MITSUBISHI ELECTRIC

TECHNICAL BULLETIN

FA-A-0494-A

Certification of Compliance with Safety Standards for the MELSEC iQ-R Series Safety CPUs

■Date of Issue

July 2026

■Relevant Models

R08SFCPU-SET, R16SFCPU-SET, R32SFCPU-SET, R120SFCPU-SET, R08SFCPU-S1-SET, R16SFCPU-S1-SET, R32SFCPU-S1-SET, R120SFCPU-S1-SET

Thank you for your continued support of Mitsubishi Electric programmable controllers, MELSEC iQ-R series.
This technical bulletin informs you that, after January 20, 2027, the certification of compliance with safety standards for the MELSEC iQ-R Series Safety CPUs will transition from certification by a third-party certification body to self-declaration by our company.
Additionally, this bulletin informs you that the new Safety CPUs will be released that have been certified by a third-party certification body as compliant with safety standards. The new Safety CPUs have different model names.

1 OVERVIEW

In recent years, laws and regulations related to product cybersecurity have been enacted both domestically and internationally, and vulnerability management is becoming mandatory.
Consequently, a system that allows customers to update the product's firmware on their own is needed.
We are continuously enhancing the cybersecurity features of our products. Furthermore, recognizing that it is essential to incorporate firmware update function into our products, we are working development.
However, if the MELSEC iQ-R series Safety CPUs were equipped with a firmware update function, the current architecture would not allow it to obtain certification of compliance with safety standards from a third-party certification body. Therefore, we will introduce a new lineup of Safety CPUs with revised architectures and new model names, and we will ensure that these new Safety CPUs support firmware updates and obtain certification from a third-party certification body confirming compliance with safety standards.
Note that, due to their revised architectures, the new Safety CPUs take longer to process instructions and built-in functions than the existing Safety CPUs.
When replacing an existing Safety CPU in the safety system in operation, check Page 4 APPENDIX in this technical bulletin and, if necessary, modify the system.

2 MODEL LIST OF SAFETY CPUS

The following table lists the applicable models.

Product	Model	Program capacity
Existing Safety CPU	R08SFCPU-SET	80K steps
	R16SFCPU-SET	160K steps
	R32SFCPU-SET	320K steps
	R120SFCPU-SET	1200K steps
New Safety CPU	R08SFCPU-S1-SET	80K steps
	R16SFCPU-S1-SET	160K steps
	R32SFCPU-S1-SET	320K steps
	R120SFCPU-S1-SET	1200K steps

3 FUTURE ACTIONS

Certification of compliance with safety standards will be obtained from a third-party certification body only for the new Safety CPU. For existing Safety CPUs, we will issue a self-declaration of compliance effective January 20, 2027 and later.
In addition, regarding future updates, we will only provide support for the new Safety CPUs. For the existing Safety CPUs, we will continue to provide only error fixes and vulnerability patches.

Refer to the list below for the main differences between the existing Safety CPUs and the new Safety CPUs.

Item	Existing Safety CPU	New Safety CPU
Processing time	No changes	Longer than that of existing Safety CPUs
Third-party certification	Not obtained*1	To be obtained
Future updates	Not supported * We will continue to provide only error fixes and vulnerability patches.	Supported

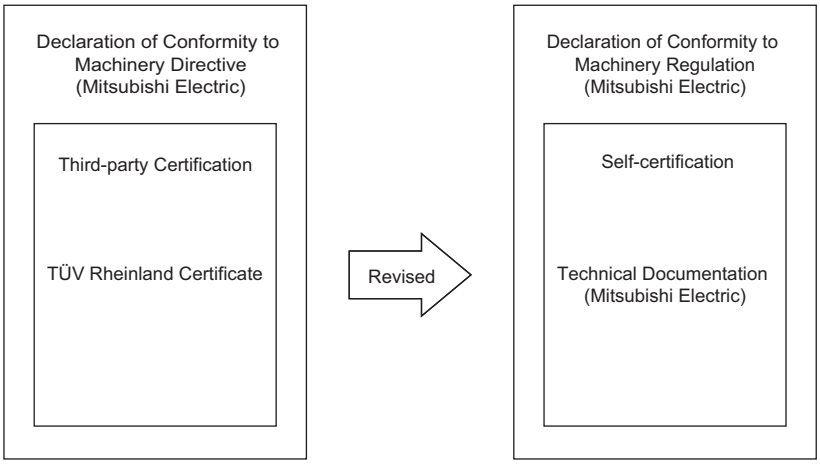
*1 Certification by a third-party certification body for the existing models will expire in January 2027. Please refer to Page 3 FUTURE AVAILABILITY OF EXISTING SAFETY CPUS for information on future handling.

4 RELEASE DATE FOR THE NEW SAFETY CPUS

Release date: Scheduled for the end of December 2026

5 FUTURE AVAILABILITY OF EXISTING SAFETY CPUS

Since the Machinery Regulation (EU) 2023/1230 will take effect on January 20, 2027, we will revise the CE Declaration of Conformity.
For existing models, the Machinery Directive will apply until January 19, 2027, and the Declaration of Conformity is based on certification by TÜV Rheinland, a third-party certification body. From January 20, 2027, onward, the Machinery Regulation will apply, and the Declaration of Conformity will be based on our self-certification.



The Declaration of Conformity is required to distribute products on the European market.
If your equipment or system includes Safety CPUs, please carefully review the Declaration of Conformity to ensure it reflects the latest updates before beginning distribution in the European market.

Point

- The third-party certification has the same meaning as the conformity assessment by a notified body defined in the Machinery Directive (2006/42/EC) Annex IX EC type-examination or in the Machinery Regulation (EU) 2023/1230 Annex VII EU TYPE-EXAMINATION.
- The self-certification has the same meaning as the conformity assessment defined in the Machinery Directive (2006/42/EC) Annex VIII Assessment of conformity with internal checks on the manufacture of machinery or in the Machinery Regulation (EU) 2023/1230 Annex VI INTERNAL PRODUCTION CONTROL.

As the Machinery Directive (2006/42/EC) expires on January 19, 2027, the TÜV Rheinland certification will also become invalid.
When the third-party certification for your equipment or system is required after the expiration date, consult the third-party certification body regarding the safety of the Safety CPUs in your equipment or system.

6 APPENDIX

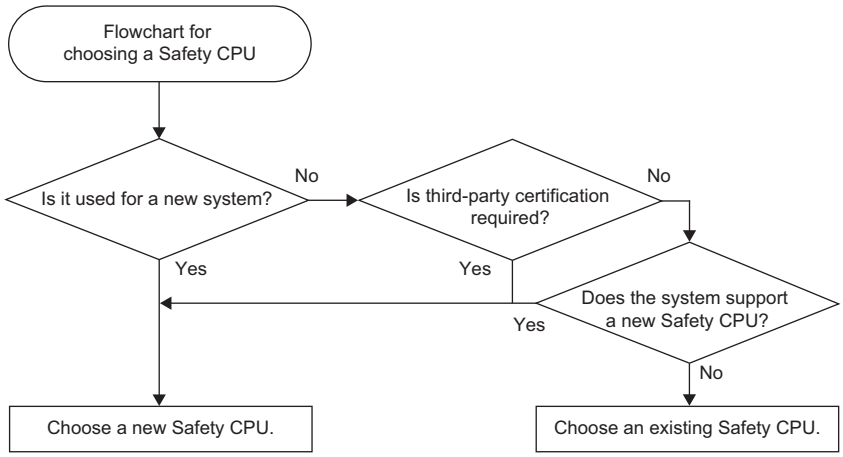
6.1 Specifications of CPU Modules

Item	R□SFCPU-SET	R□SFCPU-S1-SET
Safety category	Category 4 (Self-certification)	Category 4 (Third-party certification)
Safety level (SIL)	SIL 3 (Self-certification)	SIL 3 (Third-party certification)
Performance level (PL)	PL e (Self-certification)	PL e (Third-party certification)
Programming language	• Ladder diagram • Structured text (ST) • Function block diagram	• Ladder diagram • Structured text (ST) • Function block diagram
Program capacity [step]	Maximum 1200K (40K for safety programs)	Maximum 1200K (40K for safety programs)
Number of I/O points [point]	4096	4096
LD instruction [ns]	0.98	0.98
MOV instruction [ns]	1.96	1.96

6.2 How to Choose a Safety CPU

When you require a third-party certification for a new or existing safety system, you need to choose a new Safety CPU.
Even if certification is not required for your existing safety system, consider replacing the existing Safety CPU with a new Safety CPU in view of future upgrades and compliance with security standards.
Review the details on each impact and necessary actions provided below to determine if replacing the existing Safety CPU with a new Safety CPU is possible.

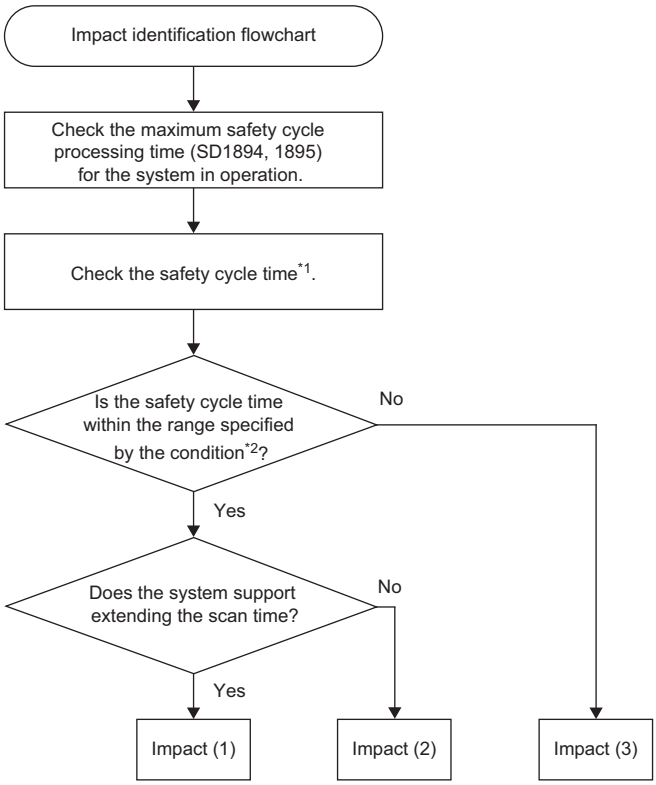
■Flowchart for choosing a Safety CPU



6.3 When Replacing With a New Safety CPU

Since the new Safety CPU takes longer to process instructions than the existing Safety CPU, the new one also has a longer safety cycle time and scan time.
For systems currently in operation, before replacing an existing Safety CPU with a new Safety CPU, follow the flowchart below to review the details regarding each impact.
The necessary actions for each impact are described below. Modify the system as needed.

■Impact identification flowchart



*1 The value set for [Safety Cycle Time] under [Safety Function Settings] in [CPU Parameters]
*2 Maximum safety cycle processing time (SD1894, 1895) of a Safety CPU × 1.5 < Safety cycle time

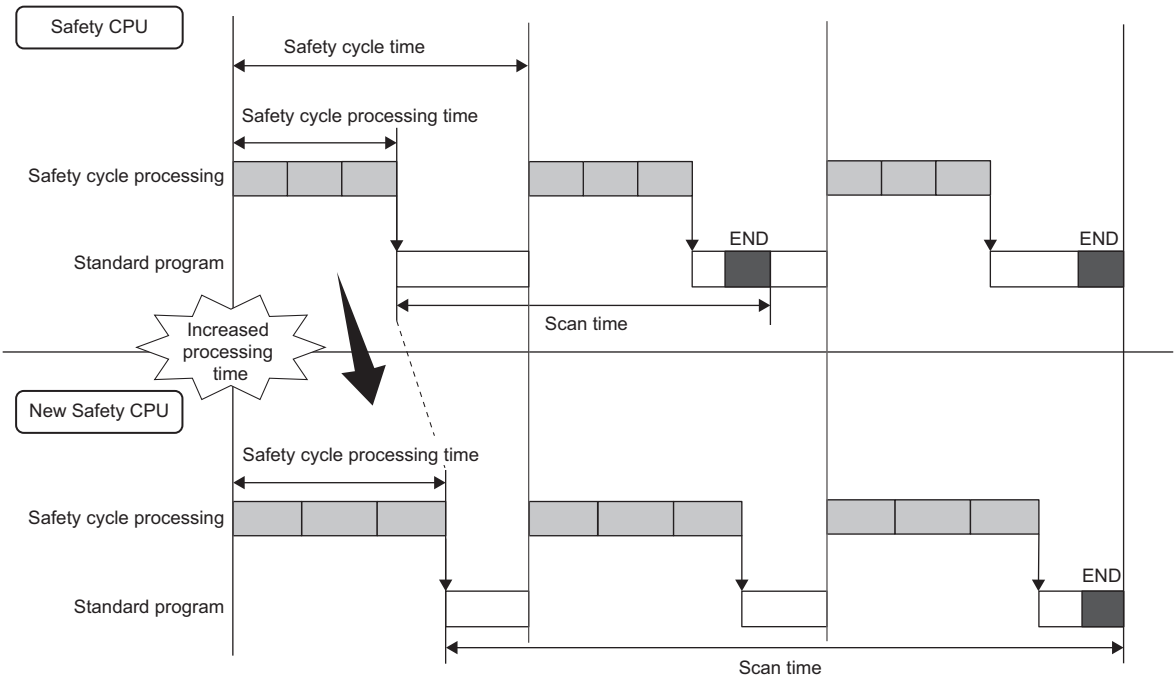
No.	Name	Description	Details
SD1894	Maximum safety cycle processing time	Maximum safety cycle processing time (in increments of ms)	• The maximum value of the safety cycle processing time is stored. SD1894: The value of the ms place is stored. (Storage range: 0 to 65535)
SD1895		Maximum safety cycle processing time (in increments of μs)	SD1895: The value of the μs place is stored. (Storage range: 0 to 999) • The measured value is stored even at STOP.

6.4 Details on Each Impact and Necessary Actions

Take the necessary actions based on each impact.

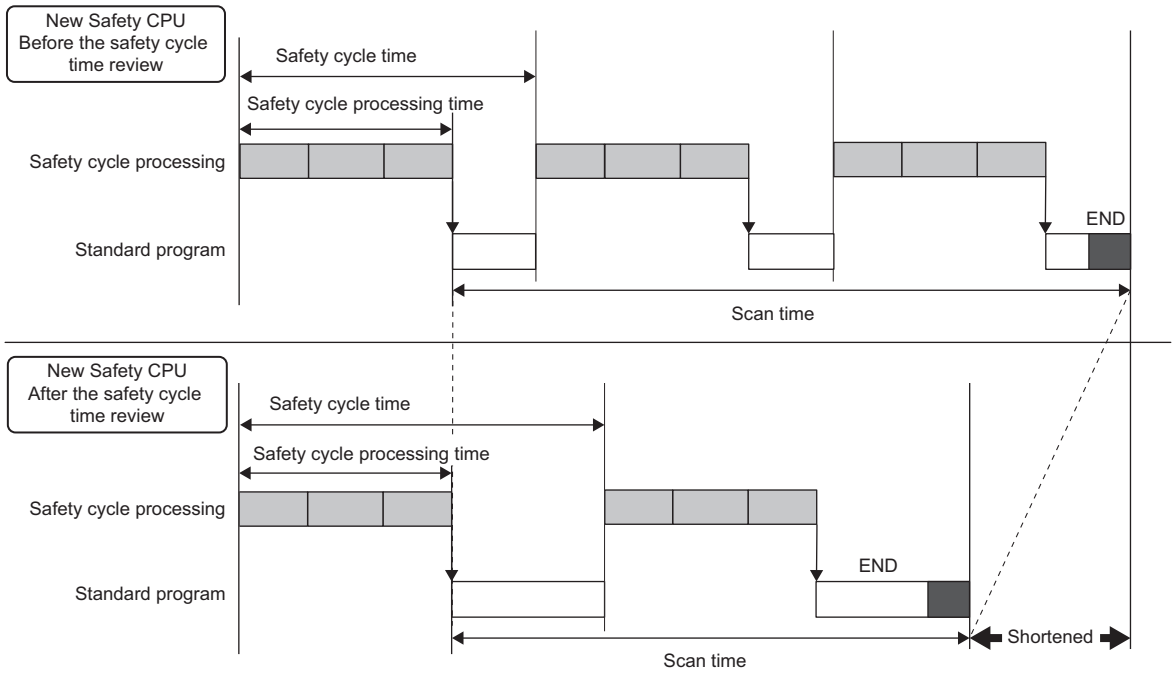
Impact (1)

There is no need to review the safety parameters, including safety response time, and no special measures are required.
Note that the scan time of a standard program will be longer since the time required to execute a standard program within the safety cycle time is reduced.



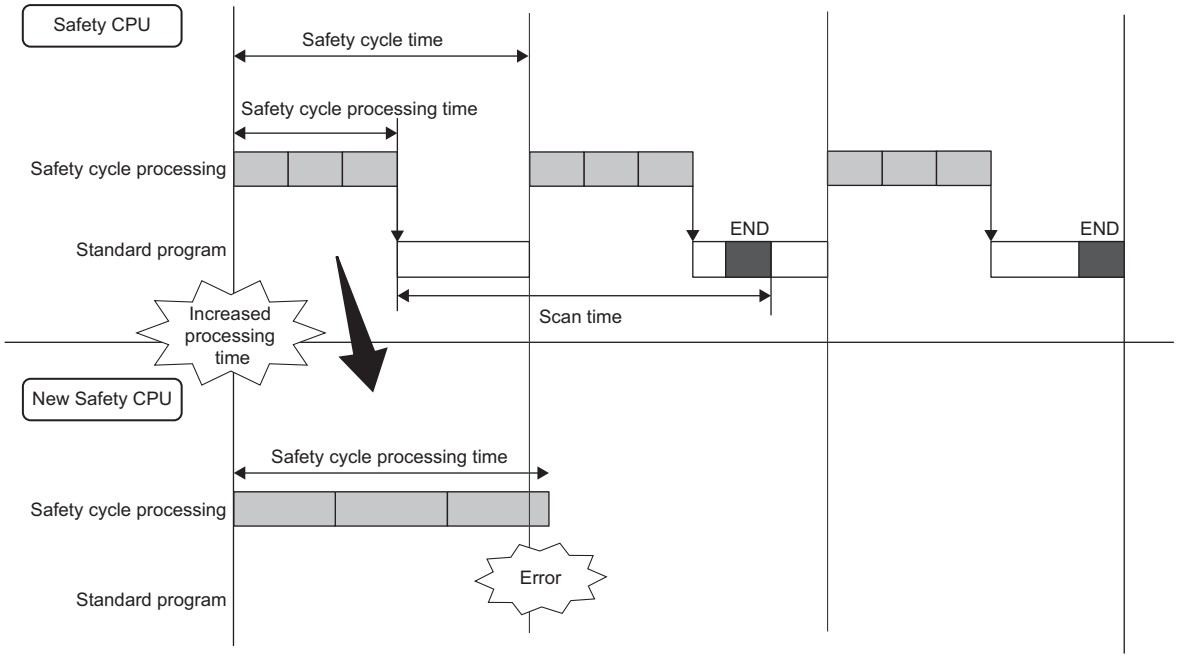
Impact (2)

When the system cannot support extending the scan time, review the safety cycle time as shown below.
Extending the safety cycle time increases the amount of spare time available for executing a standard program, thereby reducing the scan time.
However, the transmission interval monitoring time and refresh monitoring time will need to be reviewed. Since the safety response time will change, review the safety distance if necessary.



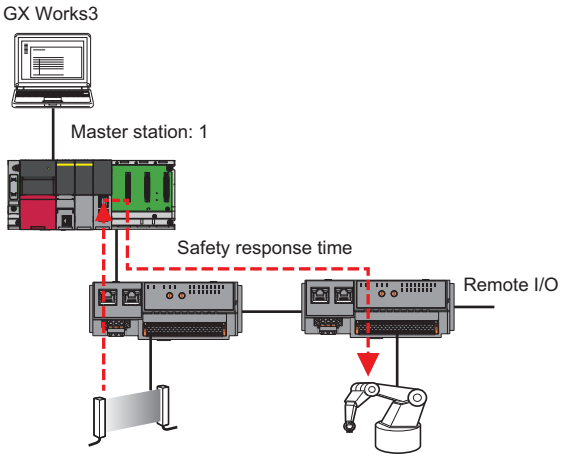
Impact (3)

If the safety cycle processing does not complete within the safety cycle time, an error occurs. Review the safety cycle time. Consequently, the transmission interval monitoring time and refresh monitoring time will need to be reviewed. Since the safety response time will change, review the safety distance if necessary.



6.5 Methods for Calculating Safety Response Times and Safety Distances

This section describes the safety response time and safety distance for the system configuration below.
For details, refer to the user's manual for each model.



Safety response time

The maximum time from when the safety input at the remote station (safety station) turns on until the safety output at the remote station (safety station) turns off (including cases where a fault is detected) can be calculated using the following formula.
(SCmst × 3) + (SRref × 4.5) + (RM × 2) + SRin + SRout + (n × 4)

The table below shows the values that include the safety response time for safety cycle times of 10ms and 15ms.

Item		Safety cycle time		Description
		10ms	15ms	
SCmst		10.0	15.0	Safety cycle time at the master station (safety station)
SRref		2.3	2.3	Safety remote station refresh response time
RM		40.0	55.0	Safety refresh monitoring time
SRin		1.4	1.4	Safety remote station input response time
SRout		0.4	0.4	Safety remote station output response time
n		7.5	7.5	The smaller of the values calculated in (1) and (2) below is used.
	(1)	7.5	7.5	(1): RM - TMmst - (TMrmt ÷ 2) + a
	(2)	8.7	14.1	(2): RM - (TMmst ÷ 2) - TMrmt + c
	a	15.0	15.0	a: TMmst - b
	b	20.0	30.0	b: The value obtained by dividing TMmst by 2, rounded up to the nearest multiple of the safe cycle time
	c	11.2	16.6	c: TMrmt - d
	d	13.8	18.4	d: The value obtained by dividing TMmst by 2, rounded up to the nearest multiple of the safety remote station refresh response time
	TMmst	35.0	45.0	TMmst: Transmission interval monitoring time at the master station (safety station)
	TMrmt	25.0	35.0	TMrmt: Transmission interval monitoring time at the remote station (safety station)
Safety response time [ms]		152.2	197.2	Maximum value of safety response time, including error detection

Safety distance

The safety distance can be calculated using the following formula.
Safety distance [cm] = Approach speed [mm/ms] × Safety response time [ms] + Additional distance based on sensor detection capability [mm]

Use the values in the table below to calculate the safety distance.

Item		Value
Approach speed [mm/ms]	Human walking speed [mm/ms]	1.6
Safety level (SIL)	Speed at which a human hand moves [mm/ms]	2.0
Additional distance based on sensor detection capability [mm]		120

The following table lists the safety distance based on the human walking speed for safety cycle times of 10ms and 15ms.
If the safety cycle time is changed from 10ms to 15ms, the safety distance will increase by 7.2cm.

Condition		Safety response time	Safety distance
Safety cycle time	10 [ms]	152.2 [ms]	36.4 [cm]
	15 [ms]	197.2 [ms]	43.6 [cm]

The following table lists the safety distance based on the speed at which a human hand moves for safety cycle times of 10ms and 15ms.
If the safety cycle time is changed from 10ms to 15ms, the safety distance will increase by 9.0cm.

Condition		Safety response time	Safety distance
Safety cycle time	10 [ms]	152.2 [ms]	42.4 [cm]
	15 [ms]	197.2 [ms]	51.4 [cm]

Configure the system in accordance with the safety distance calculated based on the above.

REVISIONS

Version	Date of Issue	Revision
A	July 2026	First edition

TRADEMARKS