CC-Link IE Field Network
Network Camera Interface Module

Model

# ECLEF-NV1G-02/-04/-08/-16

User's Manual
(Hardware Edition)


CC-Link IE Field

Onvif

| Model | ECLEF-NV1G-xx |
|---|---|
| | 50CM-D180205-F (2209) MEE |


MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED
HEAD OFFICE: HULIC KUDAN BUILDING. 1-13-5, KUDANKITA CHIYODA-KU, TOKYO 102-8404, JAPAN
NAGOYAENGINEERINGOFFICE: 139, SHIMOYASHIKICHO-SHIMOYASHIKI, KASUGAI, AICHI 486-0906, JAPAN


## ● SAFETY PRECAUTIONS ●

**(Always read these precautions prior to use.)**

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.
The precautions given in this manual are concerned with this product only.
For the safety precautions of the programmable controller system, refer to the user's manual for the CPU module used.
If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
In this manual, the safety precautions are classified into two levels:
"⚠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 medium or minor injury and/or property damage. |

Under some circumstances, failure to observe the precautions given under "⚠CAUTION" may lead to serious consequences. Observe the precautions of both levels because they are important for personal and system safety. Please keep this manual in an easy-to-access location for future reference, and be sure to deliver the manual to the end user.

**[Design Precautions]**

**⚠WARNING**

- In the case of a communication failure in the network, data in the master module are held. Check Data link status (each station) (SW00B0 to SW00B7) and configure an interlock circuit in the program to ensure that the entire system will operate safely.
- Do not use any "use prohibited" signals as a remote input or output signal. These signals are reserved for system use. Do not write any data to the "use prohibited" area in the remote register. If these operations are performed, correct operation of the module cannot be guaranteed.

**⚠CAUTION**

- Do not install the communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- When storing the product, be sure to observe the defined storage ambient temperature and humidity. Failure to do so will lead to module malfunction and failure.

**[Installation Precautions]**

**⚠WARNING**

- Shut off the external power supply (all phases) used in the system before mounting or removing a module. Failure to do so may result in electric shock or cause the module to fail or malfunction.

**⚠CAUTION**

- Use the module in an environment that meets the general specifications in this manual. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- Do not directly touch any conductive parts and electronic components of the module. Doing so can cause malfunction or failure of the module.
- Securely fix the module with a DIN rail.
- Securely connect the cable connectors. Poor contact may cause malfunction.

**[Wiring Precautions]**

**⚠WARNING**

- Shut off the external power supply (all phases) used in the system before wiring. Failure to do so may result in electric shock or cause the module to fail or malfunction.

**⚠CAUTION**

- Individually ground the FG terminal of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.
- Check the rated voltage and terminal layout before wiring to the module, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- When connecting a cable, first verify the connection interface type and then connect the cable properly. Connecting a cable to a wrong interface or miswiring a cable results in the risk of module and external device malfunction.
- Tighten the terminal screws within the specified torque range. Undertightening can cause short circuit, fire, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, fire, or malfunction.
- Use a bar solderless terminal for wiring to a module power source/FG. If a stripped wire is inserted into a wire insertion opening, the wire cannot be securely clamped.
- Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, failure, or malfunction.
- Place the cables in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the module or cables or malfunction due to poor contact.
- Do not install communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- When disconnecting the cable from the module, do not pull the cable by the cable part. For communication cable, hold the connector part of the cable. For power source/FG cable, push in the open/close button with a flathead screwdriver. With the button pushed in, pull out the wire having a bar solderless terminal. Pulling the cable connected to the module may result in malfunction or damage to the module or cable.
- Do not connect the power supply in reverse. Doing so results in risk of failure.
- Our modules must be installed in control panels. Wiring and replacement of a module must be performed by qualified maintenance personnel with knowledge of protection against electric shock. For wiring methods, refer to "WIRING" in this manual.

**[Startup and Maintenance Precautions]**

**⚠WARNING**

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
- Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal block screws or connector screws. Failure to do so may cause the module to fail or malfunction.

**⚠CAUTION**

- Do not disassemble or modify the module. Doing so may cause failure, malfunction, injury, or a fire.
- Do not drop or apply strong shock to the module. Doing so may damage the module.
- When using the product, be sure to observe the defined ambient temperature and humidity. Failure to do so results in the risk of module failure and malfunction.
- Shut off the external power supply (all phases) used in the system before mounting or removing a module. Failure to do so may cause the module to fail or malfunction.
- After the first use of the product (spring clamp terminal block), the number of connections/disconnections is limited to 50 times (IEC 61131-2 compliant).
- Do not touch any connectors when the module is powered. Doing so results in the risk of module malfunction caused by the static electricity in your body.
- Before handling the module or the cable to be connected to the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the module to fail or malfunction.
- This product cannot be used as a detector for physical protection. Erroneous output or malfunction may result in an accident.
- In the unlikely event that you feel something is wrong with the product, stop using the product immediately, turn off the power supply, and consult with our service center or representative. Continued use as is results in the risk of module failure and malfunction.
- Do not insert water or wire through the gaps of the case. Doing so results in the risk of fire or electric shock.
- Do not use the product in locations where chemical products and oil are scattered. Doing so results in the risk of module failure and malfunction.
- When cleaning, do not use thinner, benzene, acetone, kerosene, or the like. Doing so results in the risk of module damage.
- Startup and maintenance of a control panel must be performed by qualified maintenance personnel with knowledge of protection against electric shock. Lock the control panel so that only qualified maintenance personnel can operate it.

**[DISPOSAL PRECAUTIONS]**

**⚠WARNING**

- When disposing of this product, treat it as industrial waste.

### Product Application

(1) This Mitsubishi Electric Engineering Company Limited (hereinafter referred to as "MEE") product shall be used in applications that will not lead to a major accident even in the unlikely event any failure or defect should occur in the product in which this Mitsubishi product is incorporated, and shall be systematically provided with external backup and fail-safe functions that operate in the event of any failure or defect.

(2) This Mitsubishi product has been designed and manufactured as a general purpose product for general industry applications and the like.
Thus, the product shall be excluded from use in special equipment, system, and other applications such as those listed below. If used in such applications, Mitsubishi shall not bear any responsibility whatsoever for the quality, performance, and safety of the Mitsubishi product (including but not limited to non-performance of main obligation, defect liability, quality assurance liability,
tort liability, and product liability):
- Applications in which the public could be greatly affected such as the applications of the nuclear and other power plants operated by the respective power companies
- Applications in which a special quality assurance system is required, such as the applications of railway companies or government or other public offices
- Use in aircraft, medical applications, railway applications, incineration and fuel devices, passenger vehicles, manned transport devices, equipment for recreation and amusement, and safety devices, in which human life or assets could be greatly affected

Note that such an application of the Mitsubishi product may be permitted as determined by Mitsubishi if the user accepts that the application is to be limited and a special quality is not to be required (a quality that exceeds the general specifications). For details, please consult with Mitsubishi.

### Manuals

The details of this product are described in the following optional manuals.
Please thoroughly understand the functions and performance of this product for proper use.
Pdf file of the manual is stored in CD-R included with this product.

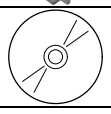
**Detailed manuals**

| Manual Title | Manual Number | Standard Price |
|---|---|---|
| ECLEF-NV1G-02/-04/-08/-16 User's Manual (Detailed Edition) Japanese | 50CM-D180206 | ¥4,000 |

## 1. OVERVIEW

This manual describes the specification, names of parts, installation, wiring connection for ECLEF-NV1G-02/-04/-08/-16 (hereinafter "Camera I/F Module") which is used as an intelligent device station for CC-Link IE Field Network.

Once you have opened the product package, verify that the package contains the following.

| Item | | Aspect | Qty. |
|---|---|---|---|
| Network Camera Interface Module (ECLEF-NV1G-02/-04/-08/-16) | |  | 1 |
| | Connector for module power source/FG (Mounted on Camera I/F Module) |  | 1 |
| | Dustproof cover for USB connector (Mounted on Camera I/F Module) |  | 1 |
| CD-R | Network Camera Interface Module Configuration Tool (ECLEF-NV1G-W1C)<br>USB Device Driver (for Windows)<br>User's Manual (Hardware Edition) PDF file<br>User's Manual (Detailed Edition) PDF file<br>Control and Communication System Profile (CSP+) |  | 1 |
| Instruction Manual for Network Camera Interface Module Configuration Tool | | — | 1 |
| Licensing Consent Form | | — | 1 |
| User's Manual (Hardware Edition) *This manual | | — | 1 |

## 2. GENERAL SPECIFICATION

| Item | Specifications | | | | | |
|---|---|---|---|---|---|---|
| Operating ambient temperature | 0 to 55 °C | | | | | |
| Storage ambient temperature | -25 to 75 °C | | | | | |
| Operating ambient humidity | 5 to 95 %RH, non-condensing | | | | | |
| Storage ambient humidity | | | | | | |
| Vibration resistance | JIS B 3502 and IEC 61131-2 compliant | | Frequency | Acceleration | Amplitude | Sweep Count |
| | | With intermittent vibration | 5 to 8.4Hz | — | 3.5mm | 10 times each in X, Y, Z directions |
| | | | 8.4 to 150Hz | 9.8m/s² | — | |
| | | With continual vibration | 5 to 8.4Hz | — | 1.75mm | — |
| | | | 8.4 to 150Hz | 4.9m/s² | — | |
| Shock resistance | JIS B 3502 and IEC 61131-2 compliant (147m/s²; 3 times each in X, Y, and Z directions) | | | | | |
| Operating environment | Free of corrosive gasses | | | | | |
| Operating altitude (*1) | 0 to 2000m | | | | | |
| Installation location | Use a DIN rail and within an enclosure (*2) | | | | | |
| Overvoltage category (*3) | II | | | | | |
| Pollution degree (*4) | 2 | | | | | |

(*1) Do not use or store Camera I/F Module under pressure higher than the atmospheric pressure of altitude 0m. Doing so may cause malfunction.
(*2) The enclosure is suitably designed for those specific environmental conditions, as applicable, and enclosure rate meets IP20 and minimum type 1 of UL 50.
(*3) This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within the premises. Category II applies to equipment for which electrical power is supplied from fixed facilities.
The surge voltage withstand level for up to the rated voltage of 300V is 2500V.
(*4) This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used.
Pollution degree 2 is when only non-conductive pollution occurs.
A temporary conductivity caused by condensing must be expected occasionally.

## 3. PERFORMANCE SPECIFICATIONS

**(1) Hardware**

| Item | | | Specifications |
|---|---|---|---|
| Protection degree | | | IP2X |
| External connection | CC-Link IE Field Network side | Connector | RJ-45 connector |
| | | Cable | Ethernet cable that meets the specifications of 1000BASE-T Straight cable in Category 5e or higher (with a double shield, STP) |
| | | Topology (*1) | ・Star topology<br>・Line topology (Only Camera I/F Module is End stations) |
| | Power supply | Connector | Spring clamp terminal block |
| | | Cable | Applicable wire size: Core 0.3 to 2.5mm² (22 to 14AWG)<br>Terminal slot size: 2.8mm x 2.0mm (*2) |
| | Ethernet/ONVIF Network side | Connector | RJ-45 connector |
| | | Cable | Ethernet cable that meets the specifications of 1000BASE-T Straight cable in Category 5e or higher (with a double shield, STP) |
| Applicable DIN rail | | | TH35-7.5Fe, TH35-7.5AI (compliant with IEC 60715) |
| Noise immunity | | | Noise voltage 500Vp-p, noise width 1us, noise frequency 25 to 60Hz (DC type noise simulator condition) |
| Withstand voltage | | | 500VDC for 1 minute between all DC external terminals and the ground |
| Insulation resistance | | | 10Mohms or higher between all DC external terminals and ground (500VDC insulation resistance tester) |
| Rated input power supply | | Voltage | 24VDC (Allowable voltage range: 20.4 to 28.8VDC) (ripple rate: 5% or less) |
| | | Current | 0.16A MAX. (for 24VDC) |
| Outer dimensions | | Height | 70mm (*3) |
| | | Width | 180mm |
| | | Depth | 50mm (*3) |
| Weight | | | 0.35kg (Including the Spring clamp terminal block) |

(*1) Ring topology is not supported. (Due to Camera I/F Module has One port only.)
(*2) The following table lists recommended bar solderless terminals.
Only one wire can be connected to a terminal of the terminal block for module power supply and FG. Multiple wires cannot be connected to a terminal. Connecting two or more wires may cause a poor contact.
(*3) Refer to "EXTERNAL DIMENSIONS" in this manual.

| Item | Model | Applicable wire size | Bar solderless terminal tool | Manufacturer |
|---|---|---|---|---|
| Applicable solderless terminal | TE 0.5-8, TE 0.5-10 | 0.3 to 0.5mm² | NH79 | NICHIFU Co., Ltd. |
| | TE 0.75-8, TE 0.75-10 | 0.75mm² | | |
| | TE 1.0-8, TE 1.0-10 | 1.0mm² | | |
| | TE 1.5-8, TE 1.5-10 | 1.5mm² | | |
| | TE 2.5-8, TE 2.5-10 | 2.5mm² | | |
| | AI 0.34-8TQ | 0.3mm² | CRIMPFOX6 | PHOENIX CONTACT GmbH & Co. KG |
| | AI 0.5-8WH, AI 0.5-10WH | 0.5mm² | | |
| | AI 0.75-8GY, AI 0.75-10GY | 0.75mm² | | |
| | AI 1-8RD, AI 1-10RD | 1.0mm² | | |
| | AI 1.5-8BK, AI 1.5-10BK | 1.5mm² | | |
| | AI 2.5-8BU, AI 2.5-10BU | 2.5mm² | | |

**(2) CC-Link IE Field Network**

| Item | | Specifications |
|---|---|---|
| Station type | | Intelligent device station |
| Cyclic transmission | RX points | 64, 144, 160 points |
| | RY points | 64, 144, 160 points |
| | RWr points | 64, 128, 256, 352, 448, 544, 640, 736, 832, 928, 1024 points |
| | RWw points | 64, 128, 256, 352, 448, 544, 640, 736, 832, 928, 1024 points |
| Station Number | | 1 to 120 |

**(3) Ethernet Network**

| Item | Specifications | |
|---|---|---|
| IP address | 192.168.0.3 | Can be modified by Network Camera Interface Module Configuration Tool. |
| Subnet mask | 255.255.255.0 | |
| Default gateway | No setting | |

**(4) ONVIF Network**

| Item | Specifications |
|---|---|
| ONVIF Core Spec | Ver.2.4.2 |
| ONVIF Test Spec | Ver.15.06 |
| Profile | Profile S |

**(5) Controllable Devices Number**

| Item | Specifications |
|---|---|
| ECLEF-NV1G-02 | 2 |
| ECLEF-NV1G-04 | 4 |
| ECLEF-NV1G-08 | 8 |
| ECLEF-NV1G-16 | 16 |

## 4. MOUNTING AND INSTALLATION

### 4.1 Usage Precautions

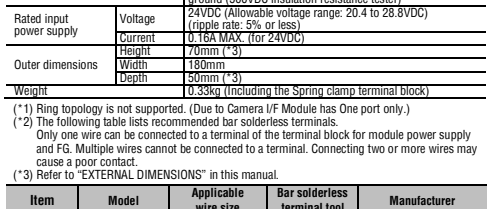
(1) Do not drop or apply strong shock to the module. Doing so may damage the module.
(2) Before handling the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the module to fail or malfunction.

### 4.2 Installation Environment

(1) Use a DIN rail to install the module.
(2) Do not install Camera I/F Module to the place where:
- Ambient temperature is outside the range of 0 to 55 °C;
- Ambient humidity is outside the range of 5 to 95% RH;
- Condensation occurs due to rapid temperature change;
- Corrosive gas or combustible gas is present;
- Conductive powder such as dust and iron powder, oil mist, salinity, or organic solvent is filled;
- Camera I/F Module is exposed to direct sunlight;
- A strong electric field or strong magnetic field is generated; and
- Camera I/F Module is subject to vibration and shock.

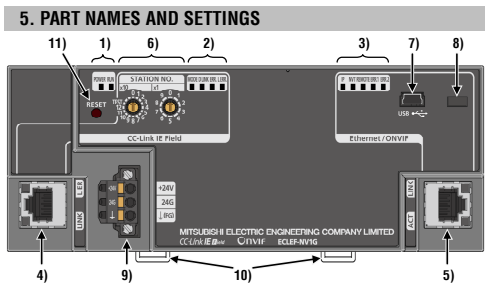
(3) When installing the I/O module in a control panel, provide clearance of 60mm or longer between the module and the sides of control panel or neighboring modules to ensure good ventilation and an easy module change.

(Unit: mm)




(*1) The bending radius of the Ethernet cable is limited.
Please check the specifications of the Ethernet cable to be used.
(4) Camera I/F Module has allowed any mounting directions.
(5) Refer to the user's manual for the CPU module used.

## 5. PART NAMES AND SETTINGS




| No. | Name | | | Application |
|---|---|---|---|---|
| 1) | POWER LED | | | Indicates the power supply status of the Camera I/F Module. |
| | | On | green | Power supply ON. |
| | | Off | | Power supply OFF. |
| | RUN LED | | | Indicates the operating status of the Camera I/F Module. |
| | | On | green | Operating normally. |
| | | Off | | A major error has detected. |
| 2) | LEDs for CC-Link IE Field Network | | | Indicates the operating status of the CC-Link IE Field Network or the module test mode. |
| | MODE LED | | | Indicates the mode of the Camera I/F Module. |
| | | On | green | Online mode |
| | | Flashing | green | The module test is running (*1) |
| | | Off | | The module test is completed. (*1) |
| | D LINK LED | | | Indicates the data link status of the Camera I/F Module. |
| | | On | green | Data link in operation. (cyclic transmission in progress) |
| | | Flashing | green | • Data link in operation. (cyclic transmission stopped)<br>• The module test is running (*1) |
| | | Off | | • Data link not performed. (disconnected)<br>• The module test is completed. (*1) |
| | ERR. LED | | | Indicates the error status of the Camera I/F Module and the module test mode. |
| | | On | red | • A module error has detected.<br>• The module test is completed with an error. (*1) |
| | | Flashing | red | • A minor error has detected.<br>• The module test is running (*1) |
| | | Off | | • Operating normally.<br>• The module test is completed without an error. (*1) |
| | L ERR. LED | | | Indicates the error status of received data on the CC-Link IE Field Network. |
| | | On | red | Module received abnormal data. |
| | | Flashing | red | Module test mode (*1) |
| | | Off | | Module received normal data. |
| 3) | LEDs for Ethernet/ONVIF Network | | | Indicates the operating status of the Ethernet/ONVIF Network or the module test mode. |
| | IP LED | | | Indicates the setting state of IP address of Camera I/F Module. |
| | | On | green | • IP address setting is completed.<br>• Indicates the error code if an error has detected in the module test. (*1) |
| | | | orange | • IP address setting is completed in the fixed IP mode.<br>• IP address setting is completed in the DHCP mode. |
| | | | red | • IP address setting is failed. (IP address is set to 192.168.0.3.) |
| | | Flashing | green | •During IP address request in the DHCP mode.<br>• During the module test. (*1) |
| | | Off | | • Hardware error is detected.<br>• Indicates the error code if an error has detected in the module test. (*1) |
| | NVT LED | | | Indicates the getting status of the camera information. |
| | | On | green | • Getting the camera information is completed.<br>• Indicates the error code if an error has detected in the module test. (*1) |
| | | Flashing | green | • During getting the camera information.<br>• During the module test. (*1) |
| | | Off | | • All registered camera is not found.<br>• There is no registered camera in the project.<br>• Indicates the error code if an error has detected in the module test. (*1) |
| | REMOTE LED | | | Indicates the operating status of Ethernet/ONVIF Network. |
| | | On | green | • Operating normally.<br>• Indicates the error code if an error has detected in the module test. (*1) |
| | | | red | Clock information not acquired.<br>(CC-Link IE Field Network unlinked up.) |
| | | Flashing | green | During the module test. (*1) |
| | | Off | | •There is no registered camera in the project.<br>• Indicates the error code if an error has detected in the module test. (*1) |
| | ERR.1 LED | | | Indicates the operating status of the target camera. |
| | | On | red | • In the target camera is up, unconnected, or abnormal status.<br>• Indicates the error code if an error has detected in the module test. (*1) |
| | | Flashing | red | During the module test. (*1) |
| | | Off | | • The target camera is normal operating.<br>• Indicates the error code if an error has detected in the module test. (*1) |
| | ERR.2 LED | | | Indicates the error status of the project file which written by Network Camera Interface Module Configuration Tool. |
| | | On | red | • Writing the project file is failure.<br>• Indicates the error code if an error has detected in the module test. (*1) |
| | | Flashing | red | During the module test. (*1) |
| | | Off | | • Writing the project file is successful or not yet performed.<br>• Indicates the error code if an error has detected in the module test. (*1) |
| 4) | RJ-45 connector for CC-Link IE Field Network | | | Connect an Ethernet cable for CC-Link IE Field Network.<br>⚠CAUTION<br>Correspond to Star topology and Line topology (Only Camera I/F Module is End stations).<br>Ring topology is not supported. |
| | L ER LED | On | red | Module received abnormal data. |
| | | Flashing | red | Module test mode (*1) |
| | | Off | | Module received normal data. |
| | LINK LED | On | green | Linkup in progress |
| | | Off | | Linkdown in progress |
| 5) | RJ-45 connector for Ethernet/ONVIF Network | | | Connect an Ethernet cable for Ethernet/ONVIF Network. |
| | LINK LED | On | green | Linkup in progress as 1Gbps |
| | | | orange | Linkup in progress as 100Mbps |
| | | | yellow | Linkup in progress as 10Mbps |
| | | Off | | Linkdown in progress |
| | ACT LED | Flashing | green | Data transmitting/receiving |
| | | Off | | Data idling |
| 6) | Station number setting switch | | | Rotary switches for the following setting and test. (Set to x10=0, x1=0 at factory shipment.)<br>• Station number setting (Operating mode) : 1〜120<br>• Module test mode : x10=TEST, x1=0<br>• Reserved IP mode : x10=TEST, x1=1<br>* When operating the station number setting switch, use a flathead screwdriver with 3.5mm or less width of the tip. |
| 7) | USB connector | | | A connector for connecting to the computer which installed Network Camera Interface Module Configuration Tool by USB. (Equipped with a dustproof cover at factory shipment.) |
| 8) | Holder for USB connector cap | | | Keep mounting a USB cap when USB connector using. |
| 9) | Connector for power supply and FG | | | A Connector to connect the module power supply (24VDC) and FG. |
| 10) | DIN rail hook | | | Hooks to mount Camera I/F Module on a DIN rail. |
| 11) | Reset switch | | | A switch for initializing Camera I/F Module in the following cases. (*2) (*3)<br>•Enable the contents of the project file which written by Network Camera Interface Module Configuration Tool.<br>• Enable the change of station number setting switch after power ON.<br>• Hardware abnormally.<br>• Communication error has occurred.<br>• Clear the error histories.<br>For error prevention, reset switch is placed inside Camera I/F Module. (*4)<br>⚠CAUTION<br>Error histories and event handling histories will be lost by reset which pushing. Save them as needed. |

(*1) Refer to Camera I/F Module User's Manual (Detailed Edition) for the module test operation.
(*2) The following is the same effect as pushing the reset switch.
- Power supply (24VDC) turns ON, after OFF.
- Remote reset by Network Camera Interface Module Configuration Tool.

(*3) All LEDs (including Power LED) are off while pushing the reset switch.
The project file is not cleared by pushing the reset switch.
(*4) Reset switch is located on the inside about 15mm from Camera I/F Module surface.
For switch operation, use the rod-shaped (fine drivers, etc.) which is 3.5mm dia. or less.

## 6. WIRING

### 6.1 Wiring Precaution

(1) Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
(2) Individually ground the FG terminal of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.

⏚ This symbol denotes a functional earth ground terminal which provides a low impedance path between electrical circuits and earth for non-safety purposes, such as noise immunity improvement.

(3) Do not invert the external power supply polarities. Camera I/F Module will not operate.
(4) Tighten the connector mounting screws within the following specified torque range.
A loose screw results in the risk of a short circuit, module failure, or malfunction.

| Screw type | Tightening torque range |
|---|---|
| Connector mounting screw (M2.5 screw) | 0.2〜0.3N・m |

### 6.2 Wiring module power source and FG

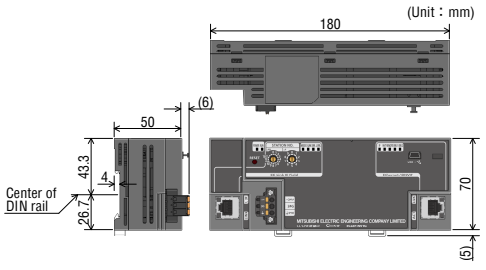
(1) Use a bar solderless terminal for the wiring to the push-in type spring clamp terminal block. If a stripped wire is inserted into a wire insertion opening, the wire cannot be securely clamped.
(2) To connect the cable, fully insert a wire having a bar solderless terminal into a wire insertion opening.
(3) After inserting the wire, pull it lightly to check that it is securely clamped.
(4) To disconnect the cable, push in the open/close button with a flathead screwdriver.
With the button pushed in, pull out the wire having a bar solderless terminal.
(5) External connection to 24VDC power supply circuit of Camera I/F Module must be powered from approved source that meets of SELV/PELV, Class 2, and limited energy according to UL 61010-2-201.

### 6.3 Wiring Ethernet Cable

(1) Power off the power supplies of Camera I/F Module.
(2) Push the Ethernet cable connector into Camera I/F Module until it clicks. Pay attention to the connector's direction.
(3) Do not use Ethernet cables with broken latches.

## 7. EXTERNAL DIMENSIONS

(Unit : mm)




## 8. EMC

Compliance to the EMC Directive, which is one of the EU Directives, has been a legal obligation for the products sold in European countries since 1996 as well as the Low Voltage Directive since 1997. Manufacturers who recognize their products are compliant to the EMC and Low Voltage Directives are required to attach a "CE mark" on their products.

**(1) Sales representative in EU member states**

Authorized representative in EU member states is shown below.
Name: Mitsubishi Electric Europe B.V.
Address: Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany

### 8.1 Measures to Comply with the EMC Directive

The EMC Directive specifies that "products placed on the market must be so constructed that they do not cause excessive electromagnetic interference (emissions) and are not unduly affected by electromagnetic interference (immunity)". This section summarizes the precautions on compliance with the EMC Directive of the machinery constructed with the module. These precautions are based on the requirements and the standards of the regulation, however, it does not guarantee that the entire machinery constructed according to the descriptions will comply with abovementioned directives.

The method and judgement for complying with the EMC Directive must be determined by the person who constructs the entire machinery.

**(1) Sales representative in EU member states**

**(a) Emission requirements**

| Specification | Test item | Test details | Standard value |
|---|---|---|---|
| EN61131-2: 2007 | CISPR16-2-3 Radiated Emission *2 | Radio waves from the product are measured. | • 30M-230MHz QP: 40dBμV/m (10m in measurement range) *1<br>• 230M-1000MHz QP: 47dBμV/m (10m in measurement range) |
| | CISPR16-2-1, CISPR16-1-2 Conducted Emission *2 *3 | Noise from the product to the power line is measured. | • 150k-500kHz QP: 79dB, Mean: 66dB *1<br>• 500k-30MHz QP: 73dB, Mean: 60dB |

*1. QP: Quasi-peak value, Mean: Average value
*2. The module is an open type device (a device designed to be housed in other equipment) and must be installed inside a conductive control panel. The tests were conducted with the module installed in a control panel.
*3. Not applicable to DC power input devices.

**(b) Immunity requirements**

| Specification | Test item | Test details | Standard value |
|---|---|---|---|
| EN61131-2: 2007 | EN61000-4-2 Electrostatic discharge immunity *1 | Immunity test in which electrostatic is applied to the cabinet of the equipment. | • 8kV Air discharge<br>• 4kV Contact discharge |
| | EN61000-4-3 Radiated, radio-frequency, electromagnetic field immunity *1 | Immunity test in which electric fields are irradiated to the product. | 80% AM modulation@1kHz<br>• 80M-1000MHz: 10V/m<br>• 1.4G-2.0GHz: 3V/m<br>• 2.0G-2.7GHz: 1V/m |
| | EN61000-4-4 Electrical fast transient/burst immunity *1 | Immunity test in which burst noise is applied to the power line and signal line. | • AC/DC main power: 2kV<br>• Communication: 1kV |
| | EN61000-4-5 Surge immunity *1 | Immunity test in which lightning surge is applied to the power line and signal line. | • AC power line: 2kV CM, 1kV DM<br>• Communication: 1kV CM |
| | EN61000-4-6 Immunity to conducted disturbances, induced by radio-frequency fields *1 | Immunity test in which high frequency noise is applied to the power line and signal line | 0.15M-80MHz, 80% AM modulation @1kHz, 10Vrms |
| | EN61000-4-8 Power-frequency magnetic field immunity *1 | Immunity test in which the product is installed in inductive magnetic field | 50Hz/60Hz, 30A/m |
| | EN61000-4-11 Voltage dips and interruption immunity *1 *2 | Immunity test in which power supply voltage is momentarily interrupted | • Apply at 0%, 0.5 cycles and zero-cross point<br>• 0%, 250/300 cycles (50/60Hz)<br>• 40%, 10/12 cycles (50/60Hz)<br>• 70%, 25/30 cycles (50/60Hz) |

*1. The module is an open type device (a device designed to be housed in other equipment) and must be installed inside a conductive control panel. The tests were conducted with the programmable controller installed in a control panel.
*2. Not applicable to DC power input devices.

**(2) Installation in a control panel**

The module is open type devices and must be installed inside a control panel.
This ensures safety as well as effective shielding of programmable controller-generated electromagnetic noise.

**(a) Control panel**
- Use a conductive control panel.
- When securing the top or bottom plate using bolts, cover the grounding part on the control panel so that the part will not be painted.
- To ensure electrical contact between the inner plate and control panel, take measures such as covering the bolts so that conductivity can be ensured in the largest possible area.
- Ground the control panel with a thick ground cable so that low impedance can be ensured even at high frequencies.
- Holes in the control panel must be 10cm diameter or less. If the holes are larger than 10cm, radio wave may be emitted. In addition, because radio waves leak through a clearance between the control panel and its door, reduce the clearance as much as possible. The leakage of radio waves can be suppressed by the direct application of an EMI gasket on the paint surface.

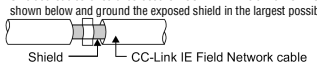
Our tests have been carried out on a panel having the attenuation characteristics of 37 dB (max.) and 30 dB (mean) (measured by 3m method, 30 to 300MHz).

**(b) Wiring of power cables and ground cables**
Near the power supply part, provide a ground point to the control panel. Ground the FG terminal with the thickest and shortest possible ground cable (30cm or shorter).

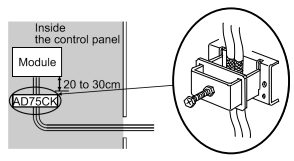
**(3) Ethernet cables**

Use shielded cables for the cables which are connected to the module and run out from the control panel. If a shielded cable is not used or not grounded correctly, the noise immunity will not meet the specified value.

**(a) Cables for the CC-Link IE Field Network**
The precautions for using CC-Link IE Field Network cables are described below.
- Shielded cables should be used on CC-Link IE Field Network. Strip a part of the jacket as shown below and ground the exposed shield in the largest possible area.




**(b) Grounding the cable clamp**
Use shielded cables for external wiring and ground the shields of the external wiring cables to the control panel with the AD75CK-type cable clamp (Mitsubishi). (Ground the shield section 20 to 30cm away from the module.)



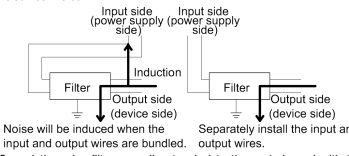

For details of the AD75CK, refer to the following.
- AD75CK-type Cable Clamping Instruction Manual

**(4) External power supply**
- Use a CE-marked product for an external power supply and always ground the FG terminal.
- Use a power cable of 10m or shorter as connecting it to the module power supply connector.

**(5) Others**

**(a) Ferrite core**
A ferrite core has the effect of reducing radiated noise in the 30MHz to 100MHz band. It is recommended to attach ferrite cores if shield cables coming out of the control panel do not provide sufficient shielding effects.
Note that the ferrite cores must be attached at the position closest to the cable hole inside the control panel. If attached at an improper position, the ferrite core will not produce any effect.
For the FG terminal on a main module that is connected to the external power supply, CC-Link IE Field Network cables, and Ethernet/ONVIF Network cables, attach a ferrite core 4cm away from the module.

**(b) Noise filter (power supply line filter)**
A noise filter is a component which has an effect on conducted noise.
Attaching the filter can suppress more noise. (The noise filter has the effect of reducing conducted noise of 10 MHz or less.)
Connect a noise filter to the external power supply of a main module and the external power supply of an extension module. Use a noise filter with the damping characteristics equivalent to those of MA1206 (manufactured by TDK-Lambda Corporation). Note that a noise filter is not required if the module is used in Zone A defined in EN61131-2.
The precautions for attaching a noise filter are described below.
- Do not bundle the cables on the input side and output side of the noise filter.
If bundled, the output side noise will be induced into the input side cables from which the noise was filtered.




- Ground the noise filter grounding terminal to the control panel with the shortest cable possible (approx. 10cm).



### Product Warranty Details

Please confirm the following product warranty details prior to product use.

### Gratis Warranty Terms and Gratis Warranty Range

If any fault or defect (hereinafter referred to as "Failure") attributable to MEE should occur within the gratis warranty period, MEE shall repair the product free of charge via the distributor from whom you made your purchase.

■ Gratis Warranty Period
The gratis warranty period of this product shall be one (1) year from the date of purchase or delivery to the designated place. Note that after manufacture and shipment from MEE, the maximum distribution period shall be six (6) months, and the gratis warranty period after manufacturing shall be limited to eighteen (18) months. In addition, the gratis warranty period for repaired products shall not exceed the gratis warranty period established prior to repair.

■ Gratis Warranty Range
The gratis warranty range shall be limited to normal use based on the usage conditions, methods and environment, etc., defined by the terms and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

### Warranty Period after Discontinuation of Production

(1) MEE shall offer product repair services (fee applied) for seven (7) years after production of the product has been discontinued.
Discontinuation of production shall be reported via distributors.
(2) Product supply (including spare parts) is not possible after production has been discontinued.

### Exclusion of Opportunity Loss and Secondary Loss from Warranty Liability

Regardless of the gratis warranty period, MEE shall not be liable for compensation for damages arising from causes not attributable to MEE, opportunity losses or lost profits incurred by the user due to Failures of MEE products, damages or secondary damages arising from special circumstances, whether foreseen or unforeseen by MEE, compensation for accidents, compensation for damages to products other than MEE products, or compensation for other work carried out by the user.

### Changes in Product Specifications

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


**MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED**

This manual is a new publication, effective September 2022.
Specifications are subject to change without notice.
The standard price does not include consumption tax.
Please note that consumption tax will be added at the time of purchase.

Developed September 2022
50CM-D180205-F