

RFID Interface Module
Model
EQ-V680D1
EQ-V680D2
User's Manual
(Hardware)



SAFETY PRECAUTIONS

(Always read these precautions prior to use.)
Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to ensure that the product is used correctly.
The precautions presented in this manual are concerned with this product only.
For programmable controller system safety precautions, refer to the user's manual of the CPU module used.
In this manual, the safety precautions are ranked as "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.

Note that failure to observe the CAUTION level instructions may lead to a serious consequence according to the circumstances. Always follow the precautions of both levels because they are important to personal 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

CAUTION	Provide a safety circuit outside the programmable controller to ensure that the overall system operates safely in the event of an error in the external power supply or failure of the programmable controller itself. Failure to do so results in the risk of erroneous output and malfunction and, in turn, module failure.
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3. MOUNTING AND INSTALLATION

3.1 Handling Precautions

- The RFID interface module case is made of plastic. Do not drop the case or expose the case to strong impact.
- Before touching the module, be sure to touch grounded metal or the like to release the static electricity from your body.
- Tighten the module screws, etc., within the ranges indicated below. Insufficient tightening results in the risk of a short circuit, failure, and malfunction.

Screw Location	Tightening Torque Range
Module screw (M3 screw) *1	0.36 to 0.48N·m (3.2 to 4.3lbf·in)
Power supply terminal block screw (M3 screws)	0.52 to 0.57N·m (4.6 to 5.1lbf·in)

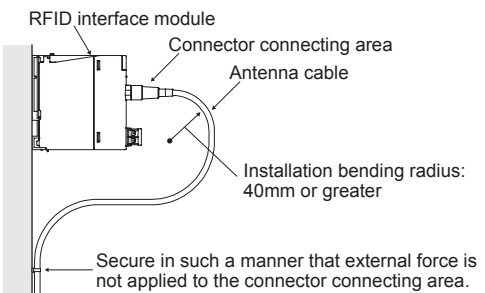
*1: The module can be simply secured to the base unit by the hooks located on top of the module. Note, however, that we recommend securing the module using screws in locations of high oscillation.

3.2 Installation Environment

Refer to the user's manual of the CPU module used.

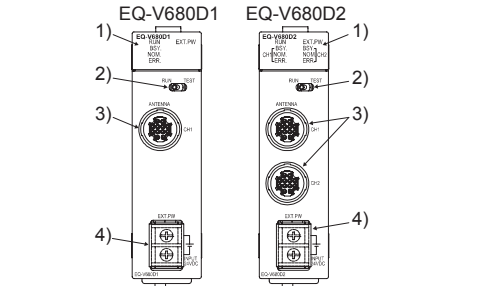
3.3 Cable Installation

When installing the antenna cable to the RFID interface module, be sure that excessive external force is not applied to the connector connecting area of the module.



4. PART NAMES AND SETTINGS

The following explains the names of each part of the RFID interface module.



No.	Name	Description
1)	LED display	Indicates the operating status of the RFID interface module. [For display details, refer to Section (1).]
2)	Test switch	Used to switch between RUN mode and TEST mode.
3)	Antenna connector	A connector for antenna connection.
4)	Power supply terminal	A terminal for 24VDC power supply connection.

CAUTION	Configure the circuitry so that the external power supply is activated after the power supply of the programmable controller itself. Activating the external power supply first results in the risk of erroneous output and malfunction and, in turn, module failure. When installing the RFID interface module and amplifier/antenna cables, do not bundle the cables with or install the cables close to the main circuit, power lines, or the like. Be sure to separate the cables and lines by about 100mm or more. Failure to do so will cause noise and, in turn, malfunction. 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. Look the control panel so that only those who trained with enough knowledge about the electric facilities can be opened. Install the emergency stop switch outside the control panel so that workers can operate it easily.
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INSTALLATION PRECAUTIONS

CAUTION	Use the programmable controller in an environment that reflects the general specifications stated in the user's manual of the CPU module used. Using the programmable controller in an environment out of the general specification range results in the risk of electric shock, fire, malfunction, and product damage or deterioration. During installation, fully insert the tabs used to secure the module into the holes of the base unit while pressing down the module mounting lever located at the bottom of the module. An incorrectly mounted module results in the risk of malfunction, failure, and dropping. When used in an environment of high oscillation, secure the module with screws. Tighten the screws within the specified torque range. If a screw is too loose, a dropped module, short circuit, or malfunction may result. If a screw is too tight, screw and/or module damage may occur, resulting in a dropped module, short circuit, or malfunction.
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CAUTION	Be sure to shut off all phases of the external power supply used by the system before module installation or removal. Failure to do so results in the risk of product damage. Do not directly touch a powered section or electronic component of the module. Doing so results in the risk of module malfunction and failure.
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WIRING PRECAUTIONS

CAUTION	After the installation and wiring work, be sure to install the provided terminal cover on the product when you want to activate and operate the module. Failure to do so results in the risk of electric shock. Fully mount the antenna cable to the module connector. After mounting, check for separation. Insufficient contact results in the risk of erroneous input and output. Be sure to place the communication cables and power cables connected to the module in a duct, or secure them with clamps. Failure to do so results in the risk of cable movement and drift, module or cable damage caused by careless pulling, and malfunction caused by insufficient cable contact. When connecting a cable, first verify the connection interface type and then connect the cable properly. Connecting a cable to a wrong interface or mis-wiring a cable results in the risk of external device malfunction. Tighten the screws within the specified torque range. If a screw is too loose, a short circuit or malfunction may result. If a screw is too tight, screw and/or module damage may occur, resulting in a short circuit, or malfunction. When removing a communication cable or power cable connected to the module, do not pull the cable section. For cables with connectors, hold the connector of the section connected to the module during removal. For terminal block cables, loosen the screws of the terminal block and then remove the cable. Pulling a cable while it is connected to the module results in the risk of malfunction and module and cable damage. Be careful to prevent foreign matter such as dust or wiring chips from entering the module. Failure to do so may result in the risk of fire, failure, and malfunction.
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(1) LED List

LED Name	Display Details	● : On	○ : OFF
RUN	Indicates normal operation.	Normal	Abnormal
BSY.	Indicates the operating status of each channel.	Running	Waiting
NOM.	Indicates the communication completion status of each channel.	Normal completion	Waiting or abnormal completion
ERR.	Indicates whether or not an error exists on each channel.	Error	Normal
EXT.PW	Indicates the status of the power supply to the antenna.	Normal	Abnormal

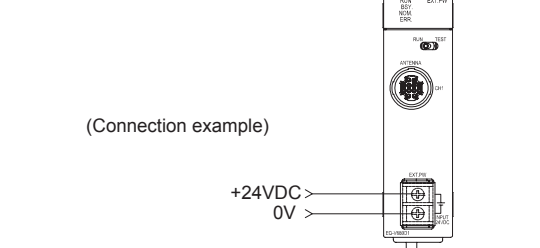
5. CONNECTING THE MODULE

5.1 Wiring Precautions

CAUTION	Do not wire the cables near or bundle the cables with main circuit cables, or power lines. Doing so causes noise and surge impact, resulting in the risk of malfunction. Be sure to separate the cables and lines by about 100mm or more. When using a group of equipment, such as inverters, servo motors, and the like, be sure to execute class D grounding (type 3 grounding). Failure to do so results in the risk of magnetic field interference and malfunction. Do not invert the EXT.PW polarity of an external power supply during connection. The RFID interface module will not operate. Do not connect directly to line voltage. Line voltage must be supplied by a suitable, approved isolating transformer or power supply having short circuit capacity not exceeding 100VA maximum or equivalent.
ATTENTION	Ne pas se connecter directement à la tension de ligne. La tension de ligne doit être fournie par un transformateur d'isolement approprié et approuvé ou par un bloc d'alimentation ayant une capacité de court-circuit ne dépassant pas 100 VA au maximum ou équivalent.

5.2 Wiring the Power Supply Terminal

The following shows a wiring diagram of the power supply terminal.



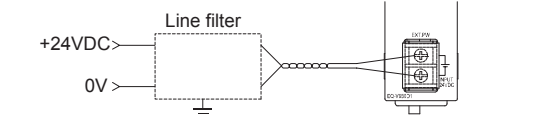
Connect the 24VDC power supply to the power supply of (1) below.

- A circuit (class 2 circuit) having a class 2 power supply module in accordance with UL1310 or a class 2 transformer in accordance with UL1585 as a power supply, and a maximum voltage of 30Vrms (42.4 peak) or less.

Recommended DC power supply
Manufactured by Omron Corporation (small-sized DIN rail installation type)

Model	Input Voltage	Output Capacity
S8VS-03024	100 to 240VAC	24VDC, 1.3A

While simply corrective action within the RFID interface module is sufficient to counter the noise superimposed on the power line, the noise to the ground can be significantly reduced by supplying power via a line filter.



CAUTION	A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring. Do not remove the film during wiring. Remove it for heat dissipation before system operation. Do not connect the power supply in reverse. Doing so results in risk of failure. Use the module after confirming that the external input DC power supply is within the rated power supply voltage. Failure to do so results in the risk of failure and malfunction. Do not bundle the control or communication cables with or install the cables close to the main circuit, power lines, or the like. Be sure to separate the cables and lines by about 100mm or more.
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EMC AND LOW VOLTAGE DIRECTIVES

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.

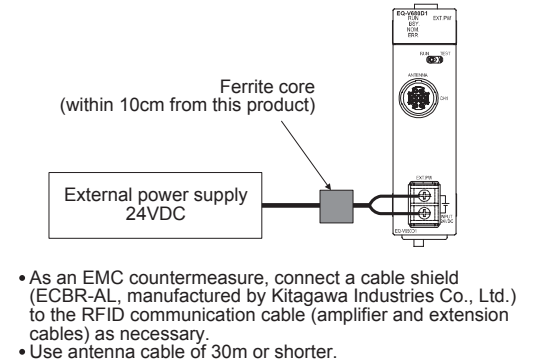
Manufacturers who recognize their products are compliant to the EMC and Low Voltage Directives are required to declare that print a "CE mark" on their products.

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

(1) This product

To make this product compliant with the EMC Directive and Low Voltage Directive, the following countermeasure is required.

- As an EMC countermeasure, install the supplied ferrite core to the power supply terminal line. The target position of the ferrite core is within 10cm from this product.



- As an EMC countermeasure, connect a cable shield (ECBR-AL, manufactured by Kitagawa Industries Co., Ltd.) to the RFID communication cable (amplifier and extension cables) as necessary.
- Use antenna cable of 30m or shorter.

Manuals

The manuals related to this product include the following. Feel free to order the manual if needed.

Detailed manuals

Manual Title	Manual Number
RFID Interface Module User's Manual (Details)	50CM-D180057

Manufactured by Mitsubishi Electric Corporation
Mitsubishi general-purpose programmable controller
MELSEC-Q series manual

Manual Title	Manual Number
QCPU User's Manual (Hardware Design, Maintenance and Inspection)	SH-080483ENG

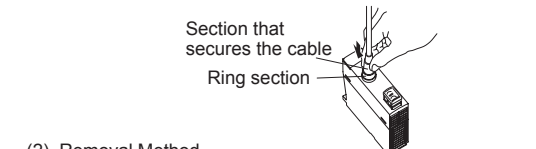
5.3 Inserting and Removing the Antenna and Cable

When inserting or removing an antenna or cable, follow the procedures below.

(1) Insertion Method

- Hold the section of the connector that secures the cable and insert the connector with the white dot facing upward.
- Push the connector straight in until the connector locks.

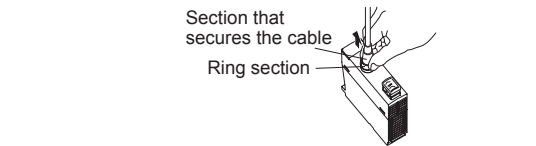
CAUTION	Do not insert the connector with the power supply ON. Doing so results in the risk of failure. The connector will not lock if you push the ring section. Be sure to hold and push the section that secures the cable.
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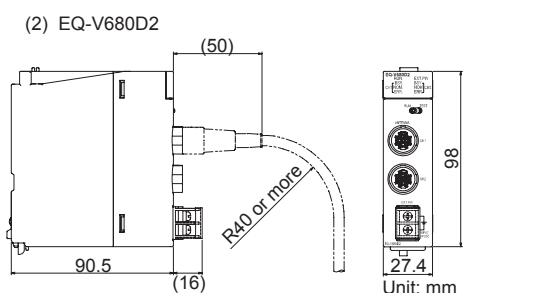
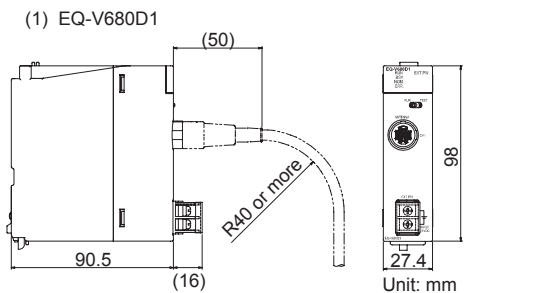
(2) Removal Method

- Hold onto the ring section and pull straight back.

CAUTION	The connector cannot be removed by holding and pulling the section that secures the cable. Pulling that section results in the risk of breakage and damage. Do not pull the cable with force. Do not remove the connector with the power ON. Doing so results in the risk of failure.
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6. EXTERNAL DIMENSIONS



1. OVERVIEW

This user's manual describes the specifications, part names, installation, wiring and connections with other devices, and other information related to the EQ-V680D1/EQ-V680D2 RFID interface module (hereinafter "RFID interface module") used in combination with the MELSEC-Q series CPU module. Once you have opened the product package, verify that the package contains the following.

Item	Quantity
RFID interface module main unit	1
Manual	1
Ferrite core	1

2. PERFORMANCE SPECIFICATIONS

The following describes the performance specifications of the RFID interface module. For the general specifications of the RFID interface module, refer to the user's manual of the CPU module used.

Item	Specifications
Operating temperature	0 to 55°C (Maximum surrounding air temperature 55°C)
Operating humidity	5 to 95%RH
Pollution degree	2
Operating ambience	No corrosive gases
Operating altitude	0 to 2000m
Overvoltage category	II
Enclosure	open type equipment (Must be mounted within an enclosure.)

Item	Specifications
Model	EQ-V680D1 EQ-V680D2
Manufactured by Omron Corporation	V680-HA63A +V680-HS V680-HA63B +V680-HS V680-H01-V2
No. of connectable antennas	1 unit 2 units
No. of occupied IO points	32 points (IO assignments : 32 intelligent module points)
Data transfer volume	2048 bytes, maximum
Internal power supply (supplied from inside the 5VDC programmable controller)	0.42A 0.52A
External power supply 24VDC (20.4VDC to 26.4VDC)	0.25A 0.37A

Item	Specifications
External power supply connection terminal	2-point terminal block
Wire standard	Heat Resistant PVC Insulated Wire JIS C 3316 HKIV, JIS C 3317 HIV, UL 758 Style No. 1007or1015
Temperature rating	Minimum 75°C
Voltage rating	300V to 600V
Conductors wire size	AWG18(0.75mm ² , 0.9mm ²)
Conductors metal	Stranded copper
Compatible crimp contact lugs	1.25-3, R1.25-3
Outer dimensions	98(H) × 27.4(W) × 90.5(D)[mm]
Weight	0.2kg 0.2kg

*1: "The Power Supply shall comply with the requirements in the standard for an isolated secondary limited voltage, limited current (LVLC) circuit, defined by UL508." or equivalent.
*2: For external power supply details, refer to Section 5.2.

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MELSEC is a registered trademark of Mitsubishi Electric Corporation in Japan.

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 Mitsubishi Electric Engineering Company Limited (hereinafter referred to as "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 production 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

- 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.
- 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.

This document is a new publication, effective Aug. 2018. 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 Aug. 2018
50CM-D180056-F