

[Issue No.] HIME-T-P-0178B

[Title] RINA Certificate Approval and Relevant Requirements for FX5

[Date of Issue] April 2017 (Ver. B: October 2018)

[Relevant Models] MELSEC iQ-F series FX5 PLC

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

The following MELSEC iQ-F series FX5 products have also acquired the type approval certificate for Programmable Logic Controller from RINA (Registro Italiano Navale).

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
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-C32EYT/D-TS, FX5-C32EYT/DSS-TS, FX5-C32ET/DS-TS, FX5-C32ET/DSS-TS, FX5-1PSU-5V, FX5-C1PS-5V, FX5-8AD
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. RINA certification

The following table explains the acquired RINA certification.

(1) Acquired certification

Item	Description
Accreditation organization	Registro Italiano Navale
Certificate No.*	-
Category	Programmable Logic Controller
Test standard*	-
Term of validity*	-

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

(2) Certification details

The MELSEC iQ-F series FX5 products certified compliant to RINA 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])*	
Power Supply	Supply power from a DC power source other than battery.	Refer to section 3.

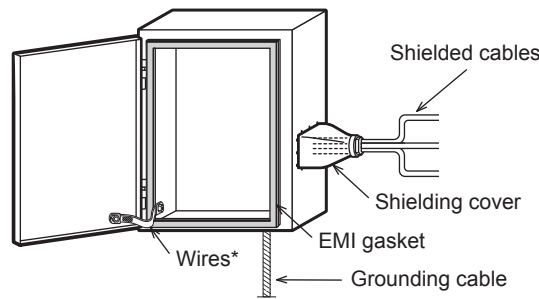
* Only for FX5-1PSU-5V, any given place on vessel (excluding Bridge and Deck Zone)

3. Requirements

When using the MELSEC iQ-F series FX5 products as RINA Certified Systems, make sure the following requirements are observed.

(1) Control cabinet

- (a) The control cabinet must be conductive.
- (b) Ground the control cabinet with the thickest possible grounding cable.
- (c) 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.)
- (d) 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 to Fig. 1.)



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

Fig. 1. Control Cabinet Example

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

(2) Cables

- (a) Use shielded cables for cables that protrude out of the control cabinet.
- (b) Connect the shields of the shielded cable, to the grounded control cabinet.

(3) Noise filter

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

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

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

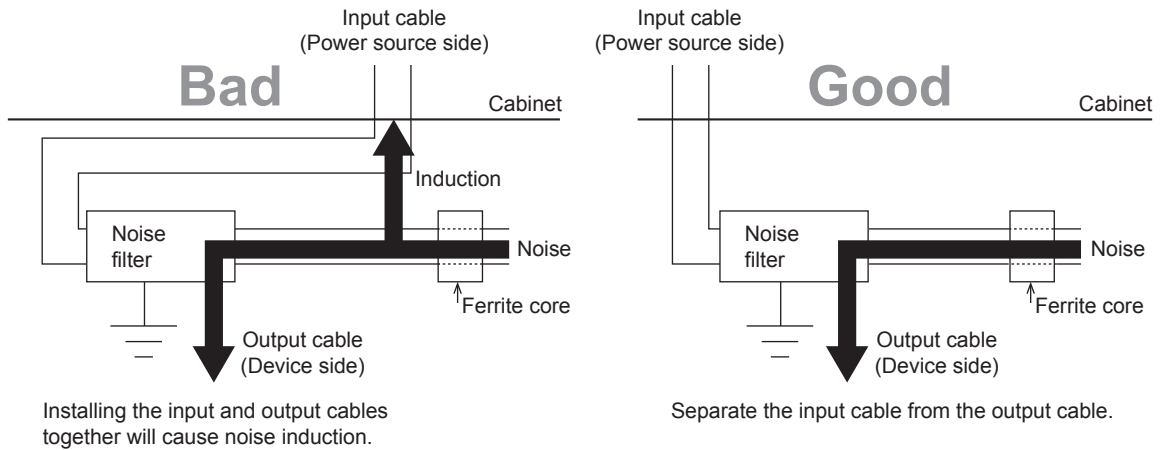


Fig. 2. Precautions on noise filter

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

(4) Ferrite core

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

Mitsubishi performed the EMC test with 1 turn around SEIWA ELECTRIC MFG. CO.,LTD. E04SR401938.

(5) Power supply

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

REVISIONS

Version	Date	Revision
A	April 2017	First edition
B	October 2018	■Added models 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/DS-TS, FX5UC-32MT/DSS-TS, FX5-16ER/ES, FX5-16ET/ES, FX5-16ET/ESS, FX5-32ER/DS, FX5-32ET/DS, FX5-32ET/DSS, FX5-C32EX/DS-TS, FX5-C32EYT/D-TS, FX5-C32EYT/DSS-TS, FX5-C32ET/DS-TS, FX5-C32ET/DSS-TS, FX5-8AD, FX5-4AD-PT-ADP, FX5-4AD-TC-ADP

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