MITSUBISHI ELECTRIC ENGINEERING

SSCNET Conversion Unit MODEL DG2GWY13

User's Manual

(Detailed Edition)

Upgrade Tool Products

SAFETY PRECAUTIONS •

(Please read the instructions carefully before using this equipment.)

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

The precautions described in this manual are concerned with this product only. For Motion controller system safety precautions, refer to the user's manual of the CPU module used.

In this manual, the safety precautions are ranked as "DANGER" and "CAUTION".



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

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

Under some circumstances, failure to observe the precautions given under "<u></u>CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

- Configure safety circuits external to the conversion unit to ensure that the entire system operates safely even when a fault occurs in the external power supply or the conversion unit. Failure to do so may result in an accident due to a malfunction or incorrect output.
 - (1) Configure external safety circuits, such as an emergency stop circuit, protection circuit, and protective interlock circuit for forward/reverse operation or upper/lower limit positioning.
 - (2) When the conversion unit detects an error such as a watchdog timer error by the self-diagnostic function, all outputs are turned off. Also, output controls may not work when an error occurs in a part, such as I/O control part, where the conversion unit cannot detect any error. To ensure safety operation in such a case, provide a safety mechanism or external circuit.
 - (3) Outputs may remain on or off due to a failure of an output module relay, transistor, or triac. To ensure safety operation, configure an external circuit to monitor output signals that could cause a serious accident.

- Noise interference can cause erroneous data to be written to the conversion unit, resulting in an incorrect operation of the conversion unit which may cause an accident, or damage the machine. Always ensure the following items are observed.
 - Do not bundle main circuit lines or high-voltage lines with load lines.
 Do not keep these lines close to each other as they are easily affected by noise and surge induction.
 When wiring, keep the above lines at least 100 mm apart.
 - (2) The shield of shielded cords and shielded cables must be grounded to a point on the programmable controller side. However, do not use a common ground with strong electrical equipment.
 - (3) Input, power supply, and optical fiber connectors should be used without any force applied on them. Excessive force will cause cables to disconnect and fail.
- Provide appropriate circuits external to the conversion unit to prevent cases where danger may result from abnormal operation of the overall system in the event of an external power supply fault or conversion unit failure.
- If a fault occurs in the conversion unit or servo amplifier, shut off the power at the control power source of the servo amplifier.
- Do not apply a voltage other than that specified in the instruction manual on any terminal. Doing so may cause destruction or damage.
- Do not reverse the polarity (+/-). Doing so can cause an explosion or damage.

[Installation Precautions]

<u>A DANGER</u>

•Shut off the external power supply (all phases) used in the system before mounting or removing the conversion unit. Not doing so could result in an electric shock or damage to the unit.

- Never try to disassemble or modify the conversion unit. It may cause a product failure, operation failure, injury, or fire.
- Do not drop or apply strong impact on the conversion unit. Doing so will damage the unit.
- Use the conversion unit in an environment that meets the general specifications contained in this manual. Using the conversion unit in an environment outside the range of the general specifications could result in an electric shock, fire, operation failure, and damage to or deterioration of the unit.
- When using the conversion unit in places subject to vibration, fix the unit with screws. Tighten the screws within the specified torque range. Undertightening may cause a drop, short circuit or malfunction. Overtightening may cause a drop, short circuit, or malfunction due to damage to the screws or conversion unit.
- Do not directly touch the conductive parts and electronic components of the conversion unit. Doing so may cause malfunction or failure of the unit.
- Lock the control panel and prevent access to those who are not certified to handle or install electric equipment.
- Mount the conversion unit, servo amplifier, servo motor, and regenerative resistor on incombustible material. Mounting them directly or close to combustibles will lead to fire.

[Wiring Precautions]

\land DANGER

• Shut off the external power supply (all phases) used in the system before installation or wiring. Not doing so could result in an electric shock or damage to the product.

- Be sure to ground the earth terminal FG and LG. (Ground resistance: 100 Ω or less) Not doing so could result in an electric shock or malfunction.
- Do not connect the FG terminal to the 24 V DC side of an external power supply. Doing so may cause a malfunction.
- Check the product's rated voltage and the terminal layout. Make sure to wire the conversion unit correctly. Connecting a power supply that differs from the rating or incorrectly wiring the product could result in fire or failure.
- External connections shall be crimped or pressure welded with the specified tools, or correctly soldered. Imperfect connections could result in a short circuit, fire, or malfunction.
- Tighten the terminal screws within the specified torque range. Undertightening may cause a drop, short circuit, fire, or malfunction. Overtightening may cause a drop, short circuit, or malfunction due to damage to the screws or conversion unit.
- Make sure that no foreign matter such as sawdust or wiring debris enters the conversion unit. Such debris could cause fire, damage, or malfunction.
- Do not reverse the polarity (+/-). Doing so can cause an explosion or damage.

[Startup and Maintenance Precautions]

- •. Do not touch any terminal while power is on. Doing so will cause electric shock.
- Shut off the external power supply (all phases) used in the system before cleaning the conversion unit or retightening the terminal or unit mounting screws. Not doing so could result in an electric shock. Undertightening may cause a drop or malfunction. Overtightening may cause a drop, short circuit, or malfunction due to damage to the screws or conversion unit.

- Never try to disassemble or modify the conversion unit. It may cause a product failure, operation failure, injury, or fire.
- Use any radio communication device such as a cellular phone or a PHS phone more than 25 cm away from the conversion unit in all directions. Not doing so may cause a malfunction.
- Shut off the external power supply (all phases) used in the system before installing or removing the conversion unit. Not doing so may cause the unit to fail or malfunction.
- Before handling the conversion unit, always touch grounded metal, etc. to discharge static electricity from human body. Not doing so may cause the unit to fail or malfunction.
- Do not directly touch the conductive parts and electronic components of the conversion unit. Doing so could cause the unit to malfunction or fail.

[Disposal Precautions]

🖄 DANGER

• A capacitor is mounted into the conversion unit. Do not incinerate the conversion unit, or the capacitor may burst. For disposal of the conversion unit, request for the specialized industrial waste disposal service who has incineration facilities.

Dispose of this product according to your local laws and regulations.

- 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, atomic power, electric power, aerospace, medical 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.

[Transportation Precautions]

- When not using the product for a long time, disconnect the power line from the unit or servo amplifier.
- Place the conversion unit and servo amplifier in anti-static vinyl bags to store.

REVISIONS

*The manual number is noted on the lower left of the back cover.

Print Date	*Manual Number	Revision
June 2015	50GR-041197-A	First edition
		[Addition of compatible models]
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		Procedure before Starting Operations, Steps before Starting Operations,
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		Setting the servo amplifier switch
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		Servo parameter capture function
	50GR-041197-G	[Additions & corrections]
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C		version, specifications, connecting the devices
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		Setiing and procedure starting operationas
	1	

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© 2017(2023) MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED INTRODUCTION

INTRODUCTION

Thank you for choosing our SSCNET conversion unit.

Before using this product, read this manual carefully and understand the functions and performance of the product thoroughly to ensure correct use.

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About the manuals

Order the following manuals that are related to this product when necessary.

Detailed manual

Manual name	Manual No.
DG2GWY13 SSCNET Conversion Unit User's Manual (Detailed)	50GR-041197

Relevant manuals of the products manufactured by Mitsubishi Electric Corporation

Manual name	Manual No.
MELSERVO-J4 Servo Amplifier Instruction Manual (Troubleshooting)	SH(NA)030109
MR-J4B_(-RJ) Servo Amplifier Instruction Manual	SH(NA)030106
MR-J4W2B, MR-J4W3B, MR-J4W2-0303B6 Servo Amplifier Instruction Manual	SH(NA)030105
MR-J3B Servo Amplifier Instruction Manual	SH(NA)030051
MR-J3W-0303BN6, MR-J3WB Servo Amplifier Instruction Manual	SH(NA)030073
A173UHCPU/A172SHCPUN/A171SHCPUN User's Manual	IB(NA)67395
A273UHCPU User's Manual	IB(NA)67262
Q173CPU(N)/Q172CPU(N) User's Manual	IB(NA)0300040

Generic terms and abbreviations

Unless otherwise specified, this manual uses the following generic terms and abbreviations.

Generic terms/abbreviations	Description
Conversion unit	DG2GWY13 SSCNET conversion unit
MELSOFT MT Works2	Motion controller engineering software package
MT Developer2	Programming software included in MELSOFT MT Works2
MR Configurator2	Servo setup software MR Configurator2 (version 1.00A or later)
A series Motion controller	A171SHCPU(N)/A172SHCPU(N)/A173UHCPU(-S1)/A273UHCPU(-S3) Motion controller
Q series Motion controller	Q172CPU(N)/Q173CPU(N) Motion controller
HG motor	MR-J4 compatible HG series servo motor
SSCNET	Communication network between the A/QN series Motion controller and the conversion unit
SSCNET III/H	Communication network between the conversion unit and the SSCNET III/H compatible servo
	amplifier
SSCNET III	Communication network between the conversion unit and the SSCNET III compatible servo
	amplifier
SV13	Operating system software for conveyor assembly use
SV22	Operating system software for automatic machinery use
SV43	Operating system software for the areas around machine tools
SW3RNC-GSVE	Integrated startup support software for the A series Motion controller
A270CDCBL03M cable	Cable for the SSC I/F card
J3 compatibility mode	MR-J4-B series operation mode compatible with the MR-J3-B series
SSCNET III/H compatible servo	MR-J4-B/MR-J4W2-B/MR-J4W3-B servo amplifiers
amplifier	
SSCNET III compatible servo	MR-J4-B (J3 compatibility mode)/MR-J4W2-B (J3 compatibility mode)/MR-J4W3-B (J3
amplifier	compatibility mode)/MR-J3-B/MR-J3W-B servo amplifiers
MR-J4-B servo parameters	Servo parameters used with SSCNET III/H compatible servo amplifiers
MR-J3-B servo parameters	Servo parameters used with SSCNET III compatible servo amplifiers

POINT

Apart from the conversion unit (DG2GWY13) and the 24 V DC power supply input connector (DG8PW3CN), the software package, modules, and cables of Mitsubishi Electric Corporation are used to configure the systems described in this manual.

1. OVERVIEW

1. OVERVIEW

- The communication type for the conversion unit (model: DG2GWY13) can be set to "SSCNET III/H" or "SSCNET III"
- By setting the communication type to "SSCNET III/H", the drive section of a system can be upgraded from SSCNET compatible servo amplifiers (MR-J2S-B/MR-J2M-B/MR-J2-B/MR-H-B/ MR-J4-B-RJ020+MR-J4-T20) to SSCNET III/H compatible servo amplifier (MR-J4-B). The SSCNET compatible controller section (A series or Q series Motion controller) does not need to be upgraded simultaneously.
- By setting the communication type to "SSCNET III", the drive section of a system can be upgraded from SSCNET compatible servo amplifiers to SSCNET III compatible servo amplifiers (MR-J4-B [J3 compatibility mode] and MR-J3-B). The SSCNET compatible controller section does not need to be upgraded simultaneously.
- Since the controller and drive sections can be upgraded independently, the potential risks at upgrading can be reduced and the machine halt time can be shortened.
- The range of upgrading is flexible since the drive section can be upgraded by SSCNET line (max. 16 axes).
- Existing design assets can be used.

Important

(1) Precautions due to differences in encoder resolution

If the encoder resolution is different from the existing installation, it is necessary to review each setting in the following items.

- Electronic gear settings (position accuracy error)
- Stroke limit upper/lower limit range setting (reduction in the stroke limit upper/lower limit range)
- Settings for the amount of backlash compensation (reduction in the setting range)
- Command in-position settings (reduction in the setting range)
- Mechanical system program settings (set-up and operation)

Refer to "Section 5.4 Cautions for differences in encoder resolution" for details.

(2) The speed control (II) VVF command and VVR command for the A series Motion controllers

When the speed control (II) VVF command or VVR command is executed for an A series Motion controller, the encoder resolution for the servo amplifier will affect the internal calculations of the A series Motion controller. This may cause overflow to occur, and thus the commands cannot be used. If controlling speed with an A series Motion controller, use the speed control (I) VF or VR command. (If controlling speed with a Q series Motion controller, use the speed control (I) VF or VR command and the speed control (II) VVF or VVR command.)

For the operating specifications for the speed control (I) VF or VR command and the speed control (II) VVF or VVR command, refer to the Motion controller manual.

- A172SHCPUN/A171SHCPUN Motion Controller (SV13/SV22) Programming Manual (REAL MODE)
 [IB (NA) 67396]
- A173UHCPUN/A273UHCPUN Motion Controller (SV13/SV22) Programming Manual (REAL MODE) [IB (NA) 0300028]
- Q173CPU(N)/Q172CPU(N) Motion Controller (SV13/SV22) Programming Manual (REAL MODE)
 [IB (NA) 0300043]

1. OVERVIEW

1.1 Precautions

Check the operating specifications and restrictions described in this manual thoroughly before use.

If this product is operated out of specifications or used without following the instructions such as restrictions, operation is not guaranteed.

We recommend our paid option to check the operating specifications and restrictions in advance.

(1) Compatible models

For compatible Motion controllers and servo amplifiers, refer to "Chapter 2 (1) Overall configuration of the system (product model, related product model)".

 To use Motion controllers and servo amplifiers with special specifications, the operating specifications need to be checked.

We can check the operating specifications (paid option).

Positioning modules (AD75M/A1SD75M/QD75M) are not compatible.

(2) SSCNET cable

In some cases, the SSCNET cable used between a Motion controller and a servo amplifier cannot be used between the Motion controller and the conversion unit.

For details, refer to "Chapter 2 (2) Configuration of the upgraded system for the conversion unit".

(3) Motion controller operating system software

Use a Motion controller that meets the following requirements: MR-J2S-B servo amplifier-compatible operating system software version and standard SV13/SV22/SV43. For details, refer to "Chapter 2 (5) Motion controller operating system software versions".

To use an operating system software with special specifications, the operating specifications need to be checked. We can check the operating specifications (paid option).

(4) Parameter settings

SSCNET III/H-compatible servo amplifier's servo parameters and the operation cycle need to be set in the conversion unit.

MELSOFT MT Works2 is required as an engineering tool.

In addition, the settings of the Motion controller need to be changed. For details, refer to "Chapter 5 SETTING AND PROCEDURE BEFORE STARTING OPERATIONS".

(5) Operation cycle

Set the operation cycle as shown in the table below.

Model	Current operation cycle setting	Condition	Operation cycle setting when the conversion unit is used	Remarks	
Conversion unit	-	-	3.555 ms	-	
	Default	The operating system software is SV22/SV43 and the number of control axes is 25 or more.	7.111 ms	For the relationships between the number of control axes and operation cycle, refer to the manual for the QN series	
QN series Motion controller		Other than those above	3.555 ms	Motion controller.	
	0.888 ms				
	1.777 ms		3.555 ms		
	3.555 ms	-			
	7.111 ms		7.111 ms		
	14.222 ms		14.222 ms	-	
A series Motion controller	-	-	The A series Motion controllers do not have the operation cycle settings.		

1. OVERVIEW

(6) Communication delay

There is a delay of one communication cycle (3.555 ms) in communication processing. Accordingly, the positioning command is transferred from the controller to the servo amplifier with a delay of one cycle. Moreover, the controller receives actual current value data, in-position signals, and servo error information from the servo amplifier with a delay of one cycle. Check that there are no problems with the communication delay. Because the communication delay occurs in all the axes connected to the conversion unit, no deviation occurs in interpolation control using multiple axes.

(7) Restrictions

Refer to "Section 5.3 Restrictions".

(1) Overall configuration of the system (product model, related product model)

The following shows the overall configuration of the system when the conversion unit is used.



No.	Item	Model	Description
1)	A series Motion controller	A171SHCPU(N) A172SHCPU(N) A173UHCPU(-S1) A273UHCPU(-S3)	SSCNET compatible controller
	Q series Motion controller	Q172CPU(N) Q173CPU(N)	SSCNET compatible controller
		MR-J2HBUS_M-A	A series Motion controller \Leftrightarrow conversion unit
		Q172J2BCBL_M	$Q172CPU(N) \Leftrightarrow$ conversion unit
2)	SSCNET cable	Q173J2B_CBL_M	$Q173CPU(N) \Leftrightarrow conversion unit$
		Q173DVCBL_M	$Q173CPU(N) \Leftrightarrow dividing unit (Q173DV)$
		MR-J2HBUS_M	Dividing unit (Q173DV) \Leftrightarrow conversion unit
3)	Conversion unit	DG2GWY13	SSCNET (max. 8 axes \times 2 lines) \rightarrow SSCNET III/H (max. 16 axes)
4)	24 V DC power supply input connector	DG8PW3CON	24 V DC power supply input connector
5)	SSCNET III cable*	MR-J3BUS_M MR-J3BUS_M-A MR-J3BUS_M-B	Conversion unit ⇔ servo amplifier Servo amplifier ⇔ servo amplifier
6)	Servo amplifier	MR-J4-B MR-J4W2-B MR-J4W3-B	SSCNET III/H compatible servo amplifier SSCNET III compatible servo amplifier
,		MR-J3-B MR-J3W-B	SSCNET III compatible servo amplifier
7)	USB cable	MR-J3USBCBL3M	Conversion unit computer
8)	Parameter conversion tool software	MELSOFT MT Works2	Software for writing parameters to the conversion unit

* The SSCNET III/H line and SSCNET III line use the same SSCNET III cable.

(2) Configuration of the upgraded system for the conversion unit

The following shows the system configurations before and after the upgrade.

By using this conversion unit, SSCNET on the Motion controller side can connect to SSCNET III/H or SSCNET III on the servo amplifier side. This enables the drive section to be upgraded independently. There are cases where the SSCNET cable between the A series Motion controller/Q series Motion controller and the servo amplifier before the upgrade can not be used as the SSCNET cable between the A series Motion controller/Q series Motion controller and the conversion unit after the upgrade. Check the explanatory note (*1). on the next page.

[Before the system upgrade]



[After the system upgrade]



No	Item	Description	
1)	A series Motion controller	A171SHCPU(N)/A172SHCPU(N)/A173UHCPU(-S1)/A273UHCPU(-S3)	Diversion possible
	Q series Motion controller	Q172CPU(N)/Q172CPU(N) Motion controller	
2)	SSCNET cable	Cable between the A series Motion controller/Q series Motion controller and the servo amplifier (*1)	New procurement/ Diversion possible (*1)
3)	Conversion unit	SSCNET \rightarrow SSCNET III/H conversion unit (*2)	This product
	24 VDC power	24 VDC power supply input connector	
	supply input connector		
4)	SSCNET III cable	Cable between the conversion unit and servo amplifier, and cable between servo amplifiers	New procurement
5)	Servo amplifier	MR-J4-B/MR-J4W2-B/MR-J4W3-B servo amplifier (SSCNET III/H compatible) MR-J4-B/MR-J4W2-B/MR-J4W3-B/MR-J3-B/MR-J3W-B servo amplifier (SSCNET III compatible)	New procurement/ Diversion possible (*3)
6)	Servo motor	MR-J4-B compatible motor : HG-KR/HG-MR/HG-SR/HG-UR/HG-RR/HG-JR MR_J2 B compatible motor :	New procurement/
		• MR-55-D compatible motor - HF-KP/HF-MP/HF-SP/HF-JP/HC-LP/HC-UP/HC-RP/HA-LP	

- (*1) The SSCNET cables connecting the Motion controller and servo amplifier before the system upgrade, and the SSCNET cables connecting the Motion controller and conversion unit after the system upgrade are described below.
 - If the SSCNET cables used before and after the system upgrade are different, procure the new cable.

Before the system upgrade		After the system upgrade				
Motion controller	Servo amplifier	SSCNET cable	Motion controller	Conversion unit	SSCNET c	able
A171SHCPU(N) A172SHCPU(N)	MR-H-B	MR-HBUS_M	A171SHCPU(N) A172SHCPU(N)	DG2GWY13	MR-J2HBUS_M-A	New procurement
A173UHCPU(-S1) A273UHCPU(-S3)	MR-J2S-B MR-J2M-B MR-J2-B MR-J4-B-RJ020 +MR-J4-T20	MR-J2HBUS_M-A	A173UHCPU(-S1) A273UHCPU(-S3)		MR-J2HBUS_M-A	Diversion possible
Q172CPU(N)	MR-H-B	Q172HBCBL_M(-B)	Q172CPU(N)	DG2GWY13	Q172J2BCBL_M(-B)	New procurement
	MR-J2S-B MR-J2M-B MR-J2-B MR-J4-B-RJ020 +MR-J4-T20	Q172J2BCBL_M(-B)			Q172J2BCBL_M(-B)	Diversion possible
Q173CPU(N) [Q173DV not used]	MR-H-B	Q173HB_CBL_M	Q173CPU(N) [Q173DV not used]	DG2GWY13	Q173J2B_CBL_M	New procurement
	MR-J2S-B MR-J2M-B MR-J2-B MR-J4-B-RJ020 +MR-J4-T20	Q173J2B_CBL_M			Q173J2B_CBL_M	Diversion possible
Q173CPU(N) [Q173DV used]	MR-H-B	Q173DVCBL_M(*1-1) MR-J2HBUS_M-A(*1-2)	Q173CPU(N) [Q173DV used]	DG2GWY13	Q173DVCBL_M(*1-1)	Diversion possible
					MR-J2HBUS_M(*1-3)	New procurement
	MR-J2S-B MR-J2M-B MR-J2-B MR-J4-B-RJ020 +MR-J4-T20	Q173DVCBL_M(*1-1) MR-J2HBUS_M(*1-4)			Q173DVCBL_M(*1-1) MR-J2HBUS_M(*1-3)	Diversion possible

(*1-1) Cable between Q173CPU(N) and Q173DV (dividing unit)

(*1-2) Cable between Q173DV (dividing unit) and MR-H-B servo amplifier

(*1-3) Cable between Q173DV (dividing unit) and the conversion unit

- (*1-4) Cable between Q173DV (dividing unit) and MR-J2S-B/MR-J2M-B/MR-J2-B/ MR-J4-B-RJ020+MR-J4-T20 servo amplifiers
- (*2) MELSOFT MT Works2 is required to write. projects to the conversion unit and to read projects from the conversion unit.

If not installed on the personal computer, make a new procurement of MELSOFT MT Works2.

(*3) If the servo amplifier (SSCNET compatible) before the system upgrade is "MR-J4-B-RJ020+MR-J4-T20", it can be diverted for usability as "MR-J4-B-RJ020" for the servo

amplifier after the system upgrade.
(*4) If the servo amplifier (SSCNET compatible) before the system upgrade is
"MR-J4-B-RJ020+MR-J4-T20", the servo motor "HG-KR/HG-MR/HG-SR/HG-UR/HG-RR/HG-JR" can be diverted to this.

(3) Connectible devices

The following table lists devices that can be connected to the conversion unit.

Item	Product model	Supported firmware version
SSCNET compatible Motion controller	A171SHCPU(N) / A172SHCPU(N) / A173UHCPU(-S1)	A or later
(OS: SV13/SV22)	A273UHCPU(-S3) Q172CPU(N) / Q173CPU(N)	B or later
SSCNET compatible Motion controller	A171SHCPU(N) / A172SHCPU(N) / A173UHCPU(-S1)	
(OS: SV43) .	A273UHCPU	D or later
	Q172CPU(N) / Q173CPU(N)	
SSCNET III/H compatible servo amplifier	MR-J4-B / MR-J4W2-B / MR-J4W3-B	A or later
SSCNET III compatible servo amplifier	MR-J4-B / MR-J4W2-B / MR-J4W3-B (J3 compatibility mode)	D or later
	MR-J3-B / MR-J3W-B	Boridio

(4) Functions supported by each firmware version

Whether functions are available depends on the firmware version of the conversion unit. The following table lists firmware versions and supported functions.

Function	Description	Firmware version (*1)	Reference
SSCNET compatible controllers added (OS: SV13/SV22) •A273UHCPU(-S3) •Q172CPU(N) •Q173CPU(N)	Currently, the controllers shown on the left can be connected.	B or later	
SSCNET compatible controllers added (OS: SV43) •A171SHCPU(N) •A172SHCPU(N) •A173UHCPU(-S1) •A273UHCPU •Q172CPU(N) •Q173CPU(N)	Currently, the controllers shown on the left can be connected.	D or later	(3) in Chapter 2
SSCNET III/H compatible servo amplifiers added •MR-J4-B (J3 compatibility mode) •MR-J4W2-B (J3 compatibility mode) •MR-J4W3-B (J3 compatibility mode) •MR-J3-B •MR-J3W-B	Currently, the servo amplifiers shown on the left can be connected.		
Auto tuning function improved	The auto tuning function adjusts servo parameters of the servo amplifier. Currently, the tuning results can be automatically stored in the storage of the conversion unit. Therefore, even soon after the power of the conversion unit and servo amplifier has been cycled, the gain servo parameters adjusted just before power off can still be used.	F or later	Sectious 5.1.3, 5.2.3
Servo parameter adjustment function using servo setup software improved (*2)	Currently, the servo parameters adjusted using the servo setup software can be automatically stored in the storage of the conversion unit. Therefore, the "applying the servo gain adjustment result setting" procedure in sections 5.1.4 or 5.2.4, can be skipped.		(*3), (*4), (*5), (*6)

(*1) The firmware version can be checked on the LED display at power-on of the conversion unit. (Refer to (4) in Chapter 3.)

(*2) Servo parameter adjustment function corresponds to "Adjustment" in the MR Configurator 2 menu or "Advanced-function" in the MRZJW3-SETUP221 menu.

(*3) Refer to "MR-J4-_B_(-RJ) Servo Amplifer Instruction Manual" (SH(NA)030106).

(*4) Refer to "MR-J4W2-_B, MR-J4W3-_B, MR-J4W2-0303B6 Servo Amplifer Instruction Manual" (SH(NA)030105).

(*5) Refer to "MR-J3-_B Servo Amplifer Instruction Manual" (SH(NA)030051).

(*6) Refer to "MR-J3W-0303BN6, MR-J3W-_B Servo Amplifer Instruction Manual" (SH(NA)030073).

(5) Motion controller operating system software versions

The conversion unit is recognized as the MR-J2S-B by the Motion controller.

Therefore, use a Motion controller with an operating system software version compatible with the MR-J2S-B.

1) For the A series Motion controllers

The following table lists the operating system software versions compatible with the MR-J2S-B.

Op	rating system Motion controller		Package model	Supported version	Engineering tool SW3RNC-GSV supported version
SV13	Motion SFC		SW3RN-SV13D		
SV22	compatible	A172SHCPU(N)	SW3RN-SV22C		
			SW3RN-SV13X	00G or lator	
		A2730HCP0-53	SW3RN-SV22W		
			SW3RN-SV13B		
		A173UHCPU	SW3RN-SB22A		- English version: 00A or later (Japanese version: 00G or later)
	Motion SFC not		SW0SRX-SV13G		
	compatible	A1/15HCPU(N)	SW0SRX-SV22F		
			SW0SRX-SV13D		
		A1725HCPU(N)	SW0SRX-SV22C	0AE or later	
	-		SW2SRX-SV13V		
		A2730HCP0			
			SW2SRX-SV13B		
		ATTSURCEO	SW2SRX-SV22A		
SV43	EIA language	A171SHCPU(N)	SW0SRX-SV43F		
	(G-code)	A172SHCPU(N)	SW0SRX-SV43C	00T or later	English version: 00B or later
		A273UHCPU	SW2SRX-SV43U		(Japanese version: 00L or later)
		A173UHCPU	SW2SRX-SV43A	00U or later	

The operating system software version of the A series Motion controller can be checked in the following message when parameters are read from the Motion controller with the engineering tool.

Communication	
The connection target CPU is A17 Read is started.	3UH, the OS is [SV22A_VER300P].
Yes	No
The operating system software model	and operating system software version are underlined.
SV22A VER:	3 0 0 P
	U : Teaching function available
software model	Blank : Teaching function not available
	Operating system software version
	→ 3 : Motion SFC compatible operating system software . (dot) : Motion SFC not compatible operating system software

2) For the QN series Motion controllers

· All the versions are compatible with the MR-J2S-B.

(1) General specifications

ltem	Specifications							
Operating ambient temperature	0 to 55°C							
Storage ambient temperature			-25	5 to 75°C				
Operating ambient humidity			5 to 95%RH	l, no condensa	tion			
Storage ambient humidity			5 to 95%RH	l, no condensa	tion			
	Compliant with JIS B 3502 and IEC 61131-2		Frequency	Constant acceleration	Half amplitude	Number of sweeps		
		Under intermittent vibration	5 to 9 Hz	-	3.5 mm	10 times in each of X, Y		
Vibration resistance			9 to 150 Hz	9.8 m/s ²	-	and Z directions (for 80 minutes)		
		Under	5 to 9 Hz	-	1.75 mm			
		continuous vibration	9 to 150 Hz	4.9 m/s ²	-	-		
Impact resistance	Compliant with JIS B 3502 and IEC 61131-2 (147 m/s ² , 3 times in each of X, Y and Z directions)							
Operating atmosphere	No corrosive gas							
Operating altitude	2000 m or less							
Installation location	Inside the control panel							
Overvoltage category (*1)	II or lower							
Pollution degree (*2)			2	or less				

(*1) Indicates the power distribution section to which the device is assumed to be connected, between the public power grid and the machinery within the premises. Category II applies to the devices that are supplied with power from fixed facilities. The surge withstand voltage is 500 V for devices with ratings up to 50 V.

(*2) Indicates the extent to which conductive substances are found in the device operating environment. Pollution degree 2 indicates an environment in which normally only nonconductive pollution occurs and the temporary conductivity caused by condensation is to be expected.

(2) SSCNET conversion function, performance specifications

Item		Performance and specifications of the conversion unit			
Number of control axes		16 axes (16 axes per line)			
Communicatio	on Input	SSCNET 3.555 ms to 14.222 ms (A series Motion controller/Q series Motion controller compatible)			
cycle	Output	SSCNET III/H (SSCNET III) 3.555 ms (A series Motion controller/Q series Motion controller compatible)			
Power s	supply	20.4 to 26.4 V DC (ripple factor within 5%)			
Consumption	on current	24 V DC (Class 2), 0.2 A			
24 V DC por (recomm	wer supply ended)	PS5R-SB24 (manufactured by IDEC CORPORATION)			
Inrush current		20 A in 2 ms (24 V DC)			
Communicat	on function	USB: communication with a personal computer			
Compliance standa	e to global ards	CE, UL/cUL,KC			
Struc	ture	Self-cooling, open (IP20)			
Mounting M5 × 10 mm or more, tig		M5 \times 10 mm or more, tightening torque range: 78 to 118 N·cm			
DIN rail		Applicable DIN rail: TH35-7.5Fe, TH35-7.5AI (JIS C2812 compatible)			
External di (mr	mensions n)	168 (H) \times 30 (W) \times 100 (D)			
Weigh	ıt (g)	260			

POINT	
(1) Input power	
1) This conversion unit must cause the unit to fail.	be supplied with 24 V DC. An input voltage of 28 V DC or above can
2) Perform voltage measurer	nents at the input connector of the conversion unit, and select the
DC power supply and wire voltage and spike voltage	with voltages ranging from 20.4 to 26.4 V DC (including the ripple .
(2) Power on	
Turn on or off the power at th	e primary side (AC side) of the DC power supply.
(3) Permissible instantaneous po	wer failure time
Select a DC power supply wi	th a permissible instantaneous power failure time of 20 ms or more.

(3) Names of each section

The following shows the names of each section of the conversion unit.



No.	Name			Function					
1)	7-segment LED display	Alarm display, status display							
0)		"0": For parameter read/write							
2)	Rotary switch (SVV1)	"1", "3 1 "2", "4":	"1", "3": For operation / parameter read "2", "4": For manufacturer setting						
3)	Adjustment switch (SW2)	Switch for	or manufacturer set	tting (Always set t	his switch to OFF.)				
4)	SSCNET connector (CN1)	Connector to connect the SSCNET CN1 line							
5)	SSCNET connector (CN2)	Connector to connect the SSCNET CN2 line							
6)	SSCNET III connector (CN3)	Connector to connect the SSCNET III CN3 line							
7)	USB communication connector (CN4)	USB port to connect a personal computer							
		24 V DC power supply input connector							
		1	Notation	Signal name	Description				
0)	24 VDC power supply input connector		+	24 V(+)	+ 24 V power supply				
8)	(24 VDC)	1	-	24G	GND				
				FG	Grounding terminal				

Do not connect the FG terminal to the 24 V DC side of an external power supply. This will cause a short circuit malfunction.

Precaution Wiring the FG terminal of the 24 V DC power supply input connector (24VDC): Do not connect the FG terminal to the 24 V DC side of an external power supply. This will cause a short circuit malfunction. The metal part of the USB port on the conversion unit is wired to FG of the internal circuit. Additionally, SG and the metal part of the USB port are wired inside the computer. Therefore, connecting the conversion unit and computer via a USB connection will cause a current to flow as indicated by the dotted lines in the figure below. This may lead to a problem such as conversion unit, computer, or external power supply malfunctioning. Metal parts of the port Personal computer Conversion unit USB CON CN4 24VDC D-D-Internal D+ D+ 24V +circuit SG SG 24G SG **(** FG 0V Shielded cords +24\ FG

(4) 7-segment LED display

The following shows the state transition after the conversion unit is powered on.

For conversion unit system setting errors and servo amplifier troubleshooting, refer to Chapter 6.



POINT If an SSCNET communication error occurs, "Ab" is shown on the 7-segment LED display.



(*1) List of system setting errors

LED display			Error description
	0	4	Axis setting missing error
	1	3	System setting not registered
	2	6	Servo parameter not registered

(*2) List of alarm codes

LE	LED display		Error description	LE	LED display		Error description
	1	0	Undervoltage		3	4	SSCNET receive error 1
	1	2	Memory error 1		3	5	Command frequency error
	1	3	Clock error		3	6	SSCNET receive error 2
	1	4	Control process error		3	7	Parameter error
	1	5	Memory error 2		3	А	Inrush current suppression circuit error
	1	6	Encoder initial communication error 1		3	D	Parameter setting error for driver communication
	1	7	Board error		3	Е	Operation mode error
	1	9	Memory error 3		4	2	Servo control error
	1	А	Servo motor combination error		4	5	Main circuit device overheat
	1	Е	Encoder initial communication error 2		4	6	Servo motor overheat
	1	F	Encoder initial communication error 3		4	7	Cooling fan error
	2	0	Encoder normal communication error 1		5	0	Overload 1
	2	1	Encoder normal communication error 2		5	1	Overload 2
	2	4	Main circuit error		5	2	Error excessive
	2	5	Absolute position erased		5	4	Oscillation detection
	2	7	Initial magnetic pole detection error		5	6	Forced stop error
	2	8	Linear encoder error 2		6	3	STO timing error
	2	А	Linear encoder error 1		7	0	Load-side encoder initial communication error 1
	2	В	Encoder counter error		7	1	Load-side encoder normal communication error 1
	3	0	Regenerative error		7	2	Load-side encoder normal communication error 2
	3	1	Overspeed		8	2	Master-slave operation error 1
	3	2	Overcurrent		8	А	USB communication time-out error
	3	3	Overvoltage		8	Е	USB communication error

(*3) List of warning codes

LED display		ay	Error description	LE	LED display		Error description
	9	1	Servo amplifier overheat warning		Е	4	Parameter warning
	9	2	Battery cable disconnection warning		Е	6	Servo forced stop warning
	9	5	STO warning		Е	7	Controller forced stop warning
	9	6	Home position setting warning		Е	8	Cooling fan speed reduction warning
	9	В	Error excessive warning		Е	9	Main circuit off warning
	9	F	Battery warning		Е	С	Overload warning 2
	Е	0	Excessive regeneration warning		Е	D	Output watt excess warning
	Е	1	Overload warning 1		F	0	Tough drive warning
	E	2	Servo motor overheat warning		F	2	Drive recorder miswriting warning
	E	3	Absolute position counter warning		F	3	Oscillation detection warning

(*4) When the rotary switch is set to "1" or "3", the 7-segment LED display shows information as below. In the hundreds place of the 7-segment LED display, "b" indicates ready-off and servo-off status, "C" indicates ready-on and servo-off status, and "d" indicates ready-on and servo-on status. When the rotary switch is set to "2" or "4", the switch is used for manufacturer settings

Rotary switch setting	LED display
"1"	b01, C01, or d01
"3"	b02, C02, or d02

(5) Setting the rotary switch

For information about how to set the rotary switch of the conversion unit, refer to 1) to 3). To check the SSCNET III/H or SSCNET III lines, click [System Setting] - [SSCNET Configuration] of a MELSOFT MT Works2 project.

- 1) To read or write parameters by USB communication, set the rotary switch to "0". This setting disables SSCNET communication.
- 2) To use SSCNET III/H, SSCNET III line 1, set the rotary switch to "1". Parameters can be read even when the rotary switch is set to "1".



3) To use SSCNET III/H, SSCNET III line 2, set the rotary switch to "3". Parameters can be read even when the rotary switch is set to "3".



(6) Compatibility with SSCNET, SSCNET III/H and SSCNET III

The following shows the compatibility of the A series Motion controller/Q series Motion controller (SSCNET) and the conversion unit (SSCNET III/H, SSCNET III) with each other.

No.	A series M Q series M	lotion controller lotion controller	Conversion unit		Remarks
	Line	Station No.	Line	Station No.	
1		d1		d01	
2		d2		d02	
3		d3		d03	
4	CN1	d4		d04	
5	CINT	d5		d05	
6		d6		d06	
7		d7		d07	Set the same axis number for d1 of the SSCNET CN2
8		d8	CNI2	d08	Ine and d09 of the SSCNET III/H, SSCNET III.
9		d1	CNS	d09	the SSCNET CN2 line as for d10 to d16 of the
10		d2		d10	SSCNET III/H, SSCNET III.
11		d3		d11	
12	CN2		d12		
13		d5		d13	
14		d6		d14	
15		d7		d15	
16		d8		d16	

Setting the A series Motion controller/Q series Motion controller (SSCNET)



Setting the conversion unit (SSCNET III/H, SSCNET III)



(7) Auxiliary axis number setting switch and axis selection rotary switch for SSCNET III/H compatible servo amplifiers

The station numbers "d01-d16" of the conversion unit correspond to "All OFF" for the auxiliary axis number setting switches of SSCNET III/H compatible servo amplifiers and correspond to 0-9 and A-F for the axis selection rotary switches of SSCNET III/H compatible servo amplifiers. Refer to (5) in this chapter for setting the rotary switch of the conversion unit.

Conversion unit		SSCNET III/H compatible servo amplifiers		
Rotary switch	Station No.	Auxiliary axis number setting switch	Axis selection rotary switch	
1	d01	All OFF	0	
(SSCNET III line 1)	d02	ON	1	
, , ,	d03		2	
	d04		3	
	d05	(Example of MR-J4-B)	4	
	d06		5	
	d07		6	
	d08		7	
	d09		8	
	d10		9	
	d11		A	
	d12		В	
	d13		С	
	d14		D	
	d15		E	
	d16		F	
3	d01	All OFF	0	
(SSCNET III line 2)	d02		1	
	d03		2	
	d04		3	
	d05	(Example of MR-J4-B)	4	
	d06		5	
	d07		6	
	d00		0	
	d09 d10		9	
	d10 d11		<u>З</u>	
	d12		В	
	d13		С	
	d14		D	
	d15		E	
	d16		F	

Example: If the rotary switch of the conversion unit is "3", the station number "d01" of the conversion unit corresponds to "All OFF" for the auxiliary axis number setting switches of SSCNET III/H compatible servo amplifiers and corresponds to "0" for the axis selection rotary switch of SSCNET III/H III/H compatible servo amplifiers.



4. INSTALLATION AND WIRING

- (1) Mounting the conversion unit
 - 1) Installation of one conversion unit



2) Installation of two conversion units

Leave a large clearance between the inner surface of the control panel and the conversion units to circulate air above and below the conversion units.

When mounting the conversion units, leave a clearance of 1 mm between the conversion units in consideration of mounting tolerances.



POINT

• When mounting the two conversion units closely, keep the ambient temperature within 0°C to 45°C.

(2) Connecting the devices



- *1: For setting the rotary switch of the conversion unit to "1", connect the SSCNET cable to the SSCNET1 connector of the A series Motion controller/Q series Motion controller. For setting the rotary switch of the conversion unit to"3", connect the SSCNET cable to the SSCNET3 connector of the A series Motion controller/Q series Motion controller.
- *2: For setting the rotary switch of the conversion unit to "1", connect the SSCNET cable to the SSCNET2 connector of the A series Motion controller/Q series Motion controller. For setting the rotary switch of the conversion unit to "3", connect the SSCNET cable to the SSCNET4 connector of the A series Motion controller/Q series Motion controller.

SSCNET III cable (option)

SSCNET III/H compatible servo amplifiers/ SSCNET III compatible servo amplifiers



Use optional cables listed in the following tables.

oSSCNET III cable (The SSCNET III/H line and SSCNET III line use the same SSCNET III cable.)

Cable	Cable model	Cable length
Standard cord inside cabinet	MR-J3BUS_M	0.15/0.3/0.5/1/3 m
Standard cable outside cabinet	MR-J3BUS_M-A	5/10/20 m
Long-distance cable	MR-J3BUS_M-B	30/40/50 m

oSSCNET cable (Refer to (1) in Chapter 2 for cable selection)

Cable	Cable model	Cable length	
	MR-J2HBUS_M		
	MR-J2HBUS_M-A	0 5/1/5 ~	
Bus cable	Q172J2BCBL_M	0.5/1/5 11	
	Q173J2B_CBL_M		
	Q173DVCBL_M	0.5/1 m	

 \circ USB cable

Cable	Cable model	Cable length
USB cable	MR-J3USBCBL3M	3 m

4. INSTALLATION AND WIRING

Precaution	
Precautions for using the USB communication function To prevent an electric shock, or conversion unit or comp supply using the following steps:	outer malfunction, connect the computer power
 (a) When using a computer with an AC power supply 1) When using a computer with a three-pin power plut three-pin socket or ground the grounding wire. 2) When using a computer with a two-pin power plug unit to the computer using the following steps: a) Unplug the computer power plug from the AC p b) Connect the conversion unit to the device after power socket. c) Plug the computer power plug into the AC power 	ug or a power plug with a grounding wire, use a g without a grounding wire, connect the conversion power socket. unplugging the computer power plug from the AC er socket.
(b) When running the computer on its battery The computer can be used as it is.	

4. INSTALLATION AND WIRING

(3) Wiring the power supply connector

A spring connection plug connector is used for 24 V DC power supply input. No dedicated tools are required.

- 1) Applicable wire size and wire fabrication
 - (a) Applicable wire size
 - The table below shows the wire size and type applicable to the 24 V DC power supply input connector.

Connector	Model	Applicable wire size and type	
24 V DC power supply input	EKC 2 5/2 ST 5 09	0.3 to 2.5 mm ² (AWG12 to AWG22)	
connector	FRC-2.5/3-51-5.06	Use copper wire only	

(b) Wire fabrication

The stripped length of the wire is as shown below.

Use the wire after stripping the sheath without twisting the core.

At this time, take care to avoid a short caused by the loose wires of the core and the adjacent pole. Do not solder the core, as it may cause a contact fault.



* When using a ferrule

A ferrule can also be used to connect with the connector.

Use the ferrules in the table below for the 24 V DC power supply connector.

Connector		Fe	rrule model	Crimping tool	Manufacturar	
Connector	wire size	For 1 wire	For 2 wires	Chimping tool	Manufacturer	
24 V DC power	AWG16	AI1.5-10 BK	AI-TWIN2×1.5-10 BK			
supply input connector	AWG14	AI2.5-10 BU	_	CRIMPFOX-ZA3	Phoenix Contact	

• Cut the wire sticking out from the end of the ferrule to 0.5 mm or less.



• When using a twin ferrule, be sure to insert the wire in a manner that will keep the insulation sleeve from interfering with the neighboring poles. Be sure to crimp the ferrule.



2) Inserting the wire

- (a) Press the connector release with a tool such as a flathead screwdriver.
- (b) While holding the release down, insert the wire all the way in.
- (c) Confirm the connection status.



* When using a ferrule, make sure its bumpy side is facing toward the release. To insert two wires into one terminal, use a twin ferrule.

Make sure the bumpy side is facing toward the release.

The conversion unit firmware has the MR-J2S-B module function and the QDS Motion module function. By setting the communication type to "SSCNET III/H", the MR-J2S-B module function receives position commands, etc. from the A series Motion controller/Q series Motion controller. Then, the QDS Motion module function sends the commands to the actual MR-J4-B servo amplifiers. The QDS Motion module function also manages the system settings (axis configuration information) and the MR-J4-B servo parameters. By setting the communication type to "SSCNET III", the MR-J2S-B module function receives position commands, etc. from the A series Motion controller/Q series Motion controller. Then, the QDS Motion module function sends the commands to the actual MR-J4-B servo amplifiers (J3 compatibility mode)/MR-J3-B servo amplifiers. The QDS Motion module function also manages the system settings (axis configuration information) and the MR-J3-B servo parameters in the conversion unit.

<u>Refer to Section 5.1 when motion controller operating system software: SV13 or SV22 is used, and refer</u> to Section 5.2 when motion controller operating system software: SV43 is used.



*1: The SSCNET III/H compatible servo amplifiers are MR-J4-B/MR-J4W2-B/MR-J4W3-B, and the SSCNET III compatible servo amplifiers are MR-J4-B (J3 compatibility mode)/MR-J4W2-B (J3 compatibility mode)/MR-J4W3-B (J3 compatibility mode)/MR-J3-B/MR-J3W-B.

With the A/Q Motion controllers and the conversion unit, edit projects using the following peripheral software packages.

	A series Motion controller	Q series Motion controller	Conversion unit
Peripheral software package	SW3RNC-GSV	MELSOFT MT Works2	MELSOFT MT Works2

[Peripheral software packages for the motion controller and conversion unit]

In a project for the A/Q Motion controllers, set up system settings, servo data settings and various programs, as shown in the following table. For the servo parameters for servo data settings in the system using the conversion unit, no A/Q Motion controller settings other than servo parameters No.1 (amplifier settings) and No.7 (rotation direction selection) are used. The reason for this is because servo parameters for MR-J2S-B/MR-J2-B/MR-H-B are handled with the A/Q Motion controllers, not servo parameters for MR-J4-B/MR-J3-B.

Only set the system settings (system setting data, basic setting data) and servo data settings (servo parameter) in a conversion unit project, as shown in the following table. Set the servo parameters on the conversion unit side since the QDS Motion module in the conversion unit manages the MR-J4-B/MR-J3-B servo parameters.

[Table of project settings for Motion controller and conversion unit]

Project settings		A se	eries Mo controlle	tion r	Q series Motion controller		Conversion unit		
		SV13	SV22	SV43	SV13	SV22	SV43		
Sustem	Syste	m setting data	0	0	0	0	0	0	Δ (*1)
sottings	Data	with high read speed	0	0	0	0	0	0	
settings	Basic	setting data				0	0	0	Δ (*2)
		Fixed parameters	0	0	0	0	0	0	×
		Home position return data	0	0	0	0	0	0	×
Sonio	Axis	JOG operation data	0	0	0	0	0	0	×
dete	data	Servo parameters	∆ (*3)	Δ (*3)	Δ (*3)	Δ (*3)	Δ (*3)	Δ (*3)	0
sottings		Workpiece coordinate			0			0	
settings		data			0			0	
	Parar	neter block	0	0	0	0	0	0	×
Limit output data		0	0	0	0	0	0	×	
Motion SFC program		0	0		0	0		×	
Servo program		0	0		0	0		×	
Mechanical system program			0			0			
Cam data			0			0			
Motion p	rogram				0			0	

 \circ : Setting data is used

 Δ : Only a portion of the setting data is used

× : Setting data is not used

*1: With the conversion unit, only "SSCNET Configuration" are used as system setting data.

- *2: With the conversion unit, only "Basic System Settings (operation cycle)" and "SSCNET Settings (communication type)" are used as basic setting data.
- *3: With the A/Q Motion controllers, only "No.1 (amplifier settings)" and "No.7 (rotation direction selection)" are used as servo parameters.

The settings for "No.1 (amplifier settings)" and "No.7 (rotation direction selection)" must also be matched to the settings for the servo parameters for the conversion unit.

Source MR-H Servo	ce A/Q series I-B/MR-J2-B/M parameters	Motion controller IR-J2S-B	Conversion unit MR-J4-B/MR-J3-B Servo parameters		
No.	Name	Initial value	No.	Name	Initial value
1	Amplifier setting	0000 (Absolute position: detection: Disabled, INC)	PA03	Absolute position detection system	0000 (Absolute position detection: Disabled, INC)
7	Rotation direction selection	0 (Counterclockwise in positioning address increments)	PA14	Rotation direction selection	0 (Counterclockwise in positioning address increments)

5.1 Setting and Procedure before Starting Operation When Motion Controller Operating System Software: SV13 or SV22 Is Used

Before starting operations, follow the procedure from [Step 1] to [Step 5] to configure the settings.

[Step 1] Set the conversion unit (Section 5.1.1) and write the parameters to the conversion unit (Section 5.1.5).

• Using MELSOFT MT Works2, convert the source Motion controller project to write the parameters to the conversion unit.

[Step 2] Set the Motion controller (Section 5.1.2).

- <A series Motion controller>
- Using SW3RNC-GSV, change the fixed parameters of the A series Motion controller (electronic gear setting, etc.) so that they match the servo motor, and write the settings to the A series Motion controller.

<Q series Motion controller>

• Using MELSOFT MT Works2, change the fixed parameters of the Q series Motion controller (electronic gear setting, etc.) so that they match the servo motor, and write the settings to the Q series Motion controller.

[Step 3] Adjust the servo gain. (Section 5.1.3).

- Using MR Configurator2, adjust the servo gain.
- [Step 4] Apply the servo gain adjustment result setting (Section 5.1.4).
 - Apply the servo gain adjustment result setting to the project in [Step 1].

[Step 5] Write the parameters to the conversion unit (Section 5.1.5).

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• Write the parameters to the conversion unit.

After completing [Step 1] to [Step 5], turn on the control circuit power supply for the Motion controller, conversion unit, and servo amplifiers simultaneously to start the system.



*2: The SSCNET III/H compatible servo amplifiers are MR-J4-B/MR-J4W2-B/MR-J4W3-B, and the SSCNET IIIcompatible servo amplifiers are MR-J4-B (J3 compatibility mode)/MR-J4W2-B (J3 compatibility mode)/MR-J4W3-B (J3 compatibility mode)/MR-J3-B/MR-J3W-B.

IB(NA)0300040

5.1.1 Setting the conversion unit

If there is no project for the A series Motion controller/Q series Motion controller, read and save a project.

1) Start MT Developer2

When diverting a project for the A series Motion controller, click Menu: [Project] - [Divert File] - [Divert Other Format Project].

When diverting a project for the Q series Motion controller, click Menu: [Project] - [Divert File] - [Divert MT Developer2 Format Project].



2) Click the [Browse] button.

	Divert Other Format Project	Click the [Browse] button
Project	Source (Other Format Project) Drive Proh Project Name Type: 05 Type: Select Type/D5 Type Type: 0273 OS Type : 5946-59220A - After the program diversion, execute the relative check or conversion in each display, and check the data. For details on this function, refer to the "Data lat available for diversion" in the help. File Selection Select AI Select None Name Update Time	Click the [blowse] button
MELSOFT MT Developer2		
--	---	
Project Edit Find/Replace View Check/Conve	Online Debug Tools Window Help	
🗅 😁 B # 📕 🗮 🗰 🗰 📕 📴 🗖 🗆	Divert Other Format Project	
「空波ない」を見てくという。	Source (Other Format Project) Brows	
Project # ×	🔯 Divert Other Format Project	
	Select the source project to be use	
	CitProgram Files/#Gsv#Sysgsv22p#Usr Browse	
	Pode Lot : Name Type OSType Operation Method Title	
	Workspace Name : Project Name : Table :	
	CAP NUM SCRL	

3) Select the source project to be used, and click the [Open] button.

4) In "Select Type/OS Type", select Q173DSCPU for "Type", select SW8-SV22QJ for "OS Type", and select Advanced Synchronous Control Method for "Operation Method".

MELSOFT MT Developer2	
Project Edit Find/Replace View Check/Convert O	nline Debug Tools Window Help
1 🗅 🖻 🖪 1 🖉 👷 💷 💭 🔚 🗮 🔚 🗖 1 🖼 1 🖼	Divert Other Format Project
<mark>內法哈哈米的예曲 문慶武武武尉 Project </mark>	Source (Other Format Project) Erronse Drive/Path C:NProgram FlesVisovSysgov22pWLor Divert Project Name 20150115_A173LHCPU Close Type: A173LH OS Type : _SW3-SIV22A(SFC) Close
	-Select Type/OS Type Type: Q17305 • OS Type: SW8-SV22QJ •
	After the program diversion, execute the relative check or conversion in each display, and check details on this function, refer to the 'Data lat available for diversion' in the heb. File Selection Select None "Type": Q173DSCPU "OS Type": SW8-SV22QJ "Operation Method": Advanced
	Name Update Time Synchronous Control Method System Setting/Servo Data Setting 10/23/2014 12:04:52 AM Synchronous Control Method Motion SFC Program/Motion SFC Parameter 10/23/2014 12:04:52 AM Synchronous Control Method System Nethods SFC Parameter 10/23/2014 12:04:52 AM Synchronous Control Method Methodial System Program 10/23/2014 12:04:52 AM Synchronous Control Method

5) Select the file to be converted.

For the conversion unit, select "System Setting/Servo Data Setting" only and click the [Divert] button.

Project	ogi曲I型學詞表表表	Source (Other Format Project) Drive/Path Ci¥Program Files¥Gsv¥Sysgsv22p¥Usr Divert	
		Project Name 20150115_A173UHCPU Type: A173UH OS Type: SW3-SV22A(SFC) Click the	[Divert] button.
		Select Type/OS Type Type: Q173DS V OS Type : SW8-5V22Q1 V Operation Method : Advanced Synchronous Control Method V	
		After the program diversion, execute the relative check or conversion in each display, and check the data. For details on this function, refer to the "Data list available for diversion" in the help. File Select All Select None	
		Name Update Time Norme 10/23/2014 12:04:52 AM Image: Description SFC Program/Motion SFC Parameter 10/23/2014 12:04:52 AM Image: Description SFC Program/Motion SFC Parameter 10/23/2014 12:04:52 AM Image: Description SFC Program/Motion SFC Parameter 10/23/2014 12:04:52 AM Image: Description SFC Program 10/23/2014 12:04:52 AM Image: Description SFC Program 10/23/2014 12:04:52 AM	
ct "System	Setting/Servo	Data	

6) When using an SSCNET III/H compatible servo amplifier, select "SSCNET III/H". When using an SSCNET III compatible servo amplifier, select "SSCNET III". After making the selection, click the [OK] button.

MELSOFT MT Developer2		
Project Edit Find/Replace View Check/Convert Onl	ne Debug Tools Window Help	
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「である」を見てきるときを	Courses (Others Executed Designat)	
Project # ×	Drive (Path C-VProgram Files/VGsv/KSvsnsv22n/kl kr	Browse
	Droiget#	Divert
	MELSOFT MT Developer2	Close
	Execute the series conversion of servo amplifier.	
	Confirm the result of the conversion after executing.	
	- Select Ti	
	Type: Conversion Target Servo Amplifier Setting	
	SSCNET III LINE 1 SSCNET III LINE 2	
	© SSCNET III/H © SSCNET III/H	
	-After C SSCNET III C SSCNET III	
	Ford	
	-File Sel	Set the SSCNET line for
	Sele	the destination
	Name Descenden the following data	the destination.
	- Servo Data	
	Servo Parameter Servo Parameter Set the initial value when the convert source servo amplifier is	
	The special part. For details on replace, press F1 key and refer to the help.	
	OK Cancel	
	Click the [O	K] button.
		-
		CAP NUM SCRL

7) "Project creation is completed. Update the screen display." appears. Click the [OK] button.

Project • x	MELSOFT MT Developer2 Froject Edit Find/Replace View Cher D D	ack/Convert Online Debug Tools Window Help 리그램GRI에 이미	a x
	Project # x	MELSOFT MT Developer2 Project creation is completed. Update the screen display. OK Click the [OK] button.	

Cautions

The servo parameters are initialized when the servo amplifier setting is changed from MR-H-B/MR-J2-B to MR-J4-B/MR-J3-B by conversion of a project from an A series Motion controller/Q series Motion controller project to a conversion unit project, so the servo parameters written to the conversion unit must be reviewed. Note that when the servo amplifier setting is changed from MR-J2S-B/MR-J2M-B to MR-J4-B/MR-J3-B, the servo parameters is retained. Refer to [Appendix-3] for comparisons of the MR-H-B/MR-J2-B/MR-J2S-B and the

MR-J4-B/MR-J3-B servo parameters.

8) In the project window, click [System Setting] - [Basic Setting].

Set the operation cycle to "3.555 ms" on the [Basic System Settings] tab in the window that appears.

reject Edit Find/Replace View Check/Convert Online Debug Tools Window Help	Priget Edit Find/Replace View Onck/Convert Online Debug Tools Window Help	🖓 MELSOFT MT Developer2 (Untitled Project) - (System Configuration)
rest existence rest existence </td <td>Image: Section Section</td> <td>Project Edit Find/Replace View Check/Convert Online Debug Tools Window Help _ &</td>	Image: Section	Project Edit Find/Replace View Check/Convert Online Debug Tools Window Help _ &
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Project 0 × System Config Withded Project (V22 Wital Mode Swit Main Base 1 Serve Setting Main Base 1 Serve Toraction Setting Serve Toract Setting Serve Program Coupled Serve Program Serve Program Serve Program Serve Program <t< td=""><td>Project ** System Config Balt: Setting Config Balt: Setting Config Balt: Setting Software Software Config Balt: Setting Software Config Config Config Software Config Config Config Config Config Config Software Config Config Software Config Config Software Config Config Software Config Config Config Software Config Config<td></td></td></t<>	Project ** System Config Balt: Setting Config Balt: Setting Config Balt: Setting Software Software Config Balt: Setting Software Config Config Config Software Config Config Config Config Config Config Software Config Config Software Config Config Software Config Config Software Config Config Config Software Config Config <td></td>	
Unted Project (SV22 Whad Mode Switting System Setting) Maine Base Setting (Multiple CPU Setting) System Setting (Der auton Cycle System Storp Land, and the setting in the set register. System Carling auton Operation Cycle Check (System Setting) Check (System Setting) System Storp Land, and the setting in the set register. Pic Module List Internal Reday M to be Setting Nation Storp Lock Perform Battery Check Pic Module List Nation Storp Lock Nation Storp Lock Perform Battery Check Pic Module List Nation Storp Lock Nation Storp Lock Perform Battery Check Pic Module List Nation Storp Lock Nation Storp Lock Perform Battery Check Pic Module Data Types Do loc Bastering Nation Storp Lock Perform Battery Check Nation Storp Data Types Do loc Bastering Nation Storp Lock Perform Battery Check Unternal Reday M 10 0 0 8514 End Idade Do loc Bastering Do loc Bastering Divide Comment Latch (2): List possible to dear using the remote operation (dich dear (1), (1)(2)). Latch (2): List possible to dear using the remote operation (dich dear (1), (2)(2)). Latch (2): List possible to dear using the remote operation (dich dear (1), (2)). Otto Cancel	Image: State Control Main Base 1 Pyrem Setting Main Base 1 Symm Control and State Control State Setting Click [System Setting]. Operation at STOP to RUN Proc Module List Output Control and State Setting Julies Operation Server Structured Data Setting Item at Bedry Mode Switcher Refers Setting List Structured Data Types Structured Data Types Structured Data Types Structured Data Types <td>Project 9 × 10 System Configure Basic Setting</td>	Project 9 × 10 System Configure Basic Setting
		Witter Bystem Config Bit State Bit State

9) From the menu, click [Check/Convert] - [Project Batch Check/Conversion].

Check that the message: "Project Batch Check/Convert Complete Error: 0, Warning: 0" is in the output window.



Now the setting up of the conversion unit is completed.

Cautions

The conversion unit uses "Basic Setting", "SSCNET Configuration" and "Servo Parameter", and does not use any other setting data.

When the Motion module setting (servo external signals interface module (Q172DLX), synchronous encoder interface module (Q172DEX) and manual pulse generator interface module (Q173DPX)) is set to slots 1 and 2 in the system configuration after the project conversion, the error shown below will occur. Correct the error with either (Correction Method 1) or (Correction Method 2).



(Correction Method 1) Change Motion module setting

Change the setting for slot 3 or higher of the Motion module as shown below. From the menu, click [Check/Convert] - [Project Batch Check/Conversion] after the setting change(s) to check whether there is an error.





(*1) Set the type to "0:Invalid" for all applicable axes.

 5.1.2 Setting the Motion controller Applicable Motion controller A171SHCPU(N)/A172SHCPU(N)/A173UHCPU(-S1)/A273UHCPU(-S3)/Q172CPU(N)/Q173CPU(N) Applicable software SW3RNC-GSV(A171SHCPU(N)/A172SHCPU(N)/A173UHCPU(-S1)/A273UHCPU(-S3)) MELSOFT MT Works2(Q172CPU(N)/Q173CPU(N)) 					
(1) Setting p Use the t	rocedure for the Motion controller following steps for the settings.				
	Start				
1) Prepare Motion	e the project file of the applicable controller.	■ When there is Motion contro	no project file, read the project from the liler.		
2) Set all to the a "MR-J2	the servo amplifiers to be conne- pplicable Motion controller to S-B". (refer to POINT)	ted ■ For axes assi MR-J2S-B in When changi parameters a to POINT "Ho	gned to MR-J2-B and MR-H-B, change to the system setting. ng the system setting to "MR-J2S-B", the servo re initialized, so set the parameters by referring by to change "MR-J2-B" and "MR-H-B" to		
3) Change gear) o match t (refer to	e the fixed parameter (electronic f the applicable Motion controlle he servo motor after replacemen p POINT)	■ Change the fi the encoder r POINT "Exan following pag For the enco	on the following pages. xed parameters (electronic gear) according to esolution after replacement by referring to nple of the electronic gear setting" on the es. der resolution after replacement, refer to		
4) For the the ope the follow	 4) For the QN series Motion controllers, set the operation cycle to the value as shown in the following table. 		Cautions for differences in encoder resolution".		
5) Turn or controll	h the power of the applicable Mo er.	tion			
6) Write a	I data to the applicable Motion				
7) Turn of controll	f the power of the applicable Mo er.				
End					
[QN series Motion	controller (operating system softwa	are: SV13/SV22) operatio	on cycle settings]		
Current operation cycle setting	Condition	Operation cycle setting when the conversion unit is used	Remarks		
Default	The operating system software is SV22 and the number of control axes is 25 or more.	7.111 ms	For the relationships between the number of control axes and operation cycle, refer to the manual for the QN series Motion controller.		
0.888 mc	Other than those above	3.555 ms			
1.777 ms		3.555 ms			

7.111 ms

14.222 ms

-

3.555 ms

7.111 ms 14.222 ms

POINT How to change "MR-J2-B" and "MR-H-B" to "MR-J2S-B" Step 1: The servo parameters are initialized when changing amplifier settings in the system settings, so the following servo parameters are recorded for the "MR-J2-B" axis and "MR-H-B" axis. MR-H-B/MR-J2-B servo parameters Checking method Name No 1 Amplifier setting Check either one of "INC/ABS" in "Detailed Settings" on an amplifier setting screen in the system setting screens. 7 Rotation direction selection Set either "forward rotation (CCW)/reverse rotation (CW)" in the servo parameter setting screen. Step 2: For the axes with the amplifier type set to "MR-J2-B" and "MR-H-B" in the system settings for the applicable Motion controller, change the amplifier type to "MR-J2S-B" and select "auto-setting" for the motor setting. ["System Setting" screen for SW3RNC-GSV] 🗧 System Setting - GSV22P Amp./Inverter Setting File Edit View Option Атр. Туре Motor Setting Resistance Setting Detail Setting 88 18 20 1 Amp./Inverter Model Westle Amplifier/Inverter List) *MR-J2S-B/ 108,208,4 5008,7008 Select ' (4) 🔻 Select "MR-J2S-B(4)" in the amplifier/inverter model name Amp. Capa. 45KB,55K 10B for the amplifier type, and select the same amplifier MB-H-B capacity as the amplifier capacity before the change. 108,208,4 5008,7008 Inverter Capa. -*MR-J-B Series 108,208,408,608,1008,2008 MB-12-B For axes of the "MR-J2-B" and "MR-H-B" *MR-J2Jr-B Series amplifier types, change the amplifier setting. LO3E ОК Cancel Amp./Inverter Setting Motor Setting Resistance Set Amp. Type Select the "Motor Setting" tab. Motor Series Auto C HA-SH ○ HA-MH ○ HA-FF C HA-LH C HC-SF O HC-MF C HA-UH C HC-RP C HC-KF C HA-FH C HC-UF C Specia Select the motor setting with "auto-setting". [Auto S Motor Model HC-SE HC-SF^{*}3/FF*3W1 HC-FF*3/FF*3W1 HC-RF*3 HC-UF*2/UF*3/UF*3W1 HC-MF*3/MF*3W1 HC-KF*3 supported in standard. Auto: The amplifier recognizes the motor automatically and controls it. It is unnece to set the motor model. 1 пκ Click the [OK] button. Cancel System Setting x All the servo parameters are initialized because the amplifier type was changed. Note that the rotation direction setting is initialized (CCW). Click the [OK] button. OK The amplifier/motor will be updated. Step 3: Set the amplifier setting and rotation direction selection again that were recorded in Step 1.

POINT

Example of the electronic gear setting (Example of SV13/SV22 · MR-J4-B) If the encoder resolution is different than before, set the electronic gear (number of pulses per revolution, movement amount per revolution, and unit scaling factor) according to the encoder resolution after replacement. The following shows an example of setting the electronic gear. < For the A series Motion controllers > "Example of electronic gear setting when the HC-MFS motor (Resolution: 131072 pulses/rev) is replaced with the HG-MR motor (Resolution: 4194304 pulses/rev)" For the electronic gear before replacement (number of pulses per revolution: 32768 pulses; movement amount per revolution: 1600.0 µm; unit scaling factor: 10), the electronic gear settings after replacement are as follows. Number of pulses per revolution 32768 pulse x(4194304 pulse/rev÷131072 pulse/rev) Movement amount per revolution x unit scaling factor 1600.0 µm ×10 32768 pulse 50.0 µm ×10 The number of pulses per revolution and the movement amount per revolution are settable only within 1 to 65535. Set the reduced fraction. In the electronic gear example, the number of pulses per revolution is set to 32768 pulses, the movement amount per revolution is set to 50.0 µm, and the unit scaling factor is set to 10. *Position accuracy errors occur in cases that are not reducible. Refer to Section 5.4 (1) for details. Based on the above calculation results, regarding the electronic gear settings after replacement, the number of pulses per revolution is set to 32768 pulses, the movement amount per revolution is set to 50.0 µm, and the unit scaling factor is set to 10. < For the QN series Motion controllers > "Example of electronic gear setting when the HC-MFS motor (Resolution: 131072 pulses/rev) is replaced with the HG-MR motor (Resolution: 4194304 pulses/rev)" For the electronic gear before replacement (number of pulses per revolution: 32768 pulses; movement amount per revolution: 16000.0 µm), the electronic gear settings after replacement are as follows. Number of pulses per revolution 32768 pulse x(4194304 pulse/rev÷131072 pulse/rev) 1048576 pulse Movement amount per revolution 16000.0 µm 16000.0 µm Based on the above calculation results, regarding the electronic gear settings after replacement, the number of pulses

per revolution is set to 1048576 pulses and the movement amount per revolution is set to 16000.0 µm.

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5.1.3 Adjusting the servo gain

- Applicable servo amplifier
 - <Communication type: SSCNET III/H> MR-J4-B/MR-J4W2-B/MR-J4W3-B
 - <Communication type: SSCNET III> MR-J4-B (J3 compatibility mode)/MR-J4W2-B (J3 compatibility mode)/MR-J4W3-B (J3 compatibility mode)/MR-J3-B/MR-J3W-B
- Applicable programming software MELSOFT MT Works2
- (1) Adjusting procedure for the servo gain Use the following steps for the settings.



- 2) Turn on the power of the Motion controller, conversion unit and servo amplifier.
- 3) Start MR Configurator2 and create a new project.
- 4) Adjust the servo gain.

1)

- 5) From the MR Configurator2 menu, click [File] -[Save as] to save the file.
- 6) Turn off the power of the Motion controller, conversion unit and servo amplifier.

End

■Select the servo amplifier type in the New window.

■From the MR Configurator2 menu, click [Display] -[Docking Window]-[Servo Assistant], and make servo gain adjustments on the "Servo Assistant" screen that appears.

- 5.1.4 Applying the servo gain adjustment result setting
- * This procedure is required only for Version E or earlier.
 - Applicable software MELSOFT MT Works2, MR Configurator2
 - Process for applying the servo gain adjustment result setting Use the following steps for the settings.



End

5.1.5 Writing parameters to the conversion unit

Perform the following procedures with the power supply of the conversion unit turned off, then turn on the power supply of the conversion unit.

- Connect the personal computer and the conversion unit with a USB cable.
- Set the rotary switch of the conversion unit to "0".
- 1) Open a MELSOFT MT Works2 project, and double-click [System Setting] [SSCNET Configuration] in the window.



2) From the menu, click [Online] - [Write to Motion].

MELSOFT MT Developer2 (Unset Project	ct) - [SSCNET Con	iguration]	
Project Edit Find/Replace View 0	Check/Convert 0	nline Debug Tools Window Help	_ a ×
i 🗅 🖻 💾 🔏 🖕 i 🔍 💷 🖕 i 🎦		Transfer Setup	
Bil& B B X M M m m m		Routing Information 🥔 🖬 🛗 👪 💂	
Project # ×	System	Read from Motion	4 🕨 🛥
🕒 🍓 Unset Project (SV22 Advanced Synchron		Write to Motion	×
Back Setting		Verify with Motion	
System Configuration		Remote Operation	
SSCNET Configuration		CPU Backup	
Optional Data Monitor		Password Click [Write to Motion].	
High-speed Input Request Signa	8	Clear CPU Memory	
🖃 🛃 Safety Observation Function Pa		Export to ROM Format 24 🗰 34 🗰 34 🗰 34	
Vision System Parameter Head Module		Change CPU Operation Method	
PLC Module List		Set Clock	
Automatic Refresh Setting List		Monitor Common + 5 6 7 8	E CONTRACTOR OF THE OTHER
Motion SFC Program		Motion Monitor	
Synchronous Control Parameter		Servo Amplifier Operation	
🖽 - 🎯 Cam Data	14		
Structured Data Types			
Device Memory Device Comment			
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		d_{09} d_{10} d_{11} d_{12} d_{13} d_{14} d_{15} d_{16}	
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		ja ja ja ja ja ja ja ja ja	
		7 18 19 20 21 22 23 24 d01 d02 d03 d04 d05 d06 d07 d08	
< >			-
		0173DS SV22 Host Station No 2	CAP NUM SCRI

3) Write the setting to the Motion controller.

Select "System Setting, Servo Data Setting" and "Servo parameter" and click the [Execute] button. <Cautions>

- MELSOFT MT Developer2 (Unset Project) [SSCNET Configuration D X Project Edit Find/Replace View Check/Convert Online Debug _ @ > : 🗅 📂 💾 🖉 📮 : 🗨 ᄤ 🚛 📮 : 🍢 🚍 📰 🖼 🎆 - 🚍 🚳 📰 🐨 - 📀 🂂 Write to CPU ą × × Project System Co System Setting Basic Setting System Configured System Configured Axis Label Transfer Information Connecting Interface : USB <--> PLC Module Type Q173DS CPU2 Target CPU : OS Type SV22QJ VER300F Aksi Label Optional Data Monitor High-speed Input Reque Mark Detection Safety Observation Fun Vision System Paramete Head Module PLC Module List Latumatic Refresh Setti Servo Data Setting Operation Method Advanced Synchronous Control Method Detail Setting Target Memory Program memory 💌 🍳 Write Data to CPU 🛛 C Delete CPU Data File selection Servo parameter Device data -Servo Data Setting Motion SFC Program Parameter + Program Select All Select None K Servo Pro Synchrono Cam Data ton on rvo Program Program
 Program
 Motion SFC Parameter
 Motion SFC program (Control Code/Text)
 Servo Program (Q)
 Synchronous Control Parameter
 C and tata (Converted data)
 C and tata (Converted data)
 C and tata (Edit data) -- Pr Structured Data Types Device Memory Device Comment Select "System Setting, Servo Data System Setting, Servo Data Setting (Para Servo parameter Setting" and "Servo parameter". Vision system pa Related Functions<< Execute 18 d02 19 do: 20 d04 21 Click the [Execute] button. Q173DS SV22 Host Station No
- * Do not select items other than the above ones.

4) A confirmation message appears: "The motion controller OS [SV22QJ VER300F] at the connection destination does not support the following functions."

Click the [OK] button.	
MELSOFT MT Developer2 (Unset Project) - [SSCNET Configuration]	_ 0 ×
Project Edit Find/Replace View Check/Convert Online Debug Tools Window Help	_ & ×
Whet Project (1y/22 Advanced Synchromation System Gendraution By stem Centrol Program By stem C	button.
< Q173D5_SV22_Host Station No.2	CAP NUM SCRL

5) When the writing is completed, the message: "Completed." appears. Click the [OK] button. In the "Write to CPU" screen, click the [Close] button.

MELSOFT MT Developer2 (Unset Project) - [SSCNET C	onfiguration]	_ 0 ×
Project Edit Find/Replace View Check/Convert	Online Debug Tools Window Help	_ 8 ×
: 🗅 🖻 💾 🖉 , : 🍕 🕊 🗭 🔳 , : 🎦 🖿 🕬 🖼		
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Project 4 ×	Ci Write to CPU	4 4
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	17 18 19 20 21 22 23 24 dos 207 200 Click the [Close	e] button.
	Q173DS SV22 Host Station No.2 CAP NUM SCR	L

Now the parameter writing to the conversion unit is completed. From the menu, select [Project] - [Save] to save the converted project. Turn off the power of the conversion unit.

6) Set the rotary switch of the conversion unit according to the SSCNET III/H (SSCNET III) line. For details on the setting method, refer to Chapter 3 (5).

<Cautions>

For selecting anything other than [System Setting, Servo Data Settings] and [Servo Parameter], rewrite parameters to the conversion unit starting from the first step.

5.2 Setting and Procedure before Starting Operation When Motion Controller Operating System Software: SV43 Is Used

Before starting operations, follow the procedure from [Step 1] to [Step 5] to configure the settings.

[Step 1] Set the conversion unit (Section 5.2.1) and write the parameters to the conversion unit (Section 5.2.5).

- Write the parameters to the conversion unit by creating a project using MELSOFT MT Works2, referring to the source Motion controller project.
- [Step 2] Set the Motion controller (Section 5.2.2).
 - <A series Motion controller>
 - Using SW3RNC-GSV, change the fixed parameters of the A series Motion controller (electronic gear setting, etc.) so that they match the servo motor, and write the settings to the A series Motion controller.
 - <Q series Motion controller>
 - Using MELSOFT MT Works2, change the fixed parameters of the Q series Motion controller (electronic gear setting, etc.) so that they match the servo motor, and write the settings to the Q series Motion controller.
- [Step 3] Adjust servo gain (Section 5.2.3).

Use MR Configurator2 to adjust the servo gain.

- [Step 4] Apply the servo gain adjustment result setting (Section 5.2.4).
 - Apply the servo gain adjustment result setting to the project in [Step 1].
- [Step 5] Write the parameters to the conversion unit (Section 5.2.5).
 - Write the parameters to the conversion unit.

After completing [Step 1] to [Step 5], turn on the control circuit power supply for the Motion controller, conversion unit, and servo amplifiers simultaneously to start the system.



*1: Refer to the manual for the A series Motion controller/Q series Motion controller for the cables used.

Manual name	Manual number
A173UHCPU/A172SHCPUN/A171SHCPUN User's Manual	IB(NA)67395
A273UHCPU User's Manual	IB(NA)67262
Q173CPU(N)/Q172CPU(N) User's Manual	IB(NA)0300040

*2: The SSCNET III/H compatible servo amplifiers are MR-J4-B/MR-J4W2-B/MR-J4W3-B, and the SSCNET III compatible servo amplifiers are MR-J4-B (J3 compatibility mode)/MR-J4W2-B (J3 compatibility mode)/MR-J4W3-B (J3 compatibility mode)/MR-J3-B/MR-J3W-B.

5.2.1 Setting the conversion unit

Projects for the conversion unit cannot be diverted/converted from the SV43 Motion controller project, so create projects with the following steps.

1) Start MT Developer2.

From the menu, click [Project]-[New].

Import Celebra Open Celebra Sec Celebra Sec Celebra Object Object Sec Object Sec Celebra Sec Object Object Object Print Celebra Sec Object Object Object Print Celebra Sec Object Print Celebra Sec Object Object Object Print Celebra Sec Ab Print Celebra Determin Project. Sec Ab Print Celebra Ext Ab Ext Ab	<u>е</u> М	ELSOFT MT Developer2			
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Open- Open- Size as MT Developer Format Project Security Prot Cti-P The Latter File Prot Exit Alt-File	: 0	New	Ctrl+N		
Close Section Hitory Object + Diver Fie Page Setup Print Cti-P Exit Alt-F4 Click [Project] - [New]. Click [Project] - [New].	1 🖻	Open	Ctrl+O	명령병원 원 및	
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Click [Project] - [New].	2 F	Save			
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Image: Type/OS Type Object Object Save as MT Developer Format Project Security Print CLI-P The Latest File Exit		Compress/Unpack	•		
Verify Perify Object > Object > Divert File > Security > Page Setup Pint Ctrl=P The Latest File bit Alt+F4	×	Delete			
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Change Type/CS Type Object > Divet File > Security > Page Setup Print The Latest File > Exit Alt+F4		Revision History	•		
Object > Divert File > Save as MT Developer Format Project Security > Page Setup Print Ctrl+P The Latest File File Exit		Change Type/OS Type			
Divert File Security Page Setup Pint Ctrl+P The Latest File Sit		Object	• •		
Save as MI Developer Format Project Security Page Setup Print Ctrl+P The Latest File Exit Alt+F4		Divert File	•		
Security Page Setup Page Setup The Latest File Exit Alt-F4		Save as MT Developer Form	iat Project		
Page Setup Pint Ctrl+P The Latest File > bit Alt+F4		Security	•		
The Latest File > Exit Alt+F4		Page Setup			
The Latest File Exit Alt+F4		Print	Ctrl+P		
Exit Alt-F4		The Latest File	•		
		Exit	Alt+F4		
CAP NUM SCRL					CAP NUM SCRL

2) Select the Series: QCPU; Type: Q173DS, OS type: SW8-SV22QJ and Operation Method: Advanced Synchronous Control Method, and click the [OK] button.

Project Edit Find/Replace View Oncet/Convert Online Debug Tools Window Help Project	MELSOFT MT Developer2		
Project Project Project Very Project Very Project Ver	Project Edit Find/Replace View Check/Convert Onli	ne Debug Tools Window Help	
Project • × A A A A A A A A A A A A A A A A A A	i 🗅 📂 🖭 🖉 👷 🔍 ᄤ 🐅 🔳 📮 i 📴 🗖 🗖 🖼		
Project # x New Project Series: QCPU Type: Q173DSCPU OS type: SW8-SV22QJ Operation Method: Advanced Synchronous Control Operation Method Advanced Syndronous Control Click the [OK] button.	「あ」となる人を全国王を	[照	
	IDIIX D	Rew Project Series Type OS Type Operation Method	Series: QCPU Type: Q173DSCPU OS type: SW8-SV22QJ Operation Method: Advanced Synchronous Control
			CAP NUM SCR

3) In the project window, click [System Setting] - [Basic Setting].

Click the [SSCNET Settings] tab in the window that appears.

When using an SSCNET III/H compatible servo amplifier, select the "SSCNET III/H" communication type. When using an SSCNET III compatible servo amplifier, select the "SSCNET III" communication type. After making the selection, click the [OK] button.

MELSOFT MT Developer2 (Untitled Project)		
Project Edit Find/Replace View Click [Sys	tem Setting] - [Basic Setting].	
Project Project Project (SV22 Advanced Synch System Setting System Configuration System Configuration System Configuration System Configuration Mark Detection B Setty Observation Function Par Head Module PLC Module List Automatic Refresh Setting List Setwo Program S Conformatic Refresh Setting List S C	asic Setting Base Setting Multiple CPU Setting System Basic Setting SSCNET Setting CPU Name Setting Bullian Communication Type SSCNET III LINE 1 SSCNET III LINE 2 SSCNET III SSCNET III SSCNET III H C SSCNET III System. SSCNET III System. However, an alarm may occur when the MR-J4(W) which was once connect SSCNET III H is connected to SSCNET III. Please refer to the troubleshooting of MR-J4 servo amplifier instruction manual Tor the details. OK	Click the [SSCNET Settings] tab.
< •	Q173DS 5V22 +	Host Station No.2 CAP NUM SCRL

4) In the project window, click [System Setting] - [Basic Setting].

Click the [Basic System Settings] tab in the window that appears, and select the operation cycle "3.555 ms". After making the selection, click the [OK] button.

MELSOFT MT Developer2 (Untitled Device)	
Project Edit Find/Replace	stem Setting] - [Basic Setting].
B X B A X B A	
Project # X	
Untitled Project (SV22 Advanced System Setting System Setting System Configuration System Configuration System Configuration Societ Configuration Mark Lebel Mark Detection Mark Detection Setter Observation Function Par Signal Setter Observation Function Par Setter Observation Function Par Head Module Head Module Setter Observation List	Basic Setting Basic Setting Operation Cycle System Basic Setting Operation Cycle Coperation Cycle
Automatic Refresh Setting List	- Error Check
B: mail Servio Data Setting B: B: Motion SFC Program B: CS Servio Program B: CS Service Setting B: CS Setting Device Memory CS Setting Device Comment	Latch Range Latch Range Sym. Range Start End Start End Internal Relay B 0 to 1971 Link Relay B 0 to 1971 Link Relay B 0 to 2971 Data Register D 0 to 3931 Link Relay B 0 to 1975 Data Register D 0 to 3931 Link Relay B 0 to 1975 Lin
	Latch(2):It is possible to clear using the remote operation (latch clear (1), (1)(2)). Latch(2):It is possible to clear using the remote operation (latch clear (1), (2)).
	OK Cancel
<	0173DS SV22 Host Station No 2

5) In the project window, click [System Setting] - [SSCNET Configuration].

Set up the SSCNET configuration for the conversion unit project to match the SSCNET configuration (axis number, layout of axes) for the Motion controller project (SV43). (Refer to "POINT" in Step 6).)



6) When selecting the communication type "SSCNET III/H" in 3), click on the silhouettes of the servo amplifier and motor for the station number in [SSCNET Configuration] to set up the amplifier. Select the amplifier model name: MR-J4(W)-B (-RJ), amplifier operation mode: standard for the amplifier settings in the window that appears, and make selections for the axis numbers, matching the layout of the axes for the Motion controller project (refer to "POINT").

After making the selection, click the [OK] button.



When selecting the communication type "SSCNET III" in 3), click on the silhouettes of the servo amplifier and motor for the station number in [SSCNET Configuration] to set up the amplifier. Select the amplifier model name: MR-J3(W)-B (-RJ), amplifier operation mode: standard for the amplifier settings in the window that appears, and make selections for the axis numbers, matching the layout of the axes for the Motion controller project (refer to "POINT"). After making the selection, click the [OK] button.





Cautions

With the amplifier settings, set up the amplifier model name: "MR-J4(W)-B (-RJ)"and the amplifier operation mode: "Standard".

When the amplifier operation mode: "fully closed, linear, DD motor" is selected in error, the kind of icon below is displayed, so please be careful about this.



POINT

Set up the SSCNET configuration for the conversion unit project. to match the SSCNET configuration (axis number, layout of axes) for the Motion controller project (SV43) (on the conversion unit side, setting up the "axis name" is not required). The figure below shows an image of the settings for the SSCNET configuration.

SSCNET configuration for the Motion controller project (SV43)
 (SSCNET setting, amplifier type: MR-J2S-B/MR-J2-B/MR-H-B, "axis name" setting: Yes)



7) Click [Servo Data Settings]-[Servo Data] in the project window to set the home position return method: "2:Data Set Method 1".



Cautions

The home position return is controlled by the commands of the controller, so set up the home position return method on the Motion controller side. Although home position return data is not used on the conversion unit side, set up the home position return method in order for an error not to occur when executing [Project Batch Check/Conversion].



8)Click [Servo Data Settings]-[Servo Parameters] in the project window, and set up the MR-J4-B/ MR-J3-B servo parameters for the conversion unit to match the settings for the Motion controller (MR-H-B/MR-J2-B/MR-J2S-B servo parameters).

MELSOFT MT Developer2 (Untitled Project	ct) - [Servo parameter]							
Project Edit Find/Replace View C	heck/	_						_ 8 ×
	Click [Se	ervo E)ata S	Settings]-[Servo Paramete	ers].			
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	" 🕅 🔪		_					
Project 7 ×	Server		meter	1				4 0 -
Linitlad Project (SV22 Advanced Synchry		Par						
System Setting		Read [🛃 S	et To Defau	Ilt 🙀 Verify 👖 Parameter Copy				
E Servo Data Setting	Open Save As	Conv	Paste M					
Servo Data			El asce E					
Servo Parameter	🕀 🔡 Function display	Basic			Selecte	d Items Write	vic Writing	
Parameter Block	🖻 🥅 List display	Duarc	41-1	Name	Jelecte	d Items write A	Kis writing	
Limit Output Data	Basic	No.	Abbr.	Name	Unit	Setting range	Axis1	
🗄 🚔 Motion SFC Program	Gain/filter	PA01	**STY **DEC	Operation mode		0000-1260	1000	
E Servo Program	Extension	PAUZ	***REG	Regenerative option		0000-/FFF	0000	
🗄 Synchronous Control Parameter		PAUS	*AD5	Absolute position detection system		0000-0001	0000	
🗄 👰 Cam Data	Extension 2	PAU4	*AUP1	Function selection A-1		10000-2130	2000	
🗄 🏦 Label	Extension 3	PAUS	*CMV	For manufacturer setting		10000-10000	10000	
	Ontion setting	PA00	*CPIX	For manufacturer setting		1-1	1	
🗄 🧑 Device Memory	Crassiel	PA07	ATU	Auto tuoing mode		0000-0004	0001	
	special	PA00	DSD	Auto tuning mode		1-40	16	
	Linear/DD Motor	PA10	TNIP	In-position range	pulse	0-65535	1600	
	Extension 4	PA11	TIP	For manufacturer setting	puise	0.0-1000.0	1000.0	
		PA12	TIN	For manufacturer setting		0.0-1000.0	1000.0	
		PA13	AOP2	For manufacturer setting		0000-0000	0000	
		PA14	*POI	Rotation direction selection		0-1	0000	
		PA15	*ENR	Encoder output pulse	pulse/rev	1-65535	4000	
		PA16	*ENR2	Encoder output pulse 2	parter	1-65535	1	
		PA17	**MSR	For manufacturer setting		0000-FFFF	0000	
		PA18	**MTY	For manufacturer setting		0000-FFFF	0000	
		PA19	*BLK	Parameter block		0000-FFFF	00AB	
		PA20	*TDS	Tough drive setting		0000-1110	0000	
		PA21	*AOP3	Function selection A-3		0000-0001	0001	
		PA22	**PCS	Position control structure selection		0000-2020	0000	
		PA23	DRAT	Drive recorder arbitrary alarm trigger setting		0000-FFFF	0000	
		PA24	AOP4	Function selection A-4		0000-0002	0000	
		PA25	OTHOV	One-touch tuning - Overshoot permissible level	%	0-100	0	
		PA26	*AOP5	Function selection A-5		0000-00A1	0000	
		PA27	*HTL	For manufacturer setting		0000-0014	0000	
		PA28	**AOP6	For manufacturer setting		0000-0000	0000	
		PA29		For manufacturer setting		0000-0000	0000	
4 11		10420		For manufacturor cotting		0000 0000	0000	
					Q173DS SV.	22 Host Station No.2	CAP NUM	SCRL

POINT Refer to [Appendix-3] for comparisons of the MR-H-B/MR-J2-B/MR-J2S-B and the MR-J4-B/MR-J3-B servo parameters.

From the menu, click [Check/Convert] - [Project Batch Check/Conversion].
 Check that the message: "Project Batch Check/Convert Complete Error: 0, Warning: 0" is in the output



Now the setting up of the conversion unit is completed.

5.2.2 Setting the Motion controller

- Applicable Motion controller A171SHCPU(N)/A172SHCPU(N)/A173UHCPU(-S1)/A273UHCPU/Q172CPU(N)/Q173CPU(N)
- Applicable software SW3RNC-GSV(A171SHCPU(N)/A172SHCPU(N)/A173UHCPU(-S1)/A273UHCPU) MELSOFT MT Works2(Q172CPU(N)/Q173CPU(N))
- (1) Setting procedure for the Motion controller Use the following steps for the settings.

Start

1)	Prepare the project Motion controller.	file of the applicable	When there is no project file, read the project from the Motion controller.
2)	Set all the servo am to the applicable Mo "MR-J2S-B". (refer	nplifiers to be connected otion controller to to POINT)	 For axes assigned to MR-J2-B and MR-H-B, change to MR-J2S-B in the system setting. When changing the system setting to "MR-J2S-B", the servo parameters are initialized, so set the parameters by referring to POINT "How to change "MR-J2-B" and "MR-H-B" to "MR-J2S-B"" on the following pages.
3)	Change the fixed pa gear) of the applicat match the servo mo (refer to POINT)	arameter (electronic ble Motion controller to otor after replacement.	 Change the fixed parameters (electronic gear) according to the encoder resolution after replacement by referring to POINT "Example of the electronic gear setting" on the following pages. For the encoder resolution after replacement, refer to
			"Section 5.4 Cautions for differences in encoder resolution".
4)	For the QN series N the operation cycle the following table.	Notion controllers, set to the value as shown in	
5)	Turn on the power of controller.	of the applicable Motion	
6)	Write all data to the	applicable Motion]
7)	Turn off the power of controller.	I of the applicable Motion	
	Er		

[QN series Motion controller (operating system software: SV43) operation cycle settings]

Current operation cycle setting	Condition	Operation cycle setting when the conversion unit is used	Remarks
Dofault	The number of control axes is 25 or	7.111 ms	For the relationships between the number of
Delault	Other than those above	3.555 ms	manual for the QN series Motion controller.
0.888 ms			
1.777 ms		3.555 ms	
3.555 ms	-		-
7.111 ms		7.111 ms	
14.222 ms		14.222 ms	

POINT

How to change "MR-J2-B" and "MR-H-B" to "MR-J2S-B"

Step 1: The servo parameters are initialized when changing amplifier settings in the system settings, so the following servo parameters are recorded for the "MR-J2-B" axis and "MR-H-B" axis.

MR-H-B/MR-J2-B servo parameters		Checking method
No. Name		
1	Amplifier setting	Check either one of "INC/ABS" in "Detailed Settings" on an amplifier setting screen in the system setting screens.
7	Rotation direction selection	Set either "forward rotation (CCW)/reverse rotation (CW)" in the servo parameter setting screen.

Step 2: For the axes with the amplifier type set to "MR-J2-B" and "MR-H-B" in the system set tings for the applicable Motion controller, change the amplifier type to "MR-J2S-B" and select "auto-setting" for the motor setting.

["System Setting" screen for SW3RNC-GSV]



POINT

Example of the electronic gear setting (Example of SV43 • MR-J4-B) If the encoder resolution is different than before, set the electronic gear (number of pulses per revolution, movement amount per revolution, and unit scaling factor) according to the encoder resolution after replacement. The following shows an example of setting the electronic gear.

< For the A series Motion controllers >

"Example of electronic gear setting when the HC-MFS motor (Resolution: 131072 pulses/rev) is replaced with the HG-MR motor (Resolution: 4194304 pulses/rev)"

For the electronic gear before replacement (number of pulses per revolution: 32768 pulses; movement amount per revolution: 1600.0 µm; unit scaling factor: 10), the electronic gear settings after replacement are as follows.

	Number of pulses per revolution
	Movement amount per revolution x unit scaling factor
	32768 pulse
=	50.0 μm ×10

32768 pulse x(4194304 pulse/rev÷131072 pulse/rev) 1600.0 μm ×10

The number of pulses per revolution and the movement amount per revolution are settable only within 1 to 65535. Set the reduced fraction.

In the electronic gear example, the number of pulses per revolution is set to 32768 pulses, the movement amount per revolution is set to 50.0 μ m, and the unit scaling factor is set to 10.

*Position accuracy errors occur in cases that are not reducible. Refer to Section 5.4 (1) for details.

Based on the above calculation results, regarding the electronic gear settings after replacement, the number of pulses per revolution is set to 32768 pulses, the movement amount per revolution is set to 50.0 μ m, and the unit scaling factor is set to 10.

< For the QN series Motion controllers >

"Example of electronic gear setting when the HC-MFS motor (Resolution: 131072 pulses/rev) is replaced with the HG-MR motor (Resolution: 4194304 pulses/rev)"

For the electronic gear before replacement (number of pulses per revolution: 32768 pulses; movement amount per revolution: 16000.0 µm), the electronic gear settings after replacement are as follows.

Number of pulses per revolution		32768 pulse x(4194304 pulse/rev÷131072 pulse/rev)		1048576 pulse
Movement amount per revolution	=	16000.0 μm	=	16000.0 µm

Based on the above calculation results, regarding the electronic gear settings after replacement, the number of pulses per revolution is set to 1048576 pulses and the movement amount per revolution is set to 16000.0 μ m.



- 5.2.4 Applying the servo gain adjustment result setting
- * This procedure is required only for Version E or earlier.
 - Applicable software
 - MELSOFT MT Works2, MR Configurator2
 - Process for applying the servo gain adjustment result setting Use the following steps for the settings.



5.2.5 Writing parameters to the conversion unit

Perform the following procedures with the power supply of the conversion unit turned off, then turn on the power supply of the conversion unit.

- Connect the personal computer and conversion unit with a USB cable.
- Set the rotary switch of the conversion unit to "0".
- (1) Open a MELSOFT MT Works2 project, and double-click [System Setting] [SSCNET Configuration] in the window.



(2) From the menu, click [Online] - [Write to Motion].

MELSOFT MT Developer2 (Untitled Project) - [SSCNET	Configuration]	
Project Edit Find/Replace View Check/Conve	t Online Debug Tools Window Help	_ @ ×
i 🗅 😁 💾 1 🖉 👷 🔍 👎 🗫 📶 💂 i 🍡 🚍 🚍	Transfer Setup	
B X B B X M M M P P 图 图	Routing Information 😥 🐘 🐺 🥔 👔 📫 👪 🖉	
Project # ×	Read from Motion	4 0 -
Untitled Project (SV22 Advanced Synchro	Write to Motion	
System Setting	Verify with Motion	<u> </u>
Basic Setting	Remote Operation	
SSCNET Configuration	CPU Backup	
Axis Label	Password Click [Write to Motion].	
High-speed Input Request Signal	Clear CPU Memory	E
Mark Detection	Export to ROM Format	
Safety Observation Function Par	Change CPU Operation Method 4 🖬 34 🖬 34 🖬 34 🖬 34	
Head Module	Set Clock	
PLC Module List	Monitor Common > and and and and a	
	Motion Monitor + 4 5 6 7 8	
Motion SFC Program	Servo Amplifier Operation + d04 d05 d06 d07 d08	
E Synchronous Control Parameter		
🗉 🎑 Cam Data		
tabel Gas Structured Data Types		
Device Comment	an an an an an an an an	
	9 10 11 12 13 14 15 16	
	d09 d10 d11 d12 d13 d14 d15 d16	
· · · ·		
Output		4 ×
🔀 Error:0		
No. Parameter/Program Content		
	Q173DS SV22 Host Station No.2	CAP NUM SCRL

(3) Write the setting to the Motion controller.

Select [System Setting, Servo Data Setting] and [Servo parameter] and click the [Execute] button. <Cautions>

Do not select any settings other than [System Setting, Servo Data Setting] and [Servo parameter].

Project Edit Find/Replace View Check/Convert Online Debug Tools Window Help	a x
Project + x System of Write to CPU	40.
Project 0.x System C Write to CRU Project System C Write to CRU Date Project System C System C System C Project System C System C System C Project System C System C System C	

(4) The confirmation message "The motion controller OS [SV22QJ VER300F] at the connection destination does not support the following functions" will be displayed.

MELSOFT MT Developer2 (Untitled Project) - [S	SCNET Configuration]	- 0 ×
Project Edit Find/Replace View Chee	ck/Convert Online Debug Tools Window Help	_ @ ×
i 🗅 😁 💾 1 🖉 , i 🔍 👎 🐅 🔳 , i 🎦 I		
1912 D B X 10 0 1 1 1 1 1 2 2 2		
Project 4 ×	System Cd Write to CPU	4 4 -
Initial Project (SV22 Advanced Synchri Device Setting Subtem Configuration State Betting Subtem Configuration Advalable Doptional Data Monitor Hykin System Parameter Head Module P.C Module List Setvo Data Setting Setting Setvo Data Setting Setting	Tomesting Interesting: Image: Method Mich Station No. Host Type [1]305 FU2 Target CPU: Method Mich Station No. Host Type [1]305 FU2 Orall Setting Ormunication Station No. Host Type [1]305 FU2 Orall Setting Ormunication Station No. Host Type [1]305 FU2 Orall Setting Ormunication Station Additional Setting No. Station No. Host Type [1]305 FU2 Target Memory Program Ormunication Station Additional Information I to check the function and Under Setting No. Setting	
	Q173DS SV22 Host Station No.2	CAP NUM SCRL

(5) When the writing is completed, the message "Completed" is displayed. Click the [OK] button on the "Completed" screen. In the "Write to CPU" screen, click the [Close] button.

MELSOFT MT Developer2 (Untitled Project) - [SSCNET Configura	tion	_ 🗆 X
Project Edit Find/Replace View Check/Convert On	line Debug Tools Window Help	_ 8 ×
: 🗅 😁 🖪 # 🗮 🖤 🐅 🔳 📜 🔚 📼 📟 📟	- - 	
	꽃 🔊 🖳 🖕 🗄 📷 📷 🔞 1 🐘 🐖 🐓 🗶 🏪 👪 🖕	
Project 🕴 🛪 🖬 System Co	Write to CPU	◄ ♦ •
 Untiled Project (SV22 Advanced Syndry System Setting System Setting System Configuration System Configuration System Configuration System Configuration System Configuration Method Nontor High-speed Type Setting List System Configuration Head Module Plend Module Statery Observation Function Part Head Module System Configuration System Config	Transfer Information Station No. Post Type [217205 Target CPU : Network No. Detail Setting Operation Method Detail Setting Operation Method Target Memory Program memory Target Memory Program Method Detail Setting Completed. Target Memory Congram (Setting Control Code(Text)) Setvo Program (Setting Consenter Click the [OK] button. Setvo Program (Setting Setvo Data Setting Parameter Body/Servo Data/Limt Output Data) Setvo Program (Setting Setvo Data Setting Parameter Setting Setting Setvo Data Setting Parameter Execute Cose Setting Setting Setting Setvo Data Setting Parameter Close Cose Setting Setting Setvo Data	н н
< m >	Click the [Close] bu	utton. 占

Now the parameter writing to the conversion unit is completed. From the menu, select [Project] - [Save] to save the converted project. Turn off the power supply of the conversion unit.

(6) Set the rotary switch of the conversion unit according to the SSCNET III/H (SSCNET III) line. For details on the setting method, refer to Chapter 3 (5).

<Cautions>

When writing after selecting other than [System Setting, Servo Data Setting] and [Servo parameter], rewrite parameters to the conversion unit starting from the first step.

5.3 Restrictions

 Changing the electronic gear setting of the A series Motion controller/Q series Motion controller The electronic gear settings (number of pulses per revolution, movement amount per revolution, unit scaling factor) must be changed.

Set the values to match the actual motor after the change. (There is a possibility that the accuracy of the positioning could change by the electronic gear settings after an adjustment, so verify the operation.) In addition, when setting the electronic gear to increase the "pulses per revolution" for the same "movement amount per revolution", the setting range for some servo motors will become narrower. (For details, refer to "Section 5.4 Cautions for differences in encoder resolution".)

2) Motion controller operating system software

Use a Motion controller that meets the following requirements: MR-J2S-B servo amplifier-compatible operating system software version and standard SV13/SV22/SV43. For details, refer to "Chapter 2 (5) Motion controller operating system software versions"

To use an operating system software with special specifications, the operating specifications need to be checked.

We can check the operating specifications (paid option).

3) Precaution for converting parameters

When converting parameters, cross-check the parameters and eliminate errors before writing the setting to the conversion unit.

4) Interface with peripheral devices

Only USB communication is available for communication with the engineering software (MELSOFT MT Works2).

MR Configurator2 cannot be connected to the conversion unit. Connect MR Configurator2 directly to the servo amplifier.

- 5) Communication
 - Set "3.555 ms" for the operation cycle setting of the conversion unit. Configure the operation cycle setting of the Motion controller by referring to "Section 1.1 (5) Operation cycle"
 - One conversion unit can convert SSCNET for up to 16 axes.
 - Two conversion units are required for conversion of 17 to 32 axes.
 - The conversion unit sends the data received from the controller to the servo amplifiers with a delay of one communication cycle. The servo amplifiers also send data with a one-cycle delay.
 - The delay may affect machine accuracies for the axes used for interpolation control or synchronous control. Therefore, collectively replace all the servo amplifiers in the same line.
 - Test the operation when the deviation counter value or the actual current value is used because the servo amplifiers send data with a one-cycle delay.
 - Test the operation when the speed-position control command is used because the positioning accuracy may be changed.
- 6) Servo amplifier adjustment < Version E or earlier >

For adjusting servo amplifiers, use MR Configurator2 to adjust the servo gain. Write the adjustment result to the conversion unit using MELSOFT MT Works2. Servo parameters are managed by the conversion unit. If the adjustment result is not written to the conversion unit after servo amplifiers are adjusted, the servo parameters will return to the previous value by turning off and on the conversion unit.

7) Turning the power off/on

- Turn on the control circuit power supply for the Motion controller, conversion unit, and servo amplifier simultaneously to start the system.
- When resetting the Motion controller or when powering it up again, power up the conversion unit as well.
- When wire breakage occurs for the SSCNET cable and SSCNET III cable and when the cables are reconnected, power up the Motion controller and conversion unit again.
- Do not turn the power off/on for the controls of the servo amplifier during the initial communication.
- 8) Speed Control (II) (VVF command / VVR command)
 - Speed Control (II) can be used with Q series Motion controller but cannot be used with A series Motion controller.
 - Using with A series Motion controller may result in overflow of internal calculations at time of setting the electronic gear for MR-J4-B/MR-J3-B.
- 9) Writing servo parameters to the conversion unit (replacing from MR-H-B/MR-J2-B)

When replacing MR-H-B/MR-J2-B with MR-J4-B/MR-J3-B at time of project conversion, the servo parameters to be written to the conversion unit must be reviewed. Use the project diversion function of MELSOFT MT Works2 to create data for the conversion unit. At that time, the servo amplifier settings will be replaced by MR-J4-B/MR-J3-B, but the axes of the MR-H-B/MR-J2-B with original servo amplifier settings will have the servo parameters initialized, so review the settings and set them in the conversion unit. Regarding the axes of the MR-J2S-B/MR-J2M-B with original servo amplifier settings, the servo parameters are retained when the servo amplifier settings are replaced by MR-J4-B/MR-J3-B.

Refer to [Appendix - 3] for the comparison of servo parameters between the MR-H-B/MR-J2-B/MR-J2S-B and the MR-J4-B/MR-J3-B.

10) Starting the system

When the SSCNET CN1 system is not yet in use, the system cannot be started according to the conversion unit H/W specification.

Be sure to start the system by using the SSCNET CN1 system.

11) Project diversion

Q173DSCPU (SV22) projects for the conversion unit cannot be diverted from SV43 projects. Use MELSOFT MT Works2 to create basic settings, configure SSCNET, and set servo parameters according to the Motion project. (Refer to Section 5.2.)

5.4 Cautions for differences in encoder resolution

As shown in the following table, the encoder resolution differs depending on the amplifier model and compatible motor.

Communication type	Amplifier model	Compatible motor	Encoder resolution
SSCNET		HC-MF, HC-FF, etc.	8192 [pulse/rev]
	WIR-J2-D	HC-SF, etc.	16384 [pulse/rev]
	MR-J2S-B	HC-KFS, HC-MFS, HC-SFS, etc.	131072 [pulse/rev]
SSCNET III	MR-J3-B	HF-KP, HF-MP, HF-SP, etc.	262144 [pulse/rev]
	MR-J4-B (J3 compatibility mode)	HG-KR, HG-MR, HG-SR, etc.	262144 [pulse/rev]
SSCNET III/H		HG-KR, HG-MR, HG-SR, etc.	4194304 [pulse/rev]
	WIN-J4-D	HC-KFS, HC-MFS, HC-SFS, etc. (*1)	131072 [pulse/rev]

[Amplifier models and resolution for compatible motors]

(*1) For information on how to use the MR-J2S-B servo motor,

refer to the "Transition from MELSERVO-J2-Super/J2M Series to J4 Series Handbook" (L(NA)03093). If the motor is not upgraded, the electronic gear settings do not need to be set again as the encoder resolution is the same.

If the encoder resolution is different than before, change the electronic gear ratio by using the fixed parameter of the electronic gear ratio as shown below

If the electronic gear is changed, the restrictions shown in the following table may apply. (Details on the restrictions are explained on the following pages.)

[Restrictions by difference in encoder resolution]

Restriction		Controller restricted during use of conversion unit	
		SSCNET III/H mode	SSCNET III mode
1)	Setting of electronic gear (position accuracy error)	A series Motion (OS: SV13, SV22, SV43)	A series Motion (OS: SV13, SV22, SV43)
2)	Upper/lower stroke limit range setting (Reduces upper/lower stroke limit range)	A series Motion (OS: SV13, SV43)	A series Motion (OS: SV13, SV43)
3)	Backlash compensation amount setting (Reduces setting range)	 A series Motion (OS: SV13, SV22, SV43) Q series Motion (OS: SV13, SV22, SV43) 	 A series Motion (OS: SV13, SV22, SV43) Q series Motion (OS: SV13, SV22, SV43)
4)	Command in-position setting (Reduces setting range)	 A series Motion (OS: SV13, SV22, SV43) Q series Motion (OS: SV13, SV22, SV43) 	 A series Motion (OS: SV13, SV22, SV43) Q series Motion (OS: SV13, SV22, SV43)
5)	Mechanical system program setting (regarding settings and operation)	Not supported	Supported (No restriction)

(1) Electronic gear setting (position accuracy error)

Applicable controller: A series Motion: Compatible OS: SV13, SV22, SV43 At the time of using a conversion unit with an A series Motion controller, it is necessary to make electronic gear settings (number of pulses per revolution, movement amount per revolution, unit scaling factor) according to encoder resolution after replacement. However, an error may be generated between the number of pulses outputted to the servo amplifier and the position accuracy for the actual movement amount of the machine because the setting range for the number of pulses per revolution is 1 pulse to 65535 pulses. For example, when replacing MR-J2-B (encoder resolution: 8192 pulses/rev) with MR-J4-B (encoder resolution:

4194304 pulses/rev) in equipment to move 1000.0 μ m for 1 motor revolution, the encoder resolution is 512 times greater, so the number of pulses per revolution must be scaled by 512 times, but a fractional calculation is necessary because the setting range for the number of pulses per revolution is 1 pulse to 65535 pulses.

<Setting electronic gear for MR-J2-B (encoder resolution: 8192 pulses/rev)> Number of pulses per revolution: 8192 pulses Movement amount per revolution: 1000.0 µm Unit scaling factor: 1

Replace with MR-J4-B servo amplifier. This shows 2 types of calculation example.

Calculation example 1 (simple calculation) Setting electronic gear for MR-J4-B (encoder resolution: 4194304 pulses/rev) The electronic gear for MR-J4-B has the number of pulses per revolution: 4194304 pulses and movement amount per revolution: 1000.0 µm. The setting range for the number of pulses per revolution is 1 pulse to 65535 pulses, so 4194304 pulses cannot be set for the number of pulses per revolution. Therefore, set the values obtained by reducing the number of pulses per revolution and movement amount per revolution so that the number of pulses per revolution falls within the setting range. Furthermore, when the setting unit is mm, the movement amount per revolution must be a value up to the first decimal place. If the value cannot be reduced with the following calculation, set the movement amount per revolution by rounding it off to one decimal place. Number of pulses per revolution 4194304 pulse 8192 pulsex512 Movement amount per revolution x unit scaling factor 1000.0 µm 1000.0 µm 32768 pulse 32768 pulse _ ÷ 7.8125 µm 7.8 um Scale the number of Perform reducing pulses per revolution because the number of The number of pulses per revolution is before replacement by pulses per revolution is reduced to 65535 or less and falls within 512 times because the outside the setting range. the setting range, but the movement resolution is 512 times. amount per revolution is beyond the first decimal place, so round it off to one decimal place. The number of pulses per revolution is set to 32768, the movement amount per revolution is set to 7.8 µm, and the unit scaling factor is set to 1.

Calculation example 2 (devised calculation)				
Step 1 Calculate movement amount per revolution X using the number of pulses per revolution				
as the maximum value (65535 pulses).				
Number of pulses per revolution	8192 pulsex512 4194304 pulse			
Movement amount per revolution × unit scaling factor	- =1000.0 μm =1000.0 μm			
_ <u>65535 pulse</u>				
X				
X=15.62476 µm and is rounded at the s	second decimal place, resulting in 15.6µm for			
the movement amount per revolution.				
Step 2 In this condition, the impact of rounding is great, so the number of pulses per				
revolution Y for movement amount per revolution 15.6 µm is calculated.				
revolution Y for movement amount per	revolution 15.6 µm is calculated.			
revolution Y for movement amount per Number of pulses per revolution	revolution 15.6 µm is calculated. 4194304 pulse Y			
revolution Y for movement amount per Number of pulses per revolution Movement amount per revolution × unit scaling factor	revolution 15.6 μ m is calculated. $= \frac{4194304 \text{ pulse}}{1000.0 \ \mu\text{m}} = \frac{Y}{15.6 \ \mu\text{m}}$			
revolution Y for movement amount per Number of pulses per revolution Movement amount per revolution × unit scaling factor This results in Y = 65431.1424 pulses, so	revolution 15.6 µm is calculated. $= \frac{4194304 \text{ pulse}}{1000.0 \text{ µm}} = \frac{Y}{15.6 \text{ µm}}$ the decimal is rounded off and the number			
revolution Y for movement amount per Number of pulses per revolution Movement amount per revolution × unit scaling factor This results in Y = 65431.1424 pulses, so of pulses per revolution becomes 65431 pul	revolution 15.6 µm is calculated. $= \frac{4194304 \text{ pulse}}{1000.0 \text{ µm}} = \frac{Y}{15.6 \text{ µm}}$ o the decimal is rounded off and the number lses.			
revolution Y for movement amount per <u>Number of pulses per revolution</u> Movement amount per revolution × unit scaling factor This results in Y = 65431.1424 pulses, so of pulses per revolution becomes 65431 pul The number of pulses per revolution is set	revolution 15.6 µm is calculated. $= \frac{4194304 \text{ pulse}}{1000.0 \text{ µm}} = \frac{Y}{15.6 \text{ µm}}$ o the decimal is rounded off and the number lses. to 65431, the movement amount per			
revolution Y for movement amount per Number of pulses per revolution Movement amount per revolution × unit scaling factor This results in Y = 65431.1424 pulses, so of pulses per revolution becomes 65431 pul The number of pulses per revolution is set revolution is set to 15.6µm, and the unit sc	revolution 15.6 µm is calculated. $\frac{4194304 \text{ pulse}}{1000.0 \text{ µm}} = \frac{Y}{15.6 \text{ µm}}$ o the decimal is rounded off and the number lses. to 65431, the movement amount per valing factor is set to 1.			
revolution Y for movement amount per Number of pulses per revolution Movement amount per revolution × unit scaling factor This results in Y = 65431.1424 pulses, so of pulses per revolution becomes 65431 pul The number of pulses per revolution is set revolution is set to 15.6µm, and the unit sc The ratio of the number of pulses per revol	revolution 15.6 µm is calculated. $\frac{4194304 \text{ pulse}}{1000.0 \text{ µm}} = \frac{Y}{15.6 \text{ µm}}$ o the decimal is rounded off and the number lses. to 65431, the movement amount per valing factor is set to 1. lution to movement amount per revolution			
revolution Y for movement amount per Number of pulses per revolution Movement amount per revolution × unit scaling factor This results in Y = 65431.1424 pulses, so of pulses per revolution becomes 65431 pul The number of pulses per revolution is set revolution is set to 15.6µm, and the unit sc The ratio of the number of pulses per revol approaches 4194304 pulses: 1000.0 µm, so	revolution 15.6 µm is calculated. $= \frac{4194304 \text{ pulse}}{1000.0 \text{ µm}} = \frac{Y}{15.6 \text{ µm}}$ To the decimal is rounded off and the number lses. to 65431, the movement amount per valing factor is set to 1. lution to movement amount per revolution to error can be suppressed in comparison to			
revolution Y for movement amount per Number of pulses per revolution Movement amount per revolution × unit scaling factor This results in Y = 65431.1424 pulses, so of pulses per revolution becomes 65431 pul The number of pulses per revolution is set revolution is set to 15.6µm, and the unit sc The ratio of the number of pulses per revol approaches 4194304 pulses: 1000.0 µm, so calculation example 1 (simple calculation), a	revolution 15.6 µm is calculated. $= \frac{4194304 \text{ pulse}}{1000.0 \text{ µm}} = \frac{Y}{15.6 \text{ µm}}$ To the decimal is rounded off and the number lses. to 65431, the movement amount per railing factor is set to 1. lution to movement amount per revolution to error can be suppressed in comparison to and this improves the position accuracy.			

There may be cases where position accuracy error will be improved by setting to MR-J4-B (J3 compatibility mode) (encoder resolution: 262144 pulses/rev).

Setting electronic gear for MR-J4-B (J3 compatibility	mode) (encoder resolution: 262144 pulses/rev)
Number of pulses per revolution	8192 pulsex32262144 pulse
Movement amount per revolution × unit scaling factor	$1000.0 \ \mu m$ = $1000.0 \ \mu m$
= <u>32768 pulse</u>	
125.0 μm	
The number of pulses per revolution is set to 3	2768, the movement amount per revolution
is set to 125.0 µm, and the unit scaling factor	is set to 1.
* Reducing is performed because 262144 pulse	s cannot be set for the number of pulses
per revolution, but 262144 pulses can be divid	ded so there is no position accuracy error.
(2) Upper/lower stroke limit range setting (Reduces upper/lower stroke limit range)

Applicable controller: A series Motion

Compatible OS: SV13, SV43

<Upper/lower stroke limit range setting for A series Motion controller>

At the time of using a conversion unit with an A series Motion controller, if the electronic gear settings (number of pulses per revolution, movement amount per revolution, unit scaling factor) are made according to encoder resolution after replacement, there may be cases where the settable range for the upper/lower stroke limit reduces and does not enter the original setting range as a result of the pulse calculation with the set electronic gear.

It is necessary to confirm that the upper/lower stroke limit values after settings range reduction are within the stroke of the actual equipment and to adjust the range when not within the stroke of the actual equipment. (Including cases where the settings are default values (upper limit value) and the setting range is enough for the stroke of the actual machine.)

Example: Electronic gear settings for MR-J4-B with encoder resolution 4194304 pulses/rev and motor movement amount per revolution 1000.0 µm.



With the above example, the stroke limit setting range after electronic gear setting is -512001.1 μ m to 512001.1 μ m, but the original upper stroke limit value is 2000000.0 μ m and lower stroke limit value is -2000000.0 μ m, so range adjustment is necessary.

The stroke setting range can be improved by setting the J4 amplifier to the J3 compatibility mode. Example: Electronic gear settings for MR-J4-B (J3 compatibility mode) with encoder resolution 262144 pulses/rev and motor movement amount per revolution 1000.0 µm.



With the above example, the stroke limit setting range after electronic gear setting is -8192000.0 μ m to 8191999.9 μ m, and that is within the original upper stroke limit value 2000000.0 μ m and lower stroke limit value -2000000.0 μ m, so the setting values can be used without modification.

<Upper/lower stroke limit range setting for Q series Motion controller>

When outside the stroke limit range with Q series Motion controller, an error will be displayed for the upper/lower stroke limit values of the servo data screen, but writing to the Q series Motion controller is possible, so it is possible to perform a stroke check with the setting values written by the Q series Motion controller itself and to control positioning within the stroke limit range.

Example: Electronic gear settings for MR-J4-B with encoder resolution 4194304 pulses/rev and motor movement amount per revolution 1000.0 µm.



The stroke setting range can be improved by setting the J4 amplifier to the J3 compatibility mode. Example: Electronic gear settings for MR-J4-B (J3 compatibility mode) with encoder resolution

Servo Parameter Axis1 In-position Range - The setting value is outside the range.

write setting

values in this condition.

262144 pulses/rev and motor movement amount per revolution 1000.0 $\mu m.$

5 Servo Data

Project		Ψ×	🍓 Servo Data 🔀		
Untitled	Project (SV13) tem Setting vo Data Setting		Item	Axis1 Set the fixed para	
	Setting values for elect have been input accord MR-J4-B (J3 compatib	tronic gear ding to pility mode)	that lumber of Pulses/Rev. lovement Amount/Rev.	262144[pulse] 1000.0[µm]	
⊡ 🔐 Mc	Original upper/lower stroke limit values		Upper Stroke Limit	2000000.0[µm] -2000000.0[µm]	
Upper Stroke I Set the upper the machine tr	ice Memory .imit limit value for avel range.		Stroke limit setting range after electronic gear setting	Setting Range -8192000.0[µm] to 81919	999.9[µm]
rror content	Warning:0	t	With the above example, electronic gear setting is -81 is within the original upper lower stroke limit value -20	the stroke limit setti 192000.0 µm to 8191999 stroke limit value 200 00000.0 µm, so the set	ng range af 9.9 µm, and th 0000.0 µm a tting values c

(3) Backlash compensation amount setting (Reducing the setting range)

Applicable controller: A/QN series Motion Compatible OS: SV13, SV22, SV43 When using the conversion unit with settings identical to the upper/lower stroke limit range settings, there are cases where the settable range for the backlash compensation amount is reduced and does not enter the original settings range. as a result of the pulse calculation with the set electronic gear.

It is necessary to check the actual equipment for the backlash compensation amount after reducing the setting range and to adjust the range when outside the setting range.

< Backlash compensation amount setting for A series Motion controller >

Example: Electronic gear settings for MR-J4-B with encoder resolution 4194304 pulses/rev and motor movement amount per revolution 1000.0 µm.

		🔃 Fixed Parameter Sett	ing Axis No.1	-		
		Unit Setting	\odot mm \odot inch	C degree C PU	JLSE Ba	acklash Comp.
	Setting values for electronic gear that have been input	Pulse Count/Revo. Travel/Revo.	65431 15.6	[PULSE] [μm]	Set bac	et the backlash of the machine. Compensate for the acklash every time the positioning direction changes.
	according to MR-J4-B	Unit Magnification	● 1 O 10 O	100 C 1000 Tim	nes 🛛	r
	Original backlash	Backlash Comp.	100.0	[µm]		Setting Range Over
	compensation amount	Upper Stroke Limit	2000000.0	[µm]		
		Lower Stroke Limit	-2000000.0	[µm]		Backlash Comp.
		CMD In-position	10.0	[µm]		0.0[um] to 15.6[um]
		Limit Switch Output	C Unused	C Used		olo[phi] to ISlo[phi]
	Backlash compensation amount setting range	– Setting Range Backlash Comp.				ОК
_	after electronic gear setting	0.0[µm	n] to	15.6[[μm]	OK Cancel

With the above example, the backlash compensation amount setting range after electronic gear setting is $0.0 \ \mu m$ to $15.6 \ \mu m$, and the original backlash compensation amount is $100.0 \ \mu m$, so adjustment of the range is necessary.

The command in-position setting range can be improved by setting the MR-J4-B to the J3 compatibility mode.

Example: Electronic gear settings for MR-J4-B (J3 compatibility mode) with encoder resolution 262144 pulses/rev and motor movement amount per revolution 1000.0 µm.



With the above example, the backlash compensation amount setting range after electronic gear setting is 0.0 μ m to 249.9 μ m, and the original backlash compensation amount is 100.0 μ m, so the setting values can be used without modification.

<Backlash compensation amount setting for Q series Motion controller>

Error content

Example: Electronic gear settings for MR-J4-B with encoder resolution 4194304 pulses/rev and motor movement amount per revolution 1000.0 µm.



With the above example, the backlash compensation amount settable range after electronic gear setting is 0.0 μ m to 15.6 μ m, and the original backlash compensation amount is 100.0 μ m, so adjustment of the range is necessary.

E E	Error:s Warning:0				
No.	Parameter/Program	Content			
1	Servo Data	Servo Data Axis1 Backlash Compensation - The setting value is outside the range.			
2	Servo Data	Servo Data Axis1 Upper Stroke Limit - The setting value is outside the range.			
3	Servo Data	Servo Data Axis1 Lower Stroke Limit - The setting value is outside the range.			
4	Servo Data	Servo Data Axis1 Command In-position - The setting value is outside the range.			
5	Servo Data	Servo Parameter Axis1 In-position Range - The setting value is outside the range.			

The backlash compensation amount setting range can be improved by setting the MR-J4-B to the J3 compatibility mode.

Example: Electronic gear settings for MR-J4-B (J3 compatibility mode) with encoder resolution

262144 pulses/rev and motor movement amount per revolution 1000.0 $\mu m.$



(4) Command in-position setting (Reduces setting range)

Applicable controller: A/QN series Motion Compatible OS: SV13, SV22, SV43 When using the conversion unit with settings identical to the upper/lower stroke limit range settings, there are cases where the settable range for the command in-position is reduced and does not enter the original setting range as a result of the pulse calculation with the set electronic gear.

It is necessary to check the actual equipment for the command in-position after reducing the setting range and to adjust the range when outside the setting range.

<Command in-position setting for A series Motion controller>

Example: Electronic gear settings for MR-J4-B with encoder resolution 4194304 pulses/rev and motor movement amount per revolution 1000.0 µm.



With the above example, the command in-position setting range after electronic gear setting is 0.1 μ m to 7.8 μ m, and the original command in-position is 10.0 μ m, so adjustment of the range is necessary.

The command in-position setting range can be improved by setting the MR-J4-B to the J3 compatibility mode.

Example: Electronic gear settings for MR-J4-B (J3 compatibility mode) with encoder resolution 262144 pulses/rev and motor movement amount per revolution 1000.0 µm.



With the above example, the command in-position setting range after electronic gear setting is 0.1 μ m to 124.9 μ m, and the original command in-position is 10.0 μ m, so the setting value can be used without modification.

<Command in-position setting for Q series Motion controller>

Example: Electronic gear settings for MR-J4-B with encoder resolution 4194304 pulses/rev and motor movement amount per revolution 1000.0 µm.

Project	Ψ×	🌯 Servo D	ata 🗙				
Control of the section of the s		Ite	m neter	Axis1 Set the fixed	para		
Setting values for ele gear that have been according to MR-J4-B	ectronic n input	Number of Movement	Pulses/Rev. Amount/Rev.	4194304[pulse] 1000.0[µm]]		
Emic Output Data		Upper Strol	ke Limit ke Limit d In-nosition	2000000.0[µm] -2000000.0[µm]] 1]	L	
Command In-position	position	man		10.0[jim]	- Settin	o Range	
Set the position where the command in-position signal is turned ON.	13		Command in setting range electronic ge	n-position e after ear setting.	0.1[µ	m] to 7.8[µm	I

Error content

With the above example, the command in-position setting range after electronic gear setting is $0.1 \mu m$ to $7.8 \mu m$, and the original command in-position is $10.0 \mu m$, so adjustment of the range is necessary.

E E	Error:5 F. Warning:0				
No.	Parameter/Program	Content			
1	Servo Data	Servo Data Axis1 Backlash Compensation - The setting value is outside the range.			
2	Servo Data	Servo Data Axis1 Upper Stroke Limit - The setting value is outside the range.			
3	Servo Data	Servo Data Axis1 Lower Stroke Limit - The setting value is outside the range.			
4	Servo Data	Servo Data Axis1 Command In-position - The setting value is outside the range.			
5	Servo Data	Servo Parameter Axis1 In-position Range - The setting value is outside the range.			

The command in-position setting range can be improved by setting the MR-J4-B to the J3 compatibility mode.

Example: Electronic gear settings for MR-J4-B (J3 compatibility mode) with encoder resolution 262144 pulses/rev and motor movement amount per revolution 1000.0 μ m.

Project	Ŧх	🌯 Servo Data 🛛		
🖃 🚰 Untitled Project (SV13)		Them	Arrived	
E System Setting		Item	Axis1	_
E Servo Data Setting		Init Setting	Set the fixed para	•
Setting values for e that have been inp	ectronic gear according to	 Number of Pulses/Rev. Movement Amount/Rev. 	262144[pulse] 1000.0[µm]	
	atibility mode)	Backlash Compensation	100.0[µm]	
🕀 🚘 Motion SFC Program		Upper Stroke Limit	2000000.0[µm]	
E Serve Drogram		Lower Stroke Limit	-2000000.0[µm]	
E 💮 😥 De Original command	in-position	Command In-position	10.0[µm]	•
Command In-position Set the position where the command in-position signal is turned ON.		Command in-pos setting range afte electronic gear se	ition r etting	g Range n] to 124.9[µm]
Error content			*	
Error:0	With the above ex range after electr and the original of	xample, the command onic gear setting is 0.2 command in-position is	in-position setting I μm to 124.9 μm, s 10.0 μm, so the	
No. Parameter/Program	Content	setting value can	be used without modif	ication.

(5) Mechanical system program setting (regarding settings and operation)

Applicable controller: A/QN series Motion Applicable OS: SV22

With the system configuration of the conversion unit, the mechanical system program supports only the communication type: SSCNET III mode.

Cautions

With the communication type: SSCNET III/H mode : do not use the mechanical system program.

With the communication type: SSCNET III/H mode, the encoder resolution for the motor of the SSCNET III/H compatible servo amplifier is of higher resolution (4194304 pulses/rev) than the encoder resolution of an SSCNET compatible servo amplifier, so overflow occurs at the operation that has passed the module of the mechanical system program, and the servo motor may operate unexpectedly.

It is necessary to use a conversion unit and to change the following mechanical module parameters in order to replace an SSCNET compatible servo amplifier with an SSCNET III compatible servo amplifier (encoder resolution: 262144 [pulse/rev]).

Mechanical mo	odule	Parameter
		Gear ratio
(1) Transmission module	Gear	(number of gear teeth on input axis side,
		number of gear teeth on output axis side)
	Roller	Number of pulses per revolution of the roller
	Ball screw	Number of pulses per revolution of the ball screw
(2) Output module	Rotary table	Number of pulses per revolution of the rotary table
	Cam	Number of pulses per revolution of the cam axis

<Parameter settings for mechanical module of A series Motion controller>

Setting example for gear ratio (transmission module) and the number of pulses per revolution of the ball screw (output module), when switching from MR-J2-B to MR-J4-B (J3 compatibility mode). (The output module uses a "ball screw".)

When switching from MR-J2-B encoder resolution (8192 [pulse/rev]) to MR-J4-B (J3 compatibility mode) encoder resolution (262144 [pulse/rev]), the encoder resolution is 32 times. For that reason, the gear ratio (transmission module) and the number of pulses per revolution of the ball screw (output module) are scaled 32 times to match the encoder resolution of MR-J4-B (J3 compatibility mode).

[Example of mechanical module configuration]



(1) Transmission module: gear Match the gear ratio setting with the MR-J4-B (J3 compatibility mode) encoder resolution.

(2) Output module: ball screw Match the setting for the number of pulses per revolution of the ball screw with the MR-J4-B (J3 compatibility mode) encoder resolution.

1) Parameter setting for gear ratio (transmission module) (With A series Motion controller)

Scale the gear ratio setting prior to replacement by 32 times, as shown below, in order to match the MR-J2-B encoder resolution with the MR-J4-B (J3 compatibility mode) encoder resolution.



2) Parameter settings for the number of pulses per revolution of the ball screw (output module) (With A series Motion controller)

Scale the number of pulses per revolution of the ball screw prior to replacement by 32 times, as shown below, in order to match the MR-J2-B encoder resolution with the MR-J4-B (J3 compatibility mode) encoder resolution.

Number of pulses per revolution of the ball screw prior to replacement (MR-J2-B)

Out. Ax. No. 1 Cmnt.			0.1.11.1	Number of pulses per revolution
Ballscrew Pitch 1000).0	μm	• mm • inch	of the ball screw prior to replacement
Pls.Count/Revo. 8192	2	pulse	Torg.Lmt.	Number of pulses per revolution of the ball screw
Travel Per Pulse 0	.1	μm	300% (default)	= 8192 [pulse]
Permissible Droop Pls. 6553 = 799	15	pulse um		
Sp.Restriction 6000)00.00	mm/min	ļ	
Upper Stroke Limit 2147	48364.7	μm	Setting Range 1 to 32	
Lower Stroke Limit -214	748364.8	μm		
Limit Switch Output				Number of pulses per revolution
C Unused C Us	sed			of the ball screw: 32 times
			ОК С	Cancel
Number of pulses per rev	olution o	of the ball scre	w after replacem	nent
MR-J4-B (J3 compatibilit	ty mode)))		
Ballscrew Parameters				
	·			
				Number of pulses per revolution of the ball screw
Out. Ax. No. 1 Cmnt.			– Outout Lloit – – –	Number of pulses per revolution of the ball screw after replacement
Out. Ax. No. 1 Cmnt. Ballscrew Pitch 1000	.0 .	μm	Output Unit • mm C inch	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw
Out. Ax. No. 1 Cmnt. Ballscrew Pitch 1000 Pls.Count/Revo. 2621	.0 µ 44 p	µm pulse	Output Unit • mm O inch Torq.Lmt.	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw = 8192 [pulse]×32
Out. Ax. No. 1 Cmnt. Ballscrew Pitch 1000 Pls.Count/Revo. 2621 Travel Per Pulse 0. Permissible Drace Pla	.0 µ 44 p	um pulse um	Output Unit • mm O inch Torq.Lmt. • 300% (default) O Indirect Dsont bu	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw = 8192 [pulse]x32 = 262144 [pulse]
Out. Ax. No. 1 Cmnt. Ballscrew Pitch 1000 Pls.Count/Revo. 2621 Travel Per Pulse 0. Permissible Droop Pls. 6553 = 243	.0 µ 44 p 5 }	um pulse um pulse um	Output Unit Torq.Lmt. 300% (default) Indirect Dsgnt. by	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw = 8192 [pulse]×32 = 262144 [pulse]
Out. Ax. No. 1 Cmnt. Ballscrew Pitch 1000 Pls.Count/Revo. 2621 Travel Per Pulse 0. Permissible Droop Pls. 6553 = 249 Sp.Restriction 6000	.0 µ 44 µ 5 µ 3.9 µ 00.00 r	um pulse um pulse um mm/min	Output Unit Imm C inch Torq.Lmt. C 300% (default) C Indirect Dsgnt. by	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw = 8192 [pulse]×32 = 262144 [pulse]
Out. Ax. No.1Cmnt.Ballscrew Pitch1000Pls.Count/Revo.2621Travel Per Pulse0.Permissible Droop Pls.6553=245Sp.Restriction6000Upper Stroke Limit2147	.0 µ 44 p 5 µ 3.9 µ 48364.7 µ	um pulse um pulse um mm/min um	Output Unit Torq.Lmt. 300% (default) Indirect Dsgnt. by Setting Range 1 to 32	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw = 8192 [pulse]×32 = 262144 [pulse]
Out. Ax. No.1Cmnt.Ballscrew Pitch1000Pls.Count/Revo.2621Travel Per Pulse0.Permissible Droop Pls.6553=243Sp.Restriction6000Upper Stroke Limit2147Lower Stroke Limit-2147	.0 µ 44 µ 5 1 3.9 µ 48364.7 µ '48364.8 µ	um pulse um pulse um mm/min um	Output Unit Torq.Lmt. 300% (default) Indirect Dsgnt. by Setting Range 1 to 32	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw = 8192 [pulse]×32 = 262144 [pulse]
Out. Ax. No. 1 Cmnt. Ballscrew Pitch 1000 Pls.Count/Revo. 2621 Travel Per Pulse 0. Permissible Droop Pls. 6553 = 243 Sp.Restriction 6000 Upper Stroke Limit 2147 Lower Stroke Limit -2147	.0 µ 44 p 5 } 3.9 µ 48364.7 µ '48364.8 µ	μm pulse μm pulse μm mm/min μm	Output Unit Image: mm Image Indirect Disgnt. by Setting Range I to 32	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw = 8192 [pulse]×32 = 262144 [pulse]
Out. Ax. No. 1 Cmnt. Ballscrew Pitch 1000 Pls. Count/Revo. 2621 Travel Per Pulse 0. Permissible Droop Pls. 6553 = 243 Sp. Restriction 6000 Upper Stroke Limit 2147 Lower Stroke Limit -2147 Climit Switch Output © Unused ©	.0 44 5 5 3.9 4 8364.7 4 248364.8 4 ed	um pulse um pulse um mm/min um	Output Unit Image: mm C inch Torq.Lmt. C 300% (default) C Indirect Dsgnt. by Setting Range 1 to 32	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw = 8192 [pulse]×32 = 262144 [pulse]
Out. Ax. No. 1 Cmnt. Ballscrew Pitch 1000 Pls. Count/Revo. 2621 Travel Per Pulse 0. Permissible Droop Pls. 65533 = 249 Sp. Restriction 6000 Upper Stroke Limit 2147 Lower Stroke Limit -2147 Climit Switch Output © Unused ©	.0 44 [5] 3.9 00.00 r 48364.7 48364.8 ed	um pulse um um um um	Output Unit Torq.Lmt. 300% (default) Indirect Dsgnt. by Setting Range 1 to 32 OK Ca	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw = 8192 [pulse]×32 = 262144 [pulse]
Out. Ax. No. 1 Cmnt. Ballscrew Pitch 1000 Pls. Count/Revo. 2621. Travel Per Pulse 0. Permissible Droop Pls. 65533 = 245 Sp. Restriction 6000 Upper Stroke Limit 2147. Lower Stroke Limit -2147. Chinit Switch Output © Us	.0 44 5 5 00.00 r 48364.7 748364.8 ed	um pulse um pulse um mm/min um	Output Unit Torq.Lmt. 300% (default) Indirect Dsgnt. by Setting Range 1 to 32 OK Ca	Number of pulses per revolution of the ball screw after replacement Number of pulses per revolution of the ball screw = 8192 [pulse]×32 = 262144 [pulse]

<Parameter settings for mechanical module of Q series Motion controller>

Example: Setting example for gear ratio (transmission module) and the number of pulses per revolution of the ball screw (output module), when switching from MR-J2-B to MR-J4-B (J3 compatibility mode). (The output module uses a "ball screw".)

When switching from MR-J2-B encoder resolution (8192 [pulse/rev]) to MR-J4-B (J3 compatibility mode) encoder resolution (262144 [pulse/rev]), the encoder resolution is 32 times. For that reason, the gear ratio (transmission module) and the number of pulses per revolution of the ball screw (output module) are scaled 32 times to match the encoder resolution of MR-J4-B (J3 compatibility mode).

[Example of mechanical module configuration]



(1) Transmission module: gear Match the gear ratio setting with the MR-J4-B (J3 compatibility mode) encoder resolution.

(2) Output module: ball screw Match the setting for the number of pulses per revolution of the ball screw with the MR-J4-B (J3 compatibility mode) encoder resolution.

1) Parameter setting for gear ratio (transmission module) (With Q series Motion controller)

Scale the gear ratio setting prior to replacement by 32 times, as shown below, in order to match the MR-J2-B encoder resolution with the MR-J4-B (J3 compatibility mode) encoder resolution.



Main Shaft Gear			N	Main Shaft Gear		
Parameter Item	Setting Value			Parameter Item	Setting Value	
Gear Ratio Input Axis Side Teeth Number		8192		Gear Ratio Input Axis Side Teeth Number		32768
Gear Ratio Output Axis Side Teeth Number		1000		Gear Ratio Output Axis Side Teeth Number		125
Rotation Direction	Forward			Rotation Direction	Forward	

2) Parameter settings for the number of pulses per revolution of the ball screw (output module) (With Q series Motion controller)

Scale the number of pulses per revolution of the ball screw prior to replacement by 32 times, as shown below, in order to match the MR-J2-B encoder resolution with the MR-J4-B (J3 compatibility mode) encoder resolution.

Number of pulses per revolution of the ball screw prior to replacement (MR-J2-B)

Mechanical Parameter Setting		
all Screw		
Parameter Item	Setting Value	Number of pulses per revolution of the bal
Output Axis No.		screw prior to replacement
Comment		
Ball Screw Pitch	1000.0[jum	Number of pulses per revolution of the hel
Number of Pulses per Revolution	8192[pulse	Number of pulses per revolution of the bai
Movement Amount per Pulse	0.1[µm	screw = 8192 [pulse]
Permissible Droop Pulse Value	65535[pulse	
Converted Value	7999.8[µm]	
Speed Limit Value	600000.00[mm/min]	
Output Unit	mm	
+ Torque Limit	300%	
🗐 Stroke Limit		
Upper Limit Value	214748364.7[µm]	
Lower Limit Value	-214748364.8[µm]	Number of pulses per revolution
		of the hall carows 22 times
mber of pulses per revolution of t R-J4-B (J3 compatibility mode))	he ball screw after replace	ement
mber of pulses per revolution of the R-J4-B (J3 compatibility mode))	he ball screw after replace	ement
mber of pulses per revolution of th R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting	he ball screw after replace 무 ×	ement Ball screw number of pulses
mber of pulses per revolution of t R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw	he ball screw after replace 무 ×	ement Ball screw number of pulses
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item	he ball screw after replace	Ball screw number of pulses per revolutio
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No.	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No. Comment	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]
mber of pulses per revolution of th R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No. Comment Ball Screw Pitch	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No. Comment Ball Screw Pitch Number of Pulses per Revolution	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No. Comment Ball Screw Pitch Number of Pulses per Revolution Movement Amount per Pulse	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No. Comment Ball Screw Pitch Number of Pulses per Revolution Movement Amount per Pulse Permissible Droop Pulse Value	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No. Comment Ball Screw Pitch Number of Pulses per Revolution Movement Amount per Pulse Permissible Droop Pulse Value Converted Value	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No. Comment Ball Screw Pitch Number of Pulses per Revolution Movement Amount per Pulse Permissible Droop Pulse Value Converted Value Speed Limit Value	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No. Comment Ball Screw Pitch Number of Pulses per Revolution Movement Amount per Pulse Permissible Droop Pulse Value Converted Value Speed Limit Value Output Unit	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No. Comment Ball Screw Pitch Number of Pulses per Revolution Movement Amount per Pulse Permissible Droop Pulse Value Converted Value Speed Limit Value Output Unit Torque Limit	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting all Screw Parameter Item Output Axis No. Comment Ball Screw Pitch Number of Pulses per Revolution Movement Amount per Pulse Permissible Droop Pulse Value Converted Value Speed Limit Value Output Unit Torque Limit Stroke Limit	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]
mber of pulses per revolution of the R-J4-B (J3 compatibility mode)) Mechanical Parameter Setting Mechanical Parameter Item Output Axis No. Comment Ball Screw Pitch Number of Pulses per Revolution Movement Amount per Pulse Permissible Droop Pulse Value Converted Value Speed Limit Value Output Unit Torque Limit Stroke Limit Upper Limit Value	he ball screw after replace	Ball screw number of pulses Ball screw number of pulses per revolutio = 8192 [pulse] × 32 = 262144 [pulse]

6. TROUBLESHOOTING

6. TROUBLESHOOTING

The following shows the corrective actions for the errors displayed on the 7-segment LED display of the conversion unit.

1) System setting errors

LE	D disp	lay	Error description	Corrective action
				Check the rotary switch of the conversion unit.
	0 1		Refer to Chapter 3 (5) for the rotary switch settings of the conversion unit.	
	0	4	Axis number not set	Write the system settings to the conversion unit.
				For details on the writing method, refer to Section 5.1.5.
	1	2	System patting pat registered	Write the system settings to the conversion unit.
		3	System setting not registered	For details on the writing method, refer to Section 5.1.5.
	2			Write servo parameters to the conversion unit.
	2	σ	Servo parameter not registered	For details on the writing method, refer to Section 5.1.5.

2) Servo amplifier errors

Refer to Chapter 1 TROUBLESHOOTING FOR SERVO AMPLIFIER (DRIVE UNIT) of the "MELSERVO-J4 Servo Amplifier Instruction Manual (Troubleshooting)" (SH(NA)030109) for details of servo amplifier errors and troubleshooting.

3) SSCNET communication error

LE	ED disp	lay	Error description	Corrective action
	Δ	٨	SSCNET communication error	Check that the controller power supply is on.
	A	А		Check the SSCNET cable connection.

7. EXTERNAL DIMENSIONS

7. EXTERNAL DIMENSIONS



Mounting hole machining diagram

WARRANTY

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

Gratis Warranty Term and Gratis Warranty Range

We will repair any failure or defect hereinafter referred to as "failure" in our FA equipment hereinafter referred to as the "Product" arising during warranty period at no charge due to causes for which we are responsible through the distributor from which you purchased the Product.

Gratis Warranty Term

The term of warranty for Product is one (1) year after your purchase or delivery of the Product to a place designated by you or eighteen (18) months from the date of manufacture whichever comes first. Warranty period for repaired Product cannot exceed the original warranty period before any repair work.

Gratis Warranty Range

This limited warranty applies only when the condition, method, environment, etc. of use are in compliance with the terms and conditions and instructions that are set forth in the instruction manual, user manual for the Product, and the caution label affixed to the Product.

Onerous Repair Term after Discontinuation of Production

- (1) We may accept the repair at charge for another seven (7) years after the production of the Product is discontinued. The announcement of the discontinuation of production for each model is issued by our distributors.
- (2) Please note that the Product (including its spare parts) cannot be ordered after its discontinuation of production.

Exclusion of Loss in Opportunity and Secondary Loss from Warranty Liability

Whether under or after the term of warranty, we are not liable for any damage arising from causes for which we are not responsible, any losses of opportunity and / or profit incurred by you due to a failure of the Product, any damage, secondary damage or compensation for accidents arising under a specific circumstance that are foreseen or unforeseen by our company, any damage to products other than the Product, and any other operations conducted by you.

Change of Product specifications

Specifications listed in our catalogs, manuals or technical documents may be changed without notice.

Appendix-2

Compliance to the EMC and Low Voltage Directives

Compliance to the EMC Directive, which is one of the EU Directives, has been a legal obligation for the products sold in European countries since 1996 as well as the Low Voltage Directive since 1997.

To prove the compliance with the EMC and Low Voltage Directives, manufacturers must issue an EC Declaration of Conformity and the products must bear a CE marking.

(1) Authorized representative in Europe

The authorized representative in Europe is shown below. Name: Mitsubishi Electric Europe B.V. Address: Gothaer strase 8, 40880 Ratingen, Germany

(2) Installation to the control panel

The conversion unit is an open type device. Ensure the conversion unit is installed inside a control panel for use. Also, install the remote stations of each network inside the control panel. Waterproof type remote stations can be installed outside of the control panel. Installing the conversion unit inside a control panel ensures both safety and effective shielding of electromagnetic noise generated by the conversion unit.

1) Control panel

- (a) Use a conductive control panel.
- (b) When attaching the control panel's top plate or base plate using bolts, mask the area used for grounding so that the area is not painted.
- (c) To ensure good electrical contact with the control panel, mask the mounting bolt area of the inner plate in the control panel so that contact between surfaces can be ensured over the widest possible area.
- (d) Ground the control panel with a thick wire to ensure a low impedance connection to ground even at high frequencies.
- (e) Holes in the control panel must measure 10 cm or less in diameter, or radio frequency noise may be emitted.

In addition, because radio waves leak through a clearance between the control panel door and the main unit, reduce the clearance as much as practicable.

- 2) Connection of power line and ground wire
 - (a) Provide a grounding point near the FG terminals. Ground the FG terminals with the thickest and shortest possible wire (wire length: 30 cm or shorter, diameter: 2 mm or less).
 - (b) Twist the grounding wire from the grounding point with the power supply wire. This enables more noise from the power supply wire to run off to the ground. However, when a noise filter has been installed on the power supply wire, twisting with the grounding wire is not required.

Appendix-3

Servo parameter comparison table

(1) MR-H-B and MR-J4-B/MR-J3-B servo parameter comparison table

MR-H-B servo parameters					-B/MR-J3-B servo parameters	Cautions		
No	Name	Initial	Customer	No.	Name	Initial value	Customer	
		value	setting				setting	
			value				value	
1	Amplifier setting	0000		PA03	Absolute position detection	0000		
					system			
2	Regenerative resistor	0000		PA02	Regenerative option	0000		
3	Motor type	Per						No corresponding parameter
		amplifier				$\langle - \rangle$	/ /	(setting is unnecessary)
4	Motor capacity	Per						No corresponding parameter
5		ampliller					/ /	(setting is uninecessary)
5		2						(setting is unnecessary))
6	Number of feedback pulses	0				\sim	/ /	No corresponding parameter
Ŭ		Ū						(setting is unnecessary)
7	Revolution direction selection	0		PA14	Revolution direction selection	0		())
8	Auto tuning	1		PA08	Auto tuning mode	0001		Must change the setting value
	5							per auto tuning mode.
9	Servo response performance	0001		PA09	Auto tuning response	With J4: 16		Must change the setting value
					performance	With J3: 12		referring to the guideline for
								machine resonance frequency.
10	Forward rotation torque limit	300						No corresponding parameter
	value						$\langle \rangle$	(setting is unnecessary)
11	Reverse rotation torque limit	300						No corresponding parameter
- 10	value							(setting is unnecessary)
12	Load to motor inertia ratio	3.0		PB06	Load to motor inertia ratio	With J4: 7.00		
12	Desition loop gain 1	70				With 14:15.0		
13	Position loop gain 1	70		PD07	Model loop gain	With J4. 15.0		
14	Speed loop gain 1	1200		/		VVI0133.24		No corresponding parameter
14	Opeed loop gain i	1200						(setting is unnecessary)
15	Position loop gain 2	25		PB08	Position loop gain	With J4: 37.0		
	· · · · · · · · · · · · · · · · · · ·					With J3: 37		
16	Speed loop gain 2	600		PB09	Speed loop gain	823		
17	Speed integral compensation	20		PB10	Speed integral compensation	33.7		
18	Machine resonance	0		PB13	Machine resonance	4500		
	suppression filter (notch filter)				suppression filter 1			
				PB14	Notch shape selection 1	0000		
19	Feed forward gain	0		PB04	Feed forward gain	0		
20	In-position range	100		PA10	In-position range	With J4: 1600		Must change the setting
_						With J3: 100		according to motor.
21	Electromagnetic brake	100		PC02	Electromagnetic brake	0		
	sequence output	0004			sequence output	0000		
22	Analog monitor output	0001		PC09	Analog monitor 1 output	0000		
22	Optional function 1	0000			Analog monitor 2 output	0001		
23	l ow noise mode selection	0000						(setting is unnecessary)
24	Electromagnetic brake interlock	0000		PA04	Selection of forced stop input	With .14 2000		Set to "Forced ston decelerat
1-1	output timing	0000			and forced stop deceleration	With J3: 0000		ion function disabled (EM1)"
1					function			to set identically to MR-H-B.
L	Motor-less operation selection			PC05	Motor-less operation selection	0000		
25	For manufacturer setting	0000						No corresponding parameter
				\angle				(setting is unnecessary)
26	For manufacturer setting	0000						No corresponding parameter
								(setting is unnecessary)
27	Analog monitor 1 offset	0		PC11	Analog monitor 1 offset	0		
28	Analog monitor 2 offset	0		PC12	Analog monitor 2 offset	0		Na anna an startha anna
29	Pre-alarm data selection	0001						
20	Zara spood	EO			Zoro chood	E0		(setting is unnecessary))
21	Error excessive alarm loval	20		PC01	Error excessive alarm loval	30 \\\/ith 14:0		Setting units differ (Select by
51	בווטו בתכבאועב מומוווו ובעבו	00		1001	בווטו בגנבאטוער מומוווו ובעבו	With 13.3		Using PC24 for knulse \rightarrow xn
				PC06	Function selection C-3	0000		rev:n)
					Error excessive alarm level			,
					unit selection			

MR-H-B servo parameters					I-B/MR-J3-B servo paramete		Cautions	
No	Name	Initial value	Customer setting value	No.	Name	Initial value	Customer setting value	
32	PI-PID control switching	0000		PB24	PI-PID control switching selection	0000		
33	For manufacturer setting	0000						
34	PI-PID switching position droop	0						No corresponding parameter (setting is unnecessary)
35	For manufacturer setting	0						
36	Speed differential compensation	980		PB11	Speed differential compensation	980		
37	For manufacturer setting							
38	For manufacturer setting							
39	For manufacturer setting							
40	Parameter writing inhibit	0000		PA19	Parameter writing inhibit	With J4: 00AB With J3: 000B		Change the setting value as needed.

(2) MR-J2-B and MR-J4-B/MR-J3-B servo parameter comparison table

MR-J2-B servo parameters			MR-J4-	B/MR-J3-B servo parameters	Cautions			
No	Name	Initial	Customer	No.	Name	Initial Value	Customer	
		Value	Setting				Setting	
			Value				Value	
1	Amplifier setting	0000		PA03	Absolute position detection	0000		
					system selection			
2	Regenerative option	0000		PA02	Regenerative option selection	0000		Must change the setting value per
	selection							option model.
3	For manufacturer setting	0080						No corresponding parameter
				/		$\langle - \rangle$	/ _	(setting is unnecessary)
4	For manufacturer setting	0						No corresponding parameter
				$\langle \rangle$		$\langle \rangle$	/ /	(setting is unnecessary)
5	For manufacturer setting	1						No corresponding parameter
_	For more foot were setting			/			/ /	(setting is unnecessary)
6	For manufacturer setting	0						No corresponding parameter
-	Povolution direction	0			Poyolution direction coloction		/	(setting is unnecessary)
<i>'</i>	selection	0		PA14	Revolution direction selection	0		
Q	Must change the setting	0001			Gain adjustment mode	0001		Must change the setting value per
0	value per auto tuning mode.	0001		1 700	selection	0001		auto tuning mode
_	Son <i>i</i> o rosponso	0001		DA00		\//ith 14:16		Must change the sotting value
9	oerformance	0001		PAU9	Auto tuning response	With 13:12		referring to the quideline for
	penormanice				penormance	Wia100.12		machine resonance frequency
10	Forward rotation torque limit	300						No corresponding parameter
10	value	500						(setting is unnecessary)
11	Reverse rotation torque limit	300				\sim	\sim	(com .g .c acoocca.))
l	value	000						
12	Load to motor inertia ratio	70		PB06	Load to motor inertia ratio	With J4: 7.00		Unit system differs
		-				With J3: 7.0		(0.1 times \rightarrow 0.01 times).
								Pay attention to the setting value.
13	Position loop gain 1	70		PB07	Model loop gain	With J4: 15.0		Unit system differs
						With J3: 24		(rad/s \rightarrow 0.1 rad/s)
14	Speed loop gain 1	1200						No corresponding parameter
				/				(setting is unnecessary)
15	Position loop gain 2	25		PB08	Position loop gain	With J4: 37.0		Unit system differs
						With J3: 37		$(rad/s \rightarrow 0.1 rad/s)$
16	Speed loop gain 2	600		PB09	Speed loop gain	823		
17	Speed integral	20		PB10	Speed integral compensation	33.7		Unit system differs
	compensation					(700		$(rad/s \rightarrow 0.1 rad/s)$
18	Machine resonance	0		PB13	Machine resonance	4500		Must change the setting value per
	suppression flitter 1				Suppression filter 1	0000		rrequency and deptn.
				PB14		0000		
19	reed torward gain	0		PB04	reed forward gain	0		
						14/11 14		
20	In-position range	100		PA10	In-position range	With J4: 1600		Pay attention to the unit system.
						vvith J3: 100		UZ-B: Set by feedback pulse unit
~	Electromognotic broke	400		DOCO	Electromognotic broke			04-D. Set by command pulse unit
21		100		PC02		0		
-			-			0000		
22	Analog monitor 1 output	0001		PC09		0000		iviust change the setting value per
L				PC10	Analog monitor 2 output	0001		וווטוווטו טעשעו מאנא.
23	Servo forced stop selection	0000		PA04	Function selection A-1	With J4: 2000		
-	Oli alt ta ilensifi				Servo forced stop selection	With J3: 0000		
24	Slight vibration suppression	0000		PB24	Slight vibration suppression	0000		
1				DOGE		0000		
1	iviotor-less operation			PC05	Function selection C-2	0000		
<u>م</u> د	For manufacturar sotting	0000			wow ress operation selection			
25	For monufacturer setting	0000						
26		0000			Analan marilar A			
27	Analog monitor 1 offset	0		PC11	Analog monitor 1 offset	0		Dave to H/VV.
<u> </u>	Angle and a line of the second	~		D0/2	An ala mananitan O. K. J	-		viust change the setting value.
28	Analog monitor 2 offset	0		PC12	Analog monitor 2 offset	0		Dave to H/VV.
-	Farman facture	0004						wust change the setting value.
29	⊢or manutacturer setting	0001						

MR-J2-B servo parameters					B/MR-J3-B servo parameters	Cautions		
No	Name	Initial value	Customer setting value	No.	Name	Initial value	Customer setting value	
30	Zero speed	50		PC07	Zero speed	50		
31	Error excessive alarm level	80		PC01	Error excessive alarm level	With J4: 0 With J3: 3		J2B: 0.025 rev. unit J4B: Can select
				PC06	Function selection C-3 Error excessive alarm level unit selection	0000		1/0.1/0.01/0.001 rev. unit
32	PI-PID control switching selection	0000		PB24	PI-PID control switching selection	0000		Cannot switch by PI-PID switching position droop
33	For manufacturer setting	0000						
34	PI-PID switching position droop	0						No corresponding parameter (setting is unnecessary)
35	For manufacturer setting	0						
36	Speed differential compensation	980		PB11	Speed differential compensation	980		
37	For manufacturer setting	0						
38	For manufacturer setting	0						
39	For manufacturer setting	0						
40	Parameter writing inhibit	0000		PA19	Parameter writing inhibit	With J4: 00AB With J3: 000B		

MF	MR-J2S-B servo parameters				3/MR-J3-B servo paramete	Cautions		
No	Name	Initial	Customer	No.	Name	Initial value	Customer	
		value	setting				setting	
			value				value	
1	Amplifier setting	0000		PA03	Absolute position	0000		
l '	Absolute position detection	0000		1 703	detection system	0000		
	system selection				selection			
2	Regenerative option selection	0000		P402	Recenerative ontion	0000		Must change the setting value
2	Regenerative option selection	0000		1 702	selection	0000		per option model
	External dynamic brake				Substitute with PD07 to			
	selection							
3	For servo system controller	0080				\sim	\leftarrow	
ľ	setting	0000						
1	For serve system controller	0000				\sim	\leftarrow	
1	setting	0000						
5	For serve system controller	1		/ /			\sim	
ľ	setting							
6	Number of feedback pulses	0					\sim	
7	Royalution direction soluction	0			Povolution direction	0		
l '	Revolution direction selection	0		FA14	coloction	0		
•	Auto tuning goin adjustment	0001			Coin adjustment mode	0001		Must shange the potting value per
°	Auto turning gain aujustiment	0001		FAUO	Gain aujustment mode	0001		iviusi change the setting value per
		(*4)		DA00		W/H 14.10		
9	Servo response performance	(1)		PAU9	Auto tuning response	Will'i J4. 10		(1) Initial value is as follows.
					penonnance	VVIUT J.J. 12		11 kW or more: 0003
4.0	Ecoward rotation targua limit	200						
10	Forward Totation torque limit	300						
<u> </u>	Value	200		\sim		$\langle - \rangle$		
11	Reverse rotation torque innit	300						
10	Load to motor inertia ratio	70		DB06	Load to motor inertia ratio	With 14.7.00		L Init system differs
12		7.0		FB00		With 12:70		$(0.1 \text{ times} \rightarrow 0.01 \text{ times})$
						Viii 105. 7.0		$(0.1 \text{ unles} \rightarrow 0.01 \text{ unles})$
	Position loop gain 1	(*2)			Model loop gain	With 14:15.0		Lipit system differs
13	Fosition loop gain 1	(2)		FD07	Model loop gain	With 12:24		$(rad/c \rightarrow 0.1 rad/c)$
						VVI0100.24		$(120/3 \rightarrow 0.1120/3)$ (*2) Initial value is as follows
								7kW or loss: 35
								11kW or more: 19
	Speed loop gain 1	(*3)		/				(*3) Initial value is as follows
14	Opeca loop gain i	(3)						7kW or less: 177
								11kW or more: 96
15	Position loop gain 2	(*4)		PB08	Position loop gain	With 14:370	í –	Linit system differs
15	r contorricop gainz	(')		1 200	r collorricop gain	With J3: 37		$(rad/s \rightarrow 0.1 rad/s)$
						Viii.100.07		(*4) Initial value is as follows
								7kW or less: 35
								11kW or more: 19
16	Speed loop gain 2	(*5)		PB09	Speed loop gain	823	1	(*5) Initial value is as follows.
1		(-)						7kW or less: 817
1								11kW or more: 455
17	Speed integral compensation	(*6)		PB10	Speed integral	33.7		Unit system differs.
		. ,			compensation			$(ms \rightarrow 0.1 ms)$ (*6)
1								Initial value is as follows.
1								7kW or less: 48
								11kW or more: 91
18	Machine resonance	0000		PB13	Machine resonance	4500		Must change the setting value per
۱.°	suppression filter 1				suppression filter 1			frequency and depth.
1				PB14	Notch shape selection 1	0000		
19	Feed forward gain	0		PB04	Feed forward gain	0		
20	In-position range	100	<u> </u>	PA10	In-position range	With 14 1600	<u> </u>	Must change the setting
20	n' posicion range	100			n' position range	With 13 100		according to motor
24	Electromagnetic brake	Ο	1	PC02	Electromagnetic brake	Λ. ΠΟΟ. 100 Π	1	
 ²¹	sequence outout	Ŭ			sequence outout	Ū		
22	Analog monitor 1 output	0001	1	PC09	Analog monitor 1 output	0000	1	Must change the setting value per
22	Analog monitor 2 output	0001		PC10	Analog monitor 2 output	0000	†	monitor output data
1	, a raiog mornior 2 output		1			0001	1	

(3) MR-J2S-B and MR-J4-B/MR-J3-B servo parameter comparison table

MR-J2S-B servo parameters				MR-J4-B/MR-J3-B servo parameters				Cautions
No	Name	Initial	Customer	No.	Name	Initial value	Customer	
		value	setting	_			setting	
		1	value				value	
23	Optional function 1	0000		PA04	Function selection A-1	With J4: 2000	1	Forced stop deceleration function
20	Servo forced stop selection			1 7.0-1	Servo forced stop	With J3: 0000		selection
l	· · ·	1			selection			Set to "Forced stop deceleration
		1						function disabled (EM1)" to set
[<u>ا</u> ا	I		I		l		identically to MR-J2SB
24	Slight vibration suppression	0000		PB24	Slight vibration	0000		
	control selection	1			suppression control			
	!	l			selection			
	Motor-less operation selection	1		PC05	Function selection C-2	0000		
		1			Motor-less operation			
		<u> </u>			selection			
25	Low-pass filter selection	0000	Γ	PB23	Low-pass filter selection	0000	Γ	
l	Adaptive vibration suppression	1		\square	No corresponding		\square	
l	control selection	1			parameter			
	Adaptive vibration suppression	1		\square	No corresponding		\frown	
	control sensitivity selection	I		\swarrow	parameter			
26	For manufacturer setting	0						
27	Analog monitor 1 offset	0		PC11	Analog monitor 1 offset	0		Save to H/W.
21	Allalog Holitor Folices	Ĩ			Allolog Hornton . ccot	-		Must change the setting value.
28	Analog monitor 2 offset	0		PC12	Analog monitor 2 offset	0		Save to H/W
20		1						Must change the setting value.
29	For manufacturer setting	0001		\vdash			\vdash	
20	Toro speed	50		0007	Zoro sneed	50	\frown	
30			<u> </u>	PC01			 	
31	Error excessive alarm level	80		PCUI	Error excessive alarm	VVIth J4: U		Unit system differs.
		1		D 000		VVIth J3: 3	 	MR-J2SB_: 0.025 rev. unit,
		1		PUUb	Function selection U-3	0000		MR-J4B_:
		1			Effor excessive alarm			
		0000				0000	───	
32	PI-PID control switching	0000		PB24	PI-PID control switching	0000		
	Selection	0000		\vdash	Selection		\vdash	
33	Sella continuitation bau	0000			No corresponding			
	Corial communication response	1		\vdash	No corresponding		\leftarrow	4
	dellar time	1			no contesponding			
	Encoder outrout nulse setting	1		0000	Encoder output pulse	0000	\vdash	
	election	1		PUUS	entting selection	0000		
24	DI_DID switching position droop	0		\vdash	Seturity selection		\vdash	
34		\vdash		\vdash				
35	For manufacturer setting			\square				
36	Speed differential	980		PB11	Speed differential	980		
	compensation	⊢		┢──	compensation		\vdash	
37	For manufacturer setting	\checkmark		\checkmark				
38	Encoder output pulse	4000	Γ	PA15	Encoder output pulse	4000	Γ	Set encoder pulse (A phase, B
		1						phase) to be output by servo
	ļ!	L						amplifier.
39	For manufacturer setting			\leq				
40	Parameter writing inhibit	0000		PA19	Parameter writing inhibit	With J4: 00AB		Must change the setting value as
	[!	I		· · · · ·		With J3: 000B		needed.
41	For manufacturer setting			\square			\square	
to				/				
48	!	V	/	/				
49	Gain switching selection	0000		PB26	Gain switching selection	0000		
50	Gain switching condition	10		PB27	Gain switching condition	10	1	
51		1	<u> </u>	1 22.	Cain switching time	1	<u> </u>	
51		ı '		PD20	constant			
52	Load to motor inertia ratio 2	70		020	Load to motor inertia ratio	With 14.7.00		l Init evetem differe
5∠		1.0		РБ2Э	after rain switching	With 13:7.0		$(0.1 \text{ times} \rightarrow 0.01 \text{ times})$
		1			aller gain switching	vviu100.7.0		Pay attention to the setting value.
52	Position loop gain 2 change	100		PB30	Position loop gain after	With . 14.00		Must change the setting value by
55	ratio			1 200	nain switching	With J3: 37		directly converting ratio.
54	Speed loop gain 2 change ratio	100		PB31	Speed loop gain after gain	With 14:0		Must change the setting value by
54	opeed loop gain 2 on ange ratio	100		1 001	switching	With J3: 823		directly converting ratio.

MF	R-J2S-B servo parameters			MR-J4	-B/MR-J3-B servo paramet		Cautions	
No	Name	Initial	Customer	No.	Name	Initial value	Customer	1
		value	setting				setting	1
			value				value	'
55	Speed integral compensation	100		PB32	Speed integral	With J4: 0.0		Must change the setting value by
	change ratio			1	compensation after gain	With J3: 33.7		directly converting ratio.
			!		switching			
56	For manufacturer setting	\square		\square				
to								'
59								'
60	Optional function C Phase	0000	ļi	PC03	Encoder output pulse	0000		
	change of encoder pulse				phase selection			'
	output		!			l		l
61	Notch frequency selection	0000		PB15	Machine resonance	4500		Must change the setting value per
					suppression filter 2			frequency and depth.
	Notch depth selection			PB16	Notch shape selection 2	0000		
62	For manufacturer setting			\square				
to								1
75								

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