

DNV Certificate Approval and Relevant Requirements for MELSEC iQ-F Series

■Date of Issue

July 2020 (Ver.C: June 2022)

■Relevant Models

MELSEC iQ-F series

Thank you for your continued support of programmable controller MELSEC iQ-F series.

The following FX5 CPU modules, extension modules, connector conversion adapters, connector conversion modules, bus conversion modules, expansion boards, and expansion adapters of the MELSEC iQ-F series have also acquired the type approval certificate for Programmable Logic Controller from DNV (DNV AS).

1 APPLICABLE MODELS

Item	Model name
CPU module	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, FX5U-80MT/DSS, 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, FX5UC-32MR/DS-TS, FX5UJ-24MR/ES, FX5UJ-24MT/ES, FX5UJ-24MT/ESS, FX5UJ-40MR/ES, FX5UJ-40MT/ES, FX5UJ-40MT/ESS, FX5UJ-60MR/ES, FX5UJ-60MT/ES, FX5UJ-60MT/ESS
Extension module	FX5-8EX/ES, FX5-8EYR/ES, FX5-8EYT/ES, FX5-8EYT/ESS, FX5-16EX/ES, FX5-16EYR/ES, FX5-16EYT/ES, FX5-16EYT/ESS, FX5-16ER/ES, FX5-16ET/ES, FX5-16ET/ESS, FX5-16ET/ES-H, FX5-16ET/ESS-H, FX5-32ER/ES, FX5-32ET/ES, FX5-32ET/ESS, FX5-32ER/DS, FX5-32ET/DS, FX5-32ET/DSS, FX5-C16EX/D, FX5-C16EX/DS, FX5-C16EYT/D, FX5-C16EYT/DSS, FX5-C32EX/D, FX5-C32EX/DS, FX5-C32EYT/D, FX5-C32EYT/DSS, FX5-C32ET/D, FX5-C32ET/DSS, FX5-C32EX/DS-TS, FX5-C16EYR/D-TS, FX5-C32EYT/D-TS, FX5-C32EYT/DSS-TS, FX5-C32ET/DS-TS, FX5-C32ET/DSS-TS, FX5-1PSU-5V, FX5-C1PS-5V, FX5-4AD, FX5-8AD, FX5-4DA, FX5-CCL-MS, FX5-DP-M, FX5-ENET, FX5-ENET/IP
Connector conversion adapter	FX5-CNV-BC
Connector conversion module	FX5-CNV-IF, FX5-CNV-IFC
Bus conversion module	FX5-CNV-BUS, FX5-CNV-BUSC
Expansion board	FX5-232-BD, FX5-485-BD, FX5-422-BD-GOT
Expansion adapter	FX5-232ADP, FX5-485ADP, FX5-4AD-ADP, FX5-4DA-ADP, FX5-4AD-PT-ADP, FX5-4AD-TC-ADP

2 DNV CERTIFICATION

The following table explains the acquired DNV certification.

2.1 Acquired Certification

Item	Description
Accreditation organization	DNV AS
Certificate No.*1	—
Category	Programmable Logic Controller
Test standard*1	—
Term of validity*1	—

*1 Please ask your local Mitsubishi Electric distributor for the certificate No., test standard, and term of validity.

2.2 Certification Details

The FX5 CPU modules, extension modules, connector conversion adapters, connector conversion modules, bus conversion modules, expansion boards, and expansion adapters of the MELSEC iQ-F series certified compliant to DNV Rules must be used in the following environment.

Item	Description	Remarks
EMC	Any given place on vessel (including Bridge and Deck Zone (Open Deck is excluded))*1 Do not install the products within 5m of a standard compass or steering magnetic compass.	—
Power supply	Supply power from a DC power source other than battery.	☞ Page 3 REQUIREMENTS

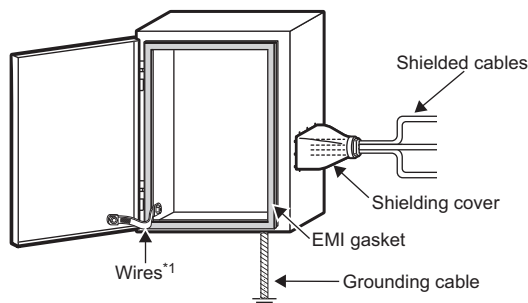
*1 Only for FX5-1PSU-5V, any given place on vessel (excluding Bridge and Deck Zone)

3 REQUIREMENTS

When using the FX5 CPU modules, extension modules, connector conversion adapters, connector conversion modules, bus conversion modules, expansion boards, and expansion adapters of the MELSEC iQ-F series as DNV Certified Systems, make sure the following requirements are observed.

3.1 Control Cabinet

- The control cabinet must be conductive.
- Ground the control cabinet with the thickest possible grounding cable.
- To ensure that there is electrical contact between the control cabinet and its door, connect the cabinet and its doors with thick wires. (See Fig. 1.)
- In order to suppress the leakage of radio waves, the control cabinet must be structured with minimal openings. The gap between the control cabinet and its door must be eliminated whenever possible by attaching EMI gaskets between them. To attach an EMI gasket, remove the coating on the contact area between the control cabinet and its door and attach the EMI gasket with conductive adhesive tape. In addition, wrap the cable holes with a shielding cover or other shielding devices. (See Fig. 1.)



*1 These wires are used to improve the conductivity between the door and control cabinet.

Fig. 1. Control cabinet example

- In order to avoid the effects of static electricity, make sure to eliminate static electricity when there is a possibility of touching the programmable controller in the control cabinet during maintenance or servicing.

3.2 Cables

- For cables that protrude out of the control cabinet, make sure to use shielded cables and install cable clamp metal fittings.
- Connect the shields of the shielded cable to the grounded control cabinet.

FAM-A-0005-C

3.3 Noise Filter

Please attach a noise filter on the power line. (See Fig. 2.)

Mitsubishi's EMC tests were carried out using SOSHIN ELECTRIC HF3010C-SZA.

- Separate and lay the input (power source side) cable and output (device side) cable away from the noise filter. Do not bundle the input cable and output cable together, and do not lay the input cable close to the output cable. If do so, interference may result due to noise being induced to the input cable from the output cable.

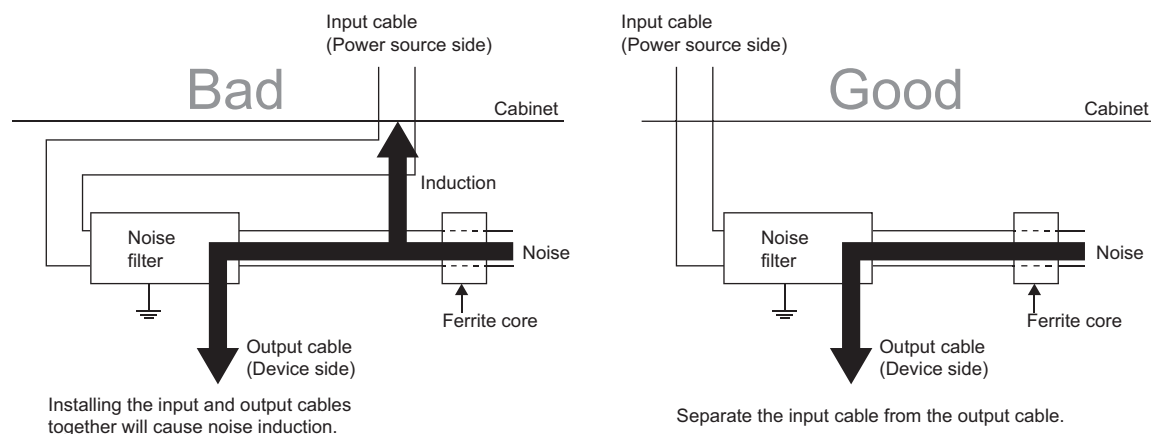


Fig. 2. Precautions on noise filter

- Grounding wires of the noise filter should be as short as possible.

3.4 Ferrite Core

Always attach a ferrite core to cables that extend outside the control cabinet, including power cable.

When an FX5UJ CPU module is used

Mitsubishi Electric performed the EMC test using SEIWA ELECTRIC E04SR401938 around which wire is wound up by 2 turns.

For the Ethernet cables, the test is performed using TDK Corporation ZCAT2035-0930A around which wire is wound up by 1 turn.

When a module other than the FX5UJ CPU module is used

Mitsubishi Electric performed the EMC test using SEIWA ELECTRIC E04SR401938 around which wire is wound up by 1 turn. For the power cables of the following modules, the test is performed using the above ferrite core around which wire is wound up by 2 turns.

Target module: FX5UC-32MR/DS-TS, FX5-4DA, FX5-CCL-MS

For the power cable of the CPU module connected to the following modules, the test is performed using the above ferrite core around which wire is wound up by 2 turns.

Target module: FX5-C16EYR/D-TS, FX5-4AD, FX5-4DA, FX5-CCL-MS, FX5-DP-M, FX5-ENET, FX5-ENET/IP

3.5 Power Supply

Use a certified DC power supply other than battery to supply power to DC power type CPU module.

REVISIONS

Version	Date of Issue	Revision
A	July 2020	Change of the issue number from HIME-T-P-0175. Addition of FX5-ENET/IP to the applicable models.
B	June 2021	Revision with change of the name of Norway classification society.
C	June 2022	<ul style="list-style-type: none"> • Addition of the following modules to the applicable models. FX5UJ-24MR/ES, FX5UJ-24MT/ES, FX5UJ-24MT/ESS, FX5UJ-40MR/ES, FX5UJ-40MT/ES, FX5UJ-40MT/ESS, FX5UJ-60MR/ES, FX5UJ-60MT/ES, FX5UJ-60MT/ESS • Modification of the following parts. Chapter 2 DNV CERTIFICATION Section 3.4 Ferrite Core • Addition of the TRADEMARKS section.

TRADEMARKS

The company names, system names, and product names mentioned in this technical bulletin are either registered trademarks or trademarks of their respective companies.

In some cases, trademark symbols such as '™' or '®' are not specified in this technical bulletin.