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MITSUBISHI ELECTRIC
Changes for the Better

MITSUBISHI ELECTRIC SERVO SYSTEM CONTROLLER

Migration Guide from Positioning Module to Simple Motion Module [QD75M(H) ⇒ QD77MS]

● SAFETY PRECAUTIONS ●

(Please read these instructions before using this equipment.)

Before using this product, please read this manual and the relevant manuals introduced in this manual 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 user's manual of the CPU module to use for a description of the PLC system safety precautions.
In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".

⚠DANGER	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Depending on circumstances, procedures indicated by ⚠CAUTION may also be linked to serious results.
In any case, it is important to follow the directions for usage.

Please save this manual to make it accessible when required and always forward it to the end user.

For Safe Operations

1. Prevention of electric shocks

⚠DANGER

- Never open the front case or terminal covers while the power is ON or the unit is running, as this may lead to electric shocks.
- Never run the unit with the front case or terminal cover removed. The high voltage terminal and charged sections will be exposed and may lead to electric shocks.
- Never open the front case or terminal cover at times other than wiring work or periodic inspections even if the power is OFF. The insides of the module and servo amplifier are charged and may lead to electric shocks.
- Completely turn off the externally supplied power used in the system before mounting or removing the module, performing wiring work, or inspections. Failing to do so may lead to electric shocks.
- When performing wiring work or inspections, turn the power OFF, wait at least ten minutes, and then check the voltage with a tester, etc. Failing to do so may lead to electric shocks.
- Be sure to ground the module, servo amplifier and servomotor (Ground resistance: 100 Ω or less). Do not ground commonly with other devices.
- The wiring work and inspections must be done by a qualified technician.
- Wire the units after installing the module, servo amplifier and servomotor. Failing to do so may lead to electric shocks or damage.
- Never operate the switches with wet hands, as this may lead to electric shocks.
- Do not damage, apply excessive stress, place heavy things on or sandwich the cables, as this may lead to electric shocks.
- Do not touch the module, servo amplifier, servomotor connector or terminal blocks while the power is ON, as this may lead to electric shocks.
- Do not touch the built-in power supply, built-in grounding or signal wires of the module and servo amplifier, as this may lead to electric shocks.

2. For fire prevention

⚠CAUTION

- Install the module, servo amplifier, servomotor and regenerative resistor on incombustible. Installing them directly or close to combustibles will lead to fire.
- If a fault occurs in the module or servo amplifier, shut the power OFF at the servo amplifier's power source. If a large current continues to flow, fire may occur.
- When using a regenerative resistor, shut the power OFF with an error signal. The regenerative resistor may abnormally overheat due to a fault in the regenerative transistor, etc., and may lead to fire.
- Always take heat measures such as flame proofing for the inside of the control panel where the servo amplifier or regenerative resistor is installed and for the wires used. Failing to do so may lead to fire.
- Do not damage, apply excessive stress, place heavy things on or sandwich the cables, as this may lead to fire.

3. For injury prevention

⚠CAUTION
● Do not apply a voltage other than that specified in the instruction manual on any terminal. Doing so may lead to destruction or damage. ● Do not mistake the terminal connections, as this may lead to destruction or damage. ● Do not mistake the polarity (+ / -), as this may lead to destruction or damage. ● Do not touch the heat radiating fins of module or servo amplifier, regenerative resistor and servomotor, etc., while the power is ON and for a short time after the power is turned OFF. In this timing, these parts become very hot and may lead to burns. ● Always turn the power OFF before touching the servomotor shaft or coupled machines, as these parts may lead to injuries. ● Do not go near the machine during test operations or during operations such as teaching. Doing so may lead to injuries.

4. Various precautions

Strictly observe the following precautions. Mistaken handling of the unit may lead to faults, injuries or electric shocks.

(1) System structure

⚠CAUTION
● Always install a leakage breaker on the module and servo amplifier power source. ● If installation of an electromagnetic contactor for power shut off during an error, etc., is specified in the instruction manual for the servo amplifier, etc., always install the electromagnetic contactor. ● Install the emergency stop circuit externally so that the operation can be stopped immediately and the power shut off. ● Use the module, servo amplifier, servomotor and regenerative resistor with the correct combinations listed in the instruction manual. Other combinations may lead to fire or faults. ● Use the CPU module, base unit, and Simple Motion module with the correct combinations listed in the instruction manual. Other combinations may lead to faults. ● 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. ● In systems where coasting of the servomotor will be a problem during the forced stop, emergency stop, servo OFF or power supply OFF, use the dynamic brake. ● Make sure that the system considers the coasting amount even when using the dynamic brake. ● In systems where perpendicular shaft dropping may be a problem during the forced stop, emergency stop, servo OFF or power supply OFF, use both the dynamic brake and electromagnetic brake. ● The dynamic brake must be used only on errors that cause the forced stop, emergency stop, or servo OFF. This brake must not be used for normal braking. ● The brake (electromagnetic brake) assembled into the servomotor are for holding applications, and must not be used for normal braking.

⚠CAUTION

- The system must have a mechanical allowance so that the machine itself can stop even if the stroke limits switch is passed through at the max. speed.
- Use wires and cables that have a wire diameter, heat resistance and bending resistance compatible with the system.
- Use wires and cables within the length of the range described in the instruction manual.
- The ratings and characteristics of the parts (other than module, servo amplifier and servomotor) used in a system must be compatible with the module, servo amplifier and servomotor.
- Install a cover on the shaft so that the rotary parts of the servomotor are not touched during operation.
- There may be some cases where holding by the electromagnetic brake is not possible due to the life or mechanical structure (when the ball screw and servomotor are connected with a timing belt, etc.). Install a stopping device to ensure safety on the machine side.

(2) Parameter settings and programming

⚠DANGER

- Set the parameter values to those that are compatible with the module, servo amplifier, servomotor and regenerative resistor model and the system application. The protective functions may not function if the settings are incorrect.
- The regenerative resistor model and capacity parameters must be set to values that conform to the operation mode and servo amplifier. The protective functions may not function if the settings are incorrect.
- Set the mechanical brake output and dynamic brake output validity parameters to values that are compatible with the system application. The protective functions may not function if the settings are incorrect.
- Set the stroke limit input validity parameter to a value that is compatible with the system application. The protective functions may not function if the setting is incorrect.
- Set the servomotor encoder type (increment, absolute position type, etc.) parameter to a value that is compatible with the system application. The protective functions may not function if the setting is incorrect.
- Use the program commands for the program with the conditions specified in the instruction manual.
- Set the sequence function program capacity setting, device capacity, latch validity range, I/O assignment setting, and validity of continuous operation during error detection to values that are compatible with the system application. The protective functions may not function if the settings are incorrect.
- The input devices and data registers assigned to the link will hold the data previous to when communication is terminated by an error, etc. Thus, an error correspondence interlock program specified in the instruction manual must be used.
- Use the interlock program specified in the intelligent function module's instruction manual for the program corresponding to the intelligent function module.

(3) Transportation and installation

⚠CAUTION

- Transport the product with the correct method according to the mass.
- Use the servomotor suspension bolts only for the transportation of the servomotor. Do not transport the servomotor with machine installed on it.
- Do not stack products past the limit.
- When transporting the module or servo amplifier, never hold the connected wires or cables.
- When transporting the servomotor, never hold the cables, shaft or detector.
- When transporting the module or servo amplifier, never hold the front case as it may fall off.
- When transporting, installing or removing the module or servo amplifier, never hold the edges.
- Install the unit according to the instruction manual in a place where the mass can be withstood.
- Do not get on or place heavy objects on the product.
- Always observe the installation direction.
- Keep the designated clearance between the module or servo amplifier and control panel inner surface or the module and servo amplifier, module or servo amplifier and other devices.
- Do not install or operate modules, servo amplifiers or servomotors that are damaged or that have missing parts.
- Do not block the intake/outtake ports of the servo amplifier and servomotor with cooling fan.
- Do not allow conductive matter such as screw or cutting chips or combustible matter such as oil enter the module, servo amplifier or servomotor.
- The module, servo amplifier and servomotor are precision machines, so do not drop or apply strong impacts on them.
- Securely fix the module, servo amplifier and servomotor to the machine according to the instruction manual. If the fixing is insufficient, these may come off during operation.
- Always install the servomotor with reduction gears in the designated direction. Failing to do so may lead to oil leaks.
- Store and use the unit in the following environmental conditions.

Environment	Conditions	
	Module/Servo amplifier	Servomotor
Ambient temperature	According to each instruction manual.	0°C to +40°C (With no freezing) (32°F to +104°F)
Ambient humidity	According to each instruction manual.	80% RH or less (With no dew condensation)
Storage temperature	According to each instruction manual.	-20°C to +65°C (-4°F to +149°F)
Atmosphere	Indoors (where not subject to direct sunlight). No corrosive gases, flammable gases, oil mist or dust must exist	
Altitude	According to each instruction manual	
Vibration	According to each instruction manual	

- When coupling with the servomotor shaft end, do not apply impact such as by hitting with a hammer. Doing so may lead to detector damage.
- Do not apply a load larger than the tolerable load onto the servomotor shaft. Doing so may lead to shaft breakage.

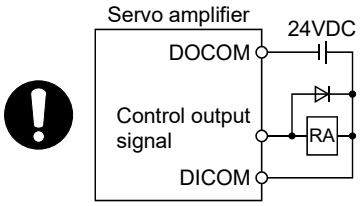
⚠CAUTION

- When not using the module for a long time, disconnect the power line from the module or servo amplifier.
- Place the module and servo amplifier in static electricity preventing vinyl bags and store.
- When storing for a long time, please contact with our sales representative.
  Also, execute a trial operation.
- Make sure that the connectors for the servo amplifier and peripheral devices have been securely installed until a click is heard.
  Not doing so could lead to a poor connection, resulting in erroneous input and output.
- When fumigants that contain halogen materials such as fluorine, chlorine, bromine, and iodine are used for disinfecting and protecting wooden packaging from insects, they cause malfunction when entering our products.
  Please take necessary precautions to ensure that remaining materials from fumigant do not enter our products, or treat packaging with methods other than fumigation (heat method). Additionally, disinfect and protect wood from insects before packing products.
- The module and the servo amplifier must not be used with parts which contain halogen-series flame retardant materials (such as bromine) under coexisting conditions.

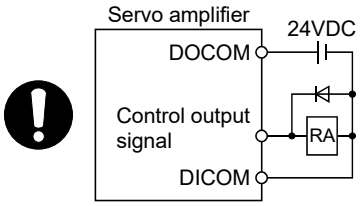
(4) Wiring

⚠CAUTION

- Correctly and securely wire the wires. Reconfirm the connections for mistakes and the terminal screws for tightness after wiring. Failing to do so may lead to run away of the servomotor.
- After wiring, install the protective covers such as the terminal covers to the original positions.
- Do not install a phase advancing capacitor, surge absorber or radio noise filter (option FR-BIF) on the output side of the servo amplifier.
- Correctly connect the output side (terminal U, V, W). Incorrect connections will lead the servomotor to operate abnormally.
- Do not connect a commercial power supply to the servomotor, as this may lead to trouble.
- Do not mistake the direction of the surge absorbing diode installed on the DC relay for the control signal output of brake signals, etc. Incorrect installation may lead to signals not being output when trouble occurs or the protective functions not functioning.



For the sink output interface



For the source output interface

- Do not connect or disconnect the connection cables between each unit, the encoder cable or PLC expansion cable while the power is ON.
- Securely tighten the cable connector fixing screws and fixing mechanisms. Insufficient fixing may lead to the cables combing off during operation.
- Do not bundle the power line or cables.
- Use applicable solderless terminals and tighten them with the specified torque.
  If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.

(5) Trial operation and adjustment

⚠CAUTION

- Confirm and adjust the program and each parameter before operation. Unpredictable movements may occur depending on the machine.
- Extreme adjustments and changes may lead to unstable operation, so never make them.
- 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 test operation, set the parameter speed limit value to the slowest value, and make sure that operation can be stopped immediately by the forced stop, etc. if a hazardous state occurs.
- Before starting the operation, confirm the brake function.

(6) Usage methods

⚠CAUTION

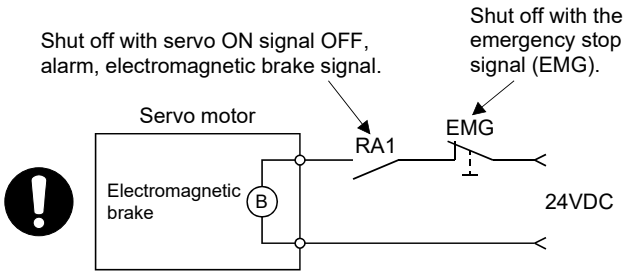
- Immediately turn OFF the power if smoke, abnormal sounds or odors are emitted from the module, servo amplifier or servomotor.
- Always execute a test operation before starting actual operations after the program or parameters have been changed or after maintenance and inspection.
- Do not attempt to disassemble and repair the units excluding a qualified technician whom our company recognized.
- Do not make any modifications to the unit.
- Keep the effect or electromagnetic obstacles to a minimum by installing a noise filter or by using wire shields, etc.
  Electromagnetic obstacles may affect the electronic devices used near the module or servo amplifier.
- When using the CE Mark-compliant equipment design, refer to the "EMC Installation Guidelines" (data number IB(NA)-67339) and refer to the corresponding EMC guideline information for the servo amplifiers and other equipment.
- Note that when the reference axis speed is designated for interpolation operation, the speed of the partner axis (2nd axis, 3rd axis and 4th axis) may be larger than the set speed (larger than the speed limit value).
- Use the units with the following conditions.

Item	Conditions
Input power	According to each instruction manual.
Input frequency	According to each instruction manual.
Tolerable momentary power failure	According to each instruction manual.

(7) Corrective actions for errors

⚠CAUTION

- If an error occurs in the self diagnosis of the module or servo amplifier, confirm the check details according to the instruction manual, and restore the operation.
- If a dangerous state is predicted in case of a power failure or product failure, use a servomotor with an electromagnetic brake or install a brake mechanism externally.
- Use a double circuit construction so that the electromagnetic brake operation circuit can be operated by emergency stop signals set externally.



- If an error occurs, remove the cause, secure the safety and then resume operation after alarm release.
- The unit may suddenly resume operation after a power failure is restored, so do not go near the machine. (Design the machine so that personal safety can be ensured even if the machine restarts suddenly.)

(8) Maintenance, inspection and part replacement

⚠CAUTION

- Perform the daily and periodic inspections according to the instruction manual.
- Perform maintenance and inspection after backing up the program and parameters for the module and servo amplifier.
- Do not place fingers or hands in the clearance when opening or closing any opening.
- Periodically replace consumable parts such as batteries according to the instruction manual.
- Do not touch the lead sections such as ICs or the connector contacts.
- Before touching the module, always touch grounded metal, etc. to discharge static electricity from human body. Failure to do so may cause the module to fail or malfunction.
- Do not directly touch the module's conductive parts and electronic components. Touching them could cause an operation failure or give damage to the module.
- Do not place the module or servo amplifier on metal that may cause a power leakage or wood, plastic or vinyl that may cause static electricity buildup.
- Do not perform a megger test (insulation resistance measurement) during inspection.
- When replacing the module or servo amplifier, always set the new module settings correctly.
- When the module or absolute position motor has been replaced, carry out a home position return operation using the following method, otherwise position displacement could occur.
  • After writing the servo data to the Simple Motion module using programming software, switch on the power again, then perform a home position return operation.
- After maintenance and inspections are completed, confirm that the position detection of the absolute position detector function is correct.
- Do not drop or impact the battery installed to the module. Doing so may damage the battery, causing battery liquid to leak in the battery. Do not use the dropped or impacted battery, but dispose of it.
- Do not short circuit, charge, overheat, incinerate or disassemble the batteries.
- The electrolytic capacitor will generate gas during a fault, so do not place your face near the module or servo amplifier.
- The electrolytic capacitor and fan will deteriorate. Periodically replace these to prevent secondary damage from faults. Please contact with our sales representative.
- Lock the control panel and prevent access to those who are not certified to handle or install electric equipment.
- Do not mount/remove the module and base or terminal block more than 50 times (IEC61131-2-compliant), after the first use of the product. Failure to do so may cause malfunction.
- Do not burn or break a module and servo amplifier. Doing so may cause a toxic gas.

(9) About processing of waste

When you discard module, servo amplifier, a battery (primary battery) and other option articles, please follow the law of each country (area).

⚠CAUTION

- This product is not designed or manufactured to be used in equipment or systems in situations that can affect or endanger human life.
- When considering this product for operation in special applications such as machinery or systems used in passenger transportation, medical, aerospace, atomic power, electric power, or submarine repeating applications, please contact your nearest Mitsubishi sales representative.
- Although this product was manufactured under conditions of strict quality control, you are strongly advised to install safety devices to forestall serious accidents when it is used in facilities where a breakdown in the product is likely to cause a serious accident.

(10) General cautions

- All drawings provided in the instruction manual show the state with the covers and safety partitions removed to explain detailed sections. When operating the product, always return the covers and partitions to the designated positions, and operate according to the instruction manual.

REVISIONS

Print Date	Manual No.	Revision
July, 2019	L(NA)03122ENG-A	First edition

INTRODUCTION

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

CONTENTS

1. OVERVIEW OF MIGRATION FROM QD75M/QD75MH TO QD77MS

1.1 Benefits of Migration

Migrating from the existing system using QD75M/QD75MH Positioning modules to a new system using MELSEC-Q series Simple Motion module QD77MS4/QD77MS2 (hereinafter called QD77MS), which support the programs on the QD75M/QD75MH, 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 Positioning module (Simple Motion module)
The Simple Motion module QD77MS achieves the operation cycle of 0.88 ms/4 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 controller

(2) High-speed communication by SSCNETIII/H
Speeding up and improving noise tolerance of servo system 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 servo amplifier 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 line 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 lines.
→ 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

1.2 Main Target Models for Migration

The main target models for replacement described in this section are as follows.

(1) Positioning modules

Product name	Model before migration		Model after migration
SSCNET Positioning module	QD75M1		QD77MS2(Note-1)
	QD75M2		
	QD75M4		QD77MS4
SSCNETIII Positioning module	QD75MH1		QD77MS2(Note-1)
	QD75MH2		
	QD75MH4		QD77MS4

(Note-1): The number of control axes is increased from 1 to 2.

(2) Servo amplifiers and servo motors

(a) For QD75M

Before migration from QD75M				After migration to QD77MS		
Servo amplifier		Servo motor		Servo amplifier		Servo motor
MR-J2S series	MR-J2S-□B	HC-KFS□ HC-MFS□ HC-SFS□ HC-LFS□ HC-RFS□ HA-LFS□ HC-UFS□	→	MR-J4 series	MR-J4-□B(-RJ) MR-J4W2-□B MR-J4W3-□B	HG-KR□ HG-MR□ HG-SR□ HG-RR□ HG-UR□ HG-JR□
MR-J2M series	MR-J2M-□DU	HC-KFS□ HC-MFS□ HC-UFS□				
MR-H series	MR-H□B(N)	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□ 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)

(b) For QD75MH

The existing MR-J3 series servo amplifiers can be used in the migrated system with QD77MS, however, it is strongly recommended to replace them with the MR-J4 series.

1) Servo amplifiers/Rotary servo motors

Before migration from QD75MH				After migration to QD77MS		
Servo amplifier		Rotary servo motor		Servo amplifier		Rotary servo motor
MR-J3 series	MR-J3-□B MR-J3W-□B MR-J3-□BS MR-J3-□B-RJ006	HF-KP□ HF-MP□ HF-SP□ HF-JP□ HC-LP□ HC-RP□ HC-UP□ HA-LP□	→	MR-J4 series	MR-J4-□B(-RJ) MR-J4W2-□B MR-J4W3-□B	HG-KR□ HG-MR□ HG-SR□ HG-RR□ HG-UR□ HG-JR□

2) Servo amplifiers/Linear servo motors

Before migration from QD75MH				After migration to QD77MS		
Servo amplifier		Linear servo motor		Servo amplifier		Linear servo motor
MR-J3 series	MR-J3-□B-RJ004	LM-H2□ LM-F□ LM-K2□ LM-U2□	→	MR-J4 series	MR-J4-□B(-RJ) MR-J4W2-□B MR-J4W3-□B	LM-H3□ LM-F□ LM-K2□ LM-U2□

3) Servo amplifiers/Direct drive motors

Before migration from QD75MH				After migration to QD77MS		
Servo amplifier		Direct drive motor		Servo amplifier		Direct drive motor
MR-J3 series	MR-J3-□B-RJ080W	TM-RFM□	→	MR-J4 series	MR-J4-□B(-RJ) MR-J4W2-□B MR-J4W3-□B	TM-RFM□

(3) Servo system network

(a) For QD75M

Item		SSCNET		SSCNETIII/H
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		0.22 ms/0.44 ms/0.88 ms
	Receive	3.55 ms		0.22 ms/0.44 ms/0.88 ms
Number of control axes		Up to 8 axes/line		Up to 16 axes/line
Transmission distance		Maximum overall distance: 30 m		[Standard code for inside panel and standard cable for outside panel] Up to 20 m between stations Maximum overall distance: 320 m (20 m × 16 axes) [Long distance cable] Up to 100 m between stations Maximum overall distance: 1600 m (100 m × 16 axes)

(b) For QD75MH

Item		SSCNETIII		SSCNETIII/H
Communications medium		Optical fiber cable		← (same as SSCNETIII)
Communications speed		50 Mbps		150 Mbps
Communications cycle	Send	0.44 ms/0.88 ms		0.22 ms/0.44 ms/0.88 ms
	Receive	0.44 ms/0.88 ms		0.22 ms/0.44 ms/0.88 ms
Number of control axes		Up to 16 axes/line		← (same as SSCNETIII)
Transmission distance		[Standard code for inside panel] Up to 3 m between stations Maximum overall distance: 48 m (3 m × 16 axes) [Standard cable for outside panel] Up to 20 m between stations Maximum overall distance: 320 m (20 m × 16 axes)		[Standard code for inside panel and standard cable for outside panel] Up to 20 m between stations Maximum overall distance: 320 m (20 m × 16 axes)
		[Long distance cable] Up to 50 m between stations Maximum overall distance: 800 m (50 m × 16 axes)		[Long distance cable] Up to 100 m between stations Maximum overall distance: 1600 m (100 m × 16 axes)

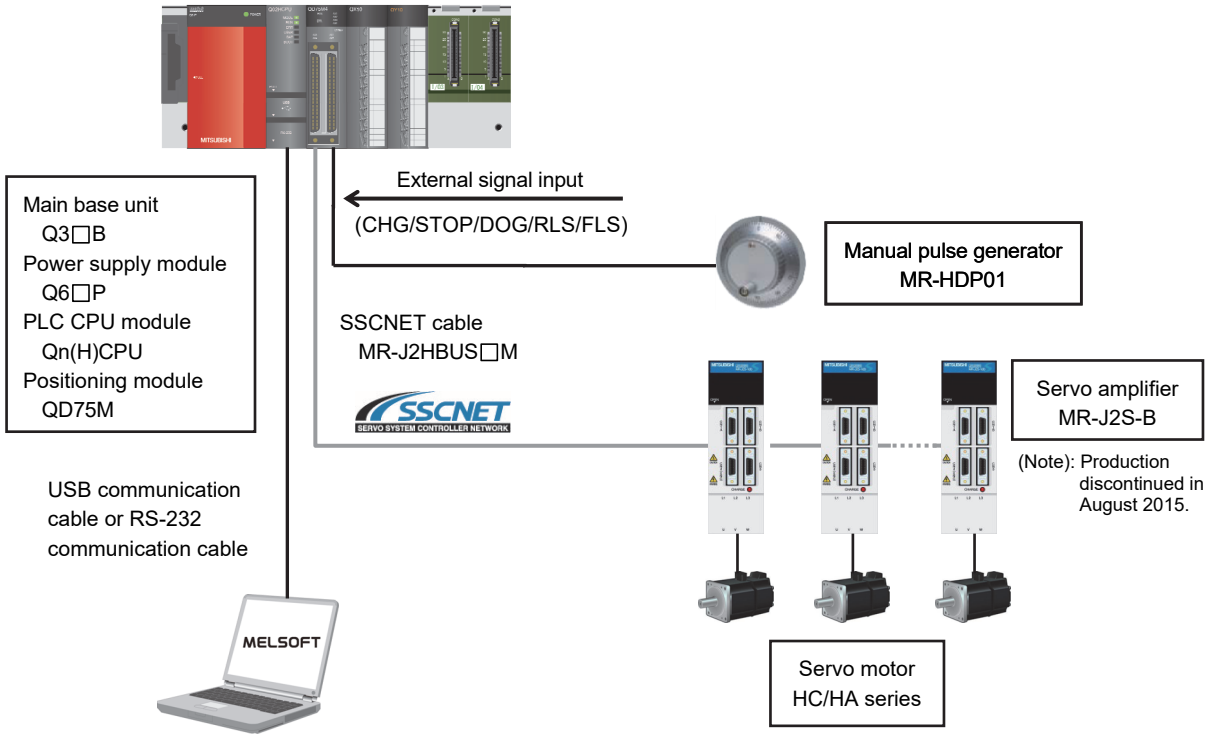
(4) Engineering environment (required)

Product name	Model	Version
MELSOFT GX Works2	SW1DND-GXW2-E	Ver.1.576A or later
MELSOFT MR Configurator2 (Note-1)	SW1DNC-MRC2-E	Ver.1.12N or later

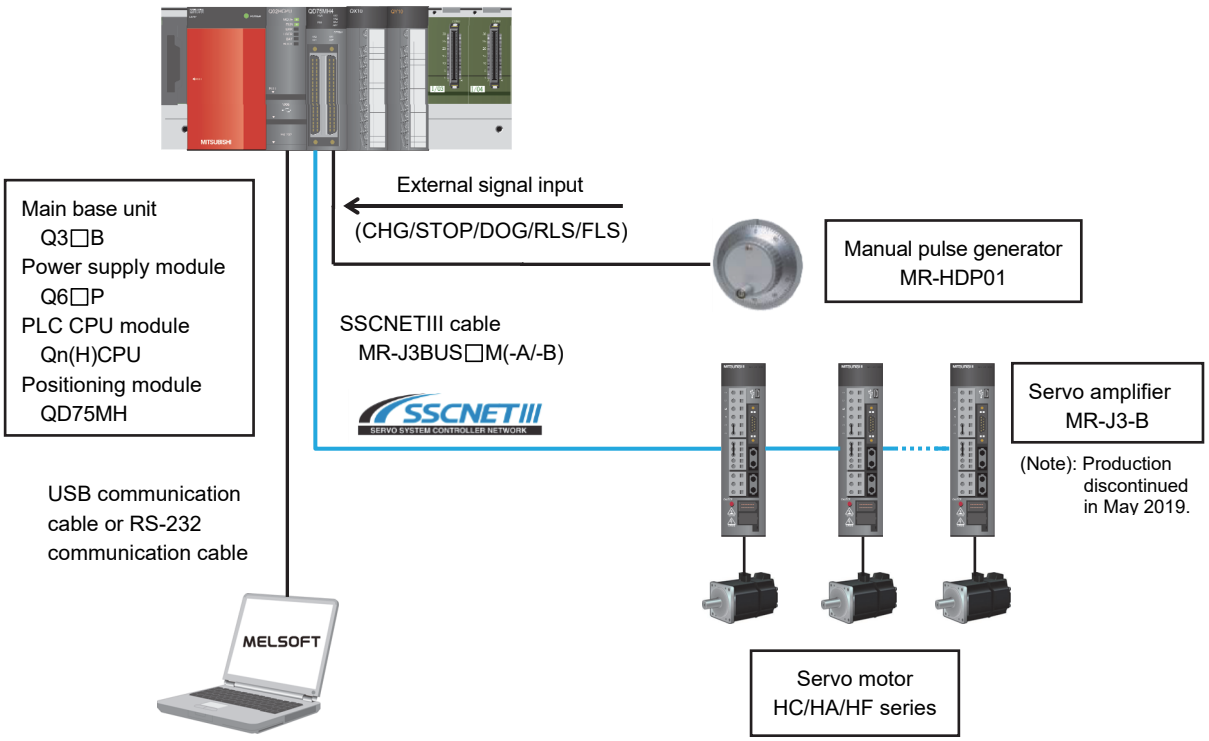
(Note-1): The Servo Setup Software MRZJW3-SETUP161E is required when a combination of MR-J4-B-RJ020 and MR-J4-T20 is used as MR-J2S-B.

1.3 System Configuration

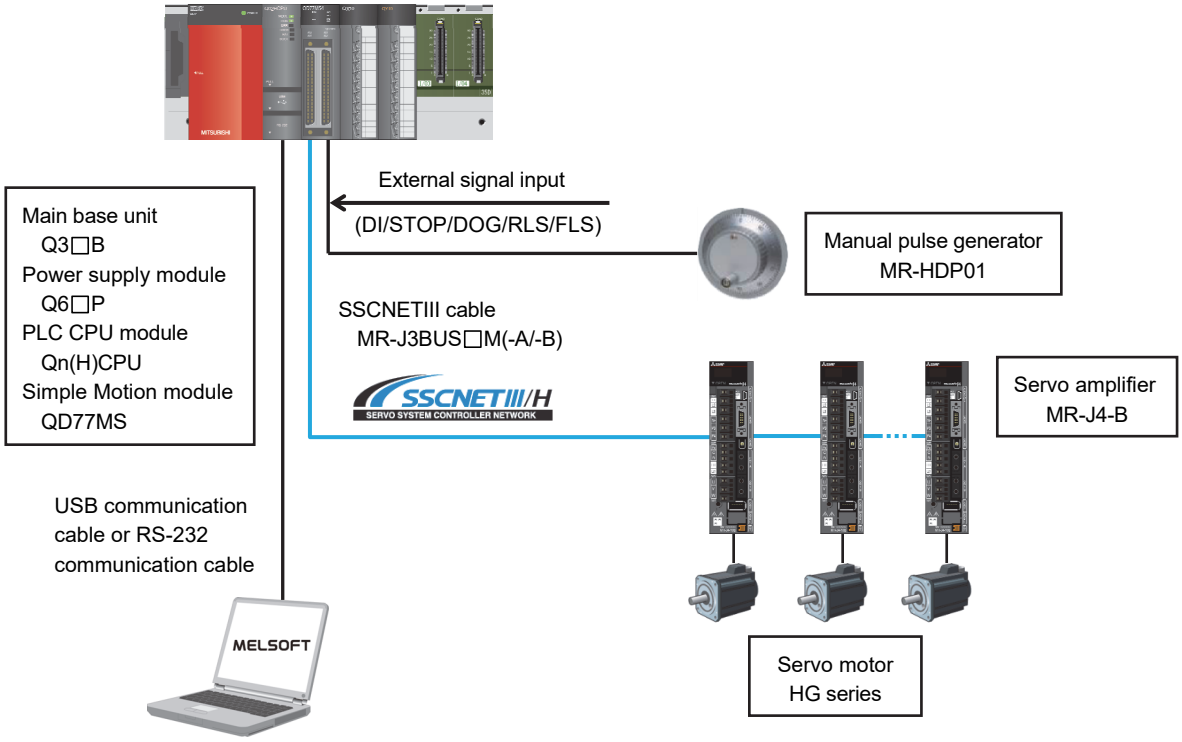
1.3.1 System configuration using QD75M before migration



1.3.2 System configuration using QD75MH before migration



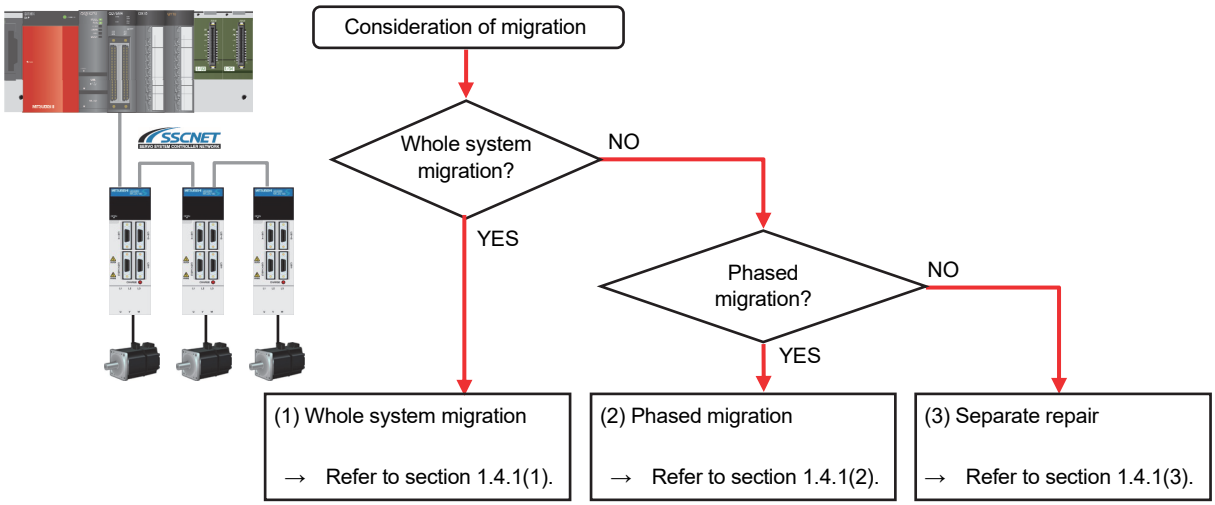
1.3.3 System configuration using QD77MS after migration



1.4 Case Study on Migration

1.4.1 Case study for QD75M

The following describes a case study for migrating the existing system using QD75M.



(1) Whole system migration (recommended)

The controller, servo amplifiers, servo motors, and servo system 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(1).)

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

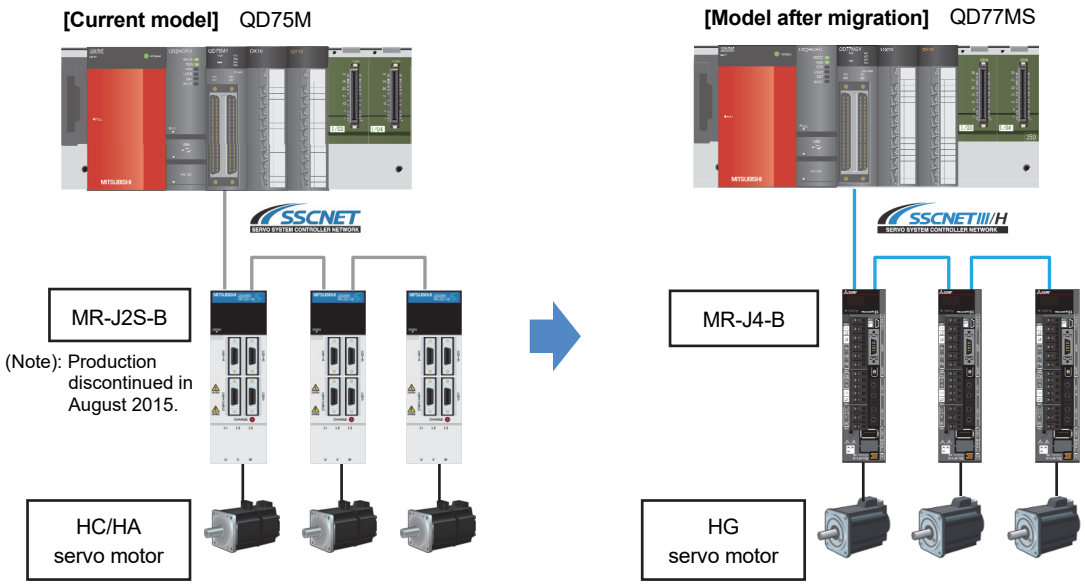
The MR-J2S-B servo amplifiers are gradually replaced with the MR-J4-B servo amplifiers, and then the controller is eventually replaced with QD77MS in the final phase.
(Refer to section 1.4.1(2).)

(3) Separate repair

This is a replacement method for when the servo amplifier or the servo motor malfunctions.
(Refer to section 1.4.1(3).)

(1) Whole system migration (recommended) [QD75M]

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



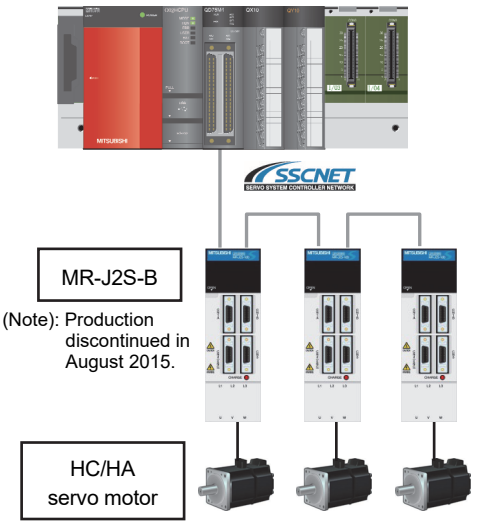
[Changes in the system]

Product name	Model before migration		Model after migration
Positioning module	QD75M	→	QD77MS
Servo amplifier	MR-J2S-B		MR-J4-B
Servo motor	HC/HA series		HG series

(2) Phased migration [QD75M]

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 with QD77MS in the final phase.

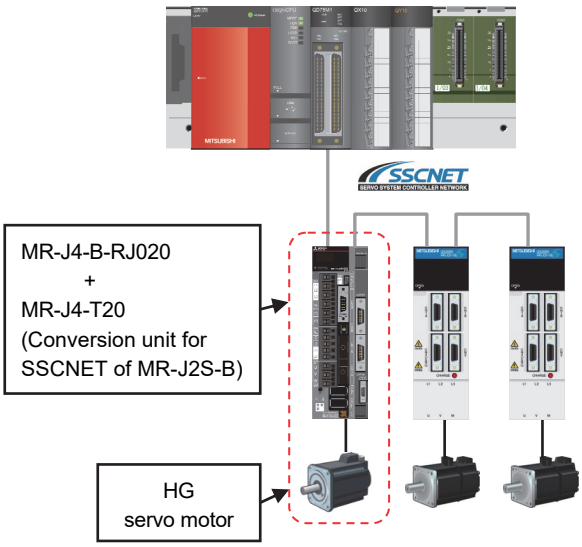
[Current system]



(Note): Production discontinued in August 2015.

[Replacement - Phase 1]

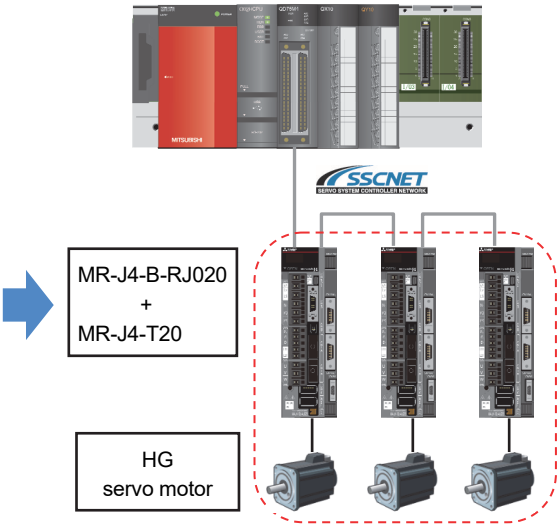
Servo amplifier and servo motor replacement for only one axis



(Note): For replacing the servo amplifier or the servo motor, refer to "1.4.1(3) Separate repair".

[Replacement - Phase 2]

Servo amplifier and servo motor replacement for all axes



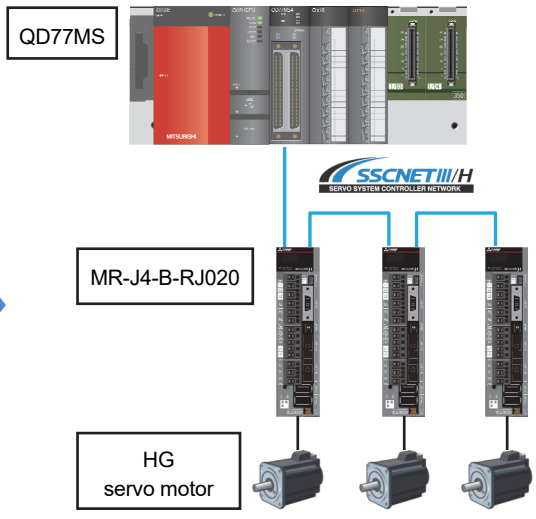
(Note): MR-J4-B-RJ020 + MR-J4-T20

↓

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]

Controller and servo system 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.

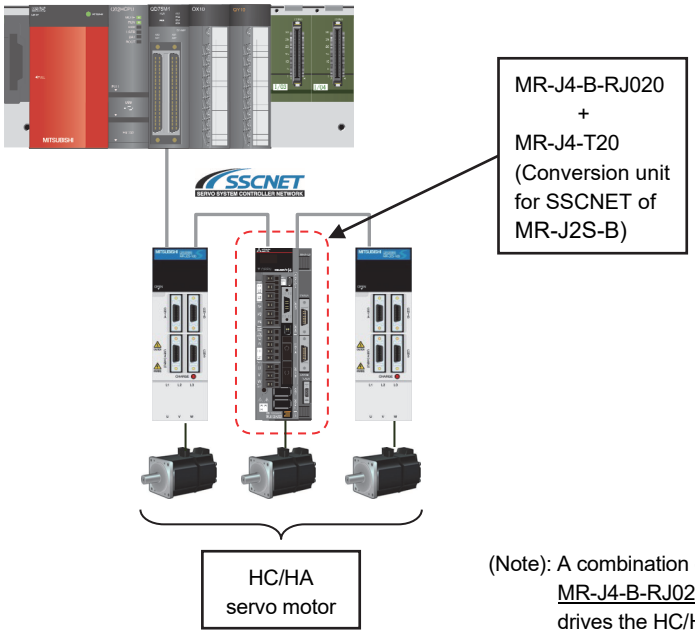
(Note): Remove MR-J4-T20.

(3) Separate repair [QD75M]

The following shows the procedure for the separate repair.

(a) When the MR-J2S-B servo amplifier has malfunctioned

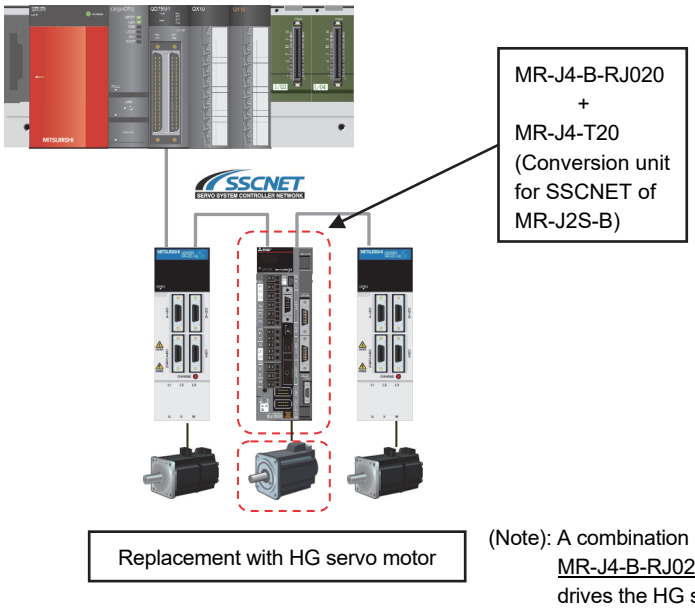
Replace only the servo amplifier.



(Note): A combination of MR-J4-B-RJ020 and MR-J4-T20 drives the HC/HA servo motors.

(b) When the HC/HA servo motor has malfunctioned

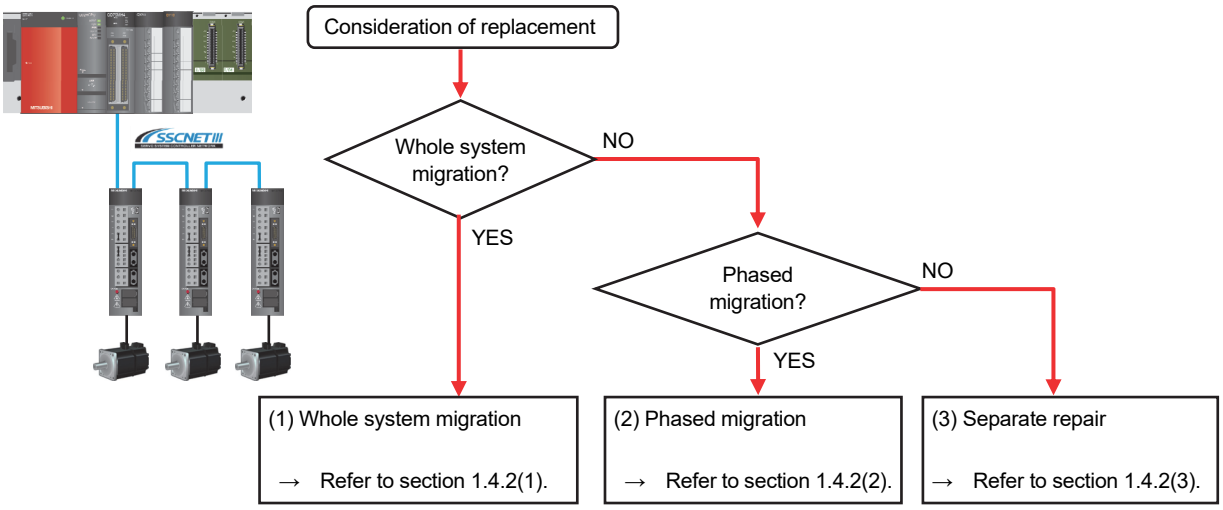
Simultaneously replace the servo amplifier and the malfunctioned servo motor.



(Note): A combination of MR-J4-B-RJ020 and MR-J4-T20 drives the HG servo motors.

1.4.2 Case study for QD75MH

The following describes a case study for migrating the existing system using QD75MH.



(1) Whole system migration (recommended)

The controller, servo amplifiers, servo motors, and servo system 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 1.4.2(1).)

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

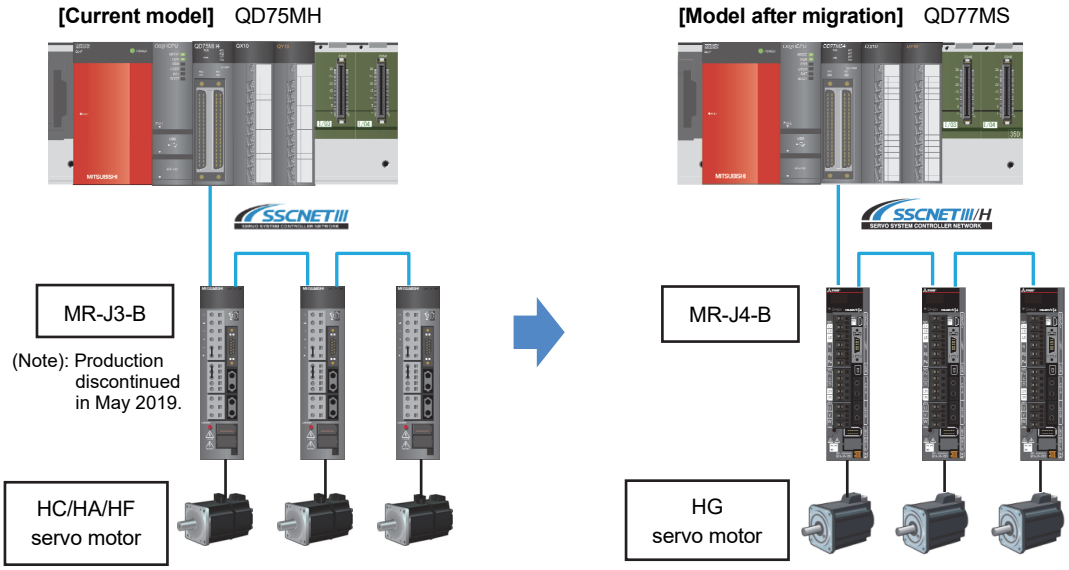
The controller is replaced with QD77MS in the first phase, and then the MR-J3-B servo amplifiers are gradually replaced with MR-J4-B.
(Refer to section 1.4.2(2).)

(3) Separate repair

This is a replacement method for when the controller, the servo amplifier, or the servo motor malfunctions.
(Refer to section 1.4.2(3).)

(1) Whole system migration (recommended) [QD75MH]

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



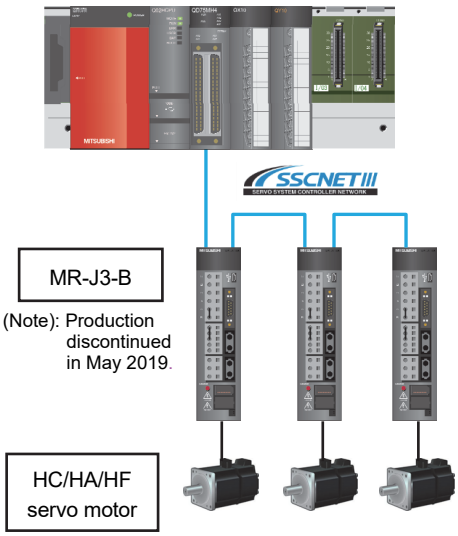
[Changes in the system]

Product name	Model before migration		Model after migration
Positioning module	QD75MH	→	QD77MS
Servo amplifier	MR-J3-B		MR-J4-B
Servo motor	HC/HA/HF series		HG series

(2) Phased migration [QD75MH]

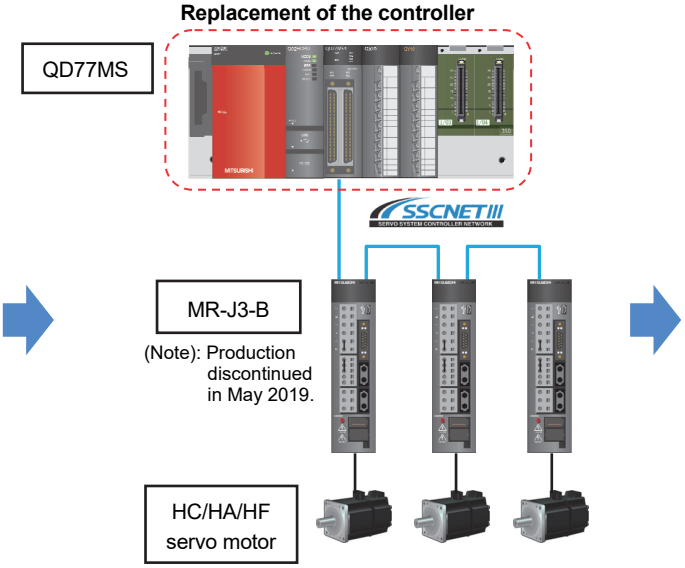
The following shows the procedure for the phased migration in which the controller is replaced with QD77MS in the first phase, and then the MR-J3-B servo amplifiers are gradually replaced with MR-J4-B in the following phases.

[Current model]



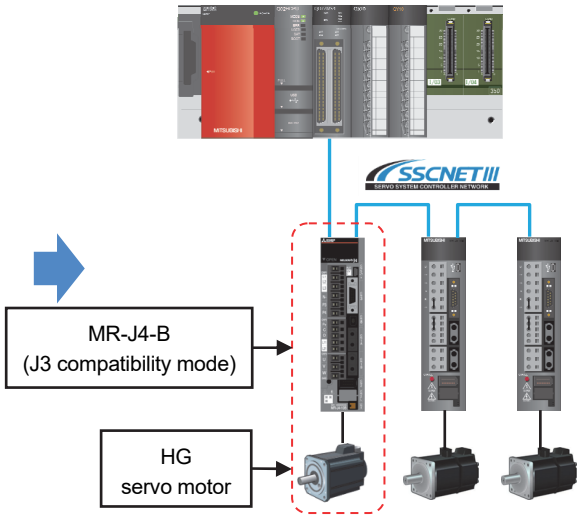
[Replacement - Phase 1]

Replacement of the controller



[Replacement - Phase 2]

Servo amplifier and servo motor replacement for only one axis

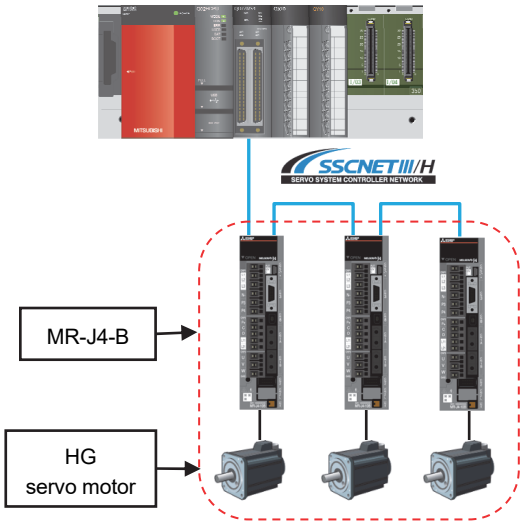


(Note): For replacing the servo amplifier or the servo motor, refer to "1.4.2(3) Separate repair".

(Note): For details of the J3 compatibility mode, refer to "Transition from MELSERVO-J3/J3W Series to J4 Series Handbook".

[Replacement - Phase 3]

Servo amplifier and servo motor replacement for all axes, and servo system network replacement



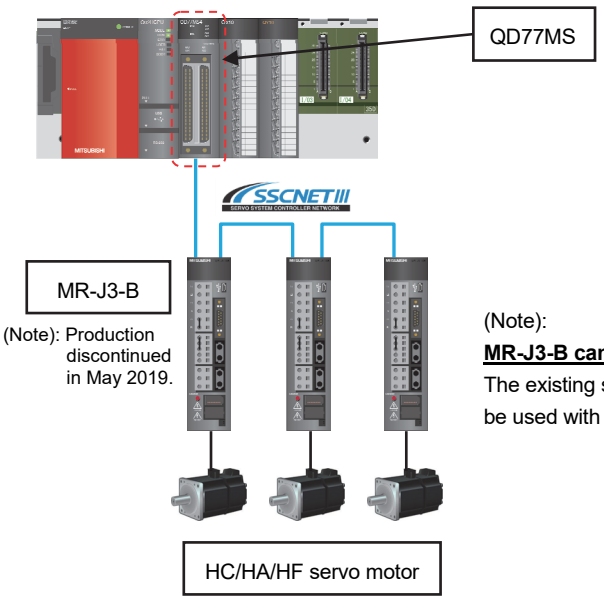
(Note): When replacing all the servo amplifiers with MR-J4-B, the operation mode can be switched from "J3 compatibility mode" to "J4 mode". The servo system network is also changed from SSCNETIII to SSCNETIII/H.

(3) Separate repair [QD75MH]

The following shows the procedure for the separate repair.

(a) When the controller has malfunctioned.

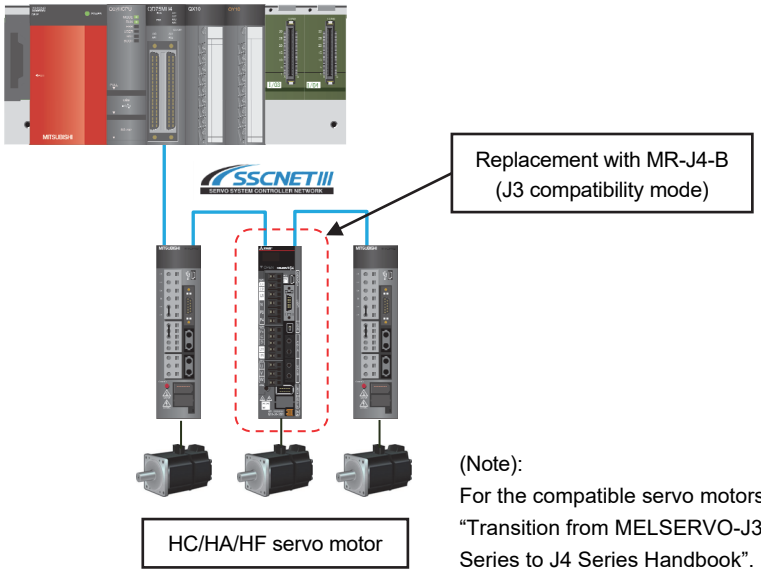
Replace only the controller.



(Note):
MR-J3-B can operate with the replaced controller
The existing servo amplifiers and servo motors can be used with the new controller.

(b) When the MR-J3-B servo amplifier has malfunctioned.

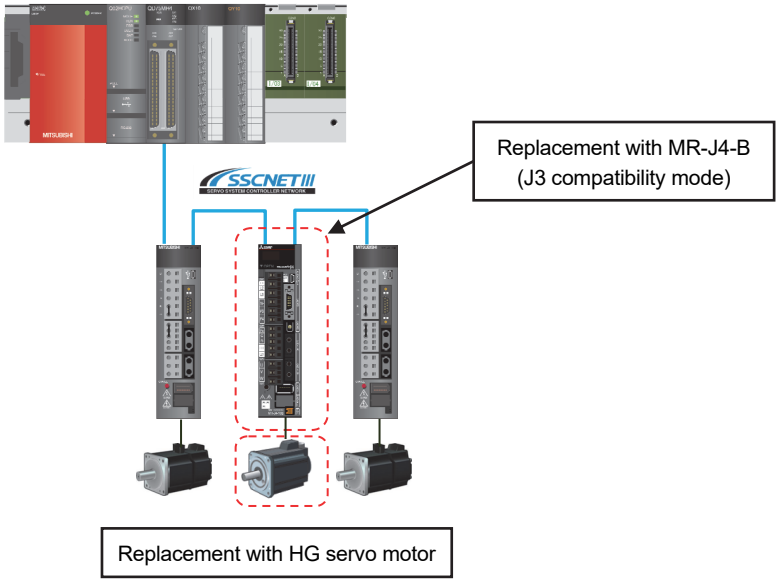
Replace only the servo amplifier.



(Note):
For the compatible servo motors, refer to "Transition from MELSERVO-J3/J3W Series to J4 Series Handbook".

(c) When the HC/HA/HF servo motor has malfunctioned

Simultaneously replace the servo amplifier and the malfunctioned servo motor.



1.5 Project Diversion

MELSOFT GX Works2 can convert the projects of QD75M/QD75MH into those of QD77MS.
For the procedure for project diversion, refer to the section below.

- QD75M ••• “2.4 Project Diversion”
- QD75MH ••• “3.4 Project Diversion”

1.6 Introduction of QD77MS16

The Simple Motion module QD77MS16 (up to 16 control axes) is also available.

	QD77MS16	QD77MS4	QD77MS2
Maximum number of control axes	16 axes	4 axes	2 axes
Command interface	SSCNETIII/H, SSCNETIII		
Maximum distance between stations [m]	100 (SSCNETIII/H), 50 (SSCNETIII)		
Maximum overall cable distance [m]	1600 (SSCNETIII/H) 800 (SSCNETIII)	400 (SSCNETIII/H) 200 (SSCNETIII)	200 (SSCNETIII/H) 100 (SSCNETIII)
Operation cycle [ms]	0.88, 1.77		

[Precaution at selection of QD77MS16]

The specification of I/O signals and the buffer memory address are different between QD77MS16 and QD75M1/QD75M2/QD75M4/QD75MH1/QD75MH2/QD75MH4. The I/O signals and the addresses in the sequence programs, etc., need to be replaced considering the differences.

For details, refer to section 3.3 and chapter 5 of “QD77MS Simple Motion Module User’s Manual (Positioning Control)”.

1.7 Relevant Documents

Refer to the following relevant documents for the replacement.

1.7.1 Relevant catalogs

MITSUBISHI ELECTRIC SERVO SYSTEM CONTROLLERS  L(NA)03062	SERVO AMPLIFIERS & MOTORS MELSERVO-J4  L(NA)03058
MELSERVO-J2-Super Transition Guide  L(NA)03091	Transition from MELSERVO-J2-Super/J2M Series to J4 Series Handbook  L(NA)03093
Transition from MELSERVO-J3/J3W Series to J4 Series Handbook  L(NA)03127	

1.7.2 Relevant manuals

(1) Simple Motion module

Manual title	Manual No.
MELSEC-Q QD77MS Simple Motion Module User's Manual (Positioning Control)	IB-0300185
QD77MS/QD77GF/LD77MS/LD77MH Simple Motion Module User's Manual (Synchronous Control)	IB-0300174
QD77MS2/QD77MS4/QD77MS16 Before Using the Product	BCN-B62008-300E

(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-030109ENG
MR-J4W2-_B/MR-J4W3-_B/MR-J4W2-0303B6 SERVO AMPLIFIER INSTRUCTION MANUAL	SH-030105

2. DETAILS OF MIGRATION FROM QD75M TO QD77MS

2.1 Table of Components and Software

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

Product name	Model before migration		Model after migration
Positioning module	QD75M1 QD75M2 QD75M4		[Simple Motion module] QD77MS2(Note-1) QD77MS4
External device connector	A6CON1, A6CON2, A6CON3, A6CON4		← (same as the left)
Manual pulse generator	MR-HDP01		MR-HDP01(Note-2)
SSCNET cable(Note-3)	MR-HBUS□M MR-J2HBUS□M		[SSCNETIII cable] MR-J3BUS□M MR-J3BUS□M-A MR-J3BUS□M-B(Note-4)

(Note-1): The number of control axes is increased from 1 to 2.

(Note-2): The existing MR-HDP01 can be used continuously with QD77MS.
In addition, Mitsubishi Electric has also 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 (100 pulse/rev after magnification by 4)	Nemicon Corporation

(Note-3): "□" 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-4): For a long distance cable of up to 100 m or an ultra-long bending life cable, contact Mitsubishi Electric System & Service Co., Ltd.
OVERSEAS SERVICE SECTION (Email: osb.webmaster@melsc.jp)

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 migration from QD75M				After migration to QD77MS		
Servo amplifier		Servo motor		Servo amplifier		Servo motor
MR-J2S series	MR-J2S-□B	HC-KFS□ HC-MFS□ HC-SFS□ HC-LFS□ HC-RFS□ HA-LFS□ HC-UFS□		MR-J4 series	MR-J4-□B(-RJ) MR-J4W2-□B MR-J4W3-□B	HG-KR□ HG-MR□ HG-SR□ HG-RR□ HG-UR□ HG-JR□
MR-J2M series	MR-J2M-□DU	HC-KFS□ HC-MFS□ HC-UFS□				
MR-H series	MR-H□B(N)	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□ 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)

[Comparison of servo system network]

Item		SSCNET SERVO SYSTEM CONTROLLER NETWORK		SSCNETIII/H 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		0.22 ms/0.44 ms/0.88 ms
	Receive	3.55 ms		0.22 ms/0.44 ms/0.88 ms
Number of control axes		Up to 8 axes/line		Up to 16 axes/line
Transmission distance		Maximum overall distance: 30 m		[Standard code for inside panel and standard cable for outside panel] Up to 20 m between stations Maximum overall distance: 320 m (20 m × 16 axes) [Long distance cable] Up to 100 m between stations Maximum overall distance: 1600 m (100 m × 16 axes)

2.1.2 Engineering environment (required)

The engineering environment that supports QD77MS is as follows.

Product name	Model	Version
MELSOFT GX Works2	SW1DND-GXW2-E	Ver.1.576A or later
MELSOFT MR Configurator2(Note-1)	SW1DNC-MRC2-E	Ver.1.12N 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.

2.2 Differences Between QD75M and QD77MS

(1) Performance and specifications

▶ An item that requires a setting change at migration.

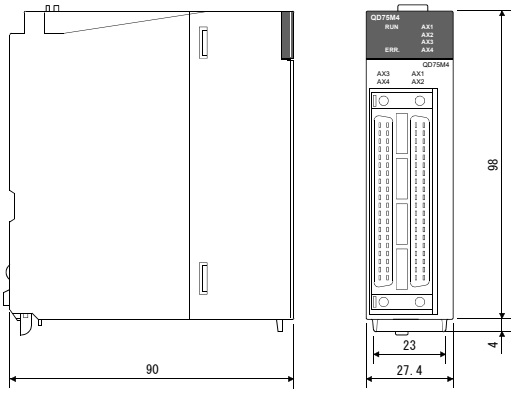
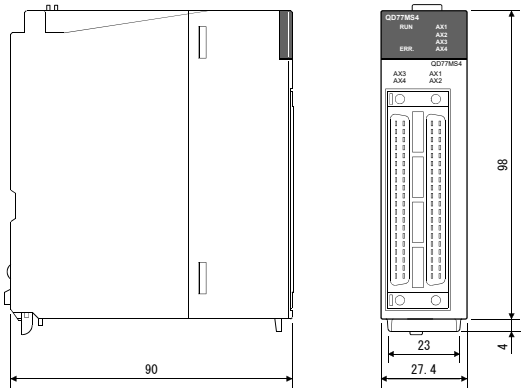
<table>
<tr><th colspan="2">Item \ Model</th><th>QD75M1</th><th>QD75M2</th><th>QD75M4</th><th>QD77MS2</th><th>QD77MS4</th><th>Points for migration</th></tr>
<tr><td colspan="2">Maximum number of control axes</td><td>1</td><td>2</td><td>4</td><td>2</td><td>4</td><td>–</td></tr>
<tr><td colspan="2">Operation cycle</td><td colspan="3">3.55 ms</td><td colspan="2">0.88 ms/1.77 ms</td><td>▶The change in the operation cycle may change program execution timing.
Revise the programs as needed.</td></tr>
<tr><td rowspan="2">Control method</td><td>Speed-torque</td><td colspan="3">Not provided</td><td colspan="2">Provided</td><td>–</td></tr>
<tr><td>Synchronous</td><td colspan="3">Not provided</td><td colspan="2">Provided</td><td>–</td></tr>
<tr><td rowspan="2">Starting time (1-axis linear control)</td><td>Trapezoidal acceleration/ deceleration</td><td colspan="3">6.0 ms</td><td colspan="2" rowspan="2">0.88 ms</td><td rowspan="2">–</td></tr>
<tr><td>S-curve acceleration/ deceleration</td><td colspan="3">6.5 ms</td></tr>
<tr><td colspan="2">Servo system network</td><td colspan="3">SSCNET</td><td colspan="2">SSCNETIII/H or SSCNETIII</td><td>▶Select a servo system network which is compatible with the devices to be connected such as servo amplifiers.
Pr.97 0: SSCNETIII
1: SSCNETIII/H</td></tr>
<tr><td colspan="2">Servo amplifier</td><td colspan="3">MR-J2S-□B/MR-J2M-□DU/
MR-H-□B(N)/
MR-J2-□B/MR-J2-03B5</td><td colspan="2">MR-J4-□B(-RJ)/
MR-J4W2-□B/MR-J4W3-□B/
MR-J4W2-0303B6</td><td>–</td></tr>
<tr><td colspan="2" rowspan="2">Refresh cycle for monitor data</td><td rowspan="2">56.8ms</td><td colspan="2">Feed machine value,
Feed speed,
Axis feedrate,
External input signal,
Forced stop input</td><td colspan="2" rowspan="2">Operation cycle</td><td rowspan="2">–</td></tr>
<tr><td>3.55ms</td><td colspan="2">Except for above</td></tr>
<tr><td rowspan="2">Maximum frequency for manual pulse generator/ incremental synchronous encoder input</td><td>Signal input form</td><td colspan="3">Voltage output/open collector type</td><td colspan="2">Differential output type,
Voltage output/open collector type</td><td>–</td></tr>
<tr><td>1 pulse input magnification</td><td colspan="3">1 to 100</td><td colspan="2">1 to 10000</td><td>–</td></tr>
<tr><td colspan="2">Machine home position return
(Home position return method)</td><td colspan="3">4 types
(Proximity dog method,
Count method1, Count method2,
Data set method)</td><td colspan="2">6 types
(Proximity dog method,
Count method1, Count method2,
Data set method, Scale home position signal detection method, Driver home position return method(Note-1))</td><td>–</td></tr>
</table>

(Continued)

Item \ Model	QD75M1	QD75M2	QD75M4	QD77MS2	QD77MS4	Points for migration
External signal selection function	Not provided (External input signal of QD75M only)			• External input signal of QD77MS (FLS, RLS, DOG, STOP, DI) • External input signal of servo amplifier (FLS, RLS, DOG) • External input signal via CPU (Buffer memory: FLS, RLS, DOG)		▶Confirm there is no problem with the connection of external input signals if the manual pulse generator in use is other than MR-HDP01. (Refer to section 2.3.2.)
Torque change function	Forward/reverse torque limit value same setting			Forward/reverse torque limit value same setting, individual setting		No need to change the setting since the default setting is “0: Forward/reverse torque limit value same setting”.
Amplifier-less operation function	Not provided			Provided		–
Virtual servo amplifier function	Not provided			Provided		–
Mark detection function	Not provided			Provided		–
Optional data monitor function	Not provided			Provided		–
Module error collection function	Not provided			Provided		–
Connect/disconnect of SSCNET communication	Not provided (No need to set)			Provided		–
History data (start, error, warning)	Time (hour, minute, second)			Date and time (year, month, day, hour, minute, second)		–
External command signal: Switching signal	CHG signal (Select whether the signal starts positioning or performs speed-position switching with parameter settings)			DI signal (Select whether the signal starts positioning or performs speed-position switching with parameter settings)		The signal name has been changed.
Speed-position/position-speed switching control	Switched by external command signal (CHG)			Switched by the external command signal (DI) or the proximity dog signal (DOG), which is set with “Pr.42 External command function selection”		The signal name has been changed.
Engineering environment	MELSOFT GX Works2 MELSOFT GX Developer MELSOFT GX Configurator-QP			MELSOFT GX Works2 MELSOFT MR Configurator2		–

(Note-1): The home position return set in driver (servo amplifier) is used.

(2) Exterior dimensions and mass

	QD75M1	QD75M2	QD75M4	QD77MS2	QD77MS4
Exterior dimensions [mm]					
	98.0[H]×27.4[W]×90.0[D]			98.0[H]×27.4[W]×90.0[D]	
Mass [kg]	0.15		0.16	0.15	0.16
Internal current consumption (5 VDC) [A]	0.4			0.6	

(3) Parameter setting

► An item that requires a setting change at migration.

Function	Specification		Points for migration
	QD75M	QD77MS	
Pr.24 Manual pulse generator/ incremental synchronous encoder input selection	Input selection for the manual pulse generator	Input selection for the manual pulse generator/incremental synchronous encoder	The parameter name has been changed.
Pr.55 Operation setting for incompletion of home position return	– (Positioning control can be executed without completion of home position return.)	0: Positioning control is not executed. 1: Positioning control is executed.	►The default setting is "0: Positioning control is not executed". Change it to "1: Positioning control is executed".
Pr.80 External input signal selection	– (External input signals of QD75M are used)	0: External input signal of QD77MS 1: External input signal of servo amplifier 2: Buffer memory of QD77MS	–
Pr.82 Forced stop valid/invalid selection	– (Forced stop is not available)	0: Valid (External input signal) 1: Invalid 2: Valid (Buffer memory)	►The default setting is "0: Valid (External input signal)". Change it to "1: Invalid".
Pr.84 Restart allowable range when servo OFF to ON	Pr.201 Restart allowable range when servo OFF to ON	Pr.84 Restart allowable range when servo OFF to ON	The parameter No. has been changed.
Pr.96 Operation cycle setting	–	0: 0.88ms 1: 1.77ms	►The change in the operation cycle may change program execution timing. Revise the programs as needed.
Pr.97 SSCNET setting		0: SSCNETIII 1: SSCNETIII/H	–
Start history	Indicates the start time by hour, minute, and second. Md.5 Start (Hour) Md.6 Start (Minute: second)	Indicates the start time by year, month, day, hour, minute, and second. Md.54 Start (Year: month) Md.5 Start (Day: hour) Md.6 Start (Minute: second)	More time information (Md.54 Year: month and Md.5 Day) is added. Review the program as needed.
Axis error occurrence time	Indicates the axis error occurrence time by hour, minute, and second. Md.11 Axis error occurrence (Hour) Md.12 Axis error occurrence (Minute: second)	Indicates the axis error occurrence time by year, month, day, hour, minute, and second. Md.55 Axis error occurrence (Year: month) Md.11 Axis error occurrence (Day: hour) Md.12 Axis error occurrence (Minute: second)	More time information (Md.55 Year: month and Md.11 Day) is added. Revise the program as needed.

(Continued)

Function	Specification		Points for migration
	QD75M	QD77MS	
Axis warning occurrence time	Indicates the axis warning occurrence time by hour, minute, and second. Md.16 Axis warning occurrence (Hour) Md.17 Axis warning occurrence (Minute: second)	Indicates the axis warning occurrence time by year, month, day, hour, minute, and second. Md.56 Axis warning occurrence (Year: month) Md.16 Axis warning occurrence (Day: hour) Md.17 Axis warning occurrence (Minute: second)	More time information (Md.56 Year: month and Md.16 Day) is added. Review the program as needed.
Md.105 Servo parameter	This area stores the parameters currently used by the servo amplifier.	No monitor data for the servo parameters. (The parameters are reflected in the buffer memory for servo parameter settings.)	-
Md.107 Parameter error No.	When a servo error occurs, the corresponding bit turns ON, and the error is stored in the buffer memory.	When a servo error occurs, the value corresponding to the parameter No. is stored in Md.107.	The monitoring method of servo error has been changed.
Md.108 Servo status	1-word data b0 : READY ON b1 : Servo ON b4 : Zero point pass b5 : In-position b6 : Zero speed b7 : Torque limit b13: Servo alarm b14: Servo warning	2-word data [Low-order buffer memory] b0 : Zero point pass b3 : Zero speed b4 : Speed limit b8 : PID control [High-order buffer memory] b0 : READY ON b1 : Servo ON b2,b3: Control mode b4 : Gain switching b5 : Fully closed loop control b7 : Servo alarm b12 : In-position b13 : Torque limit b14 : Absolute position lost b15 : Servo warning	▶The servo status has been changed from 1-word to 2-word data. Review the program as needed.
Cd.24 Speed-position switching enable flag	0: Speed control will not be taken over by position control even when the external command signal [CHG] comes ON. 1: Speed control will be taken over by position control when the external command signal [CHG] comes ON.	0: Speed control will not be taken over by position control even when the signal set in "Cd.45 Speed-position switching device selection" comes ON. 1: Speed control will be taken over by position control even when the signal set in "Cd.45 Speed-position switching device selection" comes ON.	▶The external command signal name has been changed from “CHG” to “DI”. In order to use the external command signal [DI] for speed-position switching, set "Cd.45 Speed-position switching device selection" to [0: Use the external command signal for switching from speed control to position control].

(Continued)

Function	Specification		Points for migration
	QD75M	QD77MS	
Cd.26 Position-speed switching enable flag	0: Position control will not be taken over by speed control even when the external command signal [CHG] comes ON. 1: Position control will be taken over by speed control when the external command signal [CHG] comes ON.	0: Position control will not be taken over by speed control even when the signal set in "Cd.45 Speed-position switching device selection" comes ON. 1: Position control will be taken over by speed control when the signal set in "Cd.45 Speed-position switching device selection" comes ON.	▶The external command signal name has been changed from “CHG” to “DI”. In order to use the external command signal [DI] for position-speed switching, set "Cd.45 Speed-position switching device selection" to [0: Use the external command signal for switching from position control to speed control].
Cd.45 Speed-position switching device selection	–	[Speed-position switching control] 0: Use the external command signal for switching from speed control to position control. 1: Use the proximity dog signal for switching from speed control to position control 2: Use "Cd.46 Speed-position switching command" for switching from speed control to position control [Position-speed switching control] 0: Use the external command signal for switching from position control to speed control. 1: Use the proximity dog signal for switching from position control to speed control 2: Use "Cd.46 Speed-position switching command" for switching from position control to speed control	–
Cd.46 Speed-position switching command	–	[Speed-position switching control] 0: Not switch from speed control to position control 1: Switch from speed control to position control [Position-speed switching control] 0: Not switch from position control to speed control 1: Switch from position control to speed control	–

(Continued)

Function	Specification		Points for migration
	QD75M	QD77MS	
Cd.102 SSCNET control command	Cd.102 Servo amplifier data read 0: Servo amplifier read complete 1: Servo amplifier read request	Cd.102 SSCNET control command The connect/disconnect command of SSCNET communication is executed.	A change in control data function ▶QD77MS automatically reads parameters in the servo amplifier, and the read parameters can be checked with the buffer memory.

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

Items	Differences		Change/revision
	QD75M	QD77MS	
Electronic gear	–	–	Change "Pr.2 Number of pulses per rotation" and "Pr.3 Movement amount per rotation" of the basic parameter 1 according to the resolution per the connected servo motor rotation.
Positioning data	–	–	Review the positioing data while taking into account the differences in resolution per the connected servo motor rotation and the setting changes in the electronic gear above.
Powering OFF a servo amplifier in the same network line	If a servo amplifier in SSCNET line is turned OFF, there is no influence on the servo amplifiers on subsequent axes.	If a servo amplifier in SSCNET line is turned OFF, the servo amplifiers on subsequent axes cannot be used.	Use the connect/disconnect function of SSCNET communication to turn OFF/ON the servo amplifier's power supply in SSCNET communication.
Main circuit OFF warning	If the main circuit is turned OFF while "Cd.100 Servo OFF command" is ON, the main circuit OFF warning 2149(E9) will not occur.	If the main circuit is turned OFF while "Cd.100 Servo OFF command" is ON, the main circuit OFF warning 2149(E9) will occur.	The warning occurs when the main circuit is turned OFF while "Cd.100 Servo OFF command" is ON. In order not to turn ON the main circuit OFF warning 2149(E9), change the PC18 servo parameter from "0□□□(H)" to "1□□□(H)".

2.3 Connection of Manual Pulse Generator

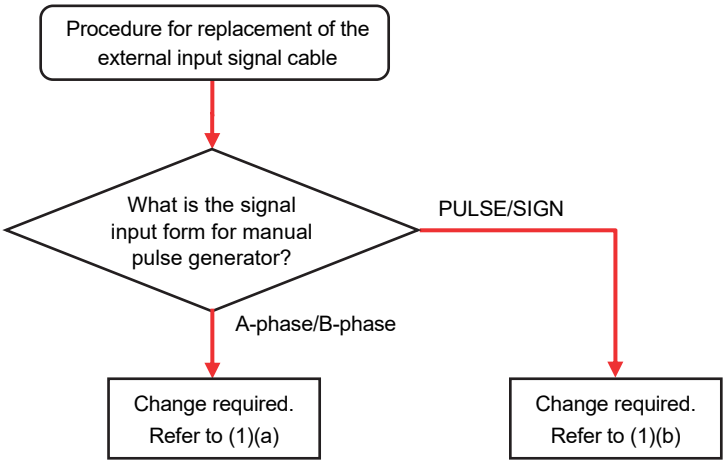
2.3.1 Comparison of pin layout

The signal layout of the external device connection connector differs between QD75M and QD77MS. Since QD77MS is provided with a 5 VDC power supply output for manual pulse generator, the internal connection of the external input signal cable needs to be changed at replacement.
The following shows the differences in pin layout between QD75M and QD77MS.

QD75M					QD77MS			
Pin No.	Signal name	Pin No.	Signal name		Pin No.	Signal name	Pin No.	Signal name
1B20	PULSER B-	1A20	PULSER B+		1B20	HB	1A20	5V
1B19	PULSER A-	1A19	PULSER A+		1B19	HA	1A19	5V
1B18	No connect	1A18	No connect		1B18	HBL	1A18	HBH
1B17	No connect	1A17	No connect		1B17	HAL	1A17	HAH
1B15	No connect	1A15	No connect		1B15	5V	1A15	5V
1B14	No connect	1A14	No connect		1B14	SG	1A14	SG

2.3.2 External input signal cable replacement

Replace the external input signal cable by following the flowchart below.



[Precaution at replacement of the external input signal cable]

Set "1: Voltage-output/open-collector type" in "Pr.89 Manual pulse generator/Incremental synchronous encoder input type selection" if the manual pulse generator/incremental synchronous encoder of voltage-output/open-collector type is used.

The default value is "1: Voltage-output/open-collector type".

Set the signal input form according to the program with "Pr.24 Manual pulse generator/Incremental synchronous encoder input selection".

The 5 VDC power supply from the Simple Motion module must not be used if a separate power supply is applied to the manual pulse generator/incremental synchronous encoder.

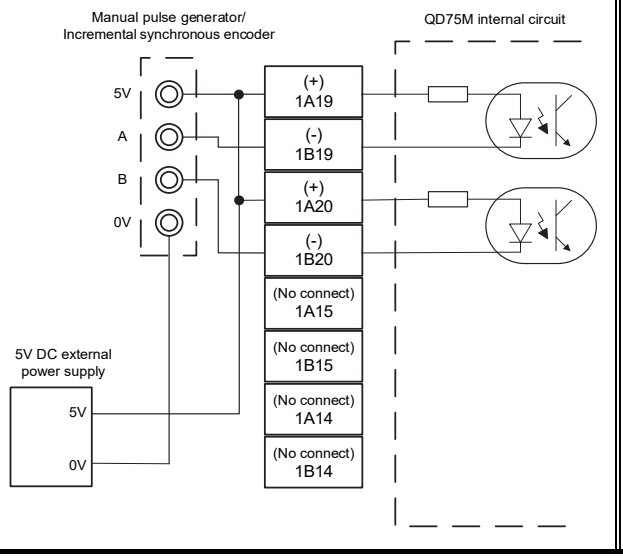
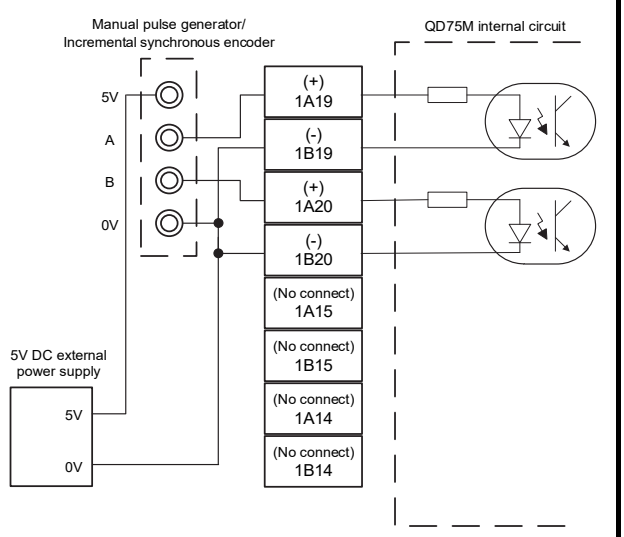
If a separate power supply is used, use a stabilized power supply of voltage 5 VDC (±5% recommended). Use of a power supply with different voltage may cause a failure.

The connection terminals for the manual pulse generator of QD77MS Simple Motion module (1A20 to 1A17, 1B20 to 1B17) are not electrically isolated. Therefore, **be sure to connect the 0 V (-) of the manual pulse generator/incremental synchronous encoder and the SG of QD77MS when using a separate power supply. Failure to do so may result in malfunction.**

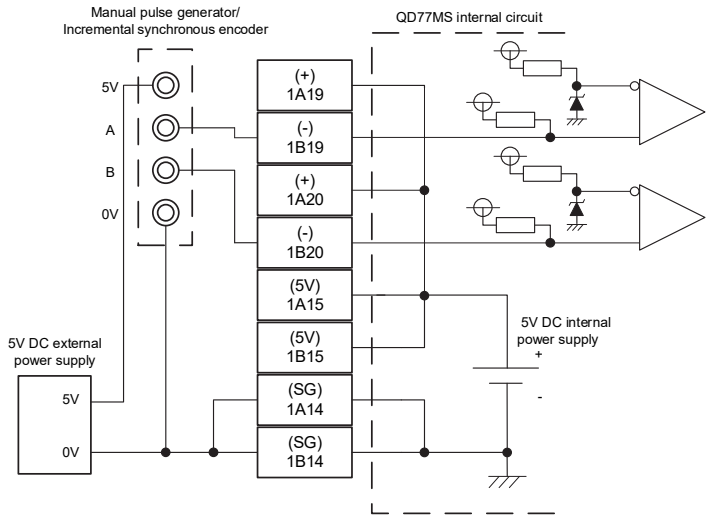
Refer to "MELSEC-Q QD77MS Simple Motion Module User's Manual (Positioning Control)" for details of wiring of the external input signal cable.

(1) Wiring example for external input signal cable

(a) When the signal input form is A-phase/B-phase

A-phase/B-phase input (5 V common)	A-phase/B-phase input (0 V common)
	
QD75M external input signal cable needs to be chaged to **Pattern A.**	

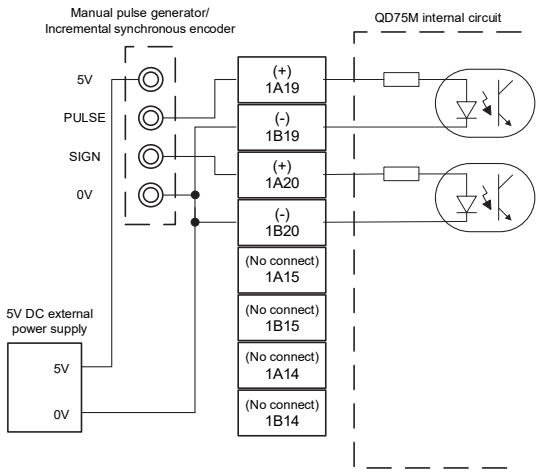
Pattern A



The external power supply must be a stabilized power supply of voltage 5 VDC (±5% recommended).
Use of a power supply with different voltage may cause a failure.

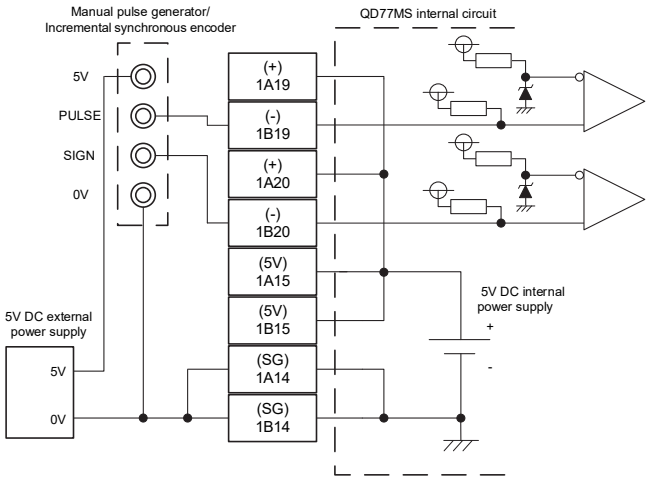
(b) When the signal input form is PULSE/SIGN

PULSE/SIGN input



QD75M external input signal cable needs to be chaged to **Pattern B.**

Pattern B



The external power supply must be a stabilized power supply of voltage 5 VDC (±5% recommended).
Use of a power supply with different voltage may cause a failure.

2.4 Project Diversion

2.4.1 Project diversion procedures by engineering environment

The contents of this document are based on the specifications of the engineering environment (MELSOFT GX Works2 Ver.1.576A). Update to the latest version when replacing.

(1) Procedures for QD75M projects diversion by MELSOFT GX Works2

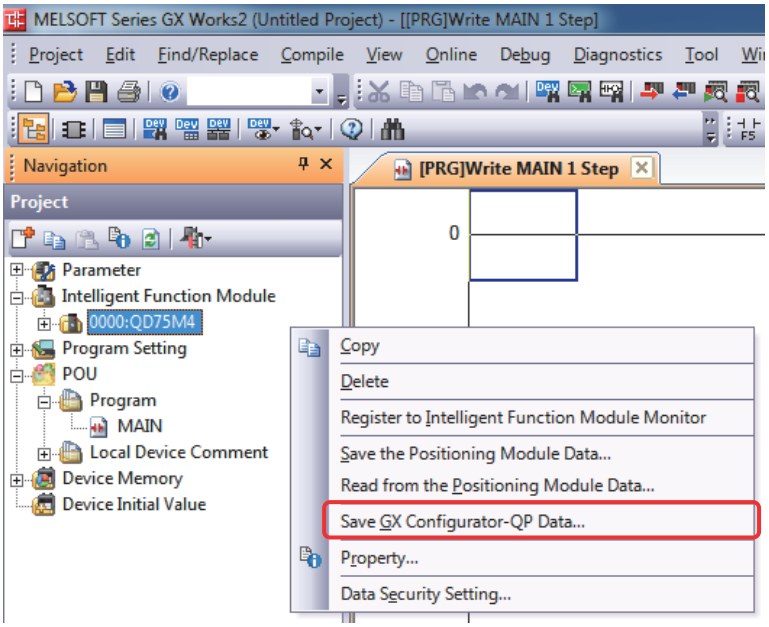
MELSOFT GX Works2 (Simple Motion module setting tool) cannot directly read QD75M data. Therefore, the diversion is carried out after the data is saved in MELSOFT GX Configurator-QP format.

The following shows the diversion procedure.

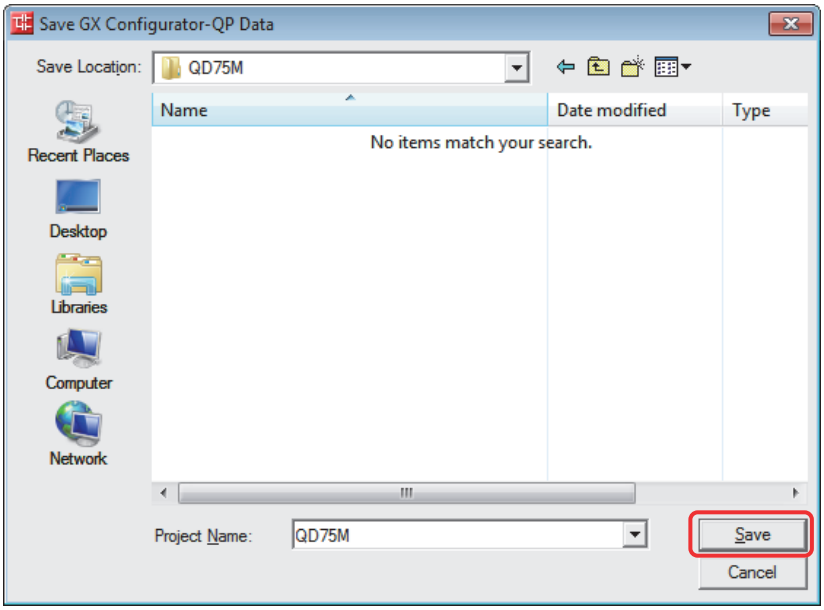
1) Start MELSOFT GX Works2. Read the project to be diverted.

2) Select “QD75M” from “Intelligent function module” in project view of the navigation window, and right-click on it.

3) Select “Save GX Configurator-QP Data” from the context menu to open “Save GX Configurator-QP Data” screen.



4) Enter the project name, and click [Save].



Saving in MELSOFT GX Configurator-QP format is complete.

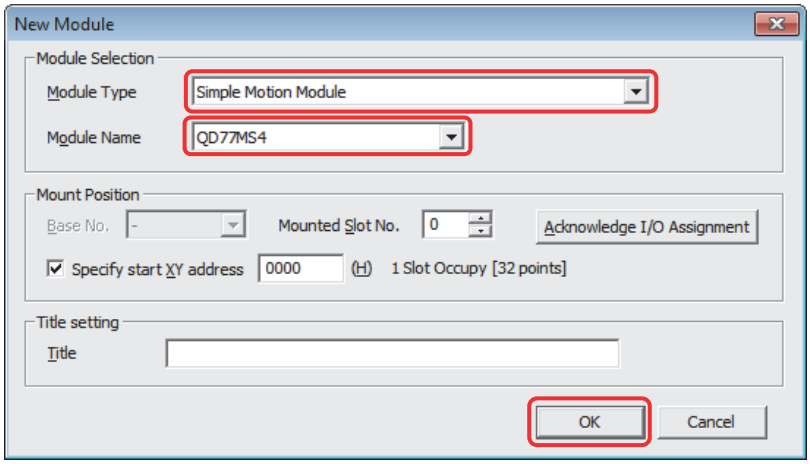
(2) Procedures for QD77MS project creation by MELSOFT GX Works2

The following shows the project creation procedure.

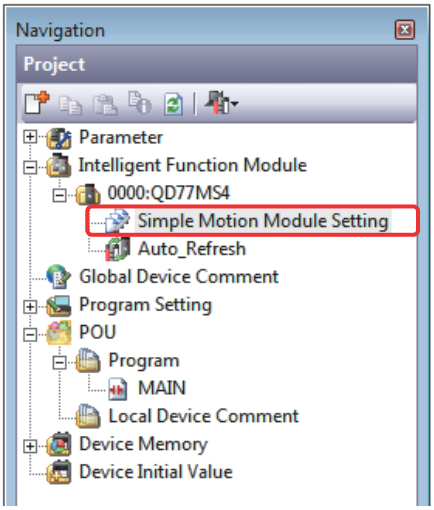
1) Start MELSOFT GX Works2.

2) Create a new Q-series project. Select [Project] → [Intelligent function module] → [New Module] to open [New Module] window.

3) Select “Simple Motion Module” for “Module Type” and the replaced Simple Motion module model for “Module Name” (the setting example below: QD77MS4), and then set “Mount Position” and “Title setting” according to your system.
Click “OK”.

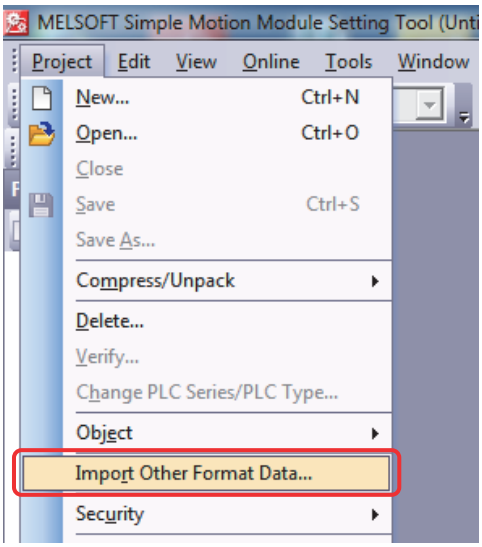


4) Select [Project] → [Intelligent function module], and double click [Simple Motion module setting] to start up the “Simple Motion Module Setting Tool”.

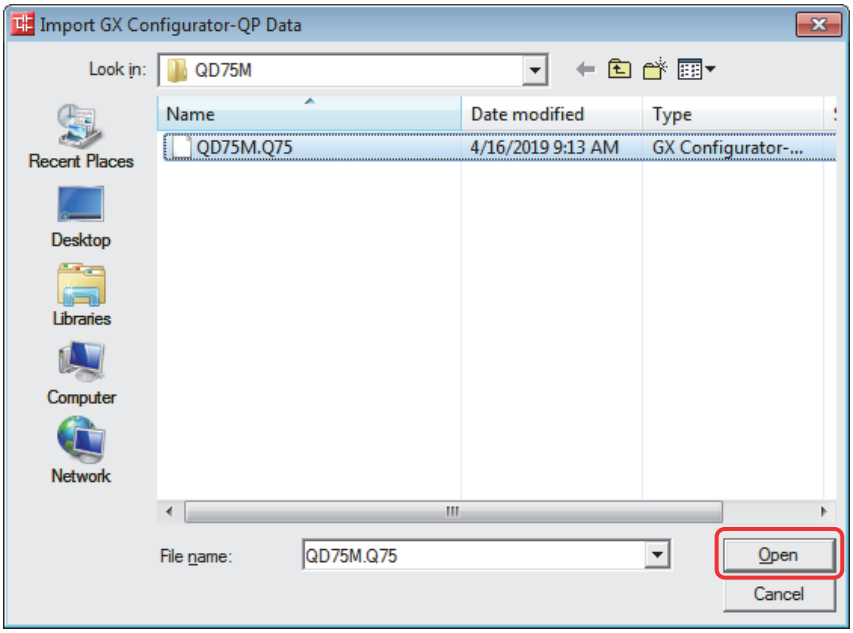


The following shows the diversion procedure by the Simple Motion Module Setting Tool.

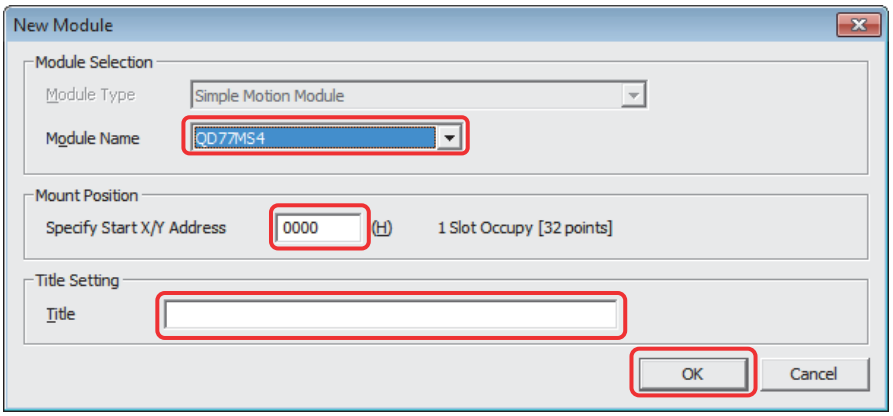
5) Select [Project] → [Import Other Format Data].



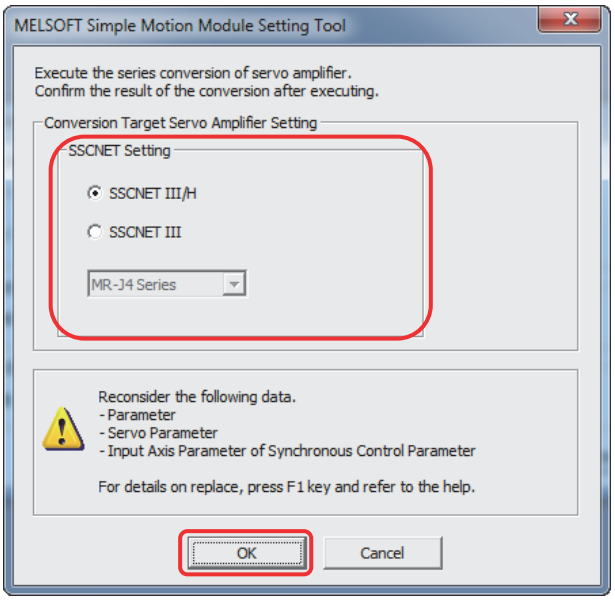
6) Select the project files to be diverted in GX Configurator-QP format, and click “Open”.



7) Set “Module Name”, “Mount Position” and “Title Setting” on [New Module] screen, and click “OK”.
Match the settings in 3) for the “Module Name” and “Mount Position”.



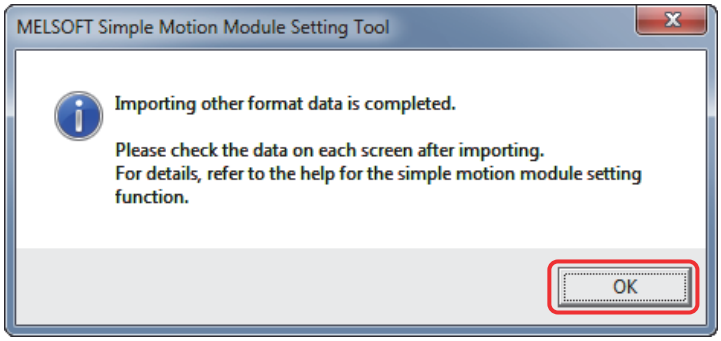
8) Execute the series conversion of the servo amplifier. Select the network to be used for the replaced servo amplifiers, and click [OK].



(Note): Refer to “MELSEC-Q QD77MS Simple Motion Module User's Manual (Positioning Control)” for the servo system 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 “Simple Motion Module Setting Help [Appendix] - [Servo parameter conversion]” for the conversion rules.

9) When the project diversion completion message appears, click “OK”. Be sure to check the imported data.



The diversion is completed.

Before writing to the Simple Motion module, be sure to confirm the validity of the diverted parameters.

3. DETAILS OF MIGRATION FROM QD75MH TO QD77MS

3.1 Table of Components and Software

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

Product name	Model before migration		Model after migration
Positioning module	QD75MH1 QD75MH2 QD75MH4		[Simple Motion module] QD77MS2(Note-1) QD77MS4
External device connector	A6CON1, A6CON2, A6CON3, A6CON4		← (same as the left)
Manual pulse generator	MR-HDP01		MR-HDP01(Note-2)
SSCNETIII cable(Note-3)	MR-J3BUS□M MR-J3BUS□M-A MR-J3BUS□M-B(Note-4)		← (same as the left)

(Note-1): The number of control axes is increased from 1 to 2.

(Note-2): The existing MR-HDP01 can be used continuously with QD77MS.
In addition, Mitsubishi Electric has also 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 (100 pulse/rev after magnification by 4)	Nemicon Corporation

(Note-3): "□" 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-4): For a long distance cable of up to 100 m or an ultra-long bending life cable, contact Mitsubishi Electric System & Service Co., Ltd.
OVERSEAS SERVICE SECTION (Email: osb.webmaster@melsc.jp)

3.1.1 Servo amplifiers and servo motors

The servo system network is changed from SSCNETIII to SSCNETIII/H.
Select a SSCNETIII/H compatible servo amplifier and a servo motor connectable to the selected servo amplifier.

(1) Servo amplifiers/Rotary servo motors

Before migration from QD75MH				After migration to QD77MS		
Servo amplifier		Rotary servo motor		Servo amplifier		Rotary servo motor
MR-J3 series	MR-J3-☐B MR-J3W-☐B MR-J3-☐BS MR-J3-☐B-RJ006	HF-KP☐ HF-MP☐ HF-SP☐ HF-JP☐ HC-LP☐ HC-RP☐ HC-UP☐ HA-LP☐	→	MR-J4 series	MR-J4-☐B(-RJ) MR-J4W2-☐B MR-J4W3-☐B	HG-KR☐ HG-MR☐ HG-SR☐ HG-RR☐ HG-UR☐ HG-JR☐

(2) Servo amplifiers/Linear servo motors

Before migration from QD75MH				After migration to QD77MS		
Servo amplifier		Linear servo motor		Servo amplifier		Linear servo motor
MR-J3 series	MR-J3-☐B-RJ004	LM-H2☐ LM-F☐ LM-K2☐ LM-U2☐	→	MR-J4 series	MR-J4-☐B(-RJ) MR-J4W2-☐B MR-J4W3-☐B	LM-H3☐ LM-F☐ LM-K2☐ LM-U2☐

(3) Servo amplifiers/Direct drive motors

Before migration from QD75MH				After migration to QD77MS		
Servo amplifier		Direct drive motor		Servo amplifier		Direct drive motor
MR-J3 series	MR-J3-☐B-RJ080W	TM-RFM☐	→	MR-J4 series	MR-J4-☐B(-RJ) MR-J4W2-☐B MR-J4W3-☐B	TM-RFM☐

(4) Comparison of servo system network

Item		SSCNETIII	SSCNETIII/H
Communications medium		Optical fiber cable	← (same as SSCNETIII)
Communications speed		50 Mbps	150 Mbps
Communications cycle	Send	0.44 ms/0.88 ms	0.22 ms/0.44 ms/0.88 ms
	Receive	0.44 ms/0.88 ms	0.22 ms/0.44 ms/0.88 ms
Number of control axes		Up to 16 axes/line	← (same as SSCNETIII)
Transmission distance		[Standard code for inside panel] Up to 3 m between stations Maximum overall distance: 48 m (3 m × 16 axes) [Standard cable for outside panel] Up to 20 m between stations Maximum overall distance: 320 m (20 m × 16 axes)	[Standard code for inside panel and standard cable for outside panel] Up to 20 m between stations Maximum overall distance: 320 m (20 m × 16 axes)
		[Long distance cable] Up to 50 m between stations Maximum overall distance: 800 m (50 m × 16 axes)	[Long distance cable] Up to 100 m between stations Maximum overall distance: 1600 m (100 m × 16 axes)

3.1.2 Engineering environment (required)

The engineering environment that supports QD77MS is as follows.

Product name	Model	Version
MELSOFT GX Works2	SW1DND-GXW2-E	Ver.1.576A or later
MELSOFT MR Configurator2	SW1DNC-MRC2-E	Ver.1.12N or later

3.2 Differences Between QD75MH and QD77MS

(1) Performance and specifications

▶ An item that requires a setting change at migration.

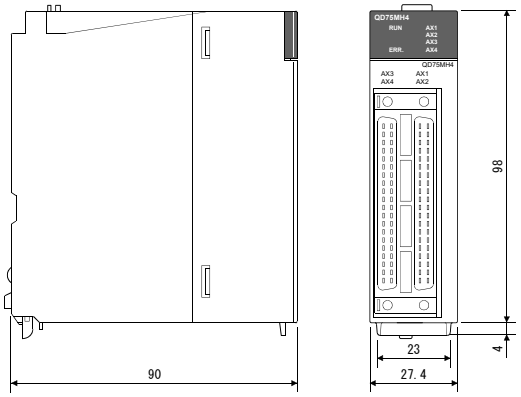
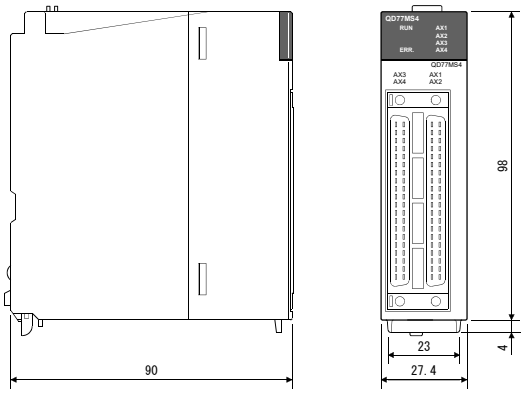
Item \ Model		QD75MH1	QD75MH2	QD75MH4	QD77MS2	QD77MS4	Points for migration
Maximum number of control axes		1	2	4	2	4	−
Operation cycle		1.77 ms			0.88 ms/1.77 ms		▶The change in the operation cycle may change program execution timing. Revise the programs as needed.
Control method	Speed-torque	Not provided			Provided		−
	Synchronous	Not provided			Provided		−
Starting time (1-axis linear control)	Trapezoidal acceleration/ deceleration	3.5ms			0.88 ms		−
	S-curve acceleration/ deceleration	4.0ms					
Servo system network		SSCNETIII			SSCNETIII/H or SSCNETIII		▶Select a servo system network which is compatible with the devices to be connected such as servo amplifiers. Pr.97 0: SSCNETIII 1: SSCNETIII/H
Servo amplifier		MR-J3-☐B/MR-J3W-☐B/ MR-J3-☐BS/MR-J3W-☐B-RJ006/ MR-J3-☐B-RJ004/ MR-J3-☐B-RJ080W			MR-J4-☐B(-RJ)/ MR-J4W2-☐B/MR-J4W3-☐B		−
Servo parameter group	SSCNETIII/H	Not provided			PA, PB, PC, PD, PE, PS, PF, Po, PL		−
	SSCNETIII	PA, PB, PC, PD, PE, PS			PA, PB, PC, PD, PE, PS, PF, Po		−
Refresh cycle for monitor data		56.8ms	Feed machine value, Feed speed, Axis feedrate, External input signal, Forced stop input		Operation cycle		−
		1.77ms	Except for above				
Maximum frequency for manual pulse generator/ incremental synchronous encoder input	Signal input form	Voltage output/open collector type			Differential output type, Voltage output/open collector type		−
	1 pulse input magnification	1 to 1000			1 to 10000		−

(Continued)

Item \ Model	QD75MH1	QD75MH2	QD75MH4	QD77MS2	QD77MS4	Points for migration
Machine home position return (Home position return method)	4 types (Proximity dog method, Count method1, Count method2, Data set method)			6 types (Proximity dog method, Count method1, Count method2, Data set method, Scale home position signal detection method, Driver home position return method (Note-1))		–
External signal selection function	• External input signal of QD75MH (FLS, RLS, DOG, STOP, DI, CHG) • External input signal of servo amplifier (FLS, RLS, DOG)			• External input signal of QD77MS (FLS, RLS, DOG, STOP, DI) • External input signal of servo amplifier (FLS, RLS, DOG) • External input signal via CPU (Buffer memory: FLS, RLS, DOG)		▶Confirm there is no problem with the connection of external input signals if the manual pulse generator in use is other than MR-HDP01. (Refer to section 3.3.2.)
Torque change function	Forward/reverse torque limit value same setting			Forward/reverse torque limit value same setting, individual setting		No need to change the setting since the default setting is “0: Forward/reverse torque limit value same setting”.
Amplifier-less operation function	Not provided			Provided		–
Virtual servo amplifier function	Not provided			Provided		–
Mark detection function	Not provided			Provided		–
Optional data monitor function	Not provided			Provided		–
Module error collection function	Not provided			Provided		–
Connect/disconnect of SSCNET communication	Not provided (No need to set)			Provided		–
History data (start, error, warning)	Time (hour, minute, second)			Date and time (year, month, day, hour, minute, second)		–
External command signal: Switching signal	CHG signal (Select whether the signal starts positioning or performs speed-position switching with parameter settings)			DI signal (Select whether the signal starts positioning or performs speed-position switching with parameter settings)		The signal name has been changed.
Speed-position/ position-speed switching control	Switched by external command signal (CHG)			Switched by the external command signal (DI) or the proximity dog signal (DOG), which is set with “Pr.42 External command function selection”		The signal name has been changed.
Engineering environment	MELSOFT GX Works2 MELSOFT GX Developer MELSOFT GX Configurator-QP			MELSOFT GX Works2 MELSOFT MR Configurator2		–

(Note-1): The home position return set in driver (servo amplifier) is used.

(2) Exterior dimensions and mass

	QD75MH1	QD75MH2	QD75MH4	QD77MS2	QD77MS4
Exterior dimensions [mm]					
	98.0[H]×27.4[W]×90.0[D]			98.0[H]×27.4[W]×90.0[D]	
Mass [kg]	0.15		0.16	0.15	0.16
Internal current consumption (5 VDC) [A]	0.6			0.6	

(3) Parameter setting

► An item that requires a setting change at migration.

Function	Specification		Points for migration
	QD75MH	QD77MS	
Pr.24 Manual pulse generator/ incremental synchronous encoder input selection	Input selection for the manual pulse generator	Input selection for the manual pulse generator/incremental synchronous encoder	The parameter name has been changed.
Pr.96 Operation cycle setting	–	0: 0.88ms 1: 1.77ms	►The change in the operation cycle may change program execution timing. Revise the programs as needed.
Pr.97 SSCNET setting		0: SSCNETIII 1: SSCNETIII/H	–
Start history	Indicates the start time by hour, minute, and second. Md.5 Start (Hour) Md.6 Start (Minute: second)	Indicates the start time by year, month, day, hour, minute, and second. Md.54 Start (Year: month) Md.5 Start (Day: hour) Md.6 Start (Minute: second)	More time information (Md.54 Year: month and Md.5 Day) has been added. Review the program as needed.
Axis error occurrence time	Indicates the axis error occurrence time by hour, minute, and second. Md.11 Axis error occurrence (Hour) Md.12 Axis error occurrence (Minute: second)	Indicates the axis error occurrence time by year, month, day, hour, minute, and second. Md.55 Axis error occurrence (Year: month) Md.11 Axis error occurrence (Day: hour) Md.12 Axis error occurrence (Minute: second)	More time information (Md.55 Year: month and Md.11 Day) is added. Review the program as needed.
Axis warning occurrence time	Indicates the axis warning occurrence time by hour, minute, and second. Md.16 Axis warning occurrence (Hour) Md.17 Axis warning occurrence (Minute: second)	Indicates the axis warning occurrence time by year, month, day, hour, minute, and second. Md.56 Axis warning occurrence (Year: month) Md.16 Axis warning occurrence (Day: hour) Md.17 Axis warning occurrence (Minute: second)	More time information (Md.56 Year: month and Md.16 Day) is added. Review the program as needed.
Md.113 Semi/Fully closed loop status	[Buffer memory address] Axis 1: 881 Axis 2: 981 Axis 3: 1081 Axis 4: 1181	[Buffer memory address] Axis 1: 887 Axis 2: 987 Axis 3: 1087 Axis 4: 1187	The buffer memory address has been changed. The status is also checked with Md.113. Review the program as needed.

(Continued)

Function	Specification		Points for migration
	QD75MH	QD77MS	
Cd.24 Speed-position switching enable flag	0: Speed control will not be taken over by position control even when the external command signal [CHG] comes ON. 1: Speed control will be taken over by position control when the external command signal [CHG] comes ON.	0: Speed control will not be taken over by position control even when the signal set in "Cd.45 Speed-position switching device selection" comes ON. 1: Speed control will be taken over by position control even when the signal set in "Cd.45 Speed-position switching device selection" comes ON.	▶The external command signal name has been changed from “CHG” to “DI”. In order to use the external command signal [DI] for speed-position switching, set "Cd.45 Speed-position switching device selection" to [0: Use the external command signal for switching from speed control to position control].
Cd.26 Position-speed switching enable flag	0: Position control will not be taken over by speed control even when the external command signal [CHG] comes ON. 1: Position control will be taken over by speed control when the external command signal [CHG] comes ON.	0: Position control will not be taken over by speed control even when the signal set in "Cd.45 Speed-position switching device selection" comes ON. 1: Position control will be taken over by speed control when the signal set in "Cd.45 Speed-position switching device selection" comes ON.	▶The external command signal name has been changed from “CHG” to “DI”. In order to use the external command signal [DI] for position-speed switching, set "Cd.45 Speed-position switching device selection" to [0: Use the external command signal for switching from position control to speed control].

(Continued)

Function	Specification		Points for migration
	QD75MH	QD77MS	
Cd.45 Speed-position switching device selection	–	[Speed-position switching control] 0: Use the external command signal for switching from speed control to position control. 1: Use the proximity dog signal for switching from speed control to position control 2: Use "Cd.46 Speed-position switching command" for switching from speed control to position control [Position-speed switching control] 0: Use the external command signal for switching from position control to speed control. 1: Use the proximity dog signal for switching from position control to speed control 2: Use "Cd.46 Speed-position switching command" for switching from position control to speed control	–
Cd.46 Speed-position switching command	–	[Speed-position switching control] 0: Not switch from speed control to position control 1: Switch from speed control to position control [Position-speed switching control] 0: Not switch from position control to speed control 1: Switch from position control to speed control	–

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

Items	Differences		Change/revision
	QD75MH	QD77MS	
Electronic gear	–	–	Change "Pr.2 Number of pulses per rotation" and "Pr.3 Movement amount per rotation" of the basic parameter 1 according to the resolution per the connected servo motor rotation.
Positioning data	–	–	Review the positioing data while taking into account the differences in resolution per the connected servo motor rotation and the setting changes in the electronic gear above.

3.3 Connection of Manual Pulse Generator

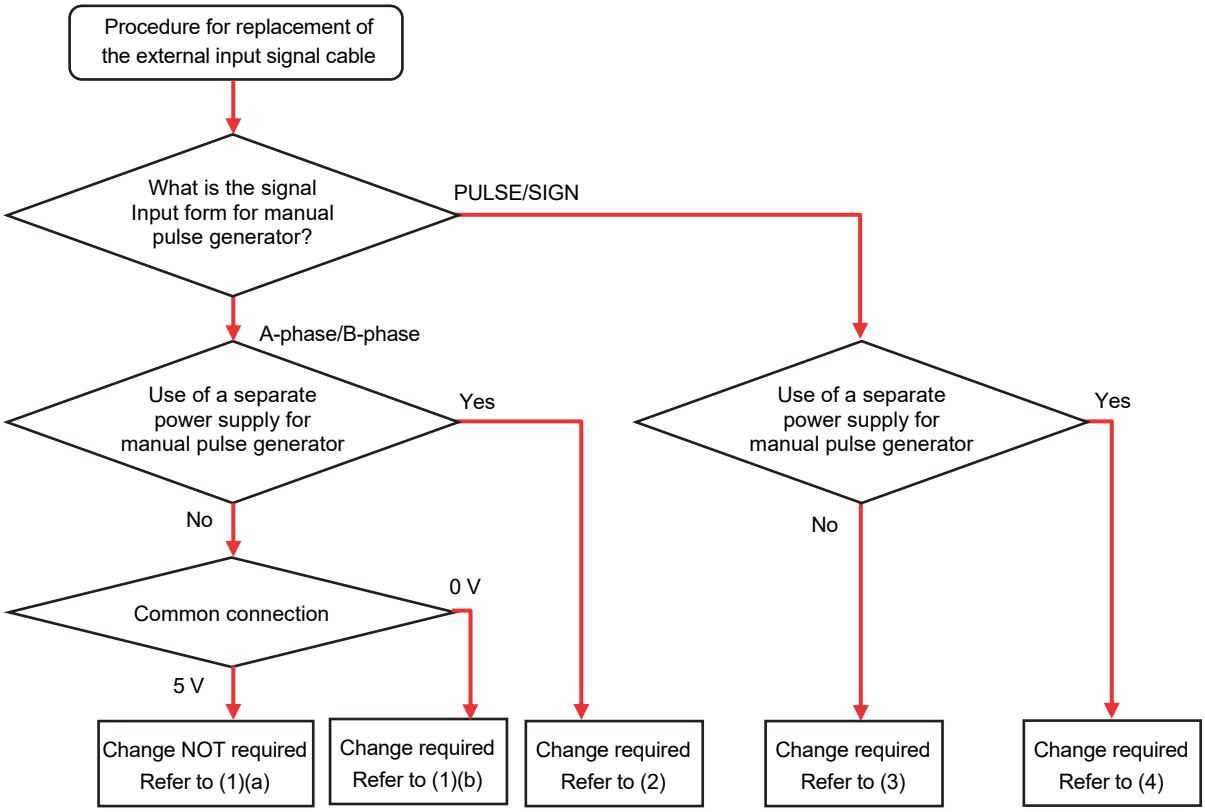
3.3.1 Comparison of pin layout

The signal layout of the external device connection connector differs between QD75MH and QD77MS. Since QD77MS is provided with a 5 VDC power supply output for manual pulse generator, the internal connection of the external input signal cable needs to be changed at replacement.
The following shows the differences in pin layout between QD75MH and QD77MS.

QD75MH					QD77MS			
Pin No.	Signal name	Pin No.	Signal name		Pin No.	Signal name	Pin No.	Signal name
1B20	PULSER B-	1A20	PULSER B+	→	1B20	HB	1A20	5V
1B19	PULSER A-	1A19	PULSER A+		1B19	HA	1A19	5V
1B18	No connect	1A18	No connect		1B18	HBL	1A18	HBH
1B17	No connect	1A17	No connect		1B17	HAL	1A17	HAH

3.3.2 External input signal cable replacement

Replace the external input signal cable by following the flowchart below.



[Precaution at replacement of the external input signal cable]

Set "1: Voltage-output/open-collector type" in "Pr.89 Manual pulse generator/Incremental synchronous encoder input type selection" if the manual pulse generator/incremental synchronous encoder of voltage-output/open-collector type is used.

The default value is "1: Voltage-output/open-collector type".

Set the signal input form according to the program with "Pr.24 Manual pulse generator/Incremental synchronous encoder input selection".

The 5 VDC power supply from the Simple Motion module must not be used if a separate power supply is applied to the manual pulse generator/incremental synchronous encoder.

If a separate power supply is used, use a stabilized power supply of voltage 5 VDC (±5% recommended). Use of a power supply with different voltage may cause a failure.

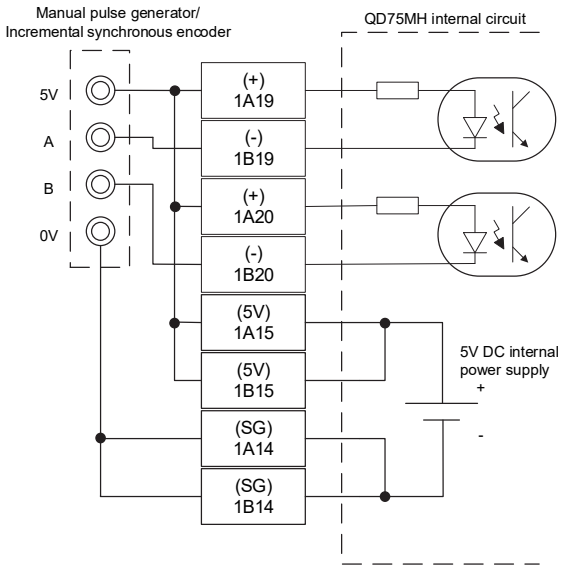
The connection terminals for the manual pulse generator of QD77MS Simple Motion module (1A20 to 1A17, 1B20 to 1B17) are not electrically isolated. Therefore, **be sure to connect the 0 V (-) of the manual pulse generator/incremental synchronous encoder and the SG of QD77MS when using a separate power supply. Failure to do so may result in malfunction.**

Refer to "MELSEC-Q QD77MS Simple Motion Module User's Manual (Positioning Control)" for details of wiring of the external input signal cable.

(1) When the signal input form is A-phase/B-phase (internal power supply use)

(a) 5 V common

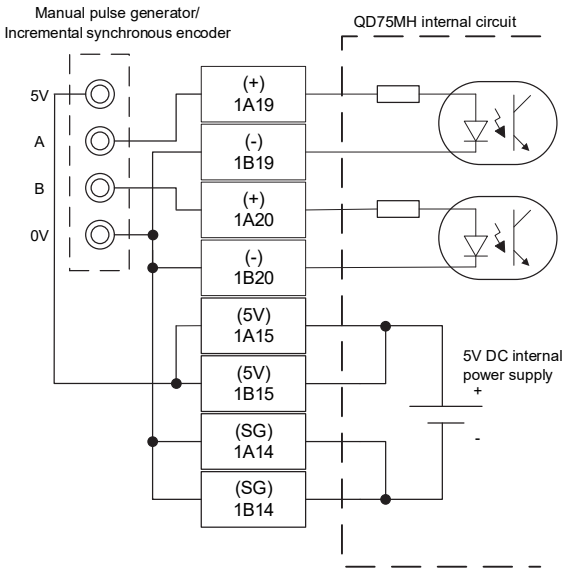
A-phase/B-phase input, internal power supply (5 V common)



The existing QD75MH external input signal cable can be **continueously used** with QD77MS

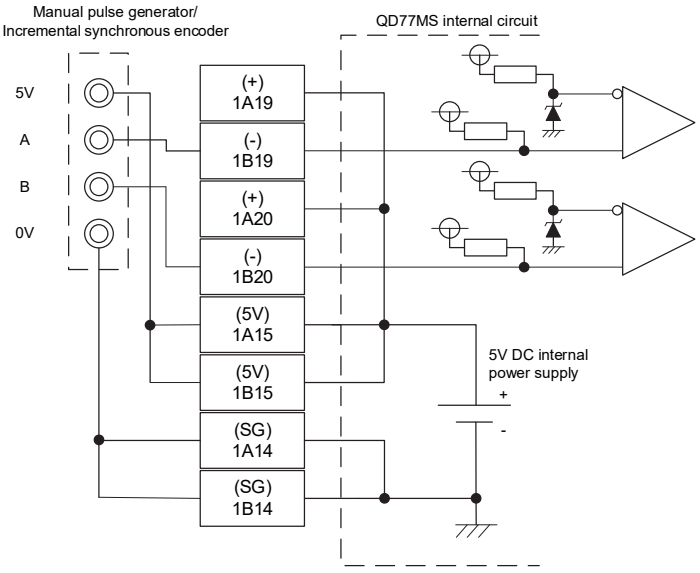
(b) 0 V common

A-phase/B-phase input, internal power supply (0 V common)



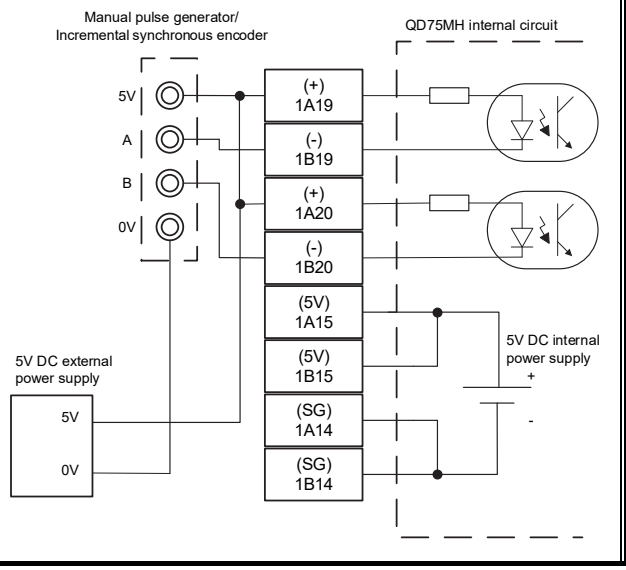
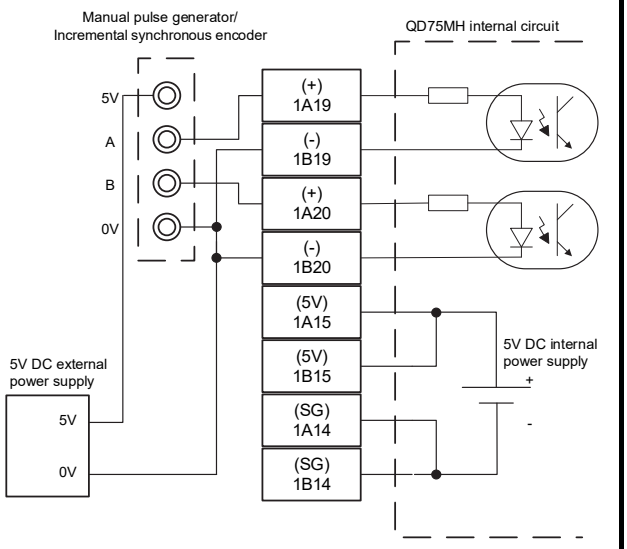
QD75MH external input signal cable needs to be chaged to **Pattern A.**

Pattern A

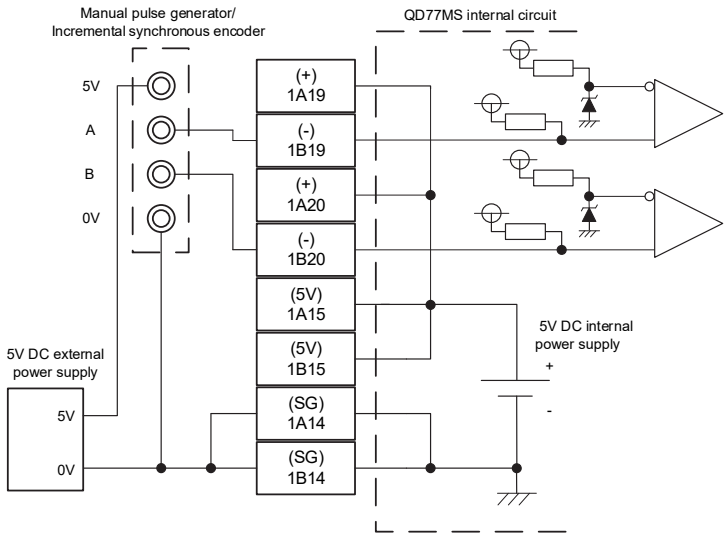


When connecting to the internal power supply, be sure to connect SG of the QD77MS and 0V of the manual pulse generator.
Without doing so, the module cannot receive the pulses correctly.

(2) When the signal input form is A-phase/B-phase (an external power supply is used for manual pulse generator)

A-phase/B-phase input, external power supply (5 V common)	A-phase/B-phase input, external power supply (0 V common)
	
QD75MH external input signal cable needs to be chaged to **Pattern B.**	

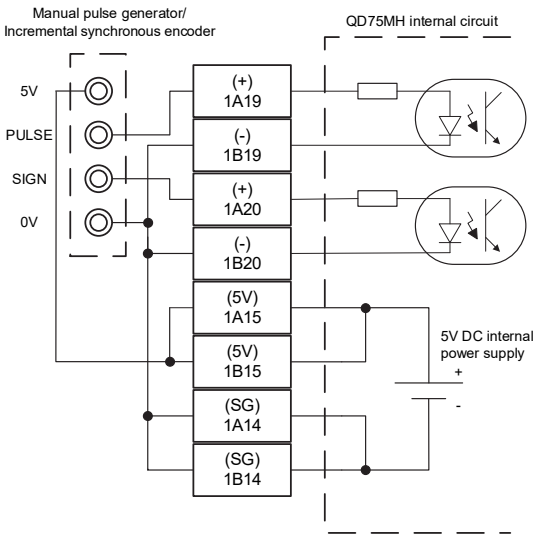
Pattern B



The external power supply must be a stabilized power supply of voltage 5 VDC (±5% recommended).
Use of a power supply with different voltage may cause a failure.

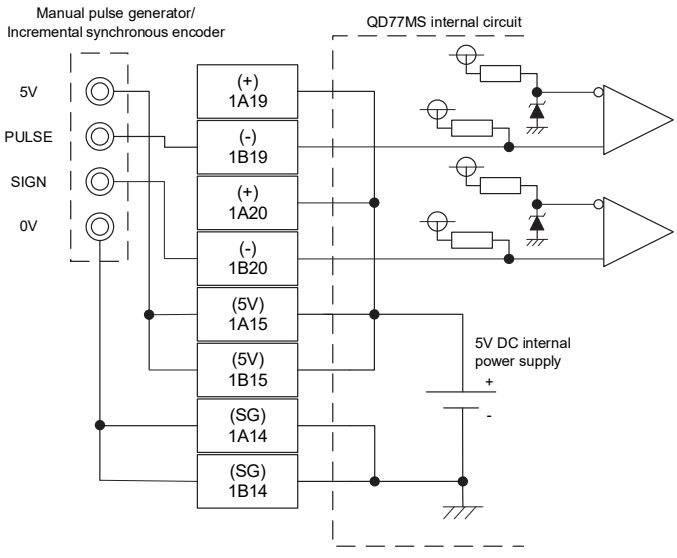
(3) When the signal input form is PULSE/SIGN (internal power supply use)

PULSE/SIGN input, internal power supply



QD75MH external input signal cable needs to be chaged to **Pattern A.**

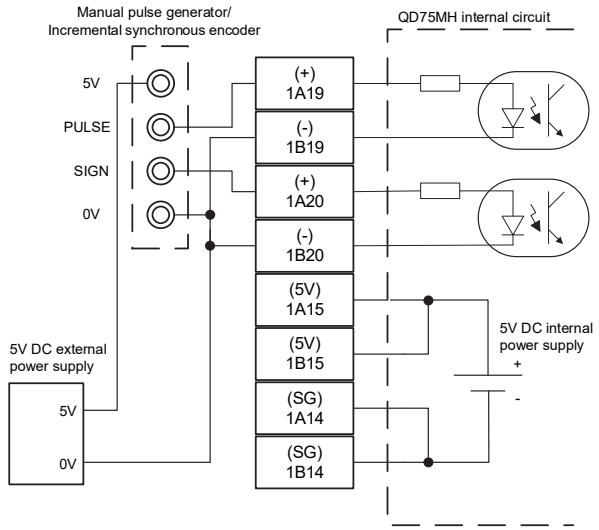
Pattern A



The external power supply must be a stabilized power supply of voltage 5 VDC (±5% recommended).
Use of a power supply with different voltage may cause a failure.

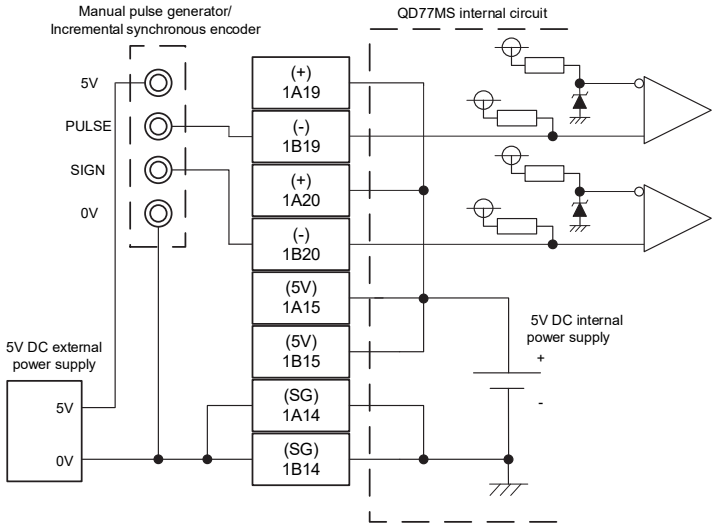
(4) When the signal input form is PULSE/SIGN (an external power supply is used for manual pulse generator power)

PULSE/SIGN input, external power supply



QD75MH external input signal cable needs to be chaged to **Pattern B.**

Pattern B



The external power supply must be a stabilized power supply of voltage 5 VDC (±5% recommended).
Use of a power supply with different voltage may cause a failure.

3.4 Project Diversion

3.4.1 Project diversion procedures by engineering environment

The contents of this document are based on the specifications of the engineering environment (MELSOFT GX Works2 Ver.1.576A). Update to the latest version when replacing.

(1) Procedures for QD75MH projects diversion by MELSOFT GX Works2

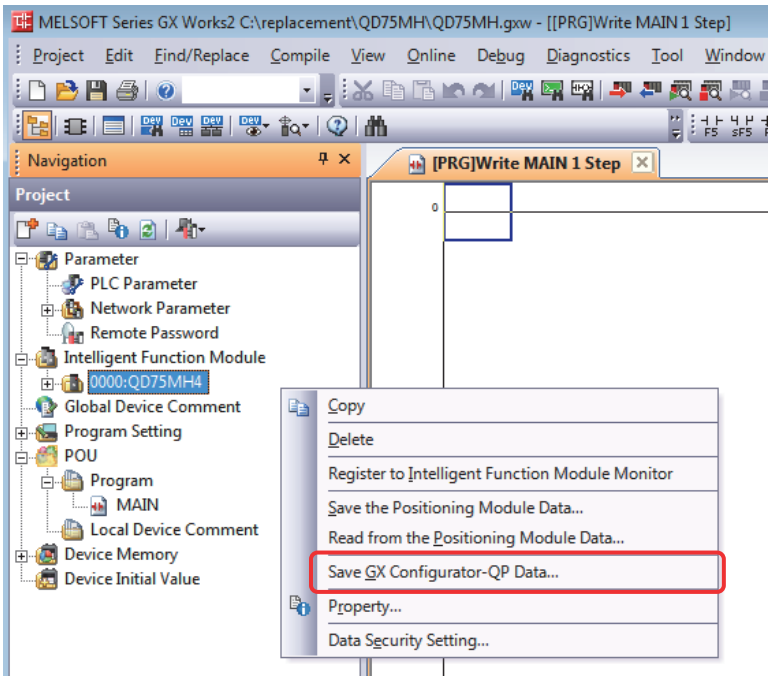
MELSOFT GX Works2 (Simple Motion module setting tool) cannot directly read QD75MH data. Therefore, the diversion is carried out after the data is saved in MELSOFT GX Configurator-QP format.

The following shows the diversion procedure.

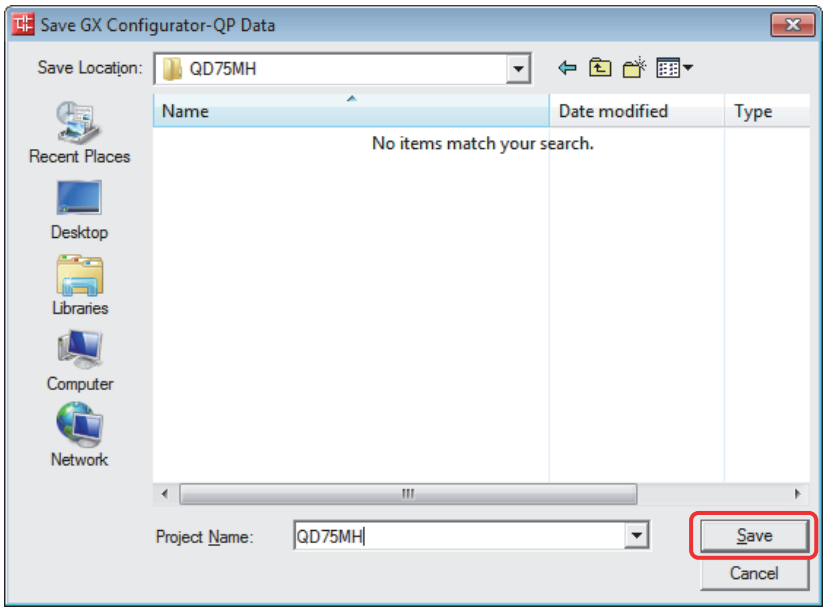
1) Start MELSOFT GX Works2. Read the project to be diverted.

2) Select “QD75MH” from “Intelligent function module” in project view of the navigation window, and right-click on it.

3) Select “Save GX Configurator-QP Data” from the context menu to open “Save GX Configurator-QP Data” screen.



4) Enter the project name, and click [Save].



Saving in MELSOFT GX Configurator-QP format is complete.

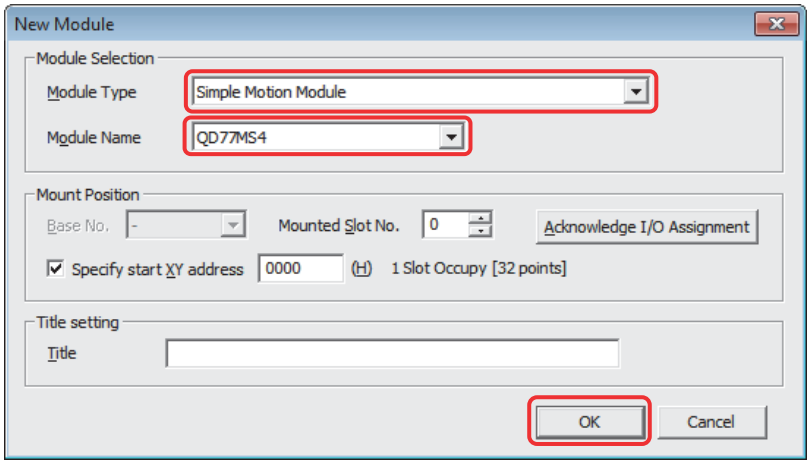
(2) Procedures for QD77MS project creation by MELSOFT GX Works2

The following shows the project creation procedure.

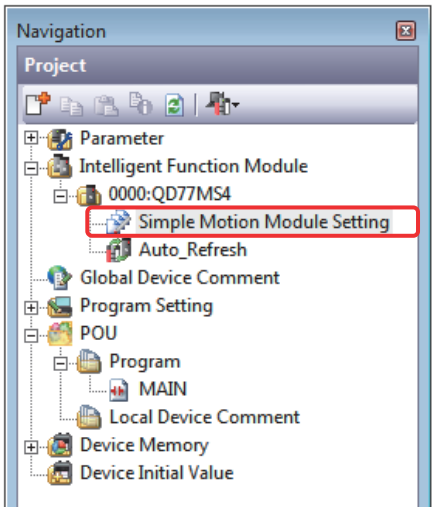
1) Start MELSOFT GX Works2.

2) Create a new Q-series project. Select [Project] → [Intelligent function module] → [New Module] to open [New Module] window.

3) Select “Simple Motion Module” for “Module Type” and the replaced Simple Motion module model for “Module Name” (the setting example below: QD77MS4), and then set “Mount Position” and “Title setting” according to your system.
Click “OK”.

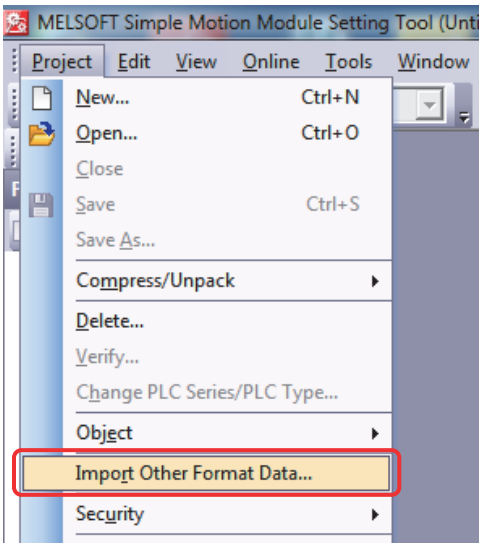


4) Select [Project] → [Intelligent function module], and double click [Simple Motion module setting] to start up the “Simple Motion Module Setting Tool”.

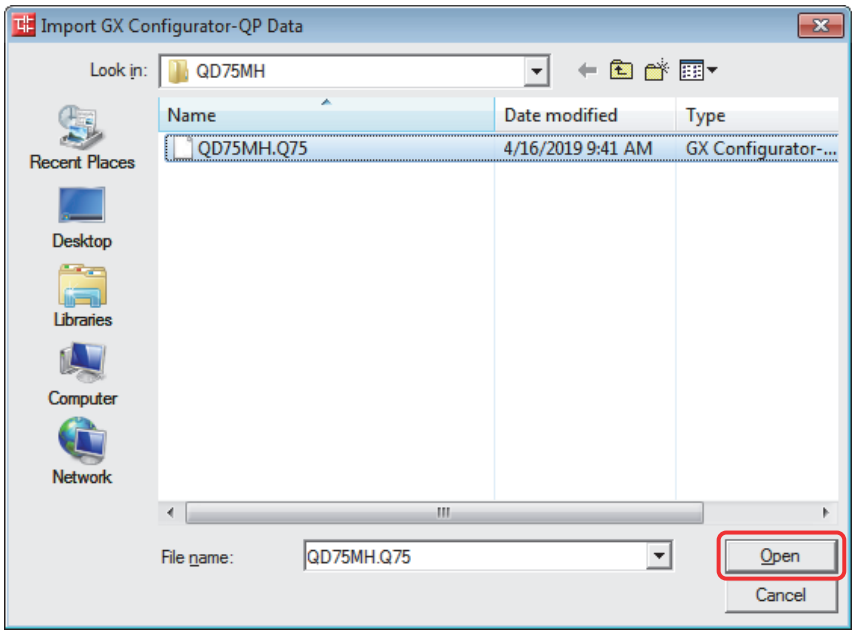


The following shows the diversion procedure by the Simple Motion Module Setting Tool.

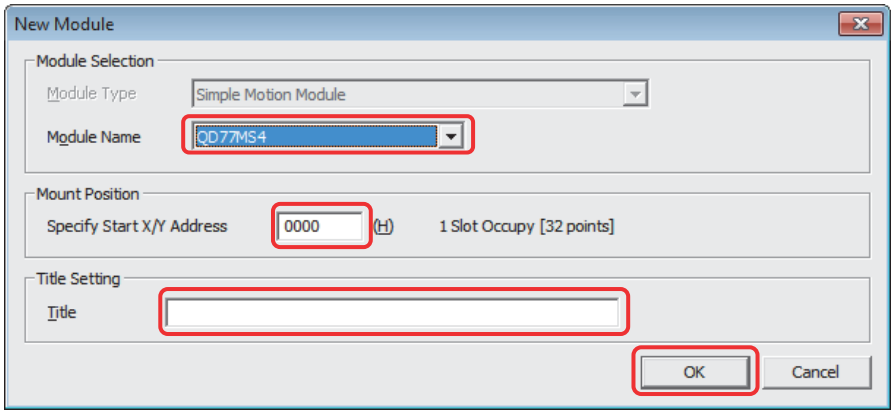
5) Select [Project] → [Import Other Format Data].



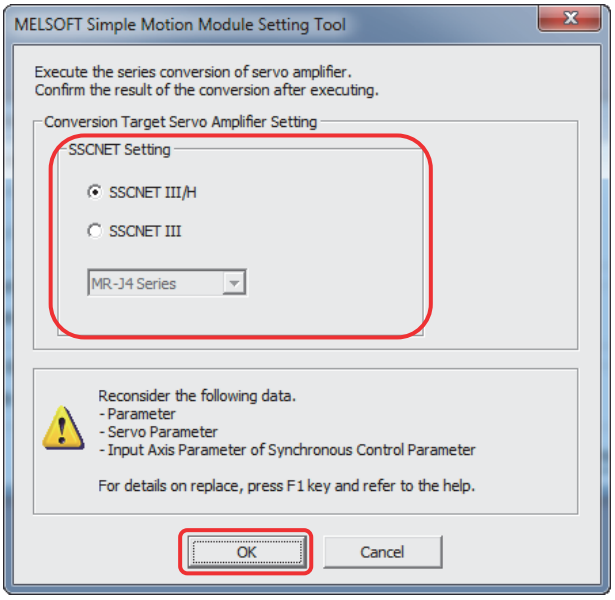
6) Select the project files to be diverted in GX Configurator-QP format, and click “Open”.



7) Set “Module Name”, “Mount Position” and “Title Setting” on [New Module] screen, and click “OK”.
Match the settings in 3) for the “Module Name” and “Mount Position”.



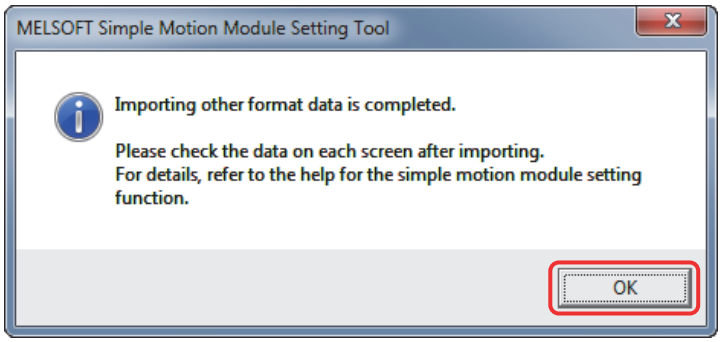
8) Execute the series conversion of the servo amplifier. Select the network to be used for the replaced servo amplifiers, and click [OK].



(Note): Refer to “MELSEC-Q QD77MS Simple Motion Module User's Manual (Positioning Control)” for the servo system networks supported by the replaced servo amplifiers and SSCNETIII compatible devices (SSCNETIII or SSCNETIII/H).

(Note): When servo parameters settings are changed from “MR-J3 series” to “MR-J4 series”, the parameter conversion is carried out based on conversion rules.
Refer to “Simple Motion Module Setting Help [Appendix] - [Servo parameter conversion]” for the conversion rules.

9) When the project diversion completion message appears, click “OK”. Be sure to check the imported data.



The diversion is completed.

Before writing to the Simple Motion module, be sure to confirm the validity of the diverted parameters.

APPENDICES

Appendix 1 List of Buffer Memory Addresses

This section shows buffer memory address lists and the calculation method of the addresses.

1) Do not use the buffer memory addresses not described in the lists because they are for manufacturer setting.
2) Refer to “Simple Motion Moduel Setting Tool Help” of MELSOFT GX Works2 for buffer memory addresses of positioning data.
3) Refer to “MELSEC-Q/L QD77MS/QD77GF/LD77MS/LD77MH Simple Motion Moduel User’s Manual (Synchronous Control)” for the buffer memory addresses for synchronous control.

[Caluculation method of buffer memory address]

(a) “n” such as “1+150n” in the table indicates the numerical value corresponding to the axis No.
Ex.) For axis No. 16A-1
1+150n ([Pr.4] Unit magnification (AM)) = 1+150 x 15 = 2251

(b) “p” such as “4012+5p” in the table indicates the pointer No.
Ex.) For pointer No.15
4012+5p ([Md.3] Start information) = 4012+5 x 15 = 4087

(c) “k” such as “54002+20k” in the table indicates the mark detection setting No.
Ex.) For mark detection setting No. 16
54002+20k ([Pr.802] Mark detection data type) = 54002+20 x 15 = 54302

n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item	Memory area	
QD77MS2 QD77MS4	QD77MS16				
0+150n		○	[Pr.1] Unit setting	Basic parameters 1	Positioning parameters
1+150n		○	[Pr.4] Unit magnification (AM)		
2+150n 3+150n		○	[Pr.2] Number of pulses per rotation (AP)		
4+150n 5+150n		○	[Pr.3] Movement amount per rotation (AL)		
6+150n 7+150n		○	[Pr.7] Bias speed at start		
10+150n 11+150n		○	[Pr.8] Speed limit value	Basic parameters 2	
12+150n 13+150n		○	[Pr.9] Acceleration time 0		
14+150n 15+150n		○	[Pr.10] Deceleration time 0		
17+150n		○	[Pr.11] Backlash compensation amount	Detailed parameters 1	
18+150n 19+150n		○	[Pr.12] Software stroke limit upper limit value		
20+150n 21+150n		○	[Pr.13] Software stroke limit lower limit value		
22+150n		○	[Pr.14] Software stroke limit selection		
23+150n		○	[Pr.15] Software stroke limit valid/invalid setting		
24+150n 25+150n		○	[Pr.16] Command in-position width		
26+150n		○	[Pr.17] Torque limit setting value		
27+150n		○	[Pr.18] M code ON signal output timing		
28+150n		○	[Pr.19] Speed switching mode		
29+150n		○	[Pr.20] Interpolation speed designation method		
30+150n		○	[Pr.21] Feed current value during speed control		
31+150n		○	[Pr.22] Input signal logic selection		
32+150n		△	[Pr.80] External input signal selection		
33		○	[Pr.24] Manual pulse generator/Incremental synchronous encoder input selection		
34+150n		○	[Pr.81] Speed-position function selection		
35		○	[Pr.82] Forced stop valid/invalid selection		

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item	Memory area	
QD77MS2 QD77MS4	QD77MS16				
36+150n 37+150n		○	[Pr.25] Acceleration time 1	Detailed parameters 2	Positioning parameters
38+150n 39+150n		○	[Pr.26] Acceleration time 2		
40+150n 41+150n		○	[Pr.27] Acceleration time 3		
42+150n 43+150n		○	[Pr.28] Deceleration time 1		
44+150n 45+150n		○	[Pr.29] Deceleration time 2		
46+150n 47+150n		○	[Pr.30] Deceleration time 3		
48+150n 49+150n		○	[Pr.31] JOG speed limit value		
50+150n		○	[Pr.32] JOG operation acceleration time selection		
51+150n		○	[Pr.33] JOG operation deceleration time selection		
52+150n		○	[Pr.34] Acceleration/deceleration process selection		
53+150n		○	[Pr.35] S-curve ratio		
54+150n 55+150n		○	[Pr.36] Rapid stop deceleration time		
56+150n		○	[Pr.37] Stop group 1 rapid stop selection		
57+150n		○	[Pr.38] Stop group 2 rapid stop selection		
58+150n		○	[Pr.39] Stop group 3 rapid stop selection		
59+150n		○	[Pr.40] Positioning complete signal output time		
60+150n 61+150n		○	[Pr.41] Allowable circular interpolation error width		
62+150n		○	[Pr.42] External command function selection		
63+150n		○	[Pr.83] Speed control 10 x multiplier setting for degree axis		
64+150n 65+150n		○	[Pr.84] Restart allowable range when servo OFF to ON		
67		○	[Pr.89] Manual pulse generator/incremental synchronous encoder input type selection		
68+150n		○	[Pr.90] Operation setting for speed-torque control mode		
	69+150n	×	[Pr.95] External command signal selection		

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item	Memory area	
QD77MS2 QD77MS4	QD77MS16				
70+150n		○	[Pr.43] HPR method	HPR basic parameters	HPR parameters
71+150n		○	[Pr.44] HPR direction		
72+150n 73+150n		○	[Pr.45] HP address		
74+150n 75+150n		○	[Pr.46] HPR speed		
76+150n 77+150n		○	[Pr.47] Creep speed		
78+150n		○	[Pr.48] HPR retry		
80+150n 81+150n		○	[Pr.50] Setting for the movement amount after proximity dog ON	HPR detailed parameters	
82+150n		○	[Pr.51] HPR acceleration time selection		
83+150n		○	[Pr.52] HPR deceleration time selection		
84+150n 85+150n		○	[Pr.53] HP shift amount		
86+150n		○	[Pr.54] HPR torque limit value		
87+150n		○	[Pr.55] Operation setting for incompletion of HPR		
88+150n		○	[Pr.56] Speed designation during HP shift		
89+150n		○	[Pr.57] Dwell time during HPR retry		
100+150n		○	[Pr.91] Optional data monitor: Data type setting 1	Expansion parameter	
101+150n		○	[Pr.92] Optional data monitor: Data type setting 2		
102+150n		○	[Pr.93] Optional data monitor: Data type setting 3		
103+150n		×	[Pr.94] Optional data monitor: Data type setting 4		
147	105	○	[Pr.96] Operation cycle setting		
106		○	[Pr.97] SSCNET setting		
114		○	[Pr.114] External command signal compensation valid/invalid setting		

(continued) p: Pointer No., ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area	
QD77MS2 QD77MS4	QD77MS16					
1200	4000	○	[Md.1] In test mode flag		System monitor data	Monitor data
1206 1207	4006 4007	○	[Md.130] OS version			
1208	4008	○	[Md.134] Operation time			
1209	4009	○	[Md.135] Maximum operation time			
1211	4011	○	[Md.131] Digital oscilloscope running flag			
1212+5p	4012+5p	○	[Md.3] Start information	Start history		
1213+5p	4013+5p	○	[Md.4] Start No.			
1440+p	4240+p	○	[Md.54] Start Year: month			
1214+5p	4014+5p	○	[Md.5] Start Day: hour			
1215+5p	4015+5p	○	[Md.6] Start Minute: second			
1216+5p	4016+5p	○	[Md.7] Error judgment			
1292	4092	○	[Md.8] Start history pointer			
1293+4p	4093+4p	○	[Md.9] Axis in which the error occurred	Error history		
1294+4p	4094+4p	○	[Md.10] Axis error No.			
31300+p		○	[Md.57] Servo alarm			
31333+p		○	[Md.61] Driver operation alarm number			
1456+p	4256+p	○	[Md.55] Axis error occurrence (Year: month)			
1295+4p	4095+4p	○	[Md.11] Axis error occurrence (Day: hour)			
1296+4p	4096+4p	○	[Md.12] Axis error occurrence (Minute: second)			
1357	4157	○	[Md.13] Error history pointer			
1358+4p	4158+4p	○	[Md.14] Axis in which the warning occurred	Warning history		
1359+4p	4159+4p	○	[Md.15] Axis warning No.			
31316+p		○	[Md.58] Servo warning			
1472+p	4272+p	○	[Md.56] Axis warning occurrence (Year: month)			
1360+4p	4160+4p	○	[Md.16] Axis warning occurrence (Day: hour)			
1361+4p	4161+4p	○	[Md.17] Axis warning occurrence (Minute: second)			
1422	4222	○	[Md.18] Warning history pointer			
1424 1425	4224 4225	○	[Md.19] Number of write accesses to flash ROM			
1431	4231	○	[Md.50] Forced stop input			
1432	4232	○	[Md.51] Amplifier–less operation mode status			
1433	4233	○	[Md.53] SSCNET control status			
1434	4234	○	[Md.52] Communication between amplifiers axes searching flag			
1435	4235	○	[Md.59] Module information			
1438	4238	○	[Md.132] Operation cycle setting			
1439	4239	○	[Md.133] Operation cycle over flag			

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area	
QD77MS2 QD77MS4	QD77MS16					
800+100n 801+100n	2400+100n 2401+100n	○	[Md.20] Feed current value		Axis monitor data	Monitor data
802+100n 803+100n	2402+100n 2403+100n	○	[Md.21] Feed machine value			
804+100n 805+100n	2404+100n 2405+100n	○	[Md.22] Feedrate			
806+100n	2406+100n	○	[Md.23] Axis error No.			
807+100n	2407+100n	○	[Md.24] Axis warning No.			
808+100n	2408+100n	○	[Md.25] Valid M code			
809+100n	2409+100n	○	[Md.26] Axis operation status			
810+100n 811+100n	2410+100n 2411+100n	○	[Md.27] Current speed			
812+100n 813+100n	2412+100n 2413+100n	○	[Md.28] Axis feedrate			
814+100n 815+100n	2414+100n 2415+100n	○	[Md.29] Speed-position switching control positioning movement amount			
816+100n	2416+100n	○	[Md.30] External input signal			
817+100n	2417+100n	△	[Md.31] Status			
818+100n 819+100n	2418+100n 2419+100n	○	[Md.32] Target value			
820+100n 821+100n	2420+100n 2421+100n	○	[Md.33] Target speed			
824+100n 825+100n	2424+100n 2425+100n	○	[Md.34] Movement amount after proximity dog ON			
826+100n	2426+100n	○	[Md.35] Torque limit stored value/forward torque limit stored value			
827+100n	2427+100n	○	[Md.36] Special start data instruction code setting value			
828+100n	2428+100n	○	[Md.37] Special start data instruction parameter setting value			
829+100n	2429+100n	○	[Md.38] Start positioning data No. setting value.			
830+100n	2430+100n	○	[Md.39] In speed limit flag			
831+100n	2431+100n	○	[Md.40] In speed change processing flag			
832+100n	2432+100n	○	[Md.41] Special start repetition counter			
833+100n	2433+100n	○	[Md.42] Control system repetition counter			
834+100n	2434+100n	○	[Md.43] Start data pointer being executed			
835+100n	2435+100n	○	[Md.44] Positioning data No. being executed			
836+100n	2436+100n	○	[Md.45] Block No. being executed			
837+100n	2437+100n	○	[Md.46] Last executed positioning data No.			
838+100n	2438+100n	△	[Md.47] Positioning data being executed	Positioning identifier		
839+100n	2439+100n	○		M code		
840+100n	2440+100n	○		Dwell time		
	2441+100n	×		Axis to be interpolated		
842+100n 843+100n	2442+100n 2443+100n	○		Command speed		
844+100n 845+100n	2444+100n 2445+100n	○		Positioning address		
846+100n 847+100n	2446+100n 2447+100n	○		Arc address		
848+100n 849+100n	2448+100n 2449+100n	○	[Md.100] HPR re-travel value			

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item	Memory area	
QD77MS2 QD77MS4	QD77MS16				
850+100n 851+100n	2450+100n 2451+100n	○	[Md.101] Real current value	Axis monitor data	Monitor data
852+100n 853+100n	2452+100n 2453+100n	○	[Md.102] Deviation counter value		
854+100n 855+100n	2454+100n 2455+100n	○	[Md.103] Motor rotation speed		
856+100n	2456+100n	○	[Md.104] Motor current value		
858+100n	2458+100n	○	[Md.125] Servo status3		
864+100n 865+100n 866+100n 867+100n 868+100n 869+100n	2464+100n 2465+100n 2466+100n 2467+100n 2468+100n 2469+100n	○	[Md.106] Servo amplifier software No.		
870+100n	2470+100n	○	[Md.107] Parameter error No.		
876+100n 877+100n	2476+100n 2477+100n	○	[Md.108] Servo status		
878+100n	2478+100n	○	[Md.109] Regenerative load ratio/Optional data monitor output 1		
879+100n	2479+100n	○	[Md.110] Effective load torque/Optional data monitor output 2		
880+100n	2480+100n	○	[Md.111] Peak torque ratio/Optional data monitor output 3		
881+100n	2481+100n	○	[Md.112] Optional data monitor output 4		
887+100n	2487+100n	○	[Md.113] Semi/Fully closed loop status		
888+100n	2488+100n	○	[Md.114] Servo alarm		
890+100n	2490+100n	○	[Md.116] Encoder option information		
891+100n	2491+100n	○	[Md.120] Reverse torque limit stored value		
892+100n 893+100n	2492+100n 2493+100n	○	[Md.122] Speed during command		
894+100n	2494+100n	○	[Md.123] Torque during command		
895+100n	2495+100n	○	[Md.124] Control mode switching status		
899+100n	2499+100n	○	[Md.48] Deceleration start flag		
59300+100n		○	[Md.500] Servo status7		
59302+100n		○	[Md.502] Driver operation alarm number		

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item	Memory area	
QD77MS2 QD77MS4	QD77MS16				
1500+100n	4300+100n	○	[Cd.3] Positioning start No.	Axis control data	Control data
1501+100n	4301+100n	○	[Cd.4] Positioning starting point No.		
1502+100n	4302+100n	○	[Cd.5] Axis error reset		
1503+100n	4303+100n	○	[Cd.6] Restart command		
1504+100n	4304+100n	○	[Cd.7] M code OFF request		
1505+100n	4305+100n	○	[Cd.8] External command valid		
1506+100n 1507+100n	4306+100n 4307+100n	○	[Cd.9] New current value		
1508+100n 1509+100n	4308+100n 4309+100n	○	[Cd.10] New acceleration time value		
1510+100n 1511+100n	4310+100n 4311+100n	○	[Cd.11] New deceleration time value		
1512+100n	4312+100n	○	[Cd.12] Acceleration/deceleration time change value during speed change, enable/disable		
1513+100n	4313+100n	○	[Cd.13] Positioning operation speed override		
1514+100n 1515+100n	4314+100n 4315+100n	○	[Cd.14] New speed value		
1516+100n	4316+100n	○	[Cd.15] Speed change request		
1517+100n	4317+100n	○	[Cd.16] Inching movement amount		
1518+100n 1519+100n	4318+100n 4319+100n	○	[Cd.17] JOG speed		
1520+100n	4320+100n	○	[Cd.18] Interrupt request during continuous operation		
1521+100n	4321+100n	○	[Cd.19] HPR request flag OFF request		
1522+100n 1523+100n	4322+100n 4323+100n	○	[Cd.20] Manual pulse generator 1 pulse input magnification		
1524+100n	4324+100n	○	[Cd.21] Manual pulse generator enable flag		
1525+100n	4325+100n	○	[Cd.22] New torque value/forward new torque value		
1526+100n 1527+100n	4326+100n 4327+100n	○	[Cd.23] Speed-position switching control movement amount change register		
1528+100n	4328+100n	○	[Cd.24] Speed-position switching enable flag		
1530+100n 1531+100n	4330+100n 4331+100n	○	[Cd.25] Position-speed switching control speed change register		
1532+100n	4332+100n	○	[Cd.26] Position-speed switching enable flag		
1534+100n 1535+100n	4334+100n 4335+100n	○	[Cd.27] Target position change value (New address)		
1536+100n 1537+100n	4336+100n 4337+100n	○	[Cd.28] Target position change value (New speed)		
1538+100n	4338+100n	○	[Cd.29] Target position change request flag		
	4339+100n	×	[Cd.43] Simultaneous starting axis		
1540+100n		×	[Cd.30] Simultaneous starting axis start data No. (axis 1 start data No.)		
	4340+100n		[Cd.30] Simultaneous starting own axis start data No.		
1541+100n		×	[Cd.31] Simultaneous starting axis start data No. (axis 2 start data No.)		
	4341+100n		[Cd.31] Simultaneous starting axis start data No.1		
1542+100n		×	[Cd.32] Simultaneous starting axis start data No. (axis 3 start data No.)		
	4342+100n		[Cd.32] Simultaneous starting axis start data No.2		
1543+100n		×	[Cd.33] Simultaneous starting axis start data No. (axis 4 start data No.)		
	4343+100n		[Cd.33] Simultaneous starting axis start data No.3		

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item	Memory area	
QD77MS2 QD77MS4	QD77MS16				
1544+100n	4344+100n	○	[Cd.34] Step mode	Axis control data	Control data
1545+100n	4345+100n	○	[Cd.35] Step valid flag		
1546+100n	4346+100n	○	[Cd.36] Step start information		
1547+100n	4347+100n	○	[Cd.37] Skip command		
1548+100n	4348+100n	○	[Cd.38] Teaching data selection		
1549+100n	4349+100n	○	[Cd.39] Teaching positioning data No.		
1550+100n	4350+100n	○	[Cd.40] ABS direction in degrees		
1551+100n	4351+100n	○	[Cd.100] Servo OFF command		
1552+100n	4352+100n	○	[Cd.101] Torque output setting value		
1554+100n	4354+100n	○	[Cd.130] Servo parameter write request		
1555+100n	4355+100n	○	[Cd.131] Parameter No. (Setting for servo parameters to be changed)		
1556+100n 1557+100n	4356+100n 4357+100n	○	[Cd.132] Change data		
1558+100n	4358+100n	○	[Cd.133] Semi/Fully closed loop switching request		
1559+100n	4359+100n	○	[Cd.108] Gain switching command flag		
1563+100n	4363+100n	○	[Cd.112] Torque change function switching request		
1564+100n	4364+100n	○	[Cd.113] New reverse torque value		
1565+100n	4365+100n	○	[Cd.136] PI-PID switching request		
1566+100n	4366+100n	○	[Cd.45] Speed-position switching device selection		
1567+100n	4367+100n	○	[Cd.46] Speed-position switching command		
1574+100n	4374+100n	○	[Cd.138] Control mode switching request		
1575+100n	4375+100n	○	[Cd.139] Control mode setting		
1576+100n 1577+100n	4376+100n 4377+100n	○	[Cd.140] Command speed at speed control mode		
1578+100n	4378+100n	○	[Cd.141] Acceleration time at speed control mode		
1579+100n	4379+100n	○	[Cd.142] Deceleration time at speed control mode		
1580+100n	4380+100n	○	[Cd.143] Command torque at torque control mode		
1581+100n	4381+100n	○	[Cd.144] Torque time constant at torque control mode (Forward direction)		
1582+100n	4382+100n	○	[Cd.145] Torque time constant at torque control mode (Negative direction)		
1584+100n 1585+100n	4384+100n 4385+100n	○	[Cd.146] Speed limit value at torque control mode		
1586+100n 1587+100n	4386+100n 4387+100n	○	[Cd.147] Speed limit value at continuous operation to torque control mode		
1588+100n	4388+100n	○	[Cd.148] Acceleration time at continuous operation to torque control mode		
1589+100n	4389+100n	○	[Cd.149] Deceleration time at continuous operation to torque control mode		
1590+100n	4390+100n	○	[Cd.150] Target torque at continuous operation to torque control mode		
1591+100n	4391+100n	○	[Cd.151] Torque time constant at continuous operation to torque control mode (Forward direction)		
1592+100n	4392+100n	○	[Cd.152] Torque time constant at continuous operation to torque control mode (Negative direction)		
1593+100n	4393+100n	○	[Cd.153] Control mode auto-shift selection		
1594+100n 1595+100n	4394+100n 4395+100n	○	[Cd.154] Control mode auto-shift parameter		

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item	Memory area	
QD77MS2 QD77MS4	QD77MS16				
1900	5900	○	[Cd.1] Flash ROM write request	System control data	Control data
1901	5901	○	[Cd.2] Parameter initialization request		
1905	5905	○	[Cd.41] Deceleration start flag valid		
1907	5907	○	[Cd.42] Stop command processing for deceleration stop selection		
1909	5909	○	[Cd.47] QD75MH initial value setting request		
1926	5926	○	[Cd.137] Amplifier-less operation mode switching request		
1928	5928 5929 5930 5931	△	[Cd.44] External input signal operation device (Axis 1 to 16)		
1945	5945	○	[Cd.158] Forced stop input		
1932	5932	○	[Cd.102] SSCNET control command		
	30100+10n	×	[Cd.180] Axis stop	Axis expansion control data	
	30101+10n	×	[Cd.181] Forward run JOG start		
	30102+10n	×	[Cd.182] Reverse run JOG start		
	30103+10n	×	[Cd.183] Execution prohibition flag		

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area		
QD77MS2 QD77MS4	QD77MS16						
2000+6000n	6000+1000n	○	[Da.1] Operation pattern	Positioning identifier	No.1	Positioning data	Data for positioning
		○	[Da.2] Control method				
		○	[Da.3] Acceleration time No.				
		○	[Da.4] Deceleration time No.				
		×	[Da.5] Axis to be interpolated				
2001+6000n	6001+1000n	○	[Da.10] M code/condition data No. /Number of LOOP to LEND repetitions				
2002+6000n	6002+1000n	○	[Da.9] Dwell time/JUMP destination positioning data No.				
	6003+1000n	×	[Da.20] Axis to be interpolated No.1	Axis to be interpolated			
			[Da.21] Axis to be interpolated No.2				
			[Da.22] Axis to be interpolated No.3				
2004+6000n 2005+6000n	6004+1000n 6005+1000n	○	[Da.8] Command speed				
2006+6000n 2007+6000n	6006+1000n 6007+1000n	○	[Da.6] Positioning address/movement amount				
2008+6000n 2009+6000n	6008+1000n 6009+1000n	○	[Da.7] Arc address				
2010+6000n to 2019+6000n	6010+1000n to 6019+1000n	△	No.2				
2020+6000n to 2029+6000n	6020+1000n to 6029+1000n	△	No.3				
to	to	to	to				
2990+6000n to 2999+6000n	6990+1000n to 6999+1000n	△	No.100				
3000+6000n to 3009+6000n	Set with GX Works2	△	No.101				
to		to	to				
7990+6000n to 7999+6000n		△	No.600				

(continued)

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Buffer memory address				Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area			
QD77MS2 QD77MS4		QD77MS16								
26000+1000n		22000+400n		○	[Da.11] Shape [Da.12] Start data No.		1st point	Block start data	Starting block 0	Data for positioning (Starting block data)
	26050+1000n		22050+400n	○	[Da.13] Special start instruction [Da.14] Parameter					
26001+1000n	26051+1000n	22001+400n	22051+400n	○	2nd point					
26002+1000n	26052+1000n	22002+400n	22052+400n	○	3rd point					
to		to		to	to					
26049+1000n	26099+1000n	22049+400n	22099+400n	○	50th point					
26100+1000n		22100+400n		○	[Da.15] Condition target		No.1	Condition data		
				△	[Da.16] Condition operator					
		22101+400n		×	[Da.23] Number of simultaneous starting axes	Simultaneous starting axis No.1				
					[Da.24] Simultaneous starting axis No.1					
					[Da.25] Simultaneous starting axis No.2					
					[Da.26] Simultaneous starting axis No.3					
26102+1000n 26103+1000n		22102+400n 22103+400n		○	[Da.17] Address					
26104+1000n 26105+1000n		22104+400n 22105+400n		△	[Da.18] Parameter 1					
26106+1000n 26107+1000n		22106+400n 22107+400n		△	[Da.19] Parameter 2					
26110+1000n to 26119+1000n		22110+400n to 22119+400n		△	No.2					
26120+1000n to 26129+1000n		22120+400n to 22129+400n		△	No.3					
to		to		to	to					
26190+1000n to 26199+1000n		22190+400n to 22199+400n		△	No.10					
26200+1000n to 26299+1000n		22200+400n to 22299+400n		○	Block start data				Starting block 1	
26300+1000n to 26399+1000n		22300+400n to 22399+400n		△	Condition data					
26400+1000n to 26499+1000n		Set with GX Works2		○	Block start data				Starting block 2	
26500+1000n to 26599+1000n				△	Condition data					
26600+1000n to 26699+1000n				○	Block start data				Starting block 3	
26700+1000n to 26799+1000n				△	Condition data					
26800+1000n to 26899+1000n				○	Block start data				Starting block 4	
26900+1000n to 26999+1000n				△	Condition data					

(continued) Mark detection setting No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
54000+20k		○	[Pr.800] Mark detection signal setting		Mark detection setting parameters
54001+20k		○	[Pr.801] Mark detection signal compensation time		
54002+20k		○	[Pr.802] Mark detection data type		
54003+20k		○	[Pr.803] Mark detection data axis No.		
54004+20k		○	[Pr.804] Mark detection data buffer memory No.		
54005+20k					
54006+20k		○	[Pr.805] Latch data range upper limit value		
54007+20k					
54008+20k		○	[Pr.806] Latch data range lower limit value		
54009+20k					
54010+20k		○	[Pr.807] Mark detection mode setting		
54640+10k		○	[Cd.800] Number of mark detection clear request		Mark detection control data
54641+10k		○	[Cd.801] Mark detection invalid flag		
54642+10k		○	[Cd.802] Latch data range change request		
54960+80k		○	[Md.800] Number of mark detection		Mark detection monitor data
54962+80k		○	[Md.801] Mark detection data storage area (1 to 32)	1	
54963+80k		○			
54964+80k		○		2	
54965+80k		○			
54966+80k		○		3	
54967+80k		○			
to		○		to	
55024+80k		○		32	
55025+80k		○			

The following list shows buffer memory addresses corresponding to servo parameters.

n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
30100+200n	28400+100n	○	[Pr.100] Servo series	—	Servo parameters
30101+200n	28401+100n	○	—	PA01	
30102+200n	28402+100n	○	—	PA02	
30103+200n	28403+100n	○	—	PA03	
30104+200n	28404+100n	○	—	PA04	
30105+200n	28405+100n	○	—	PA05	
30106+200n	28406+100n	○	—	PA06	
30107+200n	28407+100n	○	—	PA07	
30108+200n	28408+100n	○	—	PA08	
30109+200n	28409+100n	○	—	PA09	
30110+200n	28410+100n	○	—	PA10	
30111+200n	28411+100n	○	—	PA11	
30112+200n	28412+100n	○	—	PA12	
30113+200n	28413+100n	○	—	PA13	
30114+200n	28414+100n	○	—	PA14	
30115+200n	28415+100n	○	—	PA15	
30116+200n	28416+100n	○	—	PA16	
30117+200n	28417+100n	○	—	PA17	
30118+200n	28418+100n	○	—	PA18	
30119+200n	28419+100n	○	—	PB01	
30120+200n	28420+100n	○	—	PB02	
30121+200n	28421+100n	○	—	PB03	
30122+200n	28422+100n	○	—	PB04	
30123+200n	28423+100n	○	—	PB05	
30124+200n	28424+100n	○	—	PB06	
30125+200n	28425+100n	○	—	PB07	
30126+200n	28426+100n	○	—	PB08	
30127+200n	28427+100n	○	—	PB09	
30128+200n	28428+100n	○	—	PB10	
30129+200n	28429+100n	○	—	PB11	
30130+200n	28430+100n	○	—	PB12	
30131+200n	28431+100n	○	—	PB13	
30132+200n	28432+100n	○	—	PB14	
30133+200n	28433+100n	○	—	PB15	
30134+200n	28434+100n	○	—	PB16	
30135+200n	28435+100n	○	—	PB17	
30136+200n	28436+100n	○	—	PB18	
30137+200n	28437+100n	○	—	PB19	
30138+200n	28438+100n	○	—	PB20	
30139+200n	28439+100n	○	—	PB21	
30140+200n	28440+100n	○	—	PB22	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
30141+200n	28441+100n	○	—	PB23	Servo parameters
30142+200n	28442+100n	○	—	PB24	
30143+200n	28443+100n	○	—	PB25	
30144+200n	28444+100n	○	—	PB26	
30145+200n	28445+100n	○	—	PB27	
30146+200n	28446+100n	○	—	PB28	
30147+200n	28447+100n	○	—	PB29	
30148+200n	28448+100n	○	—	PB30	
30149+200n	28449+100n	○	—	PB31	
30150+200n	28450+100n	○	—	PB32	
30151+200n	28451+100n	○	—	PB33	
30152+200n	28452+100n	○	—	PB34	
30153+200n	28453+100n	○	—	PB35	
30154+200n	28454+100n	○	—	PB36	
30155+200n	28455+100n	○	—	PB37	
30156+200n	28456+100n	○	—	PB38	
30157+200n	28457+100n	○	—	PB39	
30158+200n	28458+100n	○	—	PB40	
30159+200n	28459+100n	○	—	PB41	
30160+200n	28460+100n	○	—	PB42	
30161+200n	28461+100n	○	—	PB43	
30162+200n	28462+100n	○	—	PB44	
30163+200n	28463+100n	○	—	PB45	
30164+200n	28464+100n	○	—	PC01	
30165+200n	28465+100n	○	—	PC02	
30166+200n	28466+100n	○	—	PC03	
30167+200n	28467+100n	○	—	PC04	
30168+200n	28468+100n	○	—	PC05	
30169+200n	28469+100n	○	—	PC06	
30170+200n	28470+100n	○	—	PC07	
30171+200n	28471+100n	○	—	PC08	
30172+200n	28472+100n	○	—	PC09	
30173+200n	28473+100n	○	—	PC10	
30174+200n	28474+100n	○	—	PC11	
30175+200n	28475+100n	○	—	PC12	
30176+200n	28476+100n	○	—	PC13	
30177+200n	28477+100n	○	—	PC14	
30178+200n	28478+100n	○	—	PC15	
30179+200n	28479+100n	○	—	PC16	
30180+200n	28480+100n	○	—	PC17	
30181+200n	28481+100n	○	—	PC18	
30182+200n	28482+100n	○	—	PC19	
30183+200n	28483+100n	○	—	PC20	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
30184+200n	28484+100n	○	—	PC21	Servo parameters
30185+200n	28485+100n	○	—	PC22	
30186+200n	28486+100n	○	—	PC23	
30187+200n	28487+100n	○	—	PC24	
30188+200n	28488+100n	○	—	PC25	
30189+200n	28489+100n	○	—	PC26	
30190+200n	28490+100n	○	—	PC27	
30191+200n	28491+100n	○	—	PC28	
30192+200n	28492+100n	○	—	PC29	
30193+200n	28493+100n	○	—	PC30	
30194+200n	28494+100n	○	—	PC31	
30195+200n	28495+100n	○	—	PC32	
30196+200n	Set with GX Works2	○	—	PD01	
30197+200n		○	—	PD02	
30198+200n		○	—	PD03	
30199+200n		○	—	PD04	
30200+200n		○	—	PD05	
30201+200n		○	—	PD06	
30202+200n		○	—	PD07	
30203+200n		○	—	PD08	
30204+200n		○	—	PD09	
30205+200n		○	—	PD10	
30206+200n		○	—	PD11	
30207+200n		○	—	PD12	
30208+200n		○	—	PD13	
30209+200n		○	—	PD14	
30210+200n		○	—	PD15	
30211+200n		○	—	PD16	
30212+200n		○	—	PD17	
30213+200n		○	—	PD18	
30214+200n		○	—	PD19	
30215+200n		○	—	PD20	
30216+200n		○	—	PD21	
30217+200n		○	—	PD22	
30218+200n		○	—	PD23	
30219+200n		○	—	PD24	
30220+200n		○	—	PD25	
30221+200n		○	—	PD26	
30222+200n		○	—	PD27	
30223+200n		○	—	PD28	
30224+200n		○	—	PD29	
30225+200n		○	—	PD30	
30226+200n		○	—	PD31	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
30227+200n	Set with GX Works2	○	—	PD32	Servo parameters
30228+200n		○	—	PE01	
30229+200n		○	—	PE02	
30230+200n		○	—	PE03	
30231+200n		○	—	PE04	
30232+200n		○	—	PE05	
30233+200n		○	—	PE06	
30234+200n		○	—	PE07	
30235+200n		○	—	PE08	
30236+200n		○	—	PE09	
30237+200n		○	—	PE10	
30238+200n		○	—	PE11	
30239+200n		○	—	PE12	
30240+200n		○	—	PE13	
30241+200n		○	—	PE14	
30242+200n		○	—	PE15	
30243+200n		○	—	PE16	
30244+200n		○	—	PE17	
30245+200n		○	—	PE18	
30246+200n		○	—	PE19	
30247+200n		○	—	PE20	
30248+200n		○	—	PE21	
30249+200n		○	—	PE22	
30250+200n		○	—	PE23	
30251+200n		○	—	PE24	
30252+200n		○	—	PE25	
30253+200n		○	—	PE26	
30254+200n		○	—	PE27	
30255+200n		○	—	PE28	
30256+200n		○	—	PE29	
30257+200n		○	—	PE30	
30258+200n		○	—	PE31	
30259+200n		○	—	PE32	
30260+200n		○	—	PE33	
30261+200n		○	—	PE34	
30262+200n		○	—	PE35	
30263+200n		○	—	PE36	
30264+200n		○	—	PE37	
30265+200n		○	—	PE38	
30266+200n		○	—	PE39	
30267+200n		○	—	PE40	
30268+200n		○	—	PS01	
30269+200n		○	—	PS02	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
30270+200n	Set with GX Works2	○	—	PS03	Servo parameters
30271+200n		○	—	PS04	
30272+200n		○	—	PS05	
30273+200n		○	—	PS06	
30274+200n		○	—	PS07	
30275+200n		○	—	PS08	
30276+200n		○	—	PS09	
30277+200n		○	—	PS10	
30278+200n		○	—	PS11	
30279+200n		○	—	PS12	
30280+200n		○	—	PS13	
30281+200n		○	—	PS14	
30282+200n		○	—	PS15	
30283+200n		○	—	PS16	
30284+200n		○	—	PS17	
30285+200n		○	—	PS18	
30286+200n		○	—	PS19	
30287+200n		○	—	PS20	
30288+200n		○	—	PS21	
30289+200n		○	—	PS22	
30290+200n		○	—	PS23	
30291+200n		○	—	PS24	
30292+200n		○	—	PS25	
30293+200n		○	—	PS26	
30294+200n		○	—	PS27	
30295+200n		○	—	PS28	
30296+200n		○	—	PS29	
30297+200n		○	—	PS30	
30298+200n		○	—	PS31	
30299+200n		○	—	PS32	
30900+50n		○	—	PF01	
30901+50n		○	—	PF02	
30902+50n		○	—	PF03	
30903+50n		○	—	PF04	
30904+50n		○	—	PF05	
30905+50n		○	—	PF06	
30906+50n		○	—	PF07	
30907+50n		○	—	PF08	
30908+50n		○	—	PF09	
30909+50n		○	—	PF10	
30910+50n		○	—	PF11	
30911+50n		○	—	PF12	
30912+50n		○	—	PF13	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
30913+50n	Set with GX Works2	○	—	PF14	Servo parameters
30914+50n		○	—	PF15	
30915+50n		○	—	PF16	
30916+50n		○	—	Po01	
30917+50n		○	—	Po02	
30918+50n		○	—	Po03	
30919+50n		○	—	Po04	
30920+50n		○	—	Po05	
30921+50n		○	—	Po06	
30922+50n		○	—	Po07	
30923+50n		○	—	Po08	
30924+50n		○	—	Po09	
30925+50n		○	—	Po10	
30926+50n		○	—	Po11	
30927+50n		○	—	Po12	
30928+50n		○	—	Po13	
30929+50n		○	—	Po14	
30930+50n		○	—	Po15	
30931+50n		○	—	Po16	
30932+50n		○	—	PA19	
64400+250n	64400+70n	○	—	PA20	
64401+250n	64401+70n	○	—	PA21	
64402+250n	64402+70n	○	—	PA22	
64403+250n	64403+70n	○	—	PA23	
64404+250n	64404+70n	○	—	PA24	
64405+250n	64405+70n	○	—	PA25	
64406+250n	64406+70n	○	—	PA26	
64407+250n	64407+70n	○	—	PA27	
64408+250n	64408+70n	○	—	PA28	
64409+250n	64409+70n	○	—	PA29	
64410+250n	64410+70n	○	—	PA30	
64411+250n	64411+70n	○	—	PA31	
64412+250n	64412+70n	○	—	PA32	
64413+250n	64413+70n	○	—	PB46	
64414+250n	64414+70n	○	—	PB47	
64415+250n	64415+70n	○	—	PB48	
64416+250n	64416+70n	○	—	PB49	
64417+250n	64417+70n	○	—	PB50	
64418+250n	64418+70n	○	—	PB51	
64419+250n	64419+70n	○	—	PB52	
64420+250n	64420+70n	○	—	PB53	
64421+250n	64421+70n	○	—	PB54	
64422+250n	64422+70n	○	—	PB55	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
64423+250n	64423+70n	○	—	PB56	Servo parameters
64424+250n	64424+70n	○	—	PB57	
64425+250n	64425+70n	○	—	PB58	
64426+250n	64426+70n	○	—	PB59	
64427+250n	64427+70n	○	—	PB60	
64428+250n	64428+70n	○	—	PB61	
64429+250n	64429+70n	○	—	PB62	
64430+250n	64430+70n	○	—	PB63	
64431+250n	64431+70n	○	—	PB64	
64432+250n	64432+70n	○	—	PC33	
64433+250n	64433+70n	○	—	PC34	
64434+250n	64434+70n	○	—	PC35	
64435+250n	64435+70n	○	—	PC36	
64436+250n	64436+70n	○	—	PC37	
64437+250n	64437+70n	○	—	PC38	
64438+250n	64438+70n	○	—	PC39	
64439+250n	64439+70n	○	—	PC40	
64440+250n	64440+70n	○	—	PC41	
64441+250n	64441+70n	○	—	PC42	
64442+250n	64442+70n	○	—	PC43	
64443+250n	64443+70n	○	—	PC44	
64444+250n	64444+70n	○	—	PC45	
64445+250n	64445+70n	○	—	PC46	
64446+250n	64446+70n	○	—	PC47	
64447+250n	64447+70n	○	—	PC48	
64448+250n	64448+70n	○	—	PC49	
64449+250n	64449+70n	○	—	PC50	
64450+250n	64450+70n	○	—	PC51	
64451+250n	64451+70n	○	—	PC52	
64452+250n	64452+70n	○	—	PC53	
64453+250n	64453+70n	○	—	PC54	
64454+250n	64454+70n	○	—	PC55	
64455+250n	64455+70n	○	—	PC56	
64456+250n	64456+70n	○	—	PC57	
64457+250n	64457+70n	○	—	PC58	
64458+250n	64458+70n	○	—	PC59	
64459+250n	64459+70n	○	—	PC60	
64460+250n	64460+70n	○	—	PC61	
64461+250n	64461+70n	○	—	PC62	
64462+250n	64462+70n	○	—	PC63	
64463+250n	64463+70n	○	—	PC64	
64464+250n	Set with GX Works2	○	—	PD33	
64465+250n		○	—	PD34	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
64466+250n	Set with GX Works2	○	—	PD35	Servo parameters
64467+250n		○	—	PD36	
64468+250n		○	—	PD37	
64469+250n		○	—	PD38	
64470+250n		○	—	PD39	
64471+250n		○	—	PD40	
64472+250n		○	—	PD41	
64473+250n		○	—	PD42	
64474+250n		○	—	PD43	
64475+250n		○	—	PD44	
64476+250n		○	—	PD45	
64477+250n		○	—	PD46	
64478+250n		○	—	PD47	
64479+250n		○	—	PD48	
64480+250n		○	—	PE41	
64481+250n		○	—	PE42	
64482+250n		○	—	PE43	
64483+250n		○	—	PE44	
64484+250n		○	—	PE45	
64485+250n		○	—	PE46	
64486+250n		○	—	PE47	
64487+250n		○	—	PE48	
64488+250n		○	—	PE49	
64489+250n		○	—	PE50	
64490+250n		○	—	PE51	
64491+250n		○	—	PE52	
64492+250n		○	—	PE53	
64493+250n		○	—	PE54	
64494+250n		○	—	PE55	
64495+250n		○	—	PE56	
64496+250n		○	—	PE57	
64497+250n		○	—	PE58	
64498+250n		○	—	PE59	
64499+250n		○	—	PE60	
64500+250n		○	—	PE61	
64501+250n		○	—	PE62	
64502+250n		○	—	PE63	
64503+250n		○	—	PE64	
64504+250n		○	—	PF17	
64505+250n		○	—	PF18	
64506+250n		○	—	PF19	
64507+250n		○	—	PF20	
64508+250n		○	—	PF21	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
64509+250n	Set with GX Works2	○	—	PF22	Servo parameters
64510+250n		○	—	PF23	
64511+250n		○	—	PF24	
64512+250n		○	—	PF25	
64513+250n		○	—	PF26	
64514+250n		○	—	PF27	
64515+250n		○	—	PF28	
64516+250n		○	—	PF29	
64517+250n		○	—	PF30	
64518+250n		○	—	PF31	
64519+250n		○	—	PF32	
64520+250n		○	—	PF33	
64521+250n		○	—	PF34	
64522+250n		○	—	PF35	
64523+250n		○	—	PF36	
64524+250n		○	—	PF37	
64525+250n		○	—	PF38	
64526+250n		○	—	PF39	
64527+250n		○	—	PF40	
64528+250n		○	—	PF41	
64529+250n		○	—	PF42	
64530+250n		○	—	PF43	
64531+250n		○	—	PF44	
64532+250n		○	—	PF45	
64533+250n		○	—	PF46	
64534+250n		○	—	PF47	
64535+250n		○	—	PF48	
64536+250n		○	—	Po17	
64537+250n		○	—	Po18	
64538+250n		○	—	Po19	
64539+250n		○	—	Po20	
64540+250n		○	—	Po21	
64541+250n		○	—	Po22	
64542+250n		○	—	Po23	
64543+250n		○	—	Po24	
64544+250n		○	—	Po25	
64545+250n		○	—	Po26	
64546+250n		○	—	Po27	
64547+250n		○	—	Po28	
64548+250n		○	—	Po29	
64549+250n		○	—	Po30	
64550+250n		○	—	Po31	
64551+250n		○	—	Po32	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
64552+250n	Set with GX Works2	○	—	PL01	Servo parameters
64553+250n		○	—	PL02	
64554+250n		○	—	PL03	
64555+250n		○	—	PL04	
64556+250n		○	—	PL05	
64557+250n		○	—	PL06	
64558+250n		○	—	PL07	
64559+250n		○	—	PL08	
64560+250n		○	—	PL09	
64561+250n		○	—	PL10	
64562+250n		○	—	PL11	
64563+250n		○	—	PL12	
64564+250n		○	—	PL13	
64565+250n		○	—	PL14	
64566+250n		○	—	PL15	
64567+250n		○	—	PL16	
64568+250n		○	—	PL17	
64569+250n		○	—	PL18	
64570+250n		○	—	PL19	
64571+250n		○	—	PL20	
64572+250n		○	—	PL21	
64573+250n		○	—	PL22	
64574+250n		○	—	PL23	
64575+250n		○	—	PL24	
64576+250n		○	—	PL25	
64577+250n		○	—	PL26	
64578+250n		○	—	PL27	
64579+250n		○	—	PL28	
64580+250n		○	—	PL29	
64581+250n		○	—	PL30	
64582+250n		○	—	PL31	
64583+250n		○	—	PL32	
64584+250n		○	—	PL33	
64585+250n		○	—	PL34	
64586+250n		○	—	PL35	
64587+250n		○	—	PL36	
64588+250n		○	—	PL37	
64589+250n		○	—	PL38	
64590+250n		○	—	PL39	
64591+250n		○	—	PL40	
64592+250n		○	—	PL41	
64593+250n		○	—	PL42	
64594+250n		○	—	PL43	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
64595+250n	Set with GX Works2	○	—	PL44	Servo parameters
64596+250n		○	—	PL45	
64597+250n		○	—	PL46	
64598+250n		○	—	PL47	
64599+250n		○	—	PL48	
64600+250n		○	—	PT01	
64601+250n		○	—	PT02	
64602+250n		○	—	PT03	
64603+250n		○	—	PT04	
64604+250n		○	—	PT05	
64605+250n		○	—	PT06	
64606+250n		○	—	PT07	
64607+250n		○	—	PT08	
64608+250n		○	—	PT09	
64609+250n		○	—	PT10	
64610+250n		○	—	PT11	
64611+250n		○	—	PT12	
64612+250n		○	—	PT13	
64613+250n		○	—	PT14	
64614+250n		○	—	PT15	
64615+250n		○	—	PT16	
64616+250n		○	—	PT17	
64617+250n		○	—	PT18	
64618+250n		○	—	PT19	
64619+250n		○	—	PT20	
64620+250n		○	—	PT21	
64621+250n		○	—	PT22	
64622+250n		○	—	PT23	
64623+250n		○	—	PT24	
64624+250n		○	—	PT25	
64625+250n		○	—	PT26	
64626+250n		○	—	PT27	
64627+250n		○	—	PT28	
64628+250n		○	—	PT29	
64629+250n		○	—	PT30	
64630+250n		○	—	PT31	
64631+250n		○	—	PT32	
64632+250n		○	—	PT33	
64633+250n		○	—	PT34	
64634+250n		○	—	PT35	
64635+250n		○	—	PT36	

(continued) n: Axis No.-1, ○: Compatible, △: Partly compatible, ×: Not compatible

Buffer memory address		Compatibility of QD77MS2/4 and QD77MS16	Item		Memory area
QD77MS2 QD77MS4	QD77MS16				
64636+250n	Set with GX Works2	○	—	PT37	Servo parameters
64637+250n		○	—	PT38	
64638+250n		○	—	PT39	
64639+250n		○	—	PT40	
64640+250n		○	—	PT41	
64641+250n		○	—	PT42	
64642+250n		○	—	PT43	
64643+250n		○	—	PT44	
64644+250n		○	—	PT45	
64645+250n		○	—	PT46	
64646+250n		○	—	PT47	
64647+250n		○	—	PT48	

MEMO

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 Simple Motion module, its applications should be those that may not result in a serious damage even if any failure or malfunction occurs in Simple Motion module, and a backup or fail-safe function should operate on an external system to Simple Motion module when any failure or malfunction occurs.

(2) Our Simple Motion module 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.

Migration Guide from Positioning Module to Simple Motion Module [QD75M(H) ⇒ QD77MS]

Country/Region	Sales office	
USA	Mitsubishi Electric Automation, Inc. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, U.S.A.	Tel : +1-847-478-2100
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Brazil	Mitsubishi Electric do Brasil Comercio e Servicos Ltda. Avenida Adelino Cardana, 293, 21 andar, Bethaville, Barueri SP, Brazil	Tel : +55-11-4689-3000
Germany	Mitsubishi Electric Europe B.V. German Branch Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany	Tel : +49-2102-486-0
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UAE	Mitsubishi Electric Europe B.V. Dubai Branch Dubai Silicon Oasis, P.O.BOX 341241, Dubai, U.A.E.	Tel : +971-4-3724716
South Africa	Adroit Technologies 20 Waterford Office Park, 189 Witkoppen Road, Fourways, South Africa	Tel : +27-11-658-8100
China	Mitsubishi Electric Automation (China) Ltd. Mitsubishi Electric Automation Center, No.1386 Hongqiao Road, Shanghai, China	Tel : +86-21-2322-3030
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