

Precautions for replacing QnUD(E)(H)CPU with QnUDVCPU

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■Relevant Models

Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, Q26UDVCPU

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

This bulletin provides precautions for replacing the QnUD(E)(H)CPU with QnUDVCPU.


Note that the reference manuals or the references described in this bulletin are information as of December 2023.

GENERIC TERMS

Generic term	Description
High-speed Universal model QCPU	A generic term for the Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, and Q26UDVCPU
QnUD(H)CPU	A generic term for the Q03UDHCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, and Q26UDHCPU
QnUDE(H)CPU	A generic term for the Q03UDEHCPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, and Q100UDEHCPU
QnUD(E)(H)CPU	A generic term for the Q03UDHCPU, Q03UDEHCPU, Q04UDHCPU, Q04UDEHCPU, Q06UDHCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU, Q26UDEHCPU, Q50UDEHCPU, and Q100UDEHCPU
QnUDVCPU	A generic term for the Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, and Q26UDVCPU

1 PRECAUTIONS FOR REPLACEMENT

1.1 System Configuration

Item	Precaution	Replacement method	Reference
RS-232 port	There is no RS-232 port.*1	Use a USB or Ethernet port. To communicate with an RS-232 interface, use the QJ71C24N(-R2) in the system.	—
Applicable products and software	<ul style="list-style-type: none"> The programming tools and software that can be used in the QnUD(E)(H)CPU cannot be in use or must be upgraded. (The use of GX Developer is not supported in the system after replacement.) Some GOTs and intelligent function modules that can be used in the QnUD(E)(H)CPU cannot be in use or must be upgraded. 	<ul style="list-style-type: none"> Upgrade the GX Works2 or MX Component/MX Sheet to the version supported by the QnUDVCPU. Replace the GOT and intelligent function modules to those compatible with the QnUDVCPU. 	 Page 6 APPLICABLE PRODUCTS AND SOFTWARE
Multiple CPU system	Scan time is shortened in the High-speed Universal model QCPU because operations are performed at higher speed. When used in a multiple CPU system, the High-speed Universal model QCPU accesses to the control modules frequently. As a result, the processing time in other CPU modules may increase.	Check the processing timing of other CPU modules and adjust the access frequency of the High-speed Universal model QCPU using timers or the constant scan function.	QCPU User's Manual (Multiple CPU System)
Current consumption	The current consumption increases.	Select a power supply module according to the total current consumption in the system.	QCPU User's Manual (Hardware Design, Maintenance and Inspection)

*1 This applies when the QnUD(H)CPU is replaced with the High-speed Universal model QCPU.

1.2 Program

Item	Precaution	Replacement method	Reference
Number of steps	<p>The number of basic steps differs in some instructions.</p> <p>The number of steps increases by one when:</p> <ul style="list-style-type: none"> • Index modification is performed.*1*2*3 • A leading or trailing edge instruction is used. • Device numbers equal to or greater than 64K words are used in a file register, extended data register, or extended link register.*4*5 • Bit devices are used as word data by specifying digits using K1, K2, K3, K5, K6, or K7, or by specifying a device number of other than multiples of 16. 	<p>If index modifications mentioned on the left are frequently used in the program, the program size may exceed the storage capacity of the replaced CPU module. After the program controller type is changed, check the program size using the confirm memory size function. If the program size exceeds the storage capacity, take the following actions or change the CPU module to that with larger program memory.</p> <ul style="list-style-type: none"> • Move parameters and device comments to the standard ROM. • Reduce the reserved area for online change. • Use the file register, extended data register, and extended link register within 64K words because the number of steps decreases by one when used in that way. 	MELSEC-Q/L Programming Manual (Common Instruction)

*1 When device numbers equal to or greater than 64K words are used and index modification is performed, the number of steps does not increase.

*2 When the OUT instruction is used with a timer or counter and index modification is performed, the number of steps increases by three.

*3 When index modification is performed on the destination in the following instructions, the number of steps increases by two.

- +, - (2 devices)
- D+, D (2 devices)
- E+, E- (2 devices)
- INC, DEC
- DINC, DDDEC
- NEG
- DNEG
- WAND, WOR, WXOR, WXNR (2 devices)
- DAND, DOR, DXOR, DXNR (2 devices)
- BSET, BRST

*4 Even when index modification is specified and a device number equal to or greater than 64K words is specified, the number of steps does not increase.

*5 When a device number equal to or greater than 64K words is used for the destination, the number of steps increases by two.

1.3 Parameter Size

Item	Precaution	Replacement method	Reference
Parameter size	The parameter size increases because the built-in Ethernet port setting parameters are added.*1	<ul style="list-style-type: none"> • Delete unnecessary files and free some space. • Move the parameter file to another memory area. 	—

*1 This applies when the QnUD(H)CPU is replaced with the High-speed Universal model QCPU.

1.4 Drives And Files

Item	Precaution	Replacement method	Reference
Boot file setting	A memory card (SRAM card, ATA card, or Flash card) cannot be specified as a transfer source.	Specify an SD memory card as a transfer source.	Section 2.11 in the QnUCPU User's Manual (Function Explanation, Program Fundamentals)
Device comment	A device comment file cannot be stored in an SRAM card.	Store the file in the standard RAM.	—
	A device comment file cannot be stored in an ATA card nor Flash card.	Store the file in an SD memory card.	—
Initial device value	An initial device value file cannot be stored in an SRAM card.	Store the file in the standard RAM or standard ROM.	Section 3.25 in the QnUCPU User's Manual (Function Explanation, Program Fundamentals)
	An initial device value file cannot be stored in an ATA card nor Flash card.	Store the file in an SD memory card.	
Local device	A local device file cannot be stored in an SRAM card.	<ul style="list-style-type: none"> • Store the file in the standard RAM. • If the size of the local device file exceeds the standard RAM capacity, consider the use of an extended SRAM cassette. 	Section 6.2 in the QnUCPU User's Manual (Function Explanation, Program Fundamentals)
File register	A file register file cannot be stored in an SRAM card.	<ul style="list-style-type: none"> • Store the file in the standard RAM. • If the size of the file register file exceeds the standard RAM capacity, consider the use of an extended SRAM cassette. 	Section 4.7.1 in the QnUCPU User's Manual (Function Explanation, Program Fundamentals)
	A file register file cannot be stored in a Flash card. (Sequence programs only can read file register data in a Flash card.)	Use the initial device value file in an SD memory card or the FREAD/FWRITE instructions.	<ul style="list-style-type: none"> • Section 3.25 in the QnUCPU User's Manual (Function Explanation, Program Fundamentals) • MELSEC-Q/L Programming Manual (Common Instruction)
Sampling trace	A sampling trace file cannot be stored in an SRAM card.	<ul style="list-style-type: none"> • Store the file in the standard RAM. • If the size of the sampling trace file exceeds the standard RAM capacity, consider the use of an extended SRAM cassette. 	Section 3.14 (2) in the QnUCPU User's Manual (Function Explanation, Program Fundamentals)
CPU module change function with memory card	A memory card cannot be specified as a backup destination or restoration source.	Specify an SD memory card as a backup destination or restoration source.	Section 3.31 in the QnUCPU User's Manual (Function Explanation, Program Fundamentals)

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1.5 Built-in Ethernet Port Communications

This applies when the QnUDE(H)CPU is replaced with the High-speed Universal model QCPU.

Item	Precaution	Replacement method	Reference
File transfer function (FTP server)	The security function has been enhanced from the password registration function to the file password 32 function. For this reason, the keyword-set subcommand, that sets/displays/clears the file access password, is no longer supported.	Use the FTP commands, passwd-rd and passwd-wr, that set/display/clear the read/write passwords of the file password 32 function.	QnUCPU User's Manual (Communication via Built-in Ethernet Port)

1.6 Functions

Item	Precaution	Replacement method	Reference
Security function	The security function, which limits accesses to the files in the CPU module, has been enhanced from the password registration function to the file password 32 function.	Use the file password 32 function instead of the password registration function.	Section 3.19 in the QnUCPU User's Manual (Function Explanation, Program Fundamentals)
Latch data backup to standard ROM	If an extended SRAM cassette is used and the memory capacity of the standard RAM (drive 3) is larger than that of the standard ROM, data cannot be backed up using this function.	Deselect the "Backup all files in the internal of standard RAM" checkbox in the Latch Data Backup Function window on the PLC System tab.	Section 3.29 (4) in the QnUCPU User's Manual (Function Explanation, Program Fundamentals)
Battery life-prolonging function	The battery life-prolonging function is not supported. Without the use of the function, the battery life of the QnUDVCPU is as same as that of the QnUD(E)(H)CPU.	The switch setting parameters set by I/O assignment are ignored and the following operations are performed. <ul style="list-style-type: none"> • Data held by the battery are not cleared nor deleted. • The bits, b0 and b1, of SD119 (Battery lifeprolonging factor) are fixed to 0. 	<ul style="list-style-type: none"> • Section 3.26 in the QnUCPU User's Manual (Function Explanation, Program Fundamentals) • QCPU User's Manual (Hardware Design, Maintenance and Inspection)

2 APPLICABLE PRODUCTS AND SOFTWARE

2.1 Products To Be Replaced For the Compatibility With the High-speed Universal Model QCPU

The following tables show products need to be replaced for the compatibility with the High-speed Universal model QCPU. (As for devices not listed in the tables below, replacement is not required.)

(a) Communication modules

Product	Model	Module version*2
Web server module*1	• QJ71WS96	Serial number with first five digits of "14122" or later
MES interface module	• QJ71MES96	Serial number with first five digits of "14122" or later
High speed data logger module	• QD81DL96	Serial number with first five digits of "14122" or later

*1 The High-speed Universal model QCPU does not operate normally when the Web server module on which GX RemoteService-I is installed is used.

*2 The High-speed Universal model QCPU does not operate normally when an incompatible module version is used.

(b) Personal computer boards

Product	Model	Dedicated software package version*1*2
CC-Link IE Field Network interface board	• Q81BD-J71GF11-T2 • Q80BD-J71GF11-T2	1.03D or later
CC-Link IE Controller Network interface board	• Q81BD-J71GP21-SX • Q81BD-J71GP21S-SX • Q80BD-J71GP21-SX • Q80BD-J71GP21S-SX	1.15R or later
MELSECNET/H interface board	SI/QSI/H-PCF optical cable	25B or later
	GI optical cable	
	Coaxial cable	
CC-Link System master/local interface board	• Q80BD-J61BT11N • Q81BD-J61BT11	1.12N or later

*1 No restrictions on the board itself.

*2 The software package may not meet the requirements of your operating system. For the supported operating environment, refer to each product manual.

(c) GOT

Product	Model	GT Works3 OS version*1
GOT1000	• GT16□-□ • GT15□-□ • GT14□-□ • GT11□-□ • GT10□-□	1.64S or later
GOT2000	• GT27□-□ • GT25□-□ • GT21□-□	1.100E or later (Version compatible with the target GOT model name)
GOT SIMPLE (GS)	• GT21□-□	

*1 No restrictions on GOT itself.

Network modules

Product	Model	Module version
MELSECNET/H module	<ul style="list-style-type: none"> • QJ71LP21-25 • QJ71LP21S-25 • QJ71LP21G • QJ71BR11 	Some restrictions depending on use conditions *1

*1 Use the MELSECNET/H module that has a serial number with the first five digits of "10042" or later if all of the following conditions ❶ through ❷ are satisfied.

- ❶ A multiple CPU system including Built-in Ethernet port QCPU is configured.
- ❷ A programming tool or GOT is connected to an Ethernet port of Built-in Ethernet port QCPU.
- ❸ A programming tool or GOT accesses the CPU module on another station via the MELSECNET/H module controlled by another CPU.
- ❹ An A/QnA series CPU module is the access target of another station.

2.2 CPU Modules That Can Configure a Multiple CPU System With the Universal Model QCPU

CPU modules that can configure a multiple CPU system with the Universal model QCPU are shown below.

CPU module	Model	Applicable version	Restrictions
Motion CPU	<ul style="list-style-type: none"> • Q172DCPU • Q173DCPU • Q172DSCPU • Q173DSCPU 	No restrictions	Use only the multiple CPU high-speed main base unit (Q3□DB) as a main base unit. The safety observation function is not supported.*1 (This function is to be supported in the near future.)
PC CPU module	• PPC-CPU852(MS)	N/A	—
C Controller module	<ul style="list-style-type: none"> • Q06CCPU-V • Q06CCPU-V-B 	N/A	—
	<ul style="list-style-type: none"> • Q12DCCPU-V • Q24DHCCPU-V 	Serial number with first five digits of "14122" or later	—
	<ul style="list-style-type: none"> • Q24DHCCPU-VG • Q24DHCCPU-LS • Q26DHCCPU-LS 	No restrictions	—
High Performance model QCPU	<ul style="list-style-type: none"> • Q02CPU • Q02HCPU • Q06HCPU • Q12HCPU • Q25HCPU 	Function version B or later	—
Process CPU	<ul style="list-style-type: none"> • Q02PHCPU • Q06PHCPU • Q12PHCPU • Q25PHCPU 	No restrictions	—

*1 For details on the safety observation function, refer to Q173D(S)CPU/Q172D(S)CPU Motion Controller Programming Manual (Safety Observation) (IB-300183).

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2.3 Software To Be Updated For the Compatibility With the High-speed Universal Model QCPU

The following software must be updated for the compatibility with the High-speed Universal model QCPU. ^{*1}

For the upgraded and latest software, please contact your local Mitsubishi Electric representative.

Software	Version compatible with the High-speed Universal model QCPU
GX Works2	1.95Z or later
MX Component	4.02C or later
MX Sheet	2.00A or later

*1 The upgraded software may not meet the requirements of your operating system. For the supported operating environment, refer to each product manual.

REVISIONS

Version	Date of Issue	Revision
-	February 2013	First edition
A	December 2015	Products need to be replaced for the compatibility with the High-speed Universal model QCPU are reviewed and modified.
B	May 2022	Restrictions on the safety observation function for the motion CPU are added in Chapter 2 (2).
C	July 2022	Information is updated.
D	January 2024	Added description of MX Component and MX Sheet in the Section 1.1 and 2.3.