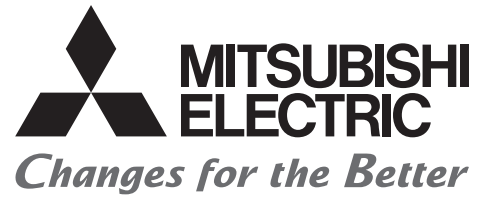




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# MITSUBISHI ELECTRIC SERVO SYSTEM CONTROLLER

## Migration Guide of Motion Controller [Q17nCPUN(-T) ⇒ RnMTCPU]

**Q173CPUN(-T)**  
**Q172CPUN(-T)**

**MELSEC iQ-R** series

**SSCNETIII/H**  
SERVO SYSTEM CONTROLLER NETWORK

**R32MTCPU**  
**R16MTCPU**





# ● SAFETY PRECAUTIONS ●

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.

The precautions given in this manual are concerned with this product only. Refer to the MELSEC iQ-R Module Configuration Manual for a description of the PLC system safety precautions.


In this manual, the safety precautions are classified into two levels: “WARNING” and “CAUTION”.



Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.



Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under “CAUTION” may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety. Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

## [Design Precautions]

### **WARNING**

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller.  
Failure to do so may result in an accident due to an incorrect output or malfunction.
  - (1) Emergency stop circuits, protection circuits, and protective interlock circuits for conflicting operations (such as forward/reverse rotations or upper/lower limit positioning) must be configured external to the programmable controller.
  - (2) When the programmable controller detects an abnormal condition, it stops the operation and all outputs are:
    - Turned off if the overcurrent or overvoltage protection of the power supply module is activated.
    - Held or turned off according to the parameter setting if the self-diagnostic function of the CPU module detects an error such as a watchdog timer error.
  - (3) All outputs may be turned on if an error occurs in a part, such as an I/O control part, where the CPU module cannot detect any error. To ensure safety operation in such a case, provide a safety mechanism or a fail-safe circuit external to the programmable controller. For a fail-safe circuit example, refer to "General Safety Requirements" in the MELSEC iQ-R Module Configuration Manual.
  - (4) Outputs may remain on or off due to a failure of a component such as a relay and transistor in an output circuit. Configure an external circuit for monitoring output signals that could cause a serious accident.
- In an output circuit, when a load current exceeding the rated current or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
- Configure a circuit so that the programmable controller is turned on first and then the external power supply. If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.
- For the operating status of each station after a communication failure, refer to manuals relevant to the network. Incorrect output or malfunction due to a communication failure may result in an accident.
- When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents.
- Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.

## [Design Precautions]

### **WARNING**

- Do not write any data to the "system area" and "write-protect area" of the buffer memory in the module. Also, do not use any "use prohibited" signals as an output signal from the CPU module to each module. Doing so may cause malfunction of the programmable controller system. For the "system area", "write-protect area", and the "use prohibited" signals, refer to the user's manual for the module used.
- If a communication cable is disconnected, the network may be unstable, resulting in a communication failure of multiple stations. Configure an interlock circuit in the program to ensure that the entire system will always operate safely even if communications fail. Failure to do so may result in an accident due to an incorrect output or malfunction.
- To maintain the safety of the programmable controller system against unauthorized access from external devices via the network, take appropriate measures. To maintain the safety against unauthorized access via the Internet, take measures such as installing a firewall.
- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
- If safety standards (ex., robot safety rules, etc.,) apply to the system using the module, servo amplifier and servomotor, make sure that the safety standards are satisfied.
- Construct a safety circuit externally of the module or servo amplifier if the abnormal operation of the module or servo amplifier differs from the safety directive operation in the system.
- Do not remove the SSCNETIII cable while turning on the control circuit power supply of modules and servo amplifier. Do not see directly the light generated from SSCNETIII connector of the module or servo amplifier and the end of SSCNETIII cable. When the light gets into eyes, you may feel something wrong with eyes. (The light source of SSCNETIII complies with class1 defined in JISC6802 or IEC60825-1.)

## [Design Precautions]

### **WARNING**

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100 mm or more between them. Failure to do so may result in malfunction due to noise.
- During control of an inductive load such as a lamp, heater, or solenoid valve, a large current (approximately ten times greater than normal) may flow when the output is turned from off to on. Therefore, use a module that has a sufficient current rating.
- After the CPU module is powered on or is reset, the time taken to enter the RUN status varies depending on the system configuration, parameter settings, and/or program size. Design circuits so that the entire system will always operate safely, regardless of the time.
- Do not power off the programmable controller or do not reset the CPU module during the setting registration. Doing so will make the data in the flash ROM undefined. The data need to be set in the buffer memory and to be written to the flash ROM again. Doing so may cause malfunction or failure of the module.
- When changing the operating status of the CPU module from external devices (such as remote RUN/STOP), select "Do Not Open by Program" for "Opening Method" in the module parameters. If "Open by Program" is selected, an execution of remote STOP causes the communication line to close. Consequently, the CPU module cannot reopen the communication line, and external devices cannot execute the remote RUN.

## [Installation Precautions]

### **WARNING**

- Shut off the external power supply (all phases) used in the system before mounting or removing the module. Failure to do so may result in electric shock or cause the module to fail or malfunction.

## [Installation Precautions]

### **CAUTION**

- Use the programmable controller in an environment that meets the general specifications in the manual "Safety Guidelines" included in the base unit. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- To mount a module, place the concave part(s) located at the bottom onto the guide(s) of the base unit, and push in the module until the hook(s) located at the top snaps into place. Incorrect mounting may cause malfunction, failure, or drop of the module.
- To mount a module with no module fixing hook, place the concave part(s) located at the bottom onto the guide(s) of the base unit, push in the module, and fix it with screw(s).
- When using the programmable controller in an environment of frequent vibrations, fix the module with a screw.
- Tighten the screws within the specified torque range. Undertightening can cause drop of the screw, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- When using an extension cable, connect it to the extension cable connector of the base unit securely. Check the connection for looseness. Poor contact may cause incorrect input or output.
- When using an SD memory card, fully insert it into the memory card slot. Check that it is inserted completely. Poor contact may cause malfunction.
- Securely insert an extended SRAM cassette into the cassette connector of a CPU module. After insertion, close the cassette cover and check that the cassette is inserted completely. Poor contact may cause malfunction.
- Do not directly touch any conductive parts and electronic components of the module, SD memory card, extended SRAM cassette, or connector. Doing so may cause malfunction or failure of the module.

## [Wiring Precautions]

### **WARNING**

- Shut off the external power supply (all phases) used in the system before installation and wiring. Failure to do so may result in electric shock or damage to the product.
- After installation and wiring, attach the included terminal cover to the module before turning it on for operation. Failure to do so may result in electric shock.

## [Wiring Precautions]

### CAUTION

- Individually ground the FG and LG terminals of the programmable controller with a ground resistance of 100 ohm or less. Failure to do so may result in electric shock or malfunction.
- Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Check the rated voltage and signal layout before wiring to the module, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause fire or failure.
- Connectors for external devices or coaxial cables must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered. Incomplete connections may cause short circuit, fire, or malfunction.
- Securely connect the connector to the module. Poor contact may cause malfunction.
- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100 mm or more between them. Failure to do so may result in malfunction due to noise.
- Place the cables in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the module or cables or malfunction due to poor contact. Do not clamp the extension cables with the jacket stripped. Doing so may change the characteristics of the cables, resulting in malfunction.
- Check the interface type and correctly connect the cable. Incorrect wiring (connecting the cable to an incorrect interface) may cause failure of the module and external device.
- Tighten the terminal screws or connector screws within the specified torque range. Undertightening can cause drop of the screw, short circuit, fire, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, fire, or malfunction.
- When disconnecting the cable from the module, do not pull the cable by the cable part. For the cable with connector, hold the connector part of the cable. For the cable connected to the terminal block, loosen the terminal screw. Pulling the cable connected to the module may result in malfunction or damage to the module or cable.
- Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, failure, or malfunction.
- A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring. Do not remove the film during wiring. Remove it for heat dissipation before system operation.
- Programmable controllers must be installed in control panels. Connect the main power supply to the power supply module in the control panel through a relay terminal block. Wiring and replacement of a power supply module must be performed by qualified maintenance personnel with knowledge of protection against electric shock. For wiring, refer to the MELSEC iQ-R Module Configuration Manual.
- For Ethernet cables to be used in the system, select the ones that meet the specifications in the user's manual for the module used. If not, normal data transmission is not guaranteed.



## [Startup and Maintenance Precautions]

### **WARNING**

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
- Correctly connect the battery connector. Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire. Also, do not expose it to liquid or strong shock. Doing so may cause the battery to generate heat, explode, ignite, or leak, resulting in injury or fire.
- Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal screws, connector screws, or module fixing screws. Failure to do so may result in electric shock or cause the module to fail or malfunction.

## [Startup and Maintenance Precautions]

### **CAUTION**

- When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents.
- Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.
- Do not disassemble or modify the modules. Doing so may cause failure, malfunction, injury, or a fire.
- Use any radio communication device such as a cellular phone or PHS (Personal Handyphone System) more than 25 cm away in all directions from the programmable controller. Failure to do so may cause malfunction.

## [Startup and Maintenance Precautions]

### CAUTION

- Shut off the external power supply (all phases) used in the system before mounting or removing the module. Failure to do so may cause the module to fail or malfunction.
- Tighten the screws within the specified torque range. Undertightening can cause drop of the component or wire, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- After the first use of the product, do not mount/remove the module to/from the base unit, and the terminal block to/from the module, and do not insert/remove the extended SRAM cassette to/from the CPU module more than 50 times (IEC 61131-2 compliant) respectively. Exceeding the limit of 50 times may cause malfunction.
- After the first use of the product, do not insert/remove the SD memory card to/from the CPU module more than 500 times. Exceeding the limit may cause malfunction.
- Do not touch the metal terminals on the back side of the SD memory card. Doing so may cause malfunction or failure.
- Do not touch the integrated circuits on the circuit board of an extended SRAM cassette. Doing so may cause malfunction or failure.
- Do not drop or apply shock to the battery to be installed in the module. Doing so may damage the battery, causing the battery fluid to leak inside the battery. If the battery is dropped or any shock is applied to it, dispose of it without using.
- Startup and maintenance of a control panel must be performed by qualified maintenance personnel with knowledge of protection against electric shock. Lock the control panel so that only qualified maintenance personnel can operate it.
- Before handling the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the module to fail or malfunction.
- Before testing the operation, set a low speed value for the speed limit parameter so that the operation can be stopped immediately upon occurrence of a hazardous condition.
- Confirm and adjust the program and each parameter before operation. Unpredictable movements may occur depending on the machine.
- When using the absolute position system function, on starting up, and when the module or absolute position motor has been replaced, always perform a home position return.
- Before starting the operation, confirm the brake function.
- Do not perform a megger test (insulation resistance measurement) during inspection.
- After maintenance and inspections are completed, confirm that the position detection of the absolute position detection function is correct.
- Lock the control panel and prevent access to those who are not certified to handle or install electric equipment.

## [Operating Precautions]

### CAUTION

- When changing data and operating status, and modifying program of the running programmable controller from an external device such as a personal computer connected to an intelligent function module, read relevant manuals carefully and ensure the safety before operation. Incorrect change or modification may cause system malfunction, damage to the machines, or accidents.
- Do not power off the programmable controller or reset the CPU module while the setting values in the buffer memory are being written to the flash ROM in the module. Doing so will make the data in the flash ROM and SD memory card undefined. The values need to be set in the buffer memory and written to the flash ROM and SD memory card again. Doing so also can cause malfunction or failure of the module.
- Note that when the reference axis speed is specified for interpolation operation, the speed of the partner axis (2nd, 3rd, or 4th axis) may exceed the speed limit value.
- Do not go near the machine during test operations or during operations such as teaching. Doing so may lead to injuries.

## [Disposal Precautions]

### CAUTION

- When disposing of this product, treat it as industrial waste.
- When disposing of batteries, separate them from other wastes according to the local regulations. For details on battery regulations in EU member states, refer to the MELSEC iQ-R Module Configuration Manual.

## [Transportation Precautions]

### CAUTION

- When transporting lithium batteries, follow the transportation regulations. For details on the regulated models, refer to the MELSEC iQ-R Module Configuration Manual.
- The halogens (such as fluorine, chlorine, bromine, and iodine), which are contained in a fumigant used for disinfection and pest control of wood packaging materials, may cause failure of the product. Prevent the entry of fumigant residues into the product or consider other methods (such as heat treatment) instead of fumigation. The disinfection and pest control measures must be applied to unprocessed raw wood.

REVISIONS

| Print Date | Manual No.   | Revision      |
|------------|--------------|---------------|
| Sep., 2017 | L(NA)03156-A | First edition |
|            |              |               |

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## INTRODUCTION

Please read this manual carefully so that equipment is used to its optimum.

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## 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 1.1 Benefits of Migration

Migrating from the existing system using Q173CPUN(-T)/Q172CPUN(-T) Motion controllers to a new system using MELSEC iQ-R series Motion controllers R32MTCPU/R16MTCPU (hereinafter called RnMTCPU), which support the programs on the Q173CPUN(-T)/Q172CPUN(-T), is recommended. We also recommend migrating servo amplifiers to the MR-J4 series at the same time.


Migrating not only allows the system to run for longer periods, but also has the following advantages.

(1) High-speed operation and high functionality of the Motion controller

The Motion controller RnMTCPU achieves the maximum operation cycle of 0.222 ms/2 axes, enabling a dramatically fast operation.


The controller also achieves further advanced motion control with a wide variety of motion control functions.

→ Increased productivity from higher speeds and functionality of the Motion controller.

(2) High-speed communication by SSCNETIII/H 

Speeding up and improving noise tolerance of servo network communications are achieved by optical communication. A long distance cable of 100 m can be also used.

→ Increased speeds over the entire facility

(3) Servo amplifier MR-J4 and servo motor 

The latest MR-J4 series achieves high performance operation with a variety of functions including one-touch tuning, a 22-bit high resolution encoder (4194304 pulse/rev), and 2.5 kHz speed frequency response. The product lineup includes multi-axis servo amplifiers that contribute to energy saving, space saving, and reduced wiring of a machine. The MR-J4 series compatible rotary servo motor, HG series enables to output high torque at high speed. Linear servo motors and direct drive motors are also available. Select the motor type according to your application from our extensive product lineup.

→ Increase of applications, improved performance, energy saving, downsizing, and reduced wiring of drive systems.

(4) Lower maintenance cost

After 5 years of usage, the products will need maintenance, such as replacement of the whole circuit board due to the life of components including electrolytic capacitors and memories.

To use the system the longest possible, an early migration to the latest model is recommended in terms of performance and quality.

→ Increased equipment longevity

# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

## 1.2 Main Target Models for Migration

The main target models and operating system software for replacement described in this section are as follows.

If you are using special operating system software or application-specific operating system software, contact your local sales office.


### (1) Modules/Cables

| Product name   | Model before migration           | Model after migration   |
|--|----------------------------------|---|
| Motion CPU module                                    | Q172CPUN                         | R16MTCPU <sup>(Note-1)</sup>  |
|  | Q173CPUN                         | R32MTCPU <sup>(Note-2)</sup>  |
|  | Q172CPUN-T                       | R16MTCPU <sup>(Note-1), (Note-3)</sup>  |
|  | Q173CPUN-T                       | R32MTCPU <sup>(Note-2), (Note-3)</sup>  |
| Battery unit   | Q170BAT<br>(Order if necessary)  | -   |
| Dividing unit  | Q173DV                           | -   |
| Servo external signals interface module              | Q172LX                           | MELSEC iQ-R series<br>Input module  |
| Serial absolute synchronous encoder interface module | Q172EX                           | [Synchronous encoder compatible servo amplifier]<br>MR-J4-□B-RJ <sup>(Note-4)</sup> |
|  | Q172EX-S1                        |   |
|  | Q172EX-S2                        |   |
|  | Q172EX-S3                        |   |
| Manual pulse generator interface module              | Q173PX                           | MELSEC iQ-R series<br>High-speed counter module                                     |
|  | Q173PX-S1                        |   |
| Serial absolute synchronous encoder                  | MR-HENC                          | Q171ENC-W8  |
|  | Q170ENC                          |   |
| Serial absolute synchronous encoder cable            | MR-JHSCBL□M-H,L<br>(For MR-HENC) | Q170ENCCBL□M-A  |
|  | Q170ENCCBL□M<br>(For Q170ENC)    |   |
| Manual pulse generator                               | MR-HDP01                         | MR-HDP01 <sup>(Note-5)</sup>  |
| SSC I/F board  | A10BD-PCF                        | -   |
|  | A30BD-PCF                        | -   |
| SSC I/F card   | A30CD-PCF                        | -   |
| SSCNET cable <sup>(Note-6)</sup>                     | Q172J2BCBL□M                     | [SSCNETIII cable]<br>MR-J3BUS□M<br>MR-J3BUS□M-A<br>MR-J3BUS□M-B <sup>(Note-7)</sup> |
|  | Q172J2BCBL□M-B                   |   |
|  | Q173J2BCBL□M                     |   |
|  | Q173J2B2CBL□M                    |   |
|  | Q173J2B3CBL□M                    |   |
|  | Q173J2B4CBL□M                    |   |
|  | Q172HBCBL□M                      |   |
|  | Q172HBCBL□M-B                    |   |
|  | Q173HBCBL□M                      |   |
|  | Q173HB2CBL□M                     |   |
|  | Q173DVCBL□M                      |   |
| SSC I/F board cable                                  | Q170BDCBL□M                      | -   |
| SSC I/F card cable                                   | Q170CDCBL□M                      | -   |



# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

(Continued)

| Product name                              | Model before migration |  | Model after migration |
|---|------------------------|--|-----------------------|
| Teaching unit                             | A31TU-D3K13            |  | -                     |
|   | A31TU-DNK13            |  |                       |
| Cable for teaching unit                   | Q170TUD3CBL3M          |  | -                     |
|   | Q170TUDNCBL3M          |  |                       |
|   | Q170TUDNCBL03M-A       |  |                       |
| Short-circuit connector for teaching unit | Q170TUTM               |  | -                     |
|   | A31TUD3TM              |  |                       |

(Note-1): The number of control axes is increased from 8 to 16.

(Note-2): If the number of axes used in the system with Q173CPUN(-T) is 16 or less, R16MTCPU can be also selected.

(Note-3): RnMTCPU does not support teaching units.

(Note-4): The synchronous encoder is connected via the servo amplifier.

(Note-5): The existing MR-HDP01 can be used continuously with RnMTCPU.

When a manual pulse generator is used with RnMTCPU, prepare a power supply separately.

In addition, Mitsubishi Electric has confirmed the operation of the following manual pulse generator.

Contact the manufacturer for details.

| Product name           | Model name           | Description   | Manufacturer        |
|------------------------|----------------------|---|---------------------|
| Manual pulse generator | UFO-M2-0025-2Z1-B00E | Number of pulses per revolution: 25 pulse/rev<br>(100 pulse/rev after magnification by 4) | Nemicon Corporation |


(Note-6): "□" indicates the cable length.

(015: 0.15m, 03: 0.3m, 05: 0.5m, 1: 1m, 5:5m, 10: 10m, 20: 20m, 30: 30m, 40: 40m, 50: 50m)

(Note-7): For a long distance cable of up to 100 m or an ultra-long bending life cable, contact Mitsubishi Electric System & Service Co., Ltd.

[Sales office] FA PRODUCT DIVISION mail: [osb.webmaster@melsc.jp](mailto:osb.webmaster@melsc.jp)

## (2) Operating system software

| Before migration |         |              |   | After migration      |  |
|------------------|---------|--------------|---|----------------------|--|
| CPU model        | OS Type | OS model     |   | CPU model            | OS model                                     |
| Q173CPUN(-T)     | SV13    | SW6RN-SV13QB |  | R32MTCPU<br>R16MTCPU | SW10DNC-RMTFW<br>(installed before shipment) |
| Q172CPUN(-T)     |         | SW6RN-SV13QD |   |                      |  |
| Q173CPUN(-T)     | SV22    | SW6RN-SV22QA |   |                      |  |
| Q172CPUN(-T)     |         | SW6RN-SV22QC |   |                      |  |




# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

## (3) Servo amplifiers and servo motors

| Before migration from Q17nCPUN(-T) |            |   | After migration to RnMTCPU |              |                                      |  |
|------------------------------------|------------|---|----------------------------|--------------|--------------------------------------|--|
| Servo amplifier                    |            | Servo motor   | Servo amplifier            |              | Servo motor                          |  |
| MR-J2S series                      | MR-J2S-□B  | HC-KFS□<br>HC-MFS□<br>HC-SFS□<br>HC-LFS□<br>HC-RFS□<br>HA-LFS□<br>HC-UFS□   | ➔                          | MR-J4 series | MR-J4-□B<br>MR-J4W2-□B<br>MR-J4W3-□B | HG-KR□<br>HG-MR□<br>HG-SR□<br>HG-RR□<br>HG-UR□<br>HG-JR□ |
| MR-J2M series                      | MR-J2M-□DU | HC-KFS□<br>HC-MFS□<br>HC-UFS□   |                            |              |                                      |  |
| MR-H series                        | MR-H□B(N)  | HA-FF□<br>HA-FH□<br>HA-LH□<br>HA-MH□<br>HA-SH□<br>HA-UH□<br>HC-KF□<br>HC-MF□<br>HC-RF□<br>HC-SF□<br>HC-UF□<br>HA-LF□<br>HA-LH□K |                            |              |                                      |  |
| MR-J2 series                       | MR-J2-□B   | HC-MF□<br>HA-FF□<br>HC-SF□<br>HA-RF□<br>HC-UF□  |                            |              |                                      |  |
| MR-J2-Jr series                    | MR-J2-03B5 | HC-AQ□(B)D  |                            |              | MR-J4W2-0303B6                       | HG-AK□(B)D   |
|                                    |            | HC-AQ□(B)S  |                            |              |                                      | HG-AK□(B)  |

# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

## (4) Servo system network

| Item                   |         |  SSCNET<br>SERVO SYSTEM CONTROLLER NETWORK |  SSCNET III/H<br>SERVO SYSTEM CONTROLLER NETWORK   |
|------------------------|---------|---|---|
| Communications medium  |         | Metal cable   | Optical fiber cable   |
| Communications speed   |         | 5.6 Mbps  | 150 Mbps  |
| Communications cycle   | Send    | 0.88 ms/1.77 ms/3.55 ms   | 0.222 ms/0.444 ms/0.888 ms  |
|                        | Receive | 3.55ms  | 0.222 ms/0.444 ms/0.888 ms  |
| Number of control axes |         | Up to 8 axes/line   | Up to 16 axes/line  |
| Transmission distance  |         | Maximum overall distance:<br>30 m   |  [Standard code for inside panel and standard cable for outside panel]<br>Up to 20 m between stations<br>Maximum overall distance: 320 m (20 m × 16 axes)<br>[Long distance cable]<br>Up to 100 m between stations<br>Maximum overall distance: 1600 m (100 m × 16 axes) |

## (5) Engineering environment (required)

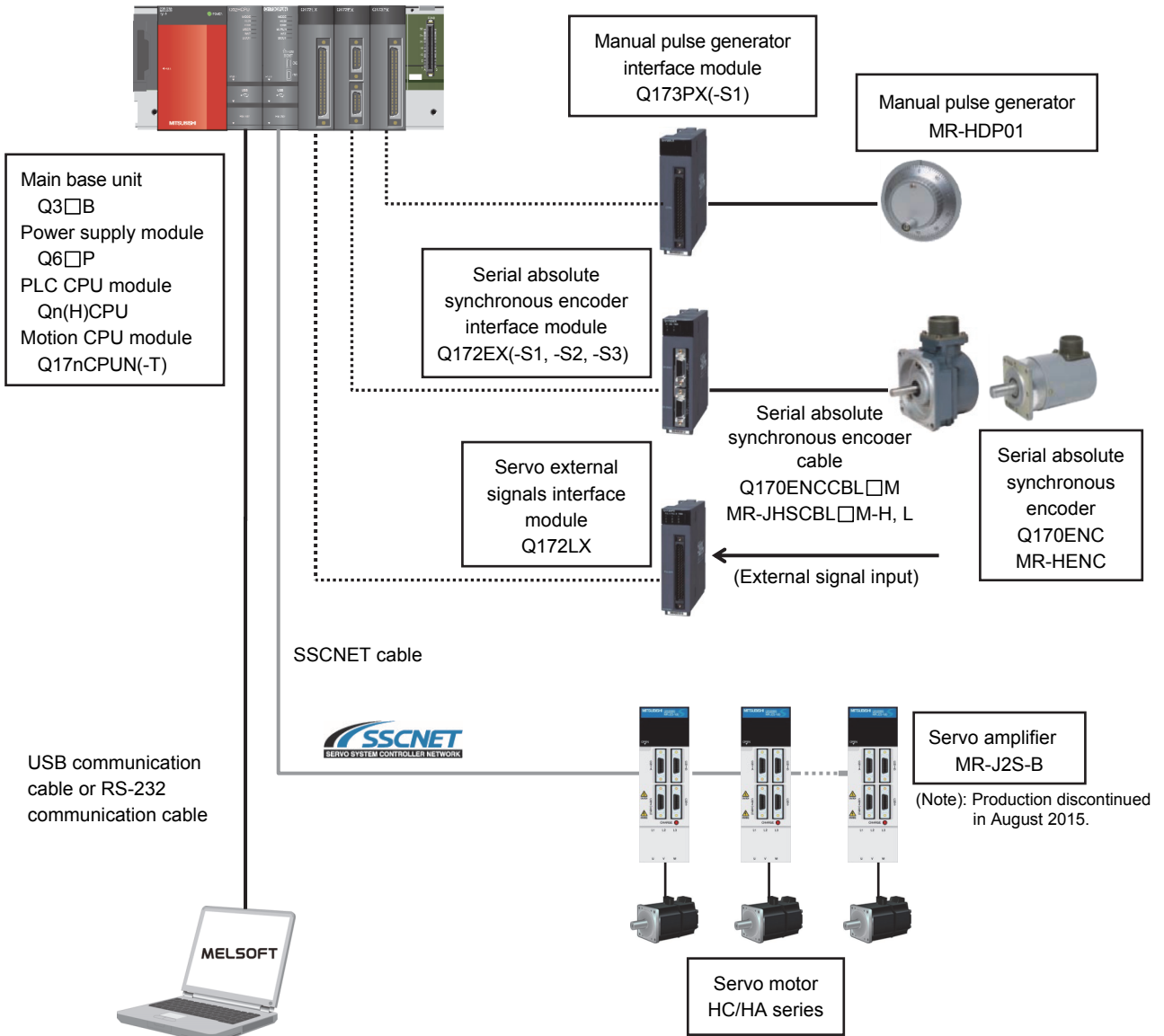
| Product name                                 | Model         | Version             |
|--|---------------|---------------------|
| MELSOFT MT Works2                            | SW1DND-MTW2-E | Ver.1.100E or later |
| MELSOFT GX Works3                            | SW1DND-GXW3-E | Ver.1.000A or later |
| MELSOFT MR Configurator2 <sup>(Note-1)</sup> | SW1DNC-MRC2-E | Ver.1.27D or later  |

(Note-1): The Servo Setup Software MRZJW3-SETUP161E is required when a combination of MR-J4-B-RJ020 and MR-J4-T20 is used as MR-J2S-B.

# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

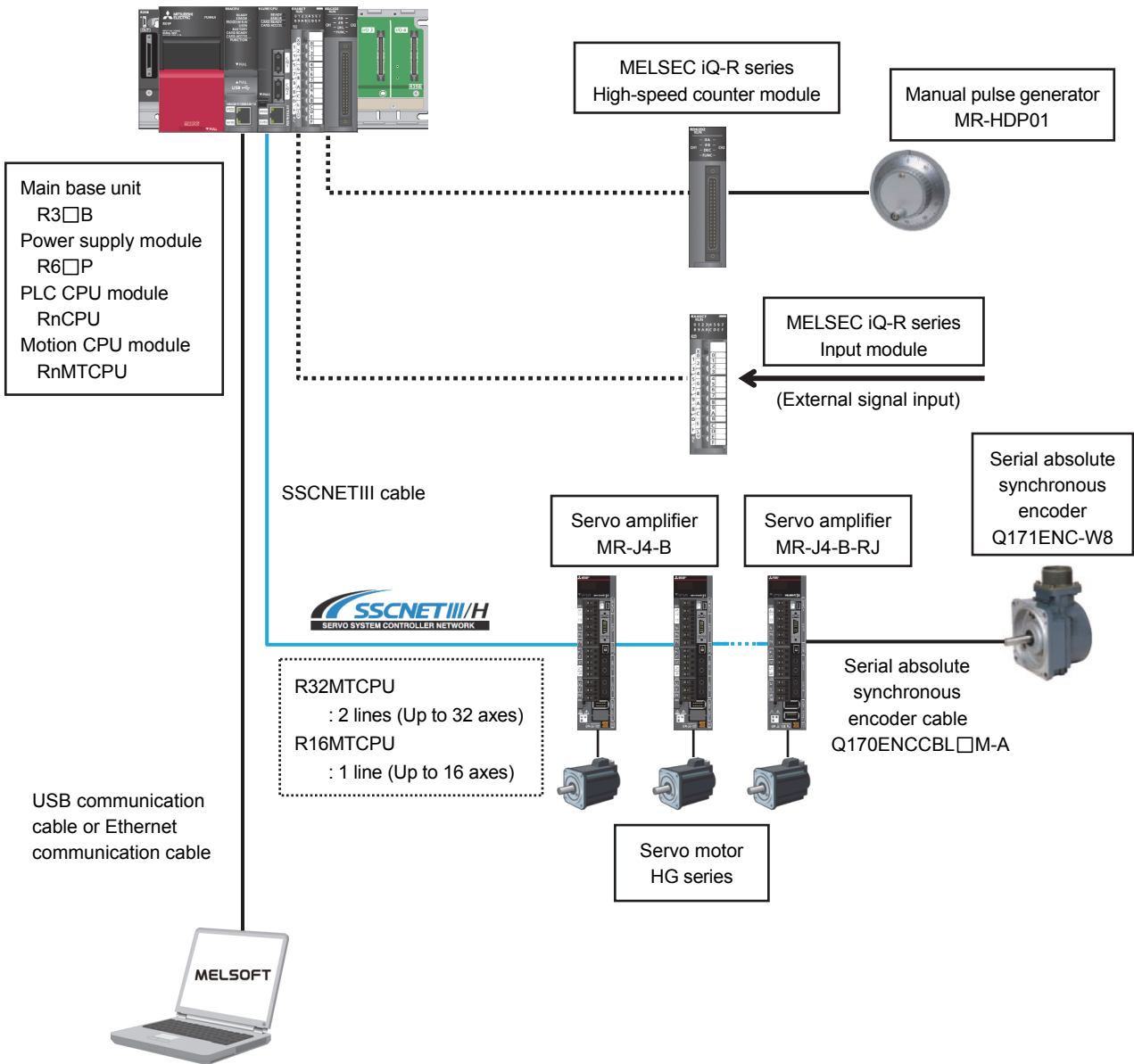
## 1.3 System Configuration

### 1.3.1 System configuration using Q17nCPUN(-T) before migration



# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

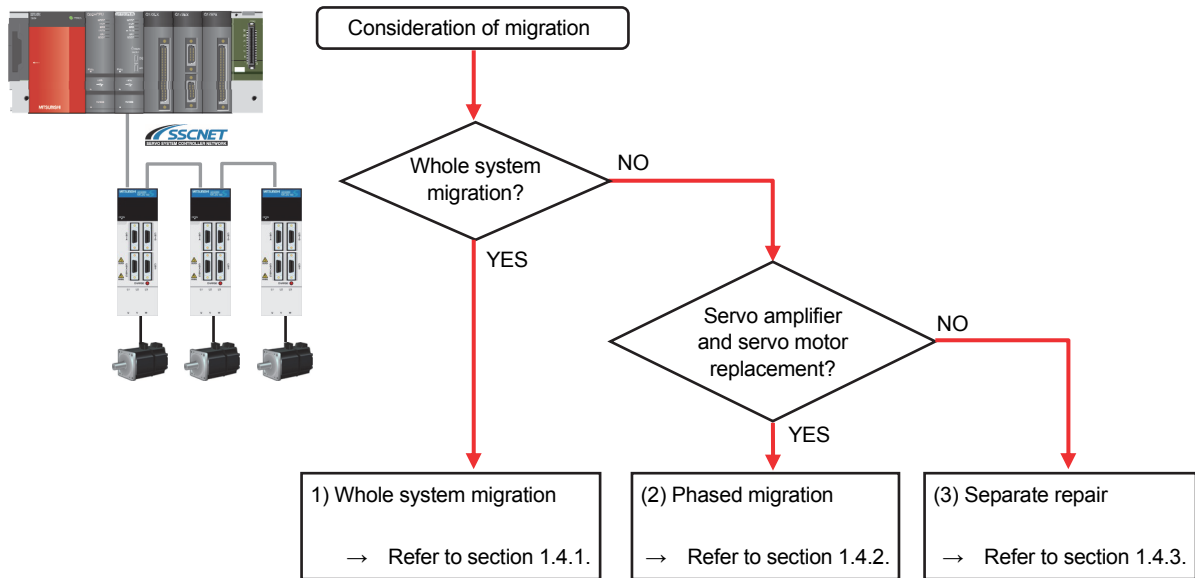
## 1.3.2 System configuration using RnMTCPU after migration



# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

## 1.4 Case Study on Migration

The following describes a standard case study of migrating the existing system using Q17nCPUN(-T).



### (1) Whole system migration (recommended)

The controller, servo amplifiers, servo motors, and servo network are replaced simultaneously. Although a large-scale installation is required, the whole system migration allows the system to operate for longer periods. (Refer to section 1.4.1.)

### (2) Phased migration (When the whole system migration is difficult due to the installation period and cost.)

The MR-J2S-B servo amplifiers are gradually replaced with the MR-J4-B servo amplifiers, and then the controller is eventually replaced with RnMTCPU in the final phase. (Refer to section 1.4.2.)

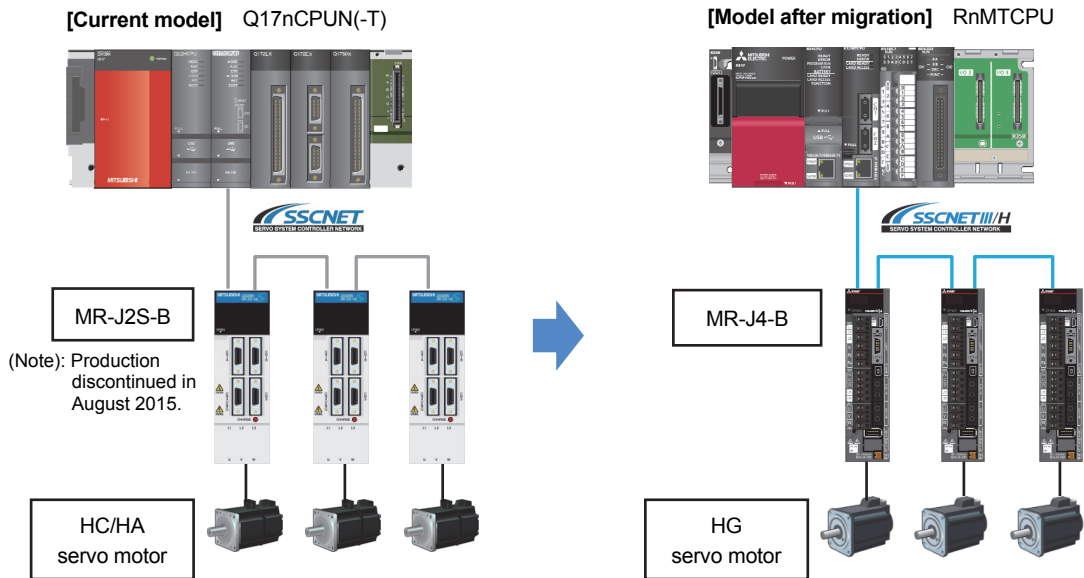
### (3) Separate repair

This is a replacement method for when the servo amplifier or the servo motor malfunctions. (Refer to section 1.4.3.)

# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

## 1.4.1 Whole system migration (recommended)

The following shows the system when the whole system migration takes place.



[Changes in the system]

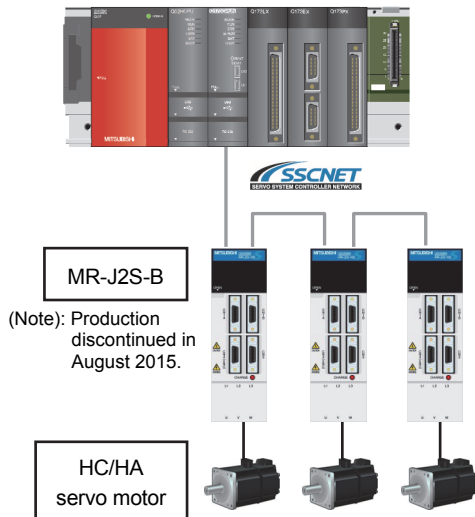
| Product name      | Model before migration | Model after migration  |
|-------------------|------------------------|--|
| Main base unit    | Q3□B                   | R3□B   |
| PLC CPU module    | Qn(H)CPU               | RnCPU  |
| Motion CPU module | Q17nCPUN(-T)           | RnMTCPU  |
| Motion modules    | Q172LX                 | MELSEC iQ-R series<br>Input module                                 |
|                   | Q172EX(-S1,-S2,-S3)    | [Synchronous encoder compatible<br>servo amplifier]<br>MR-J4-□B-RJ |
|                   | Q173PX(-S1)            | MELSEC iQ-R series<br>High-speed counter module                    |
| Servo amplifier   | MR-J2S-B               | MR-J4-B  |
| Servo motor       | HC/HA series           | HG series  |

# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

## 1.4.2 Phased migration

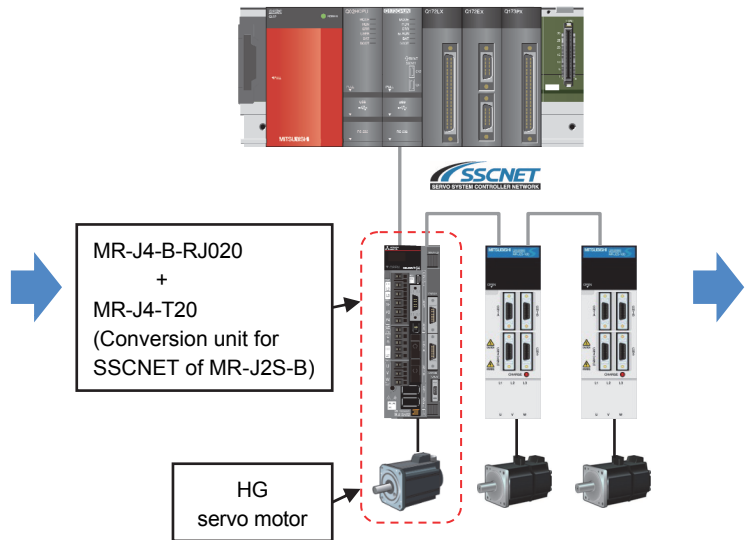
The following shows the procedure for the phased migration in which the MR-J2S-B servo amplifiers are gradually replaced with the MR-J4-B servo amplifiers, and eventually the controller is replaced with RnMTCPU in the final phase.

### [Current system]



### [Replacement - Phase 1]

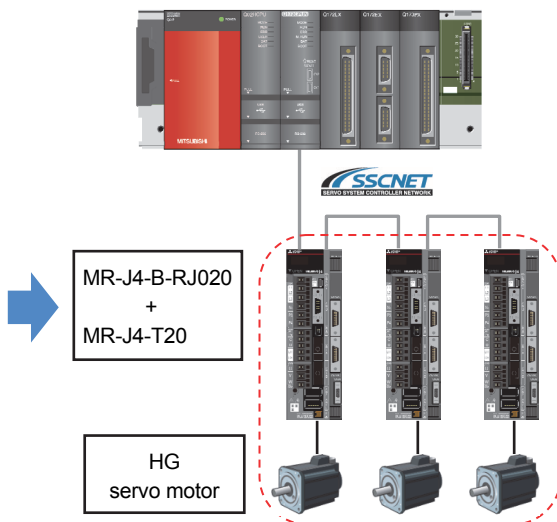
Servo amplifier and servo motor replacement for only one axis



(Note): For replacing the servo amplifier or the servo motor, refer to section 1.4.3 "Separate repair".

### [Replacement - Phase 2]

Servo amplifier and servo motor replacement for all axes

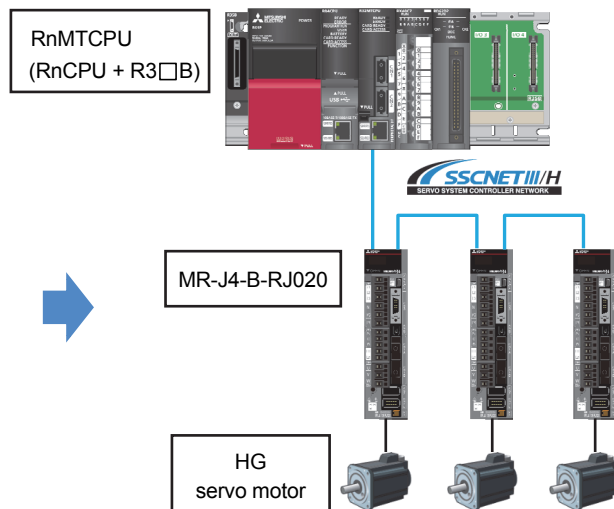


(Note): MR-J4-B-RJ020 + MR-J4-T20

↓  
MR-J4-B-RJ020 connected to MR-J4-T20 operates as MR-J2S-B. In addition, MR-J4-B-RJ020 can drive both MR-J4 compatible HG servo motors and MR-J2S compatible HC/HA servo motors.

### [Replacement - Phase 3]

Motion controller and servo network replacement



(Note): When replacing the servo system network, change the operation mode of MR-J4-B-RJ020 from the J2S mode to the J4 mode.

(Note): Remove MR-J4-T20.

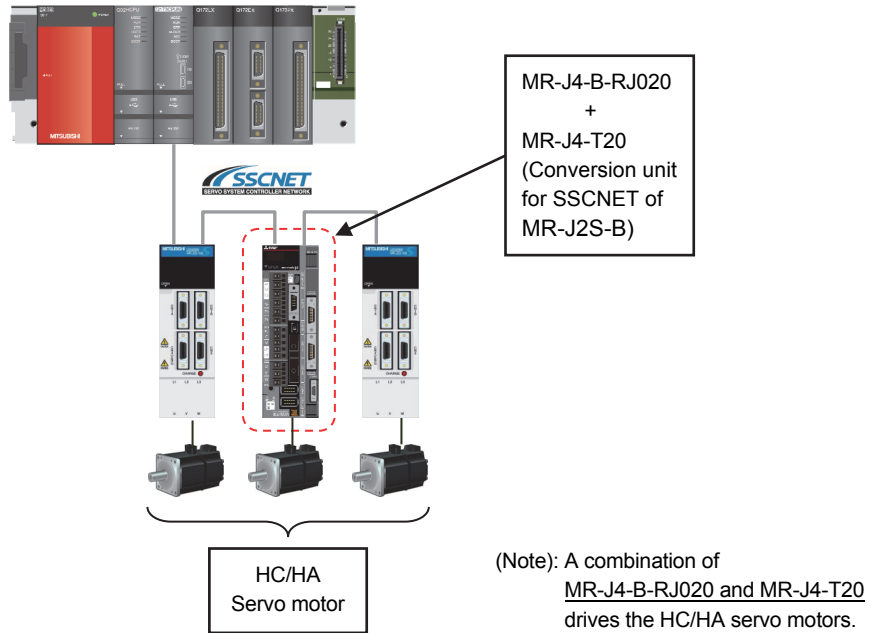


# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

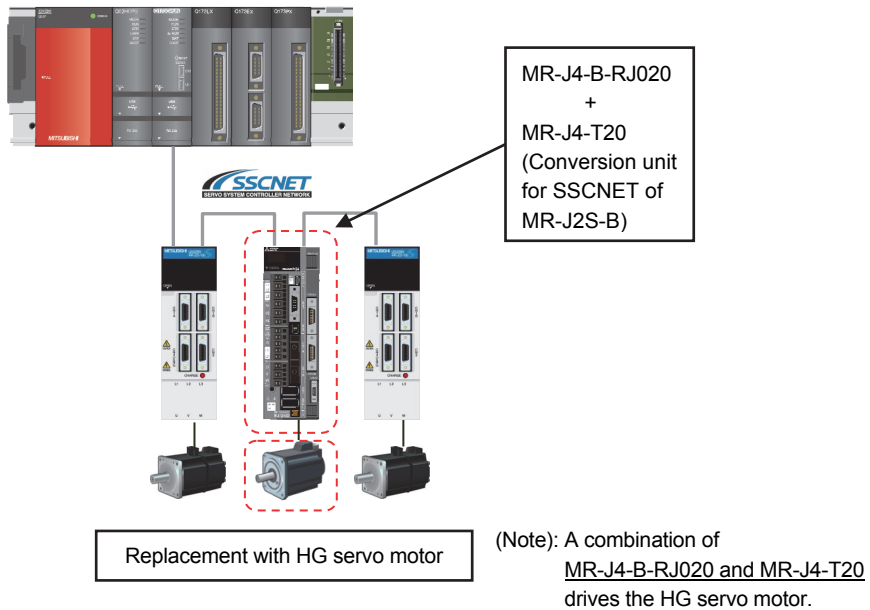
## 1.4.3 Separate repair

The following shows the procedure for the separate repair.

- (1) When the MR-J2S-B servo amplifier has malfunctioned  
Replace only the servo amplifier.



- (2) When the HC/HA servo motor has malfunctioned  
Simultaneously replace the servo amplifier and the malfunctioned servo motor.



# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

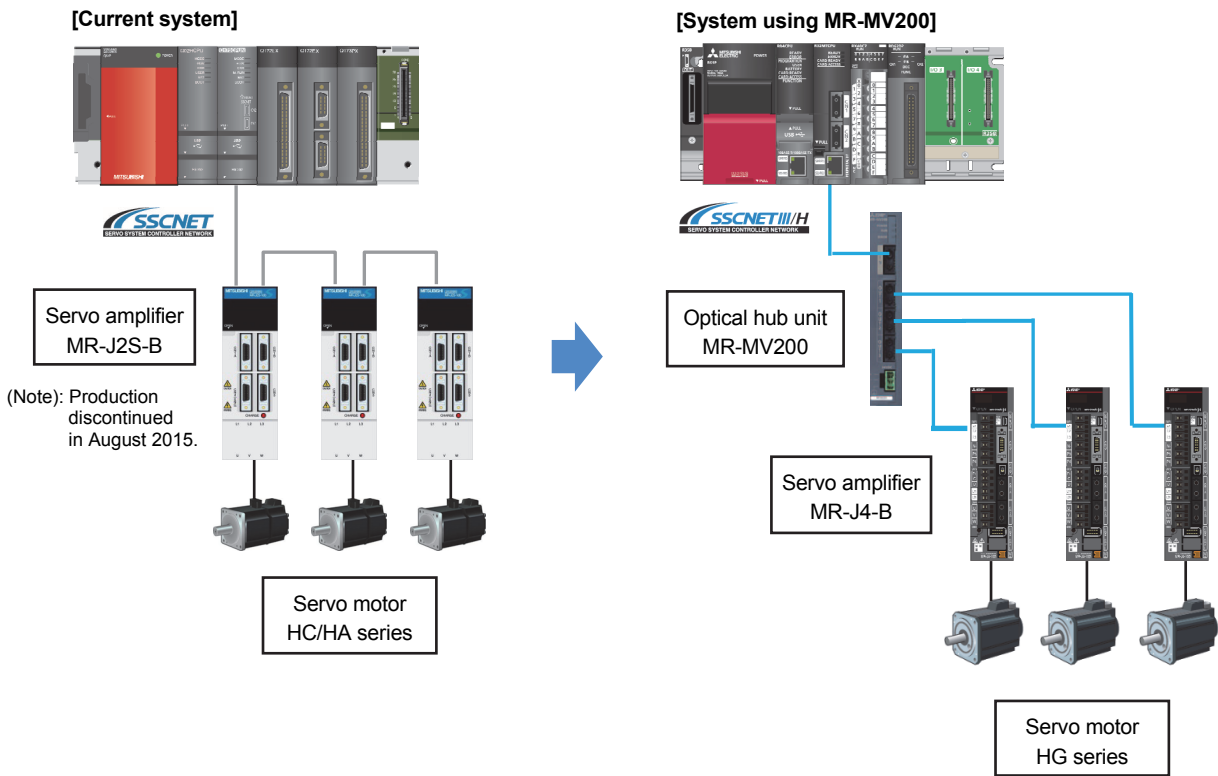
## 1.4.4 Precautions for powering off only a desired servo amplifier

Changing the servo amplifier connection method from SSCNET (metal cables) to SSCNETIII/H (optical fiber cables) makes the Motion controller communicate with servo amplifiers on the second axis and after via the servo amplifier of a preceding axis. Thus, powering OFF the servo amplifier on a preceding axis cuts off communication with all servo amplifiers on subsequent axes.

Use the SSCNETIII/H compatible MR-MV200 optical hub unit for powering off only a desired servo amplifier.

Refer to section 1.4.5 for details of the MR-MV200 optical hub unit.

The current system and the migrated system with the MR-MV200 are shown below.

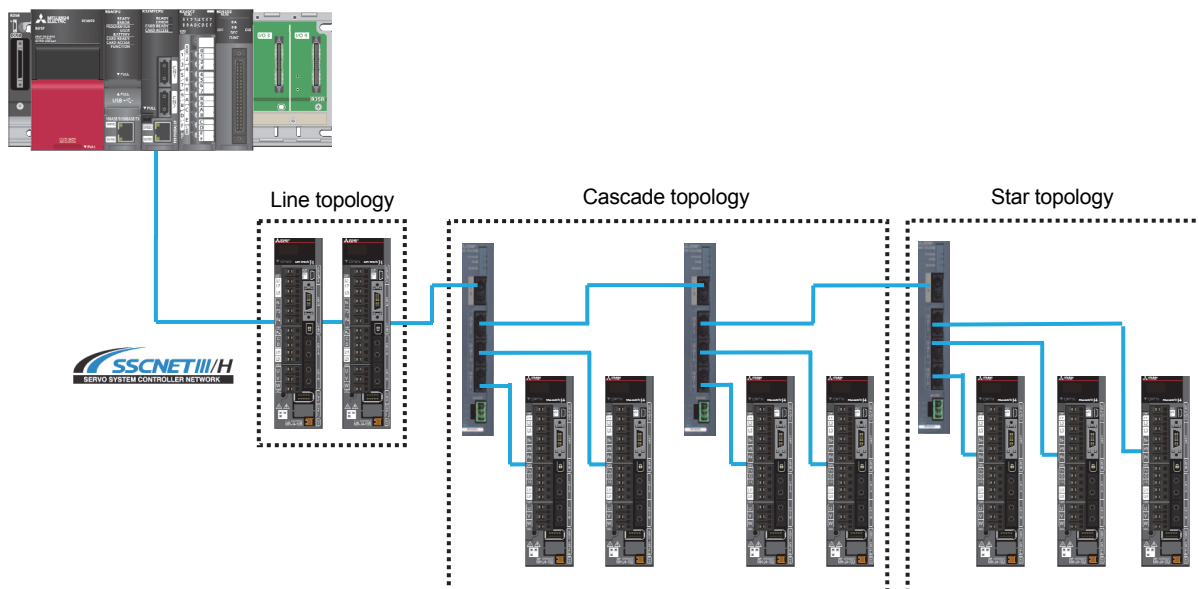


# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

## 1.4.5 Configuration when the MR-MV200 optical hub unit is used

The MR-MV200 can branch a single SSCNETIII/H network line in three separate directions (three outputs per one input).

A connection example when using the MR-MV200 and the specifications are shown below.



| Item                        | Description  |
|-----------------------------|--|
| Input voltage [V]           | 21.6 to 26.4 VDC (24 VDC $\pm$ 10 %)                   |
| Consumption current [A]     | 0.2  |
| Mass [kg]                   | 0.22   |
| Mounting method             | Directly mounted to the control panel or with DIN rail |
| Cable length [m]            | Up to 100  |
| Number of optical hub units | Up to 16 units/line                                    |
| Number of servo amplifiers  | Up to 16 axes/line                                     |
| Exterior dimensions [mm]    | 168 (H) x 30 (W) x 100 (D)                             |

# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

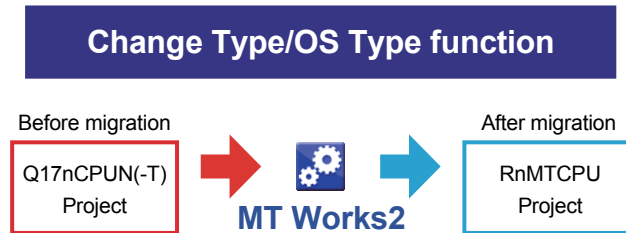
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## 1.5 Project Diversion

The following functions can convert the project of Q17nCPUN(-T) into that of RnMTCPU.  
For the procedure of project conversion, refer to section “2.4.3 Project diversion procedures by engineering environment”.

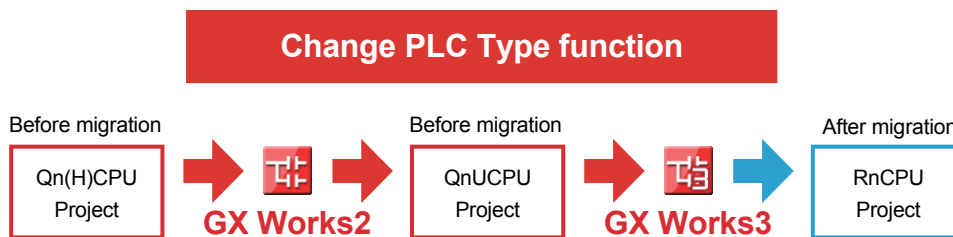
### (1) Motion CPU project

“Project diversion function” and “Change Type/OS Type function” of MELSOFT MT Works2



### (2) PLC CPU project

“Change PLC type function” of MELSOFT GX Works3



# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

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## 1.6 Introduction of R64MTCPU

The MELSEC iQ-R series Motion controller R64MTCPU with the maximum of 64 control axes is also available. Up to 192 axes can be synchronized by the use of three R64MTCPUs, enabling control of a large-scale system.

|   | R64MTCPU                              | R32MTCPU                              | R16MTCPU                   |
|---|---------------------------------------|---------------------------------------|----------------------------|
| Maximum number of control axes                | 64 axes <sup>(Note-1)</sup>           | 32 axes                               | 16 axes                    |
| Command interface                             | SSCNETIII/H, SSCNETIII                |                                       |                            |
| Number of SSCNETIII/H lines                   | 2 lines <sup>(Note-2)</sup>           |                                       | 1 line <sup>(Note-2)</sup> |
| Maximum distance between stations [m]         | 100 (SSCNETIII/H), 50 (SSCNETIII)     |                                       |                            |
| Maximum overall cable distance [m]            | 3200 (SSCNETIII/H)<br>800 (SSCNETIII) | 1600 (SSCNETIII/H)<br>800 (SSCNETIII) |                            |
| Maximum number of connected optical hub units | 32 (16 per line)                      |                                       | 16                         |
| Operation cycle                               | 0.222 ms to 7.111 ms                  |                                       |                            |
| Program language                              | Motion SFC, Dedicated instruction     |                                       |                            |

(Note-1): When SSCNETIII is used, the maximum number of control axes is 32 (16 axes per line).


(Note-2): SSCNETIII/H and SSCNETIII cannot be mixed on the same line.

# 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

## 1.7 Relevant Documents

Refer to the following relevant documents for the replacement.

### 1.7.1 Relevant catalogs

|  |  |
|--|--|
| <p>Servo System Controllers<br/>MELSEC iQ-R/MELSEC iQ-F Series</p>  <p>L(NA)03100</p>     | <p>Servo amplifiers &amp; Motors MELSERVO-J4</p>  <p>L(NA)03058</p>                            |
| <p>MELSERVO-J2-Super Transition Guide</p>  <p>L(NA)03091</p>                            | <p>Transition from MELSERVO-J2-Super/J2M Series to J4 Series Handbook</p>  <p>L(NA)03093</p> |
| <p>Replacement of Virtual mode with Advanced synchronous control</p>  <p>L(NA)03123</p> |  |

## 1. OVERVIEW OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

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### 1.7.2 Relevant manuals

#### (1) Motion controller

| Manual title  | Manual No. |
|---|------------|
| MELSEC iQ-R Motion Controller User's Manual                                     | IB-0300235 |
| MELSEC iQ-R Motion Controller Programming Manual (Common)                       | IB-0300237 |
| MELSEC iQ-R Motion Controller Programming Manual (Program Design)               | IB-0300239 |
| MELSEC iQ-R Motion Controller Programming Manual (Positioning Control)          | IB-0300241 |
| MELSEC iQ-R Motion Controller Programming Manual (Advanced Synchronous Control) | IB-0300243 |
| MELSEC iQ-R Motion Controller Programming Manual (Machine Control)              | IB-0300309 |

#### (2) Servo amplifier

| Manual title  | Manual No.  |
|---|-------------|
| MR-J4-_B_(-RJ) SERVO AMPLIFIER INSTRUCTION MANUAL   | SH-030106   |
| MR-J4 Servo amplifier Instructions and Cautions for Safe Use of AC Servos   | IB-0300175E |
| MELSERVO-J4 Servo amplifier INSTRUCTION MANUAL TROUBLE SHOOTING   | SH-030109   |
| MR-J4W2-_B_/MR-J4W3-_B_/MR-J4W2-0303B6 SERVO AMPLIFIER INSTRUCTION MANUAL   | SH-030105   |
| Conversion Unit for SSCNET of MR-J2S-B Compatible AC Servo MR-J4-_B_-RJ020/ MR-J4-DU-_B_-RJ020/MR-CR55K_/MR-J4-T20 SERVO AMPLIFIER INSTRUCTION MANUAL | SH-030125   |
| Instructions and Cautions for Drive of HC/HA Series Servo Motor with MR-J4-_B_-RJ020 Servo Amplifier  | SH-030127   |
| Conversion unit for SSCNET of MR-J2S-B MR-J4-T20 Installation Guide   | IB-0300204E |





## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU


#### 2.1 Table of Components and Software

Prepare modules, servo amplifiers, operating system software, and an engineering environment according to the following tables in this section.

| Product name   |                        | Model before migration                         | Model after migration   |                           |
|--|------------------------|--|---|---------------------------|
| Motion CPU module                                    |                        | Q172CPUN                                       | R16MTCPU <sup>(Note-1)</sup>  |                           |
|  |                        | Q173CPUN                                       | R32MTCPU <sup>(Note-2)</sup>  |                           |
|  |                        | Q172CPUN-T                                     | R16MTCPU <sup>(Note-1), (Note-3)</sup>  |                           |
|  |                        | Q173CPUN-T                                     | R32MTCPU <sup>(Note-2), (Note-3)</sup>  |                           |
| PLC CPU module                                       |                        | Qn(H)CPU                                       | RnCPU   |                           |
| Power supply module                                  |                        | Q6□P   | R6□P  |                           |
| Main base unit                                       |                        | Q3□B   | R3□B  |                           |
| Extension base unit                                  |                        | Q6□B   | R6□B  |                           |
| Extension cable                                      |                        | QC□B   | RC□B  |                           |
| Servo external signals interface module              |                        | Q172LX   | MELSEC iQ-R series Input module   |                           |
| Serial absolute synchronous encoder interface module |                        | Q172EX   | [Synchronous encoder compatible servo amplifier]<br>MR-J4-□B-RJ <sup>(Note-4)</sup> |                           |
|  |                        | Q172EX-S1                                      |   |                           |
|  |                        | Q172EX-S2                                      |   |                           |
|  |                        | Q172EX-S3                                      |   |                           |
| Manual pulse generator interface module              |                        | Q173PX   | MELSEC iQ-R series High-speed counter module  |                           |
|  |                        | Q173PX-S1                                      |   |                           |
| Input module   | AC                     | QX10   | MELSEC iQ-R series Input module   |                           |
|  | DC                     | QX40, QX41, QX42, QX80, QX81, QX70, QX71, QX72 |   |                           |
| Output module  | Relay                  | QY10   | MELSEC iQ-R series Output module  |                           |
|  | Transistor             | Sink   |   | QY40P, QY41P, QY42P, QY50 |
|  |                        | Source   |   | QY80, QY81P               |
|  | TTL-CMOS (Sink)        | QY70, QY71                                     |   |                           |
| Input/Output composite module                        |                        | QH42P, QX48Y57                                 | MELSEC iQ-R series Input/Output composite module                                    |                           |
| Analog input module                                  | Voltage input          | Q68ADV   | MELSEC iQ-R series Analog input module  |                           |
|  | Current input          | Q68ADI   |   |                           |
|  | Voltage-current input  | Q64AD  |   |                           |
| Analog output module                                 | Voltage output         | Q68DAV   | MELSEC iQ-R series Analog output module   |                           |
|  | Current output         | Q68DAI   |   |                           |
|  | Voltage-current output | Q62DA, Q64DA                                   |   |                           |


## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

(Continued)

| Product name                              | Model before migration  |  | Model after migration   |
|---|---|--|---|
| Interrupt module                          | QI60  |  | MELSEC iQ-R series<br>Input module  |
| Serial absolute synchronous encoder       | MR-HENC<br>Q170ENC  |  | Q171ENC-W8  |
| Serial absolute synchronous encoder cable | MR-JHSCBL□M-H,L<br>(For MR-HENC)<br>Q170ENCCBL□M<br>(For Q170ENC)   |  | Q170ENCCBL□M-A  |
| Battery unit                              | Q170BAT<br>(Order if necessary)   |  | -   |
| Battery                                   | A6BAT<br>(For Motion CPU module)  |  | -   |
|   | A6BAT<br>(For synchronous encoder)  |  | -<br>(The battery of the servo amplifier is used)                                   |
| Manual pulse generator                    | MR-HDP01  |  | MR-HDP01 <sup>(Note-5)</sup>  |
| Dividing unit                             | Q173DV  |  | -   |
| SSCNET cable <sup>(Note-6)</sup>          | Q172J2BCBL□M<br>Q172J2BCBL□M-B<br>Q173J2BCBL□M<br>Q173J2B2CBL□M<br>Q173J2B3CBL□M<br>Q173J2B4CBL□M<br>Q172HBCBL□M<br>Q172HBCBL□M-B<br>Q173HBCBL□M<br>Q173HB2CBL□M<br>Q173DVCBL□M |  | [SSCNETIII cable]<br>MR-J3BUS□M<br>MR-J3BUS□M-A<br>MR-J3BUS□M-B <sup>(Note-7)</sup> |

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

(Continued)

| Product name                              | Model before migration |  | Model after migration |
|---|------------------------|--|-----------------------|
| Teaching unit                             | A31TU-D3K13            |  | -                     |
|   | A31TU-DNK13            |  | -                     |
| Cable for teaching unit                   | Q170TUD3CBL3M          |  | -                     |
|   | Q170TUDNCBL3M          |  | -                     |
|   | Q170TUDNCBL03M-A       |  | -                     |
| Short-circuit connector for teaching unit | Q170TUTM               |  | -                     |
|   | A31TUD3TM              |  | -                     |

(Note-1): The number of control axes is increased from 8 to 16.

(Note-2): If the number of axes used in the system with Q173CPUN(-T) is 16 or less, R16MTCPU can be also selected.

(Note-3): RnMTCPU does not support teaching units.

(Note-4): A synchronous encoder is connected via the servo amplifier.

(Note-5): The existing MR-HDP01 can be used continuously with RnMTCPU.

When a manual pulse generator is used with RnMTCPU, prepare a power supply separately.

In addition, Mitsubishi Electric has confirmed the operation of the following manual pulse generator.

Contact the manufacturer for details.

| Product name           | Model name           | Description   | Manufacturer        |
|------------------------|----------------------|---|---------------------|
| Manual pulse generator | UFO-M2-0025-2Z1-B00E | Number of pulses per revolution: 25 pulse/rev<br>(100 pulse/rev after magnification by 4) | Nemicon Corporation |

(Note-6): "□" indicates the cable length.

(015: 0.15m, 03: 0.3m, 05: 0.5m, 1: 1m, 5:5m, 10: 10m, 20: 20m, 30: 30m, 40: 40m, 50: 50m)

(Note-7): For a long distance cable of up to 100 m or an ultra-long bending life cable, contact Mitsubishi Electric System & Service Co., Ltd.

[Sales office] FA PRODUCT DIVISION mail: [osb.webmaster@melsc.jp](mailto:osb.webmaster@melsc.jp)

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 2.1.1 Servo amplifiers and servo motors



The servo system network is changed from SSCNET to SSCNETIII/H.

Select a SSCNETIII/H compatible servo amplifier and a servo motor connectable to the selected servo amplifier.

| Before migrating from Q17nCPUN(-T) |            |             | After migrating to RnMTCPU |            |             |
|------------------------------------|------------|-------------|----------------------------|------------|-------------|
| Servo amplifier                    |            | Servo motor | Servo amplifier            |            | Servo motor |
| MR-J2S series                      | MR-J2S-□B  | HC-KFS□     | MR-J4 series               | MR-J4-□B   | HG-KR□      |
|                                    |            | HC-MFS□     |                            | MR-J4W2-□B | HG-MR□      |
|                                    |            | HC-SFS□     |                            | MR-J4W3-□B | HG-SR□      |
|                                    |            | HC-LFS□     |                            |            | HG-RR□      |
|                                    |            | HC-RFS□     |                            |            | HG-UR□      |
| MR-J2M series                      | MR-J2M-□DU | HA-LFS□     |                            |            | HG-JR□      |
|                                    |            | HC-UFS□     |                            |            |             |
|                                    |            | HC-KFS□     |                            |            |             |
| MR-H series                        | MR-H□B(N)  | HC-MFS□     |                            |            |             |
|                                    |            | HC-UFS□     |                            |            |             |
|                                    |            | HA-FF□      |                            |            |             |
|                                    |            | HA-FH□      |                            |            |             |
|                                    |            | HA-LH□      |                            |            |             |
|                                    |            | HA-MH□      |                            |            |             |
|                                    |            | HA-SH□      |                            |            |             |
|                                    |            | HA-UH□      |                            |            |             |
|                                    |            | HC-KF□      |                            |            |             |
|                                    |            | HC-MF□      |                            |            |             |
|                                    |            | HC-RF□      |                            |            |             |
|                                    |            | HC-SF□      |                            |            |             |
|                                    |            | HC-UF□      |                            |            |             |
|                                    |            | HA-LF□      |                            |            |             |
| HA-LH□K                            |            |             |                            |            |             |
| MR-J2 series                       | MR-J2-□B   | HC-MF□      |                            |            |             |
|                                    |            | HA-FF□      |                            |            |             |
|                                    |            | HC-SF□      |                            |            |             |
|                                    |            | HA-RF□      |                            |            |             |
| MR-J2-Jr series                    | MR-J2-03B5 | HC-UF□      |                            |            |             |
|                                    |            | HC-AQ□(B)D  | MR-J4W2-0303B6             | HG-AK□(B)D |             |
| HC-AQ□(B)S                         |            | HG-AK□(B)   |                            |            |             |

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

[Comparison of servo system network]

| Item                   |         |  SSCNET<br>SERVO SYSTEM CONTROLLER NETWORK |  SSCNET III/H<br>SERVO SYSTEM CONTROLLER NETWORK   |
|------------------------|---------|---|---|
| Communications medium  |         | Metal cable   | Optical fiber cable   |
| Communications speed   |         | 5.6 Mbps  | 150 Mbps  |
| Communications cycle   | Send    | 0.88 ms/1.77 ms/3.55 ms   | 0.222 ms/0.444 ms/0.888 ms  |
|                        | Receive | 3.55ms  | 0.222 ms/0.444 ms/0.888 ms  |
| Number of control axes |         | Up to 8 axes/line   | Up to 16 axes/line  |
| Transmission distance  |         | Maximum overall distance:<br>30 m   | [Standard code for inside panel and standard cable for outside panel]<br>Up to 20 m between stations<br>Maximum overall distance: 320 m (20 m × 16 axes)<br>[Long distance cable]<br>Up to 100 m between stations<br>Maximum overall distance: 1600 m (100 m × 16 axes) |

### 2.1.2 Operating system software

Use the operating system software for RnMTCPU.

| Before migration |         |              | After migration      |  |
|------------------|---------|--------------|----------------------|--|
| CPU model        | OS Type | OS model     | CPU model            | OS model                                     |
| Q173CPUN(-T)     | SV13    | SW6RN-SV13QB | R32MTCPU<br>R16MTCPU | SW10DNC-RMTFW<br>(installed before shipment) |
| Q172CPUN(-T)     |         | SW6RN-SV13QD |                      |  |
| Q173CPUN(-T)     | SV22    | SW6RN-SV22QA |                      |  |
| Q172CPUN(-T)     |         | SW6RN-SV22QC |                      |  |

### 2.1.3 Engineering environment (required)

The engineering environment that supports RnMTCPU is as follows.

| Product name                                 | Model         | Version              |
|--|---------------|----------------------|
| MELSOFT MT Works2                            | SW1DND-MTW2-E | Ver. 1.100E or later |
| MELSOFT GX Works3                            | SW1DND-GXW3-E | Ver. 1.000A or later |
| MELSOFT MR Configurator2 <sup>(Note-1)</sup> | SW1DNC-MRC2-E | Ver. 1.27D or later  |

(Note-1): The Servo Setup Software MRJW3-SETUP161E is required when a combination of MR-J4-B-RJ020 and MR-J4-T20 is used as MR-J2S-B.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 2.2 Differences Between Q17nCPUN(-T) and RnMTCPU

#### (1) Performance and specifications

▶ An item that requires a setting change at migration.

| Models                           |      | Q173CPUN(-T)  | Q172CPUN(-T) | R32MTCPU  | R16MTCPU | Points for migration   |
|----------------------------------|------|---|--------------|---|----------|--|
| Items                            |      |   |              |   |          |  |
| Number of control axes           |      | Up to 32  | Up to 8      | Up to 32  | Up to 16 | -  |
| Operation cycle (default)        | SV13 | 0.88ms/ 1 to 8 axes<br>1.77ms/ 9 to 16 axes<br>3.55ms/17 to 32 axes   |              | 0.222ms/ 1 to 2 axes<br>0.444ms/ 3 to 8 axes<br>0.888ms/ 9 to 20 axes<br>1.777ms/21 to 32 axes  |          | ▶ If the operation cycle is set as default (automatic), the operation cycle will be changed.<br>Set a fixed operation cycle where necessary because the change in the operation cycle may change program execution timing.<br>(Refer to section 2.2(11).)      |
|                                  | SV22 | 0.88ms/ 1 to 4 axes<br>1.77ms/ 5 to 12 axes<br>3.55ms/13 to 24 axes<br>7.11ms/25 to 32 axes   |              |   |          |  |
| Control methods                  |      | Positioning control, Speed control, Speed/position switching control, Fixed-pitch feed, Constant speed control, Position follow-up control, Speed switching control, High-speed oscillation control, Synchronous control (SV22) |              | Positioning control, Speed control, Speed/position switching control, Fixed-pitch feed, Continuous trajectory control, Position follow-up control, Speed control with fixed position stop, High-speed oscillation control, Speed-torque control, Tightening & press-fit control, Advanced synchronous control |          | The term "constant-speed control" has been changed to "continuous trajectory control".<br>However, the program is divertible as it is.<br>▶ If "Speed-switching control" is used, replace it with "Continuous trajectory control". (Refer to section 2.2(10).) |
| Motion dedicated PLC instruction |      | S(P).DDRD, S(P).DDWR, S(P).SFCS, S(P).SVST, S(P).CHGT, S(P).CHGV, S(P).CHGA, S(P).GINT  |              | D(P).DDRD, D(P).DDWR, D(P).SFCS, D(P).SVST, D(P).CHGT, D(P).CHGV, D(P).CHGVS, D(P).CHGA, D(P).CHGAS, D(P).GINT, D(P).SVSTD  |          | ▶ Replace the Motion dedicated PLC instruction S(P).□ with D(P).□.<br>Revise programs which use CHGT instructions because the unit of the torque limit value is different.<br>(Refer to section 2.2(9).)   |
| Program language                 |      | Motion SFC,<br>Dedicated instruction,<br>Mechanical support language  |              | Motion SFC,<br>Dedicated instruction  |          | ▶ For replacement of a mechanical system program (mechanical support language), refer to "Replacement of Virtual mode with advanced synchronous control".  |
| Servo external signal            |      | Q172LX signal   |              | Bit device<br>(When "Inter-module synchronization" is valid, "High accuracy" setting of actual input signal is possible),<br>Amplifier input  |          | ▶ When the servo external signals are used, review the settings.<br>(Refer to section 2.2(12).)  |
| Cancel signal of servo program   |      | Available   |              | Not available   |          | ▶ Delete the cancel command of the servo program, and assign the same signal to the external signal (STOP signal) or use <span style="border: 1px solid black; padding: 0 2px;">Rq.1140</span> stop command.   |

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

(Continued)

| Items                                   | Models  |              |  |          | Points for migration   |
|---|---|--------------|--|----------|--|
|   | Q173CPUN(-T)  | Q172CPUN(-T) | R32MTCPU   | R16MTCPU |  |
| Limit output data                       | Output enable/disable bit,<br>Forced output bit   |              | Forced OFF bit,<br>Forced ON bit   |          | The setting of "Output enable/disable bit" and "Forced output bit" in Q17nCPUN(-T) are respectively diverted as "Forced OFF bit" and "Forced ON bit" in RnMTCPU. The program can be diverted as it is.               |
| Shared CPU memory                       | H0 to HFFF (4096 words)   |              | U3E□\G0 to U3E□\G2097151<br>(2097152 words)  |          | If MULTW /MULTR instructions are used for writing/reading of data to/from the shared memory, review the program. (Refer to section 2.2(6).)  |
| Cancelling errors of Multiple CPU       | [Self-diagnostic error code]<br>• 10000: M2039 OFF<br>• Less than 10000:<br>M9060 OFF→ ON<br>(The error code needs to be stored to the special register of D9060.)                              |              | SM50 ON<br>• All errors can be cancelled.<br>• After cancelling errors, SM50 turns OFF automatically.  |          | For details of RnMTCPU errors, refer to section 2.2(5).  |
| Self-diagnostic errors                  | Motion CPU-specific errors<br>→"10000" is stored in the diagnostic error (D9008).<br>At this time, the self-diagnostic error flag (M9008) and the diagnostic error flag (M9010) do not turn ON. |              | All errors are assigned to the self-diagnostic error codes.<br>When an error occurs, an error code is set in SD0, and then SM0 and SM1 turns ON. |          |  |
| Motion SFC error detection flag (M2039) | It depends on the error whether M2039 is turned ON or not.  |              | None<br>(integrated into the self-diagnostic errors)   |          |  |
| Battery error check of Motion CPU       | Provided  |              | None<br>(Battery-less)   |          |  |
| Peripheral I/F                          | USB/RS232/SSCNET  |              | USB/Ethernet<br>(via PLC CPU)<br>/<br>PERIPHERAL I/F<br>(Motion CPU)   |          | Use a compatible I/F to communicate with peripheral devices.<br>If PC link communication is used, replace it with USB communication.<br>In that case, replace the existing cable with the A-miniB USB cable as well. |
| Servo system network                    | SSCNET  |              | SSCNETIII/H or SSCNETIII   |          | -  |
| Limit switch output function            | Up to 32 points   |              | Up to 64 points  |          | -  |
| Mark detection function                 | Not available   |              | UP to 64 settings  |          | -  |
| RUN/STOP                                | RUN/STOP switch   |              | RUN/STOP switch,<br>remote RUN/STOP, RUN contact   |          | ▶ If M2000, M3072, or D704 is directly operated in the program to switch the RUN/STOP status, revise the program. (Refer to section 2.2(7).)   |

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

(Continued)

| Items   |           | Models  |              | R32MTCPU  | R16MTCPU | Points for migration  |
|---|-----------|---|--------------|---|----------|---|
|   |           | Q173CPUN(-T)  | Q172CPUN(-T) |   |          |   |
| Output mode setting of STOP to RUN            |           | No option<br>(Comparable to "Clear the output (Y)")   |              | Output the output (Y) status before STOP/<br>Clear the output (Y)   |          | ▶ The default setting is "Output the output (Y) status before STOP".<br>Change the setting if necessary.  |
| LED display                                   |           | MODE, RUN, ERR, M.RUN, BAT, BOOT on LED display   |              | READY, ERROR, CARD READY, CARD ACCESS with Dot matrix LED   |          | More information can be indicated on the LED display, enabling to conduct troubleshooting more easily. (Refer to "MELSEC iQ-R Motion Controller User's Manual".)  |
| Latch range Setting                           | Latch (1) | Range in which the latch can be cleared with the latch clear  |              | Up to 32 settings<br>(M, B, F, D, W, # devices)   |          | ▶ # devices are latched as default in Q17nCPUN(-T), however, not in RnMTCPU.<br>Review the latch settings as needed.  |
|   | Latch (2) | Range in which the latch cannot be cleared with the latch clear   |              |   |          |   |
| Latch clear                                   | Latch (1) | L.CLR switch  |              | <ul style="list-style-type: none"> <li>• Clearing the MELSOFT MT Works2 Motion CPU memory.</li> <li>• Cleaning built-in memory with Motion CPU rotary switch "C".</li> </ul>  |          |   |
|   | Latch (2) |   |              | <ul style="list-style-type: none"> <li>• Cleaning built-in memory with Motion CPU rotary switch "C".</li> </ul>   |          |   |
| All clear function                            |           | Turn OFF PLC ready flag (M2000) and test mode ON flag (M9075) to execute all clear  |              | <ul style="list-style-type: none"> <li>• The standard ROM and the latch range are cleared with the rotary switch for all clear.</li> <li>• The standard ROM is cleared by formatting the Motion CPU.</li> </ul>                 |          | -   |
| Acceleration/ deceleration time               |           | 1 to 65535 ms<br>(1 word)   |              | 1 to 8388608 ms<br>(2 words)  |          | ▶ Revise the program.<br>(Refer to section 2.2(8))  |
| Torque limit value                            |           | 1 [%] unit  |              | 0.1 [%] unit  |          | ▶ Revise the program.<br>(Refer to section 2.2(9))  |
| Motor speed (#8066+4n, #8067+4n)              |           | 0.1 r/min unit<br>(0.1 mm/s for linear servo motors)  |              | 0.01 r/min unit<br>(0.01 mm/s for linear servo motors)  |          | ▶ Revise the program.   |
| Digital oscilloscope function                 |           | <ul style="list-style-type: none"> <li>• Word 4CH, Bit 8CH</li> <li>• Real-time display</li> <li>• Sampling points: Up to 8192</li> </ul> |              | <ul style="list-style-type: none"> <li>• Word 16CH, Bit 16CH</li> <li>• Real-time display</li> <li>• Sampling points: Up to 133120</li> <li>• Offline sampling</li> <li>• Saving sampling results to SD memory card.</li> </ul> |          | Sampling can be performed without a personal computer by turning ON the sampling settings RUN request device (SM860) after the setting file of trigger condition, etc. is stored to the ROM area or SD memory card. |
| Security function                             |           | Protection by password  |              | <ul style="list-style-type: none"> <li>• Protection by password (32 characters)</li> <li>• Software security key (Common specification among MELSEC iQ-R series)</li> </ul>   |          | ▶ The setting method has been changed.<br>(Refer to "MELSEC iQ-R Motion Controller Programming Manual (Common)")  |
| Operating system software installation method |           | <ul style="list-style-type: none"> <li>• MELSOFT MT Works2</li> <li>• MT Developer</li> </ul>   |              | <ul style="list-style-type: none"> <li>• MELSOFT MT Works2</li> <li>• SD memory card</li> </ul>   |          | The installation files have been consolidated into one, making management of the files easier.  |



## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (2) Exterior dimensions and mass

|                          | Q173CPUN                     | Q173CPUN-T | Q172CPUN | Q172CPUN-T | R32MTCPU                      | R16MTCPU |
|--------------------------|------------------------------|------------|----------|------------|-------------------------------|----------|
| Exterior dimensions [mm] |                              |            |          |            |                               |          |
|                          | 98.0[H] × 27.4[W] × 114.3[D] |            |          |            | 106.0[H] × 27.8[W] × 110.0[D] |          |
| Mass [kg]                | 0.23                         | 0.24       | 0.22     | 0.23       | 0.28                          |          |

### (3) Base unit

The MELSEC-Q series and the MELSEC iQ-R series are different in fixing holes' position in the base unit, dimensions, and mass. Refer to "QCPU User's Manual (Hardware Design, Maintenance and Inspection)" and "MELSEC iQ-R Module Configuration Manual" for details.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (4) Items that need a review or a change following the servo system network change

| Items   | Differences  |   | Changes/revisions  |
|---|--|---|--|
|   | Q17nCPUN(-T)   | RnMTCPU   |  |
| System setting/<br>SSCNET configuration                 | Q173CPUN(-T): 4 lines<br>(Up to 8 axes/line)   | R32MTCPU: 2 lines<br>(Up to 16 axes/line)   | Set the servo amplifier's rotary switch and connection according to the SSCNET configuration.  |
|   | Q172CPUN(-T): 1 line<br>(Up to 8 axes/line)  | R16MTCPU: 1 line<br>(Up to 16 axes/line)  |  |
| Electronic gear   | -  | -   | Change "Number of pulses per revolution" and "Movement amount per revolution" of the fixed parameters according to the resolution per the connected servo motor revolution.  |
| Powering OFF a servo amplifier in the same network line | If a servo amplifier is turned OFF, there is no influence on the other servo amplifiers in the same network line.                      | If a servo amplifier is turned OFF in the same network, the servo amplifiers connected after that one cannot be used.   | Use MR-MV200 SSCNETIII/H compatible optical hub unit.  |
| Connect/disconnect of SSCNET communication              | No special operation is required to turn OFF/ON a servo amplifier in the SSCNET network line.  | Use the connect/disconnect function of SSCNET to turn OFF/ON a servo amplifier in the SSCNET network line.  | This function disconnects the network connection of the servo amplifiers after the disconnected one.<br>In order to turn off only a specific servo amplifier, use MR-MV200 SSCNETIII/H compatible optical hub unit.  |
| Battery disconnection warning,<br>Battery warning       | Servo error code<br>2102(9F): Battery warning<br>2103(92): Battery disconnection warning   | Warnings<br>0C80(9F.1): Low battery<br>0C80(92.1): Encoder battery cable disconnection warning  | Revise the program if it uses the servo error code on the left.  |
| Main circuit OFF warning                                | If the main circuit is turned OFF while the servo OFF command (M3215+20n) is ON, the main circuit OFF warning 2149(E9) will not occur. | If the main circuit is turned OFF while the servo OFF command (M3215+20n) is ON, the [0C80 (E9.3): Ready-on signal on during main circuit off] will be turned ON. | The warning occurs when the main circuit is turned OFF while the servo OFF command (M3215+20n) is ON.<br>In order not to let the [0C80 (E9.3): Ready-on signal on during main circuit off] turn ON, change the PC18 servo parameter from "0000(H)" to "1000(H)". |

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (5) Error codes system

MELSEC iQ-R series error codes are expressed with 4 hexadecimal digits (integer without 16-bit sign). There are errors detected with each module's self-diagnostic function, and common errors detected when communicating between modules.

The error detection types and error code ranges are shown below.

| Error detection type                                  | Error code range | Description  |
|---|------------------|--|
| Detection with each module's self-diagnostic function | H0001 to H3FFF   | These are errors such as module self-diagnostic errors that are different for each module. |
| Detection when communicating between modules          | H4000 to H4FFF   | CPU module error   |
|   | H7000 to H7FFF   | Serial communication module error  |
|   | HB000 to HBFFF   | CC-Link module error   |
|   | HC000 to HCFBF   | Ethernet module error  |
|   | HD000 to HDFFF   | CC-Link IE field network module error  |
|   | HE000 to HEFFF   | CC-Link IE controller network module error   |
|   | HF000 to HFFFF   | MELSECNET/H network module, MELSECNET/10 network module error                              |

Errors detected at the RnMTCPU are divided into warnings and errors. The categories and error code range of errors detected at the RnMTCPU are shown below.

| Category | Error code     | Description   | Remarks  |
|----------|----------------|---|--|
| Warning  | H0800 to H0FFF | Warnings which do not stop servo programs   | <ul style="list-style-type: none"> <li>Equivalent to some of the Q17nCPUN(-T) minor errors</li> </ul>  |
| Error    | Minor          | H1000 to H1FFF<br>Errors which stop servo programs<br>The CPU continues to operate (in RUN status). | <ul style="list-style-type: none"> <li>Equivalent to some of the minor errors of Q17nCPUN(-T), and the major errors</li> </ul>   |
|          | Minor (SFC)    | H3100 to H3BFF<br>Motion SFC execution errors<br>The CPU continues to operate (in RUN status).      | <ul style="list-style-type: none"> <li>Equivalent to Motion SFC errors of Q17nCPUN(-T).</li> </ul>   |
|          | Moderate       | H2000 to H30FF<br>Errors that put the CPU operation status to "During stop error".                  | <ul style="list-style-type: none"> <li>If the system parameter is set to "All station stop by stop error of CPU No.1 to 4", all CPUs of the whole system will be in stop status with the specified CPU stop error.</li> <li>Equivalent to system setting errors of Q17nCPUN(-T).</li> </ul>              |
|          | Major          | H3C00 to H3FFF  | <ul style="list-style-type: none"> <li>If the system parameter is set to "All station stop by stop error of CPU No.1 to 4", all CPUs of the whole system will be in stop status with the specified CPU stop error.</li> <li>Equivalent to some of the self-diagnostic errors of Q17nCPUN(-T).</li> </ul> |

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

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When the RnMTCPU detects an error, the error is displayed on the Motion CPU LED display, and the error code is stored in the relevant device. Use the relevant device in which the error code is stored in the program to enable a machine control interlock.  
The following shows the methods for checking and cancelling errors.

(a) Check methods when an error occurs

1) LED display

- The ERROR LED is ON (or flickers).
- The dot matrix LED displays ""AL" (flickers 3 times) → "Error code" (4 digits shown 2 at a time)".

2) Special relays/special register

[Special relays]

- Latest self-diagnostics error (SM0)
- Latest self-diagnostics error (SM1)
- Warning detection (SM4)
- Detailed information 1: flag in use (SM80)
- Detailed information 2: flag in use (SM112)

[Special registers]

- Latest self-diagnostics error code (SD0)
- Clock time for latest self-diagnostic error occurrence (SD1 to SD7)
- Self-diagnostic error code (SD10 to SD25)
- Detailed information 1 information category (SD80)
- Detailed information 1 (SD81 to SD111)
- Detailed information 2 information category (SD112)
- Detailed information 2 (SD113 to SD143)

3) MELSOFT GX Works3 module diagnostics (error information list)

4) MELSOFT MT Works2 Motion CPU error batch monitor (Motion error history)

5) Axis status signals, and axis monitor devices (Error details detected for each axis)

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (b) Cancelling errors

Among the RnMTCPU errors, continue errors (minor errors, or continue mode moderate errors) and warnings can be cancelled.

Use the following method to cancel errors after eliminating the cause.

- Cancel with MELSOFT GX Works3 "Module diagnostics"
- Cancel with MELSOFT MT Works2 "Motion Monitor"
- Cancel with "Error reset (SM50)" <sup>(Note-1)</sup>

| Error type  | Information required to cancel error   |
|---|--|
| System common errors  | <ul style="list-style-type: none"> <li>• Self-diagnostic error information (SD0 to SD7, SD10 to SD25)</li> <li>• Diagnosis error detection (SM0, SM1)</li> <li>• Warning detection (SM4)</li> <li>• Detailed information 1 (SD80 to SD111)</li> <li>• Detailed information 2 (SD112 to SD143)</li> <li>• Detailed information 1: flag in use (SM80)</li> <li>• Detailed information 2: flag in use (SM112)</li> <li>• AC/DC DOWN counter (SD53)</li> <li>• AC/DC DOWN detected (SM53)</li> <li>• I/O module verify error module number (SD61)</li> </ul> |
| Positioning/synchronous control output axis errors/warnings <sup>(Note-1)</sup> | <ul style="list-style-type: none"> <li>• Warning code</li> <li>• Error code</li> <li>• Error detection signal</li> </ul>   |
| Servo alarms/warnings <sup>(Note-1)</sup>                                       | <ul style="list-style-type: none"> <li>• Servo error code</li> <li>• Servo error detection signal</li> </ul>   |
| Synchronous control input axis errors/warnings <sup>(Note-1)</sup>              | <ul style="list-style-type: none"> <li>• Command generation axis warning code</li> <li>• Command generation axis error code</li> <li>• Command generation axis error detection signal</li> <li>• Synchronous encoder axis warning No.</li> <li>• Synchronous encoder axis error No.</li> <li>• Synchronous encoder axis error detection No.</li> </ul>   |

(Note-1): Clears errors for all axes at the same time.

Refer to "Appendix 1 Error Codes of MELSEC iQ-R Motion Controller Programming Manual (Common)" for details.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (6) Data read/write operation to the CPU shared memory

#### (a) MULTW/MULTR instructions

MULTW/MULTR instructions need to be used when Q17nCPUN(-T) accesses the CPU shared memory. Meanwhile, “CPU buffer memory access device (from U3E□\G0)” is available for RnMTCPU to access the memory, and therefore the MULTW/MULTR instructions have been eliminated in RnMTCPU.

If those instructions are used before migration, replace them with TO/FROM instruction, BMOV instruction, or CPU buffer memory access device to directly access the memory.

The following shows program examples for revision.

Ex. 1) The program which writes two words from D0 to the CPU shared memory (from HA00) of self-CPU (CPU No.2)

|                        |   |   |
|------------------------|---|---|
| Q17nCPUN(-T)           | ➔ | RnMTCPU<br>(One of the following three) |
| MULTW HA00, D0, K2, M0 |   | TO H3E10, HA00, D0, K2                  |
|                        |   | BMOV U3E1\G2560, D0, K2                 |
|                        |   | U3E1\G2560L = D0L                       |

Ex. 2) The program which reads two words from the shared memory (HC00) of CPU No.1 to #0

|                          |   |   |
|--------------------------|---|---|
| Q17nCPUN(-T)             | ➔ | RnMTCPU<br>(One of the following three) |
| MULTR #0, H3E0, HC00, K2 |   | FROM #0, HE00, HC00, K2                 |
|                          |   | BMOV #0, U3E0\G3072, K2                 |
|                          |   | #0L = U3E0\G3072L                       |

#### [Point]

Make sure to review the Motion SFC program since MELSOFT MT Works2 does not automatically convert Motion SFC programs at project diversion.

An error occurs at the program conversion, and write operation cannot be performed.

#### (b) Access to other modules (MULTR/FROM/TO instructions)

If Q17nCPUN(-T) accesses other modules with MULTR instructions or FROM/TO instructions although the specified I/O number cannot be found (the specified module does not exist), a Motion SFC error will be outputted, however, the operation will continue. With RnMTCPU, whether to stop or continue the program execution can be selected with parameter.

([R series common parameter] - [CPU parameter] - [RAS setting] - [CPU module operation setting at error detected] - [Module I/O No. specification incorrect])

The default setting of the parameter is “Stop”.

In order to make the setting equivalent to that of Q17nCPUN(-T) (program execution does not stop), change the parameter to “Continue”.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (7) Switching of RUN/STOP status

The RUN/STOP status of Q17nCPUN(-T) is switched by directly operating M2000 (or M3072, D704) in the program. However, the RUN/STOP status of RnMTCPU cannot be switched by the same method.

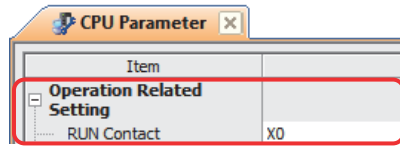
Therefore, if M2000 is used to change the status, the program is required to be changed so that a RUN contact for remote operation is used to switch the RUN/STOP status.

The following shows the procedure and point for the program revision.

[For Q17nCPUN(-T)]

| Procedure   | Contents                      |
|---|-------------------------------|
| 1) Direct operation of M2000<br>(or M3072, D704) in the program | Changes CPU operation status. |

[For RnMTCPU]

| Procedure   | Contents   |
|---|--|
| 1) Set a RUN contact in the [CPU Parameter] settings of MELSOFT MT Works2 | Set a X device for RUN contact (X0 to X2FFF)<br>  |
| 2) Change the X device status   | CPU operation status can be changed by changing the status of the X-device set in 1). <ul style="list-style-type: none"> <li>• RUN contact is OFF: CPU module is in RUN status.</li> <li>• RUN contact is ON: CPU module is in STOP status.</li> </ul> During this operation, the RUN/STOP switch must be in RUN position. |

#### [Point]

- M3072 and D704 have become unusable in RnMTCPU. They cannot be used as a status device.
- Note that RUN contact ON is for STOP status and the RUN contact OFF is for RUN status.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (8) Acceleration/deceleration time settings

The setting range of the acceleration/deceleration time is expanded from 1 word to 2 words in RnMTCPU. This change requires some program revisions.

Refer to the following conditions for the revisions.

[Items which need a program revision]

| Function                                      | Item   |
|---|--|
| Motion control parameter<br>(Parameter block) | Acceleration time                                      |
|   | Deceleration time                                      |
|   | Rapid stop deceleration time                           |
| Servo program                                 | Acceleration time                                      |
|   | Deceleration time                                      |
|   | Rapid stop deceleration time                           |
|   | Fixed position stop acceleration/<br>deceleration time |

[Program change procedure]

| No. | Condition   |   | Revision procedure  |
|-----|---|---|---|
| 1   | Direct setting of the acceleration/<br>deceleration time      |   | <ul style="list-style-type: none"> <li>No need to revise the program</li> </ul>   |
| 2   | Indirect setting of the<br>acceleration<br>/deceleration time | The start device<br>number is an<br>even number | <ul style="list-style-type: none"> <li>Check whether the next device of the start device is usable or not. If it is unusable, secure two words of devices for the acceleration/deceleration time settings.</li> <li>Note that no error occurs at program conversion.</li> </ul> |
| 3   |   | The start device<br>number is an<br>odd number  | <ul style="list-style-type: none"> <li>An odd number cannot be set as the start device number. Secure two words of devices starting from even number.</li> <li>If the device is an odd number, an error occurs at program conversion.</li> </ul>                                |



## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (9) Torque limit value settings

Torque limit value is set by 0.1 [%] unit in RnMTCPU.

Refer to the following table for the program revision.

| Function  | Item   | Unit         |         | Points for migration  |
|---|--|--------------|---------|---|
|   |  | Q17nCPUN(-T) | RnMTCPU |   |
| Motion control parameter (Parameter block)  | Torque limit value   | 1 [%]        | 0.1 [%] | The unit is automatically converted to 0.1 [%] at project diversion.  |
| Axis setting parameter  | Torque limit value   | 1 [%]        |         | No need to change.  |
| Axis setting parameter (Speed-torque control data)  | Torque limit value   | 0.1 [%]      |         | No need to change.  |
|   | Torque command device  |              |         | No need to change.  |
| Axis setting parameter (Home position return data)<br><br>(Note):Only when the stopper method is executed | Torque limit value at creep speed  | 1 [%]        |         | The unit is automatically converted to 0.1 [%] at project diversion. However, when the unit is indirectly designated, the unit is not automatically converted and a program revision is required. |
| Servo program   | Torque limit value (common)  | 1 [%]        |         | The unit is not automatically converted regardless of direct or indirect designation. A program revision is required.   |
|   | Torque limit value ( parameter block )   |              |         |   |
| Data register (Monitor device)  | Torque limit value (D14+20n)   | 1 [%]        |         | Since the values stored in this monitor device will be changed following the unit change, a revision is needed for programs which use "D14+20n".  |
| Motion SFC instruction  | Torque limit value change request (CHGT)   | 1 [%]        |         | Since the instruction method has been changed, a program revision is required. <sup>(Note-1)</sup>  |
| Motion dedicated PLC instruction  | Torque limit value change request instruction from the PLC CPU to the Motion CPU (S(P).CHGT) | 1 [%]        |         |   |

(Note-1): CHGT and S(P).CHGT instructions are used to set a separate torque limit value for positive/negative direction in RnMTCPU. However, the same torque limit value will be applied to positive/negative direction if the torque limit value is set by a different method.

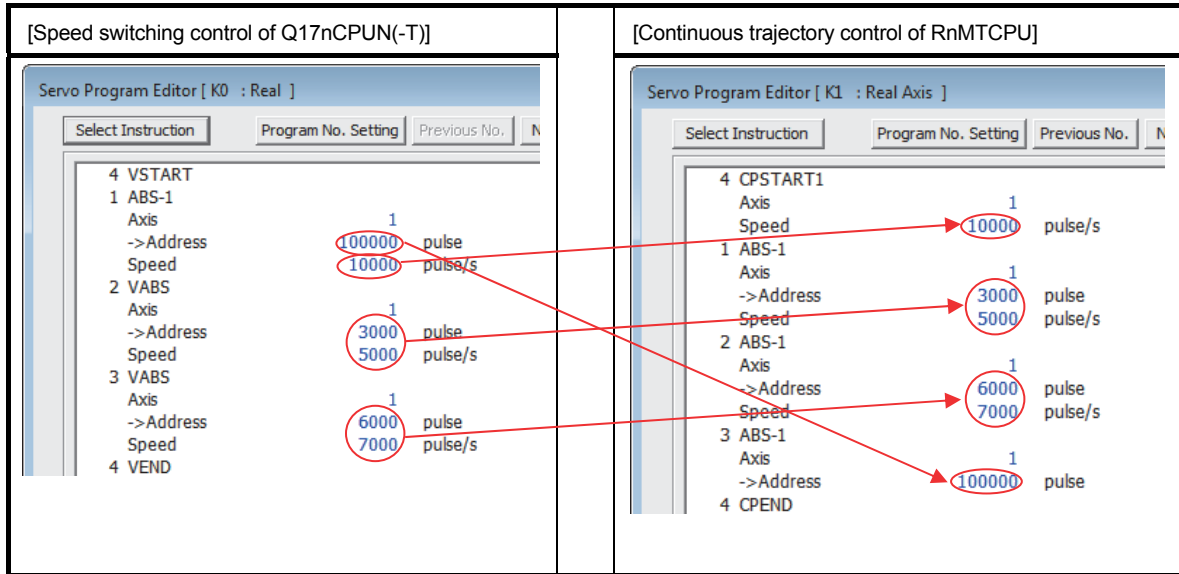
## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (10) Speed switching control

The speed switching control is not available with RnMTCPU.

When the speed switching control is used, replace it with continuous trajectory control.

The following shows the replacement points when changing the speed switching control to the continuous trajectory control.



#### [Point]

The speed switching control program begins with the end point address/movement amount. The speed is described as needed for each speed switching point.

The continuous trajectory control program describes the address/movement amount and the speed for each point.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (11) Operation cycle

The operation cycle settings of Q17nCPUN(-T) can be imported to RnMTCPU when the projects of Q17nCPUN(-T) are diverted to RnMTCPU in MELSOFT MT Works2.

(Refer to section 2.4.3(2) for details of project diversion.)

However, if the operation cycle is set as default (automatic), the operation cycle will be changed. Set a fixed operation cycle where necessary by following the table below because the change in the operation cycle may change program execution timing.

[Control axes and operation cycle at default]

| Model                     |      | Q173CPUN(-T)  | Q172CPUN(-T) | R32MTCPU   | R16MTCPU |
|---------------------------|------|---|--------------|--|----------|
| Number of control axes    |      | Up to 32  | Up to 8      | Up to 32   | Up to 16 |
| Operation cycle (default) | SV13 | 0.88ms/ 1 to 8 axes<br>1.77ms/ 9 to 16 axes<br>3.55ms/17 to 32 axes                         |              | 0.222ms/ 1 to 2 axes<br>0.444ms/ 3 to 8 axes<br>0.888ms/ 9 to 20 axes<br>1.777ms/21 to 32 axes |          |
|                           | SV22 | 0.88ms/ 1 to 4 axes<br>1.77ms/ 5 to 12 axes<br>3.55ms/13 to 24 axes<br>7.11ms/25 to 32 axes |              |  |          |

[Settable fixed operation cycle]

| Q17nCPUN(-T) (SV13/SV22)   | RnMTCPU |
|----------------------------|---------|
| 0.88ms                     | 0.222ms |
| 1.77ms                     | 0.444ms |
| 3.55ms                     | 0.888ms |
| 7.11ms                     | 1.777ms |
| 14.2ms <sup>(Note-1)</sup> | 3.555ms |
|                            | 7.111ms |

(Note-1): Operation cycle of 14.2ms is not settable for RnMTCPU.

If the operation cycle of 14.2ms is set in the Q17nCPUN(-T) project, the value is changed to the "default value (automatic)" at project diversion. Review the setting as needed.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (12) External signals interface module

The setting of the external signals interface module needs to be reviewed in MELSOFT GX Works3 since the system setting is read from MELSOFT GX Works3.

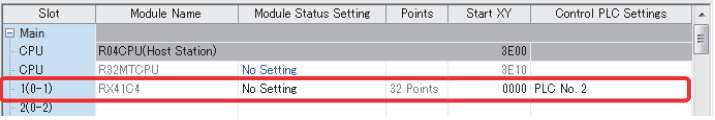

When MELSOFT GX Works2 projects are diverted to MELSOFT GX Works3, the input module is registered as a general-purpose intelligent module in the system parameters. Refer to the following setting procedures to review the settings according to the replaced input modules. (Refer to section 2.4.3(1) for details of project diversion.)

#### [Parameter setting methods]

RnMTCPU uses the common input module with PLC CPU. The following shows the example in which the signal of RX41C4 input module is set in the external signal parameter for each axis.

With MELSOFT GX Works3, the module to be used is set.

With MELSOFT MT Works2, the external signal parameter for each axis is set.

| Setting item  | Setting details  |                           |             |                       |   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
|---|--|---------------------------|-------------|-----------------------|---|-------------|----------------------|--------|----|---------|---------------------------|--|--|-----|----------------------|--|--|------|--|-----|----------|------------|--|------|--|--------|--------|------------|-----------|------|-----------|--------|--|--|--|--|--|
| 1) MELSOFT GX Works3<br>[system parameter] settings       | <p>Set RX41C4 input module on the [System parameter] screen.<br/>(Refer to "MELSEC iQ-R Module Configuration Manual" for details.)</p>  <table border="1"> <thead> <tr> <th>Slot</th> <th>Module Name</th> <th>Module Status Setting</th> <th>Points</th> <th>Start XY</th> <th>Control PLC Settings</th> </tr> </thead> <tbody> <tr> <td>Main</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CPU</td> <td>R04CPU(Host Station)</td> <td></td> <td></td> <td>3E00</td> <td></td> </tr> <tr> <td>CPU</td> <td>R32MTCPU</td> <td>No Setting</td> <td></td> <td>3E10</td> <td></td> </tr> <tr> <td>1(0-1)</td> <td>RX41C4</td> <td>No Setting</td> <td>32 Points</td> <td>0000</td> <td>PLC No. 2</td> </tr> <tr> <td>2(0-2)</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | Slot                      | Module Name | Module Status Setting | Points  | Start XY    | Control PLC Settings | Main   |    |         |                           |  |  | CPU | R04CPU(Host Station) |  |  | 3E00 |  | CPU | R32MTCPU | No Setting |  | 3E10 |  | 1(0-1) | RX41C4 | No Setting | 32 Points | 0000 | PLC No. 2 | 2(0-2) |  |  |  |  |  |
| Slot  | Module Name  | Module Status Setting     | Points      | Start XY              | Control PLC Settings                                |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| Main  |  |                           |             |                       |   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| CPU   | R04CPU(Host Station)   |                           |             | 3E00                  |   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| CPU   | R32MTCPU   | No Setting                |             | 3E10                  |   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| 1(0-1)  | RX41C4   | No Setting                | 32 Points   | 0000                  | PLC No. 2   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| 2(0-2)  |  |                           |             |                       |   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| 2) MELSOFT MT Works2<br>[Axis setting parameter] settings | <p>Set the external signal parameters (FLS, RLS, STOP, DOG) of the target axes as shown below on the [Axis setting parameter] screen.<br/>[Signal type]→2: Bit device<br/>[Device]→X0 (X device number of the input module set in 1))</p>  <table border="1"> <thead> <tr> <th colspan="2">External Signal Parameter</th> </tr> </thead> <tbody> <tr> <td>FLS Signal</td> <td>It is the parameter of sett (FLS/RLS/STOP/DOG) to b</td> </tr> <tr> <td>Signal Type</td> <td>2:Bit Device</td> </tr> <tr> <td>Device</td> <td>X0</td> </tr> <tr> <td>Contact</td> <td>1:Normally Closed Contact</td> </tr> </tbody> </table>   | External Signal Parameter |             | FLS Signal            | It is the parameter of sett (FLS/RLS/STOP/DOG) to b | Signal Type | 2:Bit Device         | Device | X0 | Contact | 1:Normally Closed Contact |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| External Signal Parameter                                 |  |                           |             |                       |   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| FLS Signal  | It is the parameter of sett (FLS/RLS/STOP/DOG) to b  |                           |             |                       |   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| Signal Type   | 2:Bit Device   |                           |             |                       |   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| Device  | X0   |                           |             |                       |   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |
| Contact   | 1:Normally Closed Contact  |                           |             |                       |   |             |                      |        |    |         |                           |  |  |     |                      |  |  |      |  |     |          |            |  |      |  |        |        |            |           |      |           |        |  |  |  |  |  |

#### [Point]

When the MELSEC-Q series external signals interface module is replaced with the MELSEC iQ-R series input module, the detection accuracy depends on the operation cycle. In order to detect signals at high accuracy, set the inter-module synchronization function to "Synchronize", and set the signal to "High-accuracy". Refer to "MELSEC iQ-R Motion Controller Programming Manual (Common)" for how to set the inter-module synchronization function.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 2.3 Comparison of Devices

#### 2.3.1 Motion registers

(1) Motion registers (Monitor devices)

| Device No.     |                | Name                   | Remarks |
|----------------|----------------|------------------------|---------|
| Q17nCPUN(-T)   | RnMTCPU        |                        |         |
| #8064 to #8067 | #8000 to #8019 | Axis 1 monitor device  |         |
| #8068 to #8071 | #8020 to #8039 | Axis 2 monitor device  |         |
| #8072 to #8075 | #8040 to #8059 | Axis 3 monitor device  |         |
| #8076 to #8079 | #8060 to #8079 | Axis 4 monitor device  |         |
| #8080 to #8083 | #8080 to #8099 | Axis 5 monitor device  |         |
| #8084 to #8087 | #8100 to #8119 | Axis 6 monitor device  |         |
| #8088 to #8091 | #8120 to #8139 | Axis 7 monitor device  |         |
| #8092 to #8095 | #8140 to #8159 | Axis 8 monitor device  |         |
| #8096 to #8099 | #8160 to #8179 | Axis 9 monitor device  |         |
| #8100 to #8103 | #8180 to #8199 | Axis 10 monitor device |         |
| #8104 to #8107 | #8200 to #8219 | Axis 11 monitor device |         |
| #8108 to #8111 | #8220 to #8239 | Axis 12 monitor device |         |
| #8112 to #8115 | #8240 to #8259 | Axis 13 monitor device |         |
| #8116 to #8119 | #8260 to #8279 | Axis 14 monitor device |         |
| #8120 to #8123 | #8280 to #8299 | Axis 15 monitor device |         |
| #8124 to #8127 | #8300 to #8319 | Axis 16 monitor device |         |
| #8128 to #8131 | #8320 to #8339 | Axis 17 monitor device |         |
| #8132 to #8135 | #8340 to #8359 | Axis 18 monitor device |         |
| #8136 to #8139 | #8360 to #8379 | Axis 19 monitor device |         |
| #8140 to #8143 | #8380 to #8399 | Axis 20 monitor device |         |
| #8144 to #8147 | #8400 to #8419 | Axis 21 monitor device |         |
| #8148 to #8151 | #8420 to #8439 | Axis 22 monitor device |         |
| #8152 to #8155 | #8440 to #8459 | Axis 23 monitor device |         |
| #8156 to #8159 | #8460 to #8479 | Axis 24 monitor device |         |
| #8160 to #8163 | #8480 to #8499 | Axis 25 monitor device |         |
| #8164 to #8167 | #8500 to #8519 | Axis 26 monitor device |         |
| #8168 to #8171 | #8520 to #8539 | Axis 27 monitor device |         |
| #8172 to #8175 | #8540 to #8559 | Axis 28 monitor device |         |
| #8176 to #8179 | #8560 to #8579 | Axis 29 monitor device |         |
| #8180 to #8183 | #8580 to #8599 | Axis 30 monitor device |         |
| #8184 to #8187 | #8600 to #8619 | Axis 31 monitor device |         |
| #8188 to #8191 | #8620 to #8639 | Axis 32 monitor device |         |

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (2) Each axis monitor devices

| Device No. (Note-1)  |                        | Name                                     | Remarks  |
|----------------------|------------------------|--|--|
| Q17nCPUN(-T)         | RnMTCPU                |  |  |
| #8064+4n             | #8000+20n              | Servo amplifier type                     |  |
| #8065+4n             | #8001+20n              | Motor current [0.1 %]                    |  |
| #8066+4n<br>#8067+4n | #8002+20n<br>#8003+20n | Motor speed                              | The setting unit differs between Q17nCPUN(-T) and RnMTCPU.<br>Review the program as needed.<br>Q17nCPUN(-T): [0.1r/min]<br>RnMTCPU: [0.01/min] |
| -                    | #8004+20n<br>#8005+20n | Command speed                            | New device in RnMTCPU  |
| -                    | #8006+20n<br>#8007+20n | Home position return re-travel value     |  |
| -                    | #8008+20n              | Servo amplifier display servo error code |  |
| -                    | #8009+20n              | Parameter error No.                      |  |
| -                    | #8010+20n              | Servo status 1                           |  |
| -                    | #8011+20n              | Servo status 2                           |  |
| -                    | #8012+20n              | Servo status 3                           |  |
| -                    | #8013+20n              | Unusable                                 |  |
| -                    | #8014+20n              |  |  |
| -                    | #8015+20n              |  |  |
| -                    | #8016+20n              | Servo amplifier vendor ID                | New device in RnMTCPU  |
| -                    | #8017+20n              | Unusable                                 |  |
| -                    | #8018+20n              | Servo status 7                           | New device in RnMTCPU  |
| -                    | #8019+20n              | Unusable                                 |  |

(Note-1): "n" indicates the corresponding axis No. (Axis No.1 to 32: n=0 to 31).

### (3) Motion registers (Motion error history)

| Device No.     |              | Name                            | Remarks  |
|----------------|--------------|---------------------------------|--|
| Q17nCPUN(-T)   | RnMTCPU      |                                 |  |
| #8000 to #8063 | SD10 to SD25 | Motion SFC error history device | Motion error history is checked with the MELSOFT MT Works2 Motion CPU error batch monitor. |

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 2.3.2 Special relays

| Q17nCPUN(-T) | Device No.                           |         | Name   | Remarks   |
|--------------|--------------------------------------|---------|--|---|
|              | Device assignment for M9000 to M9255 | RnMTCPU |  |   |
| M9000/M2320  | SM2000                               | -       | Fuse blown detection flag                      |   |
| M9005/M2321  | SM2005                               | SM53    | AC/DC DOWN detection flag                      |   |
| M9006/M2322  | SM2006                               | -       | Battery low flag                               | Not required since the Motion CPU is battery-less.  |
| M9007/M2323  | SM2007                               | -       | Battery low latch flag                         |   |
| M9008/M2324  | SM2008                               | SM1     | Self-diagnostic error flag                     |   |
| M9010/M2325  | SM2010                               | SM0     | Diagnostic error flag                          |   |
| M9025/M3136  | SM2025                               | -       | Clock data set request                         | Operated on the No.1 CPU clock data.  |
| M9026/M2328  | SM2026                               | -       | Clock data error                               |   |
| M9028/M3137  | SM2028                               | SM213   | Clock data read request                        |   |
| M9036/M2326  | SM2036                               | SM400   | Always ON                                      |   |
| M9037/M2327  | SM2037                               | SM401   | Always OFF                                     |   |
| M9060/M3138  | SM2060                               | SM50    | Diagnostic error reset                         |   |
| M9073/M2329  | SM2073                               | SM512   | Motion CPU WDT error flag                      | The error cause is stored in SD512.   |
| M9074/M2330  | SM2074                               | SM500   | PCPU READY complete flag                       |   |
| M9075/M2331  | SM2075                               | SM501   | Test mode ON flag                              |   |
| M9076/M2332  | SM2076                               | SM502   | External forced stop input flag                |   |
| M9077/M2333  | SM2077                               | -       | Manual pulse generator axis setting error flag | The error flag is integrated in the self-diagnostic errors (SM0, SM1). (Refer to section 2.2(5).)                                     |
| M9078/M2334  | SM2078                               | -       | TEST mode request error flag                   |   |
| M9079/M2335  | SM2079                               | -       | Servo program setting error flag               |   |
| M9104/M3139  | SM2104                               | -       | Servo parameter read request flag              |   |
| M9105/M2344  | SM2015                               | -       | Servo parameter reading flag                   |   |
| M9216/M2345  | SM2216                               | -       | No.1 CPU MULTR complete flag                   | MULTR instructions are deleted since RnMTCPU can use CPU buffer memory access device to access the memory. (Refer to section 2.2(6).) |
| M9217/M2346  | SM2217                               | -       | No.2 CPU MULTR complete flag                   |   |
| M9218/M2347  | SM2218                               | -       | No.3 CPU MULTR complete flag                   |   |
| M9219/M2348  | SM2219                               | -       | No.4 CPU MULTR complete flag                   |   |
| M9240/M2336  | SM2240                               | SM240   | No.1 CPU resetting flag                        |   |
| M9241/M2337  | SM2241                               | SM241   | No.2 CPU resetting flag                        |   |
| M9242/M2338  | SM2242                               | SM242   | No.3 CPU resetting flag                        |   |
| M9243/M2339  | SM2243                               | SM243   | No.4 CPU resetting flag                        |   |
| M9244/M2340  | SM2244                               | SM230   | No.1 CPU error flag                            |   |
| M9245/M2341  | SM2245                               | SM231   | No.2 CPU error flag                            |   |
| M9246/M2342  | SM2246                               | SM232   | No.3 CPU error flag                            |   |
| M9247/M2343  | SM2247                               | SM233   | No.4 CPU error flag                            |   |

**[Point]**

When Q17nCPUN(-T) projects are converted into RnMTCPU projects by "file conversion", M9000 to M9255 are automatically assigned as shown above in "Device assignment for M9000 to M9255" in the table, however, M2320 to M3139 cannot be automatically converted.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 2.3.3 Special registers

| Device No.   |                                      | RnMTCPU        | Name  | Remarks   |
|--------------|--------------------------------------|----------------|---|---|
| Q17nCPUN(-T) | Device assignment for D9000 to D9255 |                |   |   |
| D9000        | SD2000                               | -              | Fuse blown No.  |   |
| D9005        | SD2005                               | SD53           | AC/DC DOWN counter No.  |   |
| D9008        | SD2008                               | SD0            | Latest self-diagnostic error code                               | Error codes for errors found by diagnosis are stored as hexadecimal notation data.        |
| D9010        | SD2010                               | SD1            | Clock time for diagnostic error occurrence (Year (four digits)) | The clock time information that SD0 data was updated is stored as BIN code.               |
|              |                                      | SD2            | Clock time for diagnostic error occurrence (Month)              |   |
| D9011        | SD2011                               | SD3            | Clock time for diagnostic error occurrence (Day)                |   |
|              |                                      | SD4            | Clock time for diagnostic error occurrence (Hour)               |   |
| D9012        | SD2012                               | SD5            | Clock time for diagnostic error occurrence (Minute)             |   |
|              |                                      | SD6            | Clock time for diagnostic error occurrence (Second)             |   |
| -            | -                                    | SD7            | Clock time for diagnostic error occurrence (Day of week)        |   |
| D9013        | SD2013                               | SD80           | Detailed information 1 information category                     |   |
| D9014        | SD2014                               | SD81 to SD111  | Detailed information 1  |   |
| -            | -                                    | SD112          | Detailed information 2 information category                     |   |
| -            | -                                    | SD113 to SD143 | Detailed information 2  |   |
| D9015        | SD2015                               | SD203          | Operating status of CPU   |   |
| D9017        | SD2017                               | SD520          | Scan time   |   |
| D9019        | SD2019                               | SD521          | Maximum scan time   |   |
| D9025        | SD2025                               | SD210          | Clock data (Year (four digits))                                 | The clock data is stored as BIN code.   |
|              |                                      | SD211          | Clock data (Month)  |   |
| D9026        | SD2026                               | SD212          | Clock data (Day)  |   |
|              |                                      | SD213          | Clock data (Hour)   |   |
| D9027        | SD2027                               | SD214          | Clock data (Minute)   |   |
|              |                                      | SD215          | Clock data (Second)   |   |
| D9028        | SD2028                               | SD216          | Clock data (Day of week)  |   |
| D9060        | SD2060                               | -              | Diagnostic error reset error No.                                | Errors are reset by SM50.   |
| -            | -                                    | SD228          | Number of CPU modules   | New device in RnMTCPU   |
| D9061        | SD2061                               | SD229          | Multiple CPU No.  |   |
| D9104        | SD2104                               | SD805          | Servo parameter read request Axis No.                           |   |
| D9182        | SD2182                               | -              | Test mode request error   | These error code storage devices are integrated in "Latest self diagnostics error (SD0)". |
| D9183        | SD2183                               | -              |   |   |
| D9184        | SD2184                               | SD512          | Motion CPU WDT error cause                                      |   |



## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

(Continued)

| Device No.   |                                      |         | Name   | Remarks   |
|--------------|--------------------------------------|---------|--|---|
| Q17nCPUN(-T) | Device assignment for D9000 to D9255 | RnMTCPU |  |   |
| D9185        | SD2185                               | -       | Manual pulse generator axis setting error          | These error code storage devices are integrated in "Latest self diagnostics error (SD0)". |
| D9186        | SD2186                               | -       |  |   |
| D9187        | SD2187                               | -       |  |   |
| D9188        | SD2188                               | SD522   | Motion operation cycle                             |   |
| D9189        | SD2189                               | -       | Error program No.                                  | These error code storage devices are integrated in "Latest self diagnostics error (SD0)". |
| D9190        | SD2190                               | -       | Error item information                             |   |
| D9191        | SD2191                               | SD502   | Servo amplifier loading information                |   |
| D9192        | SD2192                               | SD503   |  |   |
| D9193        | SD2193                               | -       | Real mode/virtual mode switching error information | These error code storage devices are integrated in "Latest self diagnostics error (SD0)". |
| D9194        | SD2194                               | -       |  |   |
| D9195        | SD2195                               | -       |  |   |
| D9196        | SD2196                               | -       | PC link communication error codes                  | RnMTCPU is not compatible with PC link communication.                                     |
| D9197        | SD2197                               | SD523   | Operation cycle of the Motion CPU setting          |   |
| D9200        | SD2200                               | SD200   | State of switch                                    |   |
| D9201        | SD2201                               | SD201   | State of LED                                       |   |

**[Point]**

When Q17nCPUN(-T) projects are converted into RnMTCPU projects by "file conversion", D9000 to D9255 are automatically assigned as shown above in "Device assignment for D9000 to D9255" in the table in RnMTCPU projects.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 2.3.4 Other devices

| Items  |                | Q17nCPUN(-T)   | RnMTCPU  |
|--|----------------|--|--|
| Internal relays/<br>data registers                 | M2400 to M3039 | Device area of 9 axes or more is not usable as user devices in Q172CPUN(-T). | Device area of 17 axes or more is usable as user devices in R16MTCPU.        |
|  | M3200 to M3839 |  |  |
|  | D0 to D639     |  |  |
|  | D640 to D703   |  |  |
| PLC READY flag                                     |                | M2000/M3072  | M2000  |
| Personal computer link communication error flag    |                | M2034  | -<br>(Not compatible with personal computer link communication.)             |
| Motion SFC error history clear request flag        |                | M2035/M3080  | "MELSOFT MT Works2 Motion CPU error batch monitor" clears the error history. |
| Motion SFC error detection flag                    |                | M2039  | SM0, SM1 (Note-1)  |
| Speed switching point specified flag               |                | M2040/M3073  | M2040  |
| System setting error flag                          |                | M2041  | SM0, SM1 (Note-1)  |
| All axes servo ON command                          |                | M2042/M3074  | M2042  |
| Real/virtual mode switching request                |                | M2043/M3075  | M12000+n (Note-2)  |
| Real/virtual mode switching status                 |                | M2044  | M10880+n (Note-2)  |
| Real/virtual mode switching error detection signal |                | M2045  | SM0, SM1 (Note-1)  |
| Out-of-sync warning                                |                | M2046  | -<br>(Not compatible with virtual mode) (Note-2)                             |
| Motion slot fault detection flag                   |                | M2047  | SM0, SM1 (Note-1)  |
| JOG operation simultaneous start command           |                | M2048/M3076  | M2048  |
| Manual pulse generator 1 enable flag               |                | M2051/M3077  | M2051  |
| Manual pulse generator 2 enable flag               |                | M2052/M3078  | M2052  |
| Manual pulse generator 3 enable flag               |                | M2053/M3079  | M2053  |
| Synchronous encoder current value changing flag    |                | M2101 to M2112   | -<br>(Not compatible with virtual mode) (Note-2)                             |
| Clutch status (Main shaft side)                    |                | M2160+2n   | M10560+10n   |
| Clutch status (Auxiliary input side)               |                | M2161+2n   | M10562+10n   |
| Minor error code                                   |                | D6+20n   | -<br>( Both minor and major errors have been Integrated in D7+20n)           |
| PLC ready flag request                             |                | D704   | M2000  |
| Speed switching point specified flag request       |                | D705   | M2040  |
| All axes servo ON command request                  |                | D706   | M2042  |
| Real/virtual mode switching request                |                | D707   | M12000+n (Note-2)  |
| JOG operation simultaneous start command request   |                | D708   | M2048  |
| Manual pulse generator 1 enable flag request       |                | D755   | M2051  |
| Manual pulse generator 2 enable flag request       |                | D756   | M2052  |
| Manual pulse generator 3 enable flag request       |                | D757   | M2053  |
| PCPU ready complete flag                           |                | D759   | SM500  |

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

(Continued)

| Items                                | Q17nCPUN(-T)     | RnMTCPU  |
|--------------------------------------|------------------|--|
| Real mode axis information register  | D790, D791       | -<br>("M10880+n" is used to distinguish the axis status (in synchronization or in real mode) <sup>(Note-2)</sup> ) |
| Servo amplifier type                 | D792 to D799     | #8000+20n<br>(Stores the servo amplifier type code)  |
| Home position return re-travel value | D9+20n           | D9 + 20n (Data shortened to 1 word)<br>-----<br>#8006+20n, #8007+20n   |
| Travel value change registers        | D16+20n, D17+20n | Optional device<br>(D16+20n and D17+20n are also usable.)  |
| Coasting timer                       | FT               | SD718, SD719 <sup>(Note-3)</sup>   |

(Note): "n" indicates the corresponding axis No. (Axis No.1 to 32: n=0 to 31).

(Note-1): The Q17nCPUN(-T) error flags are integrated in self-diagnostics error in RnMTCPU. Refer to section 2.2(5) for differences in error codes system.

(Note-2): The synchronous control function is replaced with "Advanced synchronous control" in RnMTCPU. Refer to "Replacement of Virtual mode with advanced synchronous control".

(Note-3): Coasting timer (FT) is integrated into the special registers (SD718, SD719). Read SD718 device in 2 words unit.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

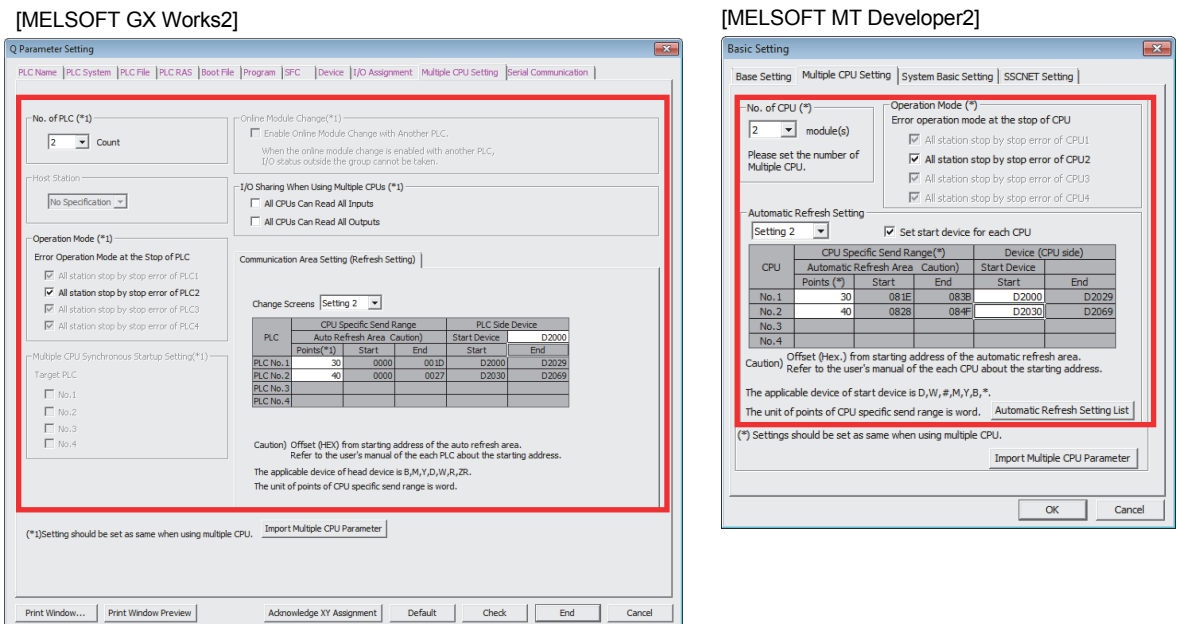
### 2.4 Project Diversion

#### 2.4.1 Module control with RnMTCPU

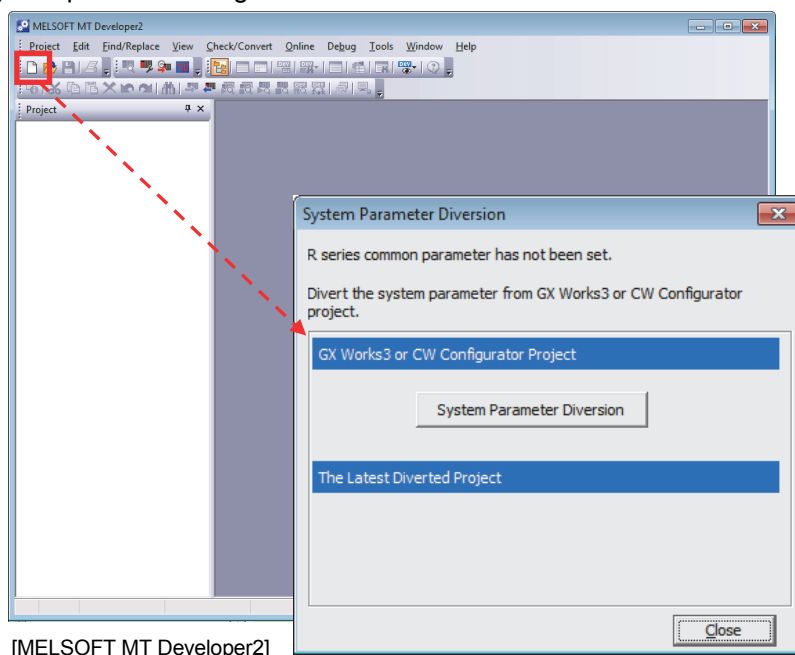
##### (1) Multiple CPU setting

Multiple CPU settings for Qn(H)CPU and Q17nCPUN(-T), which are set in MELSOFT GX Works2 and MELSOFT MT Developer2, must be matched. However, the multiple CPU setting for RnCPU and RnMTCPU is set in MELSOFT GX Works3 first, and the setting can be read by MELSOFT MT Developer2 afterwards.

##### (a) Multiple CPU setting of Qn(H)CPU and Q17nCPUN(-T)



##### (b) Multiple CPU setting of RnCPU and RnMTCPU



## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

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### (2) System parameter settings

The system configuration and the common parameters of Q17nCPUN(-T) project cannot be directly diverted to RnMTCPU. They must be set in MELSOFT GX Works3 first, and then the set parameters can be read by MELSOFT MT Developer2.

#### (a) MELSOFT GX Works3 settings

Set the following system parameters at MELSOFT GX Works3

- Module configuration
- System parameter (I/O assignment setting, Multiple CPU setting, Synchronization setting)
- Set the Motion CPU as the module control CPU in "Control PLC Settings" in [I/O Assignment Setting] screen.

#### (b) MELSOFT MT Developer2 settings

Read the parameters set in MELSOFT GX Works3 using MELSOFT MT Developer2 [System Parameter Diversion].

After diversion, the following R series common parameters can be set.

- Module parameters for modules for which a Motion CPU has been set as the control CPU
- Multiple CPU refresh settings
- Module parameters of Motion CPU

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 2.4.2 List of divertible/not divertible data (SV13/SV22)

| Q17nCPUN(-T) data name    | Divertible/not divertible | Remarks            |
|---------------------------|---------------------------|--------------------|
| System settings           |                           |                    |
| Basic settings            |                           |                    |
| Base setting              | Δ                         | (Note-1)           |
| Multiple CPU setting      | Δ                         | (Note-1), (Note-2) |
| System basic setting      | ○                         |                    |
| SSCNET setting            | Δ                         | (Note-3)           |
| System configuration      | Δ                         | (Note-1)           |
| SSCNET configuration      | ○                         | (Note-4)           |
| High-speed read data      | ○                         |                    |
| Servo data settings       |                           |                    |
| Servo data                | ○                         | (Note-5)           |
| Servo parameter           | ○                         | (Note-6)           |
| Parameter block           | ○                         |                    |
| Limit output data         | ○                         |                    |
| Motion SFC programs       |                           |                    |
| Motion SFC parameter      | ○                         |                    |
| Motion SFC program        | ○                         | (Note-7)           |
| Servo programs            |                           |                    |
| K mode allocation         | ○                         | SV22 only          |
| Servo program             | ○                         |                    |
| Mechanical system program | ○                         | SV22 only (Note-8) |
| Cam data (converted data) | ○                         | SV22 only (Note-8) |
| Device memory             | ○                         |                    |
| Backup data               | ×                         |                    |
| Communication setting     | ×                         |                    |

○: Divertible, Δ: Partially divertible, ×: Not divertible

(Note-1): MELSOFT MT Developer2 reads parameters set in MELSOFT GX Works3.

Therefore, the existing data which have been set in MELSOFT MT Developer2 for Q17nCPUN(-T) cannot be diverted.

(Note-2): When the system parameters have been set already, only the auto refresh settings for Q17nCPUN(-T) can be diverted ([R Series Common Parameter] - [Multiple CPU Setting] - [Refresh (END) Setting])

(Note-3): Select SSCNETIII or SSCNETIII/H at SSCNET setting.

(Note-4): The servo amplifiers are replaced with MR-J4-B.

(Note-5): Review the fixed parameters according to the resolution per servo motor revolution.  
(Number of pulses per revolution and movement amount per revolution)

(Note-6): Refer to "MELSOFT MT Developer2 Help" for conversion rules for servo parameters.

(Note-7): When Motion registers (Monitor devices) are used in the program, they need to be changed.

(Note-8): Refer to section 2.4.4 for replacement of mechanical system programs and cam data.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 2.4.3 Project diversion procedures by engineering environment

The following shows the project diversion procedures for PLC CPU and Motion CPU.

(1) Procedures for PLC CPU projects diversion by MELSOFT GX Works3

MELSOFT GX Works3 can read projects created in MELSOFT GX Works2.

If the PLC CPU is other than the following models, the programmable controller type needs to be changed to universal models.

- Universal model QCPU
- High-speed universal model QCPU
- Universal model process CPU

Refer to “GX Works2 Version 1 Operating Manual (Common)” for restrictions on the programmable controller type changes.

In addition, refer to the following Technical Bulletins for details of the programmable controller type changes.

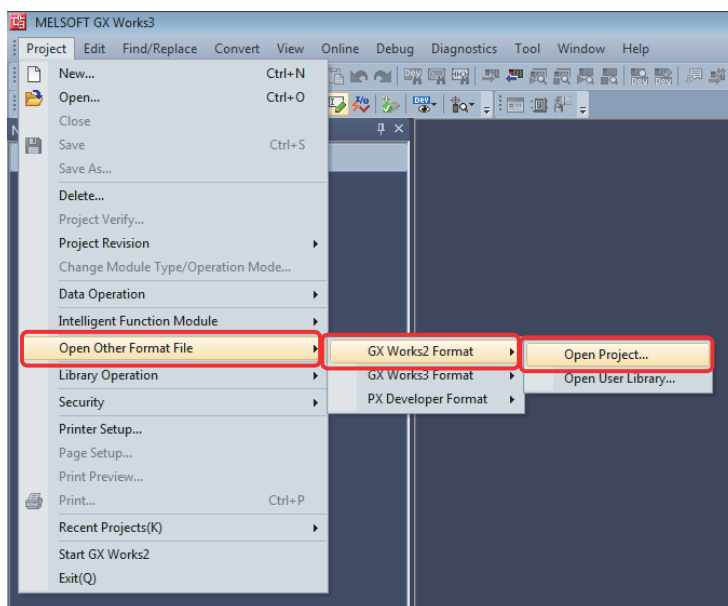
(Note): Contact your local sales office for details.

- Method of replacing Basic model QCPU with Universal model QCPU (FA-A-0054)
- Method of replacing High Performance model QCPU with Universal model QCPU (FA-A-0001)
- Method of replacing High Performance model QCPU with Universal model QCPU (Introduction) (FA-A-0209)

[Procedures when projects in which universal model QCPU is set is diverted to MELSOFT GX Works3]

Refer to “GX Works3 Operating Manual” for details of replacing MELSOFT GX Works2 projects as those for MELSOFT GX Works3.

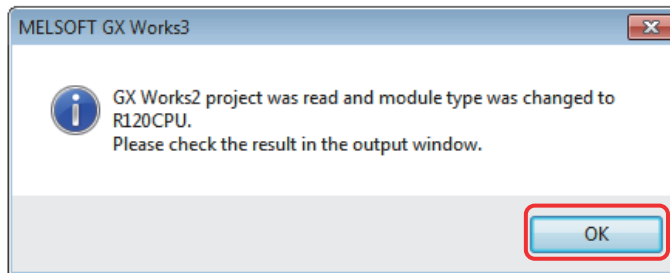
- 1) Start MELSOFT GX Works3. Select [Open Other Format File] - [GX Works2 Format] - [Open Project...] in “Project” menu.



## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

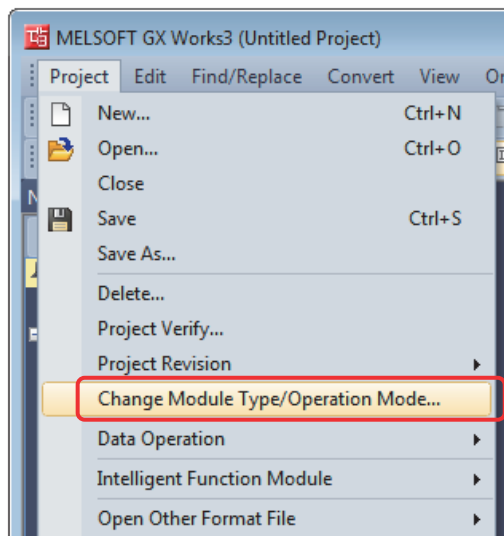
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- 2) Select the project to be diverted on the “Open GX Works2 Format Project” screen, and click “OK”.
- 3) Check the following precaution at project diversion, and click “OK”.  
[Precaution]  
When MELSOFT GX Works2 projects are read by MELSOFT GX Works3, the MELSEC-Q series PLC CPUs are automatically changed to R120CPU.
- 4) After MELSOFT GX Works2 project is read, click “OK”.  
(Make sure to check the model change result in the output window.)



When the PLC CPU is replaced with other than R120CPU, execute the following 5) to 7).

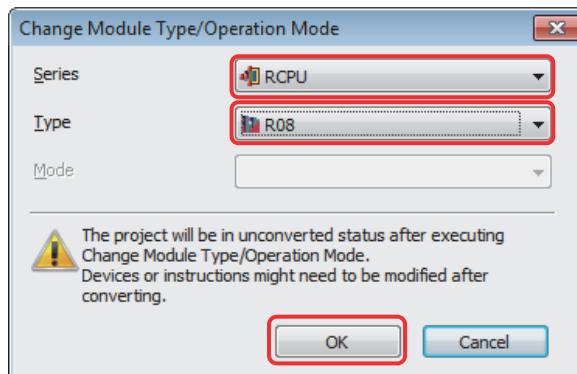
- 5) Select “Change Module Type/Operation Mode...” in “Project” menu to open “Change Module Type/Operation Mode” screen.





## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

- 6) Select RCPU for “Series” and the replaced PLC CPU model for “Type” (the setting example below: R08CPU). Click “OK”.



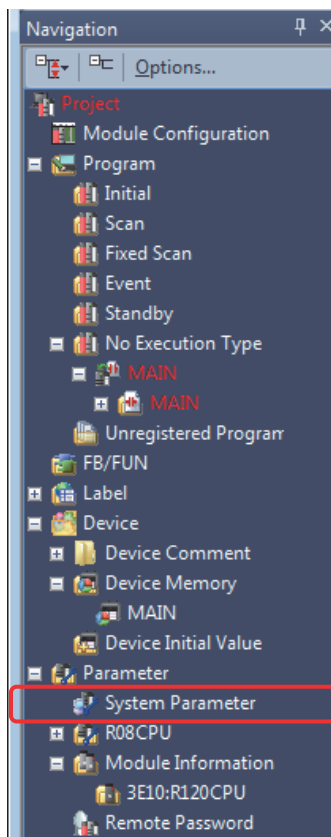
- 7) Click “OK” after confirming the precautions at model change.

The model change result is indicated in the “output window” of MELSOFT GX Works3.

The Motion CPU set for the multiple CPU system is also automatically converted to R120CPU.

The procedure for changing R120CPU to RnMTCPU is described in the following 8) and later.

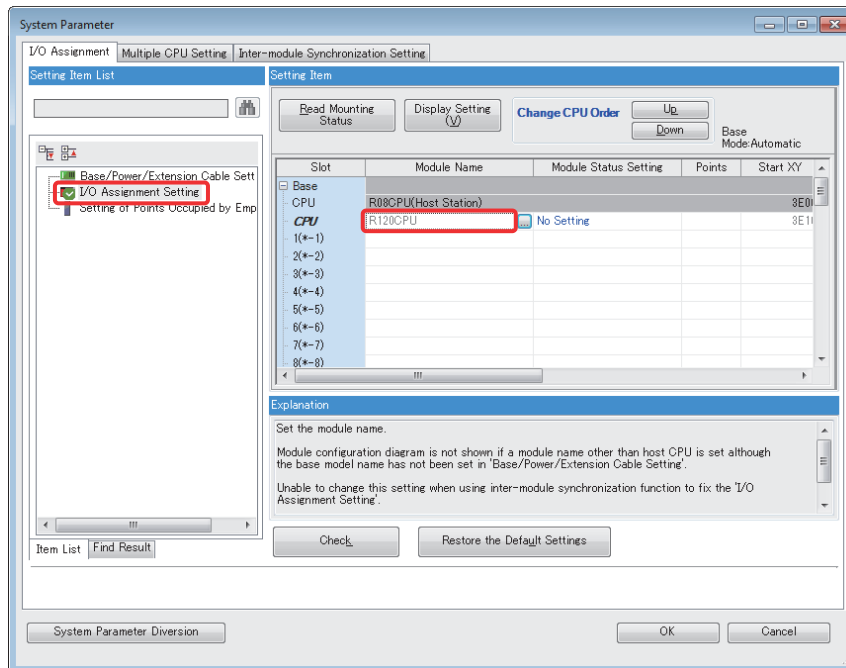
- 8) Double-click “System Parameter” in the navigation tree to open “System Parameter” screen.



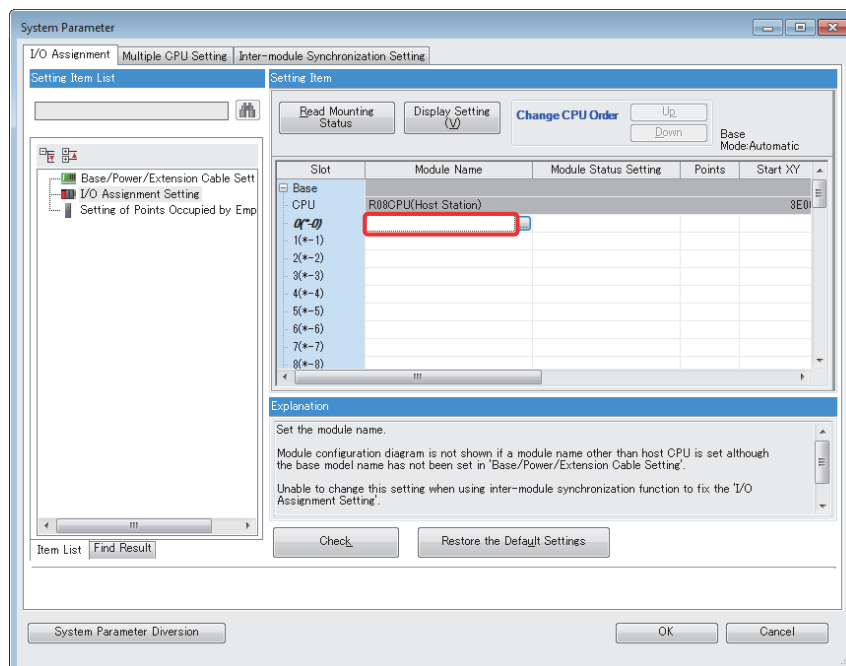
## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

9) Select R120CPU in [I/O Assignment Setting] on “System Parameter” screen, and delete it with delete key. After the deletion, the multiple CPU setting is updated (R120CPU is deleted) by clicking one of the other tabs such as “Multiple CPU Setting” tab. Execute the procedure 9) through 11) successively.

(Note): When the refresh setting is set, R120CPU cannot be deleted. Delete R120CPU after deleting the refresh setting. Refer to “MELSEC iQ-R CPU Module User's Manual (Application)” for details.



10) Double-click the deleted cell.



## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

- 11) On the “Add New Module” screen, select Motion CPU for [Module Type], the replaced Motion CPU model for [Module Name] (the setting example below: R16MTCPU), and the slot No. for [Mounting Slot No]. Click [OK].

The screenshot shows the 'Add New Module' dialog box. It has two main sections: 'Module Selection' and 'Advanced Settings'. In the 'Module Selection' section, 'Module Type' is set to 'Motion CPU' and 'Module Name' is set to 'R16MTCPU'. In the 'Advanced Settings' section, under 'Mounting Position', 'Mounting Slot No.' is set to '0'. At the bottom, the 'OK' button is highlighted with a red box.

- 12) Click “OK” on the “System Parameter” screen.  
(Note): If the refresh setting is deleted in 9), make the setting again.  
(Refer to section 2.4.5.)

The screenshot shows the 'System Parameter' dialog box with the 'I/O Assignment' tab selected. On the left, the 'Setting Item List' has 'I/O Assignment Setting' selected. The main area shows a table of module assignments:

| Slot     | Module Name          | Module Status Setting | Points | Start XY |
|----------|----------------------|-----------------------|--------|----------|
| Base CPU | R08CPU(Host Station) |                       |        | 3E01     |
| 1(*-1)   | R16MTCPU             | No Setting            |        | 3E11     |
| 2(*-2)   |                      |                       |        |          |
| 3(*-3)   |                      |                       |        |          |
| 4(*-4)   |                      |                       |        |          |
| 5(*-5)   |                      |                       |        |          |
| 6(*-6)   |                      |                       |        |          |
| 7(*-7)   |                      |                       |        |          |
| 8(*-8)   |                      |                       |        |          |

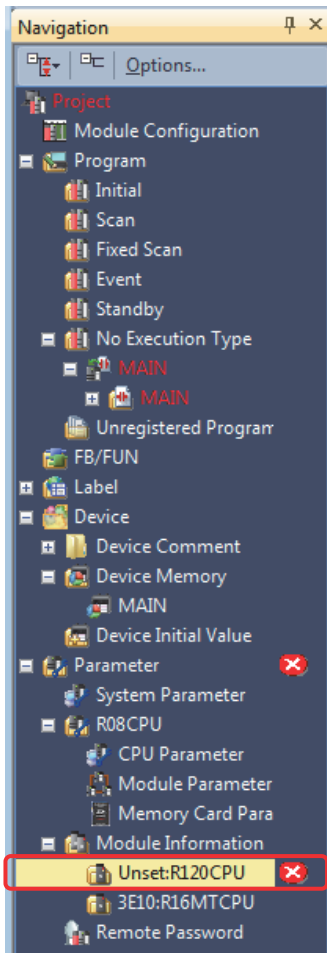
Below the table, there is an 'Explanation' section with text: 'Set the module name. Module configuration diagram is not shown if a module name other than host CPU is set although the base model name has not been set in 'Base/Power/Extension Cable Setting'. Unable to change this setting when using inter-module synchronization function to fix the I/O Assignment Setting.'

At the bottom right, the 'OK' button is highlighted with a red box.

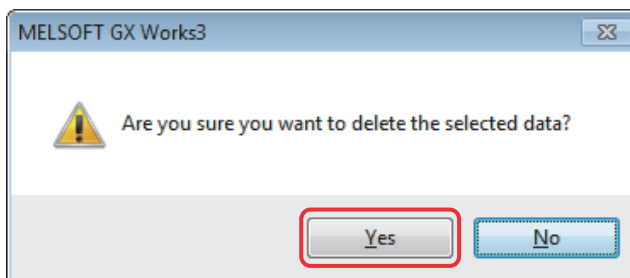
## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

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- 13) Select “Unset: R120CPU” from “Module Information” in the navigation tree, and delete it with delete key.



- 14) Click “Yes”.



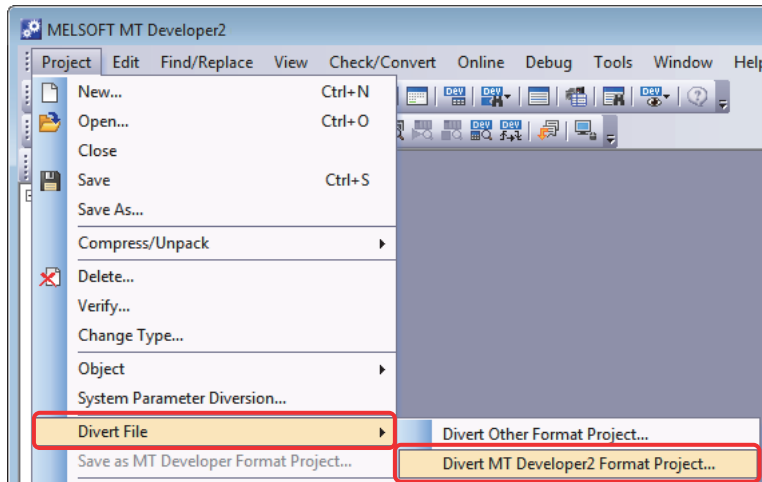
The diversion is complete.

Though a model change has been executed, conversion has not finished yet. Make sure to execute [Rebuilt All] before writing to PLC CPU.

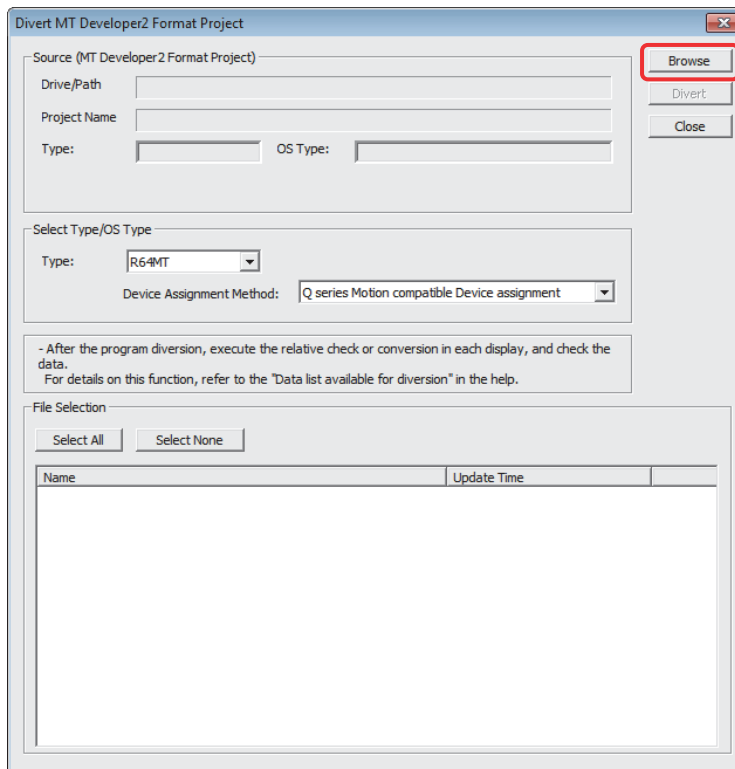
## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

- (2) Procedures for Motion CPU projects diversion by MELSOFT MT Developer2  
If latch settings and CPU refresh settings (END) in R series common parameters are diverted, divert the system parameters before the Motion projects diversion.  
(Refer to (3) in this section)

- 1) Start MELSOFT MT Developer2. Select [Divert file] - [Divert MT Developer2 Format Project...]

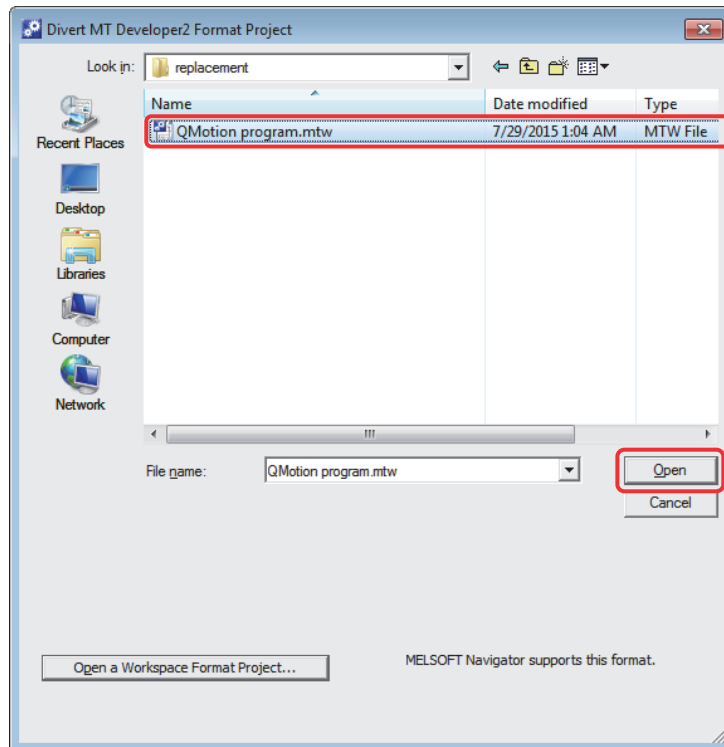


- 2) Click "Browse" on the "Divert MT Developer2 Format Project" screen.

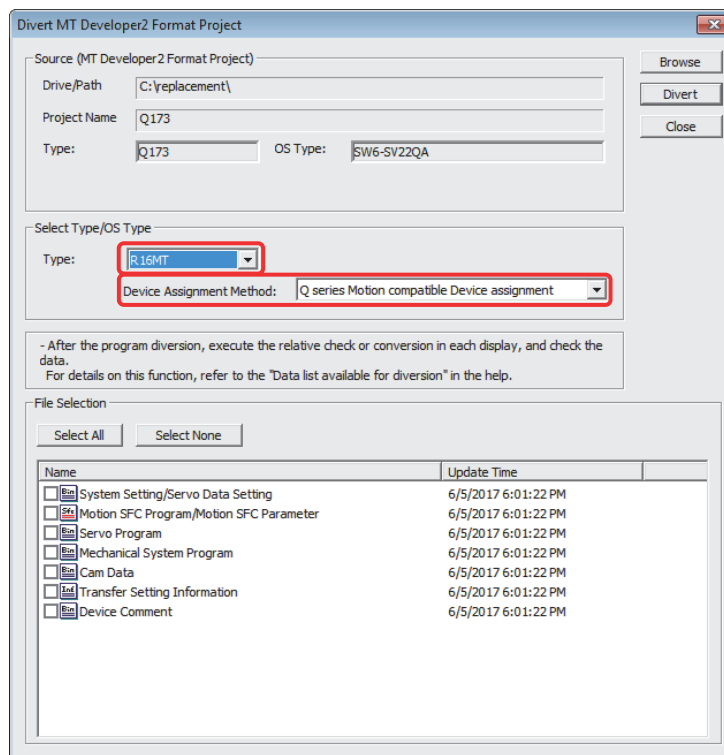


## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

- 3) Select the project to be diverted on the file selection window. Click [Open] to update the selected project (MT Developer2 Format Project).



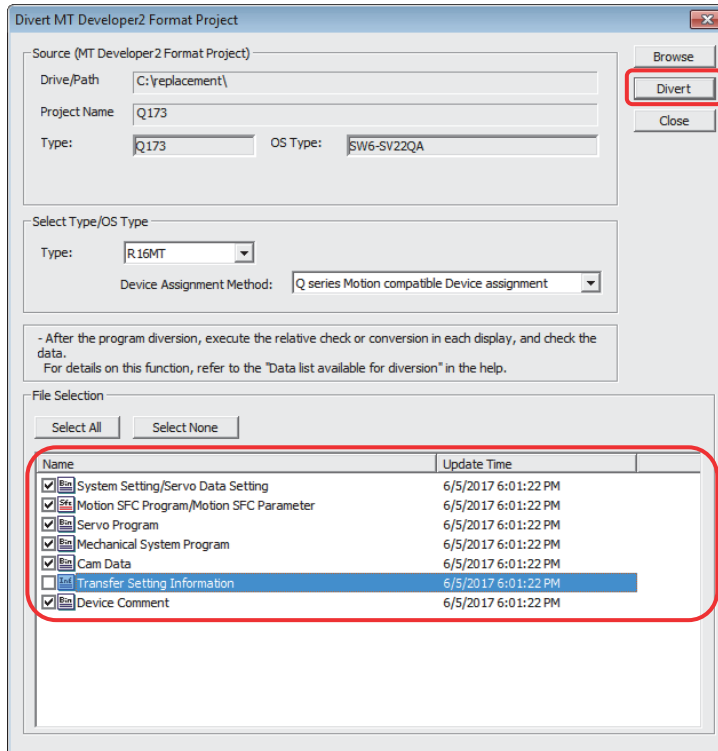
- 4) Select the replaced model for [Select Type/OS Type] (the setting example below: R16MTCPU). After the "Device Assignment Method" appears and becomes selectable, select "Q series Motion compatible Device assignment".



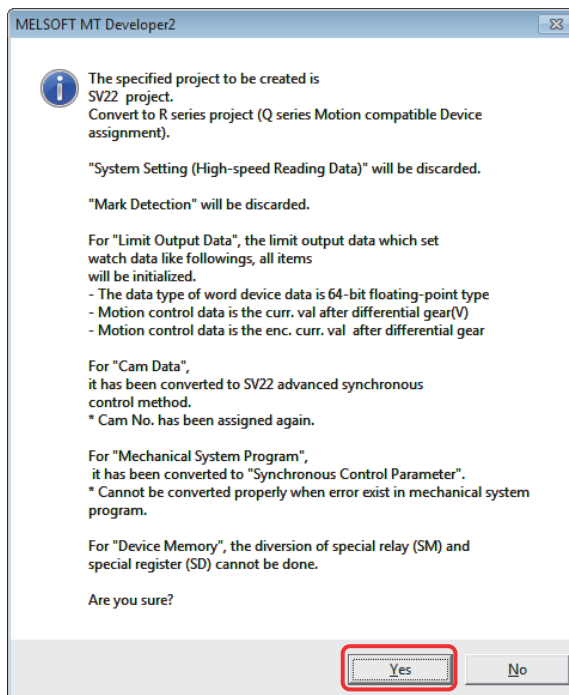
## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

5) Check the box of the data to be diverted in the "File Selection". Click "Divert".

When projects for Q17nCPUN(-T) are diverted as those for RnMTCPU, remove the check of the "Transfer Setting Information" box since the "Transfer Setting Information" cannot be diverted.

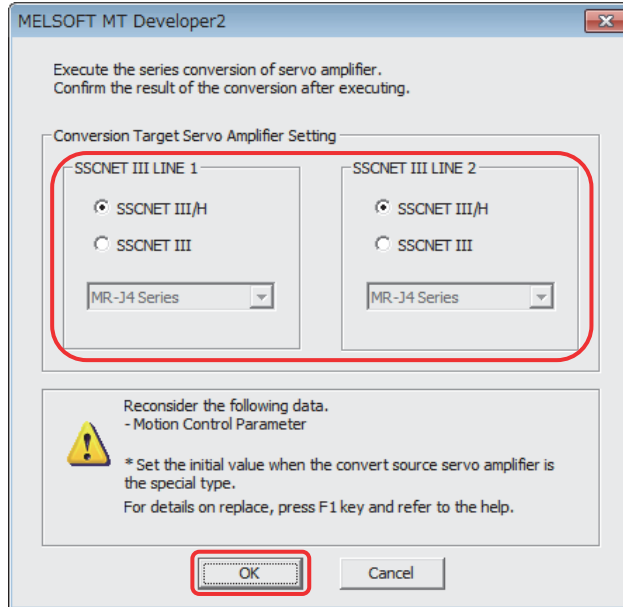


6) Confirm the precautions at conversion. Click "Yes".



## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

- 7) Execute the series conversion of the servo amplifier. Select the network to be used (SSCNETIII or SSCNETIII/H) for the replaced servo amplifiers (for RnMTCPU), and click [OK].

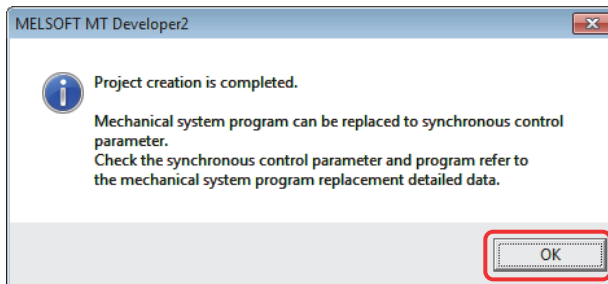


(Note): Refer to “MELSEC iQ-R Motion Controller User's Manual” for the servo networks supported by the replaced servo amplifiers and SSCNETIII compatible devices (SSCNETIII or SSCNETIII/H).

(Note): When servo parameters settings are changed from “MR-J2S series” to “MR-J4 series”, the parameter conversion is carried out based on conversion rules. However, when converting parameters of the models older than MR-J2S series (MR-H-B, MR-H-BN, MR-J-B, MR-J2-B, MR-J2Jr-B), the servo parameters are initialized.

Refer to “MELSOFT MT Developer2 Help [Appendix] - [Servo parameter conversion]” for the conversion rules.

- 8) When the project diversion completion message appears, click [OK].



The diversion is completed.



## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

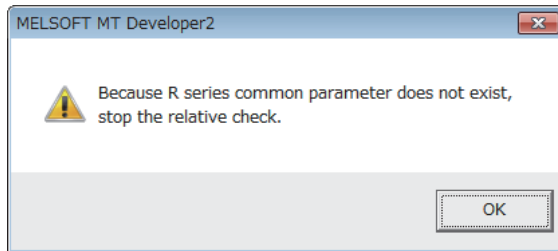
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If the operation cycle is set as default (automatic), the operation cycle will be changed. Set a fixed operation cycle where necessary because the change in the operation cycle may change the program execution timing. (Refer to section 2.2(11).)

Though the project has been diverted, conversion of Motion SFC programs and servo programs has not finished yet. Make sure to execute [Project Batch Check/Conversion] before writing to the Motion controller.

If the error message window below appears while “Project Batch Check/Conversion” is being executed, the system parameters need to be set.

Refer to “(3) Procedures for system parameter diversion by MELSOFT MT Developer2” in this section for system parameter setting procedures.

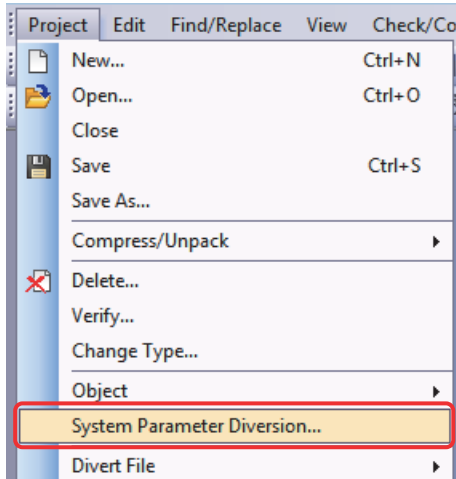


## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

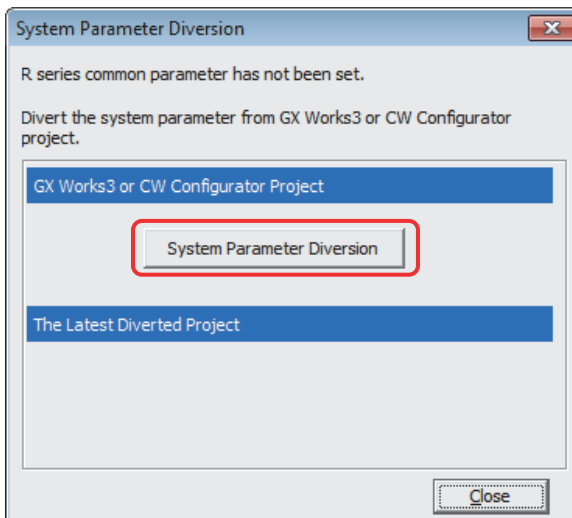
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- (3) Procedures for system parameter diversion by MELSOFT MT Developer2  
MELSOFT GX Works3 system parameters need to be diverted to R series common parameter settings (comparable to the basic settings of Q series).  
The following is the diversion procedure.

- 1) Start MELSOFT MT Developer2. Select “System Parameter Diversion” from “Project” menu to open the “System Parameter Diversion” screen.

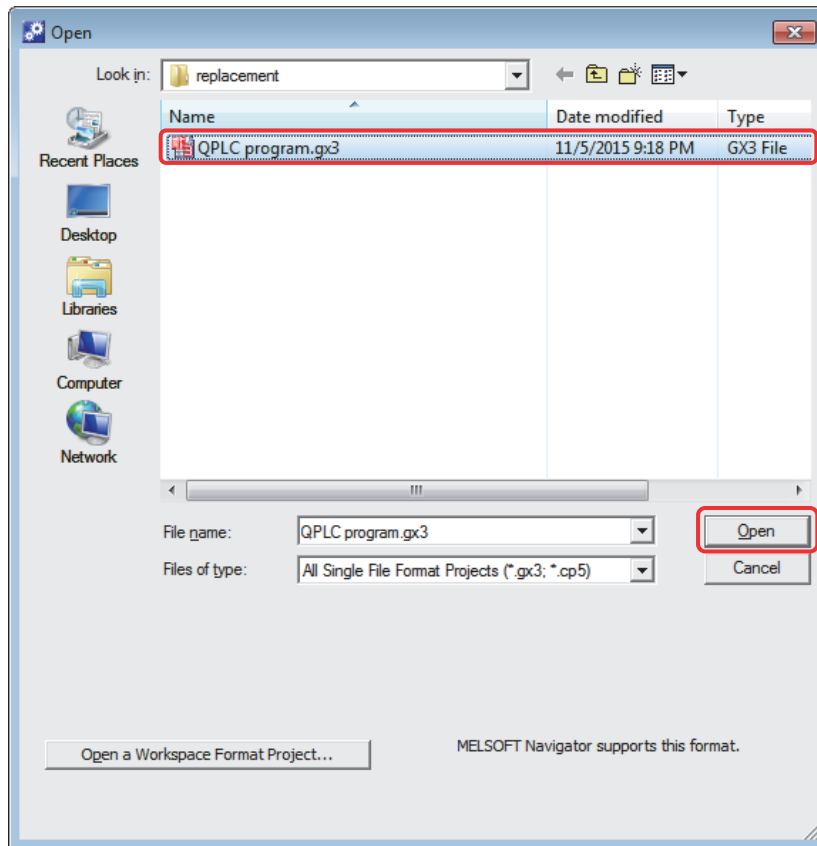


- 2) Click “System Parameter Diversion”.

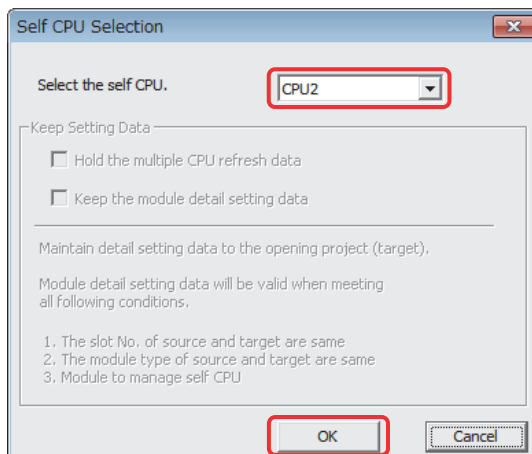


## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

- 3) Select the project to be diverted (The MELSOFT GX Works3 projects created at (1)), and click “Open”.



- 4) Select the self CPU No. on the “Self CPU selection” screen, and click “OK”.



The diversion is completed.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (4) Batch replacement of device numbers by MELSOFT MT Developer2

#### (a) Motion register

The Motion register is expanded and the device assignment is changed when Q17nCPUN(-T) is replaced with RnMTCPU. When the Motion register “#8000 to #8191” are used in Q17nCPUN(-T), replace them by referring to “2.3.1 Motion registers”.

#### (b) Special device

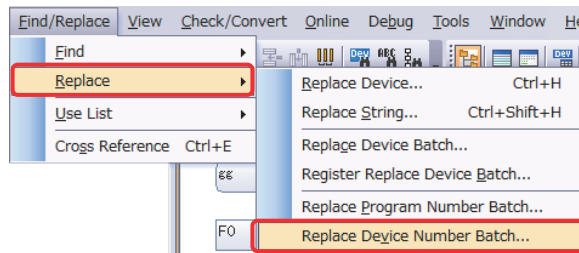
When special devices are used, replace them by referring to “2.3.2 Special relays” and “2.3.3 Special registers” in this document.

Special devices (M9000 to M9255, D9000 to D9255) are replaced with SM devices (SM2000 to SM2255) and SD devices (SD2000 to SD2255).

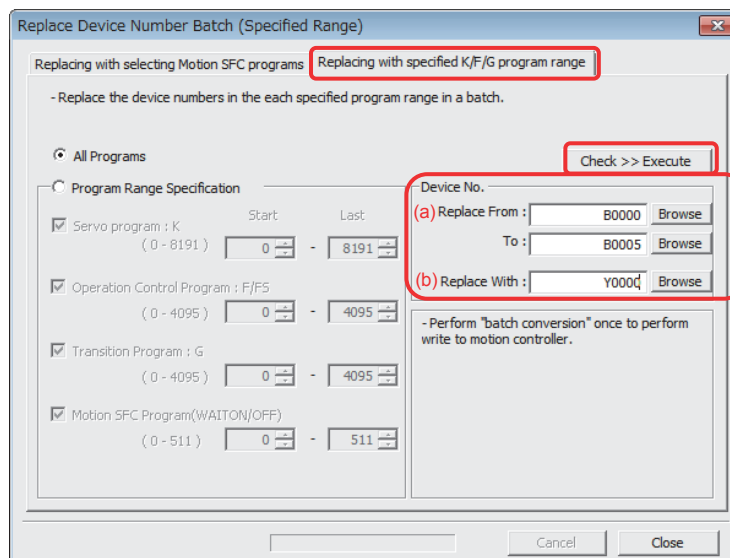
e.g.) M9074 (PCPU READY complete) is automatically converted to SM2074 when the CPU type is changed. Change SM2074 manually to the RnMTCPU special relay (SM500).

The following shows the procedure for the batch replacement of the device numbers.

- 1) Start MELSOFT MT Developer2, and select [Replace Device Number Batch...] from “Find/Replace” menu.



- 2) Select “Replacing with specified K/F/G program range” tab. Enter the device numbers in [(a) Replace From:] [To:], and [(b) Replace With:]. Click [Check >> Execute].



(a) Specify the start/end device before replacement.

(b) Specify the start device after replacement.

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

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### 2.4.4 Replacement of mechanical system program with advanced synchronization

The synchronous control function is replaced with the advanced synchronous control function.

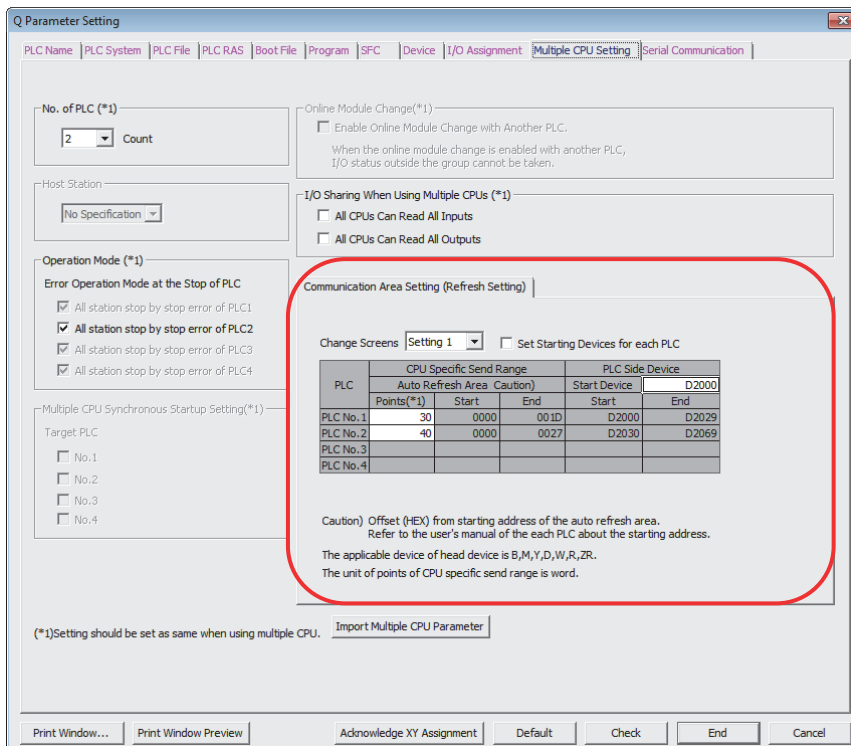
Refer to "Replacement of Virtual mode with Advanced synchronous control" for the replacement of the synchronous control function. However, at the time of replacement, be sure to take into account the device assignment difference between MELSEC-Q series and MELSEC iQ-R series (replace the Q-series device assignment for Q172DSCPU/Q173DSCPU/Q170MSCPU/Q170MSCPU-S1 with those for RnMTCPU (Q series Motion compatible device assignment)).

## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### 2.4.5 Auto refresh settings in MELSOFT GX Works3

[Communication Area Setting (Refresh Setting)] of MELSOFT GX Works2 is diverted to the [Refresh (END) Setting] of MELSOFT GX Works3.

- (1) Confirming the “Communication Area Setting (Refresh Setting)” of MELSOFT GX Works2  
Select [Parameter] - [PLC Parameter] in the navigation tree to open the “Q Parameter Setting” screen. Select [Multiple CPU Setting] tab and confirm the details of “Communication Area Setting (Refresh Setting)”.



Q Parameter Setting

PLC Name | PLC System | PLC File | PLC RAS | Boot File | Program | SFC | Device | I/O Assignment | **Multiple CPU Setting** | Serial Communication

No. of PLC (\*1)  
2 Count

Host Station  
No Specification

Operation Mode (\*1)  
Error Operation Mode at the Stop of PLC  
 All station stop by stop error of PLC1  
 All station stop by stop error of PLC2  
 All station stop by stop error of PLC3  
 All station stop by stop error of PLC4

Multiple CPU Synchronous Startup Setting(\*1)  
Target PLC  
 No.1  
 No.2  
 No.3  
 No.4

Online Module Change(\*1)  
 Enable Online Module Change with Another PLC.  
When the online module change is enabled with another PLC, I/O status outside the group cannot be taken.

I/O Sharing When Using Multiple CPUs (\*1)  
 All CPUs Can Read All Inputs  
 All CPUs Can Read All Outputs

**Communication Area Setting (Refresh Setting)**

Change Screens | Setting 1 |  Set Starting Devices for each PLC

| PLC      | CPU Specific Send Range |         |      | PLC Side Device |       |
|----------|-------------------------|---------|------|-----------------|-------|
|          | Auto Refresh Area       | Caution |      | Start Device    | End   |
|          | Points(*1)              | Start   | End  | Start           | End   |
| PLC No.1 | 30                      | 0000    | 001D | D2000           | D2029 |
| PLC No.2 | 40                      | 0000    | 0027 | D2030           | D2069 |
| PLC No.3 |                         |         |      |                 |       |
| PLC No.4 |                         |         |      |                 |       |

Caution) Offset (HEX) from starting address of the auto refresh area.  
Refer to the user's manual of the each PLC about the starting address.  
The applicable device of head device is B,M,Y,D,W,R,ZR.  
The unit of points of CPU specific send range is word.

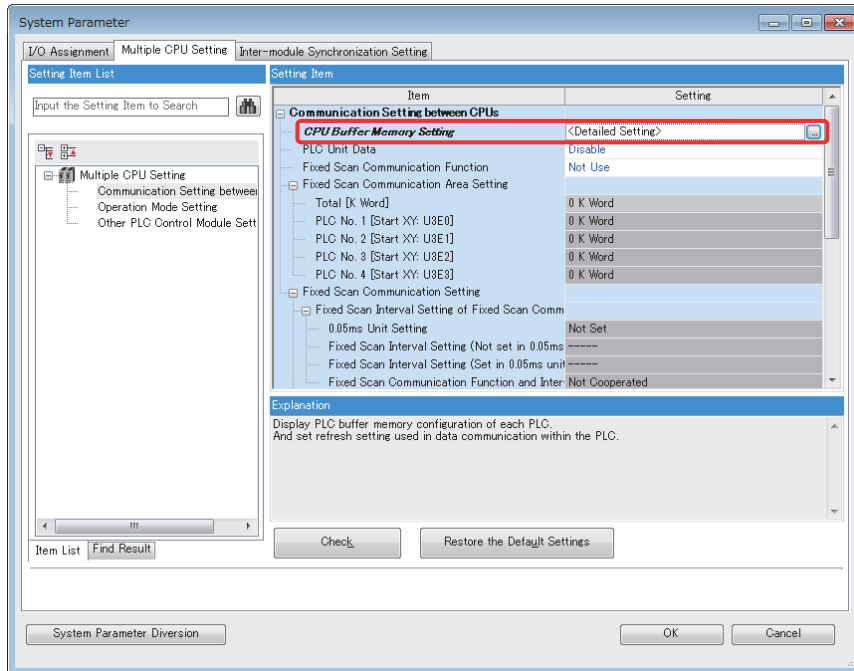
(\*1)Setting should be set as same when using multiple CPU. [Import Multiple CPU Parameter](#)

Print Window... | Print Window Preview | Acknowledge XY Assignment | Default | Check | End | Cancel

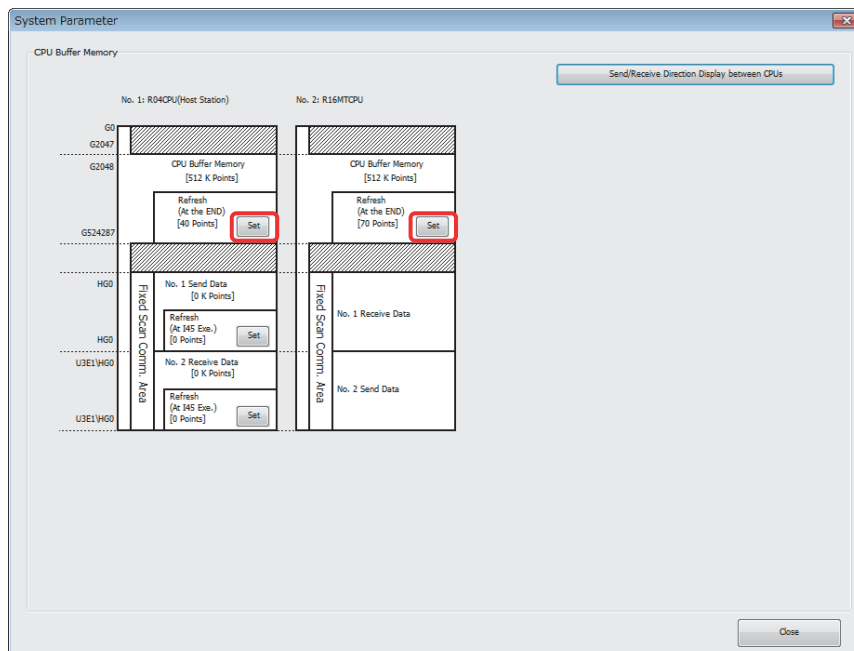
## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

### (2) Confirming “Refresh (END)” of MELSOFT GX Works3

- 1) Select [Parameter] - [System parameter] in the navigation tree to open “System Parameter” screen. Click on “CPU Buffer Memory Setting: <Detailed Setting>” in [Multiple CPU Setting] tab.

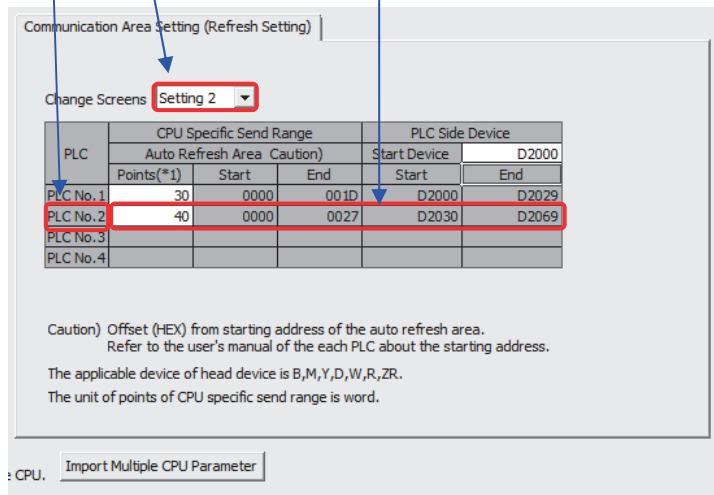
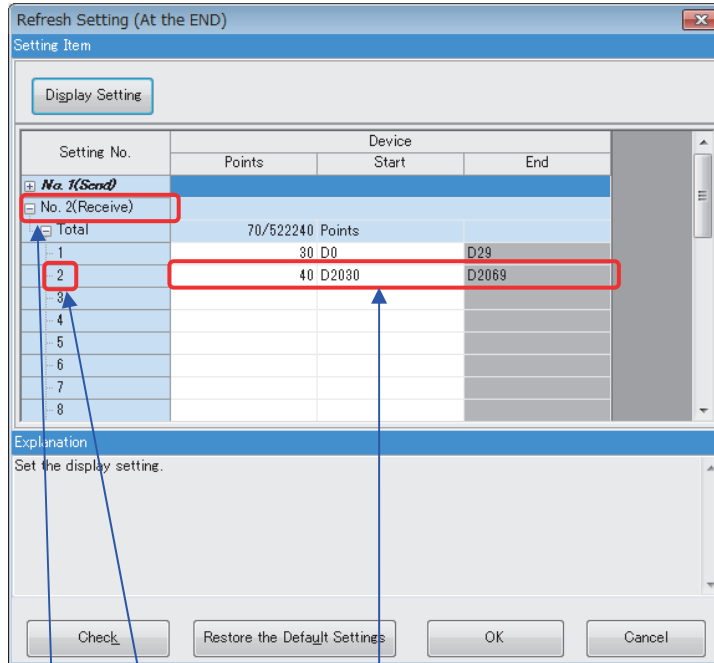


- 2) The screen below appears. Click a “Set” button of either CPU No.1 or No.2 in [Refresh (At the END)].



## 2. DETAILS OF MIGRATION FROM Q17nCPUN(-T) TO RnMTCPU

- 3) Set the following on the “Refresh (END) settings” screen below.  
 When the refresh setting has been deleted, make the setting by referring to  
 “Communication Area Setting (Refreshing Setting)” of MELSOFT GX Works2.





# **WARRANTY**

Please confirm the following product warranty details before using this product.

## **1. Gratis Warranty Term and Gratis Warranty Range**

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
  1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
  2. Failure caused by unapproved modifications, etc., to the product by the user.
  3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
  4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
  5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
  6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
  7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

## **2. Onerous repair term after discontinuation of production**

- (1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not available after production is discontinued.

## **3. Overseas service**

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

## **4. Exclusion of loss in opportunity and secondary loss from warranty liability**

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

- (1) Damages caused by any cause found not to be the responsibility of Mitsubishi.
- (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.
- (3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.
- (4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

## **5. Changes in product specifications**

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

## **6. Precautions for Choosing the Products**

- (1) For the use of our Motion controller, its applications should be those that may not result in a serious damage even if any failure or malfunction occurs in Motion controller, and a backup or fail-safe function should operate on an external system to Motion controller when any failure or malfunction occurs.
- (2) Our Motion controller is designed and manufactured as a general purpose product for use at general industries. Therefore, applications substantially influential on the public interest for such as atomic power plants and other power plants of electric power companies, and also which require a special quality assurance system, including applications for railway companies and government or public offices are not recommended, and we assume no responsibility for any failure caused by these applications when used. In addition, applications which may be substantially influential to human lives or properties for such as airlines, medical treatments, railway service, incineration and fuel systems, man-operated material handling equipment, entertainment machines, safety machines, etc. are not recommended, and we assume no responsibility for any failure caused by these applications when used. We will review the acceptability of the abovementioned applications, if you agree not to require a specific quality for a specific application. Please contact us for consultation.

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In some cases, trademark symbols such as '™' or '®' are not specified in this manual.



# Migration Guide of Motion Controller [Q17nCPUN(-T) ⇒ RnMTCPU]

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