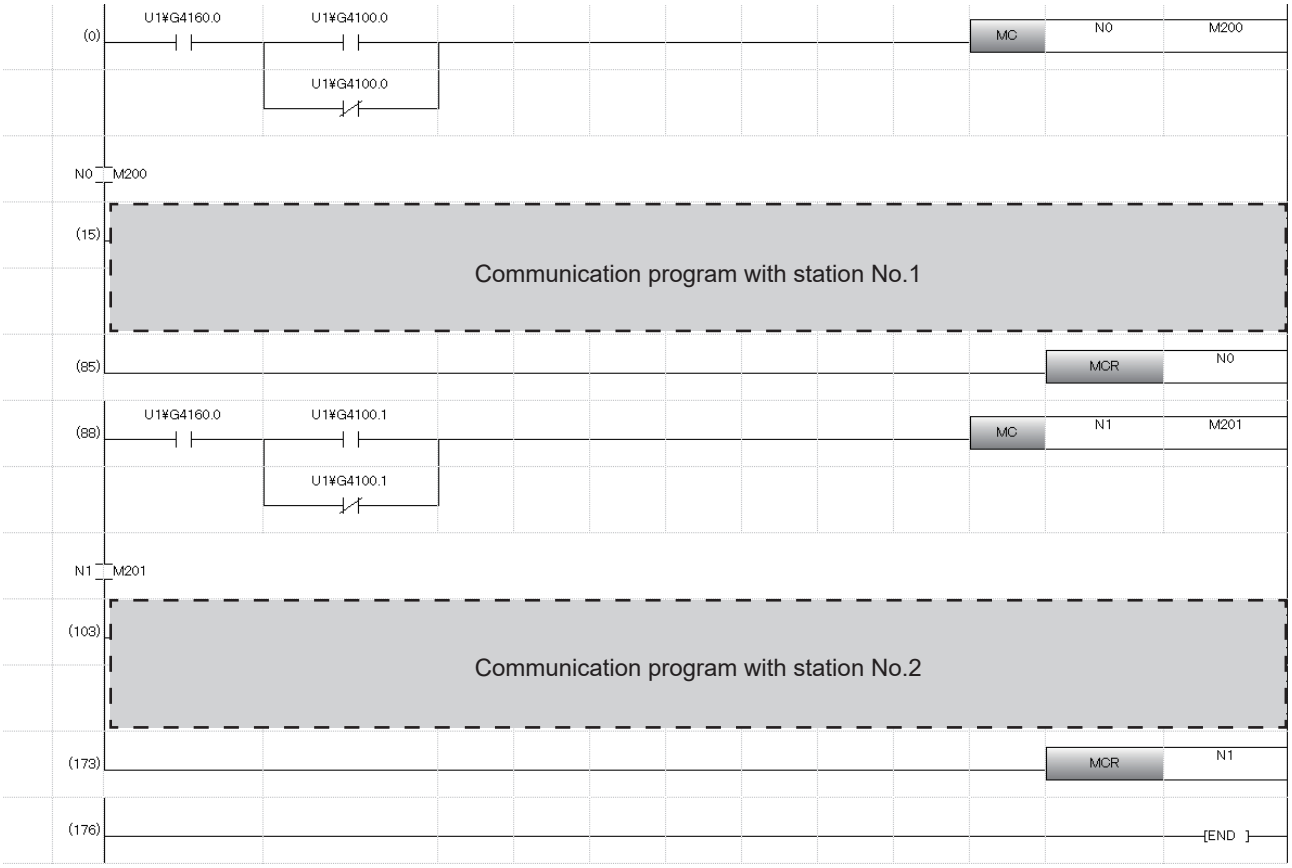
Program using devices

A program using devices is provided below.

Devices used in the program

Device	Description
U1\G4160.b0	Cyclic transmission status
U1\G4100.b0	Cyclic transmission status of each station (station No.1)
U1\G4100.b1	Cyclic transmission status of each station (station No.2)

Program example



9 TROUBLESHOOTING

This section contains an explanation of errors that may occur during communication between FX5-ENET and other devices, and troubleshooting for such errors.

9.1 Checking with LEDs

This section describes troubleshooting using the LEDs.
The error status can be determined by the status of the RUN LED and ERROR LED.

RUN LED	ERROR LED	Error status*1	Description
Off	On, flashing	Major error	An error such as hardware failure or memory failure. The module stops operating.
On	Flashing	Moderate error	An error caused by an abnormal parameter affecting the module operation. The module stops operating.
On	On	Minor error	An error caused by improper or inconsistent configuration. The module continues operating.

*1 When multiple errors occur, the error status is displayed in the order of major, moderate, and minor.

When the RUN LED turns off

When the RUN LED turns off after the FX5-ENET is powered on, check the following.

Check item	Action
Is the FX5-ENET mounted correctly?	Securely mount the FX5-ENET on the CPU module.

If the above actions do not solve the problem, perform the hardware test to check for FX5-ENET failure. (☞ Page 54 Hardware Test)

When the ERROR LED turns on or is flashing

When the ERROR LED turns on or is flashing, check the following.

Check item	Action
Does any error occur in the module diagnostics?	Take the actions displayed in the module diagnostics. (☞ Page 45 Module diagnostics)

When SD/RD LED turns off (When data cannot be sent/received)

When the SD/RD LED turns off and the data cannot be sent or received, check the following.

Check item	Action
Is the ERROR LED on or flashing?	Take the actions displayed in the module diagnostics. (☞ Page 45 Module diagnostics)
Is the Ethernet cable connected correctly?	Connect the Ethernet cable again.
Are the parameter settings correct?	Review the details of the GX Works3 settings.

If the above actions do not solve the problem, perform the hardware test to check for FX5-ENET failure. (☞ Page 54 Hardware Test)

9.2 Checking the Module Status

The status of FX5-ENET module can be checked by the following methods.

- Module diagnostics
- Ethernet diagnostics
- Checking the buffer memory
- Event history function

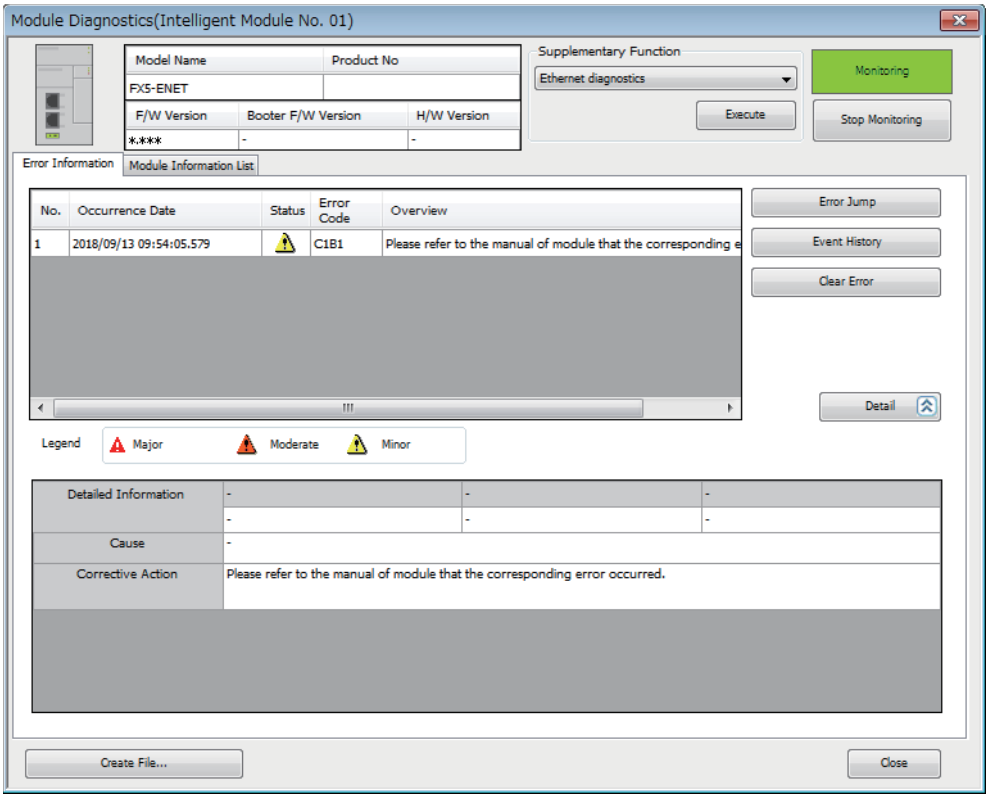
Module diagnostics

The following functions can be used in the "Module Diagnostics" window for the FX5-ENET.

Function	Application
Error Information	Displays the details of the errors currently occurring. Click the [Event History] button to check the history of errors that have occurred on the FX5-ENET, errors detected for each module.
Module Information List	Displays various status information of the FX5-ENET.

Error Information

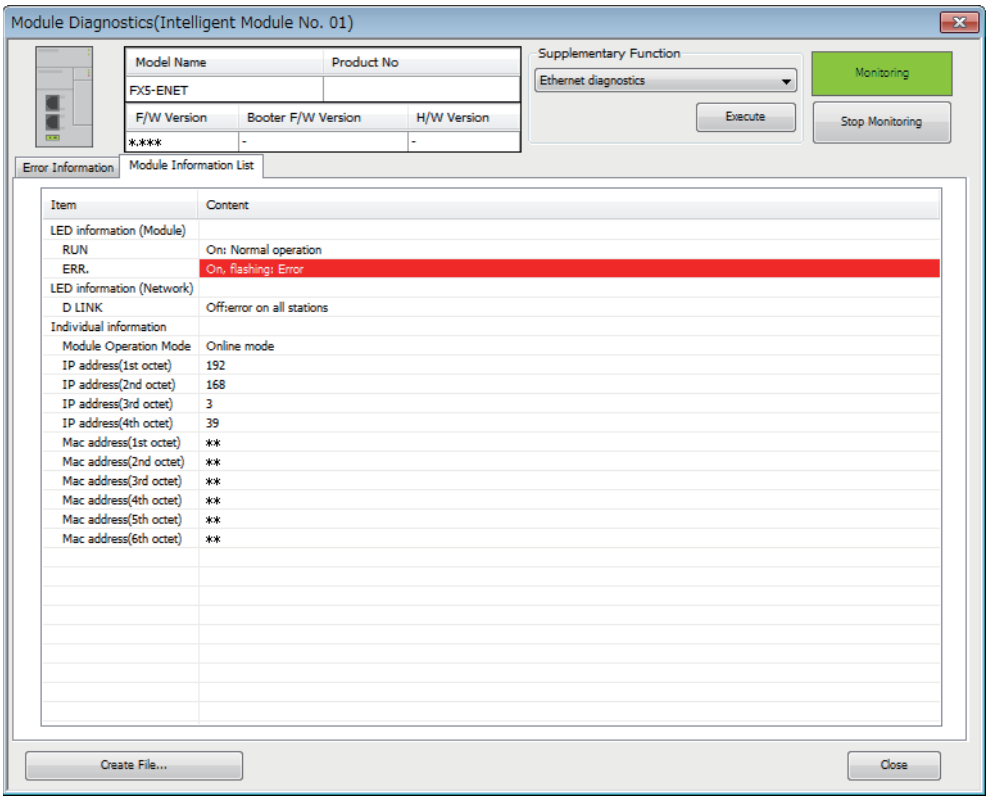
Check the details of the error currently occurring and action to eliminate the error.



Item	Description
Status	Major: An error such as hardware failure or memory failure. The module stops operating.
	Moderate: An error, such as parameter error, which affects module operation. The module stops operating.
	Minor: An error such as communication failure. The module continues operating.
Detailed Information	Displays detailed information about each error (maximum of three pieces).
Cause	Displays the detailed error causes.
Corrective Action	Action Displays the actions to eliminate the error causes.

Module Information List

Switch to the [Module Information List] tab to check various status information of the FX5-ENET.



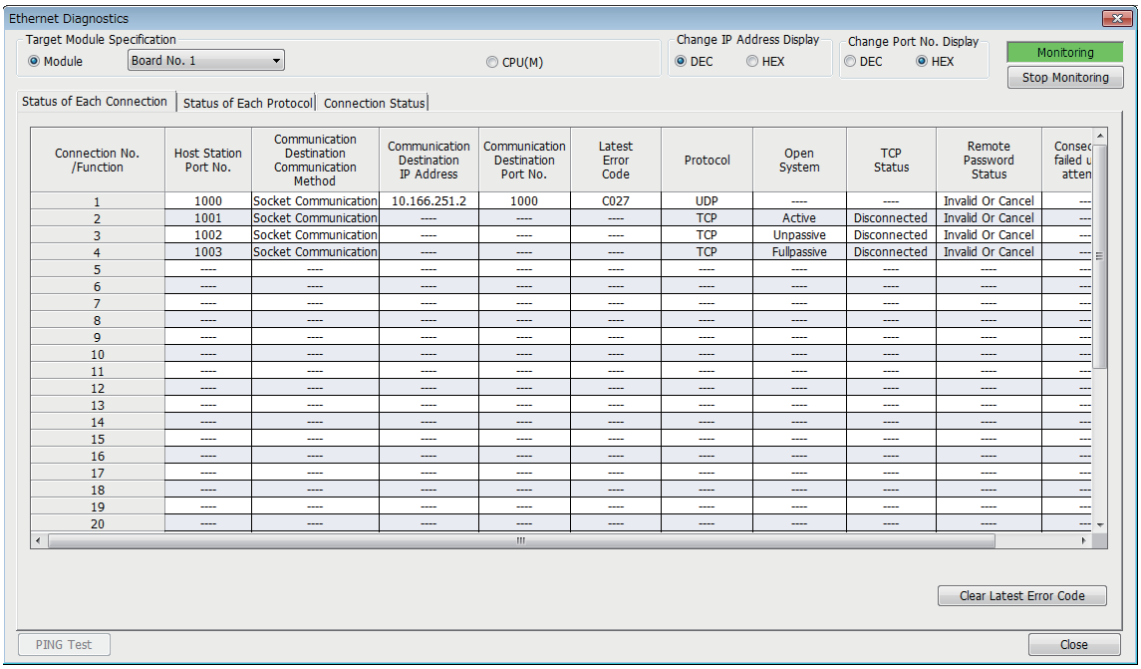
Item		Description
LED information (Module)		Displays the status of the RUN LED and ERROR LED of the FX5-ENET.
LED information (Communication)*1		Displays the status of the D LINK of the FX5-ENET.
Setting information*1	IP Address (1st Octet)	Displays the IP address of the FX5-ENET.
	IP Address (2nd Octet)	
	IP Address (3rd Octet)	
	IP Address (4th Octet)	
	MAC Address (1st Octet)	Displays the MAC address of the FX5-ENET.
	MAC Address (2nd Octet)	
	MAC Address (3rd Octet)	
	MAC Address (4th Octet)	
	MAC Address (5th Octet)	
	MAC Address (6th Octet)	

*1 An undefined value is stored during hardware test.

Ethernet diagnostics

To check the status of general-purpose Ethernet, parameter setting and communication status, perform the “Ethernet Diagnostics” of GX Works3.

[Diagnostics] ⇨ [Ethernet Diagnostics] ⇨ Select the "Module" in the [Target Module Specification].



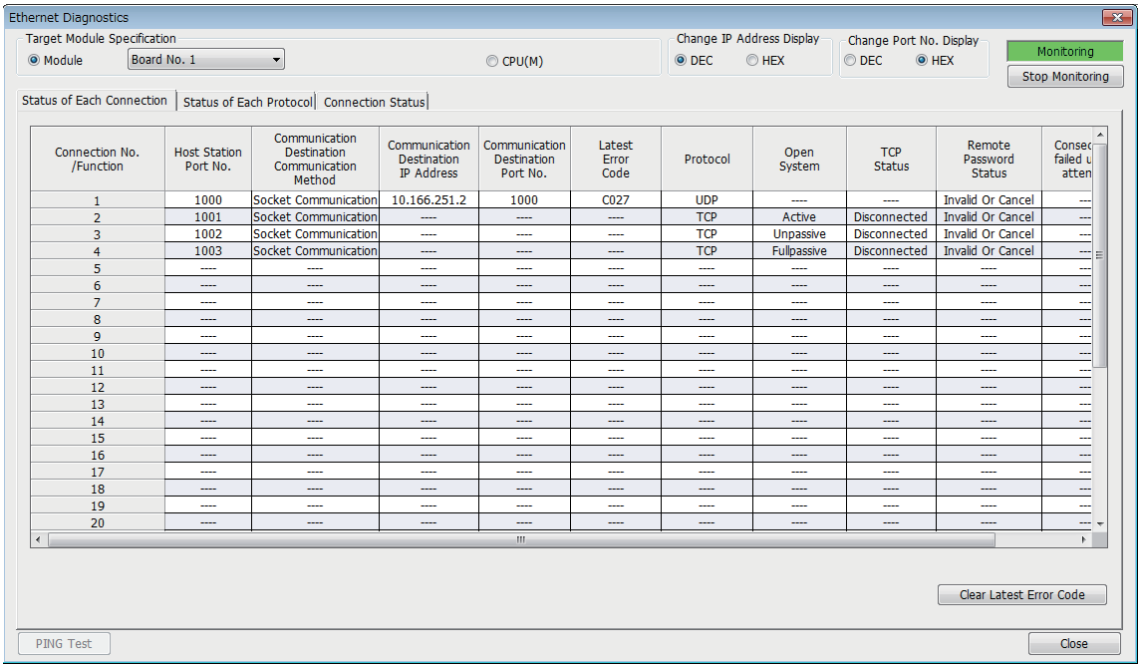
The following functions can be used in the "Ethernet Diagnostics" window for the FX5-ENET.

Function	Application
Status of Each Connection	Displays information concerning status of each connection.
Status of Each Protocol	The total of the send/receive of the packet etc. for each protocol is displayed.
Connection Status	Monitors connection status.

Status of Each Connection

The status of each connection of the FX5-ENET selected.

[Diagnostics] ⇨ [Ethernet Diagnostics] ⇨ Select the "Module" in the [Target Module Specification]. ⇨ Select the [Status of Each Connection] tab.



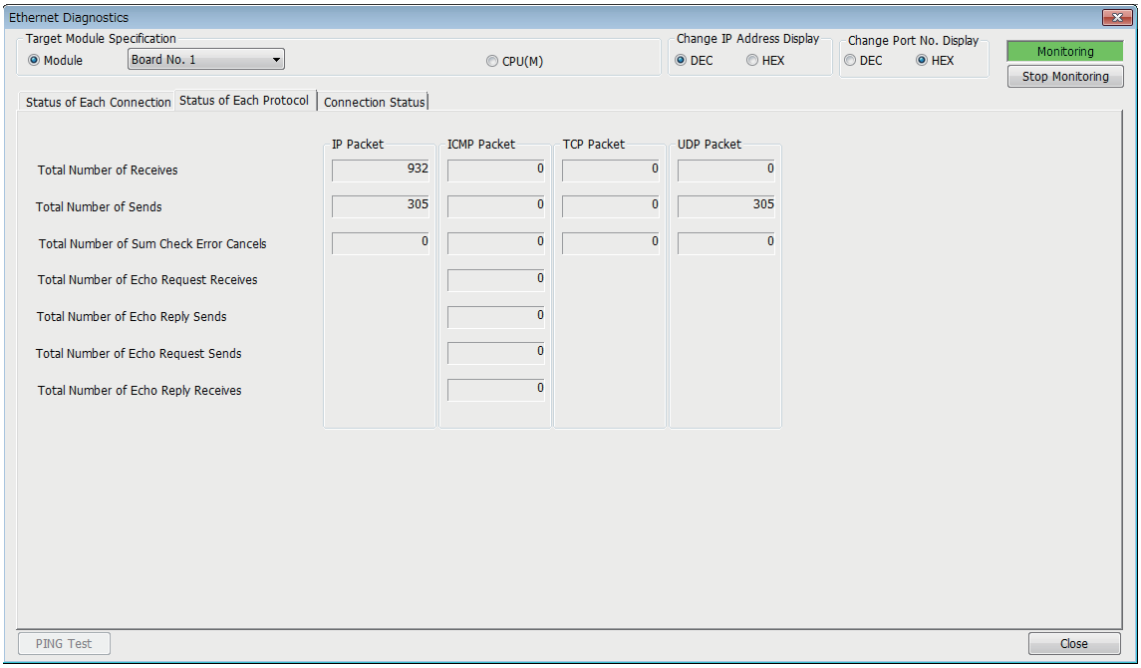
Item	Description
Connection No./Function	Displays the connection number and functions.
Host Station Port No.	Displays the own station port number used.
Communication Destination Communication Method	Displays the communication method.
Communication Destination IP Address	Displays the IP address of the sensor/device to be connected, which is set in the parameter settings.
Communication Destination Port No.	Displays the port number of the sensor/device to be connected, which is set in the parameter settings.
Latest Error Code	Displays the error code that indicates the definition of latest error occurred.
Protocol	Displays the protocol (TCP/IP or UDP/IP).
Open System	Displays the open method (Active, Unpassive, or Fullpassive) when the protocol of the connection is TCP/IP.
TCP Status	Displays the status (open status) of connection with the sensor/device when the protocol of the connection status is TCP/IP.
Remote Password Status	Not supported.
Continuous Unlock Lost Counts	Not supported.

Click the [Clear Latest Error Code] button to clear all the errors displayed in "Latest Error Code" of each connection.

Status of Each Protocol

The total number of packets sent/received by each protocol of the selected FX5-ENET can be checked.

[Diagnostics] ⇨ [Ethernet Diagnostics] ⇨ Select the "Module" in the [Target Module Specification]. ⇨ Select the [Status of Each Protocol] tab.

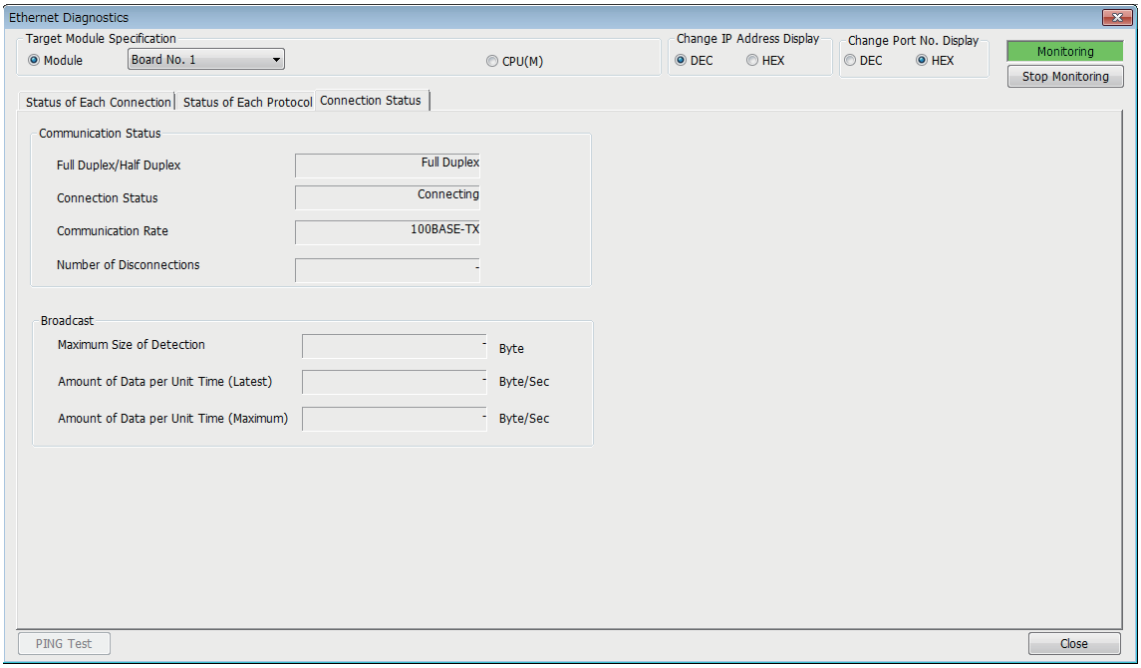


Item	Description	Display range
Total Number of Receives	Displays the total number of received packets.	0 to 4294967295
Total Number of Sends	Displays the total number of sent packets.	0 to 4294967295
Total Number of Sum Check Error Cancels	Not supported.	—
Total Number of Echo Request Receives	Displays the total number of received ICMP echo request packets.	0 to 4294967295
Total Number of Echo Reply Sends	Displays the total number of sent ICMP echo reply packets.	0 to 4294967295
Total Number of Echo Request Sends	Displays the total number of sent ICMP echo request packets.	0 to 4294967295
Total Number of Echo Reply Receives	Displays the total number of received ICMP echo reply packets.	0 to 4294967295

Connection Status

The communication status of the FX5-ENET.

[Diagnostics] ⇨ [Ethernet Diagnostics] ⇨ Select the "Module" in the [Target Module Specification]. ⇨ Select the [Connection Status] tab.



Item		Description	Display range
Communication Status	Full Duplex/Half Duplex	Displays the communication mode of the line.	—
	Connection Status	Displays the cable connection status.	—
	Communication Rate	Displays the communication speed.	—
	Number of Disconnections	Not supported.	—
Broadcast	Maximum Size of Detection	Not supported.	—
	Amount of Data per Unit Time (Latest)	Not supported.	—
	Amount of Data per Unit Time (Maximum)	Not supported.	—

Checking the buffer memory

The buffer memories can be used to check for errors that have occurred in FX5-ENET.

Module error

If an error occurs in FX5-ENET, check the following buffer memories.

Buffer memory address	Buffer memory name	Description
Un\G29	Latest error code	Stores the latest error code.
Un\G158	Initial status	It is possible to confirm whether the initialization is normally completed.
Un\G159	Initial abnormal code	An error code will be stored when the initialization is abnormally completed.

For the stored error code, refer to ☞ Page 59 Module error.

Ethernet communication error

If an error occurs during general-purpose Ethernet communication, the error code will be stored in the following buffer memory.

Buffer memory address	Buffer memory name	Description
Un\G108 to Un\G139	Error code	Error code of each connection (1 to 32) is stored.

For the stored error code, refer to ☞ Page 59 Module error.

Event history function

This function collects errors from FX5-ENET, and keeps them in the SD memory card, and data memory or battery backed built-in RAM of the CPU module.
The event information collected by the CPU module can be displayed on GX Works3 to check the occurrence history in chronological order.

Event type	Classification	Description
System	Error	An error detected by the self diagnostics in FX5-ENET.

For evevt code, refer to ☞ Page 67 List of Event Code.

Setting procedure

The event history function can be set from the event history setting window of GX Works3. For the setting procedure, refer to the following.
📖MELSEC iQ-F FX5 User's Manual (Application)

Displaying event history

Access the menu of GX Works3. For details on the operating procedure and how to view the contents, refer to the following.
📖GX Works3 Operating Manual

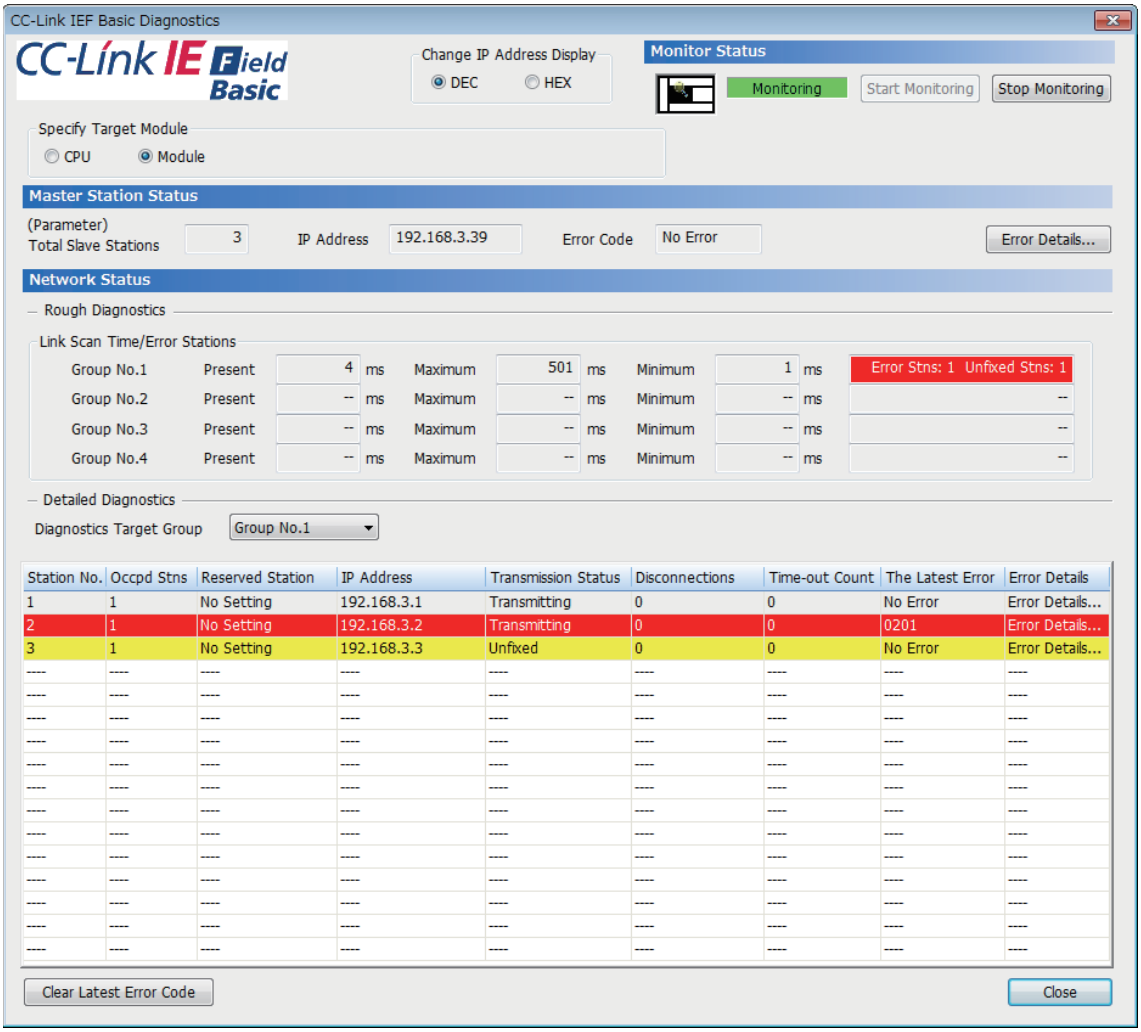
9.3 Checking the Network Status

The status of the CC-Link IE Field Network Basic network can be confirmed with the CC-Link IE Field Network Basic diagnostics.

CC-Link IE Field Network Basic Diagnostics

Perform troubleshooting by executing the CC-Link IE Field Network Basic diagnostics of GX Works3 and checking the network status and error details.

[Diagnostics] ⇨ [CC-Link IEF Basic Diagnostics]



The status of the master station is checked in "Master Station Status".
The network status including slave stations is checked in "Network Status".

Item	Description
Target Module Specification	The diagnostics information of the selected module is displayed.
Total Slave (Parameter)	The total number of slave stations set in parameter is displayed.
IP Address	The IP address of the master station is displayed. The display can be switched between decimals and hexadecimals in "Change IP Address Display".
Error Code	The error code of the master station is displayed. (☞ Page 58 CC-Link IE Field Network Basic error)
[Error Details] button	The description of the error and the actions to be taken are displayed.
Link Scan Time/Error Stations	Link scan time (present, maximum, minimum) and number of error stations/unfixed stations of each group is displayed. Error stations (Error Stns) and unfixed stations (Unfixed Stns) refers the following state. • Error Stns: Stations where an error has been occurred • Unfixed Stns: Stations (not including reserved stations) where the transmission status has not been fixed

Item	Description
Diagnostics Target Group	Select a group to be the diagnostics target.
Station No.	The station number of the slave station is displayed.
Occpd Stns	The number of occupied stations set in parameter is displayed.
Reserved Station	The reserved station status set in parameter is displayed.
IP Address	The IP address set in parameter is displayed. "-" is displayed when the station is a reserved station and an IP address has not been set.
Transmission Status	The transmission status of the slave station is displayed. • Unfixed: Communications with the master station not established*1 • Transmitting: Cyclic transmission being performed • Disconnecting: Disconnected from the master station
Disconnections	The accumulated number of disconnection detection is displayed. • 0: No disconnections • 1 to 65535: Number of disconnection detection (accumulated number)*2
Time-out Count	The accumulated number of timeouts is displayed. • 0: No timeouts • 1 to 65535: Number of timeouts (accumulated number)*2
The Latest Error	The latest error code is displayed an error which has occurred in a slave station. When the slave station is disconnected, an error occurs. After that, even when the disconnected slave station returns to the system, the error is held. When another error occurs, the latest error will be updated (overwritten). The detailed errors of the slave station cannot be confirmed with the CC-Link IE Field Network Basic diagnostics. Confirm errors occurring in the slave station with the value stored in 'Diagnostic information 2' (Un\G4114 to Un\G4159). (☞ Page 94 Diagnostic information 2)
Error Details...	The description of the error and the actions to be taken are displayed.
[Clear Latest Error Code] button	The error code is cleared.*3 The button can be clicked only during monitoring.

*1 The possible reasons include that the slave station set in parameter has not started up, a cable between the master station and the slave station is disconnected, or the setting of an IP address or a subnet mask of the master/slave station is incorrect.

*2 When the count exceeds 65535, counting is continued from 1 again.

*3 Take actions and eliminate the error cause first. Then, clear the error code.

Point

The following indicates that the disconnection has occurred due to no cyclic transmission caused by the cable disconnection of the master station side. In this case, the previous cyclic transmission time (just before the disconnection) is displayed on the link scan time.

• "CFE8" is displayed as the latest error for all slave stations. (No response received from a slave station)

• "No Error" is displayed on the error code of the master station.

9.4 Hardware Test

This section describes how to perform a test related to hardware, such as a ROM/RAM of the FX5-ENET.

Restriction

- During the hardware test, values in the buffer memory cannot be referred from the GX Works3 or the program.
- Do not change the operating status of the CPU module during the hardware test. If the operating status of the CPU module is changed, the module major error occurs in the CPU module.

Operating procedure

1. Set the FX5-ENET to the hardware test mode using the GX Works3.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [FX5-ENET] ⇨ [Indispensable Setting] ⇨ [Mode Settings] ⇨ Select "Hardware Test"

2. When a cable is connected to the Ethernet port of FX5-ENET, disconnect it.
3. Set the CPU module (FX5-ENET) to the STOP state and write parameters.
4. Power off and on the system or reset the CPU module (FX5-ENET).
5. The hardware test is automatically executed.

The following table shows the LED indications of the FX5-ENET for the hardware test.

Status	RUN LED	ERROR LED
During hardware test execution	Flashing	Off
Hardware test completed successfully	On	Off
Hardware test completed with an error	On	On

6. When the test completed successfully, set the FX5-ENET to online mode using the GX Works3.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [FX5-ENET] ⇨ [Indispensable Setting] ⇨ [Mode Settings] ⇨ Select "Online"

Write parameters and power off and on the system or reset the CPU module (FX5-ENET).

7. When the test completed with an error, check that adequate measures to reduce noise are taken for the programmable controller system and retry the hardware test. If the test still completes with an error, a hardware failure may have occurred on the FX5-ENET. Please consult your local Mitsubishi representative.

9.5 Troubleshooting by Symptom

The troubleshooting measures for each symptom during CC-Link IE Field Network Basic are shown below. If an error has occurred in the FX5-ENET, identify the error cause using the GX Works3. (☞ Page 45 Checking the Module Status)

When the diagnostics function does not start

If the CC-Link IE Field Network Basic diagnostics does not start, check the following.

Check item	Action
Is the master station power ON?	Turn ON the power for the CPU module connected to the master station.

When the transmission status is disconnected or unfixed

If the CC-Link IE Field Network Basic diagnostics transmission state is disconnected or not established, check the following.

■Ethernet

Check item	Action
Are the IP address and subnet mask of the master station/slave stations correctly set?	Check and correct the IP address and subnet mask of the master station/slave stations.
Is the IP address already in use?	Set a unique IP address to the master station/slave stations.
Is there any device having the same IP address as the master station/slave stations within the same network address?*1	
Is the same network address set to the master station and slave stations?	• Check and correct the IP address and subnet mask so that the network addresses of the master station and slave stations match. • Check and correct the subnet mask of the master station and slave stations so that they match as normal values.
Is the access blocked?	Check the security settings such as a firewall.
Is any access from slave stations blocked in "IP Filter Settings" of the master station.	Allow the access from the IP address of the corresponding slave station.
Before an error was detected, has any device on the line, such as the master station, slave station, or hub, been replaced with a device having the same IP address as that of the device before replacement?	If a device (master station, slave station, hub, etc.) on the line was replaced with a new device having the same IP address, take one of the following actions. • Wait until the ARP cache is updated. (The waiting time varies depending on the device.)*2 • Restart all devices on the line.

*1 There may be cases when duplicated master stations or duplicated slave stations are not detected as an error.

*2 Devices on Ethernet have a table of IP addresses and their corresponding MAC address, called the ARP cache. When a device on the line is replaced with a device having the same IP address, the MAC address in the ARP cache becomes different from that of the replaced device. This may cause incorrect data communications. The ARP cache is updated by resetting a device or after a certain time has elapsed. The time varies depending on the device.

■CC-Link IE Field Network Basic

Check item	Action
Are the devices specified in the refresh settings for the master station correct?	Check and correct the refresh settings.
Are the devices specified in the refresh settings for the master station used in other applications?	Check the settings and programs for the master station/slave stations, and correct them if they are incorrect.

When cyclic data cannot be read/written from/to the slave station correctly

If the cyclic data cannot be read in correctly even though the CC-Link IE Field Network Basic diagnostics state is transmitting, check the following.

■CC-Link IE Field Network Basic

Check item	Action
Is the IP address for the master station/slave station set correctly?	Correct the IP address of the master station/slave station.
Have the IP address settings been changed between devices?	
Is the IP address set in duplicate?	Change the master station/slave station IP addresses so they are not duplicated.
Is there a device with the same IP address as the master station/slave station on the same segment?*1	
Are the devices specified in the refresh settings for the master station correct?	Check and correct the refresh settings.
Are the devices specified in the refresh settings for the master station used in other applications?	Check the settings and programs for the master station/slave stations, and correct them if they are incorrect.
Is the slave station specified as a reserved station in "Network Configuration Settings" of the master station?	Cancel the reserved station setting. (☞ Page 31)
Has the accumulated number of timeouts of the slave station considered abnormal been counted up?*2	Check the ☞ Page 56 When a station is repeatedly disconnected and reconnected and take actions.
Has the accumulated number of disconnection detection of the slave station considered abnormal been counted up?*2	

*1 There may be cases when duplicated master stations or duplicated slave stations are not detected as an error.

*2 The accumulated number of timeouts and the accumulated number of disconnection detection can be checked in diagnostic information 1.

When a station is repeatedly disconnected and reconnected

If the transmission state repeatedly changes from disconnected and return, check the following.

■Ethernet

Check item	Action
Are the Ethernet cables inserted to each slot until they click?	• Lock the Ethernet cables securely. • Check that the Ethernet cables are correctly connected to the external devices and hubs.
Do the used cables conform to the Ethernet standard?	Check the specifications of the Ethernet cables used.
Is any Ethernet cable disconnected?	Replace the disconnected Ethernet cable.
Is there any source of noise near the Ethernet cables?	Keep the Ethernet cables away from the source of noise. Or, use the cables resistant to noise.
Does any error occur in the external device, hub or router?	Take actions, referring to the manual for the device having an error.
Is the hub used applicable to the communication speed of the connected master station/slave station?	Replace the hub corresponding to the master station/slave station communication speed.
Does the general-purpose Ethernet function (socket communication) respond quickly? Does it return an error response or no response?	• Stop the function. Or, modify settings. For example, extend the execution interval and decrease the execution frequency of the function. • Change UDP/IP communications to TCP/IP communications, or add resend processing.

■CC-Link IE Field Network Basic

Check item	Action
Is the timeout time setting of the master station too short?	Increase the timeout time of the master station.
Are there any slave stations having an error?	Perform troubleshooting for the slave station having an error.
Is the line load high?	Lower the CC-Link IE Field Network Basic communication frequency, and lower the line load.
Is CC-Link IE Field Network Basic being simultaneously executed at a different network address on the same line?	Separate the network and configure two CC-Link IE Field Network Basic lines.
Are data communications with other Ethernet devices being performed on the same line?	Separate the network for other Ethernet devices from the CC-Link IE Field Network Basic line and configure the CC-Link IE Field Network Basic line.
Is any of the following function being executed? • Access from GX Works3 (such as ladder monitor) • Latch function • Data logging function	Stop the function. Or, modify settings. For example, extend the execution interval, decrease the execution frequency, or reduce the range of the function.

When the link scan time delays

If the link scan time is slow, refer to ☞ Page 56 When a station is repeatedly disconnected and reconnected.

When cyclic transmission of the master station stops

If the master station's cyclic transmission stops, check the following.

Check item	Action
Is the transmission status of slave stations normal?	• If there are any disconnected slave stations, take actions according to the error details. • If there are no disconnected slave stations, check the network connection. A problem may be occurring from a device other than those set in the master station.

9.6 List of Error Codes

This section lists the error codes, error details and causes, and actions for the errors that occur in the processing for data communications between the FX5-ENET and external devices or that are caused by processing requests from the CPU module on the own station.
The FX5-ENET has the following error codes.

Type	Error code	Reference
CC-Link IE Field Network Basic error	CFC0H to CFF0H	Page 58
Module error	0800H to 480EH	Page 59
Ethernet communication error	C012H to CFBFH	Page 64

CC-Link IE Field Network Basic error

If an error occurs with CC-Link IE Field Network Basic, the error code can be confirmed with CC-Link IE Field Network Basic diagnostics. The error codes are stored in 'Latest error code' (Un\G29). (☞ Page 52 CC-Link IE Field Network Basic Diagnostics)

Error code	Error name	Error details and causes	Action
CFC0H	Cyclic transmission error (master station)	Multiple master stations are on the same network address so that cyclic transmission cannot be executed.	Confirm the master station on the network.
CFC1H	Cyclic transmission error (master station)	An error occurs during cyclic transmission so that cyclic transmission cannot be executed.	• Take measures to reduce noise. • If the error is displayed again after re-execution, please consult your local Mitsubishi representative.
CFC8H	Cyclic transmission error (master station)	There is a slave stations that is controlled by the other master station so that cyclic transmission cannot be executed.	• Confirm the master station on the network. • Confirm the slave station with error.
CFC9H	Cyclic transmission error (master station)	There is a slave station that has the same IP address on the same network address so that cyclic transmission cannot be executed.	• Confirm the slave station on the network. • Confirm the slave station with error.
CFD0H	Master station error	The port No. (61450) used by CC-Link IE Field Network Basic is already in use.	Recheck the port No. used in the Ethernet function.
CFD1H	Master station error	An incorrect value is set by the subnet mask.	Correct parameter shown in cause.
CFE0H	Cyclic transmission error (slave station)	Cyclic transmission is executed for the slave station that is controlled by the other master station.	• Confirm the master station on the network. • Confirm the slave station with error.
CFE1H	Cyclic transmission error (slave station)	The master station specifies the number of occupied stations that cannot be handled.	Recheck the number of occupied stations setting of the parameter of the master station (network configuration setting).
CFE8H	Cyclic transmission error (slave station)	No response from the slave station.	• Recheck the disconnection detection setting of the slave station of the parameter of the master station (network configuration setting). • Confirm the slave station on the network. • Confirm the disconnection slave station. • Take measures to reduce noise.
CFE9H	Cyclic transmission error (slave station)	There is a slave station that has the same IP address on the same network address.	Confirm the slave station with error.
CFF0H	Slave station error	An error occurs in the slave station.	Confirm the slave station with error.

Module error

Error codes when a module error occurs are classified into major error, moderate error, and minor error, and can be checked in the [Error Information] tab of the "Module Diagnostics" window of the FX5-ENET. (☞ Page 45 Module diagnostics) The error codes are stored in 'Latest error code' (Un\G29).

Error code	Error name	Error details and causes	Action
0800H	Link-down	Link-down due to disconnection of the network cable connected to an external device.	• Check the operation of the external device. • Check if the connection cable is disconnected.
0904H	Socket communication sending failure	Socket communication send message fails.	• Check the operation of the external device. • Check if the connection cable is disconnected.
0910H	Ethernet port error	Data cannot be sent to the external device.	• Check the operation of the external device. • Check the conditions of the cables, hubs and routers on the lines to the external devices. • The line may be flooded with packets. Retry after a while. • The receiving area of the external device may be full (the window size of TCP is small). Confirm whether the receiving processing is performed on the external device side or unnecessary data is not sent from the FX5-ENET. • Confirm whether the subnet mask pattern and default router IP address are set correctly on the FX5-ENET and external device or the IP address class is correct.
0911H	Ethernet port error	Communication with the external device was interrupted.	• Check the operation of the external device. • Check the conditions of the cables, hubs and routers on the lines to the external devices. • This error may occur when the connection under communication is forcibly invalidated. In this case, there is no problem. Re-connect.
0912H	Ethernet port error	System error or connection connecting error in OS (Malfunction due to noise or hardware trouble may have occurred.)	• Check the operation of the external device. • Check the conditions of the cables, hubs and routers on the lines to the external devices. • This error may occur when the connection under communication is forcibly invalidated. In this case, there is no problem. Re-connect.
0913H	Ethernet port error	The external device cannot be connected or is disconnected.	• Check the operation of the external device. • Check the conditions of the cables, hubs and routers on the lines to the external devices. • If this error occurs during communication, retry after a while.
1080H	ROM write count error	The number of writes to ROM exceeded 100000. (Number of writes > 100000)	Replace the module.
1810H	IP address change fails	IP address change fails.	Execute the IP address change function again.
1852H	Out-of-range setting error	The property value set in the buffer memory is incorrect.	Confirm that an incorrect value is not stored.
1861H	Excess of sent packet size	The data in the transmitted packet exceeded the size that can be transmitted by one packet.	• Check the settings for the BACnet device of the communication destination. • Confirm the causes of increase in packet size.
1870H	Received protocol version error	The protocol version of NPDU was not 1.	• Check the specifications of the communication destination device. • Check the communication packet.
1871H	Received BVLL (BVLC type) error	Unsupported BVLL (BVLC type) was received.	• Check the communication packet. • Confirm with the manufacturer of the communication destination device.
1872H	Received BVLL (BVLC function) error	Unsupported BVLL (BVLC function) was received.	• Check the communication packet. • Confirm with the manufacturer of the communication destination device.
1873H	Received DNET error	0 was specified for DNET of the received packet.	• Check the specifications of the communication destination device. • Check the communication packet.
1874H	Received SNET error	0 or 65535 was specified for SNET of the received packet.	• Check the specifications of the communication destination device. • Check the communication packet.

Error code	Error name	Error details and causes	Action
1875H	Received SLEN error	0 was specified for SLEN of the received packet.	• Check the specifications of the communication destination device. • Check the communication packet.
1876H	Packet decoding error	An error occurred during packet decoding.	• Check the communication packet. • Please confirm with the manufacturer of the communication destination device.
1877H	Receipt of message that is not supposed to be received	SimpleAck, ComplexAck, SegmentAck, Error response, Reject response or Abort response was received.	• Check the communication packet. • Please confirm with the manufacturer of the communication destination device.
1900H	Hardware error	An memory check error has occurred.	• Execute the IP address change function again. • If the error occurs again even after the above action is taken, the possible cause is a hardware failure of the module on which the error occurred. Please consult your local Mitsubishi representative.
1901H to 1902H	Hardware error	An memory check error has occurred.	• Execute the hardware test. • If the error occurs again even after the above action is taken, the possible cause is a hardware failure of the module on which the error occurred. Please consult your local Mitsubishi representative.
1920H[*1]	IP address change fails	IP address setting or other (Un\G50 to Un\G55) value exceeds the setting range.	Correct the IP address setting or other (Un\G50 to Un\G55) value.
1921H[*2]	IP address change fails	Write request and clear request (Un\G56 and Un\G58) turned from OFF to ON simultaneously.	Check if write request and clear request (Un\G56 and Un\G58) turned from OFF to ON simultaneously.
1D80H	Error during execution of dedicated instruction	An instruction other than executable dedicated instruction numbers has been specified.	Check that the dedicated instruction is executable. If it is not executable, correct.
1D83H	Error during execution of dedicated instruction	The dedicated instruction request data from the CPU module was discarded because the data size was abnormal.	• Execute the write to program again. • If the error occurs again even after the above action is taken, the possible cause is a hardware failure of the module on which the error occurred. Please consult your local Mitsubishi representative.
1D84H	Error during execution of dedicated instruction	The dedicated instruction request data from the CPU module cannot be normally input.	• Execute the write to program again. • If the error occurs again even after the above action is taken, the possible cause is a hardware failure of the module on which the error occurred. Please consult your local Mitsubishi representative.
1D85H	Error during execution of dedicated instruction	A timeout error occurred in the dedicated instruction response data, and the data was discarded.	• Reset the CPU module, and execute again. • If the error occurs again even after the above action is taken, the possible cause is a hardware failure of the module on which the error occurred. Please consult your local Mitsubishi representative.
1DC4H	IP address change fails	IP address change fails.	• Execute the IP address change function again. • If the error occurs again even after the above action is taken, the possible cause is a hardware failure of the module on which the error occurred. Please consult your local Mitsubishi representative.
1F00H	MELSOFT communication error	A communication error occurred in MELSOFT connection.	• Check the number of connected connections in the whole MELSOFT connection. • Check the number of UDP connections in the MELSOFT connection.
2160H	IP address duplication detection	Overlapping IP addresses were detected.	Correct the IP address.
2C80H	Parameter error	A parameter error was detected in the external device configuration.	• Check the external device configuration settings in the FX5-ENET equipped module parameters. • If the same error is displayed again, the abnormal module may have a hardware problem. Please consult your local Mitsubishi representative.

Error code	Error name	Error details and causes	Action
2C81H	Parameter error	A parameter error was detected in the external device configuration.	• Check the external device configuration settings in the FX5-ENET equipped module parameters. • Set so that the sum of the number of connections in External Device Configuration and the number of settings in the simple CPU communication settings is 32 or less. • If the same error is displayed again, the abnormal module may have a hardware problem. Please consult your local Mitsubishi representative.
2C82H	Parameter error	A parameter error was detected in the external device configuration.	• Check the external device configuration settings in the FX5-ENET equipped module parameters. • If the same error is displayed again, the abnormal module may have a hardware problem. Please consult your local Mitsubishi representative.
2CF0H	CPU module error	A error of CPU module was detected.	Check the details of the error of the CPU module with the module diagnostics of GX Works3, and take measures.
2DA0H to 2DA1H	Parameter error	A parameter error in external device configuration was detected.	Reexamine and correct the setting of the number of connected units in external device configuration in the FX5-ENET module parameters.
2DA2H	Parameter error	A parameter error in external device configuration was detected.	Reexamine and correct the setting of the communication method in external device configuration in the FX5-ENET module parameters.
2DA3H	Parameter error	A parameter error in external device configuration was detected.	Reexamine and correct the setting of the protocol in external device configuration in the FX5-ENET module parameters.
2DA4H	Parameter error	A parameter error in external device configuration was detected.	Reexamine and correct the setting of the model name in external device configuration in the FX5-ENET module parameters.
2DA5H	Parameter error	A parameter error in external device configuration was detected.	Reexamine and correct the setting of the fixed buffer transmission in external device configuration in the FX5-ENET module parameters.
2DA6H	Parameter error	A parameter error in external device configuration was detected.	Reexamine and correct the setting of the IP address in external device configuration in the FX5-ENET module parameters.
2DA7H	Parameter error	A parameter error in external device configuration was detected.	Reexamine and correct the setting of the IP address (IPv6) in external device configuration in the FX5-ENET module parameters.
2DA8H	Parameter error	A parameter error in external device configuration was detected.	Reexamine and correct the setting of the existence confirmation in external device configuration in the FX5-ENET module parameters.
2DA9H to 2DAAH	Parameter error	A parameter error in external device configuration was detected.	Check the setting of External device configuration in the FX5-ENET module parameters.
2DABH	Parameter error	A parameter error was detected in the external device configuration.	Check the own node port number setting in External Device Configuration FX5-ENET Module Parameter.
2DB0H	Request data error	Request and setting data error	Check the content of the specified request data.
3030H	Hardware error	Hardware error	Please consult your local Mitsubishi representative.
3040H	Update error	F/W update file version error	For this update, a PLC applicable to the new version is required. Please consult your local Mitsubishi representative.
3041H	Update error	F/W update file integrity verification failure error	Replace the update file in the SD memory card with the correct file, and perform update again.
3042H	Update error	F/W update file acquisition failure	Replace the update file in the SD memory card with the correct file, and perform update again.
3056H	Socket communication buffer full	The socket communication buffer for receiving has no space.	Read out the received data using the dedicated instruction.
3060H	Parameter error	The total number of connection is outside the range.	Please consult your local Mitsubishi representative.
3061H	Parameter error	The station number is outside the range.	Please consult your local Mitsubishi representative.
3062H	Parameter error	The number of stations occupied is outside the range.	Please consult your local Mitsubishi representative.
3063H	Parameter error	The reserved station specification is outside the range.	Please consult your local Mitsubishi representative.
3064H	Parameter error	The IP address form is outside the range.	Please consult your local Mitsubishi representative.
3065H	Parameter error	The group number is outside the range.	Please consult your local Mitsubishi representative.
3066H	Parameter error	The IP address is outside the range.	Please consult your local Mitsubishi representative.

Error code	Error name	Error details and causes	Action
3067H	Parameter error	The total number of group is outside the range.	Please consult your local Mitsubishi representative.
3068H	Parameter error	The group number is outside the range.	Please consult your local Mitsubishi representative.
306AH	Parameter error	The constant link scan setting is outside the range.	Please consult your local Mitsubishi representative.
306BH	Parameter error	The timeout time to disconnection detection is outside the range.	Please consult your local Mitsubishi representative.
306CH	Parameter error	The consecutive number of time outs to disconnection detection is outside the range.	Please consult your local Mitsubishi representative.
306DH	Parameter error	The IP address form is outside the range.	Please consult your local Mitsubishi representative.
306EH	Parameter error	The IP address (IPv4) is outside the range.	Please consult your local Mitsubishi representative.
306FH	Parameter error	The subnet mask is outside the range.	Please consult your local Mitsubishi representative.
3073H	Parameter error	The gateway address (IPv4) is outside the range.	Please consult your local Mitsubishi representative.
3074H	Parameter error	The subnet mask is outside the range.	Please consult your local Mitsubishi representative.
3082H	Parameter error	The timer change is outside the specified range.	Please consult your local Mitsubishi representative.
3085H	Parameter error	The destination alive check start interval timer is outside the range.	Please consult your local Mitsubishi representative.
3086H	Parameter error	The start interval timer unit is outside the specified range.	Please consult your local Mitsubishi representative.
3087H	Parameter error	The destination alive check interval timer is outside the range.	Please consult your local Mitsubishi representative.
3088H	Parameter error	The interval timer unit is outside the specified range.	Please consult your local Mitsubishi representative.
3089H	Parameter error	The destination alive check resend count is outside the range.	Please consult your local Mitsubishi representative.
3094H	Parameter error	The number of retry is outside the range.	Please consult your local Mitsubishi representative.
3095H	Parameter error	The number of target IP address setting is outside the range.	Please consult your local Mitsubishi representative.
3096H	Parameter error	The start target IP address setting is outside the range.	Please consult your local Mitsubishi representative.
3097H	Parameter error	The complete target IP address setting is outside the range.	Please consult your local Mitsubishi representative.
3098H	Parameter error	The start target IP address setting is outside the range > the compleate target IP address setting is outside the range	Please consult your local Mitsubishi representative.
3099H	Parameter error	The number of excluded IP address setting is outside the range.	Please consult your local Mitsubishi representative.
309AH	Parameter error	The target IP address setting number is outside the range.	Please consult your local Mitsubishi representative.
309BH	Parameter error	The excluded IP address number is outside the range.	Please consult your local Mitsubishi representative.
309CH	Parameter error	The excluded IP address is outside the range.	Please consult your local Mitsubishi representative.
309DH to 309EH	Parameter error	Target module support error	Please consult your local Mitsubishi representative.
309FH	Parameter error	Gateway address (Ipv6) out of range	Please consult your local Mitsubishi representative.
30A8H	Parameter error	The total number of stations occupied is outside the range.	Please consult your local Mitsubishi representative.
30A9H	Parameter error	The master station and slave station IP addresses match	Please consult your local Mitsubishi representative.
30AAH	Parameter error	Simple CPU communication parameter out of range	Please consult your local Mitsubishi representative.
3CF1H	Hardware error	An error of hardware was detected.	Please consult your local Mitsubishi representative.
3E30H to 3E42H	Hardware error	An error of hardware was detected.	Please consult your local Mitsubishi representative.
3E50H to 3E56H	Hardware error	An error of hardware was detected.	Please consult your local Mitsubishi representative.

Error code	Error name	Error details and causes	Action
3E60H to 3E63H	Hardware error	An error of hardware was detected.	Please consult your local Mitsubishi representative.
3F92H	Memory error	An error was detected in the memory.	• Take measures to reduce noise. • Reset the CPU module, and then switch it to RUN mode. If the error occurs again even after the above action is taken, the possible cause is a hardware failure of the CPU module. Please consult your local Mitsubishi representative.
3FA1H	Memory error	An error was detected in the memory.	• Take measures to reduce noise. • Reset the CPU module, and then switch it to RUN mode. If the error occurs again even after the above action is taken, the possible cause is a hardware failure of the CPU module. Please consult your local Mitsubishi representative.
4030H	Device specification error	The specified device name cannot be handled.	Check the specified device name.
4031H	Device specification error	• The specified device No. is out of the range. • The external device does not correspond to the specified device name.	• Check the specified device No. • Check the external device allocation. • Check the specified device name.
4032H	Device specification error	A device name (TS, TC, SS, SC, CS or CC) that cannot be used for SLMP random reading/writing (in word units) was specified.	• Check the specified device modification method. • Check the specified device name.
4033H	Device specification error	The specified device is for the system, and data cannot be written.	Do not write data into the specified device or turn ON or OFF the device.
4041H	Intelligent function module specification error	The access range exceeds the buffer memory range of the specified intelligent function module.	Check the starting address and the number of access points, and access within the buffer memory range existing in the intelligent function module.
4043H	Intelligent function module specification error	The specified intelligent function module does not exist.	Check the module number of the specified intelligent function module.
480CH	During execution of automatic detection function	The operation cannot be executed because the automatic detection function is being executed.	Re-execute after the completion of the automatic detection function.
480DH	During execution of communication setting reflection function	The operation cannot be executed because the communication setting reflection function is being executed.	Re-execute after the completion of the communication setting reflection function.
480EH	During execution of parameter read/write function	The operation cannot be executed because the parameter read/write function is being executed.	Re-execute after the completion of the parameter read/write function.

*1 The error codes are stored only in 'IP address storage area write error code' (Un\G61).

*2 The error codes are stored only in 'IP address storage area clear error code' (Un\G62).

Ethernet communication error

The Ethernet communication error codes can be checked in “Status of Each Connection” on the "Ethernet Diagnostics" screen of FX5-ENET. (☞ Page 48 Status of Each Connection) The error codes will be stored in ‘Error code’ (Un\G108 to Un\G139).

Error code	Error name	Error details and causes	Action
C012H	Error during execution of dedicated instruction	• The port number already used in the open completion connection of TCP/IP is set. • The external device port No. set in the external device information is duplicated.	Check and correct the port number of the Ethernet module and the target device.
C013H	Error during execution of dedicated instruction	The port number used in the open completion connection is set during the open processing of UDP/IP.	Check and correct the port number of the Ethernet module.
C017H	Error during execution of dedicated instruction	The connection was not established by the open processing of the TCP connection.	• Check the operation of the target device. • Check the open processing of the target device. • Correct the open setting of the communication parameter. • Check the port number of the Ethernet module, the IP address/port number of the target device, and the open method. • Check if the connection cable is disconnected.
C020H	Error during execution of dedicated instruction	The data length exceeds the allowable range.	• Correct the data length. • If the amount of data to send exceeds the prescribed amount, divide and send the data.
C027H	Error during execution of dedicated instruction	Socket communication send message has failed.	• Check the operation of the external device or switching hub. • Since there may be congestion of packets on the line, send data after a certain period of time. • Check if the connection cable is disconnected. • Check that there is no connection failure with the switching hub. • Execute the communication status test, and if the test was completed with an error, take the corrective action. • Execute the module communication test, and check that there is no failure in the module. • Check the IP address specified as the target.
C029H	Error during execution of dedicated instruction	Description of control data is not correct.	Correct the descriptions of the control data.
C035H	Ethernet communication error	The existence of the external device could not be confirmed within the response monitor timer value.	• Check the operation of the external device. • Reexamine and change the set values for existence confirmation. • Check if the connection cable is disconnected.
C04CH	Ethernet communication error	The data cannot be sent since the internal buffer such as IP header buffer has no space.	Send the same data again, and check the receiving of the response.
C050H	Ethernet communication error	When the communication data code is set to “ASCII”, ASCII code data which cannot be converted to binary is received.	• For communication, set to “Binary” in the communication data code and restart the CPU module. • Correct the send data from the target device and send it.
C051H	Ethernet communication error	Maximum number of bit devices for which data can be read/written all at once is outside the allowable range.	Correct number of bit devices that can be read or written all at once, and send to Ethernet module again.
C052H	Ethernet communication error	Maximum number of word devices for which data can be read/written all at once is outside the allowable range.	Correct number of word devices that can read or write all at once, and send to Ethernet module again.
C053H	Ethernet communication error	Maximum number of bit devices for which data can be random read/written all at once is outside the allowable range.	Correct number of bit devices that can be read or written all at random, and send to Ethernet module again.
C054H	Ethernet communication error	Maximum number of word devices for which data can be random read/written all at once is outside the allowable range.	Correct number of word devices that can read or write all at random, and send to Ethernet module again.
C056H	Ethernet communication error	Read or write request exceeds maximum address.	Correct starting address or number of read and write points, and send to Ethernet module again. (Be careful not to exceed the maximum address.)
C057H	Ethernet communication error	The request data length in the SLMP message does not match the number of data in the character section (part of the test).	After reexamining and correcting the content of the text or the request data length in the header, resend the message to the Ethernet module.

Error code	Error name	Error details and causes	Action
C058H	Ethernet communication error	Request data length after ASCII- to-binary conversion does not match the number of data in the character section (part of text).	After reexamining and correcting the content of the text or the request data length in the header, resend the message to the Ethernet module.
C059H	Ethernet communication error	• Error in command or subcommand specification. • There is a command or subcommand that cannot be used by the Ethernet module.	• Reconsider request contents. • Send command or subcommand that can be used by the Ethernet module.
C05BH	Ethernet communication error	Ethernet module cannot read or write from/to specified device.	Reconsider device to read or write.
C05CH	Ethernet communication error	Error in request contents. (Reading or writing by bit unit for word device, etc.)	Correct request content, and send to Ethernet module again. (Subcommand correction, etc.)
C05EH	Ethernet communication error	The communication time between the Ethernet module and PLC CPU exceeds the Ethernet monitor timer setting.	• Increase the monitor timer setting. • Check the connection between the CPU and Ethernet module.
C05FH	Ethernet communication error	There is a request that cannot be executed for the target CPU module.	• Correct network No., request station No., request destination module I/O No., or request destination module station No. • Correct contents of write request and/or read request.
C060H	Ethernet communication error	Error in request contents. (Error in specification of data for bit device, etc.)	Correct request content, and send to Ethernet module again. (Data correction, etc.)
C061H	Ethernet communication error	Request data length does not match the number of data in the character section (part of text).	After reexamining and correcting the content of the text or the request data length in the header, resend the message to the Ethernet module.
C06FH	Ethernet communication error	When the communication data code is set to “Binary”, a request message of ASCII is received. (Error history of this error code is registered but no error response returns.)	• Sent a request message which is adapted to the setting of the communication data code. • Change to the communication data code which is adapted to the request message.
C0D8H	Ethernet communication error	The number of the specified blocks exceeds the range.	Correct the specified value of for the number of blocks.
C0DEH	Ethernet communication error	Socket communication receive message fails.	• Check the operation of the external device or switching hub. • Since there may be congestion of packets on the line, send data after a certain period of time. • Check whether the connection cable is not disconnected. • Check that there is no connection failure with the switching hub. • Execute the communication status test, and if the test was completed with an error, take the corrective action. • Execute the module communication test, and check that there is no failure in the module.
C1A4H	Ethernet communication error	• The operator tried to use the Ethernet diagnosis, CC-Link IEF Basic diagnosis or simple CPU communication diagnosis connecting directly to the Ethernet port of the Ethernet module. • A function not supported for the target device was executed.	Execute the Ethernet diagnosis, CC-Link IEF Basic diagnosis or simple CPU communication diagnosis using the direct connection to the CPU module (built-in Ethernet port).
C1A6H	Ethernet communication error	The specification of the connection No. is not correct.	Specify 1 to 32 for the connection No.
C1A7H	Ethernet communication error	The specified network number is incorrect.	Correct the specified network number.
C1A8H	Ethernet communication error	The specified station number is incorrect.	Correct the specified station number.
C1ADH	Ethernet communication error	The specified data length is incorrect.	Correct the specified data length.
C1B0H	Ethernet communication error	The open processing of the specified connection has been already completed.	Perform the open processing after completing the close processing.
C1B1H	Ethernet communication error	The open processing of the specified connection is not completed.	Perform the open processing.
C1B2H	Ethernet communication error	The specified connection is executing the OPEN/CLOSE instruction.	Execute after the OPEN/CLOSE instruction is completed.
C1B3H	Ethernet communication error	The specified channel is being used by another send/receive instruction.	• Change the channel number. • Execute after the send/receive instruction is completed.

Error code	Error name	Error details and causes	Action
C1D3H	Error during execution of dedicated instruction	An instruction not conforming to the specifications of the communication method for the connection was executed.	• Check that the dedicated instruction can be executed by the specified communication method. Correct the program if the instruction cannot be executed. • Check that there is no error in the connection specification of the dedicated instruction.
C709H	Ethernet communication error	A communication error occurred in MELSOFT direct connection.	• Do not specify the direct connection when MELSOFT is not directly connected. • In the case of direct connection, do not turn OFF or reset the CPU module or disconnect the cable during communication.
CF70H	Communication path error	An error occurred in the Ethernet communication path.	• Check the operation of the target device. • Check whether the connection cable is not disconnected.
CF71H	Timeout error	A timeout error occurred.	• Check the cautions for the executed function. • Check the operation of the target device. • Since there may be congestion of packets on the line, send data after a certain period of time.
CFB0H	Simple CPU communication error	Transmission fails due to retransmission timeout.	• Check the operation of the external device. • Check the conditions of the cables, hubs and routers on the lines to the external devices. • Reconsider the communication start wait time. • Reconsider and correct the IP address and Ethernet address of the external device. • Confirm that the external devices have the ARP function, and communicate with an external device that has the ARP function. • When the communication destination is a MODBUS/TCP connection device and the communication pattern is Write, do not specify Input or Input Register for the transfer destination device.
CFB1H	Simple CPU communication error	The external device cannot be connected or is disconnected.	• Check whether the connection cable is not disconnected. • Check the conditions of the cables, hubs and routers on the lines to the external devices.
CFB2H	Simple CPU communication error	The specified own station port No. is duplicated.	Reconsider the port No., and prevent duplication.
CFB3H	Simple CPU communication error	A request to the CPU module fails.	• Reconsider the monitor time of the CPU response monitor timer. • Reconsider the device/label access service processing setting.
CFB4H	Simple CPU communication error	An abnormal response was received from the external device.	Check the abnormal response code in the buffer memory.
CFB5H	Simple CPU communication error	The frame received from the external device is abnormal.	• Check the operation of the external device. • Check the conditions of the cables, hubs and routers on the lines to the external devices.
CFBFH	Simple CPU communication error	Simple CPU communication cannot be performed.	• Take measures against noise. • If the same error is displayed after retry, Please consult your local Mitsubishi representative.

9.7 List of Event Code

The following table lists events that occur in the FX5-ENET.

Event code	Event type	Event category	Event status	Detected event	Detailed information		
					Detailed information 1	Detailed information 2	Detailed information 3
0800	System	Error	Minor	Link-down	Operation source information	Communication speed and communication mode	—
0904	System	Error	Minor	Socket communication sending failure	Operation source information	—	—
1080	System	Error	Major	ROM write count error	Number of times information*1	—	—
1810	System	Error	Minor	IP address change fails	—	—	—
1852	System	Error	Minor	Out-of-range setting error	Buffer memory information	—	Failure information
1900	System	Error	Minor	Flash memory check error (IP address change function sector)	—	—	—
1901	System	Error	Minor	Flash memory check error (Total number sector of writes to memory Flash ROM)	—	—	—
1902	System	Error	Minor	Flash memory check error (Flash memory test sector)	—	—	—
1F00	System	Error	Minor	MELSOFT connection error	—	—	—
2160	System	Error	Moderate	IP address duplication detection	—	—	Failure information
2C80	System	Error	Moderate	Receive parameter sum value error	—	—	Failure information
2C81	System	Error	Moderate	Receive parameter data error	—	—	Failure information
2C82	System	Error	Moderate	Divided parameter receive error	—	—	Failure information
2CF0	System	Error	Moderate	FX5-ENET WDT error occurs	—	—	Failure information
2DA0	System	Error	Moderate	Connection setting parameter (Error in the number of connection setting)	Parameter information*2	—	Failure information
2DA1	System	Error	Moderate	Connection setting parameter (Connection number error)	Parameter information*2	—	Failure information
2DA2	System	Error	Moderate	Connection setting parameter (Communication destination communication method error)	Parameter information*2	—	Failure information
2DA3	System	Error	Moderate	Connection setting parameter (Protocol system error)	Parameter information*2	—	Failure information
2DA4	System	Error	Moderate	Connection setting parameter (Open system error)	Parameter information*2	—	Failure information
2DA5	System	Error	Moderate	Connection setting parameter (Fixed buffer transmitting method error)	Parameter information*2	—	Failure information
2DA6	System	Error	Moderate	Connection setting parameter (IP address (IPv4) error)	Parameter information*2	—	Failure information
2DA7	System	Error	Moderate	Connection setting parameter (IP address (IPv6) error)	Parameter information*2	—	Failure information
2DA8	System	Error	Moderate	Connection setting parameter (Existence confirmation specification error)	Parameter information*2	—	Failure information
2DA9	System	Error	Moderate	Connection setting parameter (Communication data code error)	Parameter information*2	—	Failure information
2DAA	System	Error	Moderate	Connection setting parameter (Error in specification of writing during running)	Parameter information*2	—	Failure information

Event code	Event type	Event category	Event status	Detected event	Detailed information		
					Detailed information 1	Detailed information 2	Detailed information 3
2DAB	System	Error	Moderate	Connection setting parameter own node port number error	Parameter information	—	—
2DB0	System	Error	Moderate	Request data error	—	—	Failure information
3030	System	Error	Moderate	Specific code error	—	—	—
3040	System	Error	Moderate	Firmware update file version error	—	—	—
3041	System	Error	Moderate	Failure in verification of firmware update file integrity	—	—	—
3042	System	Error	Moderate	Failure in acquisition of firmware update file	—	—	—
3056	System	Error	Moderate	Socket communication buffer full	—	—	Failure information
3060	System	Error	Moderate	The total number of connection is outside the range (Configuration setting parameter)	Parameter information*2	—	—
3061	System	Error	Moderate	The station number is outside the range (Configuration setting parameter)	Parameter information*2	—	—
3062	System	Error	Moderate	The number of stations occupied is outside the range (Configuration setting parameter)	Parameter information*2	—	—
3063	System	Error	Moderate	The reserved station specification is outside the range (Configuration setting parameter)	Parameter information*2	—	—
3064	System	Error	Moderate	The IP address form is outside the range (Configuration setting parameter)	Parameter information*2	—	—
3065	System	Error	Moderate	The group number is outside the range (Configuration setting parameter)	Parameter information*2	—	—
3066	System	Error	Moderate	The IP address is outside the range (Configuration setting parameter)	Parameter information*2	—	—
3067	System	Error	Moderate	The total number of group is outside the range (Configuration parameter according to group)	Parameter information*2	—	—
3068	System	Error	Moderate	The group number is outside the range (Configuration parameter according to group)	Parameter information*2	—	—
306A	System	Error	Moderate	The constant link scan setting is outside the range (Configuration parameter according to group)	Parameter information*2	—	—
306B	System	Error	Moderate	The timeout time to disconnection detection is outside the range (Configuration parameter according to group)	Parameter information*2	—	—
306C	System	Error	Moderate	The consecutive number of time outs to disconnection detection is outside the range (Configuration parameter according to group)	Parameter information*2	—	—
306D	System	Error	Moderate	The IP address form is outside the range (IP address setting parameter)	Parameter information*2	—	—
306E	System	Error	Moderate	The IP address (IPv4) is outside the range (IP address setting parameter)	Parameter information*2	—	—
306F	System	Error	Moderate	The subnet mask is outside the range (IP address setting parameter)	Parameter information*2	—	—
3073	System	Error	Moderate	The gateway address (IPv4) is outside the range (Gateway address setting parameter)	Parameter information*2	—	—
3074	System	Error	Moderate	The subnet mask is outside the range (Gateway address setting parameter)	Parameter information*2	—	—
3082	System	Error	Moderate	The timer change is outside the specified range (Data communication timer setting parameter)	Parameter information*2	—	—

Event code	Event type	Event category	Event status	Detected event	Detailed information		
					Detailed information 1	Detailed information 2	Detailed information 3
3085	System	Error	Moderate	The destination alive check start interval timer is outside the range (Data communication timer setting parameter)	Parameter information*2	—	—
3086	System	Error	Moderate	The start interval timer unit is outside the specified range (Data communication timer setting parameter)	Parameter information*2	—	—
3087	System	Error	Moderate	The destination alive check interval timer is outside the range (Data communication timer setting parameter)	Parameter information*2	—	—
3088	System	Error	Moderate	The interval timer unit is outside the specified range (Data communication timer setting parameter)	Parameter information*2	—	—
3089	System	Error	Moderate	The destination alive check resend count is outside the range (Data communication timer setting parameter)	Parameter information*2	—	—
3094	System	Error	Moderate	The number of retry is outside the range (Data communication timer setting parameter)	Parameter information*2	—	—
3095	System	Error	Moderate	The number of target IP address setting is outside the range (IP filter settings)	Parameter information*2	—	—
3096	System	Error	Moderate	IP address 1 is outside the range (IP filter settings)	Parameter information*2	—	—
3097	System	Error	Moderate	IP address 2 is outside the range (IP filter settings)	Parameter information*2	—	—
3098	System	Error	Moderate	IP address 1 ≥ IP address 2 error (IP filter settings)	Parameter information*2	—	—
3099	System	Error	Moderate	The number of excluded IP address setting is outside the range (IP filter settings)	Parameter information*2	—	—
309A	System	Error	Moderate	The target IP address setting number is outside the range (IP filter settings)	Parameter information*2	—	—
309B	System	Error	Moderate	The excluded IP address number is outside the range (IP filter settings)	Parameter information*2	—	—
309C	System	Error	Moderate	The excluded IP address is outside the range (IP filter settings)	Parameter information*2	—	—
309D	System	Error	Moderate	Target module support error (IP address settings parameter)	Parameter information*2	—	—
309E	System	Error	Moderate	Target module support error (Gateway address setting parameter)	Parameter information*2	—	—
309F	System	Error	Moderate	The gateway address (IPv6) is outside the range (Gateway address setting parameter)	Parameter information*2	—	—
30A8	System	Error	Moderate	The total number of stations occupied is outside the range (Configuration setting parameter)	Parameter information*2	—	—
30A9	System	Error	Moderate	The master station and slave station IP addresses match (Configuration setting parameter)	Parameter information*2	—	—
3CF1	System	Error	Major	BINT disconnection detection timeout error	—	—	Failure information
3E30	System	Error	Major	The fixed memory block acquisition/release ID number is invalid.	—	—	Failure information
3E31	System	Error	Major	Fixed memory block acquisition/release context error	—	—	Failure information
3E32	System	Error	Major	Error in forced cancellation of waiting for variable memory block acquisition/release	—	—	Failure information

Event code	Event type	Event category	Event status	Detected event	Detailed information		
					Detailed information 1	Detailed information 2	Detailed information 3
3E33	System	Error	Major	Error in forced cancellation of waiting due to reset of fixed memory block acquisition/release object	—	—	Failure information
3E34	System	Error	Major	Fixed memory block acquisition/release parameter error	—	—	Failure information
3E35	System	Error	Major	The variable memory block acquisition/release ID number is invalid	—	—	Failure information
3E36	System	Error	Major	Variable memory block acquisition/release context error	—	—	Failure information
3E37	System	Error	Major	Error in forced cancellation of waiting for variable memory block acquisition/release	—	—	Failure information
3E38	System	Error	Major	Error in forced cancellation of waiting due to reset of variable memory block acquisition/release object	—	—	Failure information
3E39	System	Error	Major	Variable memory block acquisition/release parameter error	—	—	Failure information
3E3A	System	Error	Major	E-mail box transmitting/receiving parameter error	—	—	Failure information
3E3B	System	Error	Major	The e-mail box transmitting/receiving ID number is invalid	—	—	Failure information
3E3C	System	Error	Major	E-mail box transmitting/receiving context error	—	—	Failure information
3E3D	System	Error	Major	Error in forced cancellation of waiting for e-mail box transmitting/receiving	—	—	Failure information
3E3E	System	Error	Major	Semaphore acquisition/release parameter error	—	—	Failure information
3E3F	System	Error	Major	Invalid semaphore acquisition/release ID number	—	—	Failure information
3E40	System	Error	Major	Semaphore acquisition/release context error	—	—	Failure information
3E41	System	Error	Major	Semaphore acquisition/release queueing overflow	—	—	Failure information
3E42	System	Error	Major	Error in forced cancellation of waiting for semaphore acquisition/release	—	—	Failure information
3E50	System	Error	Major	RAM check error	—	—	—
3E51	System	Error	Major	Sum check code error	—	—	—
3E52	System	Error	Major	Flash memory test access error	—	—	—
3E53	System	Error	Major	Flash memory test verification error	—	—	—
3E54	System	Error	Major	Buffer memory access error	—	—	—
3E55	System	Error	Major	BusAsic register read error	—	—	—
3E56	System	Error	Major	Factory test mode error	—	—	—
3E60 to 3E63	System	Error	Major	MPU error	—	—	Failure information
3F92	System	Error	Major	Memory error	—	—	Failure information
3FA1	System	Error	Major	Memory error	—	—	Failure information
C050	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C051	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C052	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C053	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C054	System	Error	Minor	Ethernet communication error	Parameter information	—	—

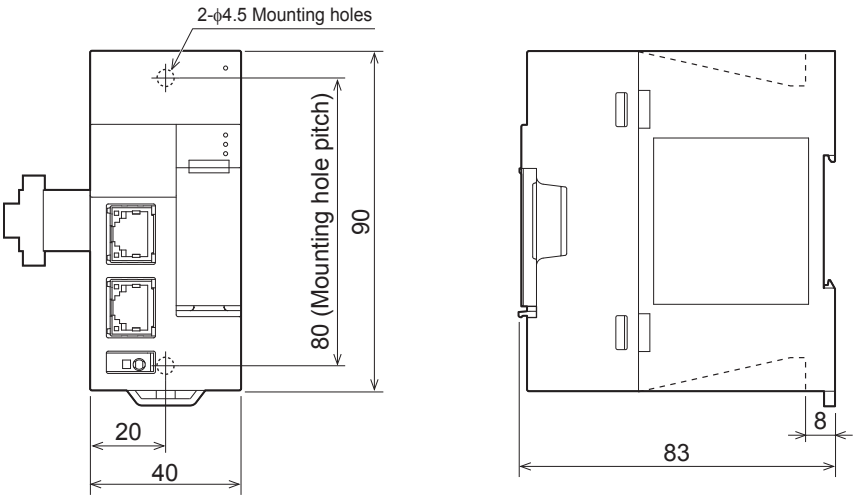
Event code	Event type	Event category	Event status	Detected event	Detailed information		
					Detailed information 1	Detailed information 2	Detailed information 3
C056	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C057	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C058	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C059	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C05B	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C05C	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C05E	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C05F	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C060	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C061	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C06F	System	Error	Minor	Ethernet communication error	Parameter information	—	—
C0D8	System	Error	Minor	Ethernet communication error	Parameter information	—	—

*1 <Number of times information>
· Number of times (set value)
*2 <Parameter information>
· Parameter storage location
· Parameter type
· (I/O number)
· (Parameter number)
· Parameter item number

APPENDIX

Appendix 1 External Dimensions

This chapter describes the external dimensions of the FX5-ENET.



(Unit: mm)

Appendix 2 Standards

Certification of UL, cUL standards

The FX5-ENET supports UL (UL, cUL) standards.
For models that support UL standards, refer to the following.
UL, cUL file number: E95239

Compliance with EC directive (CE Marking)

This note does not guarantee that an entire machine produced in accordance with the contents of this note will comply with the following standards.
Compliance to EMC directive and LVD directive of the entire mechanical module should be checked by the user/manufacturer. For more details please contact to the local Mitsubishi Electric sales site.

Requirement for compliance with EMC directive

The following products have shown compliance through direct testing (of the identified standards below) and design analysis (through the creation of a technical construction file) to the European Directive for Electromagnetic Compatibility (2014/30/EU) when used as directed by the appropriate documentation.

Attention

This product is designed for use in industrial applications.

Product compatibility

Type: Programmable controller (open type equipment)
Models: FX5 manufactured

from October 1st, 2018	FX5-ENET

Electromagnetic compatibility (EMC) directive	Remarks
EN61131-2:2007 Programmable controllers - Equipment requirements and tests	Compliance with all relevant aspects of the standard. EMI • Radiated emission • Conducted emission EMS • Radiated electromagnetic field • Fast transient burst • Electrostatic discharge • High-energy surge • Voltage drops and interruptions • Conducted RF • Power frequency magnetic field

Caution for compliance with EC Directive

Caution for when the FX5-ENET is used

When the FX5-ENET is used, attach a ferrite core and make 2 turns within approximately 200 mm from the power cable connectors. (Ferrite core used in tests by Mitsubishi: E04SR401938 manufactured by SEIWA ELECTRIC MFG. CO., LTD.)

Appendix 3 Module Label

The buffer memory of the FX5-ENET can be set using module label.

Structure of the module label

The module label name is defined with the following structure.

- "instance name"_"data format""data type"_"label name"_D
- "instance name"_"data format""module number""data type"_"label name"_D

■Instance name

The following is the instance name of the FX5-ENET.

Model	Instance name
FX5-ENET	FX5ENET

Ex.

FX5ENET_uValid_Invalid_Flag_Diag_D

■Data format

The data format indicates the size of a buffer memory area. The following shows the classification.

Data format	Description
b	Bit
bn	Bit of multiple buffer memories
u	Word [Unsigned]/Bit String [16-bit]
ud	Double word [Unsigned]/Bit String [32-bit]
un	Word of multiple buffer memories [Unsigned]/Bit String [16-bit]

■Data type

The data type indicates the type of a buffer memory area. The following shows the classification.

Data type	Description
Val	Display the value of module.
Set	Set the module control instruction.
Sts	Display the module status.

■Label name

A label name unique to the module.

■_D

This symbol indicates that the module label is for direct access. Value update timing is shown below.

Type	Description	Access timing
Direct access	The values read/written from/to the module labels are reflected to the module immediately.	At writing to or reading from the module label

Appendix 4 Buffer Memory

The buffer memory is used to exchange data between the FX5-ENET and the CPU module or external devices.
Buffer memory values are set to their defaults (initial values) when the system is powered off or the CPU module is reset.

List of buffer memory addresses

Buffer memory address		Name	Initial value	Read, write
Decimal	Hexadecimal			
29	1DH	Latest error code	0	Read
30	1EH	Module information	69A0H	Read
31	1FH	Firmware version	*1	Read
34	22H	Input signals	0	Read, write
36	24H	Output signals	0	Read, write
50 to 51	32H to 33H	IP address setting	0.0.0.0	Read, write
52 to 53	34H to 35H	Subnet mask pattern setting	0.0.0.0	Read, write
54 to 55	36H to 37H	Default router IP address setting	0.0.0.0	Read, write
56	38H	IP address storage area write request	0	Read, write
57	39H	IP address storage area write status	0	Read
58	3AH	IP address storage area clear request	0	Read, write
59	3BH	IP address storage area clear status	0	Read
60	3CH	IP address change function enable flag	0	Read
61	3DH	IP address storage area write error code	0	Read
62	3EH	IP address storage area clear error code	0	Read
64 to 65	40H to 41H	IP address	192.168.3.251	Read
74 to 75	4AH to 4BH	Subnet mask pattern	255.255.255.0	Read
76 to 77	4CH to 4DH	Default gateway IP address	0.0.0.0	Read
102 to 104	66H to 68H	Ethernet address (MAC address)	*2	Read
108 to 139	6CH to 8BH	Error code	0	Read
152 to 153	98H to 99H	Open completion signal	0	Read
154 to 155	9AH to 9BH	Open request signal	0	Read
156 to 157	9CH to 9DH	Socket communications receive status signal	0	Read
158	9EH	Initial status	0	Read
159	9FH	Initial error code	0	Read
201	C9H	Same IP address state storage area	0.0.0.0	Read
202 to 204	CAH to CCH	MAC address of the already connected station	0.0.0.0	Read
205 to 207	CDH to CFH	MAC address of the station connected later	0.0.0.0	Read
300, 301	12CH, 12DH	“Communication start at request” request	0	Read, write
304, 305	130H, 131H	Periodic communication stop request	0	Read, write
308, 309	134H, 135H	Periodic communication restart request	0	Read, write
312, 313	138H, 139H	Execution Status flag	0	Read
316, 317	13CH, 13DH	Ready	0	Read
320 to 351	140H to 15FH	System area	—	—
352 to 383	160H to 17FH	Simple CPU communication status	0	Read
416 to 447	1A0H to 1BFH	Simple CPU error code	0	Read
480 to 511	1E0H to 1FFH	Abnormal response code	0	Read
544 to 575	220H to 23FH	Execution interval (current value)	0	Read
1000 to 1127	3E8H to 467H	Remote input (RX)	0	Read
1256 to 1383	4E8H to 567H	Remote output (RY)	0	Read, write
2000 to 3023	7D0H to BCFH	Remote register (RWr)	0	Read
3024 to 4047	BD0H to FCFH	Remote register (RWw)	0	Read, write
4100 to 4101	1004H to 1005H	Cyclic transmission status of each station	0	Read
4104 to 4105	1008H to 1009H	Data link status of each station	0	Read
4112	1010H	Total number of connected stations	0	Read

Buffer memory address		Name		Initial value	Read, write
Decimal	Hexadecimal				
4113 to 4114	1011H to 1012H	Reserved station specification status of each station		0	Read
4117	1015H	Link scan information (group number 1)	Maximum link scan time (Unit: ms)	0	Read
4118	1016H		Minimum link scan time (Unit: ms)	0	Read
4119	1017H		Current link scan time (Unit: ms)	0	Read
4121	1019H	Link scan information (group number 2)	Maximum link scan time (Unit: ms)	0	Read
4122	101AH		Minimum link scan time (Unit: ms)	0	Read
4123	101BH		Current link scan time (Unit: ms)	0	Read
4127	101FH	Diagnostic request information		0	Read, write
4128	1020H	Diagnostic information status flag		0	Read
4129 to 4143	1021H to 102FH	Diagnostic information 1		0	Read
4144 to 4159	1030H to 103FH	Diagnostic information 2		0	Read
4160	1040H	CCIEF Basic each status		0	Read
4162	1042H	Diagnostic information display request		0	Read, write
4163	1043H	Diagnostic information display request execution status		0	Read
6400 to 8447	1900H to 20FFH	Area for simple CPU communication		—	Read, write
8500	2134H	BACnet communication device	SystemStatus	0	Read, write
8501	2135H		Module status	0	Read
8502 to 8508	2136H to 213CH		Time setting reception	0	Read
8509	213DH		Time setting read flag	0	Read, write
8510	213EH		I-Am transmission	0	Read, write
8520, 8521	2148H, 2149H	BACnet communication Accumulator 1	Object ID	0	Read
8522, 8523	214AH, 214BH		PresentValue	0	Read, write
8524	214CH		OutOfService	0	Read, write
8525	214DH		Reliability	0	Read, write
8526, 8527	214EH, 214FH		Scale	0	Read
8528, 8529	2150H, 2151H		MaxPresValue	0	Read
8530	2152H		Pulse set value	0	Read, write
8531	2153H		Units	0	Read
8540 to 8551	215CH to 2167H	BACnet communication Accumulator 2	Same configuration as BACnet communication Accumulator 1	—	—
8560 to 8571	2170H to 217BH	BACnet communication Accumulator 3	Same configuration as BACnet communication Accumulator 1	—	—
8580 to 8591	2184H to 218FH	BACnet communication Accumulator 4	Same configuration as BACnet communication Accumulator 1	—	—
8600, 8601	2198H, 2199H	BACnet communication AnalogInput 1	Object ID	0	Read
8602, 8603	219AH, 219BH		PresentValue	0	Read, write
8604	219CH		OutOfService	0	Read, write
8605	219DH		Reliability	0	Read, write
8606	219EH		Units	0	Read
8620 to 8626	21ACH to 21B2H	BACnet communication AnalogInput 2	Same configuration as BACnet communication AnalogInput 1	—	—
8640 to 8646	21C0H to 21C6H	BACnet communication AnalogInput 3	Same configuration as BACnet communication AnalogInput 1	—	—
8660 to 8666	21D4H to 21DAH	BACnet communication AnalogInput 4	Same configuration as BACnet communication AnalogInput 1	—	—
8680 to 8686	21E8H to 21EEH	BACnet communication AnalogInput 5	Same configuration as BACnet communication AnalogInput 1	—	—
8700 to 8706	21FCH to 2202H	BACnet communication AnalogInput 6	Same configuration as BACnet communication AnalogInput 1	—	—
8720 to 8726	2210H to 2216H	BACnet communication AnalogInput 7	Same configuration as BACnet communication AnalogInput 1	—	—
8740 to 8746	2224H to 222AH	BACnet communication AnalogInput 8	Same configuration as BACnet communication AnalogInput 1	—	—

Buffer memory address		Name		Initial value	Read, write
Decimal	Hexadecimal				
8760, 8761	2238H, 2239H	BACnet communication AnalogOutput 1	Object ID	0	Read
8762, 8763	223AH, 223BH		PresentValue	0	Read
8764	223CH		OutOfService	0	Read, write
8765	223DH		Reliability	0	Read, write
8766, 8767	223EH, 223FH		Value set value	0	Read, write
8768	2240H		Write setting	0	Read, write
8769	2241H		Write control	0	Read, write
8770	2242H		Update counter	0	Read
8771	2243H		Units	0	Read
8780 to 8791	224CH to 2257H	BACnet communication AnalogOutput 2	Same configuration as BACnet communication AnalogOutput 1	—	—
8800 to 8811	2260H to 226BH	BACnet communication AnalogOutput 3	Same configuration as BACnet communication AnalogOutput 1	—	—
8820 to 8831	2274H to 227FH	BACnet communication AnalogOutput 4	Same configuration as BACnet communication AnalogOutput 1	—	—
8840 to 8851	2288H to 2293H	BACnet communication AnalogOutput 5	Same configuration as BACnet communication AnalogOutput 1	—	—
8860 to 8871	229CH to 22A7H	BACnet communication AnalogOutput 6	Same configuration as BACnet communication AnalogOutput 1	—	—
8880 to 8891	22B0H to 22BBH	BACnet communication AnalogOutput 7	Same configuration as BACnet communication AnalogOutput 1	—	—
8900 to 8911	22C4H to 22CFH	BACnet communication AnalogOutput 8	Same configuration as BACnet communication AnalogOutput 1	—	—
8920, 8921	22D8H, 22D9H	BACnet communication AnalogValue 1	Object ID	0	Read
8922, 8923	22DAH, 22DBH		PresentValue	0	Read
8924	22DCH		OutOfService	0	Read, write
8925	22DDH		Reliability	0	Read, write
8926, 8927	22DEH, 22DFH		Value set value	0	Read, write
8928	22E0H		Write setting	0	Read, write
8929	22E1H		Write control	0	Read, write
8930	22E2H		Update counter	0	Read
8931	22E3H		Units	0	Read
8940 to 8951	22ECH to 22F7H	BACnet communication AnalogValue 2	Same configuration as BACnet communication AnalogValue 1	—	—
8960 to 8971	2300H to 230BH	BACnet communication AnalogValue 3	Same configuration as BACnet communication AnalogValue 1	—	—
8980 to 8991	2314H to 231FH	BACnet communication AnalogValue 4	Same configuration as BACnet communication AnalogValue 1	—	—
9000 to 9011	2328H to 2333H	BACnet communication AnalogValue 5	Same configuration as BACnet communication AnalogValue 1	—	—
9020 to 9031	233CH to 2347H	BACnet communication AnalogValue 6	Same configuration as BACnet communication AnalogValue 1	—	—
9040 to 9051	2350H to 235BH	BACnet communication AnalogValue 7	Same configuration as BACnet communication AnalogValue 1	—	—
9060 to 9071	2364H to 236FH	BACnet communication AnalogValue 8	Same configuration as BACnet communication AnalogValue 1	—	—
9080, 9081	2378H, 2379H	BACnet communication BinaryInput 1	Object ID	0	Read
9082	237AH		PresentValue	0	Read, write
9083	237BH		OutOfService	0	Read, write
9084	237CH		Reliability	0	Read, write
9100 to 9104	238CH to 2390H	BACnet communication BinaryInput 2	Same configuration as BACnet communication BinaryInput 1	—	—
9120 to 9124	23A0H to 23A4H	BACnet communication BinaryInput 3	Same configuration as BACnet communication BinaryInput 1	—	—
9140 to 9144	23B4H to 23B8H	BACnet communication BinaryInput 4	Same configuration as BACnet communication BinaryInput 1	—	—

Buffer memory address		Name		Initial value	Read, write
Decimal	Hexadecimal				
9160 to 9164	23C8H to 23CCH	BACnet communication BinaryInput 5	Same configuration as BACnet communication BinaryInput 1	—	—
9180 to 9184	23DCH to 23E0H	BACnet communication BinaryInput 6	Same configuration as BACnet communication BinaryInput 1	—	—
9200 to 9204	23F0H to 23F4H	BACnet communication BinaryInput 7	Same configuration as BACnet communication BinaryInput 1	—	—
9220 to 9224	2404H to 2408H	BACnet communication BinaryInput 8	Same configuration as BACnet communication BinaryInput 1	—	—
9240 to 9244	2418H to 241CH	BACnet communication BinaryInput 9	Same configuration as BACnet communication BinaryInput 1	—	—
9260 to 9264	242CH to 2430H	BACnet communication BinaryInput 10	Same configuration as BACnet communication BinaryInput 1	—	—
9280 to 9284	2440H to 2444H	BACnet communication BinaryInput 11	Same configuration as BACnet communication BinaryInput 1	—	—
9300 to 9304	2454H to 2458H	BACnet communication BinaryInput 12	Same configuration as BACnet communication BinaryInput 1	—	—
9320 to 9324	2468H to 246CH	BACnet communication BinaryInput 13	Same configuration as BACnet communication BinaryInput 1	—	—
9340 to 9344	247CH to 2480H	BACnet communication BinaryInput 14	Same configuration as BACnet communication BinaryInput 1	—	—
9360 to 9364	2490H to 2494H	BACnet communication BinaryInput 15	Same configuration as BACnet communication BinaryInput 1	—	—
9380 to 9384	24A4H to 24A8H	BACnet communication BinaryInput 16	Same configuration as BACnet communication BinaryInput 1	—	—
9400, 9401	24B8H, 24B9H	BACnet communication BinaryOutput 1	Object ID	0	Read
9402	24BAH		PresentValue	0	Read
9403	24BBH		OutOfService	0	Read, write
9404	24BCH		Reliability	0	Read, write
9405	24BDH		Value set value	0	Read, write
9406	24BEH		Write setting	0	Read, write
9407	24BFH		Write control	0	Read, write
9408	24C0H		Update counter	0	Read
9409	24C1H		FeedbackValue	0	Read, write
9420 to 9429	24CCH to 24D5H	BACnet communication BinaryOutput 2	Same configuration as BACnet communication BinaryOutput1	—	—
9440 to 9449	24E0H to 24E9H	BACnet communication BinaryOutput 3	Same configuration as BACnet communication BinaryOutput1	—	—
9460 to 9469	24F4H to 24FDH	BACnet communication BinaryOutput 4	Same configuration as BACnet communication BinaryOutput1	—	—
9480 to 9489	2508H to 2511H	BACnet communication BinaryOutput 5	Same configuration as BACnet communication BinaryOutput1	—	—
9500 to 9509	251CH to 2525H	BACnet communication BinaryOutput 6	Same configuration as BACnet communication BinaryOutput1	—	—
9520 to 9529	2530H to 2539H	BACnet communication BinaryOutput 7	Same configuration as BACnet communication BinaryOutput1	—	—
9540 to 9549	2544H to 254DH	BACnet communication BinaryOutput 8	Same configuration as BACnet communication BinaryOutput1	—	—
9560 to 9569	2558H to 2561H	BACnet communication BinaryOutput 9	Same configuration as BACnet communication BinaryOutput1	—	—
9580 to 9589	256CH to 2575H	BACnet communication BinaryOutput 10	Same configuration as BACnet communication BinaryOutput1	—	—
9600 to 9609	2580H to 2589H	BACnet communication BinaryOutput 11	Same configuration as BACnet communication BinaryOutput1	—	—
9620 to 9629	2594H to 259DH	BACnet communication BinaryOutput 12	Same configuration as BACnet communication BinaryOutput1	—	—
9640 to 9649	25A8H to 25B1H	BACnet communication BinaryOutput 13	Same configuration as BACnet communication BinaryOutput1	—	—

Buffer memory address		Name		Initial value	Read, write
Decimal	Hexadecimal				
9660 to 9669	25BCH to 25C5H	BACnet communication BinaryOutput 14	Same configuration as BACnet communication BinaryOutput1	—	—
9680 to 9689	25D0H to 25D9H	BACnet communication BinaryOutput 15	Same configuration as BACnet communication BinaryOutput1	—	—
9700 to 9709	25E4H to 25EDH	BACnet communication BinaryOutput 16	Same configuration as BACnet communication BinaryOutput1	—	—
9720, 9721	25F8H, 25F9H	BACnet communication BinaryValue 1	Object ID	0	Read
9722	25FAH		PresentValue	0	Read
9723	25FBH		OutOfService	0	Read, write
9724	25FCH		Reliability	0	Read, write
9725	25FDH		Value set value	0	Read, write
9726	25FEH		Write setting	0	Read, write
9727	25FFH		Write control	0	Read, write
9728	2600H		Update counter	0	Read
9740 to 9748	260CH to 2614H	BACnet communication BinaryValue 2	Same configuration as BACnet communication BinaryValue 1	—	—
9760 to 9768	2620H to 2628H	BACnet communication BinaryValue 3	Same configuration as BACnet communication BinaryValue 1	—	—
9780 to 9788	2634H to 263CH	BACnet communication BinaryValue 4	Same configuration as BACnet communication BinaryValue 1	—	—
9800 to 9808	2648H to 2650H	BACnet communication BinaryValue 5	Same configuration as BACnet communication BinaryValue 1	—	—
9820 to 9828	265CH to 2664H	BACnet communication BinaryValue 6	Same configuration as BACnet communication BinaryValue 1	—	—
9840 to 9848	2670H to 2678H	BACnet communication BinaryValue 7	Same configuration as BACnet communication BinaryValue 1	—	—
9860 to 9868	2684H to 268CH	BACnet communication BinaryValue 8	Same configuration as BACnet communication BinaryValue 1	—	—
9880 to 9888	2698H to 26A0H	BACnet communication BinaryValue 9	Same configuration as BACnet communication BinaryValue 1	—	—
9900 to 9908	26ACH to 26B4H	BACnet communication BinaryValue 10	Same configuration as BACnet communication BinaryValue 1	—	—
9920 to 9928	26C0H to 26C8H	BACnet communication BinaryValue 11	Same configuration as BACnet communication BinaryValue 1	—	—
9940 to 9948	26D4H to 26DCH	BACnet communication BinaryValue 12	Same configuration as BACnet communication BinaryValue 1	—	—
9960 to 9968	26E8H to 26F0H	BACnet communication BinaryValue 13	Same configuration as BACnet communication BinaryValue 1	—	—
9980 to 9988	26FCH to 2704H	BACnet communication BinaryValue 14	Same configuration as BACnet communication BinaryValue 1	—	—
10000 to 10008	2710H to 2718H	BACnet communication BinaryValue 15	Same configuration as BACnet communication BinaryValue 1	—	—
10020 to 10028	2724H to 272CH	BACnet communication BinaryValue 16	Same configuration as BACnet communication BinaryValue 1	—	—
10040, 10041	2738H, 2739H	BACnet communication Multi-state Input 1	Object ID	—	Read
10042, 10043	273AH, 273BH		PresentValue	—	Read, write
10044	273CH		OutOfService	—	Read, write
10045	273DH		Reliability	—	Read, write
10046, 10047	273EH, 273FH		NumberOfStates	—	Read
10060 to 10067	274CH to 2753H	BACnet communication Multi-state Input 2	Same configuration as BACnet communication Multi-state Input 1	—	—
10080 to 10087	2760H to 2767H	BACnet communication Multi-state Input 3	Same configuration as BACnet communication Multi-state Input 1	—	—
10100 to 10107	2774H to 277BH	BACnet communication Multi-state Input 4	Same configuration as BACnet communication Multi-state Input 1	—	—
10120 to 10127	2788H to 278FH	BACnet communication Multi-state Input 5	Same configuration as BACnet communication Multi-state Input 1	—	—

Buffer memory address		Name		Initial value	Read, write
Decimal	Hexadecimal				
10140 to 10147	279CH to 27A3H	BACnet communication Multi-state Input 6	Same configuration as BACnet communication Multi-state Input 1	—	—
10160 to 10167	27B0H to 27B7H	BACnet communication Multi-state Input 7	Same configuration as BACnet communication Multi-state Input 1	—	—
10180 to 10187	27C4H to 27CBH	BACnet communication Multi-state Input 8	Same configuration as BACnet communication Multi-state Input 1	—	—
10200, 10201	27D8H, 27D9H	BACnet communication Multi-state Output 1	Object ID	0	Read
10202, 10203	27DAH, 27DBH		PresentValue	0	Read
10204	27DCH		OutOfService	0	Read, write
10205	27DDH		Reliability	0	Read, write
10206, 10207	27DEH, 27DFH		Value set value	0	Read, write
10208	27E0H		Write setting	0	Read, write
10209	27E1H		Write control	0	Read, write
10210	27E2H		Update counter	0	Read
10212, 10213	27E4H, 27E5H		FeedbackValue	0	Read, write
10214, 10215	27E6H, 27E7H		NumberOfStates	0	Read
10220 to 10230, 10232 to 10235	27ECH to 27F6H, 27F8H to 27FBH	BACnet communication Multi-state Output 2	Same configuration as BACnet communication Multi-state Output 1	—	—
10240 to 10250, 10252 to 10255	2800H to 280AH, 280CH to 280FH	BACnet communication Multi-state Output 3	Same configuration as BACnet communication Multi-state Output 1	—	—
10260 to 10270, 10272 to 10275	2814H to 281EH, 2820H to 2823H	BACnet communication Multi-state Output 4	Same configuration as BACnet communication Multi-state Output 1	—	—
10280 to 10290, 10292 to 10295	2828H to 2832H, 2834H to 2837H	BACnet communication Multi-state Output 5	Same configuration as BACnet communication Multi-state Output 1	—	—
10300 to 10310, 10312 to 10315	283CH to 2846H, 2848H to 284BH	BACnet communication Multi-state Output 6	Same configuration as BACnet communication Multi-state Output 1	—	—
10320 to 10330, 10332 to 10335	2850H to 285AH, 285CH to 285FH	BACnet communication Multi-state Output 7	Same configuration as BACnet communication Multi-state Output 1	—	—
10340 to 10350, 10352 to 10355	2864H to 286EH, 2870H to 2873H	BACnet communication Multi-state Output 8	Same configuration as BACnet communication Multi-state Output 1	—	—

*1 The firmware version of the FX5-ENET is stored. For Ver. 1.000, 1000 is stored.

*2 MAC address written before shipment

Details of buffer memory addresses

The following describes the buffer memory addresses of the FX5-ENET.

For the details of the buffer memory (Un\8500 to Un\10355) of the BACnet function, refer to 📖MELSEC iQ-F FX5 User's Manual (BACnet).

Latest error code

■Latest error code (Un\G29)

The latest error code that has occurred in FX5-ENET is stored. (0 is stored when communications are normal.)

For details on error code, refer to ☞ Page 59 Module error.

Module information

■Module information (Un\G30)

This area stores the module information (69A0H) of FX5-ENET.

Firmware version

■Firmware version (Un\G31)

This area stores the firmware version of FX5-ENET.

Ex.

When firmware version of the FX5-ENET is Ver. 1.000: K1000

Input signals

■Input signals (Un\G34)

These signals are used to check the status of FX5-ENET.

Address	bit	Signal name	Description
Un\G34	b0	Module ready	A signal for checking the status of completion of preparation for operation of FX5-ENET. • On: The module is operable • Off: The module is not operable (in preparation)
	b15	Module error status	A signal for checking the occurrence of error (minor/moderate/major) of FX5-ENET • On: An error has occurred (minor/moderate/major) • Off: No error When the signal is turned on (an error occurs), remove the cause of the error, and turn on 'Module error clear request' (Un\G36.b15). Then, the signal will be turned off.

Output signals

■Output signals (Un\G36)

These signals are used for controlling the FX5-ENET.

Address	bit	Signal name	Description
Un\G36	b15	Module error clear request	Requests to clear the error that has occurred in FX5-ENET. To request to clear the module error, turn off, on and off the signal. Issuing the request after the cause of the error is removed will clear the followings. • 'Module error status' (Un\G34.b15) is turned on and on. • The ERROR LED is turned off. • The following buffer memory - 'Latest error code' (Un\G29) - 'IP address storage area write error code' (Un\G61) - 'IP address storage area clear error code' (Un\G62) - 'Error code' (Un\G108 to Un\G139) - 'Same IP address state storage area' (Un\G201) - 'MAC address of the already connected station' (Un\G202 to Un\G204) - 'MAC address of the station connected later' (Un\G205 to Un\G207)

IP address setting

■IP address setting (Un\G50 to Un\G51)

Stores IP address to be set when using IP address change function.

Stores 0 when writing to IP address storage area is completed normally.

Address	Description
Un\G50	3rd octet, 4th octet
Un\G51	1st octet, 2nd octet

Ex.

When IP address is 192.168.3.250: Un\G50=H03FA, Un\G51=HC0A8

Subnet mask pattern setting

■Subnet mask pattern setting (Un\G52 to Un\G53)

Stores subnet mask pattern to be set when using IP address change function.

Stores 0 when writing to IP address storage area is completed normally.

Address	Description
Un\G52	3rd octet, 4th octet
Un\G53	1st octet, 2nd octet

Ex.

When subnet mask pattern is 255.255.255.0: Un\G52=HFF00, Un\G53=HFFFF

Default router IP address setting

■Default router IP address setting (Un\G54 to Un\G55)

Stores default router IP address to be set when using IP address change function.

Stores 0 when writing to IP address storage area is completed normally.

Address	Description
Un\G54	3rd octet, 4th octet
Un\G55	1st octet, 2nd octet

Ex.

When default router IP address is 192.168.3.255: Un\G54=H03FF, Un\G55=HC0A8

IP address storage area write request

■IP address storage area write request (Un\G56)

Specify whether to write the stored values of 'IP address setting' (Un\G50 to Un\G51), 'Subnet mask pattern setting' (Un\G52 to Un\G53) and 'Default router IP address setting' (Un\G54 to Un\G55) to the IP address storage area.

- 0: Not write
- 1: Write

IP address storage area write status

■IP address storage area write status (Un\G57)

You can confirm whether or not the values are written to the IP address storage area when executing the IP address change function.

Address	bit	Name	Description
Un\G57	b0	IP address storage area write completed	Turns ON when writing to IP address storage area completes or fails. Turns off when 'IP address storage area write request' (Un\G56) is changed from 1 to 0.
	b1	IP address storage area write error	Turns ON when writing to IP address storage area fails. Turns ON if there is a problem in contents of IP address storage area, when power supply of Ethernet moduleis turned from OFF to ON. Turns off when 'IP address storage area write request' (Un\G56) is changed from 1 to 0.

IP address storage area clear request

■IP address storage area clear request (Un\G58)

Specify whether to clear the data in the IP address storage area.

- 0: Not clear
- 1: Clear

IP address storage area clear status

■IP address storage area clear status (Un\G59)

You can confirm whether or not the IP address storage area is cleared.

Address	bit	Name	Description
Un\G59	b0	IP address storage area clear completed	Turns ON when clearing of IP address storage area completes or fails. Turns off when 'IP address storage area clear request' (Un\G58) is changed from 1 to 0.
	b1	IP address storage area clear error	Turns ON when clearing of IP address storage area fails. Turns off when 'IP address storage area clear request' (Un\G58) is changed from 1 to 0.

IP address change function enable flag

■IP address change function enable flag (Un\G60)

You can confirm whether or not the IP address change function is enabled.

- 0: Invalid
- 1: Enable

IP address storage area write error code

■IP address storage area write error code (Un\G61)

Stores error codes if writing to IP address storage area fails.

- 0: Normal (no error)
- 1920H: Values of IP address setting, etc. (Un\G50 to Un\G55) are out of the setting ranges.

IP address storage area clear error code

■IP address storage area clear error code (Un\G62)

Stores error codes if clearing of IP address storage area fails.

- 0: Normal (no error)
- 1921H: 'IP address storage area write request' (Un\G56) and 'IP address storage area clear request' (Un\G58) were simultaneously turned off and on.

IP address

■IP address (Un\G64 to Un\G65)

Stores IP address on the own station set with GX Works3. (☞ Page 29 Basic Setting) The stored values can be changed by the IP address change function.

Address	Description
Un\G64	3rd octet, 4th octet
Un\G65	1st octet, 2nd octet

Ex.

When IP address is 192.168.3.250: Un\G64=H03FA, Un\G65=HC0A8

Point

If the IP address is changed by the IP address change function, priority will be given to the IP address stored by the IP address change function. To enable the set value in GX Works3, clear the IP address storage area.

Subnet mask pattern

■Subnet mask pattern (Un\G74 to Un\G75)

Stores subnet mask pattern on the own station set with GX Works3. (☞ Page 29 Basic Setting) The stored values can be changed by the IP address change function.

Address	Description
Un\G74	3rd octet, 4th octet
Un\G75	1st octet, 2nd octet

Point

If the subnet mask pattern is changed by the IP address change function, priority will be given to the subnet mask pattern stored by the IP address change function. To enable the set value in GX Works3, clear the IP address storage area.

Ex.

When subnet mask pattern is 255.255.255.0: Un\G74=HFF00, Un\G75=HFFFF

Default gateway IP address

■Default gateway IP address (Un\G76 to Un\G77)

Stores default gateway IP address on the own station set with GX Works3. (☞ Page 29 Basic Setting) The stored values can be changed by the IP address change function.

Address	Description
Un\G76	3rd octet, 4th octet
Un\G77	1st octet, 2nd octet

Ex.

When default gateway IP address is 192.168.3.255: Un\G76=H03FF, Un\G77=HC0A8

Point

If the default gateway IP address is changed by the IP address change function, priority will be given to the default gateway IP address stored by the IP address change function. To enable the set value in GX Works3, clear the IP address storage area.

Ethernet address (MAC address)

■Ethernet address (MAC address) (Un\G102 to Un\G104)

Stores Ethernet address (MAC address) on the own station.

Address	Description
Un\G102	Serial ID
Un\G103	Lower one digit of vendor ID, model ID
Un\G104	Upper two digits of vendor ID

Ex.

When MAC address is 00-26-92-60-10-25: Un\G102 = H1025, Un\G103 = H9260, Un\G104 = H0026

Error code

■Error code (Un\G108 to Un\G139)

Stores error code (connection number 1 to 32) of general-purpose Ethernet. (0 is stored when communications are normal.)

For details on error code, refer to ☞ Page 59 Module error.

Address	Description
Un\G108	Stores error code of connection number 1.
Un\G109	Stores error code of connection number 2.
⋮	
Un\G139	Stores error code of connection number 32.

Open completion signal

■Open completion signal (Un\G152 to Un\G153)

Open completion signal for each connection number.

Address	bit	Connection number	Description
Un\G152	b0	Connection number 1	• On: Open completed • Off: Closed or not open
	b1	Connection number 2	
	⋮		
	b15	Connection number 16	
Un\G153	b0 to b15	Connection number 17 to 32	

Open request signal

■Open request signal (Un\G154 to Un\G155)

Open request signal for each connection number of socket communication.

Address	bit	Connection number	Description
Un\G154	b0	Connection number 1	• On: Requesting open • Off: No open request
	b1	Connection number 2	
	⋮		
	b15	Connection number 16	
Un\G155	b0 to b15	Connection number 17 to 32	

Socket communications receive status signal

■Socket communications receive status signal (Un\G156 to Un\G157)

Socket communication receive state signal for each connection number.

Address	bit	Connection number	Description
Un\G156	b0	Connection number 1	• On: Data reception completed • Off: Data not received
	b1	Connection number 2	
	⋮		
	b15	Connection number 16	
Un\G157	b0 to b15	Connection number 17 to 32	

Initial status

■Initial status (Un\G158)

You can confirm whether or not FX5-ENET has been initialized.

Address	bit	Name	Description
Un\G158	b0	Initial normal completion status	Turns on when the initialization is normally completed.
	b1	Initial abnormal completion status	Turns on when the initialization is abnormally completed.

Initial error code

■Initial error code (Un\G159)

The error codes that occur during initialization of FX5-ENET are stored. (0 is stored when communications are normal.)

For details on error code, refer to ☞ Page 59 Module error.

Same IP address state storage area

■Same IP address state storage area (Un\G201)

Same IP address state is stored.

Address	bit	Name	Description
Un\G201	b0	Same IP address detection flag	Turns ON if there is a same IP address.

MAC address of the already connected station

■MAC address of the already connected station (Un\G202 to Un\G204)

Stores the MAC address of the station, which was connected to the network earlier, in the station with duplicated IP address.

Address	Description
Un\G202	Serial ID
Un\G203	Lower one digit of vendor ID, model ID
Un\G204	Upper two digits of vendor ID

Ex.

When MAC address is 00-26-92-60-10-25: Un\G202 = H1025, Un\G203 = H9260, Un\G204 = H0026

"FFFFFFFFFFFFH" is stored in the station that has been already connected to the network.

MAC address of the station connected later

■MAC address of the station connected later (Un\G205 to Un\G207)

Stores the MAC address of the station with duplicated IP address in the station which was connected earlier to the network.

Address	Description
Un\G205	Serial ID
Un\G206	Lower one digit of vendor ID, model ID
Un\G207	Upper two digits of vendor ID

Ex.

When MAC address is 00-26-92-60-10-25: Un\G205 = H1025, Un\G206 = H9260, Un\G207 = H0026

"FFFFFFFFFFFFH" is stored in the station with duplicated IP address.

"Communication start at request" request

■"Communication start at request" request (Un\G300, Un\G301)

When the communication setting is "requested," start of data transmission in the simple CPU communication is requested.

Address	bit	Setting No.	Description
Un\G300	b0	Setting No.1	• ON: Requested • OFF: Not requested
	b1	Setting No.2	
	⋮		
	b15	Setting No.16	
Un\G301	b0 to b15	Setting No.17 to 32	

Periodic communication stop request

■Periodic communication stop request (Un\G304, Un\G305)

When the communication setting is "Fixed," stop of data transmission in the simple CPU communication is requested.

Address	bit	Setting No.	Description
Un\G304	b0	Setting No.1	• ON: Requested • OFF: Not requested
	b1	Setting No.2	
	⋮		
	b15	Setting No.16	
Un\G305	b0 to b15	Setting No.17 to 32	

Periodic communication restart request

■Periodic communication restart request (Un\G308, Un\G309)

When the communication setting is "Fixed," restart of data transmission in the simple CPU communication is requested.

Address	bit	Setting No.	Description
Un\G308	b0	Setting No.1	• ON: Requested • OFF: Not requested
	b1	Setting No.2	
	⋮		
	b15	Setting No.16	
Un\G309	b0 to b15	Setting No.17 to 32	

Execution Status flag

■Execution Status flag (Un\G312, Un\G313)

The data transmission/reception status of the simple CPU communication is stored.

Address	bit	Setting No.	Description
Un\G312	b0	Setting No.1	• ON: During execution • OFF: Unexecuted
	b1	Setting No.2	
	⋮		
	b15	Setting No.16	
Un\G313	b0 to b15	Setting No.17 to 32	

Ready

■Ready (Un\G316, Un\G317)

The preparation completion status of the simple CPU communication is stored.

Address	bit	Setting No.	Description
Un\G316	b0	Setting No.1	• ON: Ready • OFF: Not ready
	b1	Setting No.2	
	⋮		
	b15	Setting No.16	
Un\G317	b0 to b15	Setting No.17 to 32	

Simple CPU communication status

■Simple CPU communication status (Un\G352 to Un\G383)

The simple CPU communication status is stored..

Address	Setting No.	Description
Un\G352	Setting No.1	• 0H: Unset • 1H: Preparing • 2H: Waiting for request • 3H: Communicating • 4H: Communication stop • 5H: Retry being executed • 6H: Monitoring • AH: Communications impossible
Un\G353	Setting No.2	
⋮		
Un\G382	Setting No.31	
Un\G383	Setting No.32	

Simple CPU error code

■Simple CPU error code (Un\G416 to Un\G447)

The cause (CFB0H to CFBFH) of the error detected in the simple CPU communication is stored. For the details of the error codes, refer to ☞ Page 64 Ethernet communication error.

Address	Description
Un\G416	The error code of the setting No.1 is stored.
Un\G417	The error code of the setting No.2 is stored.
⋮	
Un\G447	The error code of the setting No.32 is stored.

Abnormal response code

■Abnormal response code (Un\G480 to Un\G511)

The abnormal response code detected in the simple CPU communication is stored.

Address	Description
Un\G480	The abnormal response code of the setting No.1 is stored.
Un\G481	The abnormal response code of the setting No.2 is stored.
⋮	
Un\G511	The abnormal response code of the setting No.32 is stored.

Execution interval (current value)

■Execution interval (current value) (Un\G544 to Un\G575)

The execution interval of the simple CPU is stored.

Address	Description
Un\G544	The execution interval of the setting No.1 is stored.
Un\G545	The execution interval of the setting No.2 is stored.
⋮	
Un\G575	The execution interval of the setting No.32 is stored.

Remote input (RX)

■Remote input (RX) (Un\G1000 to Un\G1127)

Stores the input data (bit unit) sent from the slave station to the master station (FX5-ENET) with cyclic transmission.

Address	bit	Remote input	Description
Un\G1000	b0	RX0	• On: Remote input is turned on. • Off: Remote input is turned off.
	b1	RX1	
	⋮		
	b15	RXF	
⋮			
Un\G1127	b0 to b15	RX7F0 to RX7FF	

Remote output (RY)

■Remote output (RY) (Un\G1256 to Un\G1383)

Set the output data (bit unit) to be sent from the master station (FX5-ENET) to the slave station with cyclic transmission.

Address	bit	Remote output	Description
Un\G1256	b0	RY0	• On: Remote output is turned on. • Off: Remote output is turned off.
	b1	RY1	
	⋮		
	b15	RYF	
⋮			
Un\G1383	b0 to b15	RY7F0 to RY7FF	

Remote register (RWr)

■Remote register (RWr) (Un\G2000 to Un\G3023)

Stores the input data (word unit) sent from the slave station to the master station (FX5-ENET) with cyclic transmission.

Address	Remote register	Description
Un\G2000	RWr0	0 to 32768
Un\G2001	RWr1	
⋮		
Un\G3023	RWr3FF	

Remote register (RWw)

■Remote register (RWw) (Un\G3024 to Un\G4047)

Set the output data (word unit) to be sent from the master station (FX5-ENET) to the slave station with cyclic transmission.

Address	Remote register	Description
Un\G3024	RWw0	0 to 32768
Un\G3025	RWw1	
⋮		
Un\G4047	RWw3FF	

Cyclic transmission status of each station

■Cyclic transmission status of each station (Un\G4100 to Un\G4101)

Stores the slave station cyclic transmission state for each station No.

Address	bit	Station number	Description
Un\G4100	b0	1 station	• On: Being performed • Off: Not performed
	b1	2 station	
	⋮		
	b15	16 station	
Un\G4101	b0 to b15	17 to 32 station	

Point

- Only the bit of the start station number turns on.
- The status is not stored for the reserved stations and the station numbers after the maximum station number.
- Use this buffer memory as an interlock for cyclic transmission. (☞ Page 41 Interlock Programs of Cyclic Transmission)

Data link status of each station

■Data link status of each station (Un\G4104 to Un\G4105)

Stores the slave station data link status for each station No.

Address	bit	Station number	Description
Un\G4104	b0	1 station	• On: Faulty station • Off: Normally operating station
	b1	2 station	
	⋮		
	b15	16 station	
Un\G4105	b0 to b15	17 to 32 station	

*1 This status includes the case where a slave station has not responded to the first request from the master station due to a power-off of the slave station. (The slave station is not judged as a faulty station because the data link status is not determined.)

Point

- Only the bit of the start station number turns on.
- The status is not stored for the reserved stations and the station numbers after the maximum station number.
- This buffer memory can be used to monitor errors in slave stations, connected cables, and a connected hub.

Total number of connected stations

■Total number of connected stations (Un\G4112)

The total number of connected stations set in GX Works3 is stored. (☞ Page 31)

Reserved station specification status of each station

■Reserved station specification status of each station (Un\G4113 to Un\G4114)

Stores the setting state of the reserved station set with GX Works3. (☞ Page 31)

Address	bit	Station number	Description
Un\G4113	b0	1 station	• On: Reserved station • Off: Other than reserved station
	b1	2 station	
	b2	3 station	
	⋮		
	b15	16 station	
Un\G4114	b0 to b15	17 to 32 station	

Point

- Only the bit of the start station number turns on.
- The status is not stored for the reserved stations and the station numbers after the maximum station number.

Link scan information (group number 1)

■Link scan information (group number 1) (Un\G4117 to Un\G4119)

Link scan information of group number 1 is stored.

Address	Name	Description
Un\G4117	Maximum link scan time (Unit: ms)	The maximum link scan time value during cyclic transmission is stored. (Unit: ms)
Un\G4118	Minimum link scan time (Unit: ms)	The minimum link scan time value during cyclic transmission is stored. (Unit: ms)
Un\G4119	Current link scan time (Unit: ms)	The current link scan time value during cyclic transmission is stored. (Unit: ms)

Link scan information (group number 2)

■Link scan information (group number 2) (Un\G4121 to Un\G4123)

Link scan information of group number 2 is stored.

Address	Name	Description
Un\G4121	Maximum link scan time (Unit: ms)	The maximum link scan time value during cyclic transmission is stored. (Unit: ms)
Un\G4122	Minimum link scan time (Unit: ms)	The minimum link scan time value during cyclic transmission is stored. (Unit: ms)
Un\G4123	Current link scan time (Unit: ms)	The current link scan time value during cyclic transmission is stored. (Unit: ms)

Diagnostic request information

■Diagnostic request information (Un\G4127)

Specify a slave station number whose diagnostic information (Un\G4129 to Un\G4159) is to be displayed.

- 0: Not Set
- 1 to 32: Displays the diagnostic information for the specified station No.

Diagnostic information status flag

■Diagnostic information status flag (Un\G4128)

After the END instruction of the scan where the bit 0 of 'Diagnostic information display request' (Un\G4162) is turned off and on is executed, the status (valid or invalid) of diagnostic information (Diagnostic information 1, Diagnostic information 2) of the slave station specified in 'Diagnostic request information' (Un\G4127) is stored.

Address	bit	Name	Description
Un\G4128	b0 to b7	Diagnostic information 1	• On: Valid • Off: Invalid
	b8 to b15	Diagnostic information 2	

The valid/invalid conditions are given below.

- If the station number of the slave station that is specified in 'Diagnostic request information' (Un\G4127) is the start station number of the occupied stations and the cyclic transmission is performed for the slave station, 1 is stored in b0 to b7 and b8 to b15. (If the specified slave station is a reserved station, 0 is stored in b8 to b15.)
- If the station number of the slave station that is specified in 'Diagnostic request information' (Un\G4127) is other than the start station number of the occupied stations or the cyclic transmission is not performed for the slave station, 0 is stored in b0 to b7 and b8 to b15.
- When b0 to b7 are valid, the number of occupied stations, group number, IP address, the accumulated number of timeouts, and the accumulated number of disconnection detection are stored in 'Diagnostic information 1' (Un\G4129 to Un\G4143). When invalid, 0 is stored in 'Diagnostic information 1' (Un\G4129 to Un\G4143).
- When b8 to b15 are valid, the Manufacturer code, model code, device version, module information, error code, and detailed module information are stored in 'Diagnostic information 2' (Un\G4144 to Un\G4159). When invalid, 0 is stored in 'Diagnostic information 2' (Un\G4144 to Un\G4159).

Diagnostic information 1

■Diagnostic information 1 (Un\G4129 to Un\G4143)

When 1 (valid) is stored in b0 to b7 of 'Diagnostic information status flag' (Un\G4128), the number of occupied stations, group number, IP address, the accumulated number of timeouts, and the accumulated number of disconnection detection are stored.

When 0 (invalid) is stored in b0 to b7 of 'Diagnostic information status flag' (Un\G4128), 0 is stored.

Address	Name	Description
Un\G4129	Number of occupied stations	Number of occupied stations in a slave station specified is stored.
Un\G4130	Group number*1	Group number in a slave station specified is stored.
Un\G4131	IP address*1	IP address (3rd octet, 4th octet) in a slave station specified is stored.*2
Un\G4132		IP address (1st octet, 2nd octet) in a slave station specified is stored.*2
Un\G4133 to Un\G4138	System area	—
Un\G4139	Accumulated number of timeouts	After the END instruction of the scan where the bit 0 of 'Diagnostic information display request' (Un\G4162) is turned off and on is executed, the accumulated number of timeouts that occurred in a slave station specified in 'Diagnostic request information' (Un\G4127) is stored. • 0: No timeouts • 1 to 65535: Number of timeouts (accumulated number)*3
Un\G4140	Accumulated number of disconnection detection	After the END instruction of the scan where the bit 0 of 'Diagnostic information display request' (Un\G4162) is turned off and on is executed, the accumulated number of disconnections that detected in a slave station specified in 'Diagnostic request information' (Un\G4127) is stored. • 0: No disconnections • 1 to 65535: Number of disconnection detection (accumulated number)*3
Un\G4141 to Un\G4143	System area	—

*1 The value set with GX Works3 is stored. (☞ Page 31)

*2 When the IP address has not been set in the parameter, 0 is stored.

*3 When the count exceeds 65535, counting is continued from 1 again.

Point

If the slave station specified with 'Diagnostic request information' (Un\G4127)" is disconnected, the information current just before the disconnection is stored.

Diagnostic information 2

■Diagnostic information 2 (Un\G4144 to Un\G4159)

When Diagnostic information 2 is valid (1 is stored in b8 to b15 of 'Diagnostic information status flag' (Un\G4128)), the manufacturer code, model code, device version, module information, error code, and detailed module information are stored.
When Diagnostic information 2 is invalid (0 is stored in b8 to b15 of 'Diagnostic information status flag' (Un\G4128)), 0 is stored.

Address	Name	Description
Un\G4144	Manufacturer code	Manufacturer code of a slave station specified is stored.
Un\G4145	System area	—
Un\G4146	Model code	Model code (lower) of a slave station specified is stored.
Un\G4147		Model code (upper) of a slave station specified is stored.
Un\G4148	Device version	Device version of a slave station specified is stored.
Un\G4149	System area	—
Un\G4150	Own station module information	Module information of a slave station specified is stored.
Un\G4151	Error code	Latest error code of a slave station specified is stored.
Un\G4152	Detailed module information	Detailed module information (lower) of a slave station specified is stored.
Un\G4153		Detailed module information (upper) of a slave station specified is stored.
Un\G4154 to Un\G4159	System area	—

Point

If the slave station specified with 'Diagnostic request information' (Un\G4127)" is disconnected, the information current just before the disconnection is stored.

CCIEF Basic each status

■CCIEF Basic each status (Un\G4160)

Each status of CC-Link IE Field Network Basic is stored.

Address	bit	Name	Description
Un\G4160	b0	Cyclic transmission status	This register turns ON when initial process is completed. Turns OFF when the cyclic transmission is stopped because of an error, etc. • Off: Not performed • On: Being performed
	b1	Data link status	This register turns ON when the 'Data link status of each station' (Un\G4104 to Un\G4105) is ON for even one station. • Off: All stations normal • On: One or more faulty stations
	b2	Reserved station specification status	This register turns ON when the 'Reserved station specification status' (Un\G4113 to Un\G4114) is ON for even one station. • Off: Not designated • On: Designated

Diagnostic information display request

■Diagnostic information display request (Un\G4162)

Reads the diagnostic information of the slave station that is specified by the 'Diagnostic request information' (Un\G4127) is read to Un\G4128 to Un\G4159 after execution of the END instruction of the scan where bit 0 turns OFF and ON.
0 is stored if the setting of the diagnostic information is completed during the END process.

Address	bit	Name	Description
Un\G4162	b0	Diagnostic information display request	• Off: Diagnostic information display not requested • On: Diagnostic information display request

Diagnostic information display request execution status

■Diagnostic information display request execution status (Un\G4163)

Stores the execution status of the diagnostic information display following the 'Diagnostic information display request' (Un\G4162).

- 0: Diagnostic information display not requested
- 1: Diagnostic information display requested
- 2: Diagnostic information display completed

Area for simple CPU communication

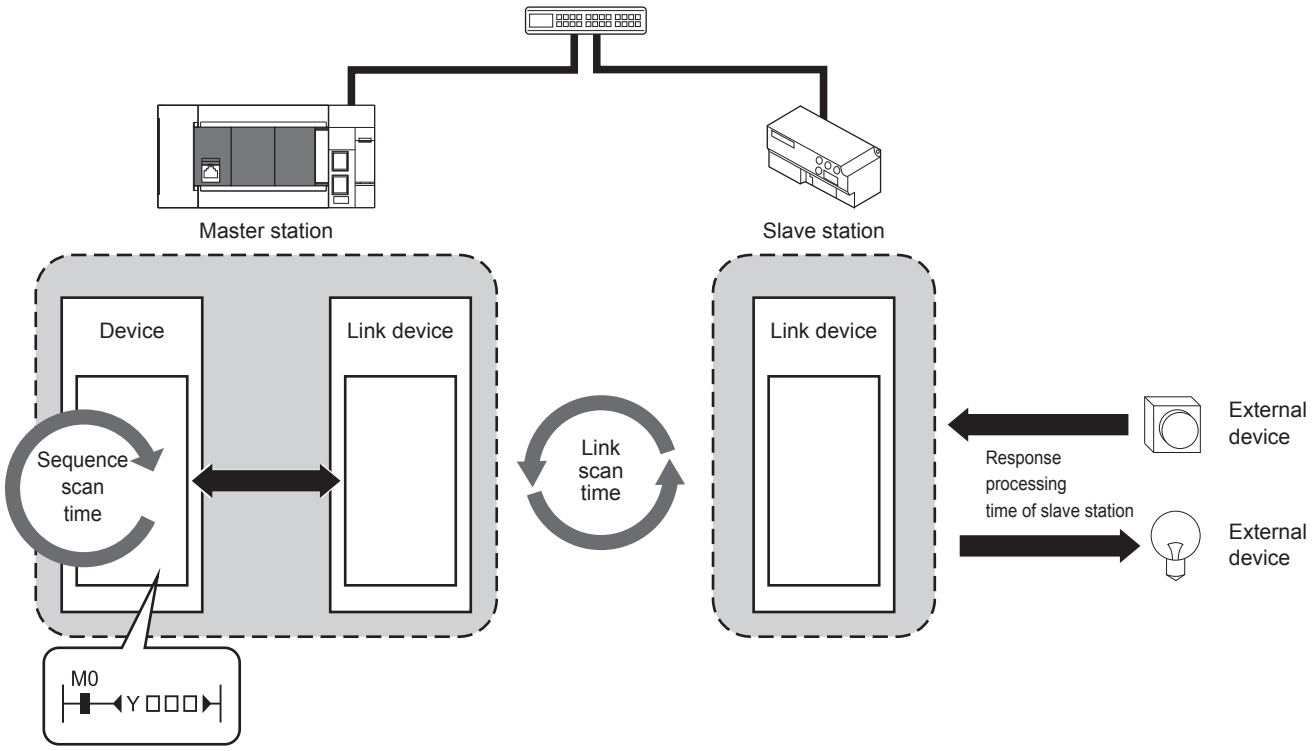
■Area for simple CPU communication (Un\G6400 to Un\G8447)

Usable as a device that can be specified for the own station in the simple CPU communication. (Word device in units of 1 point)

Appendix 5 Processing Time

The processing time of CC-Link IE Field Network Basic consists of the time components below.

Sequence scan time + Link scan time + Slave station response processing time = Transmission delay time



For scan time, refer to MELSEC iQ-F FX5 User's Manual (Application).

For slave station response processing time, refer to manual for the slave station used.

For transmission delay time, refer to Page 96 Transmission delay time.

Transmission delay time

A transmission delay time includes an input transmission delay time and an output transmission delay time.

Input transmission delay time

The input transmission delay time means the following.

- Time between when a signal (RX) is input to the slave station and when a device of the master station turns on or off
- Time between data (RWr) is input to the slave station and when the data is stored in a device of the master station

The formula for calculating the input transmission delay time (maximum) is shown below.

Input transmission delay time (maximum) = SM + Ls + SS (ms)

SM: Sequence scan time (ms)
Ls: Link scan time (ms)
SS: Processing time required for the slave station to reflect the input (ms) (Refer to the manual for the slave station used.)

Output transmission delay time

The output transmission delay time means the following.

- Time between when a device of the master station turns on or off and when the output (RY) of the slave station turns on or off
- Time between when data is set to a device of the master station and when the data (RWw) is output to the slave station

The formula for calculating the output transmission delay time (maximum) is shown below.

Output transmission delay time (maximum) = SM + Ls + SS (ms)

SM: Sequence scan time (ms)
Ls: Link scan time (ms)
SS: Processing time required for the slave station to reflect the output (ms) (Refer to the manual for the slave station used.)

Appendix 6 Software Licenses and Copyrights

This section describes the licenses and copyrights of software used in this product.

MD5 Message-Digest Algorithm

This product includes code that was developed by RSA Data Security, Inc.
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Appendix 7 Added and Changed Functions

This appendix shows the functions added to FX5-ENET and engineering tool or changed functions, the firmware versions of the appropriate FX5-ENET and CPU module and the software version of the engineering tool.

The firmware version of the FX5-ENET can be found in the buffer memory. (☞ Page 81 Firmware version)

The firmware version of the CPU module can be confirmed by module diagnosis (CPU diagnosis). For the module diagnosis (CPU diagnosis), refer to the following manual.

📖MELSEC iQ-F FX5UJ User's Manual (Hardware)

📖MELSEC iQ-F FX5U User's Manual (Hardware)

📖MELSEC iQ-F FX5UC User's Manual (Hardware)

For the software version, refer to 📖GX Works3 Operating Manual.

FX5UJ CPU module

Add/Change Function	Applicable versions			Reference
	Firmware version of the CPU module	Firmware version of the FX5-ENET	Software version of the engineering tool	
MELSOFT connection	“1.010” and above	“1.100” and above	“1.075D” and above	MELSEC iQ-F FX5 User's Manual (Ethernet Communication)
SLMP communication types	“1.010” and above	“1.100” and above	“1.075D” and above	MELSEC iQ-F FX5 User's Manual (Ethernet Communication)
Simple CPU communication function	“1.010” and above	“1.100” and above	“1.075D” and above	MELSEC iQ-F FX5 User's Manual (Ethernet Communication)
BACnet function	“1.010” and above	“1.100” and above	“1.075D” and above	MELSEC iQ-F FX5 User's Manual (BACnet)

FX5U/FX5UC CPU module

Add/Change Function	Applicable versions			Reference
	Firmware version of the CPU module	Firmware version of the FX5-ENET	Software version of the engineering tool	
Firmware update function	“1.240” and above	“1.003“ and above	“1.075D” and above	MELSEC iQ-F FX5 User's Manual (Application)
MELSOFT connection	“1.240” and above	“1.100” and above	“1.075D” and above	MELSEC iQ-F FX5 User's Manual (Ethernet Communication)
SLMP communication types	“1.240” and above	“1.100” and above	“1.075D” and above	MELSEC iQ-F FX5 User's Manual (Ethernet Communication)
Simple CPU communication function	“1.240” and above	“1.100” and above	“1.075D” and above	MELSEC iQ-F FX5 User's Manual (Ethernet Communication)
BACnet function	“1.240” and above	“1.100” and above	“1.075D” and above	MELSEC iQ-F FX5 User's Manual (BACnet)

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REVISIONS

Revision date	Revision	Description
October 2018	A	First Edition
October 2019	B	■Added models FX5UJ CPU module ■Added or modified parts RELEVANT MANUALS, TERMS, Section 2.3, Chapter 3,Section 7.2, Section 7.3, Section 7.4, Appendix 1, TRADEMARKS
August 2020	C	■Added or modified parts SAFETY PRECAUTIONS, WARRANTY
April 2021	D	■Added functions Firmware update function, MELSOFT connection, SLMP communication function, Simple CPU communication function, BACnet function ■Added or modified parts RELEVANT MANUALS, TERMS, Chapter 1, Section 2.3, Chapter 3, Section 4.2, 4.3, 7.3, 7.4, 8.1, 9.6, 9.7, Appendix 2, 4, 6, TRADEMARKS
December 2021	E	■Added or modified parts RELEVANT MANUALS, TERMS, GENERIC TERMS AND ABBREVIATIONS, Appendix 6, 7

Japanese manual number: SH-082024-E

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company. However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
   1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
   2. Failure caused by unapproved modifications, etc., to the product by the user.
   3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
   4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
   5. Relay failure or output contact failure caused by usage beyond the specified life of contact (cycles).
   6. Failure caused by external irresistible forces such as fires or abnormal voltages, and failure caused by force majeure such as earthquakes, lightning, wind and water damage.
   7. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
   8. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi MELSEC programmable controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi programmable controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for railway companies or public service purposes shall be excluded from the programmable controller applications.
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable controller range of applications.
However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the user's discretion.

(3) Mitsubishi shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

TRADEMARKS

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