

## Precautions to Acquire the Type Approval Certificate for Ship Classifications of ABS, BV, DNV, LR, NK, and RINA (For MELSEC-Q Series)

### ■Date of Issue

November 2008 (Ver. C: June 2021)

### ■Relevant Models

MELSEC-Q series

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Thank you for your continued support of Mitsubishi Electric programmable controllers, MELSEC-Q series. The following describes the details on precautions for using MELSEC-Q series as the system that the classification societies have approved.

For the models, numbers, and expiration dates that each classification society has approved, please consult your local Mitsubishi representative.

## 1 Classification Societies that Issue the Type Approval Certificates

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MELSEC-Q series have acquired the Type Approval Certificates from the following classification societies.

- American Bureau of Shipping (Abbreviation: ABS)
- Bureau Veritas (Abbreviation: BV)
- DNV AS (Abbreviation: DNV)
- Lloyd's Register of Shipping (Abbreviation: LR)
- Nippon Kaiji Kyokai (Abbreviation: NK)
- Registro Italiano Navale (Abbreviation: RINA)

## 2 Precautions

This section describes the details on precautions for using MELSEC-Q series as the approved system.

Before using the products, make sure to read through the user's manual for the product used and QCPU User's Manual (Hardware Design, Maintenance and Inspection) (SH-080483ENG).

### Base unit installation

Purchase a DIN rail adapter to install a base unit to a DIN rail.

Attach a base unit on a DIN rail and fix it to a control panel by tightening screws at the four corners.

However, when the Q6DIN1A is used, it is not necessary to fix the unit by tightening screws at the four corners.

Base unit	DIN rail adapter	Tightening
Q38B, Q312B, Q68B, Q612B	Q6DIN1	Fix the base unit on a control panel by tightening screws at the four corners.
	Q6DIN1A	Unnecessary
Q35B, Q65B, Q00JCPU	Q6DIN2	Fix the base unit on a control panel by tightening screws at the four corners.
	Q6DIN1A	Unnecessary
Q32SB, Q33SB, Q35SB, Q33B, Q52B, Q55B, Q63B	Q6DIN3	Fix the base unit on a control panel by tightening screws at the four corners.
	Q6DIN1A	Unnecessary

For the QA1S65B, QA1S68B, QA65B, and QA68B, fix each of them to a control panel by tightening screws at the four corners.

For the redundant base unit (Q38RB, Q68RB, or Q65WRB), fix each of them to a control panel by tightening screws at the five points with screws.

### Network system

For a CC-Link system, only master/local modules have acquired the Type Approval Certificates from the classification societies.

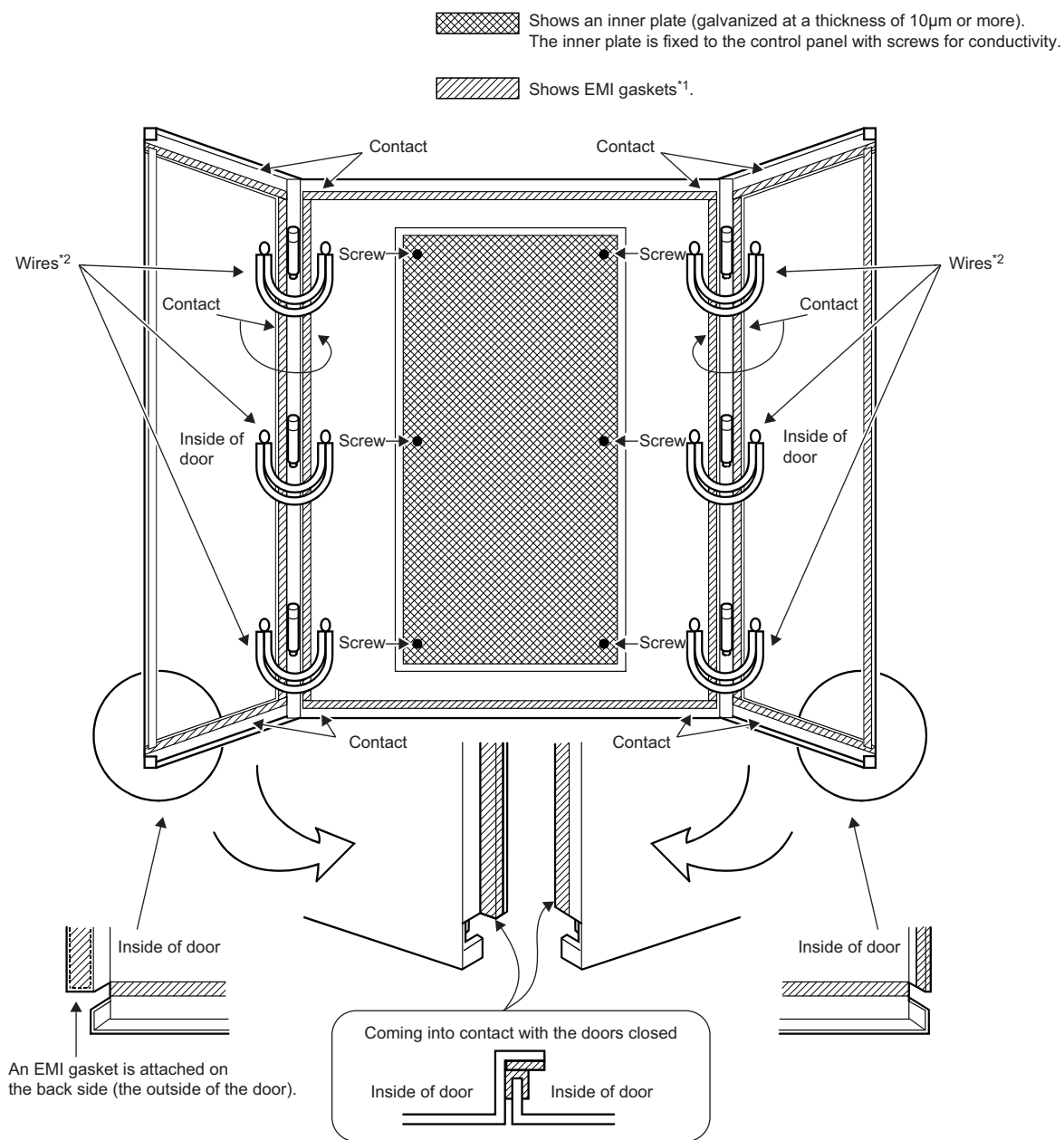
When using remote I/O modules as the approved system, use them on CC-Link IE Field Network or CC-Link IE TSN.

### Control panel

- The control panel must be conductive.
- When fixing a top or bottom plate of the control panel with bolts, remove the protective coating from both the plate and bolt surfaces to ensure that they come into electric contact.
- When using an inner plate, ensure electric contact with the control panel. For instance, galvanize an inner plate at a thickness of 10μm or more. (☞ Page 3 Structure example inside the control panel) In addition, remove the coating of the fixing bolt area of both the inner plate and control panel to ensure conductivity in the largest possible area.
- Ground the control panel with a thick ground cable (cross-sectional area: 2mm<sup>2</sup> or more).
- To suppress the leakage of radio waves, the control panel must have the structure where the clearance gaps are reduced as much as possible. Ensure that the space between the control panel and its doors is as small as possible by attaching EMI gaskets between them. Also, the diameter of the cable hole must be 10cm or less.
- To ensure the electric contact between the control panel and its doors, remove the coating of the contact areas, attach EMI gaskets with electrically conductive adhesive tape, and connect the panel and the doors with thick wires. (☞ Page 3 Structure example inside the control panel)

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■ Structure example inside the control panel



\*1 Do not apply coating to the parts where EMI gaskets are to be attached. Use electrically conductive adhesive tape to attach EMI gaskets.

\*2 These wires are used to strengthen conductivity between the doors and control panel.

**Cable**

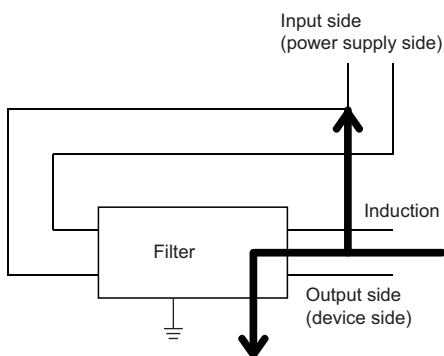
Use a shielded cable for a cable coming out of the control panel because the cable releases noise by functioning like an antenna. (☞ Page 6 Example of a noise filter and a ferrite core set inside the control panel)

**Noise filter**

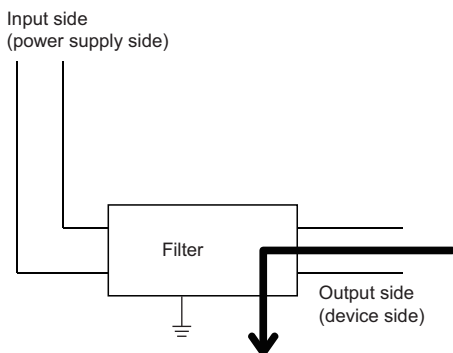
Make sure to attach a noise filter to the power cable. (☞ Page 6 Example of a noise filter and a ferrite core set inside the control panel)

Use the HF3010C-SZA noise filter (manufactured by SOSHIN ELECTRIC CO., LTD.) or the equivalent.

- 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.



- Defect example  
When the cables for input wiring and output wiring are bundled, noise is induced.



- Improvement example  
Carry out cable laying taking the distance between input wiring and output wiring.

- Connect the noise filter's ground terminal to the control panel with the shortest possible cable (approx. 10cm).

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**Ferrite core**


Ferrite cores should be attached to all of the cables (including power cables) coming out from the control panel.

**■ Power cable**

Twist power cables (including ground cables).


Attach a ferrite core to a twisted power cable at the position closest to a power supply module as possible.

If attached at an improper position, the ferrite core will not function effectively.

Using the ZCAT3035-1330 (manufactured by TDK Corporation) for a ferrite core is recommended. (  Page 6 Example of a noise filter and a ferrite core set inside the control panel)

**■ Signal wire**

Attach a ferrite core to a signal wire (shielded cable) inside the control panel at the position closest to the cable hole.

(  Page 6 Example of a noise filter and a ferrite core set inside the control panel)

If attached at an improper position, the ferrite core will not function effectively.

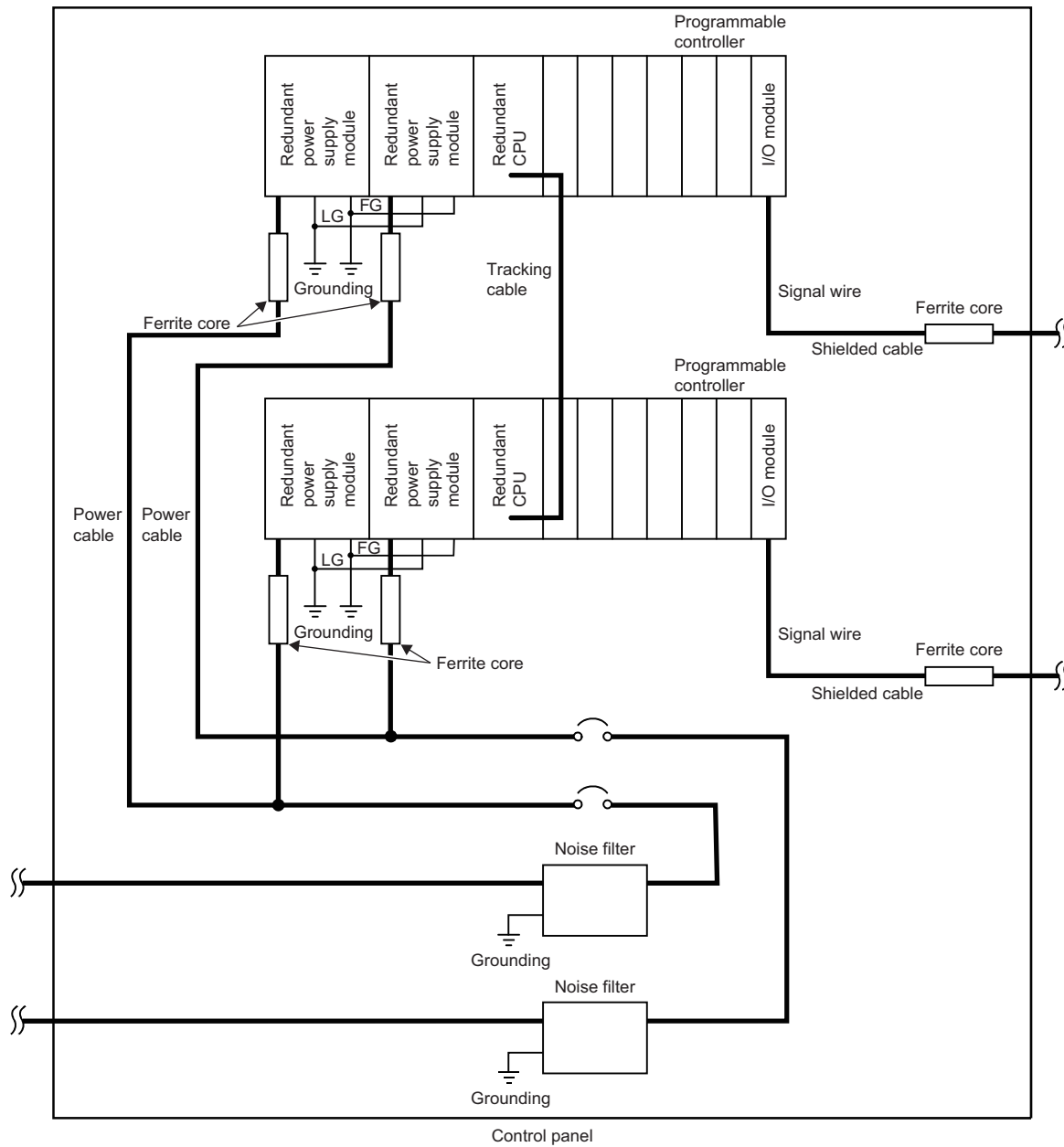
Using the ZCAT3035-1330 (manufactured by TDK Corporation) for a ferrite core is recommended.

**Equipment maintenance**

To use the MELSEC-Q series, maintenance and inspection must be performed by a maintenance worker.

The maintenance worker here refers to a person who has taken appropriate education and training, has work experience, can recognize hazards in operation and avoid them.

Example of a noise filter and a ferrite core set inside the control panel



**Warming up**

Warming up (for about 15 minutes) is necessary before operating temperature control modules which use a temperature sensor such as thermocouple and RTD.

**REVISIONS**

Version	Date of Issue	Revision
—	November 2008	First edition
A	April 2016	Change of the noise filter due to the production discontinuation of the SF1252 manufactured by ROXBURGH ELECTRONICS LTD
B	June 2018	Change in the title of this bulletin and description in "1 Classification Societies that Issue the Type Approval Certificates" due to the amalgamation of classification societies
C	June 2021	Change in the title of this bulletin and description in "1 Classification Societies that Issue the Type Approval Certificates" due to the name change from DNV GL to DNV

**TRADEMARKS**

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