

DNV Certificate Approval and Relevant Requirements for FX3S Series

■Date of Issue

June 2021

■Relevant Models

MELSEC-F FX3S series programmable controllers

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

The following MELSEC-F FX3S series main units and connection conversion adapters have also acquired the type approval certificate for Programmable Logic Controller from DNV (DNV AS).

1 APPLICABLE MODELS

Item	Model name
Main unit (AC power supply)	FX3S-10MR/ES, FX3S-10MT/ES, FX3S-10MT/ESS, FX3S-14MR/ES, FX3S-14MT/ES, FX3S-14MT/ESS, FX3S-20MR/ES, FX3S-20MT/ES, FX3S-20MT/ESS, FX3S-30MR/ES, FX3S-30MT/ES, FX3S-30MT/ESS, FX3S-30MR/ES-2AD, FX3S-30MT/ES-2AD, FX3S-30MT/ESS-2AD
Main unit (DC power supply)	FX3S-10MR/DS, FX3S-10MT/DS, FX3S-10MT/DSS, FX3S-14MR/DS, FX3S-14MT/DS, FX3S-14MT/DSS, FX3S-20MR/DS, FX3S-20MT/DS, FX3S-20MT/DSS, FX3S-30MR/DS, FX3S-30MT/DS, FX3S-30MT/DSS
Connection conversion adapter	FX3S-CNV-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	—
Classification	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 MELSEC-F FX3S series main units and connection conversion adapters certified compliant to DNV Rules must be used under the following environment.

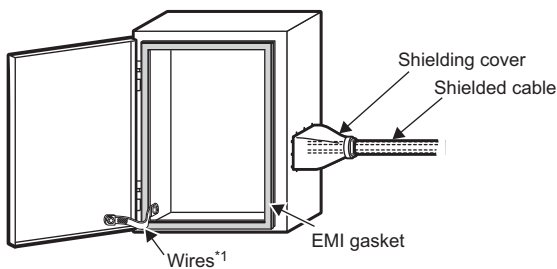
Item	Description	Remarks
EMC	Any given place on vessel (including Bridge and Deck Zone)	—
Power supply	Power should be supplied by a DC supply excluding batteries.	Refer to section 3.

3 REQUIREMENTS

When using the MELSEC-F FX3S series main units and connection conversion adapters in a system requiring DNV approval, 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 structure must have minimal openings. Also, wrap the cable holes with a shielding cover or other shielding devices. (See Fig. 1.)
- Ensure that the space between the control cabinet and its doors is as small as possible by attaching EMI gaskets between them. Mitsubishi's EMC tests have been carried out on a cabinet whose damping characteristics is 46.8dB max. and 26.4dB mean (measured by 3m method with 30MHz to 2GHz) and to which the EMI gasket having the damping characteristics of 69dB mean (150kHz to 100MHz) is mounted.



*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 on the control cabinet during maintenance or servicing.

3.2 Cable

- Use shielded cables for the cables that protrude out of the control cabinet.
- Connect the shields, such as the shielded cables and the shielding cover, to the grounded control cabinet.

3.3 Noise Filter

Attach a noise filter on the power line. (See Fig. 4.)

Mitsubishi's EMC tests have been carried out on the noise filters that are connected in series and have the common mode damping characteristics shown in Figs 2 and 3. (See Fig. 2 and Fig. 3.)

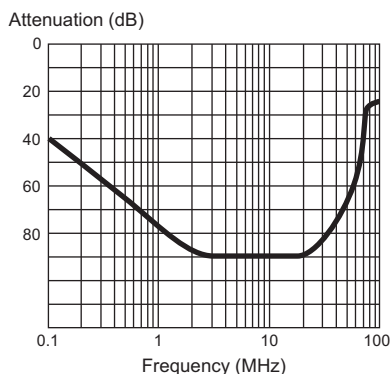


Fig. 2. Damping characteristics of noise filter for a main unit (1)

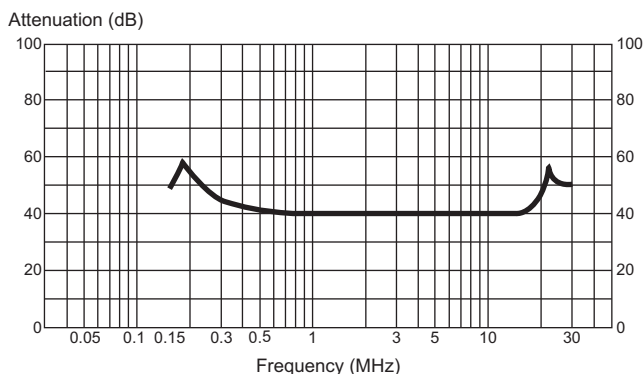


Fig. 3. Damping characteristics of noise filter for a main unit (2)

- 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.

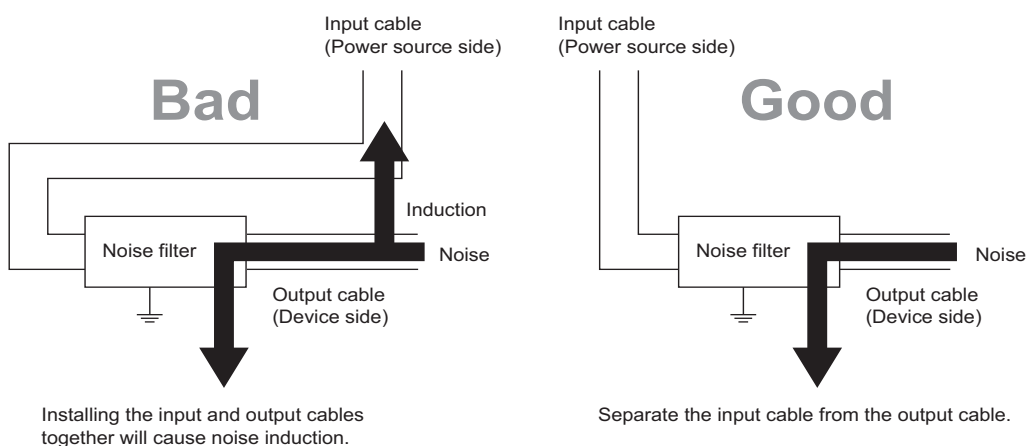


Fig. 4. Precautions on noise filter

- 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 cables.

Mitsubishi's EMC tests have been carried out with the TOKIN Corporation ESD-SR-250 to which a wire is wound for two turns.

3.5 Power Supply

When a DC powered main unit is used, power should be supplied by a DC supply excluding batteries.

FAM-A-0022-A

REVISIONS

Version	Date of Issue	Revision
A	June 2021	Change of the issue number from HIME-T-P-0142. Revised with change of the name of Norway classification society.

TRADEMARKS

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