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MITSUBISHI ELECTRIC
Changes for the Better

Mitsubishi Electric AC Servo System MELSERVO-J5 400 V Class Servo Amplifiers

MITSUBISHI ELECTRIC SERVO SYSTEM MELSERVO-J5

November 2020

MR-J5-G4/MR-J5-A4 0.6 kW to 3.5 kW

New Product Release
SV2011-2E

MR-J5 series releases 400 V servo amplifiers

Product Lines

■ **400 V class servo amplifiers**

MR-J5-60G4, MR-J5-100G4, MR-J5-200G4, MR-J5-350G4, MR-J5-60A4, MR-J5-100A4, MR-J5-200A4, MR-J5-350A4

Features

- The 400 V class servo amplifiers support the same functions as the MELSERVO-J5 series 200 V class servo amplifiers which have already been released on the market. For example, the maximum torque is increased by combining the servo motor with a larger-capacity servo amplifier, and various functions including tuning, maintenance, and diagnosis functions are also supported.
- The product line of the compatible servo motors initially includes small-capacity and low-inertia servo motors and will be expanded sequentially to meet the customers' demands.
- Models supporting the safety communication via CC-Link IE TSN are also available, which support a total safety system for entire equipment and production lines.

EtherCAT® * EtherCAT®-compatible models are also available.

Servo Amplifier Product Lines 400 V class added

CC-Link IE TSN

MR-J5-G4

Supports Ethernet-based CC-Link IE TSN, featuring high-speed, large-capacity communication (1 Gbps). Command communication cycle of ≥ 31.25 µs and speed frequency response of 3.5 kHz enable advanced motion control.

General purpose interface-compatible

MR-J5-A4

Enables position control by pulse train command and speed/torque control by analog voltage command.
The maximum command pulse frequency is 4 Mpulses/s.

■ **Servo amplifier**

●: Supported ○: Future support planned –: Not supported

Model	Power supply specifications (Note 1)	Command interface	Fully closed loop control (Note 2)	Compatible servo motors			
				Rotary	Linear (Note 3)	Direct drive	
MR-J5-G	200 V AC	CC-Link IE TSN EtherCAT® (Note 4)	●	●	●	●	
MR-J5-G4	400 V AC		●	●	○	–	
MR-J5-A	200 V AC	Pulse train/Analog voltage	●	●	●	●	
MR-J5-A4	400 V AC		●	●	○	–	

Notes: 1. 200 V AC servo amplifiers are compatible with DC power supply input as standard.
2. The indicated servo amplifiers are compatible only with a two-wire type serial encoder. For four-wire type serial encoders and pulse train interface (A/B/Z-phase differential output type) encoders, use MR-J5-G-RJ/MR-J5-G4-RJ/MR-J5-A-RJ/MR-J5-A4-RJ servo amplifiers.
3. The indicated servo amplifiers are compatible only with two-wire type and four-wire type serial linear encoders. For a pulse train interface (A/B/Z-phase differential output type) linear encoder, use MR-J5-G-RJ/MR-J5-A-RJ servo amplifiers.
4. EtherCAT® is supported by MR-J5-G-N1/MR-J5-G4-N1 servo amplifiers.

400 V Servo Amplifiers Providing New Combinations with Servo Motors

Drives a Wide Range of Servo Motors

The MR-J5 series 400 V class servo amplifiers can be combined with the HK-KT series servo motors.
The HK-ST series and HK-RT series will be supported sequentially, which will optimize your machines. *1

Motor type: HK-KT_W

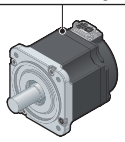
40 x 40	
Model	Capacity [kW]
HK-KT053W	0.05
HK-KT13W	0.1
HK-KT1M3W	0.15

Motor type: HK-KT_4W

60 x 60		80 x 80		90 x 90	
Model	Capacity [kW]	Model	Capacity [kW]	Model	Capacity [kW]
HK-KT434W	0.4	HK-KT7M34W	0.75	HK-KT1534W	1.5
HK-KT634W	0.6	HK-KT1034W	1.0	HK-KT2034W	2.0
				HK-KT2024W	2.0

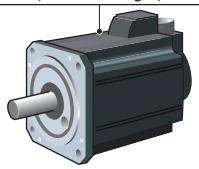
*1. The HK-ST series and HK-RT series are planned for future support/release.

Minimum flange size: 40 × 40 (0.05 kW or larger)



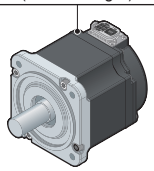
Small capacity, low inertia HK-KT series

Minimum flange size: 130 × 130 (0.5 kW or larger)



Medium capacity, medium inertia HK-ST series *1

Minimum flange size: 90 × 90 (1 kW or larger)



Medium capacity, ultra-low inertia HK-RT series *1

Motor flange size [unit: mm]

Compatible rotary servo motors

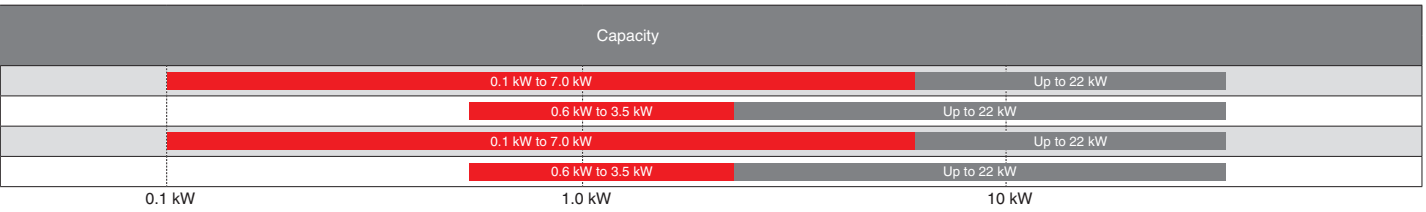
Small capacity, low inertia

HK-KT Series

Servo motors with a 26-bit batteryless absolute position encoder
Rated speed: 3000 r/min *1
Maximum speed: 6700 r/min *1
The servo motors have a single connector that connects the single cable for the power supply, encoder, and electromagnetic brake by one-touch lock, which makes wiring easy.

*1. The speed varies by the model type.

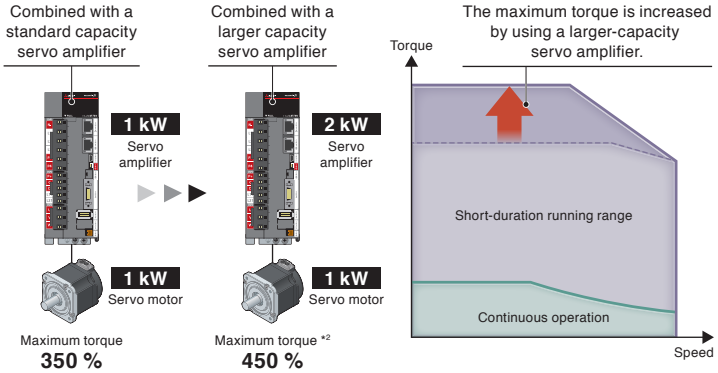
: Future release planned



Increases Maximum Torque by Combining with Larger-Capacity Servo Amplifiers

It is possible to increase the maximum torque and achieve a shorter cycle time by combining the servo motor with a larger-capacity servo amplifier.*1

*1. Refer to "Combinations of Rotary Servo Motors and Servo Amplifiers" for the available combinations.

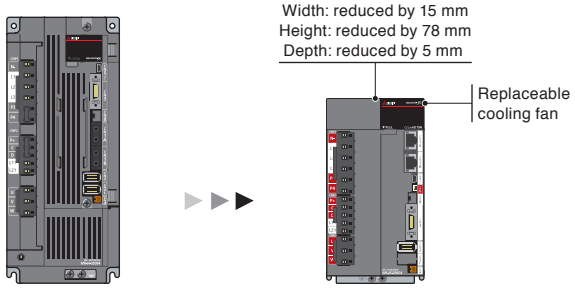


*2. When the maximum torque of HK-KT1034W servo motor is increased with the 2 kW servo amplifier.

Compact 3.5 kW Servo Amplifiers with a Replaceable Cooling Fan Unit

The 3.5 kW servo amplifiers are much more compact than the conventional model of MR-J4, saving space in the cabinet.
The servo amplifiers are equipped with a replaceable cooling fan unit, which can be easily replaced by users. *1

*1. The 2 kW and 3.5 kW servo amplifiers are equipped with a cooling fan unit.



W: 105 mm
H: 250 mm
D: 200 mm
MR-J4-350B4

W: 90 mm
H: 172 mm
D: 195 mm
MR-J5-350G4

Predictive Maintenance

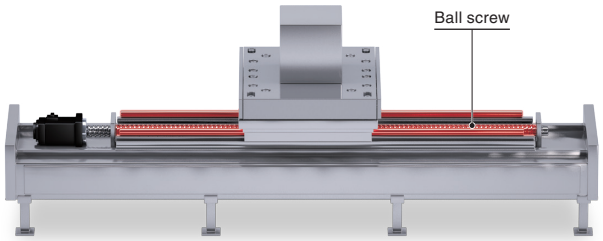
The servo amplifiers detect signs of machine failure by monitoring the operation status.

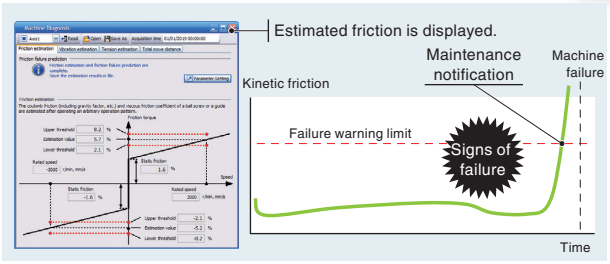
Maisart is an abbreviation for “Mitsubishi Electric's AI creates the State-of-the-ART in technology.” Mitsubishi Electric is leveraging original AI technology to make devices smarter.

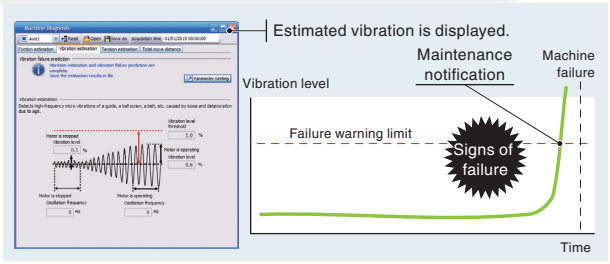
Machine Diagnosis (Ball Screws/Linear Guides)

This function supports predictive maintenance by estimating frictions and vibrations of mechanical drive components such as ball screws and linear guides.

- Friction failure prediction with the friction estimation function
- Vibration failure prediction with the vibration estimation function



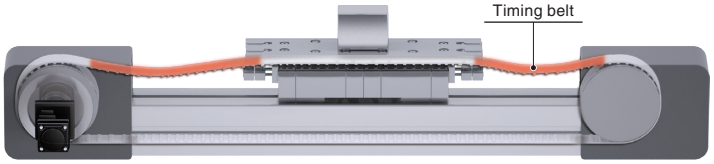


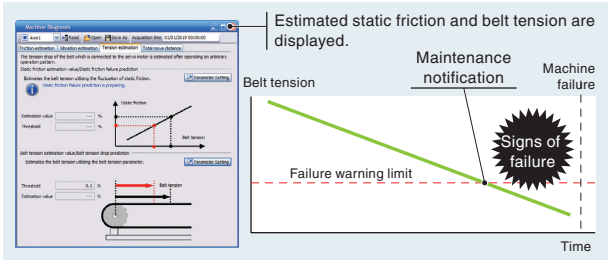


Machine Diagnosis (Belts)

This function detects aging deterioration of belts in advance by the static friction failure prediction and the tension deterioration prediction with the belt tension estimation.

- Static friction failure prediction
- Belt tension deterioration prediction

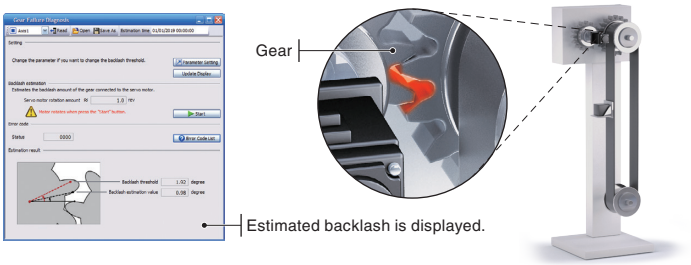




Machine Diagnosis (Gears) *1

With this function, the servo amplifier generates commands automatically, and executes to-and-fro positioning operation to estimate the amount of gear backlash. Gear failure is predicted based on the set nominal values for backlash.

- Backlash estimation function
- Gear failure prediction



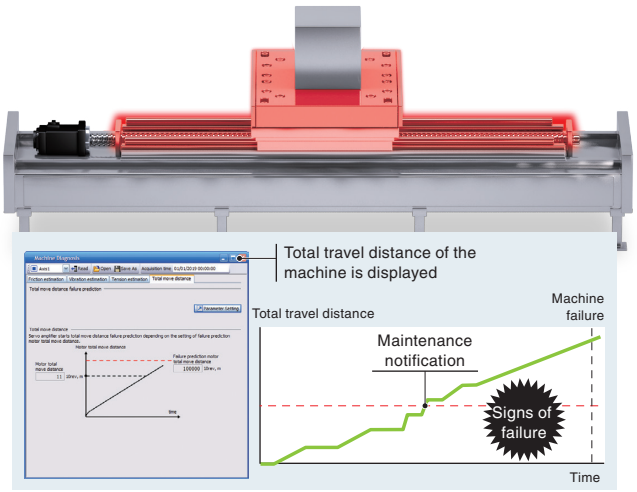
*1. The machine diagnosis (gears) does not work during normal operation.

Preventive Maintenance

Machine Diagnosis (Mechanical Drive Components)

This function estimates when a machine failure will occur based on the total travel distance of the servo motor, and notifies when it is time for replacement if the rated life of the mechanical drive components is set.

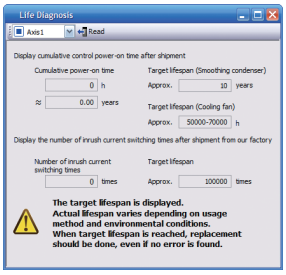
● Machine total travel distance failure prediction



Servo Amplifier Life Diagnosis

This function displays the cumulative energization time and the number of inrush relay on/off times. The data can be used to check the service life of the parts as a rough guide.

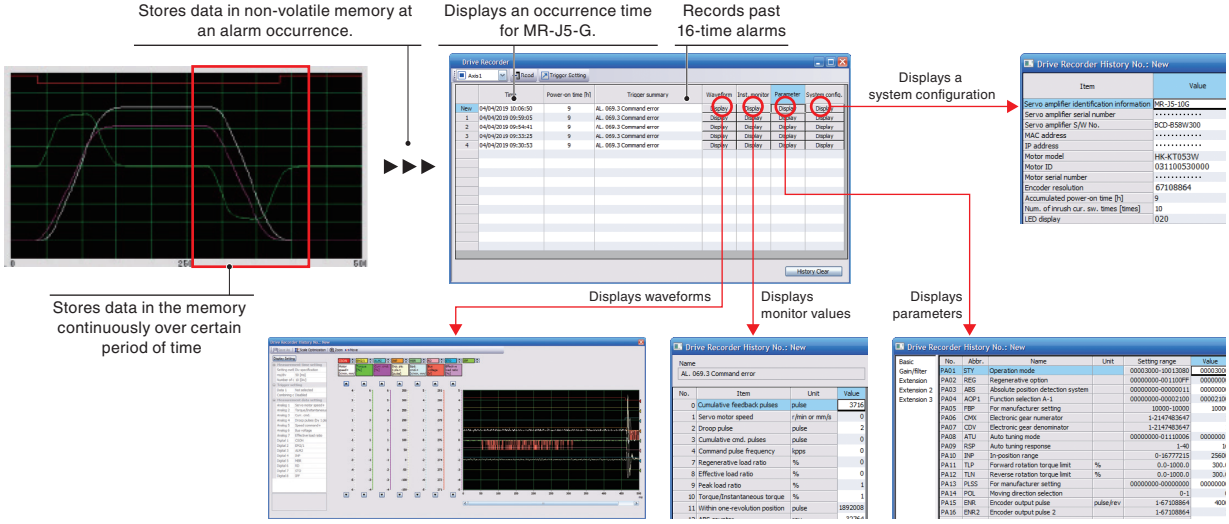
● Cumulative energization time (Smoothing condenser/cooling fan life span)
● The number of inrush relay on/off times (Inrush relay life)



Corrective Maintenance

Drive Recorder

This function continuously monitors the servo status and records the status transition such as a trigger condition before and after an alarm for a fixed period of time. Reading the servo data on MR Configurator2 helps you analyze the cause of the alarm. In addition to the monitor values and the waveform of the past 16-time alarms in the alarm history, the system configuration and the servo parameters are displayed. Alarm occurrence time is also displayed when the servo amplifier and the controller are normally in communication on CC-Link IE TSN. The data can be outputted to a GX LogViewer format file.

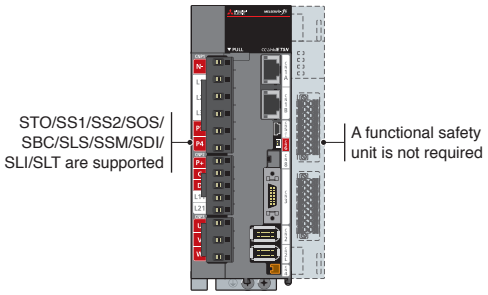


Safety Sub-Functions

Built-In Safety Functions and a Wide Range of Safety Sub-Functions J5-G4-RJ CC-Link IE TSN

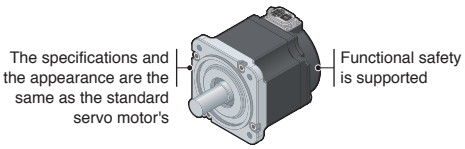
MR-J5-G4-RJ has a built-in safety control part, supporting safety sub-functions without a dedicated unit. When the servo amplifier is combined with HK-KT_WS servo motors with functional safety, the safety level is enhanced.
The servo amplifiers support the safety sub-functions of STO/SS1/SS2/SOS/SBC/SLS/SSM/SDI/SLI/SLT at a safety level of SIL 2 or SIL 3.

MR-J5-G4-RJ



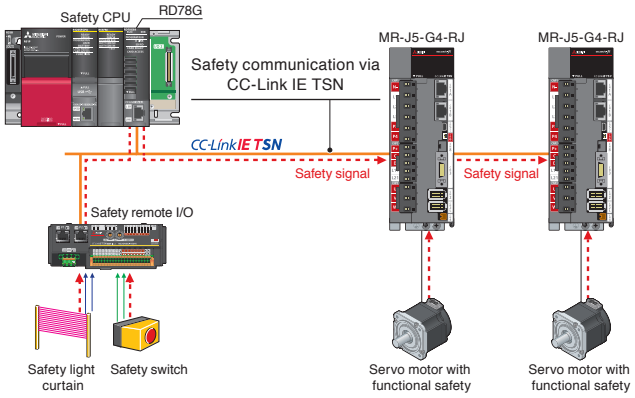
Servo motors with functional safety support the safety sub-functions at a higher safety level. The functional safety encoders provide the servo motor positions and speeds necessary for the safety sub-functions at a safety level of Category 4 PL e, SIL 3.
Encoder cables for the servo motors with functional safety are the same as for the standard servo motors.

Servo motor with functional safety
HK-KT_WS



Safety Communication via CC-Link IE TSN J5-G4-RJ CC-Link IE TSN

CC-Link IE TSN enables control of safety and non-safety communications realizing a flexible system whereby safety communications can be easily incorporated into the main control network.
When combined with R_SFCPU-SET safety CPU and RD78G Motion module, MR-J5-G4-RJ can receive safety signal data of the safety CPU through CC-Link IE TSN. Wiring the safety signals to the servo amplifiers is not necessary.



STO Function Compliant with IEC/EN 61800-5-2

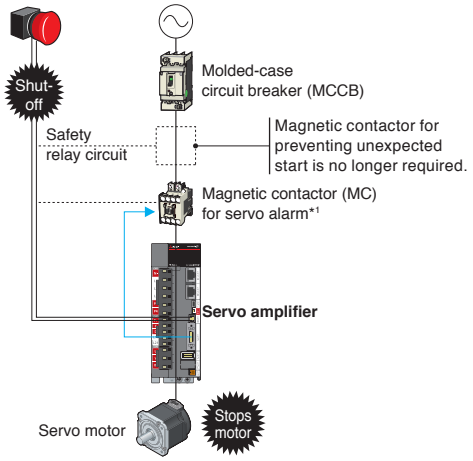
STO (Safe torque off) is integrated as standard, enabling easy configuration of a safety system which shuts off power to a servo motor in the machine.

- By using STO, it is not necessary to turn off the control power of the servo amplifier, resulting in a shorter restart time and eliminating the necessity of homing.
- A magnetic contactor for preventing unexpected motor start is not needed.*1

Servo amplifier model	Safety level
MR-J5-G4/MR-J5-A4/MR-J5-A4-RJ	Category 3 PL e, SIL 3
MR-J5-G4-RJ	Category 4 PL e, SIL 3 *2

*1. Magnetic contactors are not required to meet the STO requirements. However, this illustration recommends the use of a magnetic contactor which shuts off the main circuit power supply of the servo amplifier at an alarm occurrence.
*2. The safety level requires STO wiring to a servo amplifier using safety equipment including a safety programmable controller that is compatible with Category 4. When a switch is connected directly to a servo amplifier as shown in the illustration, the safety level is Category 3. For details of safety sub-functions, refer to "MR-J5 User's Manual".

[Shut-off by STO]

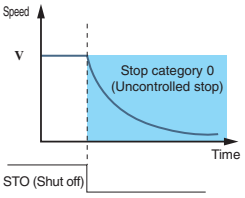


Safety Sub-Functions Compliant with IEC/EN 61800-5-2

MR-J5-G4-RJ supports safety sub-functions, STO/SS1/SS2/SOS/SBC/SLS/SSM/SDI/SLI/SLT.
Refer to "Servo Amplifiers Safety Sub-Functions" for the safety sub-functions and the safety levels, which vary depending on the combinations of the servo amplifiers and the rotary servo motors (including servo motors with functional safety).

Safe torque off (STO)

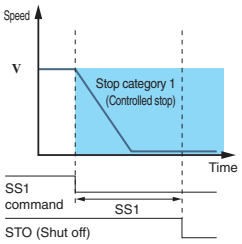
Responding to the input signal from external equipment, the STO function shuts off power to the servo motor electronically using the internal circuit (shuts off through secondary-side output).
This function corresponds to the Stop category 0 of IEC/EN 60204-1.



Execute the STO function in servo off state or when the servo motor is stopped.

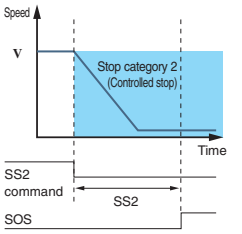
Safe stop 1 (SS1)

Responding to the input signal from external equipment, the servo motor starts to decelerate. After the set delay time for motor stop is passed, the STO function starts.
Monitoring the servo motor deceleration based on the motor deceleration rate is also supported.
This function corresponds to the Stop category 1 of IEC/EN 60204-1.



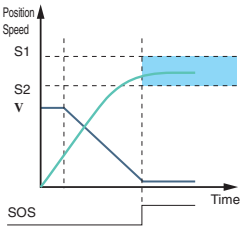
Safe stop 2 (SS2)

Responding to the input signal from external equipment, the servo motor starts to decelerate. After the set delay time for motor stop is passed, the SOS function starts.
Monitoring the servo motor deceleration based on the motor deceleration rate is also supported.
This function corresponds to the Stop category 2 of IEC/EN 60204-1.



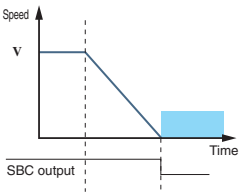
Safe operating stop (SOS)

This function monitors the position of the servo motor not to deviate from the specified range. Power is still supplied to the servo motor during the SOS function.



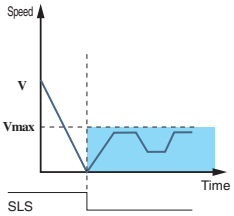
Safe brake control (SBC)

The SBC signals are outputted for external brake control.



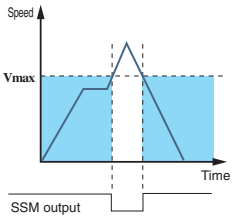
Safely-limited speed (SLS)

This function monitors the speed of the servo motor not to exceed the specified speed limit. If the speed exceeds the limit, the motor power is shut off by the STO.



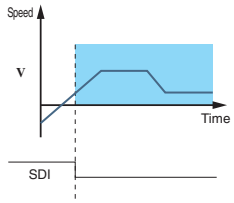
Safe speed monitor (SSM)

The SSM signals are outputted when the speed of the servo motor is below the specified speed limit.



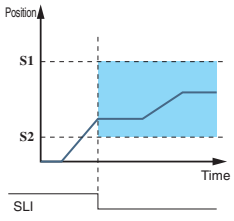
Safe direction (SDI)

This function monitors whether the servo motor moves in the command direction.
If the servo motor moves in a different direction from the command direction, the STO function is executed.



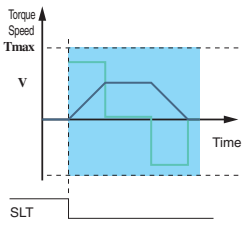
Safely-limited increment (SLI)

This function monitors the travel distance of the servo motor not to deviate from the specified range. If the travel distance exceeds the range, the STO function is executed.



Safely-limited torque (SLT)

This function monitors the torque (or the thrust) of the servo motor not to deviate from the specified range. If the torque (or the thrust) exceeds the range, the STO function is executed.



: Function activation area

Model Designation for 1-Axis Servo Amplifier (Note 1)

MR-J5-60G4-___

Mitsubishi Electric AC servo amplifier MELSERVO-J5 Series

Symbol	Rated output [kW]
60	0.6
100	1
200	2
350	3.5

Symbol	Interface
G	Network compatible

Symbol	Power supply
4	3-phase 400 V AC

Symbol	Special specification (Note 2, 4)
None	CC-Link IE TSN-compatible standard
RJ	CC-Link IE TSN-compatible, Fully closed loop control four-wire type/load-side encoder A/B/Z-phase input compatible, Safety sub-function
ED	MR-J5-_G4 without a dynamic brake (Note 3)
RU	MR-J5-_G4-RJ without a dynamic brake (Note 3)
N1	EtherCAT®-compatible standard
RJN1	EtherCAT®-compatible, Fully closed loop control four-wire type/load-side encoder A/B/Z-phase input compatible, Safety sub-function
EDN1	MR-J5-_G4-N1 without a dynamic brake (Note 3)
RUN1	MR-J5-_G4-RJN1 without a dynamic brake (Note 3)

MR-J5-60A4-___

Mitsubishi Electric AC servo amplifier MELSERVO-J5 Series

Symbol	Rated output [kW]
60	0.6
100	1
200	2
350	3.5

Symbol	Interface
A	General-purpose

Symbol	Power supply
4	3-phase 400 V AC

Symbol	Special specification (Note 2, 4)
None	Standard
RJ	Fully closed loop control four-wire type/load-side encoder A/B/Z-phase input/high resolution analog input compatible
ED	MR-J5-_A4 without a dynamic brake (Note 3)
RU	MR-J5-_A4-RJ without a dynamic brake (Note 3)

Notes: 1. This section describes what each symbol in a model name indicates. Some combinations of symbols are not available.
2. For the restrictions on the communication cycle, refer to "Restrictions" in "MELSERVO-J5 catalog (L(NA)03179ENG)".
3. A dynamic brake which is built in the servo amplifiers is removed. When the servo amplifiers without the dynamic brake are used, the servo motors coast to a stop and do not stop immediately at alarm occurrence or power failure. Take measures to ensure safety on the entire system. Refer to "MR-J5 User's Manual" for details.
4. Note that options/peripheral equipment and low-voltage switchgears/wires necessary for servo amplifiers with special specifications are the same as those for standard servo amplifiers. Refer to the servo amplifiers with the same rated output.

Combinations of Rotary Servo Motors and Servo Amplifiers (Note 1)

The torque can be increased by combining a large-capacity servo amplifier.
The torque characteristics vary by the combinations. Refer to the list of the specifications of each rotary servo motor.

○: Standard torque ◎: Torque increased

Rotary servo motor (Note 2)			Servo amplifier MR-J5-_ (400 V)			
			60G4/A4	100G4/A4	200G4/A4	350G4/A4
HK-KT_W	40 × 40	HK-KT053W	○	◎	-	-
		HK-KT13W	○	◎	-	-
		HK-KT1M3W	○	◎	-	-
HK-KT_4W	60 × 60	HK-KT434W	○	◎	◎	-
		HK-KT634W	-	○	◎	◎
	80 × 80	HK-KT7M34W	-	○	◎	◎
		HK-KT1034W	-	○	◎	◎
	90 x 90	HK-KT1534W	-	-	○	◎
		HK-KT2034W	-	-	○	◎
		HK-KT2024W	-	-	○	◎

Notes: 1. The combinations of servo motors and servo amplifiers with special specifications are the same as those of standard servo amplifiers. Refer to the servo amplifiers with the same rated output.
2. Use the rotary servo motors manufactured in September 2020 or later for the 400 V servo amplifiers. Refer to "Rotary Servo Motor User's Manual" for checking the production year and month.

MR-J5-G_ (Network Compatible) Specifications (400 V) (Note 8)

Servo amplifier model MR-J5-_(-(RJ)(N1))			60G4	100G4	200G4	350G4
Output	Voltage		3-phase 0 V AC to 480 V AC			
	Rated current	[A]	1.6	2.8	5.5	8.6
Main circuit power supply input	Voltage/ frequency (Note 1)	AC input	3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz			
	Rated current	[A]	1.4	2.5	5.1	7.9
	Permissible voltage fluctuation	AC input	3-phase 323 V AC to 528 V AC			
	Permissible frequency fluctuation		±5 % maximum			
Control circuit power supply input	Voltage/ frequency	AC input	1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz			
	Rated current	[A]	0.1			
	Permissible voltage fluctuation	AC input	1-phase 323 V AC to 528 V AC			
	Permissible frequency fluctuation		±5 % maximum			
	Power consumption	[W]	30			
Interface power supply			24 V DC ± 10 % (required current capacity: 0.3 A (including CN8 connector signals))			
Control method			Sine-wave PWM control/current control method			
Permissible regenerative power of the built-in regenerative resistor (Note 2, 3)		[W]	15	15	100	120
Dynamic brake (Note 4)			Built-in			
CC-Link IE TSN (Note 7) (MR-J5-G4(-RJ))	Communication cycle (Note 5, 6)		31.25 µs, 62.5 µs, 125 µs, 250 µs, 500 µs, 1 ms, 2 ms, 4 ms, 8 ms			
	Certified class		Class B			
EtherCAT® (MR-J5-G4-(RJ)N1)	Communication cycle (Note 5, 6)		125 µs, 250 µs, 500 µs, 1 ms, 2 ms, 4 ms, 8 ms			
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)			
Encoder output pulse			Compatible (A/B/Z-phase pulse)			
Analog monitor			2 channels			
Fully closed loop control (Note 6)	MR-J5-G4(-N1)		Two-wire type communication method			
	MR-J5-G4-RJ(N1)		Two-wire/four-wire type communication method			
Load-side encoder interface	MR-J5-G4(-N1)		Mitsubishi Electric high-speed serial communication			
	MR-J5-G4-RJ(N1)		Mitsubishi Electric high-speed serial communication, A/B/Z-phase differential input signal			
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, quick tuning, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function (including failure prediction), power monitoring function, lost motion compensation function, scale measurement function (Note 6), super trace control, continuous operation to torque control mode (Note 6, 9)			
Protective functions			Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection			
Safety sub-function, Safety performance			Refer to "Safety Sub-Functions" in this brochure.			
Structure (IP rating)			Natural cooling, open (IP20)		Force cooling, open (IP20)	
Close mounting			Not possible			
Mass		[kg]	1.6		2.2	2.3

Notes:
1. Rated output and speed of a rotary servo motor are applicable when the servo amplifier is operated within the specified power supply voltage and frequency.
2. Select the most suitable regenerative option for your system with our drive system sizing software Motorizer.
3. Refer to "Regenerative Option" in this brochure for the permissible regenerative power [W] when a regenerative option is used.
4. When using the dynamic brake, refer to "MR-J5 User's Manual" for the permissible load to motor inertia ratio.
5. The command communication cycle depends on the controller specifications and the number of slaves connected.
6. For the restrictions on the communication cycle, refer to "Restrictions" in "MELSERVO-J5 catalog (L(NA)03179ENG)".
7. A communication speed of 1 Gbps/100 Mbps can be selected. When 100 Mbps is selected, the minimum communication cycle is 500 µs.
8. For the environment and the compliance with global standards and regulations for the servo amplifiers, refer to "Environment" and "Compliance with Global Standards and Regulations" in "MELSERVO-J5 catalog (L(NA)03179ENG)".
9. The continuous operation to torque control mode is not available with MR-J5-G4-(RJ)N1.

MR-J5-A_ (General-Purpose Interface) Specifications (400 V) (Note 5)

Servo amplifier model MR-J5-_(-RJ)			60A4	100A4	200A4	350A4
Output	Voltage		3-phase 0 V AC to 480 V AC			
	Rated current	[A]	1.6	2.8	5.5	8.6
Main circuit power supply input	Voltage/frequency (Note 1)	AC input	3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz			
	Rated current	[A]	1.4	2.5	5.1	7.9
	Permissible voltage fluctuation	AC input	3-phase 323 V AC to 528 V AC			
	Permissible frequency fluctuation		±5 % maximum			
Control circuit power supply input	Voltage/frequency	AC input	1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz			
	Rated current	[A]	0.1			
	Permissible voltage fluctuation	AC input	1-phase 323 V AC to 528 V AC			
	Permissible frequency fluctuation		±5 % maximum			
	Power consumption	[W]	30			
Interface power supply			24 V DC ± 10 % (required current capacity: 0.5 A (including CN8 connector signals))			
Control method			Sine-wave PWM control/current control method			
Permissible regenerative power of the built-in regenerative resistor (Note 2, 3)		[W]	15	15	100	120
Dynamic brake (Note 4)			Built-in			
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)			
	RS-422/RS-485		1:n communication (up to 32 axes)			
Encoder output pulse			Compatible (A/B/Z-phase pulse)			
Analog monitor			2 channels			
Position control mode	Maximum input pulse frequency		4 Mpulses/s (when using differential receiver), 200 kpulses/s (when using open collector)			
	Positioning feedback pulse		Encoder resolution: 26 bits			
	Command pulse multiplying factor		Electronic gear A/B multiple, A: 1 to 2147483647, B: 1 to 2147483647, 1/10 < A/B < 64000			
	In-position range setting		0 pulse to ±16777215 pulses (command pulse unit)			
	Error excessive		±3 rotations			
	Torque limit		Set by servo parameters or external analog input (0 V DC to +10 V DC/maximum torque)			
Speed control mode	Speed control range		Analog speed command 1:2000, internal speed command 1:5000			
	Analog speed command input		0 V DC to ±10 V DC/rated speed (Speed at 10 V is changeable with [Pr. PC12].)			
	Speed fluctuation rate		±0.01 % maximum (load fluctuation: 0 % to 100 %), 0 % (power fluctuation: ±10 %) ±0.2 % maximum (ambient temperature: 25 °C ± 10 °C) only when using analog speed command			
	Torque limit		Set by servo parameters or external analog input (0 V DC to +10 V DC/maximum torque)			
Torque control mode	Analog torque command input		0 V DC to ±8 V DC/maximum torque (input impedance: 10 kΩ to 12 kΩ)			
	Speed limit		Set by servo parameters or external analog input (0 V DC to ± 10 V DC/rated speed)			
Fully closed loop control		MR-J5-A4	Two-wire type communication method			
		MR-J5-A4-RJ	Two-wire/four-wire type communication method			
Load-side encoder interface		MR-J5-A4	Mitsubishi Electric high-speed serial communication			
		MR-J5-A4-RJ	Mitsubishi Electric high-speed serial communication, A/B/Z-phase differential input signal			
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, quick tuning, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function (including failure prediction), power monitoring function, lost motion compensation function, super trace control			
Protective functions			Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection			
Safety sub-function, Safety performance			Refer to "Safety Sub-Functions" in this brochure.			
Structure (IP rating)			Natural cooling, open (IP20)		Force cooling, open (IP20)	
Close mounting			Not possible			
Mass		[kg]	1.6		2.2	2.3

Notes: 1. Rated output and speed of a rotary servo motor are applicable when the servo amplifier is operated within the specified power supply voltage and frequency.
2. Select the most suitable regenerative option for your system with our drive system sizing software Motorizer.
3. Refer to "Regenerative Option" in this brochure for the permissible regenerative power [W] when a regenerative option is used.
4. When using the dynamic brake, refer to "MR-J5 User's Manual" for the permissible load to motor inertia ratio.
5. For the environment and the compliance with global standards and regulations for the servo amplifiers, refer to "Environment" and "Compliance with Global Standards and Regulations" in "MELSERVO-J5 catalog (L(NA)03179ENG)".

Safety Sub-Functions (Note 1)

Specifications of servo amplifiers

●MR-J5-G4/MR-J5-G4-N1/MR-J5-A4/MR-J5-A4-RJ

Safety performance	Satisfied standards	EN ISO 13849-1:2015 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2
	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100 [years] (314a)
	Diagnostic coverage (DC)	DC = Medium, 97.6 %
	Probability of dangerous Failure per Hour (PFH)	PFH = 6.4×10^{-9} [1/h]
	Mission time (T_M) (Note 3)	T_M = 20 [years]

●MR-J5-G4-RJ/MR-J5-G4-RJN1

Safety performance	Satisfied standards (Note 2)	EN ISO 13849-1:2015 Category 4 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2
	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100 [years] (750a)
	Diagnostic coverage (DC)	DC = Medium, 96.5 %
	Probability of dangerous Failure per Hour (PFH)	PFH = 3×10^{-9} [1/h]
	Mission time (T_M) (Note 3)	T_M = 20 [years]

Function specifications

Safety sub-functions (Note 2)	STO	Shut-off response time (STO input off → energy shut off)	8 ms or less (using input device) 60 ms or less (using CC-Link IE TSN) (Note 4, 5, 8)
	SS1	Deceleration delay time	0 ms to 60000 ms (functional safety parameter setting)
	SS2	Deceleration delay time	0 ms to 60000 ms (functional safety parameter setting)
	SOS	Observation position	0 rev to 1000 rev (functional safety parameter setting)
	SBC	Shut-off response time	8 ms or less (using input device) 60 ms or less (using CC-Link IE TSN) (Note 4, 5, 8)
	SLS1/2/3/4	Observation speed	0 r/min (mm/s) to 10000 r/min (mm/s) (functional safety parameter setting) (Note 6)
	SSM	Observation speed	0 r/min (mm/s) to 10000 r/min (mm/s) (functional safety parameter setting)
	SDI	Direction monitor delay time	0 ms to 60000 ms (functional safety parameter setting)
	SLI	Observation position	0 rev to 1000 rev (functional safety parameter setting)
	SLT	Observation torque	-1000.0 [%] to 1000.0 [%] (functional safety parameter setting)
Input/output function	Input device	Number of inputs	1 point × 2 systems
		Permissible time for mismatched double inputs	0 ms to 60000 ms (functional safety parameter setting)
		Noise elimination filter	1.000 ms to 32.000 ms (functional safety parameter setting)
		Test pulse off time (Note 7)	1 Hz to 25 Hz
	Output device	Number of outputs	1 point × 2 systems
		Test pulse off time (Note 7)	0.500 ms to 2.000 ms (functional safety parameter setting)
		Test pulse interval (Note 7)	1 s or less
Safety communication function		Response time	250 ms (Note 9)
		Transmission interval monitor time	16.0 ms to 1000.0 ms (functional safety parameter setting) (using CC-Link IE TSN) (Note 5, 8)
		Safety communication delay time	60 ms or less (using CC-Link IE TSN) (Note 4, 5, 8)

Notes: 1. Supported safety sub-functions and their safety levels vary by the combinations of the servo amplifier and the servo motor. Refer to "List of supported safety sub-functions" in this brochure.
2. When DI/O connection (CN8) is used, a diagnosis using test pulses is required to meet Category 4 PL e, SIL 3.
3. The performance of special proof tests within the mission time of the product is regarded as not necessary, however, the diagnostic interval is suggested as at least one test per three months for Category 3 PL e, SIL 3 on IEC 61800-5-2:2016.
4. This value is applicable when the transmission interval monitor time is 32.0 ms or less.
5. Set the communication cycle to 125 µs or more when connecting to the network.
6. The observation speed can be set separately.
7. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
8. The safety-sub functions through the network connection are supported only by MR-J5-G4-RJ.
9. This value is applicable when the transmission interval monitor time is 64.0 ms or less.

Safety Sub-Functions

List of supported safety sub-functions

Supported safety sub-functions and their safety levels vary by the combinations of the servo amplifier and the servo motor. Refer to the table below.

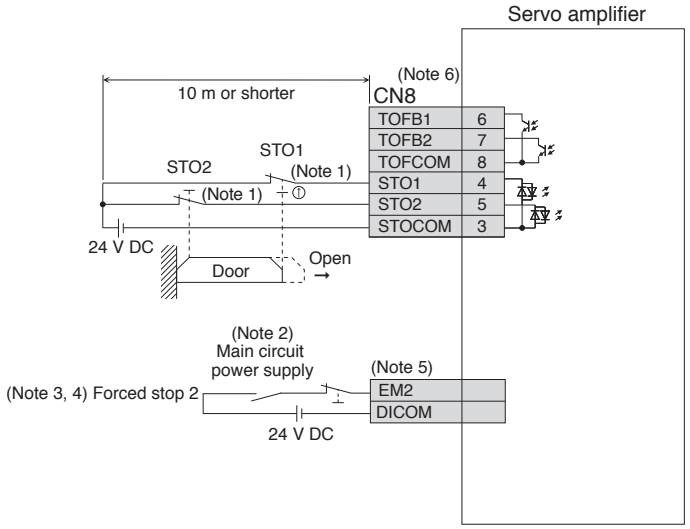
Servo amplifier model	Connection method (connector)	Servo motor type	Safety sub-function (IEC/EN 61800-5-2)										
			STO	SS1		SS2 (Note 3)	SOS (Note 3)	SBC	SLS (Note 3)	SSM (Note 3)	SDI (Note 3)	SLI (Note 3)	SLT
				SS1-t	SS1-r (Note 3)	SS2-t, SS2-r							
MR-J5-G4 MR-J5-A4(-RJ)	DI/O connection (CN8)	Servo motor with functional safety Rotary servo motor	Cat. 3 PL e, SIL 3	- (Note 4)	-	-	-	-	-	-	-	-	-
MR-J5-G4-RJ	DI/O connection (Note 2, 6) (CN8)	Servo motor with functional safety	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 3 PL d, SIL 2
		Rotary servo motor	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 3 PL d, SIL 2	-	-	Cat. 4 PL e, SIL 3	Cat. 3 PL d, SIL 2	Cat. 3 PL d, SIL 2	Cat. 3 PL d, SIL 2	-	Cat. 3 PL d, SIL 2
	Network connection (Note 1, 5, 7) (CN1A/CN1B)	Servo motor with functional safety	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 3 PL d, SIL 2
		Rotary servo motor	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 3 PL d, SIL 2	-	-	Cat. 4 PL e, SIL 3	Cat. 3 PL d, SIL 2	Cat. 3 PL d, SIL 2	Cat. 3 PL d, SIL 2	-	Cat. 3 PL d, SIL 2
MR-J5-G4-N1	DI/O connection (CN8)	Servo motor with functional safety Rotary servo motor	Cat. 3 PL e, SIL 3	- (Note 4)	-	-	-	-	-	-	-	-	-
MR-J5-G4-RJN1	DI/O connection (Note 2, 6) (CN8)	Servo motor with functional safety Rotary servo motor	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	-	-	-	Cat. 4 PL e, SIL 3	-	-	-	-	-

Notes:
1. Combine the servo amplifier with an R_SFCPU safety CPU with firmware version of 20 or later.
2. The listed safety levels are applicable when a safety CPU or a safety controller that meets Category 4 PL e, SIL 3 executes safety sub-function control. When a forced stop switch, a safety switch, or an enable switch is directly connected to the servo amplifier, the safety level is Category 3 PL d, SIL 2.
3. A fully closed loop system does not support SS1-r, SS2, SOS, SLS, SSM, SDI, and SLI.
4. The servo amplifiers support SS1-t when combined with MR-J3-D05. Refer to "Safety Logic Unit (MR-J3-D05)" in this brochure for details.
5. Set the communication cycle to 125 µs or more when connecting to the network.
6. When DI/O connection (CN8) is used, a diagnosis using test pulses is required to meet Category 4 PL e, SIL 3.
7. The safety-sub functions through the network connection are supported only by MR-J5-G4-RJ.

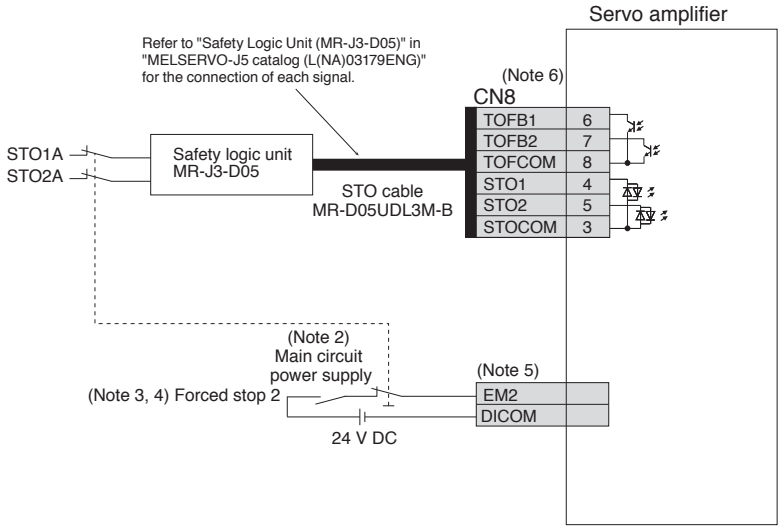
Functional Safety I/O Signal Connector (CN8) Connection Example

The following are connection examples of STO function for MR-J5-G4. Be sure to read through "MR-J5 User's Manual" for the actual wiring and use.

●When using a safety door



●When used with MR-J3-D05

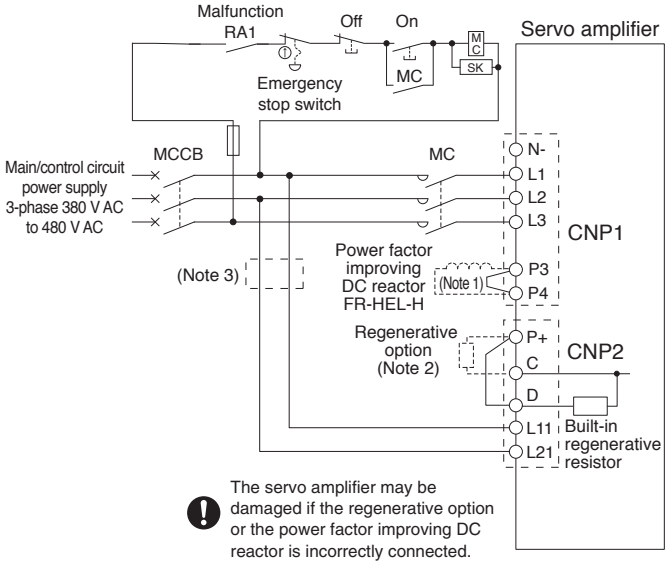


Notes:
1. When using the STO function, turn off STO1 and STO2 at the same time. Turn off STO1 and STO2 after the servo motor stops in servo-off state or after the servo motor stops with deceleration by turning off EM2 (Forced stop 2).
2. To prevent an unexpected restart of the servo amplifier, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off.
3. If the controller does not have a forced stop function, install a forced stop 2 switch (normally closed contact).
4. Turn on EM2 (Forced stop 2) before starting the operation.
5. The connector and the pin numbers for each signal vary depending on the servo amplifier. Refer to the standard wiring diagram example for the relevant servo amplifier in "MELSERVO-J5 catalog (L(NA)03179ENG)" for details.
6. For MR-J5-G4-RJ(N1), the input/output signal names of CN8 are different from the indicated names such as STO1 and TOFB1. Refer to "MR-J5 User's Manual" for details.

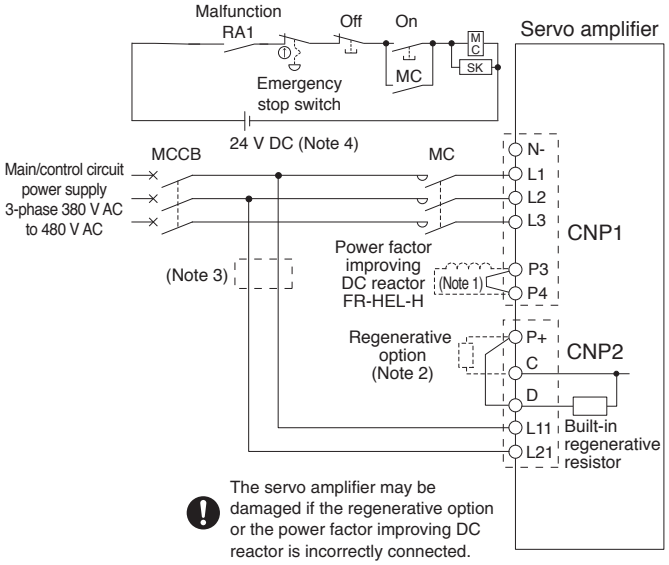
Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Main/Control Circuit Power Supply Connection Example (Note 5)

●For 3-phase 400 V AC and driving on/off of main circuit power supply with AC power supply



●For 3-phase 400 V AC and driving on/off of main circuit power supply with DC power supply



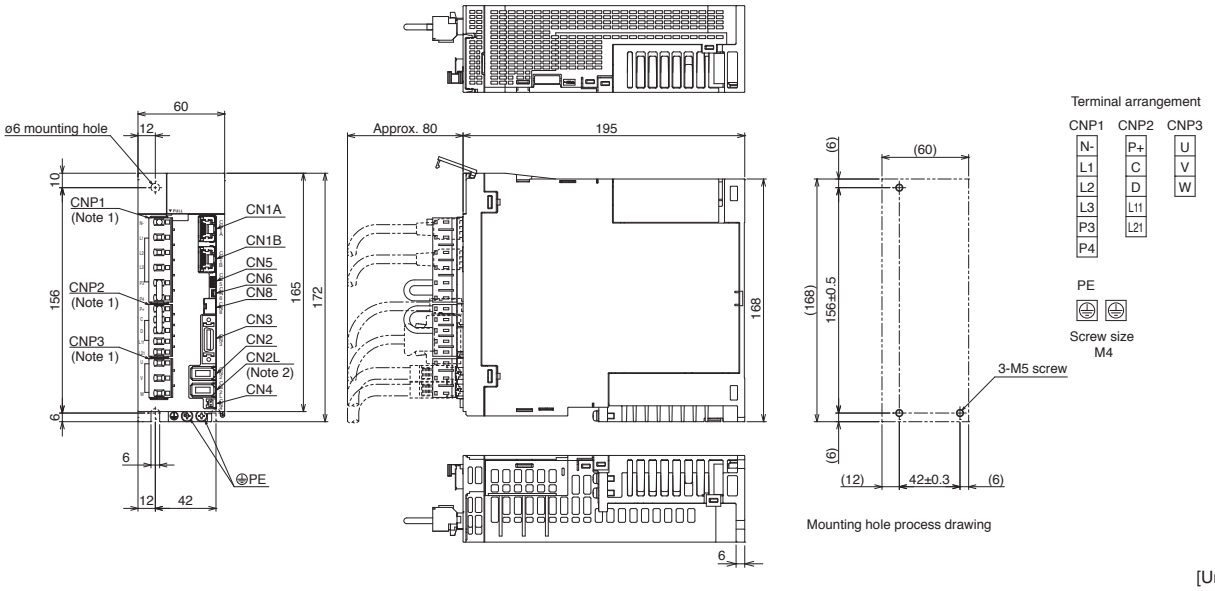
Notes: 1. Disconnect a short-circuit bar between P3 and P4 when using the power factor improving DC reactor.
2. Disconnect a short-circuit bar between P+ and D when connecting the regenerative option externally.
3. When wires used for L11 and L21 are thinner than those for L1, L2, and L3, use a molded-case circuit breaker or a fuse. Refer to "MR-J5 User's Manual" for details.
4. Do not use the 24 V DC interface power supply for the magnetic contactor. Provide a dedicated power supply to the magnetic contactor.
5. For the input/output signals and the rotary servo motor connection examples, refer to "MELSERVO-J5 catalog (L(NA)03179ENG)".

Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

MR-J5-G_ Dimensions

●MR-J5-60G4(-N1), MR-J5-60G4-RJ(N1)

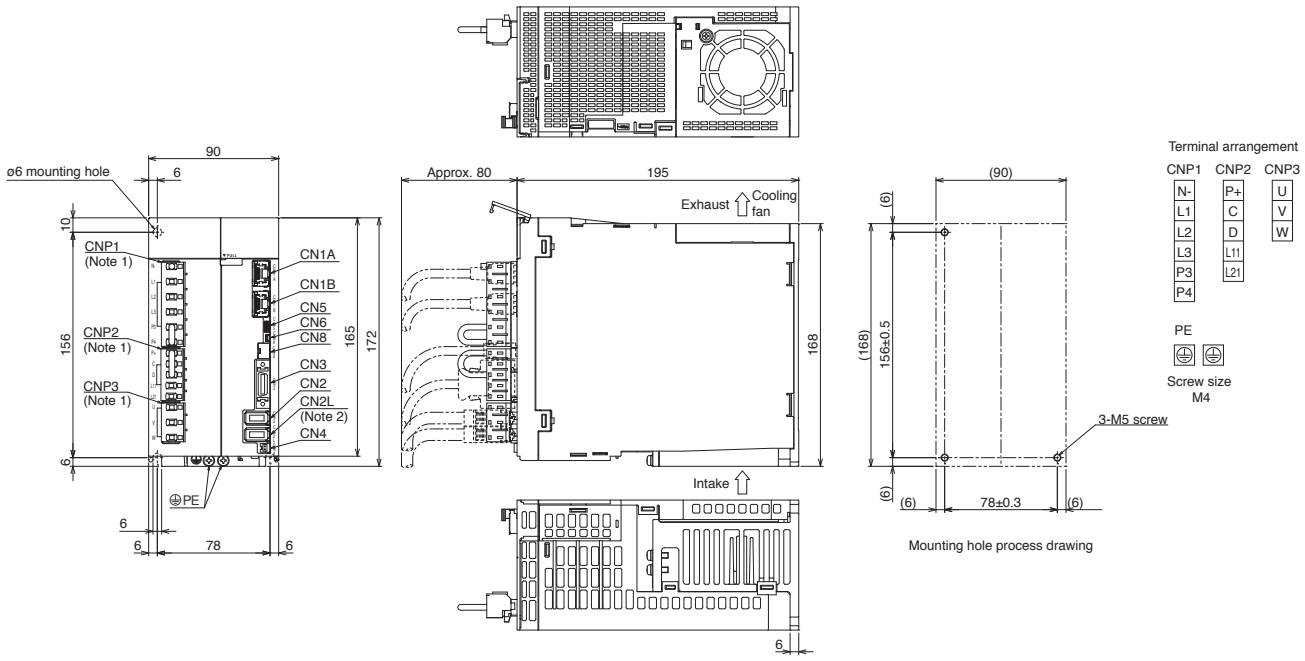
●MR-J5-100G4(-N1), MR-J5-100G4-RJ(N1)



[Unit: mm]

●MR-J5-200G4(-N1), MR-J5-200G4-RJ(N1)

●MR-J5-350G4(-N1), MR-J5-350G4-RJ(N1)



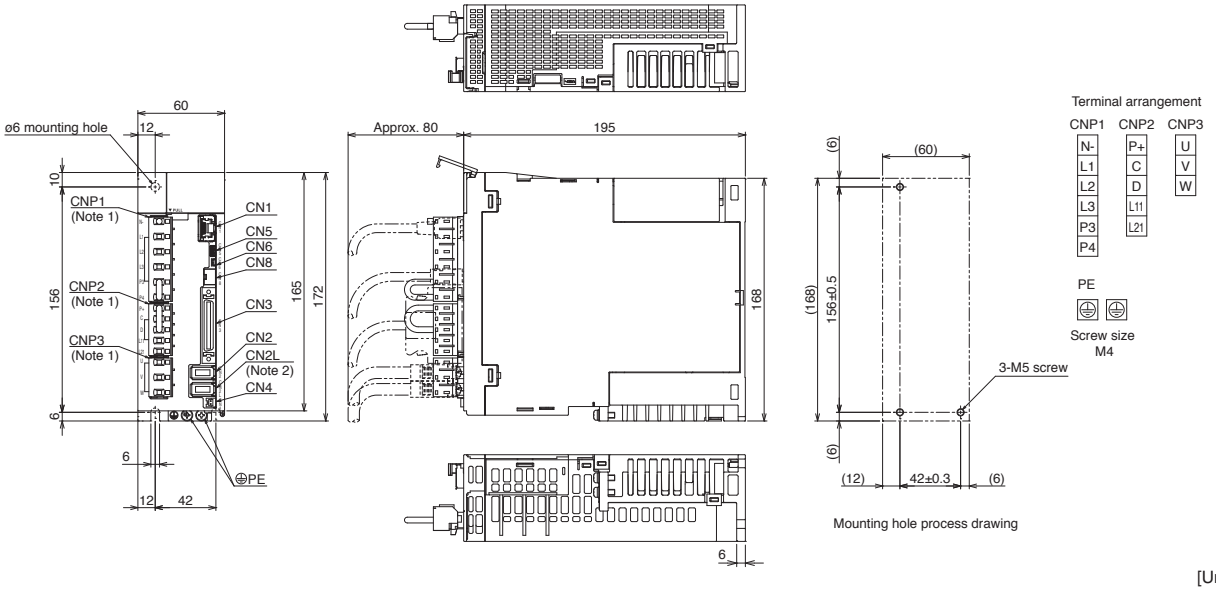
[Unit: mm]

Notes: 1. CNP1, CNP2, and CNP3 connectors are supplied with the servo amplifier.
2. CN2L connector is not available for MR-J5-G4(-N1) servo amplifiers.

MR-J5-A_ Dimensions

●MR-J5-60A4, MR-J5-60A4-RJ

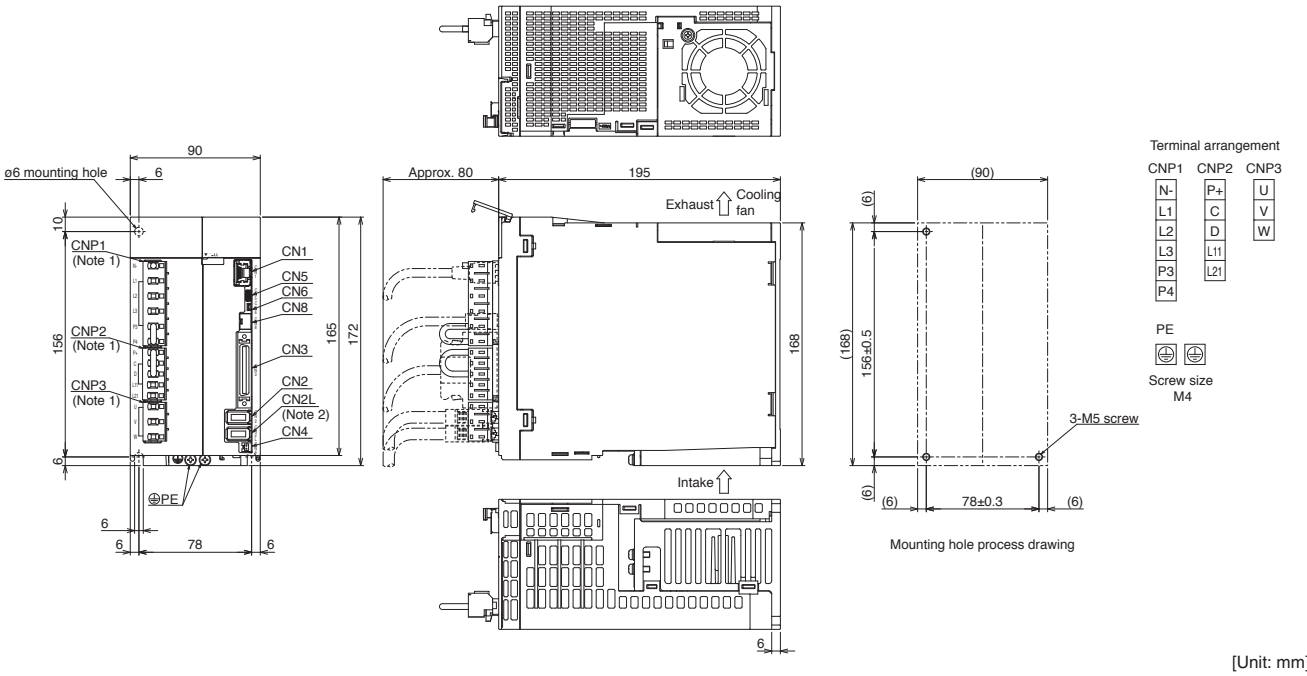
●MR-J5-100A4, MR-J5-100A4-RJ



[Unit: mm]

●MR-J5-200A4, MR-J5-200A4-RJ

●MR-J5-350A4, MR-J5-350A4-RJ



[Unit: mm]

Notes: 1. CNP1, CNP2, and CNP3 connectors are supplied with the servo amplifier.
2. CN2L connector is not available for MR-J5-A4 servo amplifiers.

HK-KT_W (Low Inertia, Small Capacity)

Specifications when connected with a 400 V servo amplifier

Flange size		[mm]	40 × 40		
Rotary servo motor model		HK-KT	053W	13W	1M3W
Continuous running duty (Note 4)	Rated output	[kW]	0.05	0.1	0.15
	Rated torque (Note 5)	[N•m]	0.16 (Note 6)	0.32	0.48
Maximum torque (Note 3)		[N•m]	0.56 (0.72)	1.1 (1.4)	1.7 (2.1)
Rated speed (Note 4)		[r/min]	3000		
Maximum speed (Note 4)		[r/min]	6700		
Power rate at continuous rated torque	Standard	[kW/s]	6.4	14.8	23.3
	With electromagnetic brake	[kW/s]	5.8	14.0	22.4
Rated current		[A]	1.3	1.2	1.2
Maximum current (Note 3)		[A]	4.6 (6.2)	4.6 (6.0)	4.5 (6.0)
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	0.0394	0.0686	0.0977
	With electromagnetic brake	[× 10^{-4} kg•m^2]	0.0434	0.0725	0.102
Recommended load to motor inertia ratio (Note 1)			20 times or less		
Speed/position detector			Batteryless absolute/incremental 26-bit encoder (resolution: 67,108,864 pulses/rev)		
Oil seal			None (Servo motors with an oil seal are available. (HK-KT_J)) (Note 6)		
Electromagnetic brake			None (Servo motors with an electromagnetic brake are available. (HK-KT_B))		
Thermistor			None		
Insulation class			155 (F)		
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2, 7)		
Vibration resistance *1		[m/s^2]	X: 49, Y: 49		
Vibration rank			V10 *3		
Permissible load for the shaft *2	L	[mm]	25		
	Radial	[N]	88		
	Thrust	[N]	59		
Mass	Standard	[kg]	0.27	0.37	0.47
	With electromagnetic brake	[kg]	0.53	0.63	0.73

Notes: 1. Contact your local sales office if the load to motor inertia ratio exceeds the value in the table.
2. The shaft-through portion is excluded. Refer to the asterisk 4 of "Annotations for Rotary Servo Motor Specifications" in this brochure for the shaft-through portion.
3. The value in brackets is applicable when the torque is increased by combining a larger-capacity servo amplifier. Refer to "Combinations of Rotary Servo Motors and Servo Amplifiers" in this brochure for the available combinations.
4. The continuous running duty and the speed are not guaranteed when the power supply voltage is dropped.
5. When unbalanced torque is generated, such as in a vertical lift machine, keep the unbalanced torque of the machine under 70 % of the servo motor rated torque.
6. For the HK-KT053W with an oil seal, use 80 % of the rated output.
7. When IP67 cables are required, please contact Mitsubishi Electric System & Service Co., Ltd. OVERSEAS SERVICE SECTION. (Email: osb.webmaster@melsc.jp)

Refer to "Annotations for Rotary Servo Motor Specifications" in this brochure for details about asterisks 1 to 3.

Electromagnetic brake specifications (Note 1)

Model		HK-KT	053WB	13WB	1M3WB
Type			Spring actuated type safety brake		
Rated voltage			24 V DC (-10 % to 0 %)		
Power consumption		[W] at 20 °C	6.4		
Electromagnetic brake static friction torque		[N•m]	0.48 or higher		
Permissible braking work	Per braking	[J]	5.6		
	Per hour	[J]	56		
Electromagnetic brake life (Note 2)	Number of braking times		20000		
	Work per braking	[J]	5.6		

Notes: 1. The electromagnetic brake is for holding. It cannot be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until readjustment is needed.

HK-KT_4W (Low Inertia, Small Capacity)

Specifications when connected with a 400 V servo amplifier

Flange size		[mm]	60 × 60		80 × 80		90 x 90		
Rotary servo motor model		HK-KT	434W	634W	7M34W	1034W	1534W	2034W	2024W
Continuous running duty (Note 4)	Rated output	[kW]	0.4	0.6	0.75	1.0	1.5	2.0	2.0
	Rated torque (Note 5)	[N•m]	1.3	1.9	2.4	3.2	4.8	6.4	9.5
Maximum torque (Note 3)		[N•m]	4.5 (5.7)	6.7 (8.6)	8.4 (10.7)	11.1 (14.3)	16.7 (21.5)	19.1 (25.5)	28.6 (38.2)
Rated speed (Note 4)		[r/min]	3000						2000
Maximum speed (Note 4)		[r/min]	6700			6500	6700	6000	3000
Power rate at continuous rated torque	Standard	[kW/s]	39.5	61.0	41.6	60.3	52.0	71.7	111
	With electromagnetic brake	[kW/s]	36.7	58.0	37.7	56.0	48.3	67.7	107
Rated current		[A]	1.3	2.3	2.4	2.5	4.4	5.3	4.5
Maximum current (Note 3)		[A]	4.9 (6.6)	9.1 (13)	9.7 (13)	10 (14)	17 (23)	17 (24)	15 (21)
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	0.410	0.598	1.37	1.68	4.38	5.65	8.18
	With electromagnetic brake	[× 10^{-4} kg•m^2]	0.442	0.629	1.51	1.81	4.72	5.99	8.53
Recommended load to motor inertia ratio (Note 1)			23 times or less	20 times or less (Note 7)	9 times or less (Note 8)	7 times or less (Note 7)	11 times or less (Note 7)	10 times or less (Note 7)	15 times or less
Speed/position detector			Batteryless absolute/incremental 26-bit encoder (resolution: 67,108,864 pulses/rev)						
Oil seal			None (Servo motors with an oil seal are available. (HK-KT_J))						
Electromagnetic brake			None (Servo motors with an electromagnetic brake are available. (HK-KT_B))						
Thermistor			None						
Insulation class			155 (F)						
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2, 6)						
Vibration resistance *1		[m/s^2]	X: 49, Y: 49				X: 24.5, Y: 24.5		
Vibration rank			V10 *3						
Permissible load for the shaft *2	L	[mm]	30		40				
	Radial	[N]	245		392				
	Thrust	[N]	98		147				
Mass	Standard	[kg]	1.2	1.5	2.2	2.4	3.6	4.4	5.9
	With electromagnetic brake	[kg]	1.6	1.9	2.9	3.1	4.7	5.5	7.0

Notes: 1. Contact your local sales office if the load to motor inertia ratio exceeds the value in the table.
2. The shaft-through portion is excluded. Refer to the asterisk 4 of "Annotations for Rotary Servo Motor Specifications" in this brochure for the shaft-through portion.
3. The value in brackets is applicable when the torque is increased by combining a larger-capacity servo amplifier. Refer to "Combinations of Rotary Servo Motors and Servo Amplifiers" in this brochure for the available combinations.
4. The continuous running duty and the speed are not guaranteed when the power supply voltage is dropped.
5. When unbalanced torque is generated, such as in a vertical lift machine, keep the unbalanced torque of the machine under 70 % of the servo motor rated torque.
6. When IP67 cables are required, please contact Mitsubishi Electric System & Service Co., Ltd. OVERSEAS SERVICE SECTION. (Email: osb.webmaster@melsc.jp)
7. 30 times or less for 3000 r/min or less.
8. 20 times or less for 3000 r/min or less.

Refer to "Annotations for Rotary Servo Motor Specifications" in this brochure for details about asterisks 1 to 3.

Electromagnetic brake specifications (Note 1)

Model		HK-KT	434WB	634WB	7M34WB	1034WB	1534WB	2034WB	2024WB
Type			Spring actuated type safety brake						
Rated voltage			24 V DC (-10 % to 0 %)						
Power consumption		[W] at 20 °C	7.9		10		13.8		
Electromagnetic brake static friction torque		[N•m]	1.9 or higher		3.2 or higher		9.5 or higher		
Permissible braking work	Per braking	[J]	22		64		64		
	Per hour	[J]	220		640		640		
Electromagnetic brake life (Note 2)	Number of braking times		20000				5000		
	Work per braking	[J]	22		64		64		

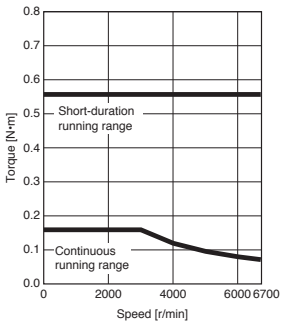
Notes: 1. The electromagnetic brake is for holding. It cannot be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until readjustment is needed.

HK-KT_W Torque Characteristics (Note 1)

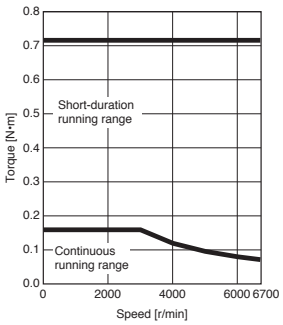
When connected with a 400 V servo amplifier

: For 3-phase 400 V AC
: For 3-phase 380 V AC

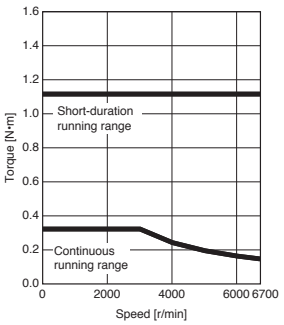
HK-KT053W
Standard torque



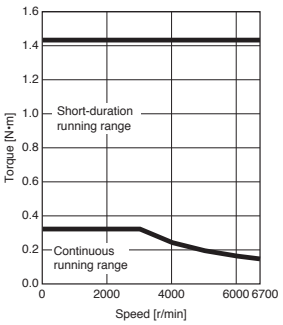
HK-KT053W
Torque increased



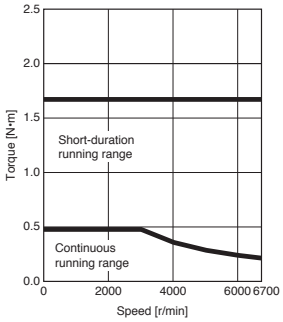
HK-KT13W
Standard torque



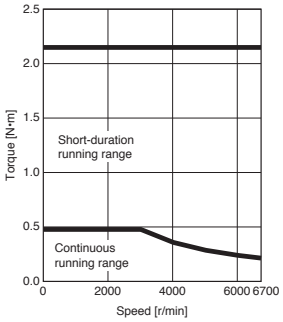
HK-KT13W
Torque increased



HK-KT1M3W
Standard torque



HK-KT1M3W
Torque increased



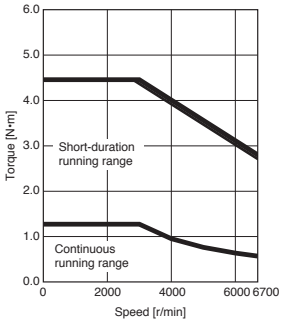
Notes: 1. Torque drops when the power supply voltage is below the specified value.

HK-KT_4W Torque Characteristics (Note 1)

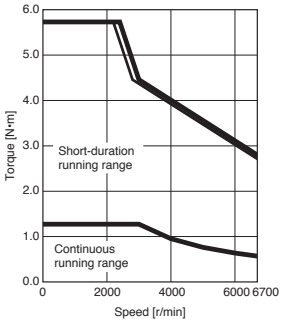
When connected with a 400 V servo amplifier

: For 3-phase 400 V AC
: For 3-phase 380 V AC

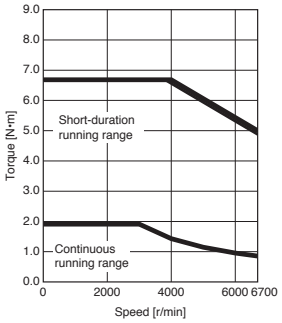
HK-KT434W
Standard torque



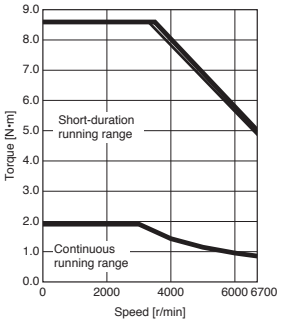
HK-KT434W
Torque increased



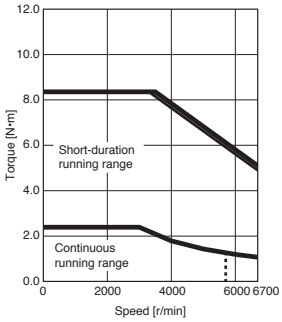
HK-KT634W
Standard torque



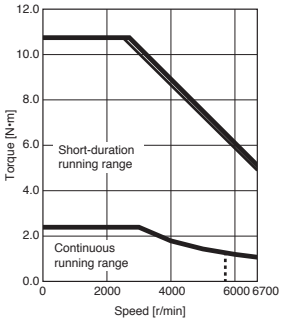
HK-KT634W
Torque increased



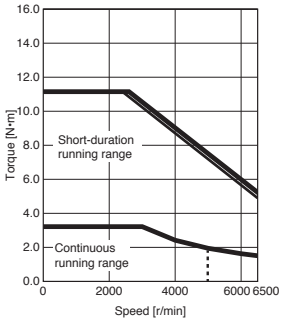
HK-KT7M34W
Standard torque



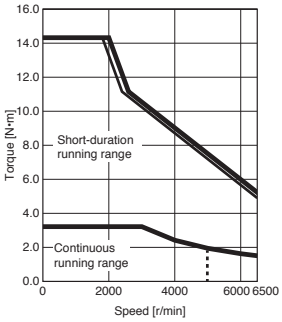
HK-KT7M34W
Torque increased



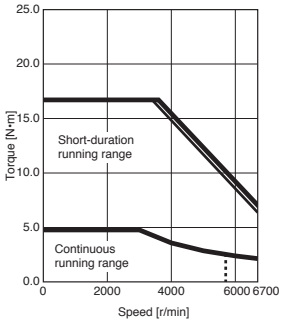
HK-KT1034W
Standard torque



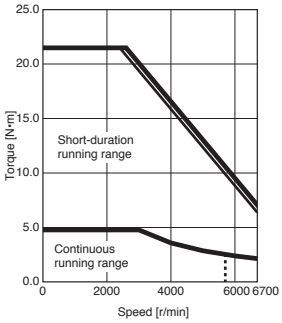
HK-KT1034W
Torque increased



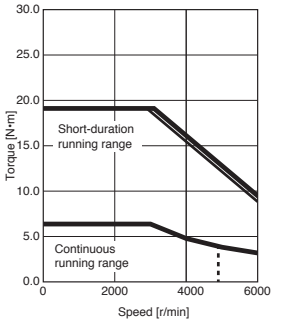
HK-KT1534W
Standard torque



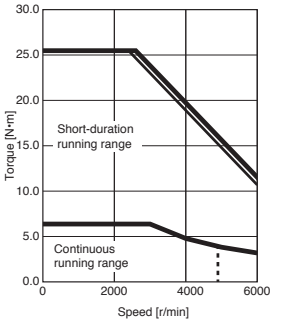
HK-KT1534W
Torque increased



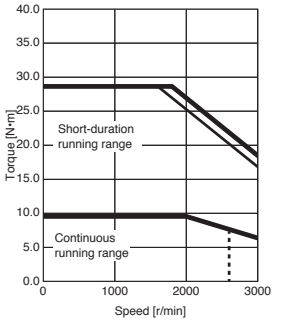
HK-KT2034W
Standard torque



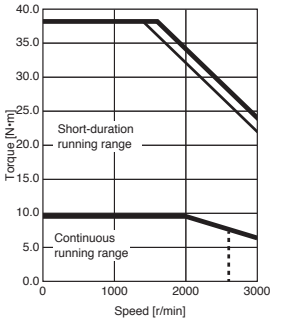
HK-KT2034W
Torque increased



HK-KT2024W
Standard torque



HK-KT2024W
Torque increased



Notes: 1. Torque drops when the power supply voltage is below the specified value. - - - -: A rough indication of the possible continuous running range for 3-phase 323 V AC

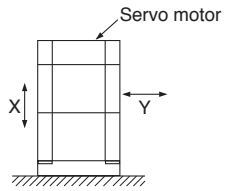
Power Supply Capacity

Rotary servo motor		Servo amplifier (Note 2)	Power supply capacity [kVA] (Note 1)
HK-KT_W	HK-KT053W	MR-J5-60G4/A4	0.3
		MR-J5-100G4/A4	0.3
	HK-KT13W	MR-J5-60G4/A4	0.5
		MR-J5-100G4/A4	0.4
	HK-KT1M3W	MR-J5-60G4/A4	0.6
		MR-J5-100G4/A4	0.6
HK-KT_4W	HK-KT434W	MR-J5-60G4/A4	1.2
		MR-J5-100G4/A4	1.1
		MR-J5-200G4/A4	1.1
	HK-KT634W	MR-J5-100G4/A4	1.5
		MR-J5-200G4/A4	1.6
	HK-KT7M34W	MR-J5-100G4/A4	1.8
		MR-J5-200G4/A4	1.8
	HK-KT1034W	MR-J5-100G4/A4	2.3
		MR-J5-200G4/A4	2.3
		MR-J5-350G4/A4	2.3
	HK-KT1534W	MR-J5-200G4/A4	3.1
		MR-J5-350G4/A4	3.1
	HK-KT2034W	MR-J5-200G4/A4	4.0
		MR-J5-350G4/A4	4.0
	HK-KT2024W	MR-J5-200G4/A4	4.0
		MR-J5-350G4/A4	4.0

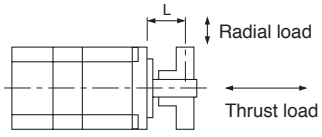
Notes: 1. The power supply capacity varies depending on the power supply impedance.
2. Note that the power supply capacity for servo amplifiers with special specifications is the same as that for standard servo amplifiers. Refer to the servo amplifiers with the same rated output.

Annotations for Rotary Servo Motor Specifications

*1. The vibration direction is shown in the diagram below. The numerical value indicates the maximum value of the component (commonly the bracket in the opposite direction of the load side).
Fretting tends to occur on the bearing when the servo motor stops. Thus, maintain vibration level at approximately one-half of the allowable value.

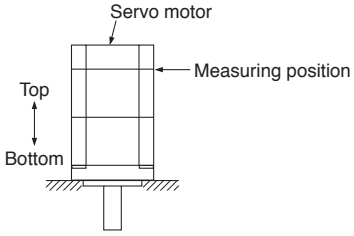


*2. Refer to the diagram below for the permissible load for the shaft. Ensure that loads applied on the shaft do not exceed the values specified in the table. The values in the table are applicable when each load is applied singly.

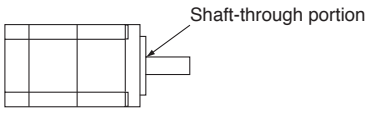


L: Distance between the flange mounting surface and the center of load

*3. V10 indicates that the amplitude of the servo motor itself is 10 μm or less. The following shows mounting orientation and measuring position of the servo motor during the measurement:



*4. Refer to the diagram below for the shaft-through portion.



Safety Logic Unit (MR-J3-D05)

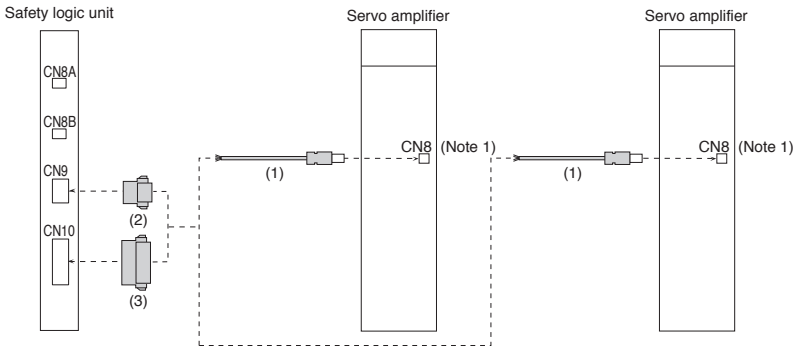
The safety logic unit has SS1 and STO functions. A combination of the servo amplifier and the safety logic unit (MR-J3-D05) achieves SS1 (safe stop 1) function.

Specifications

Safety logic unit model		MR-J3-D05
Control circuit power supply	Voltage	24 V DC
	Permissible voltage fluctuation	24 V DC ± 10 %
	Required current capacity [A]	0.5 (Note 1, 2)
Compatible system		2 systems (A-axis, B-axis independent)
Shut-off input		4 points (2 points × 2 systems) SDI_ : source/sink compatible (Note 3)
Shut-off release input		2 points (1 point × 2 systems) SRES_: source/sink compatible (Note 3)
Feedback input		2 points (1 point × 2 systems) TOF_ : source compatible (Note 3)
Input type		Photocoupler insulation, 24 V DC (external supply), internal limited resistance 5.4 kΩ
Shut-off output		8 points (4 points × 2 systems) STO_ : source compatible (Note 3) SDO_ : source/sink compatible (Note 3)
Output type		Photocoupler insulation, open-collector type Permissible current: 40 mA or less per output, Inrush current: 100 mA or less per output
Delay time setting		A-axis: select from 0 s, 1.4 s, 2.8 s, 5.6 s, 9.8 s or 30.8 s B-axis: select from 0 s, 1.4 s, 2.8 s, 9.8 s or 30.8 s Accuracy: ±2 %
Safety sub-function		STO, SS1 (IEC/EN 61800-5-2) EMG STOP, EMG OFF (IEC/EN 60204-1)
Safety performance	Satisfied standards	ISO 13849-1:2015 Category 3 PL d, IEC 61508 SIL 2, IEC 62061 SIL CL 2, IEC 61800-5-2
	Response performance (when delay time is set to 0 s) (Note 4)	10 ms or less (STO input OFF → shut-off output OFF)
	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100 [years] (516a)
	Diagnostic coverage (DC)	DC = Medium, 93.1 [%]
	Probability of dangerous Failure per Hour (PFH)	4.75×10^{-9} [1/h]
Satisfied standards	CE marking	LVD: EN 61800-5-1 EMC: EN 61800-3 MD: EN ISO 13849-1:2015, EN 61800-5-2, EN 62061
Structure (IP rating)		Natural cooling, open (IP00)
Environment	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)
	Ambient humidity	Operation/storage: 5 %RH to 90 %RH (non-condensing)
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust
	Altitude	1000 m or less
	Vibration resistance	5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)
Mass [kg]		0.2 (including CN9 and CN10 connectors)

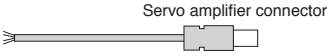
Notes: 1. Inrush current of approximately 1.5 A flows instantaneously when the power is switched on. Select an appropriate capacity of a power supply considering the inrush current.
2. Power-on duration of the safety logic unit is 100,000 times.
3. _ in signal name indicates a number and axis name.
4. Contact your local sales office for test pulse input.

Configuration Example for MR-J3-D05



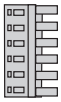
Cables and Connectors for MR-J3-D05

Refer to "Details of Option Connectors for MR-J3-D05" in "MELSERVO-J5 catalog (L(NA)03179ENG)" for the detailed models.

No.		Item	Application	Cable length	Model	Description
For CN8	(1)	STO cable	For connecting MR-J3-D05 or another safety control device with MR-J5-_G4(-RJ)/ MR-J5-_A4(-RJ)	3 m	MR-D05UDL3M-B	
For CN9	(2)	Connector	For MR-J3-D05	-	(Standard accessory of MR-J3-D05)	 Safety logic unit connector
For CN10	(3)	Connector	For MR-J3-D05	-	(Standard accessory of MR-J3-D05)	 Safety logic unit connector

Notes: 1. Attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.

Servo Amplifier Power Connector Set (Standard Accessory)

CNP1 connector	CNP2 connector	CNP3 connector	Open tool
			
06JFAT-SAXGDK-HT10.5 (LA) (J.S.T. Mfg. Co., Ltd.) Applicable wire size: AWG 18 to 14 Insulator OD: 3.9 mm or smaller	05JFAT-SAXGDK-HT7.5 (LA) (J.S.T. Mfg. Co., Ltd.) Applicable wire size: AWG 18 to 14 Insulator OD: 3.9 mm or smaller	03JFAT-SAXGDK-HT10.5 (LA) (J.S.T. Mfg. Co., Ltd.) Applicable wire size: AWG 18 to 14 Insulator OD: 3.9 mm or smaller	J-FAT-OT-XL (J.S.T. Mfg. Co., Ltd.)

Cables and Connectors for Rotary Servo Motors

For the cables and the connectors for the rotary servo motors, refer to "MELSERVO-J5 catalog (L(NA)03179ENG)".

Replacement Fan Unit

Servo amplifier model	Replacement fan unit model
MR-J5-200G4/A4 MR-J5-350G4/A4	MR-J5-FAN2

Regenerative Option

Servo amplifier model	Permissible regenerative power [W] (Note 2)						
	Built-in regenerative resistor	Regenerative option					
		MR-RB					
		1H-4	3M-4 (Note 1)	3G-4 (Note 1)	5G-4 (Note 1)	3Y-4 (Note 1)	5Y-4 (Note 1)
		82 Ω	120 Ω	47 Ω	47 Ω	36 Ω	36 Ω
MR-J5-60G4/A4	15	100	300	-	-	-	-
MR-J5-100G4/A4	15	100	300	-	-	-	-
MR-J5-200G4/A4	100	-	-	300	500	-	-
MR-J5-350G4/A4	120	-	-	-	-	300	500

Notes: 1. Cool the unit forcibly with a cooling fan (92 mm × 92 mm, minimum air flow: 1.0 m^3/min). The cooling fan must be prepared by users.
2. The power values in this table are resistor-generated powers, not rated powers.

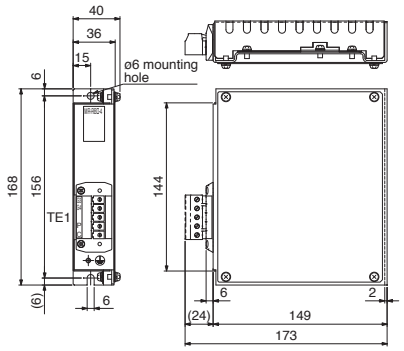
* Precautions when installing and connecting the regenerative option

1. The regenerative option causes a temperature rise of 100 °C or higher relative to the ambient temperature. Fully examine heat dissipation, installation position, wires used before installing the unit. Use flame-retardant wires or apply flame retardant on wires, and keep the wires clear of the unit.
2. Use twisted wires for connecting the regenerative option to the servo amplifier, and keep the wire length to a maximum of 5 m.
3. Use twisted wires for connecting a thermal sensor so that the sensor does not fail to work properly because of inducted noise.
4. There are restrictions on the mounting direction of the regenerative option. Refer to "MR-J5 User's Manual" for details.

Options/Peripheral Equipment

Dimensions [Unit: mm]

MR-RB1H-4



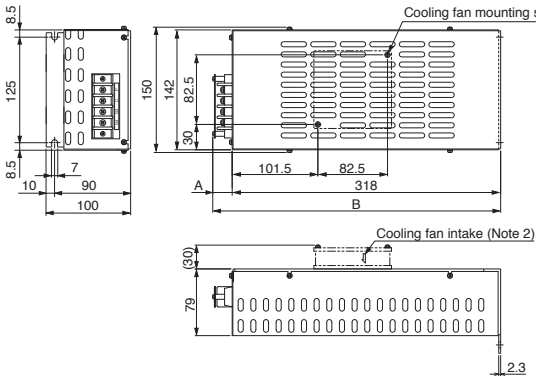
Terminal arrangement

TE1
G3
G4
P
C

Applicable wire size (Note 4):
0.2 mm² to 4.0 mm² (AWG 24 to 10)
Mounting screw size: M5

Model	Mass [kg]
MR-RB1H-4	1.1

MR-RB3M-4, MR-RB3G-4, MR-RB3Y-4



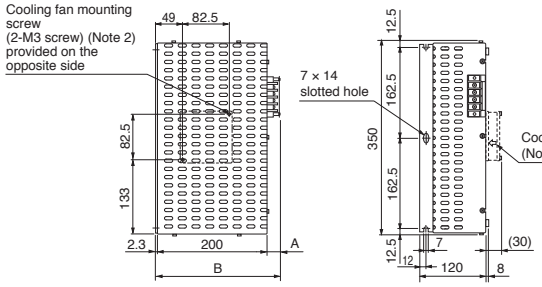
Terminal arrangement

P
C
G3
G4

Terminal screw size: M4
Mounting screw size: M6

Model	Variable dimensions		Mass [kg]
	A	B	
MR-RB3M-4	23	341	2.9
MR-RB3G-4			
MR-RB3Y-4			

MR-RB5G-4, MR-RB5Y-4



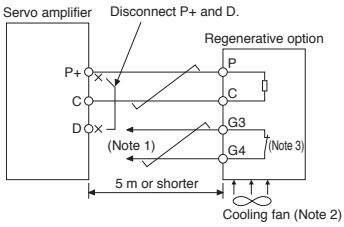
Terminal arrangement

P
C
G3
G4

Terminal screw size: M4
Mounting screw size: M6

Model	Variable dimensions		Mass [kg]
	A	B	
MR-RB5G-4	23	223	5.6
MR-RB5Y-4			

Connections



Notes: 1. Create a sequence circuit that turns off the magnetic contactor when abnormal overheating occurs.
2. When using MR-RB3M-4, MR-RB3G-4, MR-RB3Y-4, MR-RB5G-4, or MR-RB5Y-4, cool the unit forcibly with a cooling fan (92 mm × 92 mm, minimum air flow: 1.0 m³/min). The cooling fan must be prepared by users.
3. G3 and G4 terminals are thermal sensor. G3-G4 opens when the regenerative option overheats abnormally.
4. The wire size shows wiring specifications of the connector. Refer to "Wires, Molded-Case Circuit Breakers, and Magnetic Contactors" in this brochure for examples of wire size selection.

Multifunction Regeneration Converter (FR-XC-H) (Note 5)

Use the common bus regeneration mode with the harmonic suppression function disabled. The power regeneration mode and the harmonic suppression function are not supported.

Multifunction regeneration converter FR-XC-H		7.5K	11K	15K	22K	30K	37K	55K
Capacity [kW]		7.5	11	15	22	30	37	55
Maximum number of connectable servo amplifiers		10						
Total capacity of connectable servo amplifiers (Note 1) [kW]		3.5 (5.5)	5.5 (7.5)	7.5 (11)	22	30	37	55
Continuous output (Note 1) [kW]		3.5 (5.5)	5.5 (7.5)	7.5 (11)	18.5	22	30	45
Rated input current [A]	Power driving	18	25	34	49	65	80	118
	Regenerative driving	14	20	27	39	54	66	98
Overload current rating		100 % continuous / 150 % 60 s						
Power source	Rated input AC voltage/frequency (Note 2)	3-phase 380 V AC to 500 V AC, 50 Hz/60 Hz						
	Permissible AC voltage fluctuation (Note 3)	3-phase 323 V AC to 550 V AC, 50 Hz/60 Hz						
	Permissible frequency fluctuation	±5 %						
	Power supply capacity [kVA]	17	20	28	41	52	66	100
IP rating (IEC 60529)		Open type (IP00)						
Cooling system		Forced air						
Environment	Ambient temperature	-10 °C to 50 °C (non-freezing)						
	Ambient humidity	90 %RH or less (non-condensing)						
	Storage temperature	-20 °C to 65 °C						
	Ambience	Indoors (without corrosive gas, flammable gas, oil mist, dust and dirt)						
	Altitude	2500 m or less (For the installation at an altitude above 1000 m, consider a 3 % reduction in the rated current per 500 m increase in altitude.)						
	Vibration resistance	5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y, and Z axes)						
Molded-case circuit breaker or earth-leakage current breaker (Note 4)		30 AF 30 A (30 AF 15 A)	50 AF 50 A (30 AF 20 A)	100 AF 60 A (30 AF 30 A)	100 AF 100 A (50 AF 50 A)	225 AF 125 A (60 AF 60 A)	225 AF 150 A (100 AF 75 A)	225 AF 200 A (100 AF 100 A)
Magnetic contactor (Note 4)		S-T21	S-T25 (S-T21)	S-T35 (S-T21)	S-T50 (S-T25)	S-T65 (S-T35)	S-T80 (S-T50)	S-N125 (S-T65)

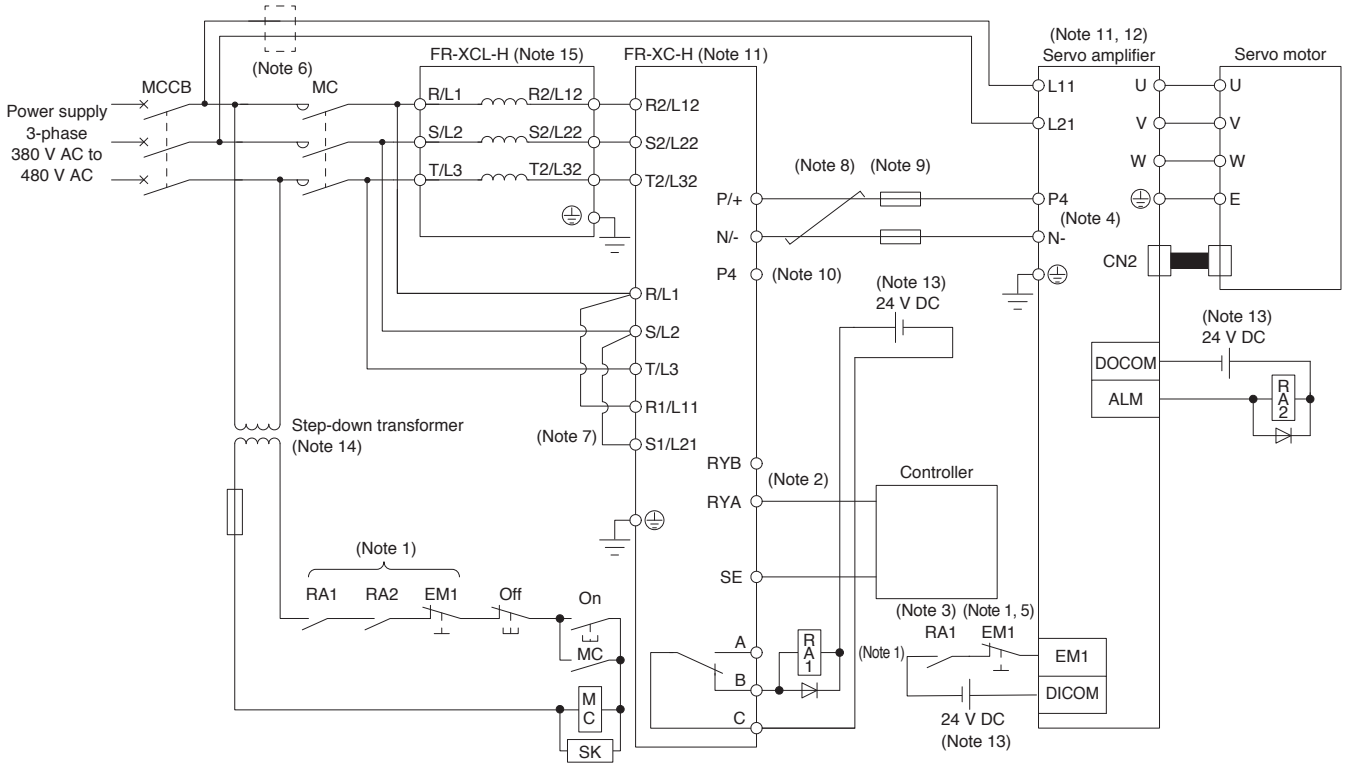
Notes: 1. The values in brackets are applicable when the number of connected servo amplifiers is six or less.
2. When connecting to a servo amplifier, use with a voltage range of 380 V to 480 V.
3. When connecting to a servo amplifier, use with a voltage range of 323 V to 528 V.
4. The models in brackets are applicable when the capacity [kW] of FR-XC-H ≥ Total rated capacity [kW] of servo amplifiers connected to FR-XC-H × 2.
5. The following are specifications at the time of October 2020.
For selecting an FR-XC-H multifunction regeneration converter, refer to the latest "FR-XC Instruction Manual" and "MR-J5 User's Manual".

* Precautions when selecting the multifunction regeneration converter

1. Total rated capacity [kW] of servo amplifiers connected to FR-XC-H ≤ Capacity [kW] of FR-XC-H
2. Effective value [kW] of total output power of servo motors ≤ Continuous output [kW] of FR-XC-H
3. Maximum value [kW] of total output power of servo motors ≤ FR-XC-H capacity [kW] × 1.5

Multifunction Regeneration Converter (FR-XC-H)

Connection example



Notes:
1. Create a sequence that shuts off the main circuit power when either:
   An alarm occurs on FR-XC-H or the servo amplifier, or
   EM1 (Forced stop 1) is validated.
2. For the servo amplifier, create a sequence that switches the servo-on after FR-XC-H is ready.
3. Create a sequence that stops the servo motor with the emergency stop input to the controller when an alarm occurs on FR-XC-H. When the emergency stop input is not available in the controller, stop the servo motor with the forced stop input to the servo amplifier as shown in the diagram.
4. Disconnect the short-circuit bar between P3 and P4 when using FR-XC-H.
5. Set [Pr. PA04.3] and [Pr. PA04.2] to "0" to enable EM1 (Forced stop 1).
6. When wires used for L11 and L21 are thinner than those for L1, L2, and L3, use a molded-case circuit breaker.
7. When using a separate power supply for the control circuit, remove the short-circuit bars between R/L1 and R1/L11, and S/L2 and S1/L21.
8. Use twisted wires for connecting the DC power supply between FR-XC-H and the servo amplifiers, and keep the wire length to a maximum of 5 m.
9. Install a fuse between each FR-XC-H and servo amplifier.
10. Do not connect anything to the P4 terminal of FR-XC-H.
11. Inputs/outputs (main circuit) of FR-XC-H and the servo amplifier include high frequency components, and they may interfere with peripheral communication devices. In this case, the interference can be reduced with the installation of a radio noise filter (FR-BIF-H) or line noise filter (FR-BSF01).
12. Wire a built-in regenerative resistor.
13. For convenience of illustration, the diagram shows separate 24 V DC power supplies for input and output signals. However, the input and output signals can share a common power supply.
14. When FR-XC-H is used, a step-down transformer is required if coil voltage of the magnetic contactor is in 200 V class.
15. When using FR-XC-H, use the following dedicated stand-alone reactor (FR-XCL-H). Do not use a power factor improving AC reactor (FR-HAL-H) or a power factor improving DC reactor (FR-HEL-H) with FR-XC-H.

Multifunction regeneration converter	Dedicated stand-alone reactor
FR-XC-H7.5K	FR-XCL-H7.5K
FR-XC-H11K	FR-XCL-H11K
FR-XC-H15K	FR-XCL-H15K
FR-XC-H22K	FR-XCL-H22K
FR-XC-H30K	FR-XCL-H30K
FR-XC-H37K	FR-XCL-H37K
FR-XC-H55K	FR-XCL-H55K

EMC Filter

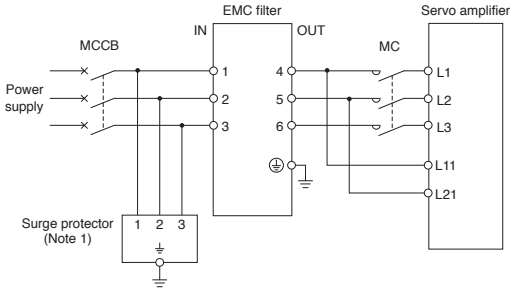
The following filters are recommended as a filter compliant with the EMC directive for the power supply of the servo amplifier.
A surge protector is separately required to use the filters. Refer to "MR-J5 User's Manual" for details.
Fulfill the following requirements when connecting one or more units of servo amplifiers to one EMC filter.

- Rated voltage [V] of EMC filter ≥ Rated input voltage [V] of servo amplifier
- Rated current [A] of EMC filter ≥ Total rated input current [A] of servo amplifiers connected to EMC filter

Operating environment	Total length of servo motor power cables	EMC filter					
		Model	Rated current [A]	Rated voltage [V AC]	Operating temperature [°C]	Mass [kg]	Manufacturer
IEC/EN 61800-3 Category C2/C3 (Note 1)	50 m or shorter	FSB-10-355	10	500	-40 to 85	1.8	COSEL Co., Ltd.
		FSB-20-355	20				

Notes: 1. Category C2: first environment (residential environment), second environment (commercial, light industrial, and industrial environments)
Category C3: second environment (commercial, light industrial, and industrial environments)

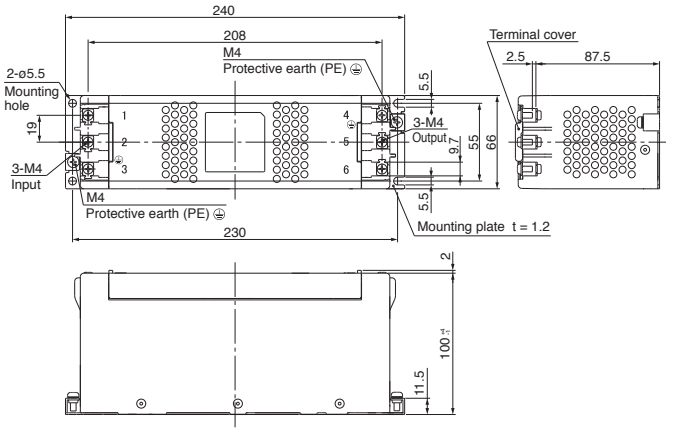
Connections



Notes: 1. This is for when a surge protector is connected.

Dimensions [Unit: mm]

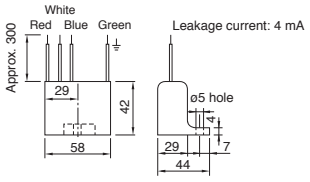
FSB-10-355/FSB-20-355



Radio Noise Filter (FR-BIF-H)

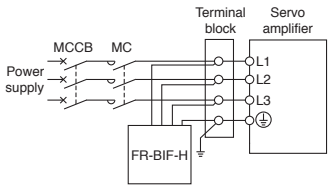
This filter suppresses noise from the power supply side of the servo amplifier, especially effective for the radio frequency bands of 10 MHz or lower. The radio noise filter is designed to be installed on the input side.

Dimensions [Unit: mm]



Connections

Do not use the radio noise filter on the output side of the servo amplifier.
Wiring should be as short as possible. Grounding is required.

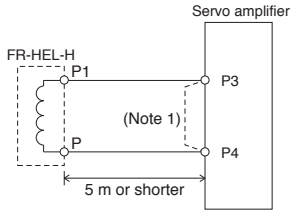


Power Factor Improving DC Reactor (FR-HEL-H)

This boosts the power factor of servo amplifier and reduces the power supply capacity.
Use either the DC reactor or the AC reactor.
As compared to the AC reactor (FR-HAL-H), the DC reactor (FR-HEL-H) is more recommended since the DC reactor is more effective in power factor improvement, smaller and lighter, and its wiring is easier. (The DC reactor uses two wires, while the AC reactor uses six wires.) For the specifications and the dimensions, refer to FR-HEL Instruction Manual.

Servo amplifier model	Power factor improving DC reactor model
MR-J5-60G4/A4	FR-HEL-H1.5K
MR-J5-100G4/A4	FR-HEL-H2.2K
MR-J5-200G4/A4	FR-HEL-H3.7K
MR-J5-350G4/A4	FR-HEL-H7.5K

Connections



Notes: 1. Disconnect a short-circuit bar between P3 and P4 when using the power factor improving DC reactor.

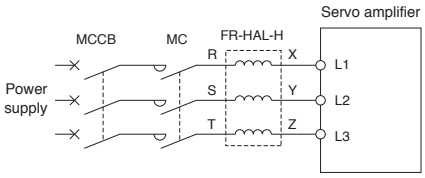
Power Factor Improving AC Reactor (FR-HAL-H)

This boosts the power factor of servo amplifier and reduces the power supply capacity.
For the specifications and the dimensions, refer to FR-HAL Instruction Manual.

Servo amplifier model	Power factor improving AC reactor model (Note 1)
MR-J5-60G4/A4	FR-HAL-H1.5K
MR-J5-100G4/A4	FR-HAL-H2.2K
MR-J5-200G4/A4	FR-HAL-H3.7K
MR-J5-350G4/A4	FR-HAL-H7.5K

Notes: 1. When using the power factor improving AC reactor, install one reactor for each servo amplifier.

Connections



Wires, Molded-Case Circuit Breakers, and Magnetic Contactors

The following are examples of wire sizes when 600 V grade heat-resistant polyvinyl chloride insulated wires (HIV wires) are used. The wire size for U, V, W, and E varies depending on the servo motor. Refer to "Selection Example in HIV Wires for Servo Motors" in "MELSERVO-J5 catalog (L(NA)03179ENG)" for details on wires for each servo motor.

Wires and molded-case circuit breakers

Servo amplifier model	Molded-case circuit breaker (Note 4, 5, 6, 7)	Wire size [mm^2] (Note 4)			
		L1, L2, L3, ⏚	L11, L21	P+, C (Note 1)	U, V, W, E
MR-J5-60G4/A4	30 A frame 5 A (30 A frame 5 A)	2 (AWG 14)	1.25 to 2 (AWG 16 to 14)	2 (AWG 14)	AWG 18 to 14 (Note 3)
MR-J5-100G4/A4	30 A frame 10 A (30 A frame 5 A)				
MR-J5-200G4/A4	30 A frame 15 A (30 A frame 10 A)				
MR-J5-350G4/A4	30 A frame 20 A (30 A frame 15 A)				

Magnetic contactors

Servo amplifier model	Magnetic contactor (Note 2, 5)	
	On/off of main circuit power supply	
	AC power supply	DC power supply
MR-J5-60G4/A4	S-T10	SD-T12
MR-J5-100G4/A4		
MR-J5-200G4/A4		
MR-J5-350G4/A4	S-T21	SD-T21

Notes: 1. Keep the wire length to the regenerative option within 5 m.
2. Use a magnetic contactor with an operation delay time of 80 ms or less. The operation delay time is the time interval from current being applied to the coil until closure of contacts.
3. The wire size shows applicable size for the servo amplifier connector.
4. When complying with IEC/EN/UL/CSA standard, refer to "Selection Example Compliant with IEC/EN/UL 61800-5-1 and CSA C22.2 No. 274".
5. These selection examples are for when one molded-case circuit breaker and one magnetic contactor are installed for one unit of servo amplifier. When connecting multiple units of servo amplifiers, refer to "MR-J5 User's Manual".
6. Use a molded-case circuit breaker having the operation characteristics equal to or higher than Mitsubishi Electric general-purpose products.
7. When using a power improving reactor, use a molded-case circuit breaker listed in the brackets.

Selection Example Compliant with IEC/EN/UL 61800-5-1 and CSA C22.2 No. 274

The molded-case circuit breakers, semiconductor fuses, and recommended wire sizes in the table are examples based on the rated inputs/outputs of the servo amplifiers. Molded-case circuit breakers (MCCB) or semiconductor fuses with a smaller capacity than in the table can be used when a servo motor with a smaller capacity is connected to the servo amplifiers.

Molded-case circuit breakers/semiconductor fuses

Servo amplifier model	Molded-case circuit breaker (480 V AC) SCCR 30 kA (Mitsubishi Electric)	Semiconductor fuse (700 V) SCCR 100 kA (BUSSMAN)
MR-J5-60G4/A4	NF125-SVU-15A (125 A frame 15 A) (Note 1)	170M1408 (10 A)
MR-J5-100G4/A4		
MR-J5-200G4/A4		170M1409 (16 A)
MR-J5-350G4/A4		170M1412 (32 A)

Notes: 1. When complying with UL/CSA standard, use semiconductor fuses.

Recommended wires

Servo amplifier model	75 °C stranded wire [AWG]			
	L1, L2, L3, ⏚	L11, L21	P+, C	U, V, W, E (Note 1)
MR-J5-60G4/A4	14	14	14	14
MR-J5-100G4/A4				
MR-J5-200G4/A4				
MR-J5-350G4/A4				

Notes: 1. For connecting a servo motor with a smaller capacity than a servo amplifier rated capacity, a wire size based on the rated current of the servo motor can be selected in addition to the recommended wire size.

Product List

Servo amplifiers

Item	Model	Rated output	Main circuit power supply
MR-J5-G4	MR-J5-60G4	0.6 kW	3-phase 380 V AC to 480 V AC
	MR-J5-100G4	1 kW	3-phase 380 V AC to 480 V AC
	MR-J5-200G4	2 kW	3-phase 380 V AC to 480 V AC
	MR-J5-350G4	3.5 kW	3-phase 380 V AC to 480 V AC
MR-J5-G4-RJ	MR-J5-60G4-RJ	0.6 kW	3-phase 380 V AC to 480 V AC
	MR-J5-100G4-RJ	1 kW	3-phase 380 V AC to 480 V AC
	MR-J5-200G4-RJ	2 kW	3-phase 380 V AC to 480 V AC
	MR-J5-350G4-RJ	3.5 kW	3-phase 380 V AC to 480 V AC
MR-J5-G4-N1	MR-J5-60G4-N1	0.6 kW	3-phase 380 V AC to 480 V AC
	MR-J5-100G4-N1	1 kW	3-phase 380 V AC to 480 V AC
	MR-J5-200G4-N1	2 kW	3-phase 380 V AC to 480 V AC
	MR-J5-350G4-N1	3.5 kW	3-phase 380 V AC to 480 V AC
MR-J5-G4-RJN1	MR-J5-60G4-RJN1	0.6 kW	3-phase 380 V AC to 480 V AC
	MR-J5-100G4-RJN1	1 kW	3-phase 380 V AC to 480 V AC
	MR-J5-200G4-RJN1	2 kW	3-phase 380 V AC to 480 V AC
	MR-J5-350G4-RJN1	3.5 kW	3-phase 380 V AC to 480 V AC
MR-J5-A4	MR-J5-60A4	0.6 kW	3-phase 380 V AC to 480 V AC
	MR-J5-100A4	1 kW	3-phase 380 V AC to 480 V AC
	MR-J5-200A4	2 kW	3-phase 380 V AC to 480 V AC
	MR-J5-350A4	3.5 kW	3-phase 380 V AC to 480 V AC
MR-J5-A4-RJ	MR-J5-60A4-RJ	0.6 kW	3-phase 380 V AC to 480 V AC
	MR-J5-100A4-RJ	1 kW	3-phase 380 V AC to 480 V AC
	MR-J5-200A4-RJ	2 kW	3-phase 380 V AC to 480 V AC
	MR-J5-350A4-RJ	3.5 kW	3-phase 380 V AC to 480 V AC

Regenerative options

Model	Permissible regenerative power	Resistance value	Application (Note 1)
MR-RB1H-4	100 W	82 Ω	For MR-J5-60G4 to 100G4 and MR-J5-60A4 to 100A
MR-RB3M-4	300 W	120 Ω	For MR-J5-60G4 to 100G4 and MR-J5-60A4 to 100A4
MR-RB3G-4	300 W	47 Ω	For MR-J5-200G4 and MR-J5-200A4
MR-RB5G-4	500 W	47 Ω	For MR-J5-200G4 and MR-J5-200A4
MR-RB3Y-4	300 W	36 Ω	For MR-J5-350G4 and MR-J5-350A4
MR-RB5Y-4	500 W	36 Ω	For MR-J5-350G4 and MR-J5-350A4

Notes: 1. Note that options/peripheral equipment necessary for servo amplifiers with special specifications are the same as those for standard servo amplifiers. Refer to the servo amplifiers with the same rated output.

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