Mitsubishi Safety Programmable Controller
MELSEC-QS Series Safety Relay Module
Machinery Directive (2006/42/EC) Compliance

BCN-P5770-B

Thank you for purchasing the Mitsubishi safety relay module MELSEC-QS series.
The MELSEC-QS series safety relay module is suitable for establishing safety functions for general industrial machinery and complies with the Machinery Directive (2006/42/EC).

Before using this product, please read this manual, the relevant manuals, the manuals for standard programmable controller, and the safety standards carefully and pay full attention to safety to handle the product correctly.
This instruction is the original version.

1. Safety Programmable Controller Product List

Product Name	Model	Description
Q Series safety relay module	QS90SR2SP-Q	Safety relay module for MELSEC-Q series. Dual input with positive commons.
	QS90SR2SN-Q	Safety relay module for MELSEC-Q series. Dual input with positive common and negative common.
CC-Link safety relay module	QS90SR2SP-CC	Safety relay module for CC-Link field network. Dual input with positive commons.
	QS90SR2SN-CC	Safety relay module for CC-Link field network. Dual input with positive common and negative common.
Extension safety relay module	QS90SR2SP-EX	Safety relay module for extension. Dual input with positive commons.
	QS90SR2SN-EX	Safety relay module for extension. Dual input with positive common and negative common.

2. Relevant Manuals

The following lists the safety relay module relevant manuals.
Order each manual as needed, referring to the list.

Manual Name	Manual Number (Model Code)
Safety Guidelines	IB-0800411 (13JZ09)
Safety Relay Module User's Manual	SH-080746ENG (13JY62)

3. Safety Standards

Use the product according to the following safety standards.

Region	Safety Standards
International	ISO13849-1:2006, IEC60204-1:2005, IEC61496-1:2004
Europe	EN954-1:1996, EN50178:1997, EN55011/A2:3002, EN61000-6-2:2005
North America	UL508

4. Module/Unit Replacement

Replace the module or unit according to the following replacement cycle.

Module/Unit	Replacement Cycle
Safety relay module	10 years

5. Installation

When installing a programmable controller to a control panel or similar, fully consider its operability, maintainability, and environmental resistance. For details, refer to the Safety Relay Module User's Manual.
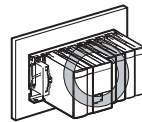
(1) Installation position

Keep the clearances shown below between the top/bottom faces of the modules and the control panel or other parts so that good ventilation is ensured and the modules can be easily replaced.
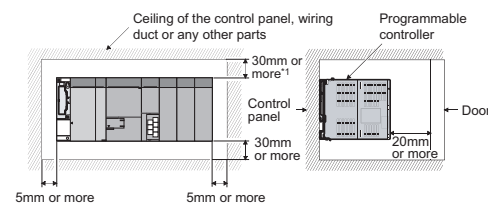

*1 A clearance required when the wiring duct is 50mm or less in height. A 40mm or more clearance is required when the wiring duct is longer.

(2) Module mounting orientation

(a) Mount modules in the following orientation to ensure good ventilation for heat release.

(b) Do not mount modules in the following orientations.

Vertical mounting   Upward/downward mounting

Upside-down mounting
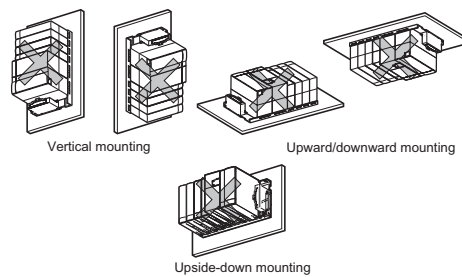
(3) Installation precautions

(a) Install a base unit on a flat surface.
If the surface is not flat, the printed circuit board is distorted, resulting in malfunction of the modules mounted.

(b) If there is a vibration source, such as an electromagnetic contactor or no fuse breaker, separate the control panel or keep enough clearance from the vibration source to install the programmable controller.
In addition, keep the clearances shown below between the programmable controller and devices (such as contactors and relays) to avoid being affected by radiated noise or heat.
• In front of the programmable controller: 100mm or more
• On the right or left of the programmable controller: 50mm or more

Device
(such as contactor and relay)
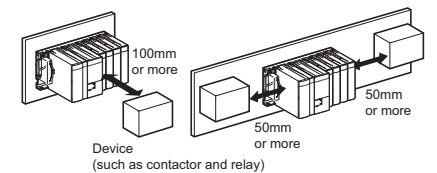
(c) When installing a programmable controller to a control panel, do not mount any module in the rightmost slot of the base unit.
Before uninstalling, remove the module mounted in the rightmost slot of the base unit.

(4) CC-Link safety relay module

For the installation of CC-Link safety relay module, refer to the Safety Guidelines provided with each module.

6. Module Status after Power-on and LED Indication

A safety programmable controller performs initial processing (such as self-diagnostics) after power-on or reset. The LEDs of each module indicate the module operating status after initial processing.

(1) Q Series safety relay module

No.	Name	Application
1)	PW LED	Indicates the status of module power supply. On: Power is being supplied. Off: Power is not supplied or an electric fuse has blown.
2)	ERR. LED	Indicates the host station error status. Flashing: A self-diagnostics error has occurred or power is not supplied. Off: The module is operating normally.
3)	Z LED	Indicates the status of the safety output. On: The module is outputting a safety signal. Off: The module is not outputting a safety signal.
4)	X0, X1 LED	Indicates the status of the safety input (X0, X1). On: Safety signals are input to the module. Off : No safety signal is input to the module.
5)	S PW LED	Indicates the status of safety power supply. On: Power is being supplied. Off: Power is not supplied or an electric fuse has blown.
6)	K0, K1 LED	Indicates the operating status (coil status) of the internal safety relay (K0, K1). On: The operating status of the internal safety relay is on. Off: The operating status of the internal safety relay is off.

(2) CC-Link safety relay module

No.	Name	Application
1)	PW LED	Refer to Q series safety relay module.
2)	ERR. LED	Refer to Q series safety relay module.
3)	L RUN LED	Indicates the communication status in the CC-Link system. On: The module is communicating normally. Off: The module is not communicating. (A timeout error has occurred.)
4)	SD LED	On: The module is sending data.
5)	RD LED	On: The module is receiving data.
6)	L ERR. LED	Indicates a communication error in the CC-Link system. On: A setting value of the station number setting switch or the transmission speed setting switch is out of range. Flashing regularly: A setting value of the station number setting switch or the transmission speed setting switch has been changed during operation. Flashing irregularly: A terminating resistor is not attached or is wrongly attached. Or, the module is affected by noise. Off: The module is communicating normally.
7)	S PW LED	Refer to Q series safety relay module.
8)	Z LED	Refer to Q series safety relay module.
9)	X0, X1 LED	Refer to Q series safety relay module.
10)	K0, K1 LED	Refer to Q series safety relay module.

(3) Extension safety relay module

No.	Name	Application
1)	PW LED	Refer to Q series safety relay module.
2)	ERR. LED	Indicates the host station error status. Flashing: A self-diagnostics error has occurred, power is not supplied, or communication with upper module(s) is disabled. Off: The module is operating normally
3)	Z LED	Refer to Q series safety relay module.
4)	X0, X1 LED	Refer to Q series safety relay module.
5)	K0, K1 LED	Refer to Q series safety relay module.

7. Precautions for Use

Users must prove that their entire safety system complies with the safety standards and the Machinery Directive. The third-party certification organization will validate the safety of product for the entire safety system, including a safety relay module and safety components.
To establish a safety system, calculate the target performance level (PL) for each safety application (safety function) based on the MTTFd and DCavg values of the safety relay module and connected safety components.
The calculation equation is shown in ISO13849-1:2006.

MTTFd and DCavg of the safety relay module are shown in following.

Module	PL	MTTFd(year)	DCavg(%)
Safety relay module	e	>100	0.99

8. EC Declaration of Conformity

EC Declaration of Conformity

Manufacturer: Mitsubishi Electric Corporation, Nagoya Works
Address: 1-14, 5-chome, Yada-Minami, Higashi-ku, Nagoya 461-8670,Japan
Products: Type: Safety relay modules
(Open Type equipment, Installation category II)
Model: QS9-Series
(Applicable units identified in Appendix)

These products comply with the following European directives:

Directive	Name
2006/42/EC	Machinery Directive

Further details of conformity to these directives are contained in the appendices (BCN-P9999-0622).

This declaration is based on the conformity assessment of following Notified Body:
TÜV SÜD PRODUCT SERVICE GMBH   NB 0123
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80339 München
Germany
phone: +49 (0)89 5008-40
fax: +49 (0)89 5008-4222
email: PS.Empfang@tuev-sued.de
Website : http://www.tuev-sued.de

Authorised Signature:
T. Takahashi
Senior Manager, FA System Department

Date: (signature)
2. 6. 2010   Toshiya Takahashi

Authorised Representative: Mitsubishi Electric Europe BV
in the European Community Gothaer Str. 8, 40880 Ratingen, Germany
through Responsible person
Signature:
H. Pütz
Executive Vice President &
Deputy Product Marketing Director,
FA European Business Group

Date: (signature)
28-05-2010

The appendices are part of this declaration. This declaration certifies the conformity with the directives mentioned, but does not contain any warranted qualities. The installation, usage and safety directions of the product documentation have to be observed.

BCN-P9999-0621-A

Appendix
QS-Series Safety relay module
Range of products:

QS90SR2SP-Q	5
QS90SR2SPN-Q	5
QS90SR2SP-CC	5
QS90SR2SN-CC	5
QS90SR2SP-EX	5
QS90SR2SN-EX	5

The conformity of the above mentioned products with the regulations of the directive 2006/42/EC for machinery is shown by the application of a Technical Construction File. This is supported by selected product tests to the following standards directly and indirectly (when Generic standards are used).
Note: The mentioned products must be used as directed by the associated documentation in order to provide full compliance.

Harmonized European Standards

Reference No.	Date of Issue
EN ISO13849-1	2008

Modules marked with a mark 5 have been tested to EN ISO13849-1(2008)

Revision Record
*   25/12/09   The list is created.

Signature
Toshiya Takahashi

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