

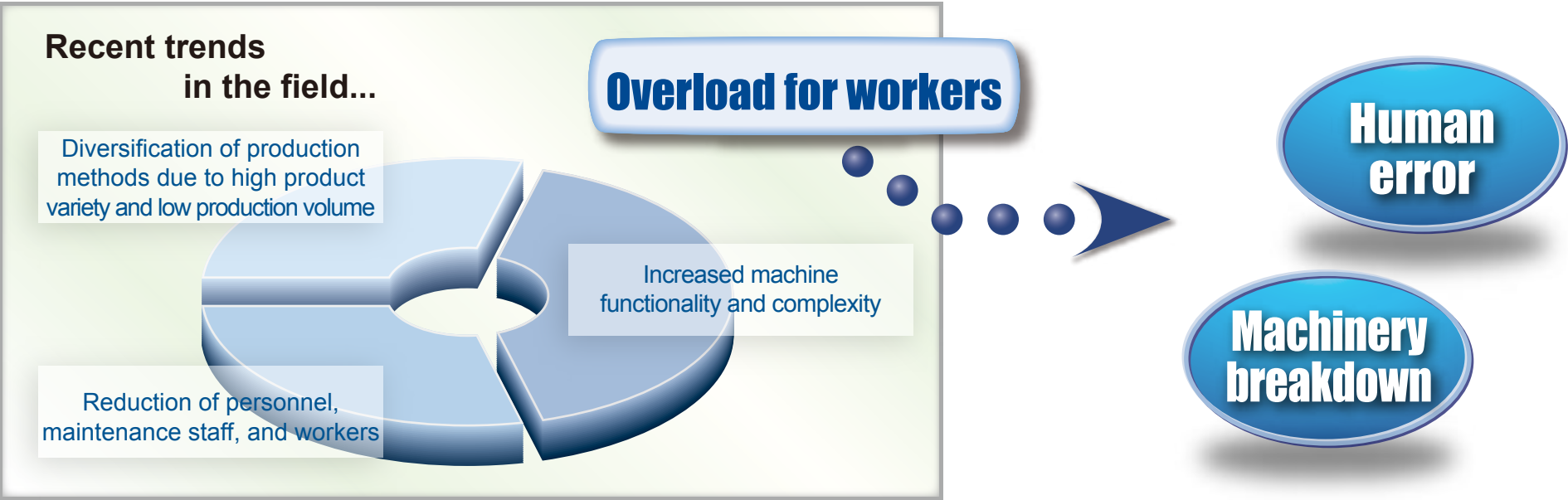


Mitsubishi **Safety Solutions** meet production line safety requirements

Safety

Companies have the social responsibility of ensuring safety at the production site. At the same time it is essential to operate at the highest level of efficiency and productivity to succeed in today's competitive global market. To meet both of these needs, Mitsubishi Electric offers a comprehensive line of products to provide superior safety solutions.

■ **Necessity for safety**



■ **Steps to a safe production line**



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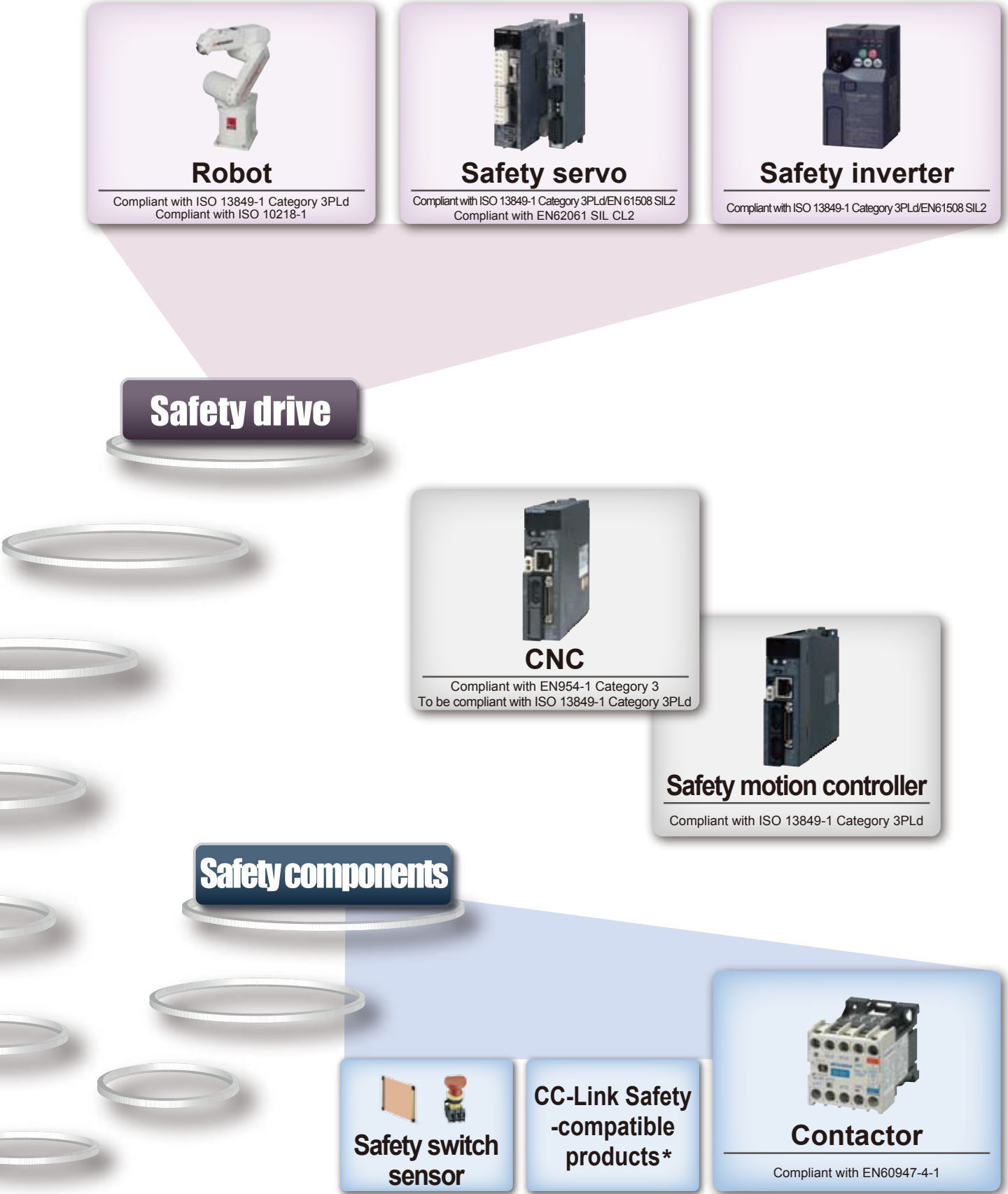
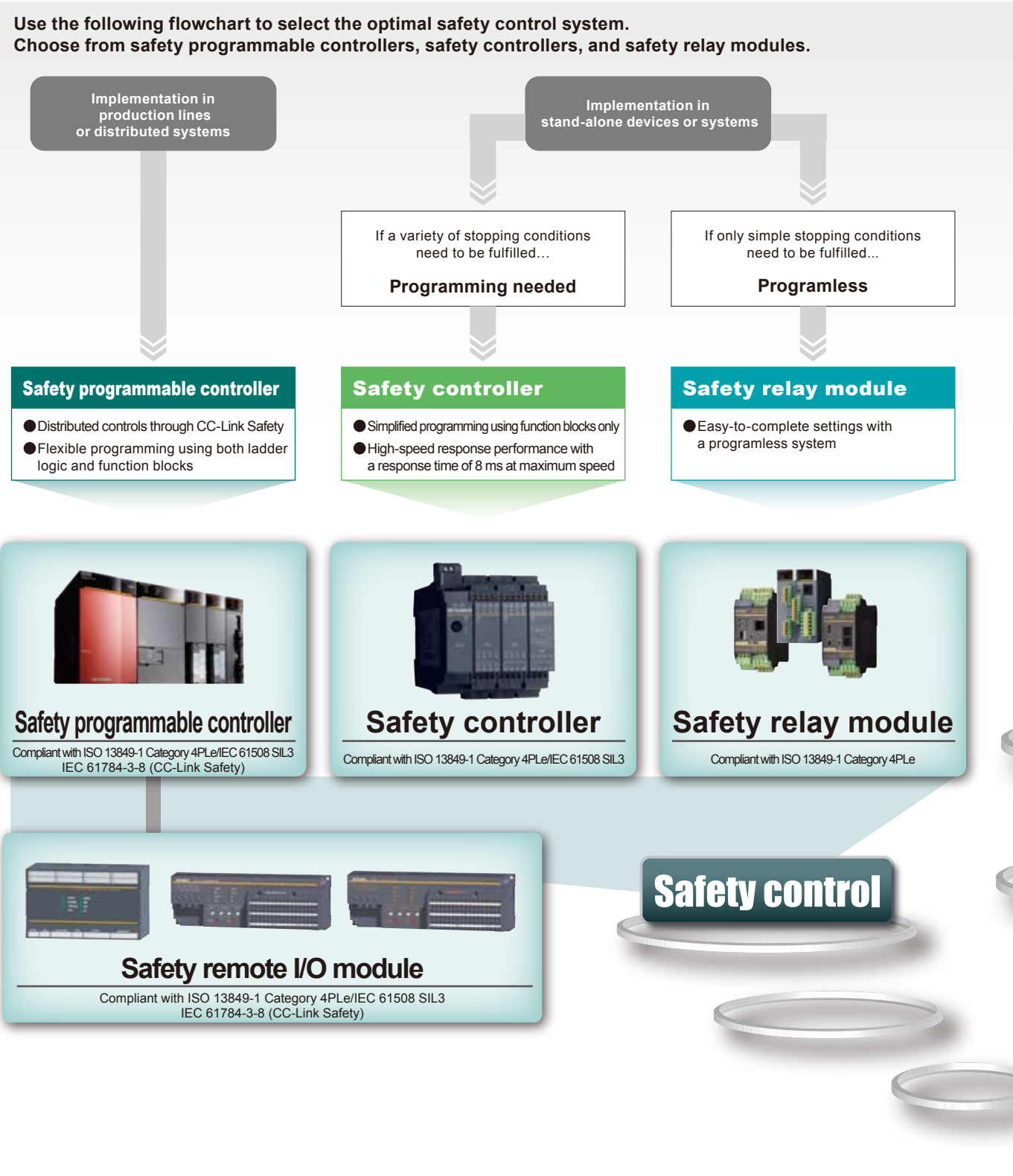
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Mitsubishi Electric offers **Safety Solutions** supported by an extensive line of safety products.

Safety

Mitsubishi Electric provides a total safety solution by incorporating safety control devices, safety drive devices, and safety components required for safety systems. This comprehensive offering allows visualization of safety information, which results in dependable safety control and maximized productivity.

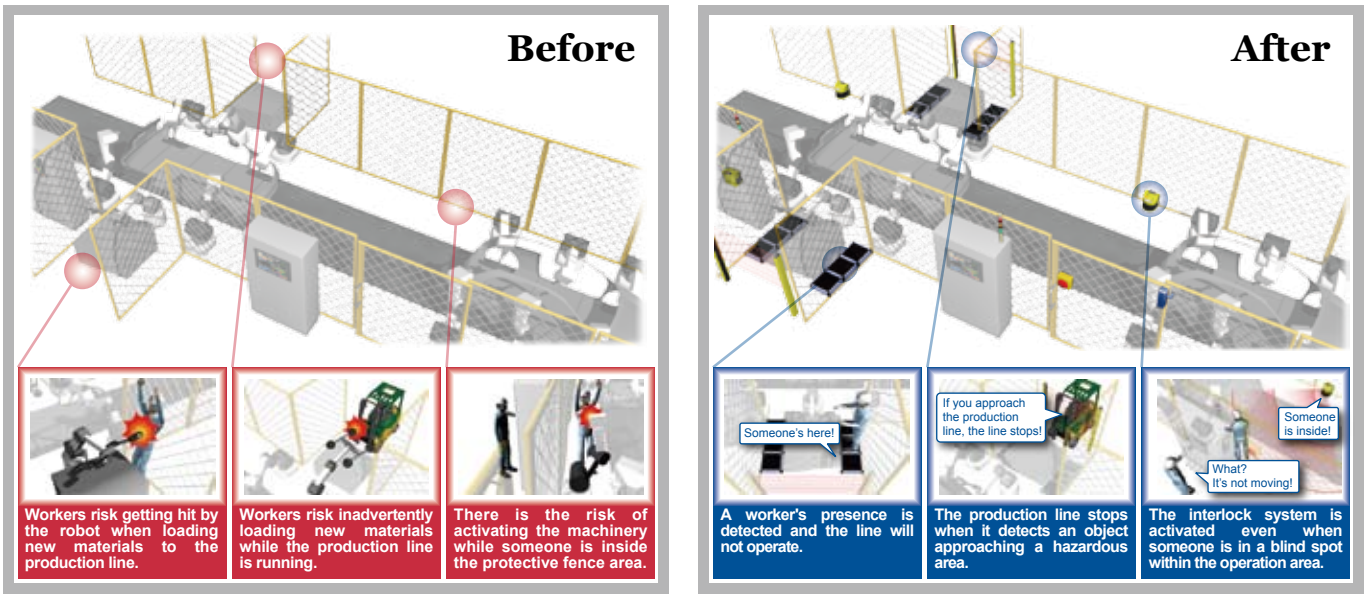


* For details on the connecting method, refer to the manual for each product.

*CLPA-partner products

Safety solution application example 1

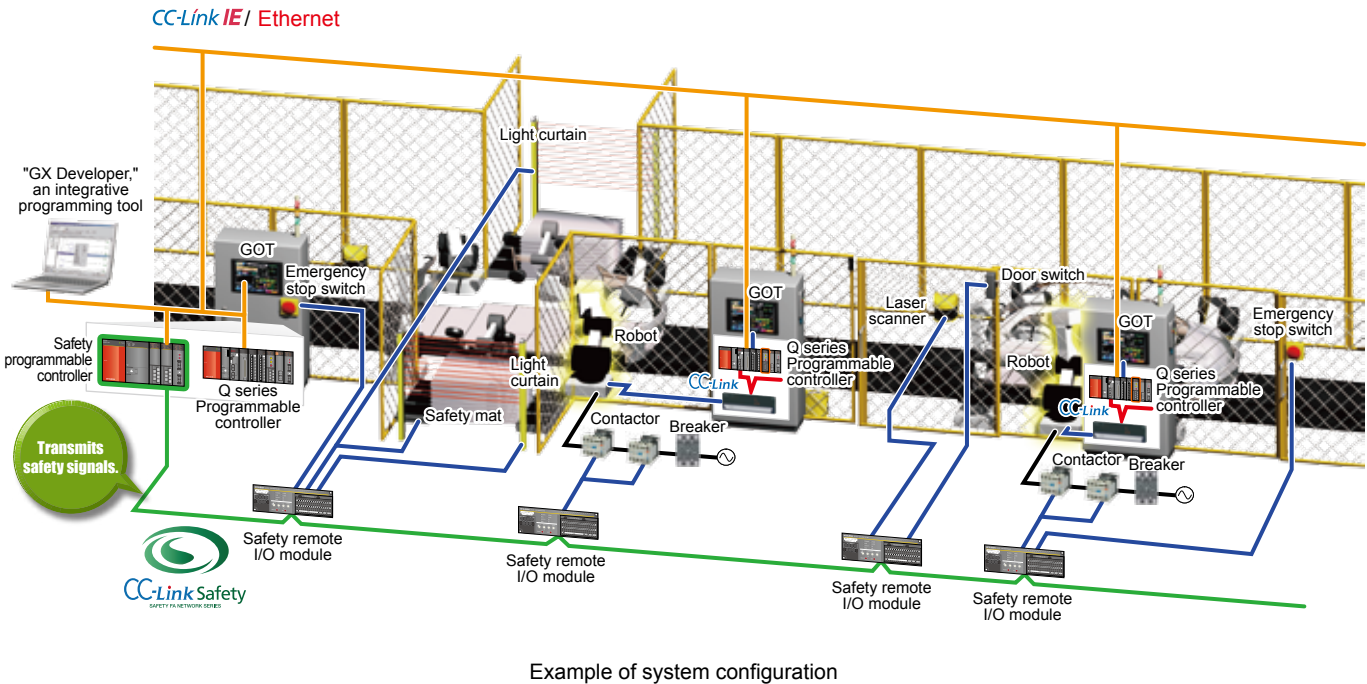
Safety implementation in large scale production line



System Concepts

The safety programmable controller is ideal for distributed I/O control of large-scale production lines and distributed systems.

- Safety programmable controller's compatibility with CC-Link Safety, a safety field network, simplifies wiring of safety signals and enables connection of remote I/O modules using only one cable.
- The integrative programming tool, GX Developer, uses ladder logic and safety function blocks to create simple programs for complex safety circuits.
- GX Developer or a GOT can monitor signals detected by a safety remote I/O to quickly track input and operating states of safety devices.

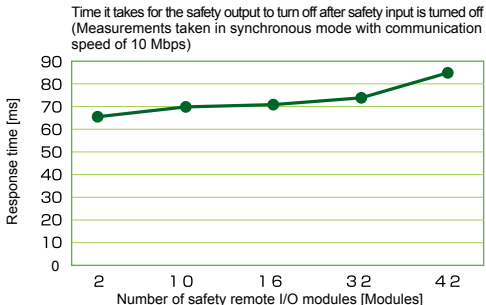


Safety Programmable Controller

- The safety programmable controller is compliant with ISO 13849-1 category 4PLe and IEC 61508 SIL3 international safety standards.
- Compatible with safety field network CC-Link Safety
 - Compliant with ISO 13849-1 PLe and IEC 61508 SIL3
 - Same 10 Mbps transmission speed as CC-Link
 - Maximum total cable length of 1,200 m (For speed of 156 kbps)
 - One safety CPU can control up to 84 safety remote I/O modules
 - QS0J65BTB2-12DT: 8 points safety input, 4 points safety output
 - QS0J65BTS2-8D : 8 points safety input
 - QS0J65BTS2-4T : 4 points safety output
 - Reduced I/O wiring by setting up remote I/O modules in distributed systems
 - Stable high speed communication even if the number of remote I/O modules in the system increases
- Compatible with general communication networks such as CC-Link IE and Ethernet
 - A general PLC can monitor a safety programmable controller's data notifications such as operating state and error state via CC-Link IE or Ethernet communication.
 - GX Developer enables program monitor, device monitor, and operation and history monitor of safety programmable controllers via Ethernet communication. Maintainability is improved as the program status can be checked remotely.
 - Safety programmable controller programs can be monitored via network as is possible with GOTs. Maintainability is improved because there is no need to take a computer on site.
- Create concise safety programs in GX Developer using safety function blocks (FBs).

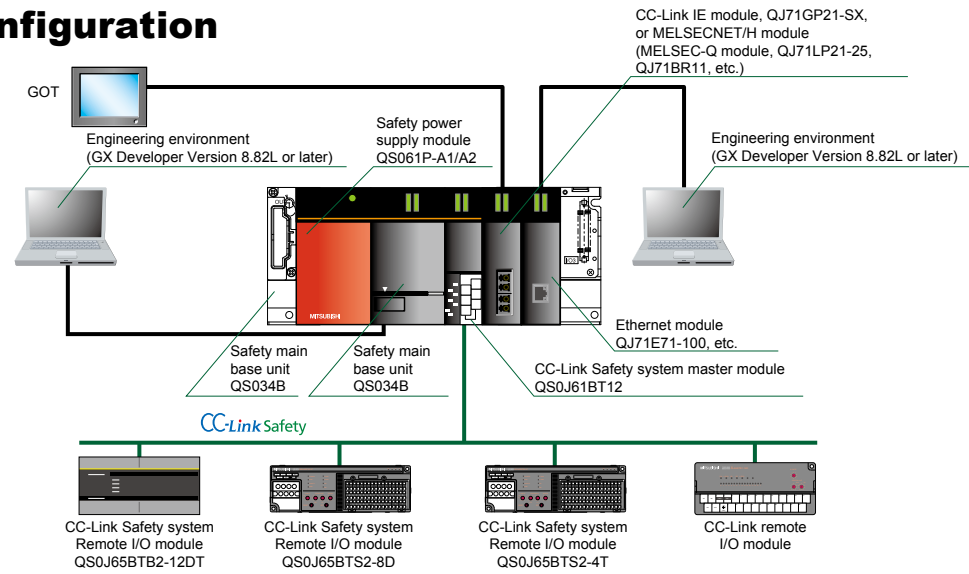


[Safety programmable controller]



[CC-Link Safety Response Time]

System configuration

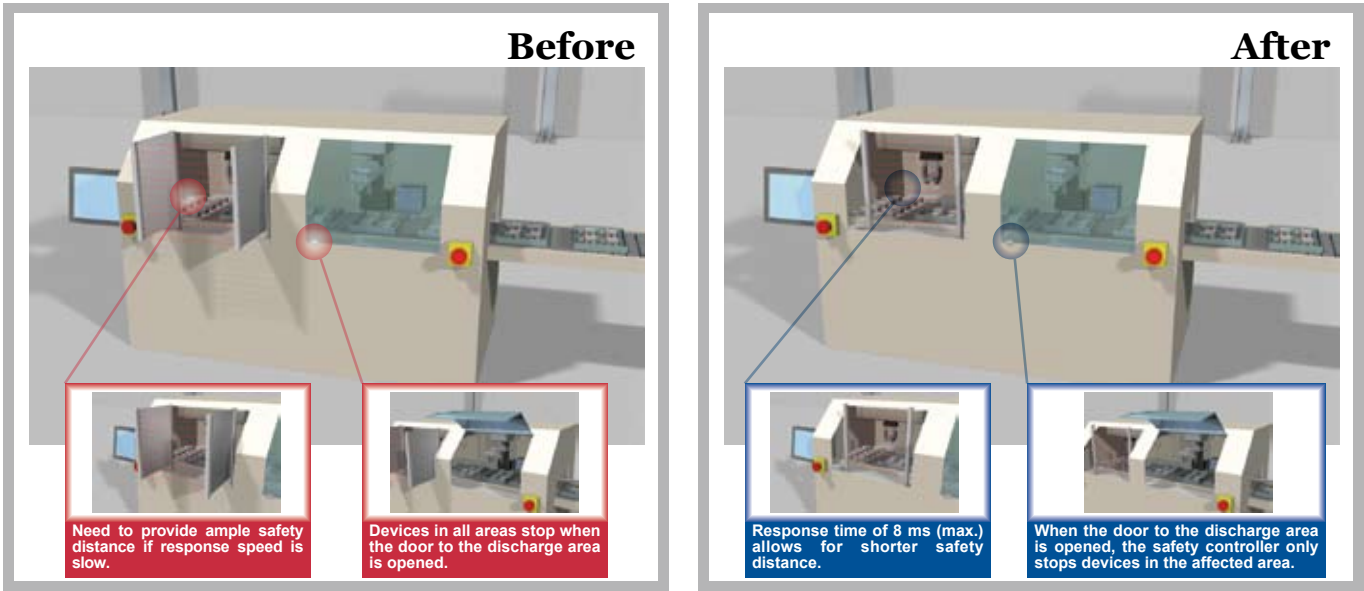


Product name	Model*	Outline
Safety CPU module	QS001CPU(-K)	Program capacity: 14 k steps, number of I/O device points: 6144 points, operation/error history: 3,000 records
Safety main base unit	QS034B(-K)	4 slots; for QS Series, MELSECNET/H, CC-Link IE, and Ethernet modules
Safety power supply module	QS061P-A1(-K) QS061P-A2(-K)	Input: 100 to 120 V AC, 50/60 Hz; output: 5 V 6 A; with overvoltage/overcurrent protection and shutdown circuit diagnostics Input: 200 to 240 V AC, 50/60 Hz; output: 5 V 6 A; with overvoltage/overcurrent protection and shutdown circuit diagnostics
CC-Link Safety system master module	QS0J61BT12(-K)	Max. number of connectable modules: 64 (42 for safety stations), safety station information management
CC-Link Safety system remote I/O module	QS0J65BTB2-12DT(-K)	Safety input: 8 points (dual input); safety output: 4 points (dual output)
	QS0J65BTS2-8D	Safety input: 8 points (dual input)
	QS0J65BTS2-4T	Safety output: 4 points (dual output)

* S-mark compatible part models are indicated in parentheses.

Safety solution application example 2

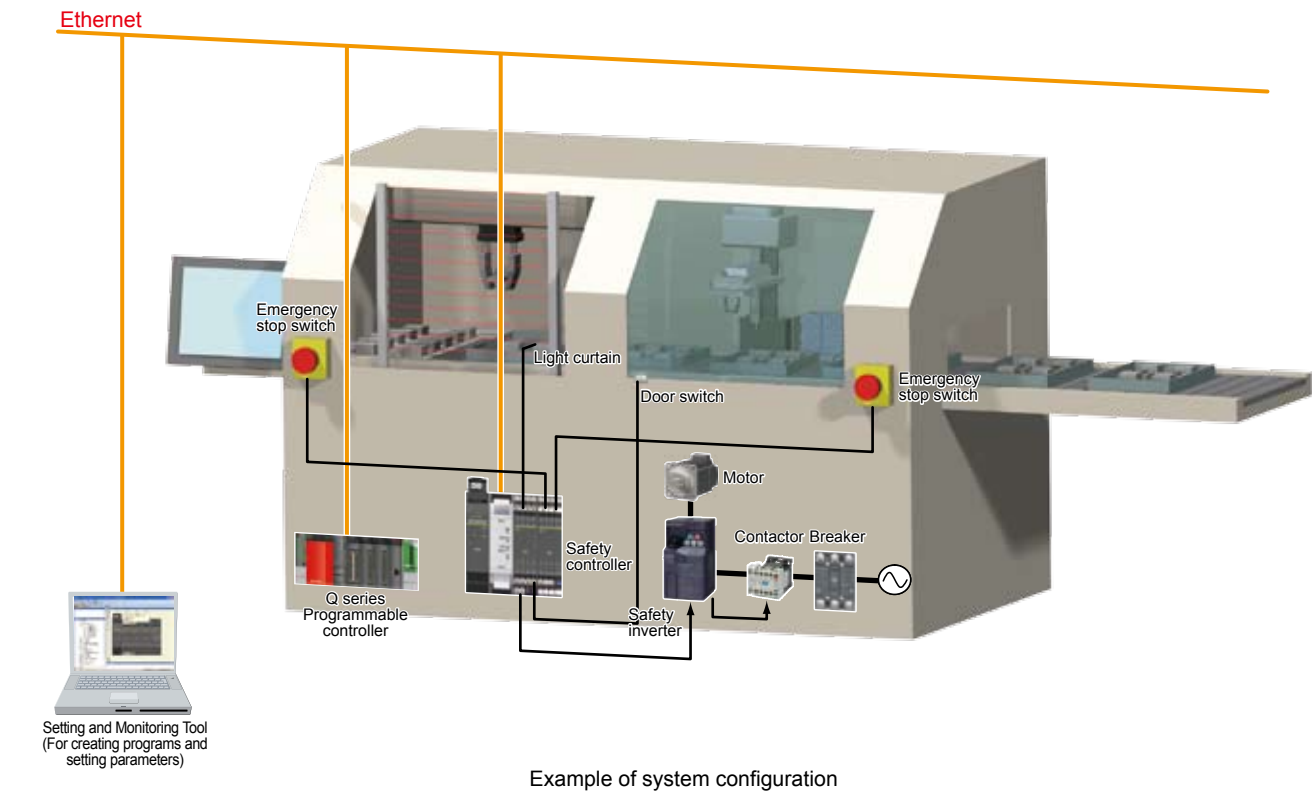
Safety implementation in automated machinery



System Concepts

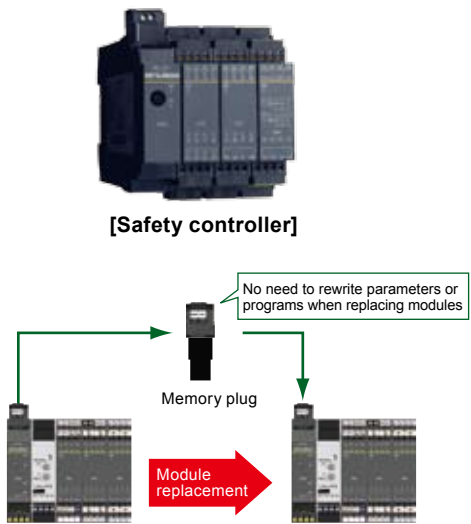
Safety controller is specifically designed to ensure safe operation of stand-alone devices through the programming of safety logic.

- Safety controllers can be easily programmed using safety function blocks.
- Flexible expansion (expansion of safety I/O and communications with Q series Programmable controllers) and its compact size make the safety controller perfect for stand-alone devices and small control panels.

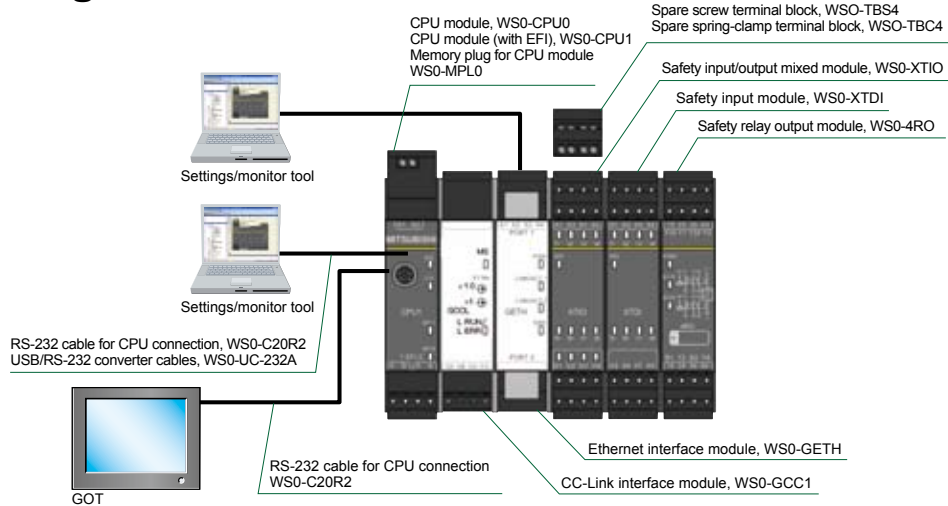


Safety Controller

- The safety controller is compliant with ISO 13849-1 Category 4PLe and IEC 61508 SIL3 international safety standards.
- Maximum of 12 safety input/output mixed modules, 4 safety relay output modules, and 2 network interface modules (Ethernet and CC-Link).
- Optimal for safety control of stand-alone devices and systems: can be expanded to 144 points (for single input) or 96 safety inputs and 48 safety outputs to suit the system configuration.
- Easy CPU module replacement by storing parameters and programs in a memory plug using the Setting and Monitoring Tool.
- Efficient information monitor (such as CPU status, arithmetic operation results, and input/output signal) between a PC, Q series Programmable controller, and safety controller through a network interface module.
- Shorter safety distance required thanks to the safety output fast shut off function's rapid response time of 8 ms.
- Direct input, setting, and diagnosis of safety data for connected SICK safety devices (such as light curtains and laser scanners) through an EFI interface in the CPU module.



System configuration



Product name	Model	Outline
CPU module	WS0-CPU0	Program size: 255 FBs, Scan cycle: 4 ms, Interface: RS-232
CPU module (with EFI)	WS0-CPU1	EFI-equipped (EFI is the communication interface for setting SICK's safety products.)
PU module memory plug	WS0-MPL	For storing CPU parameters and programs (required)
Safety input module	WS0-XTDI	Safety input: 8 points (single input), Spring clamp terminal block, Fast shut off function (response of 8 ms)
Safety I/O module	WS0-XTIO	Safety input: 8 points (single input), Safety output: 4 points (single output) Output current: max. 2 A, Spring clamp terminal block, Fast shut off function (response of 8 ms)
Safety relay output module	WS0-4RO	Safety output: safety relay output 4 points (single input), Output current: max. 6 A
RS-232 cable connecting to CPU module	WS0-C20R2	RS-232 cable for PC-CPU connection
USB/RS-232 conversion cable	WS0-UC-232A	USB/RS-232 conversion cable
CC-Link interface module	WS0-GCC1	For CC-Link communication (standard communication)
Ethernet interface module	WS0-GETH	For Ethernet/TCP connection (standard communication)
Screw-in replacement terminal block	WS0-TBS4	Screw-in replacement terminal block
Spring clamp replacement terminal block	WS0-TBC4	Spring clamp replacement terminal block
Setting and Monitor Tool*	SW1DNN-WS0ADR-B	Setting and Monitor Tool for safety controller

* Please download from the MELFANS Web page.

Safety solution application example 3

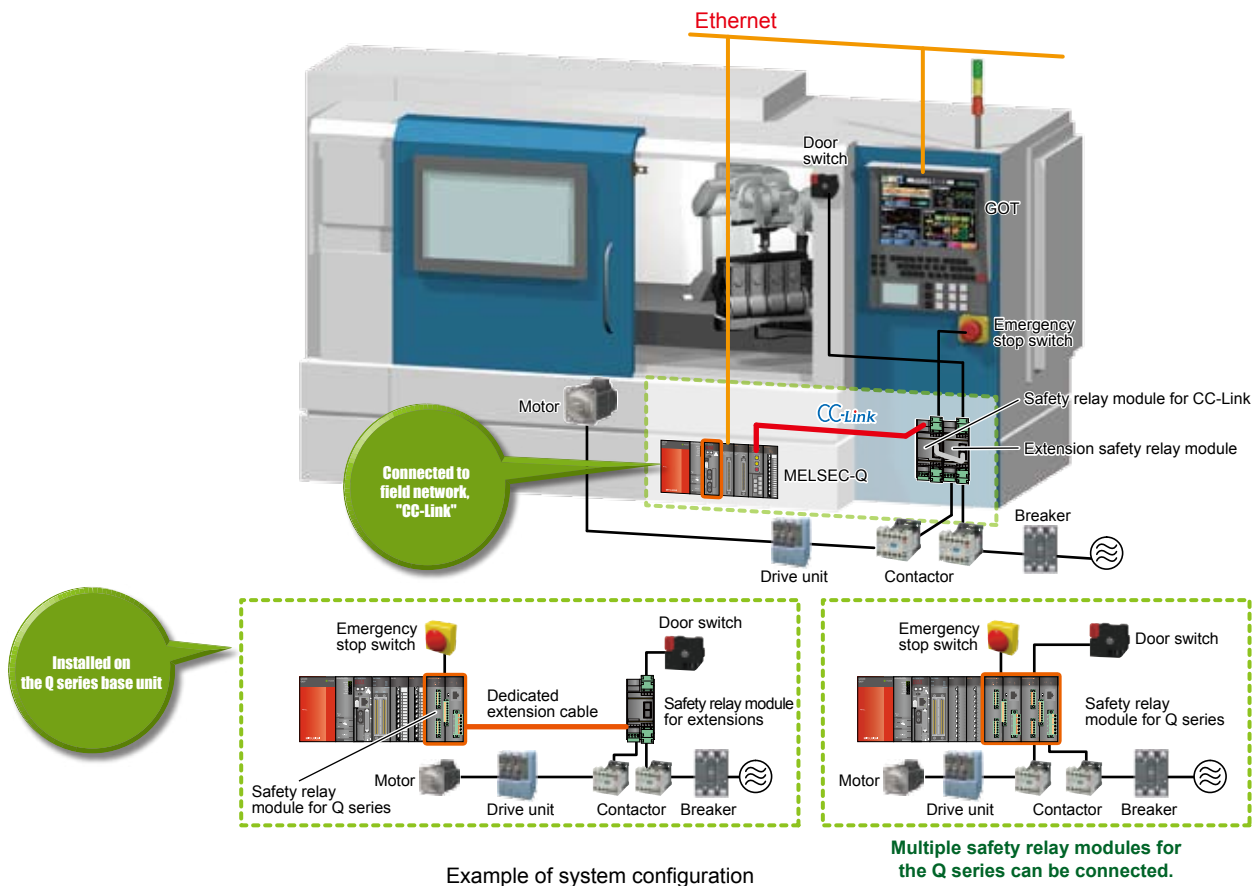
Safety implementation in stand-alone processing machinery



System Concepts

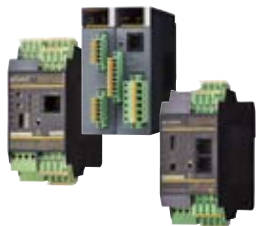
Safety relay module is fit for control of stand-alone devices whose safety circuits do not require any programming.

- Simply wire the safety relay to effortlessly construct a safety circuit.
- Easily obtain machine safety certification because the programless safety relay module does not require software documentation.



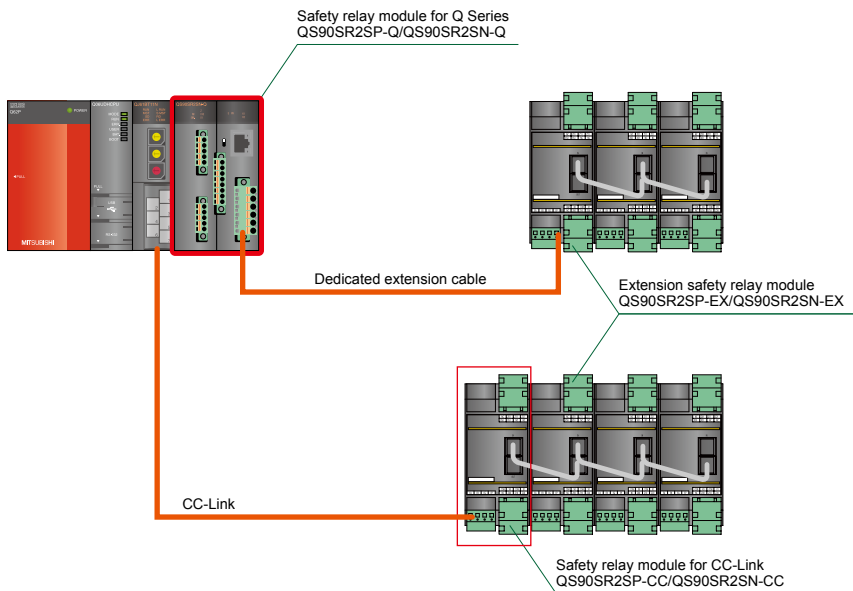
Safety Relay Module

- The safety relay is compliant with ISO 13849-1 Category 4PLe.
- Programming and complicated parameter settings are out of the picture because safety circuits are available by just wiring.
- Easily add safety control to existing MELSEC-Q PLCs by mounting safety relays to the Q Series base unit or connecting them to a field network (CC-Link).
- Monitor operation and error states of safety relay modules from the existing MELSEC-Q PLCs. Visualization of safety signals leads to accelerated identification of the cause of emergency stops and failures.
- Extension safety relay modules allow a maximum expansion of 4 safety input and output points each.
- Safety input of the extension safety relay modules effectively shut off only those areas that need to be stopped.
- High degree of protection achieved through separation of safety circuit from CPU and CC-Link circuits - safety control remains reliable despite CPU error and CC-Link communication state.



[Safety Relay Module]

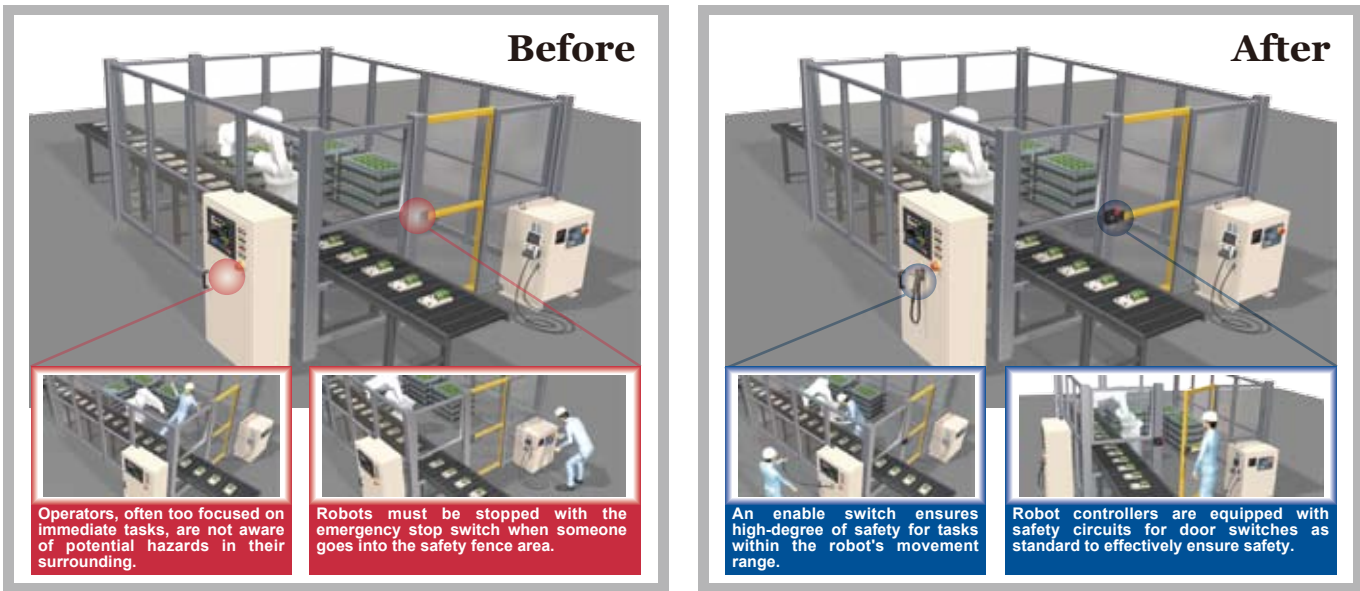
System configuration



Product name	Model	Outline
Q Series safety relay module	QS90SR2SP-Q	For Q Series; safety input: 1 point (2 inputs), P type (dual input with positive commons); safety output: 1 point (3 outputs)
	QS90SR2SN-Q	For Q Series; safety input: 1 point (2 inputs), N type (dual input with positive common and negative common); safety output: 1 point (3 outputs)
CC-Link safety relay module	QS90SR2SP-CC	For CC-Link; safety input: 1 point (2 inputs), P type (dual input with positive commons); safety output: 1 point (3 outputs)
	QS90SR2SN-CC	For CC-Link; safety input: 1 point (2 inputs), N type (dual input with positive common and negative common); safety output: 1 point (3 outputs)
Extension safety relay module	QS90SR2SP-EX	For extension; safety input: 1 point (2 inputs), P type (dual input with positive commons); safety output: 1 point (3 outputs)
	QS90SR2SN-EX	For extension; safety input: 1 point (2 inputs), N type (dual input with positive common and negative common); safety output: 1 point (3 outputs)
Safety circuit part extension cable	QS90CBL-SE01	0.1 m cable for adding safety part
	QS90CBL-SE15	1.5 m cable for adding safety part

Safety solution application example 4

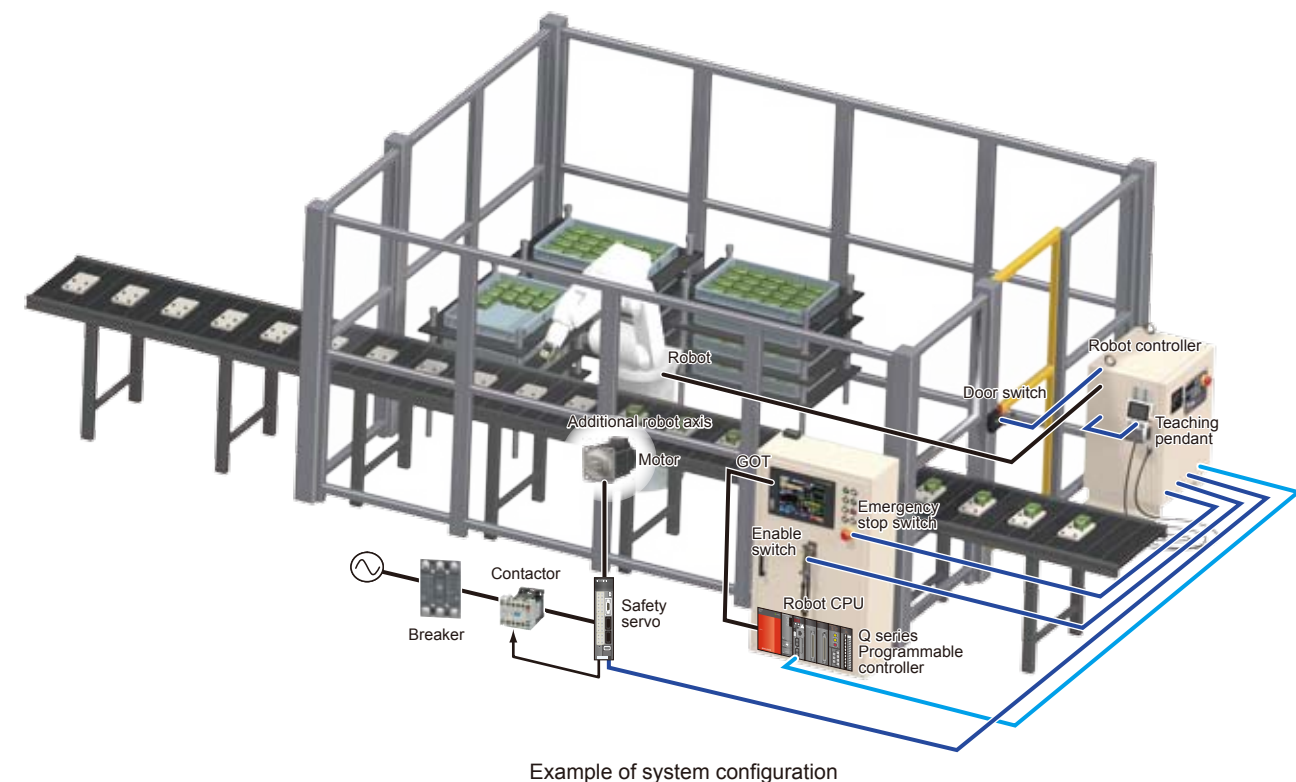
Safety implementation in assembly/transport tasks



System Concepts

Mitsubishi MELFA Series Industrial Robots have built-in safety circuits and are highly efficient at safety control of assembly and transport cells.

- Connecting safety signals to robot controllers eliminates the need of separate safety circuits for each equipment and reduces plant construction costs along with control panel space.
- Safety circuits for the enable switch facilitates coordinated operation between teaching operators and monitoring personnel during teaching tasks.
- The additional robot axis is synchronized with the servo ON/OFF state to reassure safety of all equipment.



Mitsubishi MELFA Series Industrial Robot

The Mitsubishi MELFA Series Industrial Robots are compliant with ISO 10218-1 and ISO 13849-1 Category 3PLd safety requirements for industrial robots.

Robot controllers come equipped with safety speed limiters^{Note1} and door switch^{Note2} functions to ensure the safety of operators while robots are in operation.

Note 1: Speed is limited to 250 mm/s or less for modes other than automatic operation.

Note 2: Reads the status of the switch on the door of the protective fence, and turns OFF the servo when the door is opened.

The emergency stop switch on the control panel or teaching box stops peripheral equipment even if the robot's power is off.

GOT operation achieves enhanced visualization.

SQ Series: Can monitor safety-related signals in the GOT through shared memory in a multimode CPU.

SD Series: Can monitor safety-related signals in the GOT through a GOT-direct connection function with no need to create ladder logic programs for PLC.

The optional teaching boxes (R32TB and R56TB) come equipped with a three-position^{Note3} enable switch to further boost the safety level.

Note 3: Three positions

- (1) When not pushed : Robot inoperable. (Servo OFF state)
- (2) When lightly pushed : Robot can be operated.
- (3) When pushed hard : Robot inoperable. (Servo OFF state)



[Mitsubishi MELFA Series Industrial Robot] (RV-6SQ)

Three-position enable switch



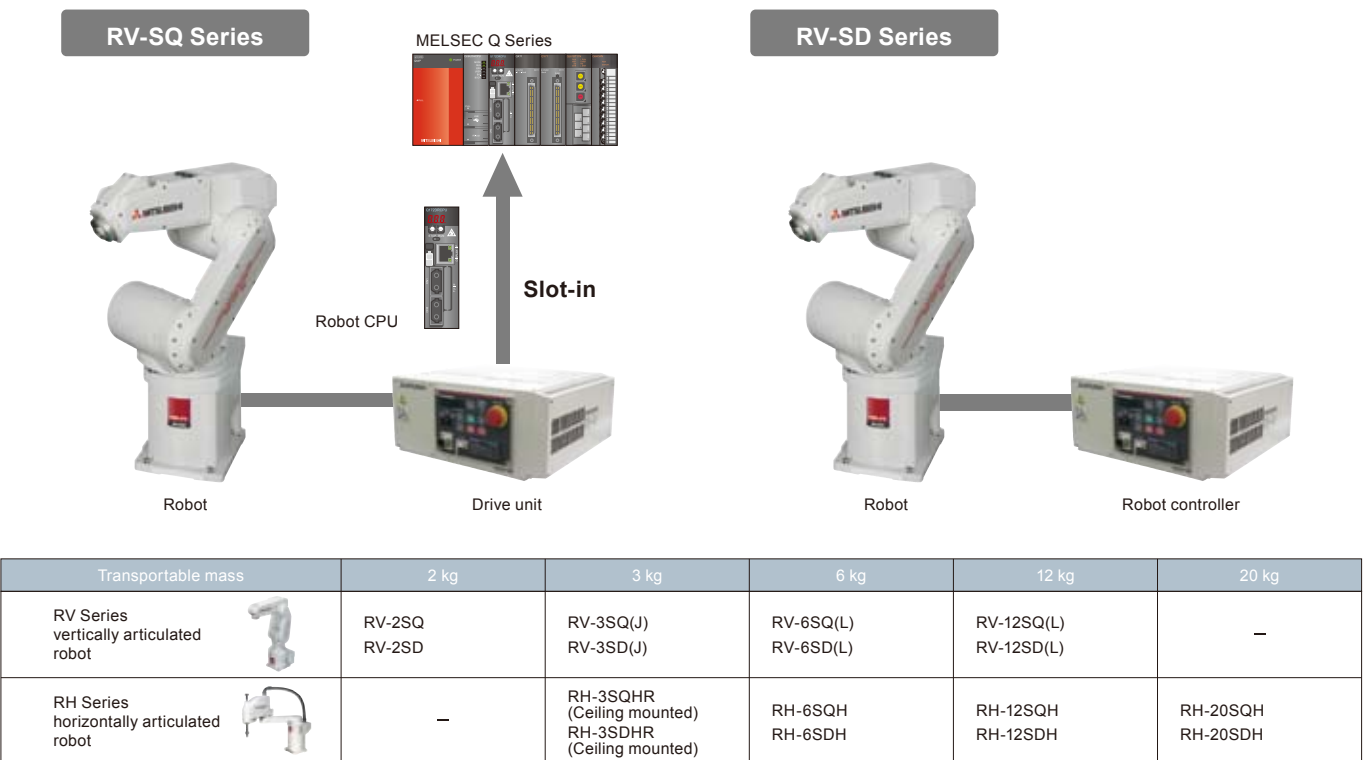
(Front)



(Back)

Teaching box (R32TB)

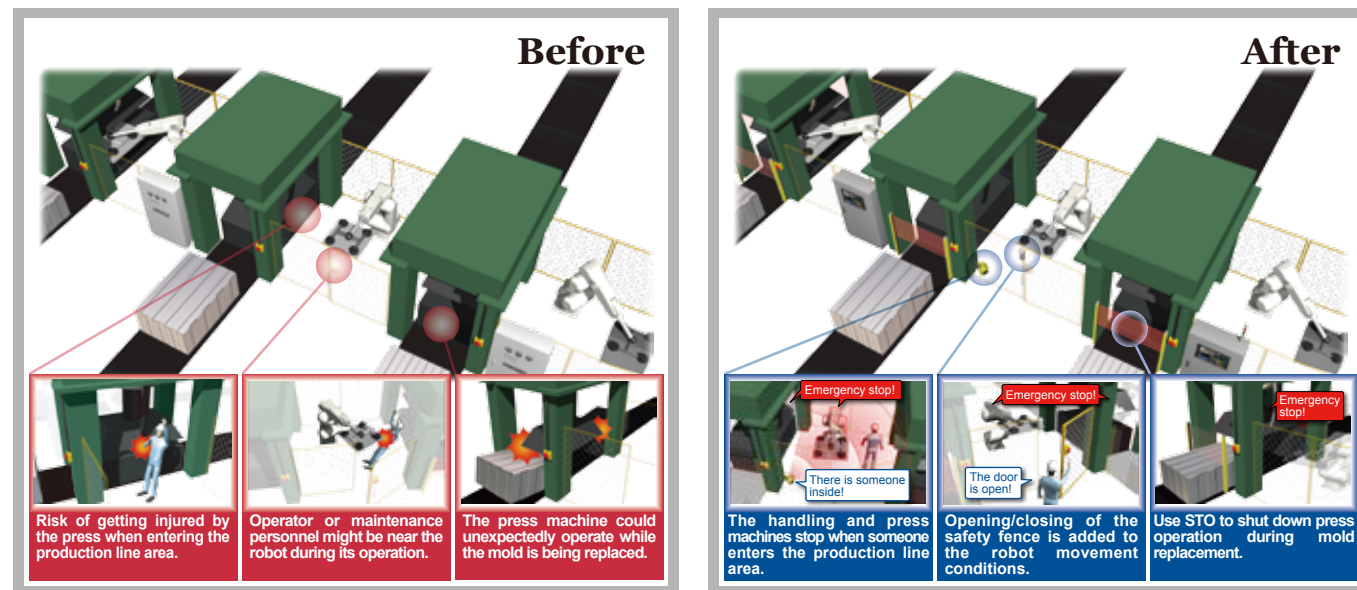
System configuration



Safety solution application example 5

Safety implementation in press machines

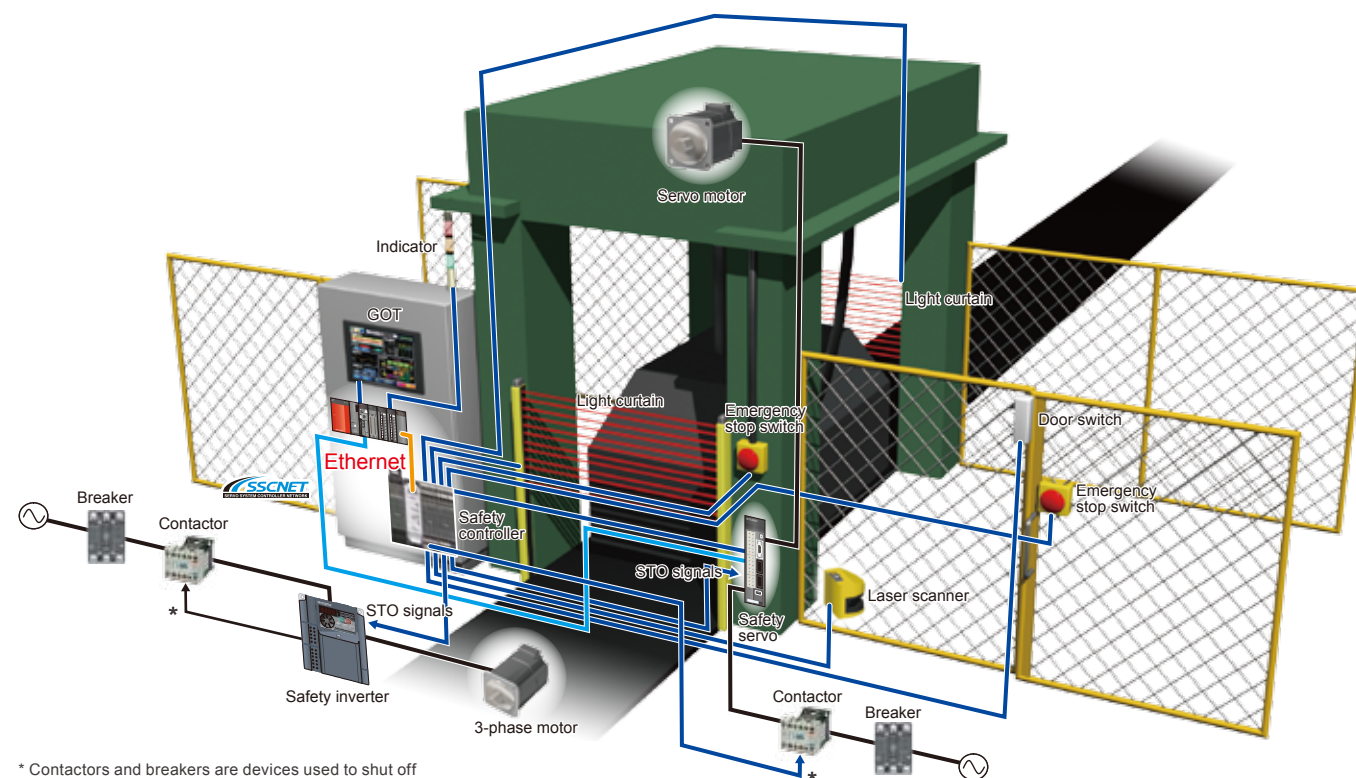
Safety



System Concepts

Safety servo and safety inverter offer built-in Safe Torque OFF (STO) that enhances safety control of press machines.

- Built-in STO contributes to cost reduction by eliminating the need for two shutoff contactors.
- Deactivating power on the drive unit while supplying power to the safety servo and safety inverter enables faster machine restart.



* Contactors and breakers are devices used to shut off power during servo/inverter errors or during wiring/maintenance operations.

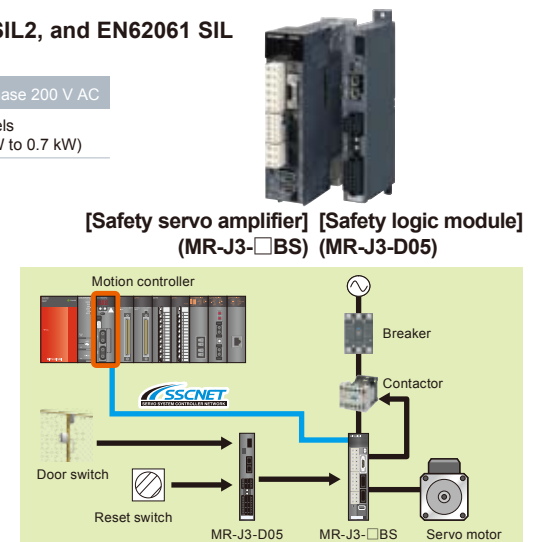
Example of system configuration

Safety Servo

- The safety servo is compliant with ISO 13849-1 Category 3PLd, EN61508 SIL2, and EN62061 SIL CL2 international safety standards.

	3-phase 200 V AC	3-phase 400 V AC	Single-phase 100 V AC	Single-phase 200 V AC
MR-J3-□BS	13 models (0.1 kW to 22 kW)	9 models (0.6 kW to 22 kW)	3 models (0.1 kW to 0.4 kW)	5 models (0.1 kW to 0.7 kW)

- Compliant with Stop Category 0 through the built-in STO function.
- Compatible with the SS1 (Safe Stop1) function by combining the safety logic module (MR-J3-D05) with the safety servo(MR-J3-□-BS).
- Compliant with Stop Category 1 through STO and SS1 functions.
- The Safety Servo(MR-J3-□BS) is compatible with fully closed control systems. In addition, current MR-J3-□BS modules can be directly replaced with safety servos with the existing wiring left intact.



Safety Inverter

- The safety inverter is compliant with ISO 13849-1 Category 3PLd and EN61508 SIL2 international safety standards.

	3-phase 200 V AC	3-phase 400 V AC	Single-phase 200 V AC
FR-D700	11 models (0.1 kW to 15 kW)	9 models (0.4 kW to 15 kW)	6 models (0.1 kW to 2.2 kW)
FR-E700-SC			

- Compliant with Stop Category 0 because STO is used as the safety stop function.
- High-level reliability and simplified wiring using a spring-clamp terminal block (control circuit)*.

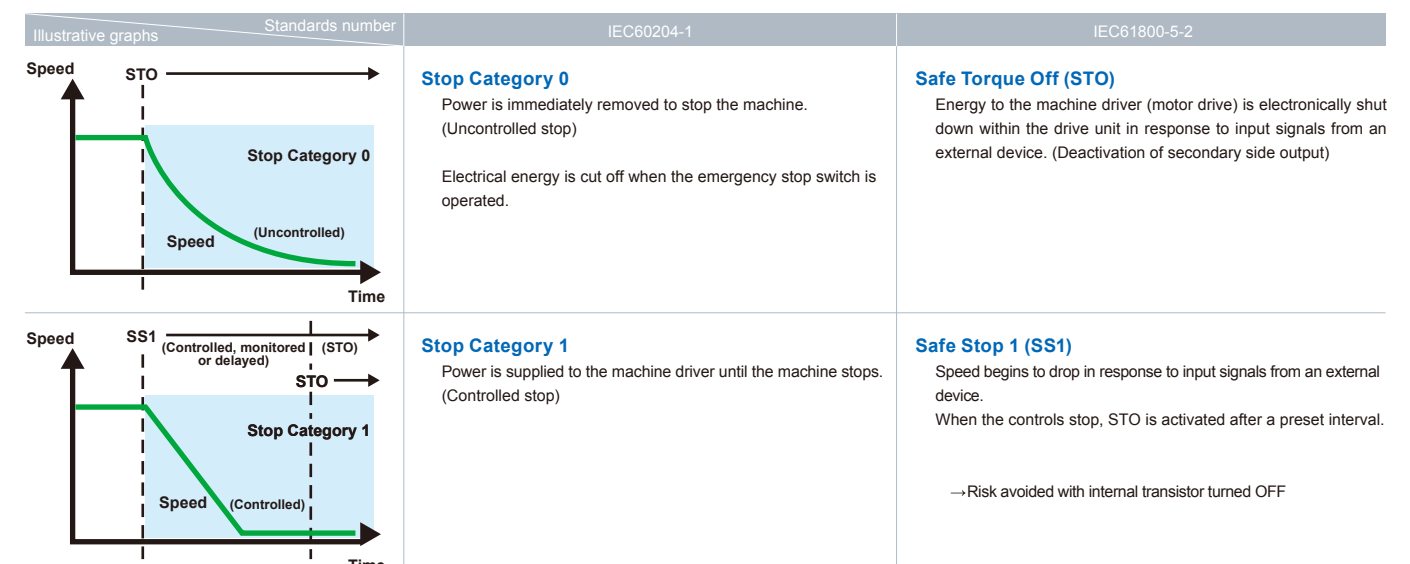
* Screw terminal block used as main circuit terminal block

- The FR-E700-SC has built-in safety stop function and spring clamp terminal block (control circuit). The following are the specifications that differ from those of the standard product (specifications not listed below are identical to the standard product):

- Dedicated control terminal block (cannot use optional control terminals)
- 2 points added for safety input (S1, S2), with the number of connecting input terminals changing from 7 points to 6 points
- Deeper (D dimension) than the standard product
- Cannot use the built-in options (the FR-A7-□□E kit) for standard FR-E700 series (ongoing plans to develop dedicated FR-E700-SC built-in options)



**[Safety inverter]
(FR-E700-SC)**



Safety solution application example 6

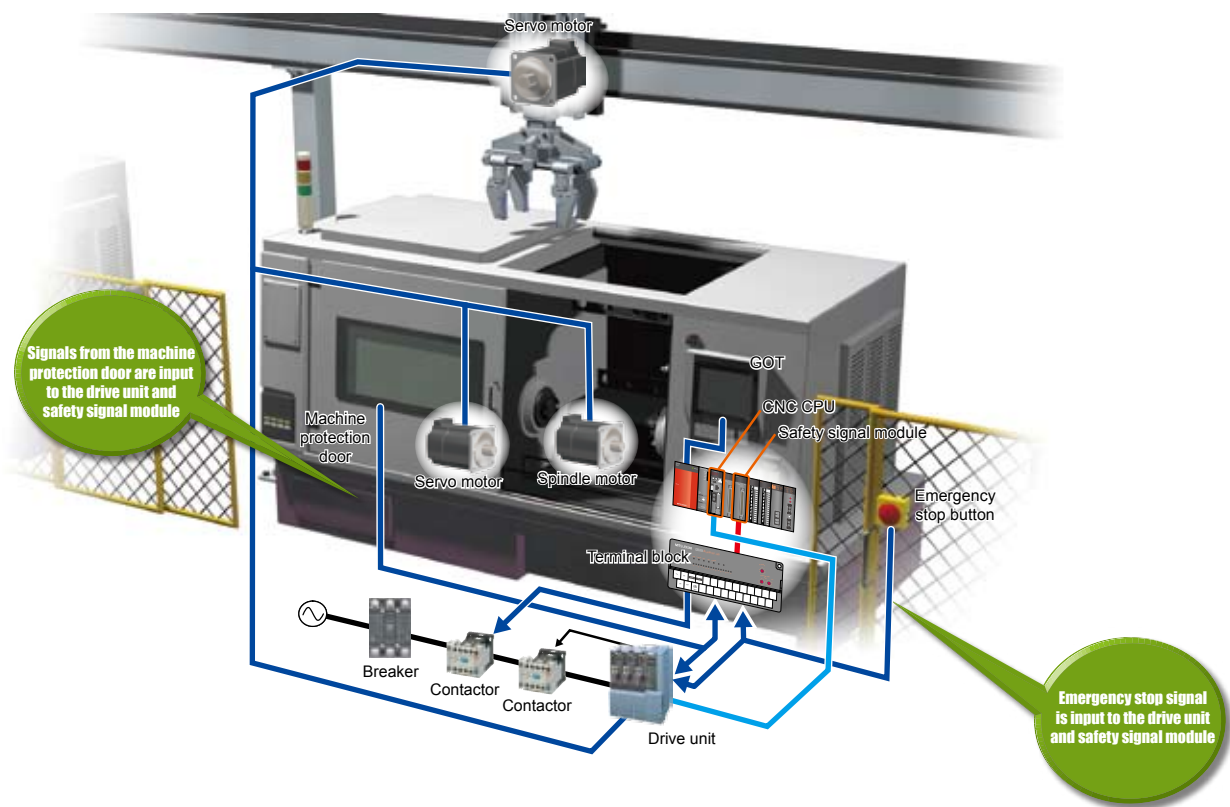
Safety implementation in NC machining lines



System Concepts

The CNC CPU achieves both general and safety control on the same base unit.

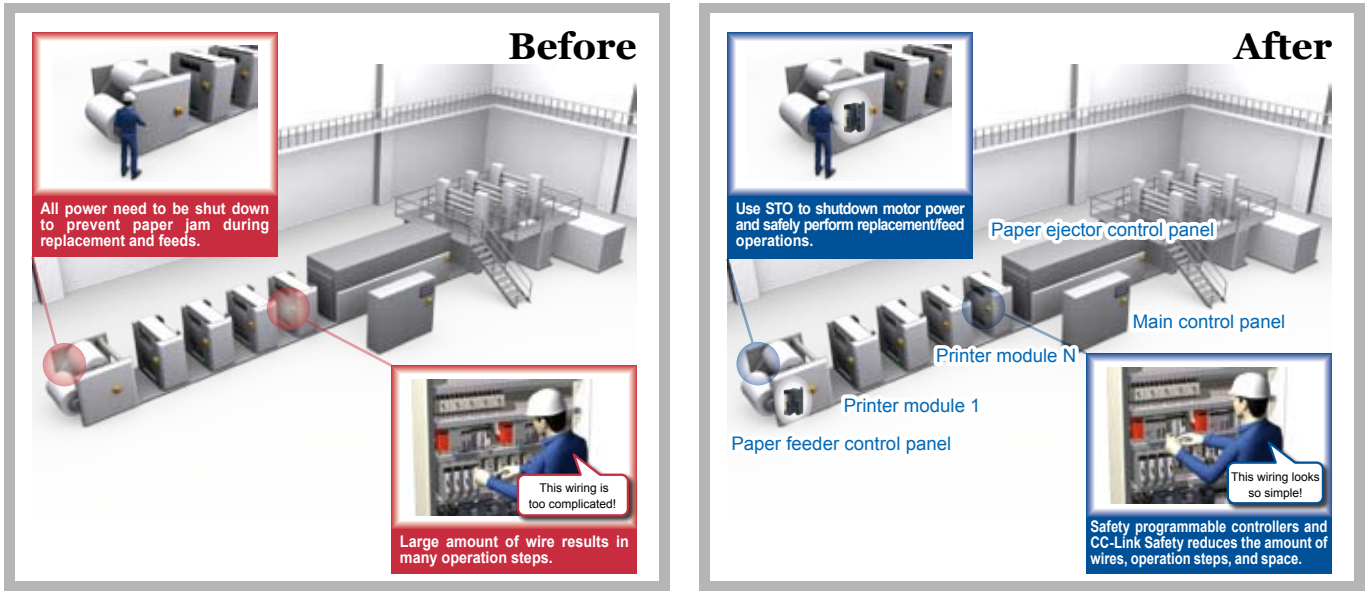
- Implementing both general and safety control on the same base unit contributes to even more compact control panels.
- Using CNC CPU's servo motor speed monitoring function, maintenance operation and axis movement are safe even when the machine protection door is left open.



Example of system configuration

Safety solution application example 7

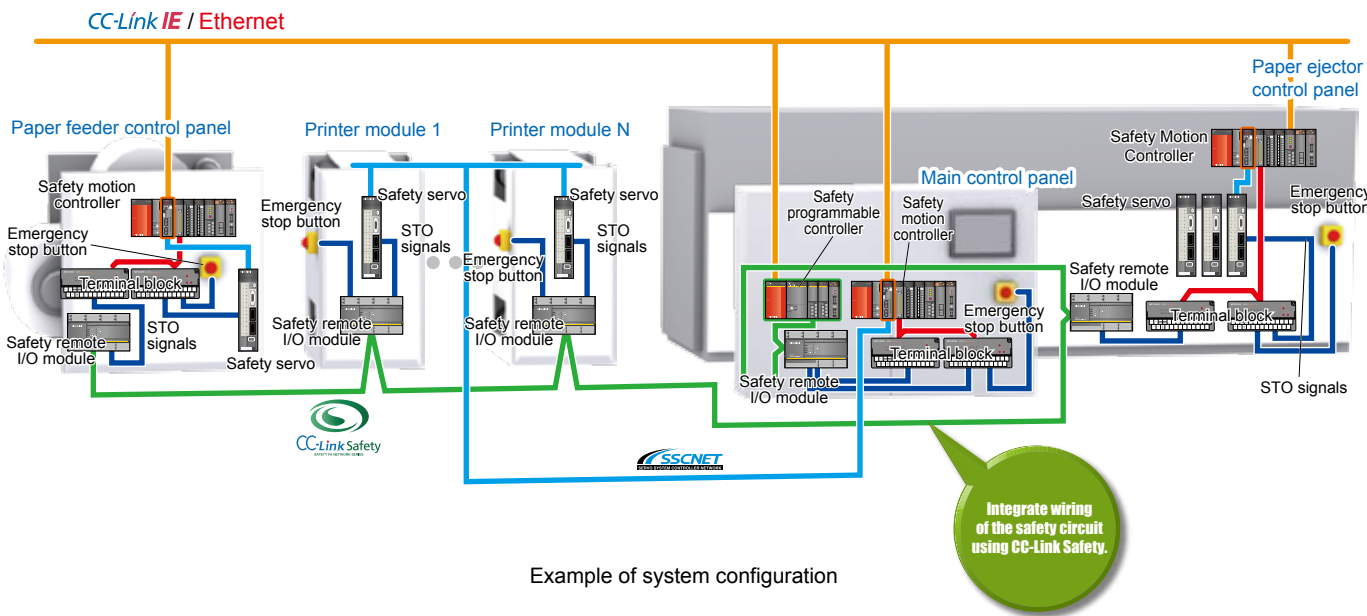
Safety implementation in printing machines



System Concepts

Safety control of printing machines is characterized by the combination of safety programmable controllers and safety motion controllers that integrate distributed I/O controls and drivers.

- Safety programmable controllers and CC-Link Safety enables connection of distributed safety devices with reduced wiring.
- The safety motion controller monitors the servo motor's speed to allow safe inspection and maintenance of the drivers without shutting off power.



Example of system configuration

Computerized Numerical Controller

■ The computerized numerical controller (CNC) is compliant with EN954-1:1996 Category 3 international safety standards (in the process of transferring to ISO 13849-1 PLd).

■ The Q series programmable controller(PLC) CPU and CNC CPU work independently to control input/output signals from the safety signal module. However, both CPUs perform signal comparisons to ensure reliability.

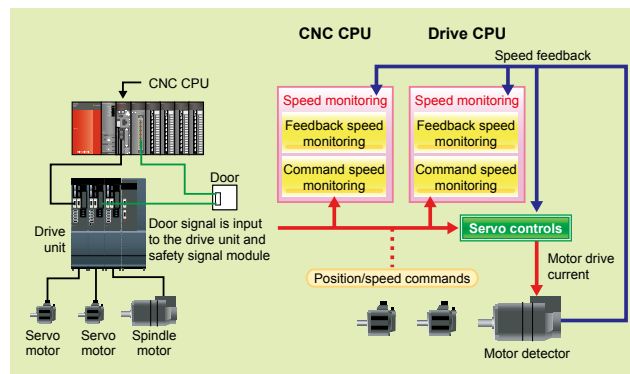
■ Speed monitoring function (SLS) monitors speed commands and speed feedback (dual monitoring).

Example) Safety speed specified by ISO 23125:2010 (for lathes) consists of feed axis speed of 2,000 mm/min or less and spindle speed of 50 r/min or less. Safety speed can be changed with parameters.

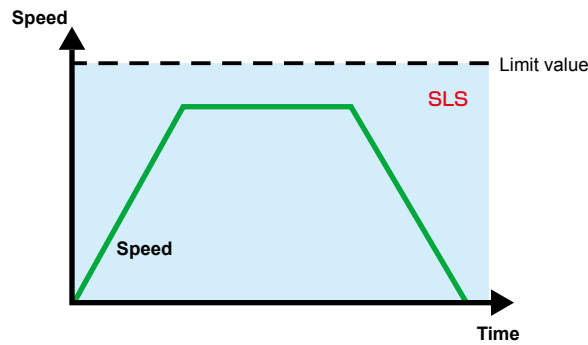
■ Up to 16 combinations of enable/disable for speed monitoring

■ Signal from the emergency stop is input to both the CNC CPU and the drive unit to effectively shut down main power.

■ Based on your machine structure and configuration, select the ideal control method among position command synchronized control, speed command synchronized control, and current command synchronized control.



SLS diagram



SLS graph

* Safety-limited speed (SLS) function shuts down driver operation using an emergency stop when the safety speed is exceeded.

[Computerized numerical controller]
(Q173NCCPU-S01)

Safety Motion Controller

■ The safety motion controller is compliant with ISO 13849-1 Category 3PLd international standard.

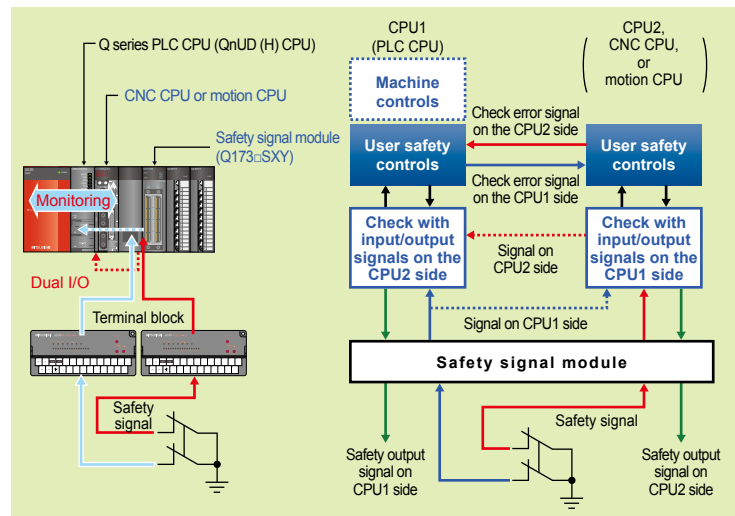
■ The Q series programmable controller(PLC) CPU and safety motion controller CPU work independently to control input/output signals from the safety signal module. However, both CPUs perform signal comparisons to ensure reliability. (CNC has the same function)

■ Speed monitoring function (SLS) monitors speed commands and speed feedback (dual monitoring).

* Scheduled to be supported. Listed in the PDS system standards (IEC 61800-5-2) as a function that monitors motor speed.

■ Up to 20 input points (2 lines) and 12 output points (2 lines) per safety signal module, and up to 3 modules per system. (Same as CNC)

■ Connectable to a safety servo amplifier (MR-J3-□BS) via SSCNETIII communications.



Signal comparison diagram

[Safety motion controller]
(Q173DCPU-S1)

List of Models

Safety

■ Safety programmable controller

Product name	Model*1	Outline	Standard price (yen)
Safety CPU module	QS001CPU(-K)	Program capacity: 14 k steps, number of I/O device points: 6144 points, operation/error history: 3,000 records	Open price
Safety main base unit	QS034B(-K)	4 slots; for QS Series, MELSECNET/H, CC-Link IE, and Ethernet modules	Open price
Safety power supply module	QS061P-A1(-K)	Input: 100 to 120 V AC, 50/60 Hz; output: 5 V 6 A; with overvoltage/overcurrent protection and shutdown circuit diagnostics	Open price
	QS061P-A2(-K)	Input: 200 to 240 V AC, 50/60 Hz; output: 5 V 6 A; with overvoltage/overcurrent protection and shutdown circuit diagnostics	Open price
CC-Link Safety system master module	QS0J61BT12(-K)	Max. number of connectable modules: 64 (42 for safety stations), safety station information management	Open price
CC-Link Safety system remote I/O module	QS0J65BT2-12DT(-K)	Safety input: 8 points (dual input); safety output: 4 points (dual output)	Open price
	QS0J65BTS2-8D	Safety input: 8 points (dual input)	Open price
	QS0J65BTS2-4T	Safety output: 4 points (dual output)	Open price
GX Developer	SW8D5C-GPPW-E	Version 8.82L or later	150,000
CC-Link IE Controller Network Unit	QJ71GP21-SX	Multi-mode fiber optic cable, Dual-loop controller network (control station/normal station)	180,000
	QJ71GP21S-SX	Multi-mode fiber optic cable, Dual-loop controller network (control station/normal station) with external power supply function	250,000
MELSECNET/H module	QJ71LP21-25	SI/QSI/H-PCF/wide range H-PCF optic cable, Dual-loop Controller network (control station/normal station)/remote I/O network (remote master station)	150,000
	QJ71LP21S-25	SI/QSI/H-PCF/wide range H-PCF optic cable, Dual-loop Controller network (control station/normal station)/remote I/O network (remote master station) with external power supply function	220,000
	QJ71LP21G	GI optic cable, Dual-loop Controller network (control station/normal station)/remote I/O network (remote master station)	220,000
	QJ71BR11	3C-2V/5C-2V coaxial cable, Single bus Controller network (control station/normal station)/remote I/O network (remote master station)	150,000
Ethernet module	QJ71E71-100	10BASE-T/100BASE-TX	150,000
	QJ71E71-B2	10BASE2	150,000
	QJ71E71-B5	10BASE5	150,000

(Note) Sales tax not included in the above prices.
*1 S-mark compatible part models are indicated in parentheses.

■ Safety controller

Product name	Model	Outline	Standard price (yen)
CPU module	WS0-CPU0	Program size: 255 FBs, Scan cycle: 4 ms, Interface: RS-232	Open price
CPU module (with EFI)	WS0-CPU1	EFI-equipped (EFI is the communication interface for setting SICK's safety products.)	Open price
PU module memory plug	WS0-MPL	For storing CPU parameters and programs (required)	Open price
Safety input module	WS0-XTDI	Safety input: 8 points (single input), Spring clamp terminal block, Fast shut off function (response of 8 ms)	Open price
Safety I/O module	WS0-XTIO	Safety input: 8 points (single input), Safety output: 4 points (single output) Output current: max. 2 A, Spring clamp terminal block, Fast shut off function (response of 8 ms)	Open price
Safety relay output module	WS0-4RO	Safety output: safety relay output 4 points (single input), Output current: max. 6 A	Open price
RS-232 cable connecting to CPU module	WS0-C20R2	RS-232 cable for PC-CPU connection	Open price
USB/RS-232 conversion cable	WS0-UC-232A	USB/RS-232 conversion cable	Open price
CC-Link interface module	WS0-GCC1	For CC-Link communication (standard communication)	Open price
Ethernet interface module	WS0-GETH	For Ethernet/TCP connection (standard communication)	Open price
Screw-in replacement terminal block	WS0-TBS4	Screw-in replacement terminal block	Open price
Spring clamp replacement terminal block	WS0-TBC4	Spring clamp replacement terminal block	Open price
Setting and Monitor Tool*2	SW1DNN-WS0ADR-B	Setting and Monitor Tool for safety controller	—

*2 Please download from the MELFANS Web page.

■ Safety relay module

Product name	Model	Outline	Standard price (yen)
Q Series safety relay module	QS90SR2SP-Q	For Q Series; safety input: 1 point (2 inputs), P type (dual input with positive commons); safety output: 1 point (3 outputs)	38,500
	QS90SR2SN-Q	For Q Series; safety input: 1 point (2 inputs), N type (dual input with positive common and negative common); safety output: 1 point (3 outputs)	38,500
CC-Link safety relay module	QS90SR2SP-CC	For CC-Link; safety input: 1 point (2 inputs), P type (dual input with positive commons); safety output: 1 point (3 outputs)	53,500
	QS90SR2SN-CC	For CC-Link; safety input: 1 point (2 inputs), N type (dual input with positive common and negative common); safety output: 1 point (3 outputs)	53,500
Extension safety relay module	QS90SR2SP-EX	For extension; safety input: 1 point (2 inputs), P type (dual input with positive commons); safety output: 1 point (3 outputs)	38,000
	QS90SR2SN-EX	For extension; safety input: 1 point (2 inputs), N type (dual input with positive common and negative common); safety output: 1 point (3 outputs)	38,000
Safety circuit part extension cable	QS90CBL-SE01	0.1 m cable for adding safety part	2,500
	QS90CBL-SE15	1.5 m cable for adding safety part	5,000

(Note) Sales tax not included in the above prices.

■ Safety inverter

Product name	Model		Outline	Standard price (yen)
Basic, compact-sized inverter	FR-D720-0.1K	For 0.1 kW	3-phase 200 V	43,000
	FR-D720-0.2K	For 0.2 kW		46,000
	FR-D720-0.4K	For 0.4 kW		51,800
	FR-D720-0.75K	For 0.75 kW		61,600
	FR-D720-1.5K	For 1.5 kW		80,800
	FR-D720-2.2K	For 2.2 kW		93,600
	FR-D720-3.7K	For 3.7 kW		113,400
	FR-D720-5.5K	For 5.5 kW		201,600
	FR-D720-7.5K	For 7.5 kW		227,200
	FR-D720-11K	For 11 kW		306,000
	FR-D720-15K	For 15 kW		367,400
	FR-D740-0.4K	For 0.4 kW	3-phase 400 V	100,400
	FR-D740-0.75K	For 0.75 kW		111,800
	FR-D740-1.5K	For 1.5 kW		124,800
	FR-D740-2.2K	For 2.2 kW		161,200
	FR-D740-3.7K	For 3.7 kW		205,800
	FR-D740-5.5K	For 5.5 kW		249,600
	FR-D740-7.5K	For 7.5 kW		316,000
	FR-D740-11K	For 11 kW		430,600
	FR-D740-15K	For 15 kW		487,400
	FR-D720S-0.1K	For 0.1 kW	Single-phase 200 V	51,400
	FR-D720S-0.2K	For 0.2 kW		56,800
	FR-D720S-0.4K	For 0.4 kW		63,400
	FR-D720S-0.75K	For 0.75 kW		74,800
	FR-D720S-1.5K	For 1.5 kW		92,800
	FR-D720S-2.2K	For 2.2 kW		110,000
High-function, compact-sized inverter	FR-E720-0.1KSC	For 0.1 kW	3-phase 200 V	49,800
	FR-E720-0.2KSC	For 0.2 kW		56,800
	FR-E720-0.4KSC	For 0.4 kW		64,000
	FR-E720-0.75KSC	For 0.75 kW		76,000
	FR-E720-1.5KSC	For 1.5 kW		99,800
	FR-E720-2.2KSC	For 2.2 kW		116,000
	FR-E720-3.7KSC	For 3.7 kW		140,000
	FR-E720-5.5KSC	For 5.5 kW		252,000
	FR-E720-7.5KSC	For 7.5 kW		284,000
	FR-E720-11KSC	For 11 kW		370,000
	FR-E720-15KSC	For 15 kW		430,000
	FR-E740-0.4KSC	For 0.4 kW	3-phase 400 V	124,000
	FR-E740-0.75KSC	For 0.75 kW		138,000
	FR-E740-1.5KSC	For 1.5 kW		154,000
	FR-E740-2.2KSC	For 2.2 kW		199,000
	FR-E740-3.7KSC	For 3.7 kW		254,000
	FR-E740-5.5KSC	For 5.5 kW		312,000
	FR-E740-7.5KSC	For 7.5 kW		395,000
	FR-E740-11KSC	For 11 kW		480,000
	FR-E740-15KSC	For 15 kW		620,000
	FR-E720S-0.1KSC	For 0.1 kW	Single-phase 200 V	60,000
	FR-E720S-0.2KSC	For 0.2 kW		70,000
	FR-E720S-0.4KSC	For 0.4 kW		78,000
	FR-E720S-0.75KSC	For 0.75 kW		92,000
	FR-E720S-1.5KSC	For 1.5 kW		130,000
	FR-E720S-2.2KSC	For 2.2 kW		150,000

(Note) Sales tax not included in the above prices.

■ Safety servo

Product name	Model		Outline	Standard price (yen)
Servo amplifier	MR-J3-10BS1	For 50 W, 100 W	Single-phase 100 to 120 V AC	160,000
	MR-J3-20BS1	For 200 W		170,000
	MR-J3-40BS1	For 400 W		176,000
	MR-J3-10BS	For 50 W, 100 W	Single-phase 200 to 230 V AC, and 3-phase 200 to 230 V AC	160,000
	MR-J3-20BS	For 200 W		170,000
	MR-J3-40BS	For 400 W		176,000
	MR-J3-60BS	For 500 W		180,000
	MR-J3-70BS	For 750 W		224,000
	MR-J3-100BS	For 1 kW	3-phase 200 to 230 V AC	326,000
	MR-J3-200BS	For 2 kW		356,000
	MR-J3-350BS	For 3.5 kW		385,000
	MR-J3-500BS	For 5 kW		486,000
	MR-J3-700BS	For 7 kW		576,000
	MR-J3-11KBS	For 11 kW		944,000
	MR-J3-15KBS	For 15 kW	3-phase 380 to 480 V AC	1,024,000
	MR-J3-22KBS	For 22 kW		1,096,000
	MR-J3-60BS4	For 500 W		211,000
	MR-J3-100BS4	For 1 kW		383,000
	MR-J3-200BS4	For 2 kW		423,000
	MR-J3-350BS4	For 3.5 kW		455,000
	MR-J3-500BS4	For 5 kW		570,000
	MR-J3-700BS4	For 7 kW		672,000
	MR-J3-11KBS4	For 11 kW		1,126,000
	MR-J3-15KBS4	For 15 kW		1,223,000
	MR-J3-22KBS4	For 22 kW		1,309,000
Drive unit	MR-J3-DU30KBS	For 30 kW	3-phase 200 to 230 V AC	—
	MR-J3-DU37KBS	For 37 kW	3-phase 380 to 480 V AC	—
	MR-J3-DU30KBS4	For 30 kW		—
	MR-J3-DU37KBS4	For 37 kW		—
	MR-J3-DU45KBS4	For 45 kW		—
	MR-J3-DU55KBS4	For 55 kW		—
Converter module	MR-J3-CR55K	For 30 kW, 37 kW	3-phase 200 to 230 V AC	—
	MR-J3-CR55K4	For 30 kW, 37 kW, 45 kW, 55 kW	3-phase 380 to 480 V AC	—
Safety logic module	MR-J3-D05	Shut-off delay time: 0 s to 30 s (compatible with the SS1 function); number of safety logic circuits: 2 circuits Specifications: Safety input: 1 point (two inputs)/circuit, safety output: 1 point (two outputs)/circuit		64,000
STO cable	MR-D05UDL03M	0.3 m		7,000
	MR-D05UDL1M	1 m		8,900
	MR-D05UDL3M	3 m		14,500
	MR-D05UDL3M-B	3 m (For safety controllers other than MR-J3-D05)		13,000

(Note) Sales tax not included in the above prices.

■ Computerized numerical controller

Product name	Model	Outline	Standard price (yen)
Computerized numerical controller (CNC)	Q173NCCPU-S01	Maximum number of control axes (NC axes + Spindles + PLC axes): 16 axes	—

■ Safety motion controller

Product name	Model	Outline	Standard price (yen)
Motion controller	Q172DCPU-S1	For up to 8-axis control, with arithmetic synchronization at 0.44 ms and above (comes with a battery holder module and battery (Q6BAT))	—
	Q173DCPU-S1	For up to 32-axis control, with arithmetic synchronization at 0.44 ms and above (comes with a battery holder module and battery (Q6BAT))	—

■ Robot

Product name	Model	Outline			Standard price (yen)
Industrial robot	RV-2SQ	Transportable mass: 2 kg	Compatible with the iQ Platform	Vertical articulated type	—
	RV-3SQ	Transportable mass: 3 kg			—
	RV-3SQJ	Transportable mass: 3 kg (5-axis type)			—
	RV-6SQ	Transportable mass: 6 kg			—
	RV-6SQL	Transportable mass: 6 kg, long arm type			—
	RV-12SQ	Transportable mass: 12 kg			—
	RV-12SQL	Transportable mass: 12 kg, long arm type			—
	RV-2SD	Transportable mass: 2 kg	Stand-alone		—
	RV-3SD	Transportable mass: 3 kg			—
	RV-3SDJ	Transportable mass: 3 kg (5-axis type)			—
	RV-6SD	Transportable mass: 6 kg			—
	RV-6SDL	Transportable mass: 6 kg, long arm type			—
	RV-12SD	Transportable mass: 12 kg			—
	RV-12SDL	Transportable mass: 12 kg, long arm type			—
	RH-3SQHR	Transportable mass: 3 kg, hoisting type	Compatible with the iQ Platform	Horizontal articulated type	—
	RH-6SQH	Transportable mass: 6 kg			—
	RH-12SQH	Transportable mass: 12 kg			—
	RH-20SQH	Transportable mass: 20 kg			—
	RH-3SDHR	Transportable mass: 3 kg, hoisting type	Stand-alone		—
	RH-6SDH	Transportable mass: 6 kg			—
RH-12SDH	Transportable mass: 12 kg	—			
RH-20SDH	Transportable mass: 20 kg	—			

MEMO

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Solutions for the Automobile Production Line

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