TECHNICAL BULLETIN

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[Title] Precautions for external wiring of safety input (X0, X1)
[Date of Issue] July 2009 (Ver. A: March 2010)
[Relevant Models] QS90SR2SN-Q, QS90SR2SP-Q, QS90SR2SN-CC, QS90SR2SP-CC, QS90SR2SN-EX, QS90SR2SP-EX

Thank you for your continued support of Mitsubishi programmable controllers, MELSEC-QS series.

This technical bulletin gives additional precautions for external wiring in a system where any extension safety relay module is used. Please use safety relay modules in accordance with the precautions given in this bulletin.

1. Target modules

Table 1 Target modules

Module name	Type	Model name
Q series safety relay module (main module)	N	QS90SR2SN-Q
	P	QS90SR2SP-Q
CC-Link safety relay module (main module)	N	QS90SR2SN-CC
	P	QS90SR2SP-CC
Extension safety relay module (extension module)	N	QS90SR2SN-EX
	P	QS90SR2SP-EX

2. External wiring of safety input (X0, X1) when only main module is used in a system

Maximum wire length of the safety input (X0, X1) shall be 50m or less. (Wire diameter shall be 0.2 to 0.75mm^2 for Q series safety relay modules and 0.2 to 2.25mm^2 for CC-Link safety relay modules.)

Table 2 Maximum wire length of the safety input (X0, X1) when only main module is used

System configuration	Wire diameter	Maximum wire length of safety input (X0, X1)
QS90SR2SP-Q/QS90SR2SN-Q	0.2 to 0.75mm^2	50m
QS90SR2SP-CC/QS90SR2SN-CC	0.2 to 2.5mm^2	50m

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS : 1-14, YADA-MINAMI 5-CHOME, HIGASHI-KU, NAGOYA, JAPAN

3. External wiring of safety input (X0, X1) when both main and extension modules are used in a system

Note that wire diameter and maximum wire length vary depending on the input type and the time of manufacture.

(1) Input P type

When this type of extension module(s) is used in a system, wire the system according to the wire diameter and maximum wire length shown in Table 3.

Table 3 Maximum wire length of the safety input (X0, X1) when extension module (input P type) is used

System configuration	Wire diameter*1	Maximum wire length of safety input (X0, X1)*2			
		a	b	c	d
QS90SR2SN-Q/CC + one QS90SR2SP-EX module	0.2 to 2.5mm^2	50m	50m	-	-
QS90SR2SN-Q/CC + two QS90SR2SP-EX modules	0.2 to 2.5mm^2	50m	50m	50m	-
QS90SR2SN-Q/CC + three QS90SR2SP-EX modules	0.2 to 2.5mm^2	50m	50m	50m	50m

*1: The diameter of the wire connected to the QS90SR2SP-Q shall be 0.2 to 0.75mm^2.

*2: Each wire length (a, b, c, and d) corresponds to the same alphabets shown in Figure 1.

(2) Input N type

The wiring specifications vary depending on the time of manufacture.

(a) When the production information (first six digits) of the module is "111013" or earlier

If a system includes any main or extension module whose production information (first six digits) is "111013" or earlier, wire the system according to the wire diameter and maximum wire length shown in Table 4.

Table 4 Maximum wire length of the safety input (X0, X1) when extension module (input N type) is used

System configuration	Production information (first six digits)	Wire diameter*1	Maximum wire length of safety input (X0, X1)*2			
			a	b	c	d
QS90SR2SN-Q/CC + one QS90SR2SN-EX module	"111013" or earlier (any one of the modules)	0.75 to 2.5mm^2	30m	20m	-	-
QS90SR2SN-Q/CC + two QS90SR2SN-EX modules		0.75 to 2.5mm^2	20m	15m	15m	-
QS90SR2SN-Q/CC + three QS90SR2SN-EX modules		0.75 to 2.5mm^2	10m	13.3m	13.3m	13.3m

*1: The diameter of the wire connected to the QS90SR2SN-Q shall be 0.75mm^2.

*2: Each wire length (a, b, c, and d) corresponds to the same alphabets shown in Figure 1.

(b) When the production information (first six digits) of the module is "111014" or later

If a system is configured with a main module and extension module(s) whose production information (first six digits) is "111014" or later, wire the system according to the wire diameter and maximum wire length shown in Table 5.

Table 5 Maximum wire length of the safety input (X0, X1) when extension module (input N type) is used

System configuration	Production information (first six digits)	Wire diameter*1	Maximum wire length of safety input (X0, X1)*2			
			a	b	c	d
QS90SR2SN-Q/CC + one QS90SR2SN-EX module	"111014" or later	0.2 to 2.5mm^2	50m	50m	-	-
QS90SR2SN-Q/CC + two QS90SR2SN-EX modules		0.2 to 2.5mm^2	50m	50m	50m	-
QS90SR2SN-Q/CC + three QS90SR2SN-EX modules		0.2 to 2.5mm^2	50m	50m	50m	50m

*1: The diameter of the wire connected to the QS90SR2SN-Q shall be 0.2 to 0.75mm^2.

*2: Each wire length (a, b, c, and d) corresponds to the same alphabets shown in Figure 1.

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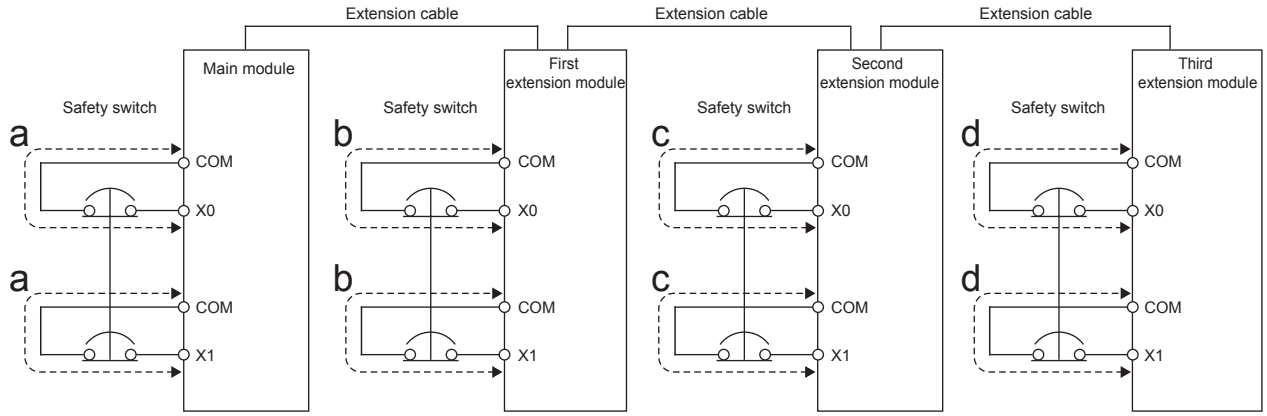

Figure 1 System configuration and external wiring diagram

a: External wire length of the safety input (X0-COM, X1-COM) of the main module
b: External wire length of the safety input (X0-COM, X1-COM) of the first extension module
c: External wire length of the safety input (X0-COM, X1-COM) of the second extension module
d: External wire length of the safety input (X0-COM, X1-COM) of the third extension module

REVISIONS

Version	Print Date	Revision
-	July 2009	First edition
A	March 2010	Chapter 3 (2) (a) and (b) are added.

MITSUBISHI ELECTRIC CORPORATION
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