

TECHNICAL BULLETIN

[Issue No.] T40-0006

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[Title] MELSEC-Q series CPU module battery backup time reduction and the corrective actions

[Date of Issue] Mar., '06

[Relevant Models] Q2MEM-2MBS

Thank you for your continued support of Mitsubishi programmable logic controllers, MELSEC-Q series. This bulletin provides information of cautions for a battery backup time when using the MELSEC-Q series memory card.

1. Precautions

Based on the stricter process rules and the contributions to environmental conservation, such as lead-free, compliance to RoHS directives are required, we have changed the memory (SRAM) to maintain the production.

The new memory (SRAM) satisfies the battery backup time guaranteed by Mitsubishi. However, with the memory change, the actual service value of battery backup time has been drastically shorter as described in item 2 (2); this is caused by the memory's characteristics, i.e., it requires more current for backup at power failure than the former one.

It is recommended to eliminate the affect of battery voltage reduction on the system by carrying out the corrective actions in item 3.

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2. Relevant Models and Changes

(1) Relevant models

Table 1 below shows the CPU module models with new memory (SRAM) of the memory card.

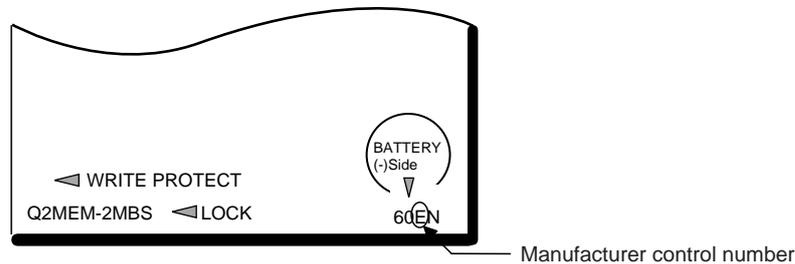
Table 1 Models with new memory (SRAM)

Model *1	Memory change time	Manufacturer control number *2	
		Before change	After change
Q2MEM-2MBS	Manufactured from March, 2006	"□□D□" ↑ D or earlier	"□□E□" ↑ E or later

*1: The Q2MEM-1MBS is not applicable for decrease of a battery backup time.

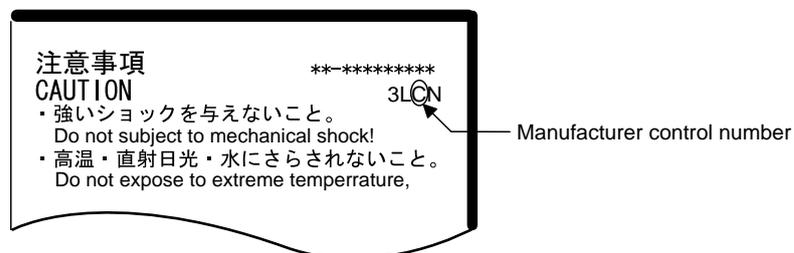
*2: Checking the manufacturer control number

Manufacturer control number can be checked with the number (the 3rd digit from the left) marked on the lower right of the SRAM card back label. Manufacturer control number "E" or later is the target memory card.



SRAM card back label

For manufacturer control number "C" or earlier, the number is marked on the upper right.



SRAM card back label

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(2) Changes

Table 2 below shows the changes in battery backup time with the memory (SRAM) change for each CPU module. In addition, max 5 years is specified as a battery backup time since battery life is limited to 5 years.

Table 2 Changes in actual service value

SRAM card	Power-on Time Ratio *3	Guaranteed value *4	Battery backup time *5	
			Actual service value (Reference value) *6	
			Ambient temperature 40°C	Ambient temperature 25°C
Q2MEM-2MBS Manufacturer control number "□□D□" ↑ D or earlier	0%	2,400 hours 0.27 years	43,800 hours 5 years	43,800 hours 5 years
	30%	2,880 hours 0.32 years	43,800 hours 5 years	43,800 hours 5 years
	50%	4,320 hours 0.49years	43,800 hours 5 years	43,800 hours 5 years
	70%	6,480 hours 0.73 years	43,800 hours 5 years	43,800 hours 5 years
	100%	43,800 hours 5 years	43,800 hours 5 years	43,800 hours 5 years
Q2MEM-2MBS Manufacturer control number "□□E□" ↑ E or later	0%	2,400 hours 0.27 years	25,404 hours 2.9 years	35,040hours 4 years
	30%	2,880 hours 0.32 years	34,164 hours 3.9 years	43,800hours 5 years
	50%	4,320 hours 0.49years	43,800 hours 5 years	43,800hours 5 years
	70%	6,480 hours 0.73 years	43,800 hours 5 years	43,800hours 5 years
	100%	43,800 hours 5 years	43,800 hours 5 years	43,800hours 5 years

*3: The power-on time ratio indicates the ratio of PLC power-on time to one day (24 hours).

(When the total power-on and power-off times are 12 hours for each, the power-on time ratio is 50%).

*4: The guaranteed value; equivalent to the total power failure time that is calculated based on the characteristics value of the memory (SRAM) supplied by the manufacturer and under the storage ambient temperature range of -25 to 75°C (operating ambient temperature of 0 to 55°C).

This value has not been changed with the memory change.

*5: Indicates values when the QCPU marked 04012 or greater on the first 5 digits of serial No. is used.

*6: The actual service value; equivalent to the total power failure time that is calculated based on the measured value and under the storage ambient temperature of 40°C and 25°C. This value is intended for reference only, as it varies with characteristics of the memory.

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3. Preventive Maintenance and Corrective Actions for Battery Voltage Reduction

The relevant corrective actions are provided here.

- (1) Do not use a battery longer than the guaranteed value in item 2 (2) and replace with new one regularly.
- (2) When the battery may be used longer than the guaranteed value item 2 (2), carry out either of the following corrective actions.

When the special relay (SM52) for battery error turns ON, back up programs and data within the battery backup time in Table 3, or replace the battery to prevent losing the memory data.

The memory will not be cleared while the PLC system power is ON, even if a battery error occurs.

Table 3 The battery backup time after SRAM card special relay turns ON and applicable special relay for each CPU module

SRAM card	Power-on Time Ratio	Battery backup time after special relay turns ON *7	Special relay that turns ON
			Battery error
Q2MEM-2MBS	0%	20 hours	SM52
	30%	20 hours	
	50%	20 hours	
	70%	20 hours	
	100%	50 hours	

*7: Indicates values when the QCPU marked 04012 or greater on the first 5 digits of serial No. is used.