MITSUBISHI ELECTRIC
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FACTORY AUTOMATION

New Product Release

November 2024 [SV2411-2E]

Mitsubishi Electric AC Servo System MELSERVO-J5

MR-J5 series releases large-capacity models

Servo amplifier 200 V/400 V 12 kW to 25 kW
Rotary servo motor HK-JT series 7 kW to 22 kW

Features

■The large-capacity servo amplifiers offer the same performance and functions as the other existing models.

■MR-J5-G-HS with enhanced safety sub-functions is added.

■The servo motors are equipped with a batteryless absolute position encoder.

Large-Capacity Servo Amplifiers

MR-J5 series has added large-capacity servo amplifiers (12 kW, 17 kW, and 25 kW) to its product line, supporting a broader range of capacities from 0.1 kW to 25 kW.

■ Servo amplifier

●: Supported

Model	Power supply specifications (Note 1)	Command interface (Note 3)	Fully closed loop control (Note 2)	Capacity	NEW
MR-J5-G	200 V AC	CC-Link IE TSN EtherCAT® (Note 4) EtherNet/IP® (Note 4)	●	0.1 kW to 7.0 kW	12 kW to 25 kW
	400 V AC		●	0.6 kW to 7.0 kW	12 kW to 25 kW
MR-J5-B	200 V AC	SSCNET III/H	●	0.1 kW to 7.0 kW	12 kW to 25 kW
	400 V AC		●	0.6 kW to 7.0 kW	12 kW to 25 kW
MR-J5-A	200 V AC	Pulse train/ analog voltage	●	0.1 kW to 7.0 kW	12 kW to 25 kW
	400 V AC		●	0.6 kW to 7.0 kW	12 kW to 25 kW

0.1 kW 1.0 kW 10 kW

Notes: 1. 200 V AC servo amplifiers are also compatible with DC power supply input as standard.
2. The indicated servo amplifiers are compatible 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-G-HS/MR-J5-B-RJ/MR-J5-A-RJ servo amplifiers.
3. MR-J5-G is also compatible with CC-Link IE Field Network Basic.
4. MR-J5-G-N1 is compatible with EtherCAT® and EtherNet/IP®.

Improved Performance and Expanded Functions

As with the other existing models (7.0 kW or less) in MR-J5 series, the large-capacity servo amplifiers improve performance and expand the adjustment and diagnosis functions compared to the previous models in MR-J4 series. Furthermore, MR-J5-G-HS with enhanced safety sub-functions is added, contributing to improving machine safety.

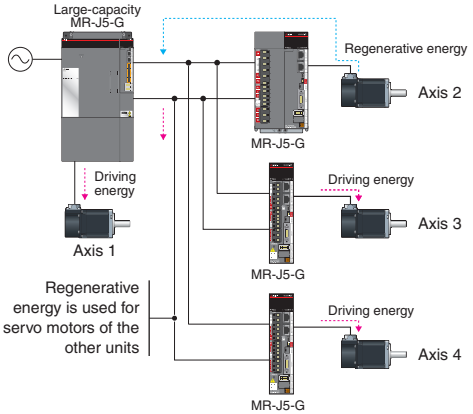
Item		MR-J4-B	MR-J5-G MR-J5-B	MR-J5-G-HS
Performance/ functions	Encoder resolution	22 bits	**26 bits**	
	Machine diagnosis function	Ball screw	Ball screw/**gear/belt**	
	Disconnection detection	Not provided	**Provided (Servo amplifier main circuit power supply input open phase/Servo motor power supply output open phase)**	
	Auto tuning	One-touch tuning Auto tuning	**Quick tuning** One-touch tuning Auto tuning	
	Cooling fan replacement	Not supported	**Supported**	
Functional safety	Safety sub-functions	STO	STO	STO/**SS1/SS2/SOS/SBC/SLS/SSM/SDI/SLI/SLT**
	Safety sub-functions via network	Not supported	Not supported	**Supported***1
	Input device	1 point	1 point	**3 points**
	Output device	1 point	1 point	**3 points**
Operating environment	Ambient temperature	55 °C	**60 °C**	

*1. Not supported by EtherNet/IP®.

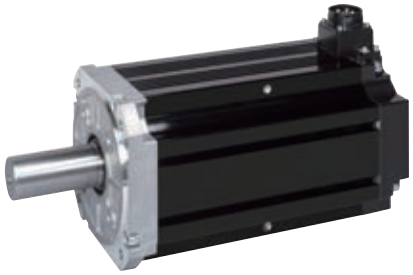
Energy-Saving Systems by Common Bus Connection Utilizing a Large-Capacity Servo Amplifier

When multiple servo amplifiers are connected to a large-capacity servo amplifier by a common bus connection using its built-in converter, the regenerative energy of one axis is used for driving other axes without a power regeneration converter unit, contributing to saving energy and space, and reducing wiring.

* For details, refer to "MR-J5 User's Manual".



Large-Capacity Rotary Servo Motors



Medium/large capacity, low inertia NEW

HK-JT Series

Servo motors with a 26-bit batteryless absolute position encoder
Rated speed: 1500 r/min*1
Maximum speed: 3000 r/min*1
Easy wiring with one-touch lock.

*1. The speed varies by the model type.

■ Servo motor

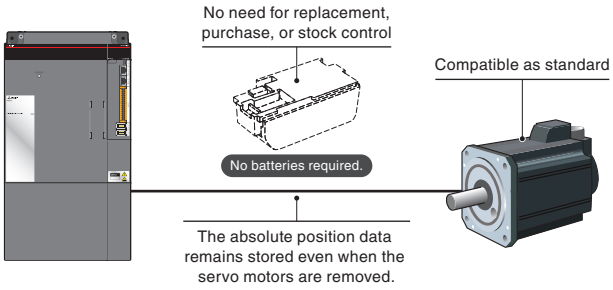
: Future release planned

Series	Inertia	Motor type	Servo amplifier power supply	Capacity
HK-JT NEW	Low inertia	HK-JT_J	200 V AC	7 kW to 22 kW
		HK-JT_4_J	400 V AC	7 kW to 22 kW
HK-KT	Low inertia	HK-KT_W	200 V AC	0.05 kW to 2.0 kW
			400 V AC	0.05 kW to 0.15 kW
		HK-KT_4_W	200 V AC	0.2 kW to 1.0 kW
			400 V AC	0.4 kW to 2.0 kW
HK-MT	Ultra-low inertia	HK-MT_W	200 V AC	0.05 kW to 1.0 kW
HK-ST	Medium inertia	HK-ST_W	200 V AC	0.5 kW to 7.0 kW, Up to 11 kW
		HK-ST_4_W	200 V AC	0.3 kW to 4.2 kW, Up to 5.5 kW
			400 V AC	0.5 kW to 7.0 kW, Up to 11 kW
HK-RT	Ultra-low inertia	HK-RT_W	200 V AC	1.0 kW to 7.0 kW
		HK-RT_4W	400 V AC	1.0 kW to 7.0 kW

0.1 kW 1.0 kW 10 kW

Batteryless Absolute Position Encoder as Standard

Servo motors come equipped with a batteryless absolute position encoder as standard, making it possible to configure absolute position systems without the use of batteries or any other options.
Moreover, maintenance costs are reduced as a result of eliminating the battery replacement and stock control.



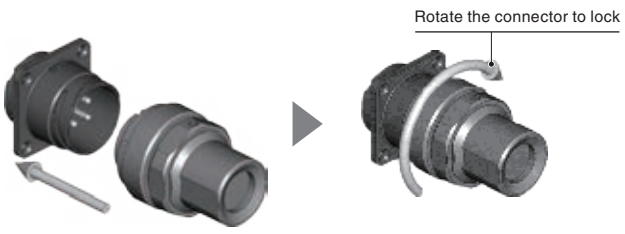
One-Touch Lock

HK-JT*1 series servo motors boast a greatly simplified installation process through use of the one-touch lock system. The servo motors are compatible with both straight and angle type connectors.

- Power connector: one-touch lock or screw tightening type
- Encoder connector: one-touch lock or screw tightening type
- Electromagnetic brake connector: screw tightening type

*1. The one-touch lock is available for 1500 r/min (200 V/400 V power supply, 7 kW, 11 kW, and 15 kW).

One-touch lock



Combinations of Rotary Servo Motors and Servo Amplifiers (Note 1, 2)

1-axis servo amplifier (200 V)

○: Standard torque

Rotary servo motor (Note 2)			Servo amplifier MR-J5-_ (200 V)			
			700G/B/A (Note 3)	12KG/B/A	17KG/B/A	25KG/B/A
HK-JT_J	220 × 220	HK-JT701MJ	○	-	-	-
		HK-JT11K1MJ	-	○	-	-
		HK-JT15K1MJ	-	-	○	-
	250 × 250	HK-JT15K1J	-	-	○	-
		HK-JT22K1MJ	-	-	-	○

1-axis servo amplifier (400 V)

○: Standard torque

Rotary servo motor (Note 2)			Servo amplifier MR-J5-_ (400 V)			
			700G4/B4/A4 (Note 3)	12KG4/B4/A4	17KG4/B4/A4	25KG4/B4/A4
HK-JT_4J	220 × 220	HK-JT701M4J	○	-	-	-
		HK-JT11K1M4J	-	○	-	-
		HK-JT15K1M4J	-	-	○	-
	250 × 250	HK-JT22K1M4J	-	-	-	○

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. The combinations of servo amplifiers and servo motors with an electromagnetic brake or servo motors with functional safety are the same as those described in this table.
3. Refer to "MELSERVO-J5 catalog (L(NA)03179ENG)" for specifications and dimensions of the MR-J5-700_ servo amplifiers.

Model Designation for 1-Axis Servo Amplifier

G G-HS

M R - J 5 - 1 2 K G _ - _ _

Mitsubishi Electric AC servo amplifier MELSERVO-J5 series

Symbol	Power supply
None	3-phase 200 V AC or DC input
4	3-phase 400 V AC

Symbol	Interface
G	Network compatible

Symbol	Rated output [kW]
12K	12
17K	17
25K	25

Symbol	Special specifications
None	CC-Link IE TSN-compatible standard
HS	CC-Link IE TSN-compatible, Fully closed loop control four-wire type, Load-side encoder A/B/Z-phase input compatible, Safety sub-function, 3 points of functional safety I/O signals
PX	MR-J5-_G_ without an enclosed regenerative resistor (Note 1)
HZ	MR-J5-_G_-HS without an enclosed regenerative resistor (Note 1)
LL	MR-J5-_G_ compatible with pressure control (Note 2)
RN	MR-J5-_G_-LL without an enclosed regenerative resistor (Note 1)
N1	EtherCAT®/EtherNet/IP®-compatible standard
PXN1	MR-J5-_G_-N1 without an enclosed regenerative resistor (Note 1)
HSN1	EtherCAT®/EtherNet/IP®-compatible, Fully closed loop control four-wire type, Load-side encoder A/B/Z-phase input compatible, Safety sub-function, 3 points of functional safety I/O signals
HZN1	MR-J5-_G_-HSN1 without an enclosed regenerative resistor (Note 1)

Notes: 1. Available in 12 kW to 25 kW servo amplifiers. A regenerative resistor (standard accessory) is not enclosed. Refer to "MR-J5 User's Manual" for details.
2. Refer to "MR-J5 User's Manual" for the pressure control compatible servo amplifiers.

Model Designation for 1-Axis Servo Amplifier

B B-RJ

M R - J 5 - 1 2 K B _ - _ _

Mitsubishi Electric AC servo amplifier MELSERVO-J5 series

Symbol	Power supply
None	3-phase 200 V AC or DC input
4	3-phase 400 V AC

Symbol	Interface
B	SSCNET III/H

Symbol	Rated output [kW]
12K	12
17K	17
25K	25

Symbol	Special specifications
None	Standard
RJ	Fully closed loop control four-wire type, Load-side encoder A/B/Z-phase input compatible
PX	MR-J5-_B_ without an enclosed regenerative resistor (Note 1)
RZ	MR-J5-_B_-RJ without an enclosed regenerative resistor (Note 1)
LL	MR-J5-_B_ compatible with pressure control (Note 2)
RN	MR-J5-_B_-LL without an enclosed regenerative resistor (Note 1)

A A-RJ

M R - J 5 - 1 2 K A _ - _ _

Mitsubishi Electric AC servo amplifier MELSERVO-J5 series

Symbol	Power supply
None	3-phase 200 V AC or DC input
4	3-phase 400 V AC

Symbol	Interface
A	General-purpose

Symbol	Rated output [kW]
12K	12
17K	17
25K	25

Symbol	Special specifications
None	Standard
RJ	Fully closed loop control four-wire type, Load-side encoder A/B/Z-phase input compatible, High resolution analog input compatible
PX	MR-J5-_A_ without an enclosed regenerative resistor (Note 1)
RZ	MR-J5-_A_-RJ without an enclosed regenerative resistor (Note 1)

Notes: 1. Available in 12 kW to 25 kW servo amplifiers. A regenerative resistor (standard accessory) is not enclosed. Refer to "MR-J5 User's Manual" for details.
2. Refer to "MR-J5 User's Manual" for the pressure control compatible servo amplifiers.

MR-J5-G_ (Network Compatible) Specifications (200 V/400 V)

G G-HS

Refer to "MELSERVO-J5 catalog (L(NA)03179ENG)" for the safety sub-function, safety performance, connections with peripheral equipment, standard wiring diagram example, external encoder connection specifications, linear encoder connection examples, and restrictions on the communication cycle. For MR-J5-G-HS(N1), refer to the items for MR-J5-G4-HS(N1) in the catalog.

Servo amplifier model MR-J5-_(-(HS)(N1))			12KG	17KG	25KG	12KG4	17KG4	25KG4
Output	Voltage		3-phase 0 V AC to 240 V AC			3-phase 0 V AC to 480 V AC		
	Rated current	[A]	68.0	87.0	126.0	32.0	41.0	63.0
Main circuit power supply input	Voltage/ frequency (Note 1)	AC input	3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz		
		DC input (Note 8)	283 V DC to 340 V DC			-		
	Rated current (Note 11)	[A]	52.0 (63.6)	72.2 (77.7)	109.7 (132.9)	26.0	36.1	54.8
	Permissible voltage fluctuation	AC input	3-phase 170 V AC to 264 V AC			3-phase 323 V AC to 528 V AC		
		DC input (Note 8)	241 V DC to 374 V DC			-		
	Permissible frequency fluctuation		±5 % maximum					
Control circuit power supply input	Voltage/ frequency	AC input	1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz		
		DC input (Note 8)	283 V DC to 340 V DC			-		
	Rated current	[A]	0.3			0.2		
	Permissible voltage fluctuation	AC input	1-phase 170 V AC to 264 V AC			1-phase 323 V AC to 528 V AC		
		DC input (Note 8)	241 V DC to 374 V DC			-		
	Permissible frequency fluctuation		±5 % maximum					
	Power consumption	[W]	45					
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 external regenerative resistor (standard accessory) (Note 2, 3, 15, 16)		[W]	500 (800)	850 (1300)		500 (800)	850 (1300)	
Dynamic brake (Note 4)			External option (Note 6, 14)					
CC-Link IE TSN Class B (Note 13) (MR-J5-G(4)(-HS))	Communication cycle (Note 10)		31.25 µs, 62.5 µs, 125 µs, 250 µs, 500 µs, 1 ms, 1.5 ms, 2 ms, 2.5 ms, 3 ms, 3.5 ms, 4 ms, 4.5 ms, 5 ms, 5.5 ms, 6 ms, 6.5 ms, 7 ms, 7.5 ms, 8 ms					
	Protocol version		1.0/2.0					
CC-Link IE TSN Class A (Note 12, 13) (MR-J5-G(4)(-HS))	Communication cycle (Note 10)		500 µs to 500 ms					
	Protocol version		2.0					
EtherCAT® (MR-J5-G(4)-(HS)N1)	Communication cycle (Note 10)		125 µs, 250 µs, 500 µs, 1 ms, 2 ms, 4 ms, 8 ms					
EtherNet/IP® (Note 12) (MR-J5-G(4)-(HS)N1)	Cycle time		Select from 1 ms to 100 ms					
CC-Link IE Field Network Basic (Note 12) (MR-J5-G(4)(-HS))			Supported					
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)					
Encoder output pulse			Compatible (A/B/Z-phase pulse)					
Analog monitor			2 channels					
Positioning mode			Point table method					
Fully closed loop control			Available					
Load-side encoder interface	MR-J5-G(4)(-N1)		Mitsubishi Electric high-speed serial communication					
	MR-J5-G(4)-HS(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, super trace control, continuous operation to torque control mode (Note 5), driver communication function (Note 5)					
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, magnetic pole detection protection, linear servo control fault protection					
Structure (IP rating)			Force cooling, open (IP20) (Note 7, 9)					
Close mounting			Not possible					
Mass		[kg]	12.7		18.1	12.7		18.1

MR-J5-G_ (Network Compatible) Specifications (200 V/400 V)

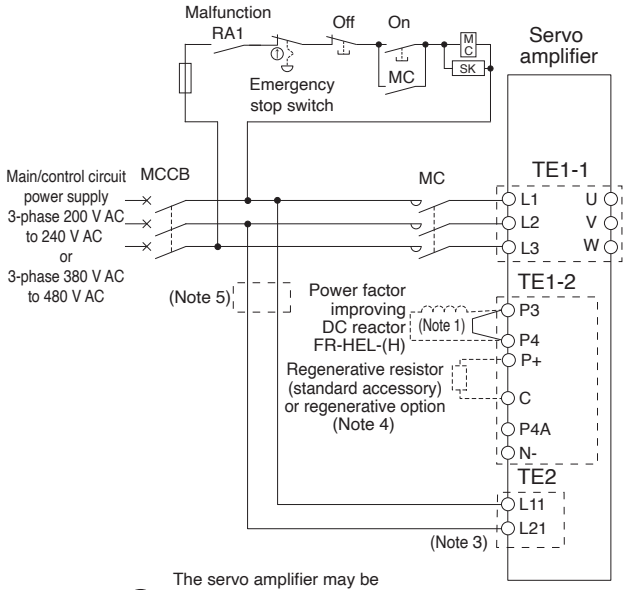
G G-HS

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 function is not available with MR-J5-G(4)-(HS)N1.
6. Use an external dynamic brake with the 12 kW or larger servo amplifiers. Failure to do so will cause an accident because the servo motor does not stop immediately but coasts at emergency stop. Ensure the safety in the entire equipment.
7. This product is certified as IP00.
8. For a connection example of power supply circuit with DC input, refer to "MR-J5 User's Manual".
9. Terminal blocks are excluded.
10. The communication cycle depends on the controller specifications and the number of device stations connected.
11. The values in brackets are the rated current for the 1-phase power supply input.
12. For the restrictions on the network, refer to "MR-J5 User's Manual".
13. A communication speed of 1 Gbps/100 Mbps can be selected. When 100 Mbps is selected, the minimum communication cycle is 500 µs.
14. The external dynamic brake cannot be used to comply with the SEMI-F47 standard. Do not assign DB (Dynamic brake interlock) to the output device. If DB (Dynamic brake interlock) is assigned, the servo amplifier switches to servo-off status when an instantaneous power failure occurs.
15. The values in brackets are applicable when cooling fans (two units of 92 mm × 92 mm, minimum air flow: 1.0 m^3/min) are installed, and then [Pr. PA02] is changed.
16. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "Model Designation for 1-Axis Servo Amplifier" in this brochure for details.

Main/Control Circuit Power Supply Connection Example

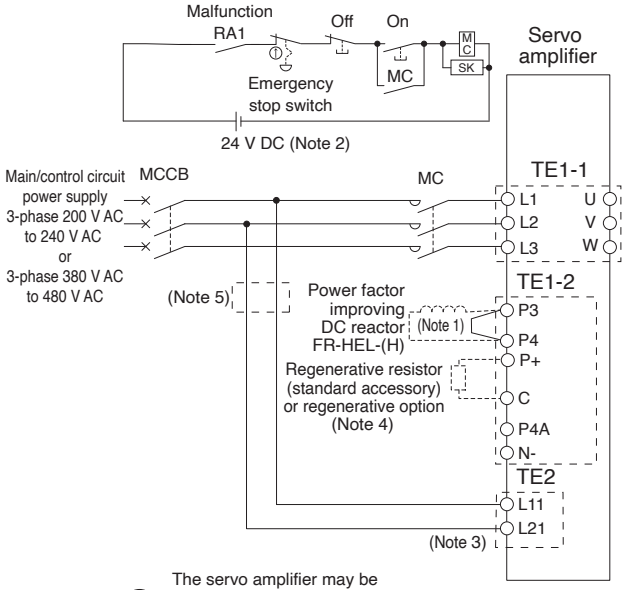
G | G-HS | B | B-RJ | A | A-RJ

● Driving on/off of main circuit power supply with AC power supply for 3-phase 200 V AC/400 V AC, 12 kW to 25 kW



The servo amplifier may be damaged if the regenerative option or the power factor improving DC reactor is incorrectly connected.

● Driving on/off of main circuit power supply with DC power supply for 3-phase 200 V AC/400 V AC, 12 kW to 25 kW



The servo amplifier may be damaged if the regenerative option or the power factor improving DC reactor is incorrectly connected.

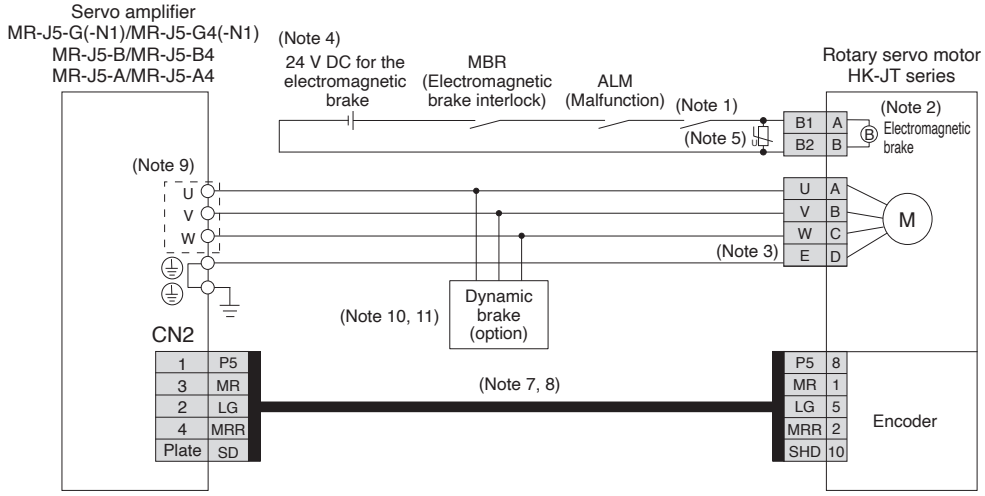
Notes: 1. Disconnect a short-circuit bar between P3 and P4 when using the power factor improving DC reactor.
2. Do not use the 24 V DC interface power supply for the magnetic contactor. Provide a dedicated power supply to the magnetic contactor.
3. Do not ground the servo amplifier between L11 and L21 even when the control circuit power supply is separated from the main circuit power supply using an uninterruptible power supply (UPS) or an isolation transformer.
4. MR-J5-12KG_/MR-J5-12KB_/MR-J5-12KA_ or larger servo amplifiers do not have a built-in regenerative resistor.
5. When wires used for L11 and L21 are thinner than those for L1, L2, and L3, use a molded-case circuit breaker. 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.

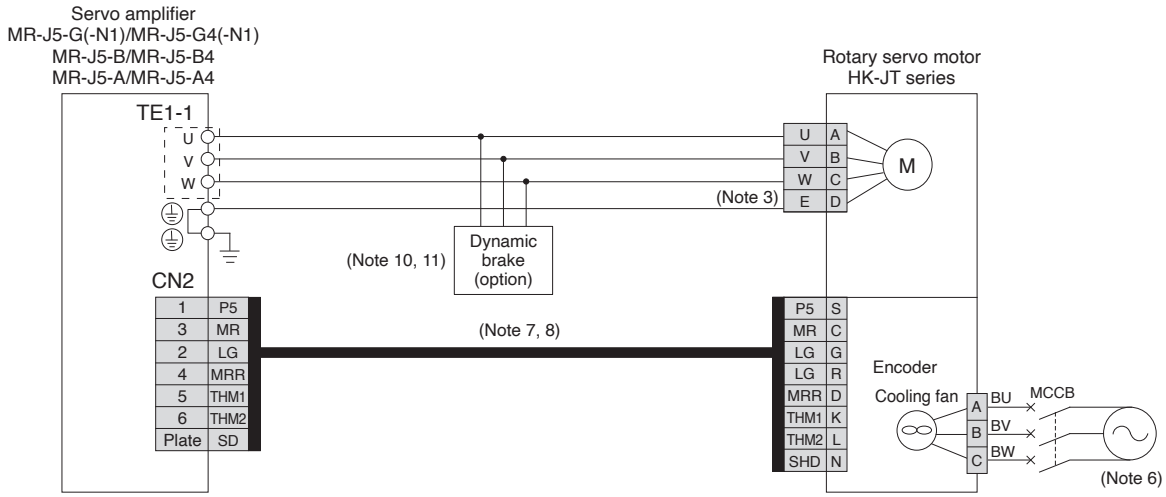
Servo Motor Connection Example (Rotary Servo Motor)

Semi Closed Loop Control System with MR-J5-G(4)(-N1)/MR-J5-B(4)/MR-J5-A(4)

●For HK-JT 1500 r/min (7 kW to 15 kW) series



●For HK-JT 1000 r/min (15 kW) series/HK-JT 1500 r/min (22 kW) series



Notes:
1. Create the circuit in order to shut off by being interlocked with the emergency stop switch.
2. This is for the servo motors with an electromagnetic brake. The electromagnetic brake terminals do not have polarity.
3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier for grounding the servo motor.
4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
5. Install a surge absorber between B1 and B2.
6. Supply power to the cooling fan terminals. Refer to the cooling fan power supply described in the servo motor specifications in this brochure for the required power.
7. Encoder cables are available as an option.
8. Refer to "Rotary Servo Motor User's Manual (For MR-J5)" when fabricating the cables.
9. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions in this brochure for 12 kW or larger servo amplifiers. Refer to "MELSERVO-J5 catalog (L(NA)03179ENG)" for 7 kW servo amplifiers.
10. Use an external dynamic brake with the 12 kW or larger servo amplifiers. Failure to do so will cause an accident because the servo motor does not stop immediately but coasts at emergency stop. Ensure the safety in the entire equipment. Refer to "MR-J5 User's Manual" when wiring the dynamic brake.
11. The external dynamic brake cannot be used to comply with the SEMI-F47 standard. Do not assign DB (Dynamic brake interlock) to the output device. If DB (Dynamic brake interlock) is assigned, the servo amplifier switches to servo-off status when an instantaneous power failure occurs.

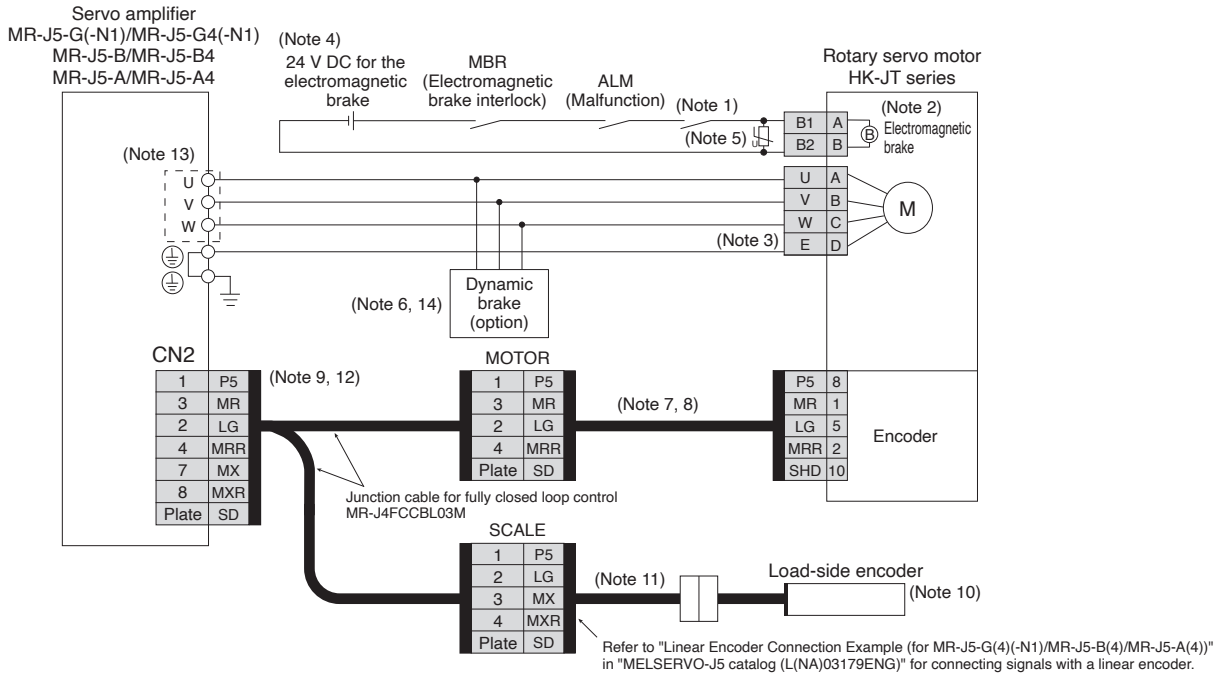
Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Rotary Servo Motor)

G B A

Fully Closed Loop Control System with MR-J5-G(4)(-N1)/MR-J5-B(4)/MR-J5-A(4)

●For HK-JT 1500 r/min (7 kW to 15 kW) series



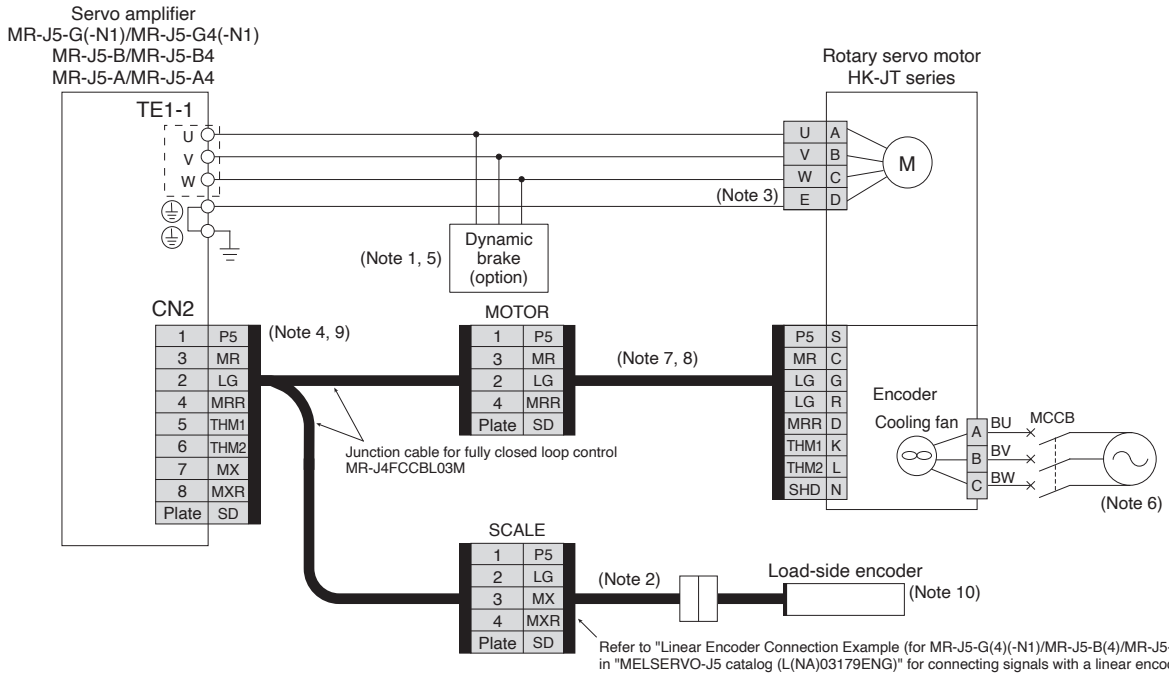
Notes:
1. Create the circuit in order to shut off by being interlocked with the emergency stop switch.
2. This is for the servo motors with an electromagnetic brake. The electromagnetic brake terminals do not have polarity.
3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier for grounding the servo motor.
4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
5. Install a surge absorber between B1 and B2.
6. Use an external dynamic brake with the 12 kW or larger servo amplifiers. Failure to do so will cause an accident because the servo motor does not stop immediately but coasts at emergency stop. Ensure the safety in the entire equipment. Refer to "MR-J5 User's Manual" when wiring the dynamic brake.
7. Encoder cables are available as an option.
8. Refer to "Rotary Servo Motor User's Manual (For MR-J5)" when fabricating the cables.
9. For fully closed loop control, the load-side encoder and the servo motor encoder are compatible only with two-wire type communication method. Four-wire type cannot be used.
10. For linear encoders, refer to "List of Linear Encoders" in "MELSERVO-J5 catalog (L(NA)03179ENG)". Refer to "MR-J5 User's Manual" for the fully closed loop control with a rotary encoder.
11. Necessary encoder cables vary depending on the load-side encoder. Refer to "MR-J5 User's Manual" and "Rotary Servo Motor User's Manual (For MR-J5)".
12. When configuring a fully closed loop control system with MR-J5-G(4)(-N1)/MR-J5-B(4)/MR-J5-A(4), connect MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set to CN2 connector.
13. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions in this brochure for 12 kW or larger servo amplifiers. Refer to "MELSERVO-J5 catalog (L(NA)03179ENG)" for 7 kW servo amplifiers.
14. The external dynamic brake cannot be used to comply with the SEMI-F47 standard. Do not assign DB (Dynamic brake interlock) to the output device. If DB (Dynamic brake interlock) is assigned, the servo amplifier switches to servo-off status when an instantaneous power failure occurs.

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.

Servo Motor Connection Example (Rotary Servo Motor)

Fully Closed Loop Control System with MR-J5-G(4)(-N1)/MR-J5-B(4)/MR-J5-A(4)

●For HK-JT 1000 r/min (15 kW) series/HK-JT 1500 r/min (22 kW) series



Notes:
1. The external dynamic brake cannot be used to comply with the SEMI-F47 standard. Do not assign DB (Dynamic brake interlock) to the output device. If DB (Dynamic brake interlock) is assigned, the servo amplifier switches to servo-off status when an instantaneous power failure occurs.
2. Necessary encoder cables vary depending on the load-side encoder. Refer to "MR-J5 User's Manual" and "Rotary Servo Motor User's Manual (For MR-J5)".
3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier for grounding the servo motor.
4. When configuring a fully closed loop control system with MR-J5-G(4)(-N1)/MR-J5-B(4)/MR-J5-A(4), connect MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set to CN2 connector.
5. Use an external dynamic brake with the 12 kW or larger servo amplifiers. Failure to do so will cause an accident because the servo motor does not stop immediately but coasts at emergency stop. Ensure the safety in the entire equipment. Refer to "MR-J5 User's Manual" when wiring the dynamic brake.
6. Supply power to the cooling fan terminals. Refer to the cooling fan power supply described in the servo motor specifications in this brochure for the required power.
7. Encoder cables are available as an option.
8. Refer to "Rotary Servo Motor User's Manual (For MR-J5)" when fabricating the cables.
9. For fully closed loop control, the load-side encoder and the servo motor encoder are compatible only with two-wire type communication method. Four-wire type cannot be used.
10. For linear encoders, refer to "List of Linear Encoders" in "MELSERVO-J5 catalog (L(NA)03179ENG)". Refer to "MR-J5 User's Manual" for the fully closed loop control with a rotary encoder.

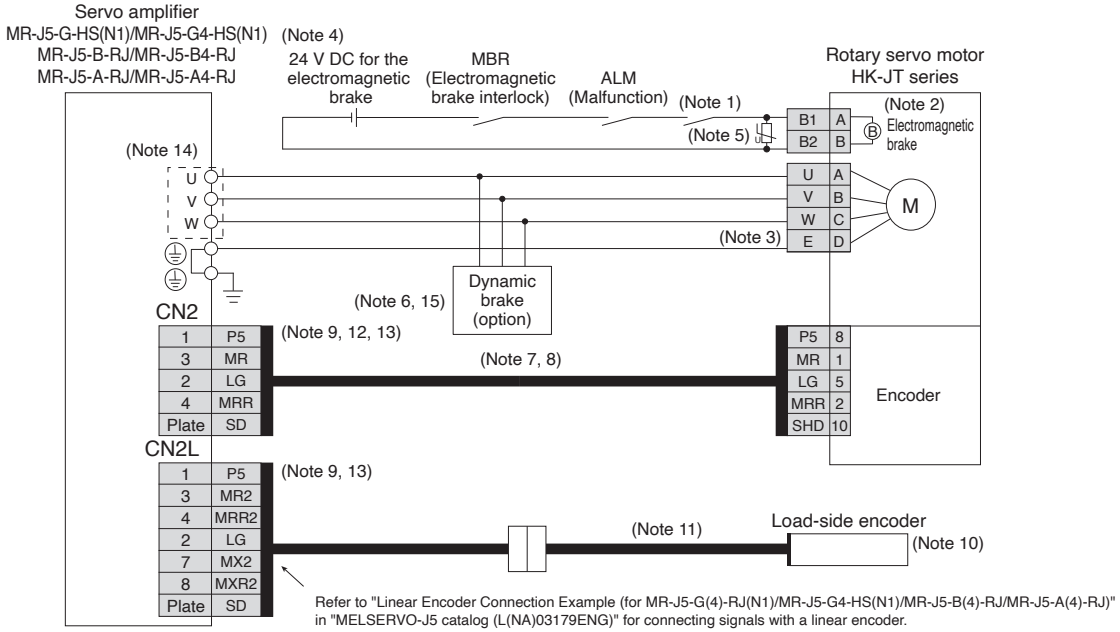
Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Rotary Servo Motor)

G-HS B-RJ A-RJ

Fully Closed Loop Control System with MR-J5-G(4)-HS(N1)/MR-J5-B(4)-RJ/MR-J5-A(4)-RJ

●For HK-JT 1500 r/min (7 kW to 15 kW) series



Notes:
1. Create the circuit in order to shut off by being interlocked with the emergency stop switch.
2. This is for the servo motors with an electromagnetic brake. The electromagnetic brake terminals do not have polarity.
3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier for grounding the servo motor.
4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
5. Install a surge absorber between B1 and B2.
6. Use an external dynamic brake with the 12 kW or larger servo amplifiers. Failure to do so will cause an accident because the servo motor does not stop immediately but coasts at emergency stop. Ensure the safety in the entire equipment. Refer to "MR-J5 User's Manual" when wiring the dynamic brake.
7. Encoder cables are available as an option.
8. Refer to "Rotary Servo Motor User's Manual (For MR-J5)" when fabricating the cables.
9. The load-side encoder and the servo motor encoder are compatible with both two-wire and four-wire type communication methods.
10. For linear encoders, refer to "List of Linear Encoders" in "MELSERVO-J5 catalog (L(NA)03179ENG)". Refer to "MR-J5 User's Manual" for the fully closed loop control with a rotary encoder.
11. Necessary encoder cables vary depending on the load-side encoder. Refer to "MR-J5 User's Manual" and "Rotary Servo Motor User's Manual (For MR-J5)".
12. This wiring of the servo motor encoder is applicable for the two-wire type communication method.
13. When configuring a fully closed loop control system with MR-J5-G(4)-HS(N1)/MR-J5-B(4)-RJ/MR-J5-A(4)-RJ, connect a servo motor encoder to CN2 connector and a load-side encoder to CN2L connector. Do not use MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set.
14. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions in this brochure for 12 kW or larger servo amplifiers. Refer to "MELSERVO-J5 catalog (L(NA)03179ENG)" for 7 kW servo amplifiers.
15. The external dynamic brake cannot be used to comply with the SEMI-F47 standard. Do not assign DB (Dynamic brake interlock) to the output device. If DB (Dynamic brake interlock) is assigned, the servo amplifier switches to servo-off status when an instantaneous power failure occurs.

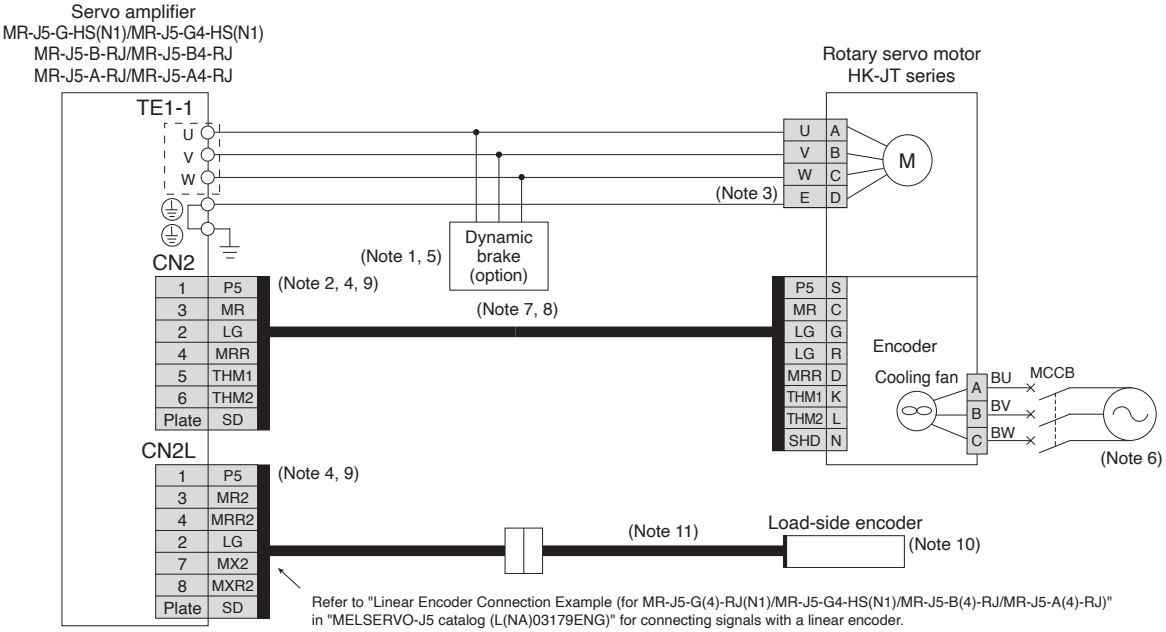
Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Rotary Servo Motor)

G-HS B-RJ A-RJ

Fully Closed Loop Control System with MR-J5-G(4)-HS(N1)/MR-J5-B(4)-RJ/MR-J5-A(4)-RJ

●For HK-JT 1000 r/min (15 kW) series/HK-JT 1500 r/min (22 kW) series



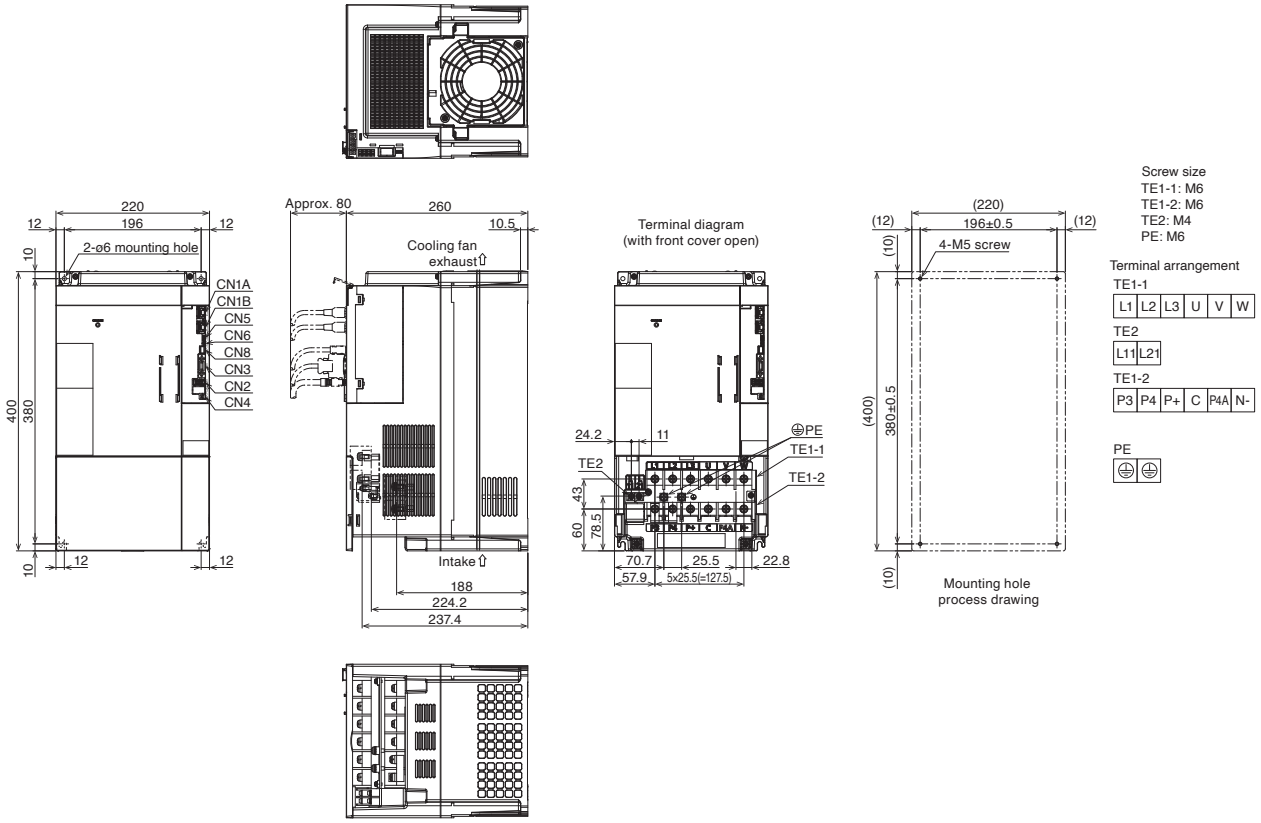
Notes:
1. The external dynamic brake cannot be used to comply with the SEMI-F47 standard. Do not assign DB (Dynamic brake interlock) to the output device. If DB (Dynamic brake interlock) is assigned, the servo amplifier switches to servo-off status when an instantaneous power failure occurs.
2. This wiring of the servo motor encoder is applicable for the two-wire type communication method.
3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier for grounding the servo motor.
4. When configuring a fully closed loop control system with MR-J5-G(4)-HS(N1)/MR-J5-B(4)-RJ/MR-J5-A(4)-RJ, connect a servo motor encoder to CN2 connector and a load-side encoder to CN2L connector. Do not use MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set.
5. Use an external dynamic brake with the 12 kW or larger servo amplifiers. Failure to do so will cause an accident because the servo motor does not stop immediately but coasts at emergency stop. Ensure the safety in the entire equipment. Refer to "MR-J5 User's Manual" when wiring the dynamic brake.
6. Supply power to the cooling fan terminals. Refer to the cooling fan power supply described in the servo motor specifications in this brochure for the required power.
7. Encoder cables are available as an option.
8. Refer to "Rotary Servo Motor User's Manual (For MR-J5)" when fabricating the cables.
9. The load-side encoder and the servo motor encoder are compatible with both two-wire and four-wire type communication methods.
10. For linear encoders, refer to "List of Linear Encoders" in "MELSERVO-J5 catalog (L(NA)03179ENG)". Refer to "MR-J5 User's Manual" for the fully closed loop control with a rotary encoder.
11. Necessary encoder cables vary depending on the load-side encoder. Refer to "MR-J5 User's Manual" and "Rotary Servo Motor User's Manual (For MR-J5)".

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

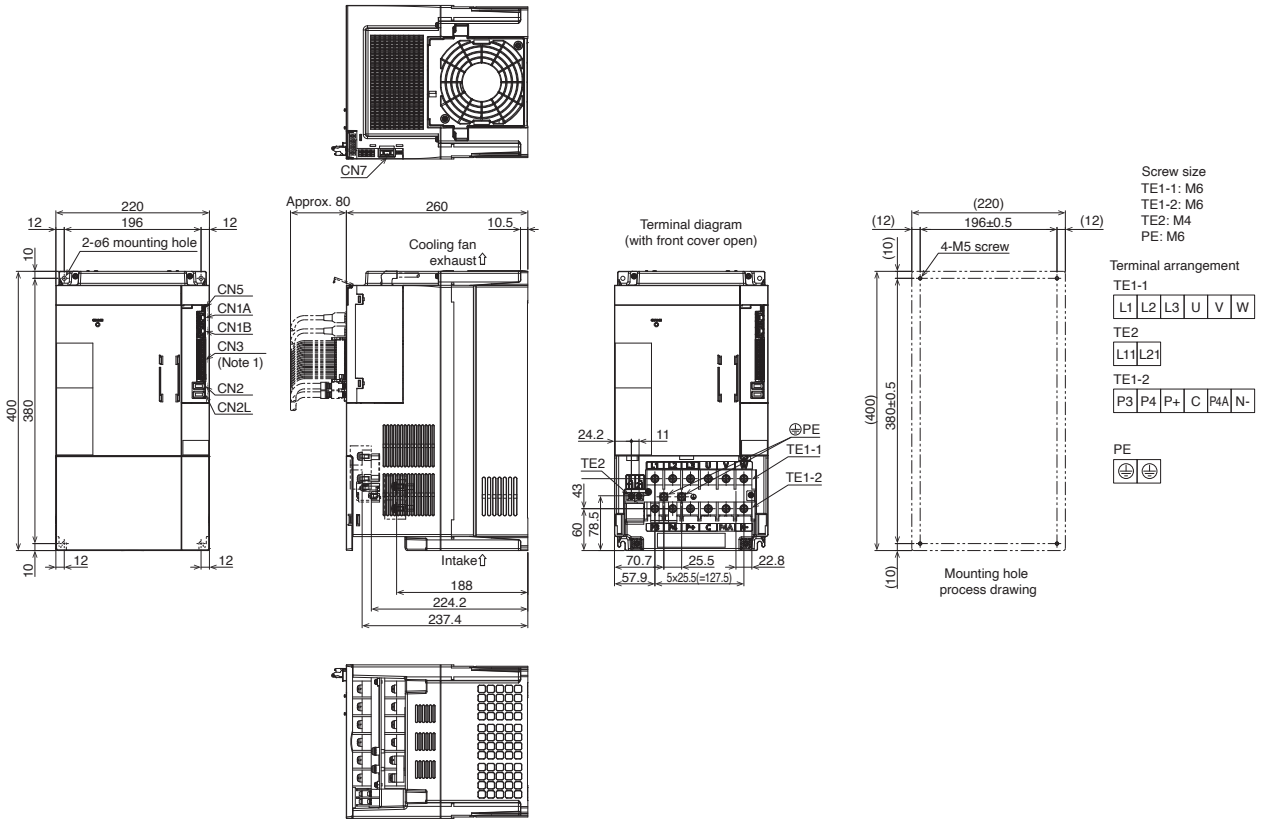
G G-HS

●MR-J5-12KG(4)(-N1), MR-J5-17KG(4)(-N1)



[Unit: mm]

●MR-J5-12KG(4)-HS(N1), MR-J5-17KG(4)-HS(N1)



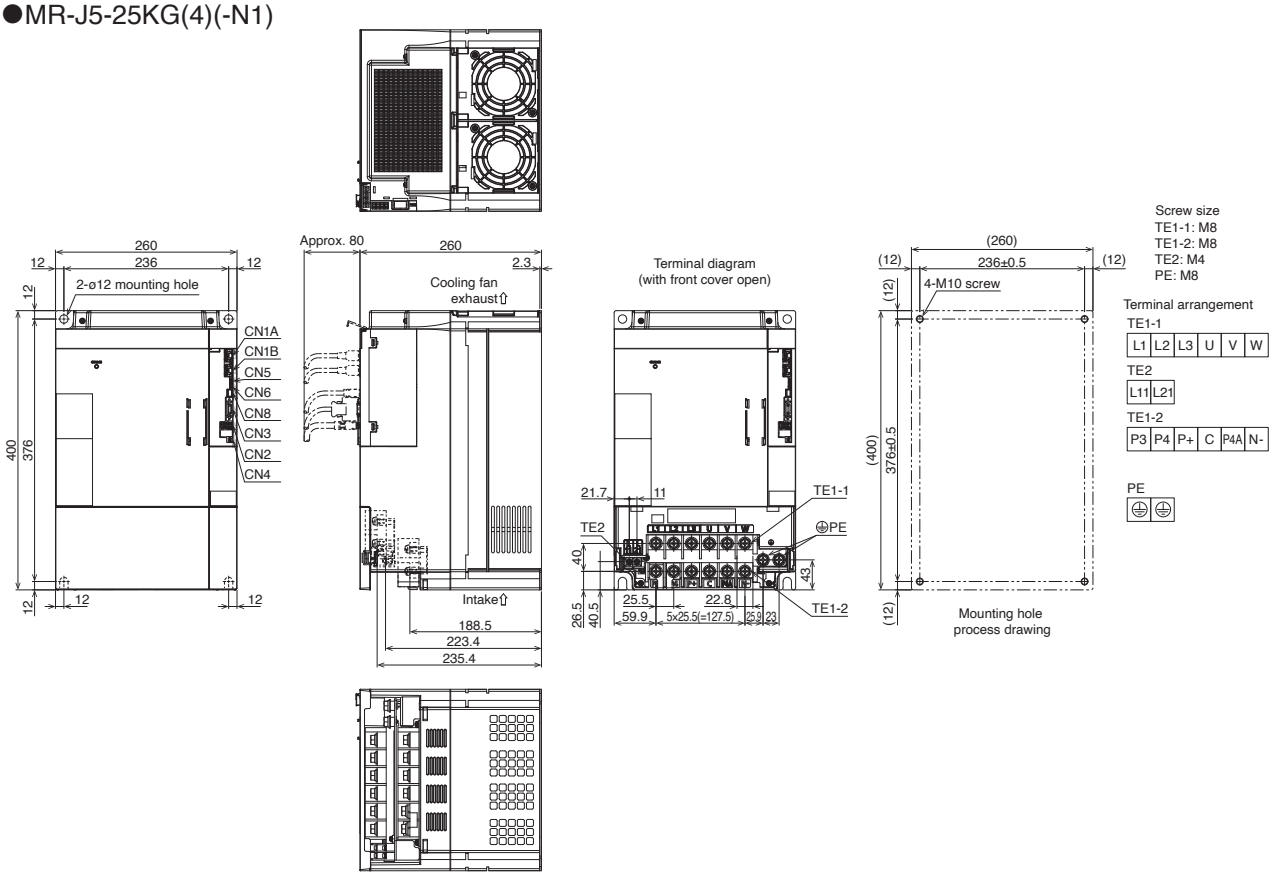
[Unit: mm]

Notes: 1. CN3 connector is supplied with the servo amplifier.

MR-J5-G_ Dimensions

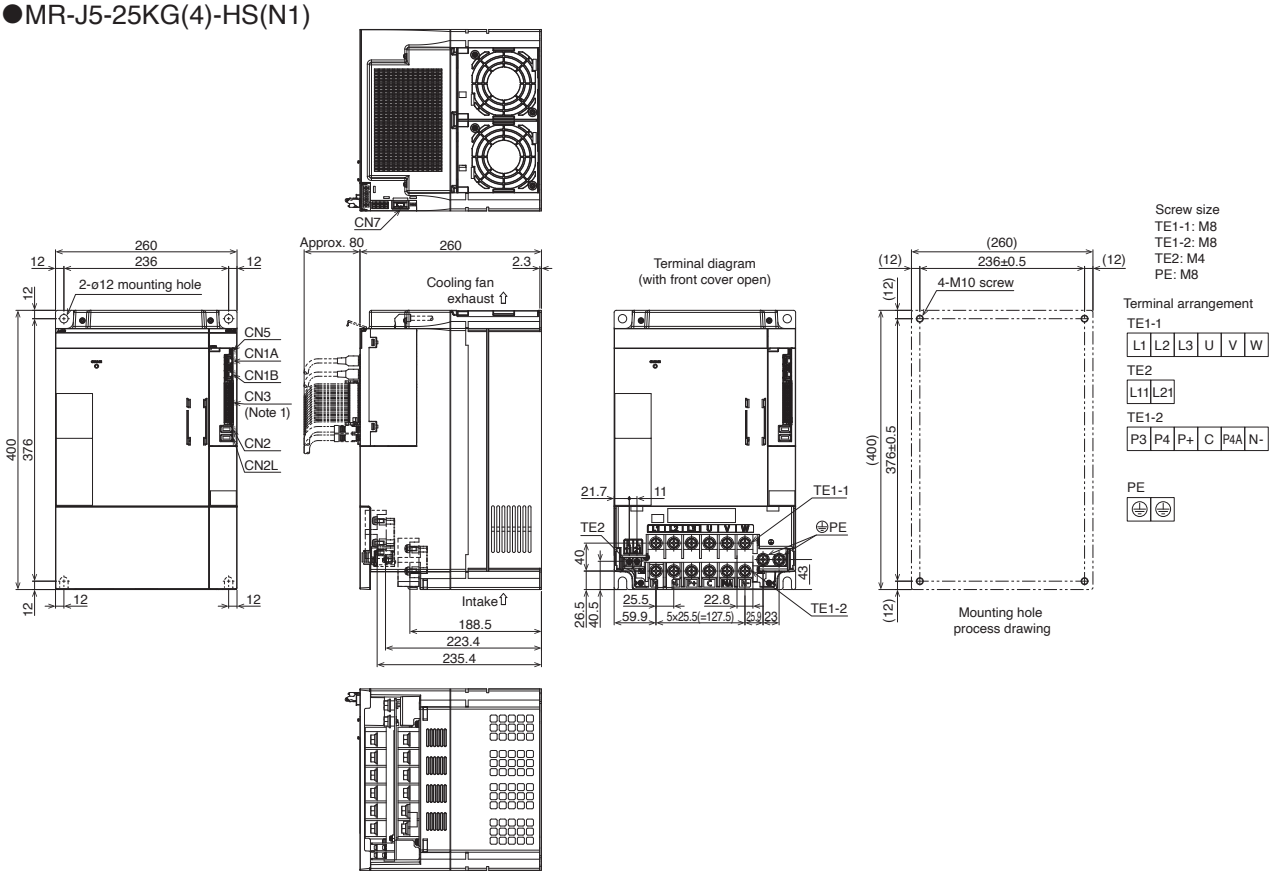
G G-HS

●MR-J5-25KG(4)(-N1)



[Unit: mm]

●MR-J5-25KG(4)-HS(N1)



[Unit: mm]

Notes: 1. CN3 connector is supplied with the servo amplifier.

MR-J5-B_ (SSCNET III/H) Specifications (200 V/400 V)

B B-RJ

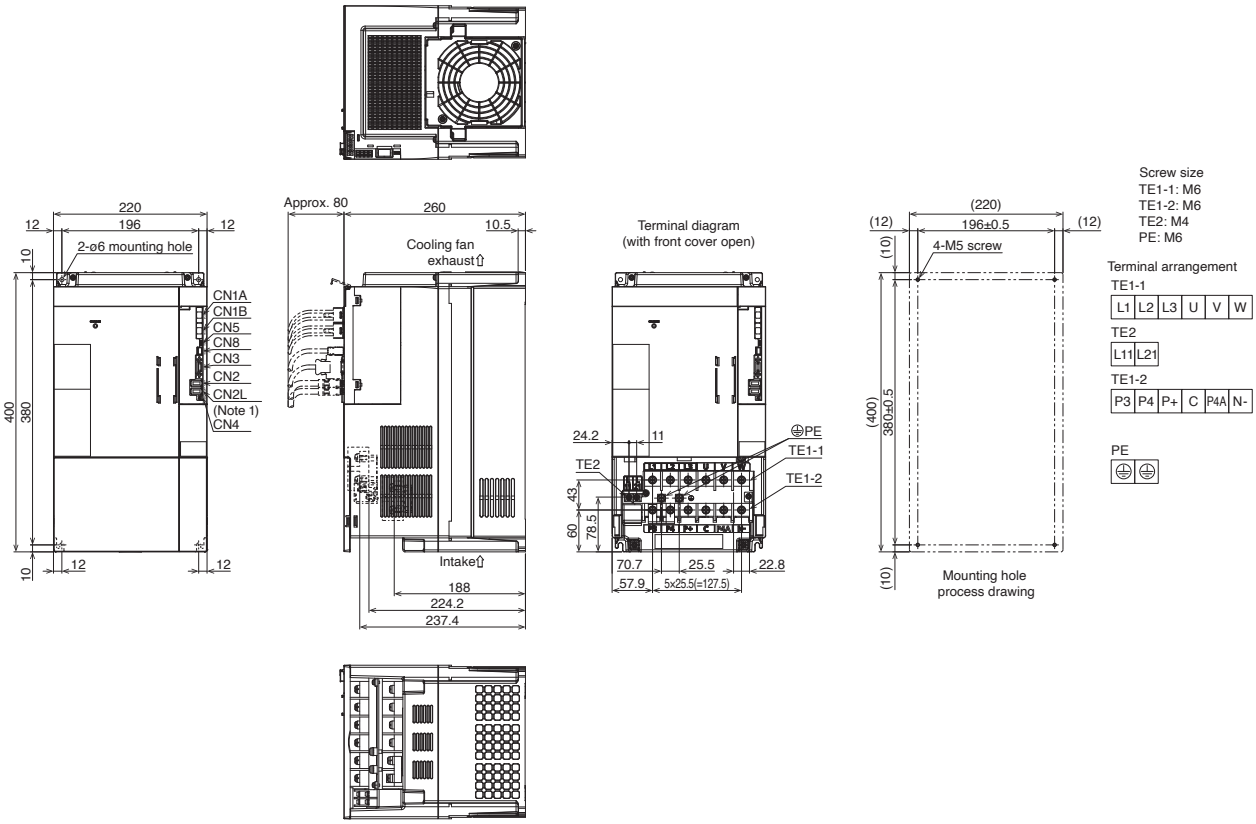
Refer to "MELSERVO-J5 catalog (L(NA)03179ENG)" for the safety sub-function, safety performance, connections with peripheral equipment, standard wiring diagram example, external encoder connection specifications, and linear encoder connection examples.

Servo amplifier model MR-J5-_(-RJ)			12KB	17KB	25KB	12KB4	17KB4	25KB4
Output	Voltage		3-phase 0 V AC to 240 V AC			3-phase 0 V AC to 480 V AC		
	Rated current [A]		68.0	87.0	126.0	32.0	41.0	63.0
Main circuit power supply input	Voltage/ frequency (Note 1)	AC input	3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz		
		DC input (Note 8)	283 V DC to 340 V DC			-		
	Rated current (Note 5) [A]		52.0 (63.6)	72.2 (77.7)	109.7 (132.9)	26.0	36.1	54.8
	Permissible voltage fluctuation	AC input	3-phase 170 V AC to 264 V AC			3-phase 323 V AC to 528 V AC		
		DC input (Note 8)	241 V DC to 374 V DC			-		
	Permissible frequency fluctuation		±5 % maximum					
Control circuit power supply input	Voltage/ frequency	AC input	1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz		
		DC input (Note 8)	283 V DC to 340 V DC			-		
	Rated current [A]		0.3			0.2		
	Permissible voltage fluctuation	AC input	1-phase 170 V AC to 264 V AC			1-phase 323 V AC to 528 V AC		
		DC input (Note 8)	241 V DC to 374 V DC			-		
	Permissible frequency fluctuation		±5 % maximum					
	Power consumption [W]		45					
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 external regenerative resistor (standard accessory) (Note 2, 3, 12, 13) [W]			500 (800)	850 (1300)		500 (800)	850 (1300)	
Dynamic brake (Note 4)			External option (Note 6, 11)					
SSCNET III/H	Communication cycle (Note 10)		0.222 ms, 0.444 ms, 0.888 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			Available					
Load-side encoder interface	MR-J5-B(4)		Mitsubishi Electric high-speed serial communication					
	MR-J5-B(4)-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, scale measurement function, super trace control, continuous operation to torque control mode, driver communication function					
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, magnetic pole detection protection, linear servo control fault protection					
Structure (IP rating)			Force cooling, open (IP20) (Note 7, 9)					
Close mounting			Not possible					
Mass [kg]			12.7		18.1	12.7		18.1

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 values in brackets are the rated current for the 1-phase power supply input.
6. Use an external dynamic brake with the 12 kW or larger servo amplifiers. Failure to do so will cause an accident because the servo motor does not stop immediately but coasts at emergency stop. Ensure the safety in the entire equipment.
7. This product is certified as IP00.
8. For a connection example of power supply circuit with DC input, refer to "MR-J5 User's Manual".
9. Terminal blocks are excluded.
10. The communication cycle depends on the controller specifications and the number of axes connected.
11. The external dynamic brake cannot be used to comply with the SEMI-F47 standard. Do not assign DB (Dynamic brake interlock) to the output device. If DB (Dynamic brake interlock) is assigned, the servo amplifier switches to servo-off status when an instantaneous power failure occurs.
12. The values in brackets are applicable when cooling fans (two units of 92 mm × 92 mm, minimum air flow: 1.0 m^3/min) are installed, and then [Pr. PA02] is changed.
13. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "Model Designation for 1-Axis Servo Amplifier" in this brochure for details.

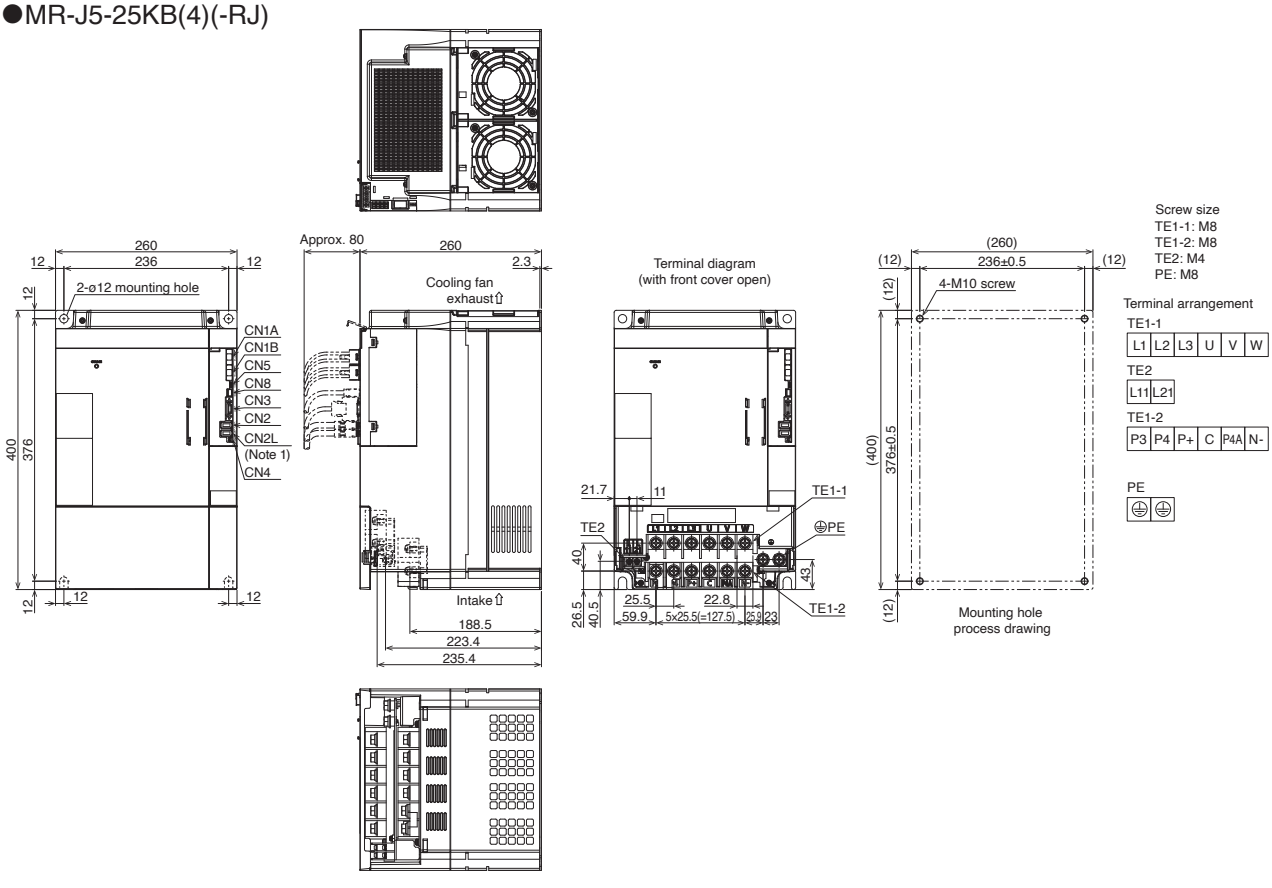
MR-J5-B_ Dimensions

●MR-J5-12KB(4)(-RJ), MR-J5-17KB(4)(-RJ)



[Unit: mm]

●MR-J5-25KB(4)(-RJ)



[Unit: mm]

Notes: 1. CN2L connector is not available for MR-J5-B(4) servo amplifiers.

MR-J5-A_ (General-Purpose Interface) Specifications (200 V/400 V)

A A-RJ

Refer to "MELSERVO-J5 catalog (L(NA)03179ENG)" for the safety sub-function, safety performance, connections with peripheral equipment, standard wiring diagram example, external encoder connection specifications, and linear encoder connection examples.

Servo amplifier model MR-J5-_(-RJ)				12KA	17KA	25KA	12KA4	17KA4	25KA4
Output	Voltage			3-phase 0 V AC to 240 V AC			3-phase 0 V AC to 480 V AC		
	Rated current		[A]	68.0	87.0	126.0	32.0	41.0	63.0
Main circuit power supply input	Voltage/ frequency (Note 1)	AC input		3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz		
		DC input (Note 8)		283 V DC to 340 V DC			-		
	Rated current (Note 10)		[A]	52.0 (63.6)	72.2 (77.7)	109.7 (132.9)	26.0	36.1	54.8
	Permissible voltage fluctuation	AC input		3-phase 170 V AC to 264 V AC			3-phase 323 V AC to 528 V AC		
		DC input (Note 8)		241 V DC to 374 V DC			-		
	Permissible frequency fluctuation			±5 % maximum					
Control circuit power supply input	Voltage/ frequency	AC input		1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz		
		DC input (Note 8)		283 V DC to 340 V DC			-		
	Rated current		[A]	0.3			0.2		
	Permissible voltage fluctuation	AC input		1-phase 170 V AC to 264 V AC			1-phase 323 V AC to 528 V AC		
		DC input (Note 8)		241 V DC to 374 V DC			-		
	Permissible frequency fluctuation			±5 % maximum					
	Power consumption		[W]	45					
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 external regenerative resistor (standard accessory) (Note 2, 3, 5, 12)			[W]	500 (800)	850 (1300)		500 (800)	850 (1300)	
Dynamic brake (Note 4)				External option (Note 6, 11)					
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				Available					
Load-side encoder interface	MR-J5-A(4)			Mitsubishi Electric high-speed serial communication					
	MR-J5-A(4)-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, magnetic pole detection protection, linear servo control fault protection					
Structure (IP rating)				Force cooling, open (IP20) (Note 7, 9)					
Close mounting				Not possible					
Mass			[kg]	12.7		18.1	12.7		18.1

MR-J5-A_ (General-Purpose Interface) Specifications (200 V/400 V)

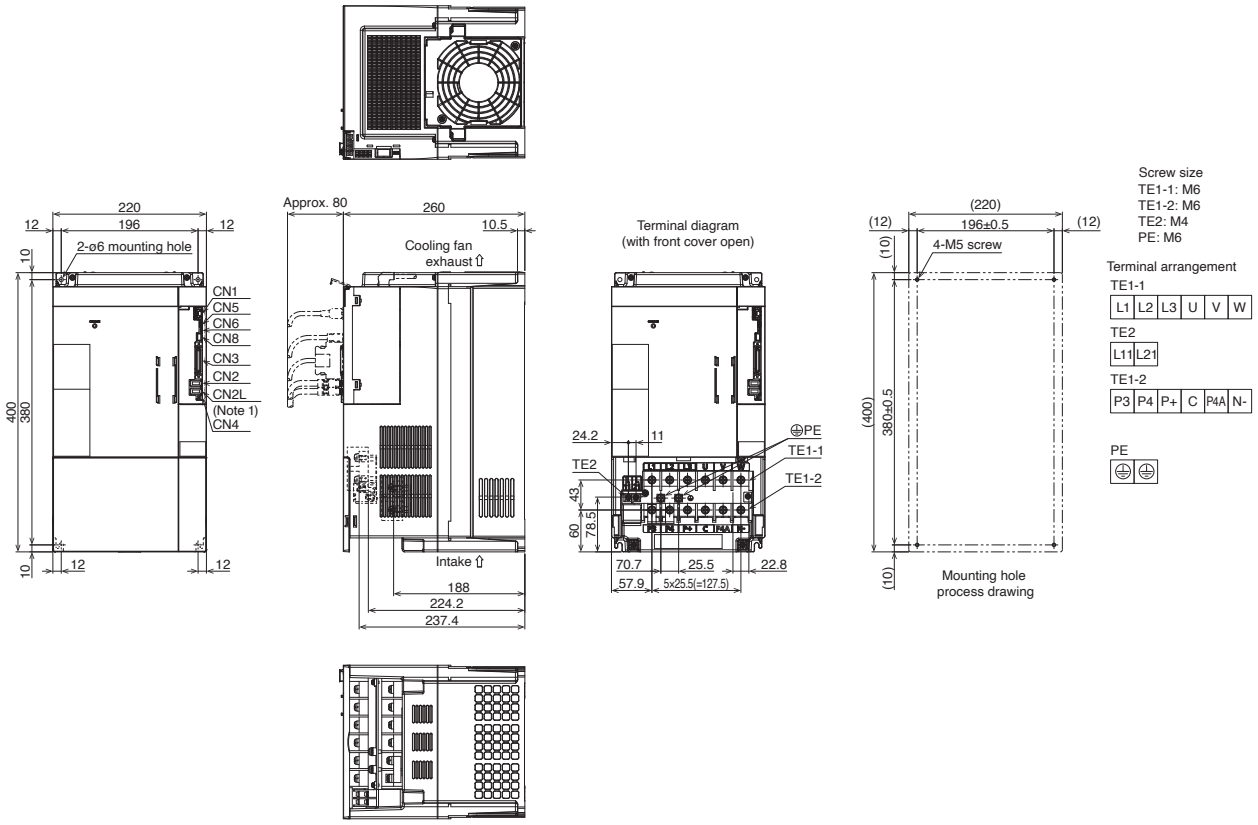
A A-RJ

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. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "Model Designation for 1-Axis Servo Amplifier" in this brochure for details.
6. Use an external dynamic brake with the 12 kW or larger servo amplifiers. Failure to do so will cause an accident because the servo motor does not stop immediately but coasts at emergency stop. Ensure the safety in the entire equipment.
7. This product is certified as IP00.
8. For a connection example of power supply circuit with DC input, refer to "MR-J5 User's Manual".
9. Terminal blocks are excluded.
10. The values in brackets are the rated current for the 1-phase power supply input.
11. The external dynamic brake cannot be used to comply with the SEMI-F47 standard. Do not assign DB (Dynamic brake interlock) to the output device. If DB (Dynamic brake interlock) is assigned, the servo amplifier switches to servo-off status when an instantaneous power failure occurs.
12. The values in brackets are applicable when cooling fans (two units of 92 mm × 92 mm, minimum air flow: 1.0 m^3/min) are installed, and then [Pr. PA02] is changed.

MR-J5-A_ Dimensions

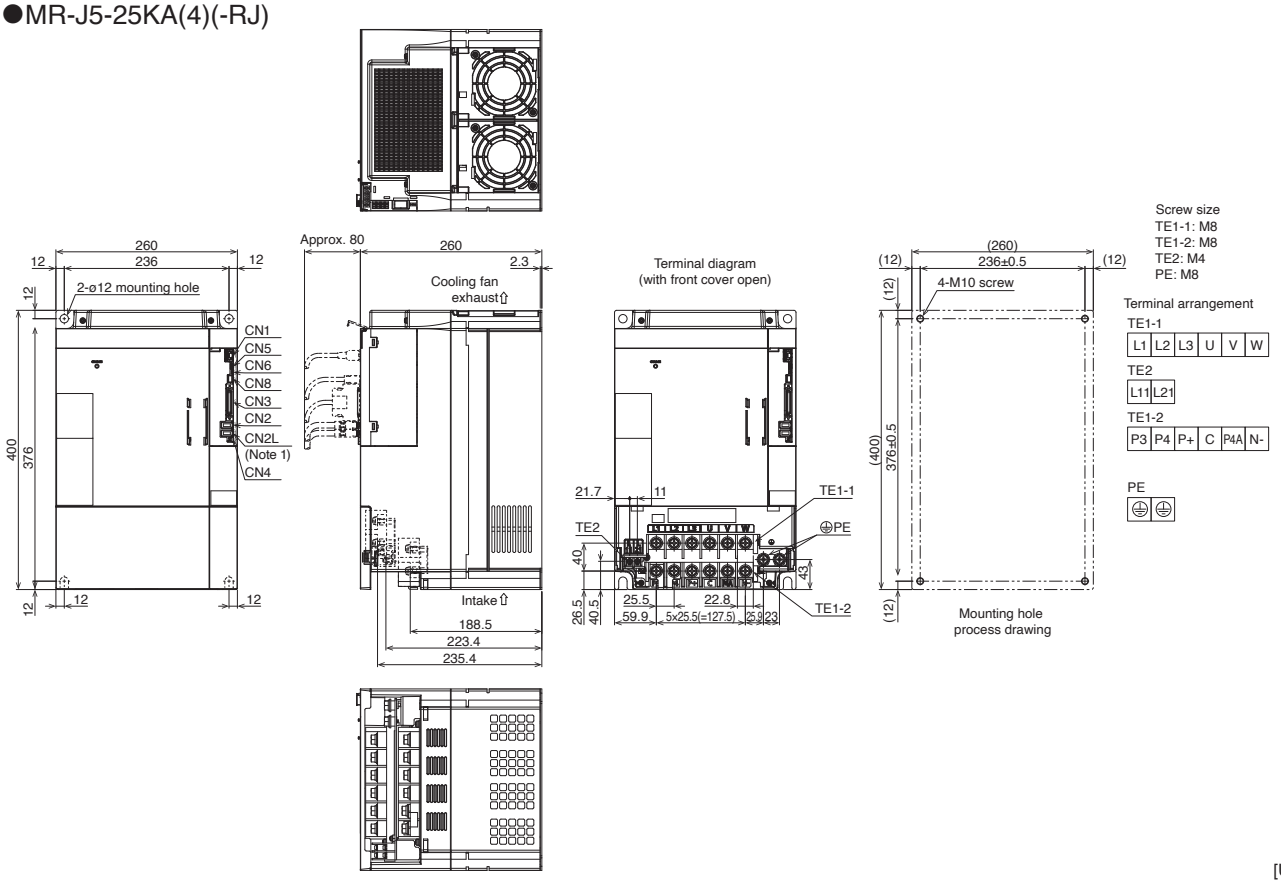
A A-RJ

●MR-J5-12KA(4)(-RJ), MR-J5-17KA(4)(-RJ)



[Unit: mm]

●MR-J5-25KA(4)(-RJ)



[Unit: mm]

Notes: 1. CN2L connector is not available for MR-J5-A(4) servo amplifiers.

Model Designation (Note 1)

●HK-JT series (low inertia, medium/large capacity)

H K - J T 7 0 1 M 4 B J

Symbol	Special specifications
None	Standard
WS	Servo motors with functional safety (Note 2, 3)

Symbol	Shaft shape
None	Standard (straight shaft)
N	Keyed shaft (without a key)

Symbol	Oil seal
J	Installed (Note 4)

Symbol	Electromagnetic brake
None	None
B	Installed

Symbol	Compatible servo amplifier
None	200 V
4	400 V

Symbol	Rated speed [r/min]
1	1000
1M	1500

Symbol	Rated output [kW]
70	7.0
11K	11
15K	15
22K	22

Notes: 1. This section describes what each symbol in a model name indicates. Some combinations of symbols are not available.
2. The dimensions of the servo motors with functional safety are the same as those of the standard servo motors.
3. Available only with the servo motors with the rated speed of 1500 r/min.
4. Oil seal is installed in HK-JT series as standard.

HK-JT_J (Low Inertia, Medium/Large Capacity)

Specifications when connected with a 200 V servo amplifier (Note 6)

Flange size		[mm]	220 × 220			250 × 250			
Rotary servo motor model		HK-JT	701MJ	11K1MJ	15K1MJ	15K1J		22K1MJ	
Continuous running duty (Note 3)	Rated output	[kW]	7.0	11	15	15		22	
	Rated torque (Note 4)	[N•m]	44.6	70.0	95.5	143		140	
Maximum torque		[N•m]	134	210	286	429		420	
Rated speed (Note 3)		[r/min]	1500			1000		1500	
Maximum speed (Note 3)		[r/min]	3000			1500		2500	
Power rate at continuous rated torque [kW/s]	Without electromagnetic brake		113	223	289	418		401	
	With electromagnetic brake		101	204	271	-			
Rated current		[A]	34	61	76	67		99	
Maximum current		[A]	111	200	246	231		315	
Moment of inertia J [× 10^{-4} kg•m^2]	Without electromagnetic brake		176	220	315	489			
	With electromagnetic brake		196	240	336	-			
Recommended load to motor inertia ratio (Note 1)			10 times or less (Note 5)	10 times or less					
Speed/position detector			Batteryless absolute/incremental 26-bit encoder (resolution: 67,108,864 pulses/rev)						
Type			Permanent magnet synchronous motor						
Oil seal			Installed						
Electromagnetic brake			None (Servo motors with an electromagnetic brake are available.)			None			
Thermistor			None			Built-in			
Insulation class			155 (F)						
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)			Totally enclosed, force cooling (IP rating: IP44) (Note 2)			
Vibration resistance *1		[m/s^2]	X: 24.5, Y: 24.5						
Vibration rank			V10 *3						
Permissible load for the shaft *2	L	[mm]	85	116		140			
	Radial	[N]	2450	2940		3234			
	Thrust	[N]	980			1470			
Mass [kg]	Without electromagnetic brake		53	62	86	120			
	With electromagnetic brake		65	74	97	-			
Cooling fan	Power supply voltage		-			3-phase 200 V AC to 240 V AC			
	Frequency	[Hz]	-			50	60	50	60
	Input	[W]	-			65	85	65	85
	Current	[A]	-			0.20	0.23	0.20	0.23

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" on p. 27 in this brochure for the shaft-through portion.
3. The continuous running duty and the speed are not guaranteed when the power supply voltage is dropped.
4. 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.
5. When the speed exceeds 2500 r/min, the recommended load to motor inertia ratio is 5 times or less.
6. Refer to "Environment" in "MELSERVO-J5 catalog (L(NA)03179ENG)" for the operating environment of the servo motors.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 27 in this brochure for details about asterisks 1 to 3.

Electromagnetic Brake Specifications (Note 1)

Model		HK-JT	701MBJ	11K1MBJ	15K1MBJ
Type (Note 3)			Spring actuated type safety brake		
Rated voltage (Note 4)			24 V DC (-10 % to 0 %)		
Power consumption		[W] at 20 °C	32		
Electromagnetic brake static friction torque (Note 5)		[N•m]	126 or higher		
Permissible braking work	Per braking	[J]	5000		
	Per hour	[J]	45200		
Electromagnetic brake life (Note 2)	Number of braking times		20000		
	Work per braking	[J]	400		

Notes: 1. The electromagnetic brake is for holding. It cannot be used for deceleration applications.
2. Brake lining wear due to braking will increase the brake gap, but the gap is not adjustable. Therefore, the brake life indicates the number of times the brake can be applied before gap adjustment becomes necessary.
3. This type does not have a manual release mechanism. Use a 24 V DC power supply to release the brake electrically.
4. Prepare a power supply exclusively for the electromagnetic brake.
5. The value of the brake static friction torque is the lower limit in the initial state at 20 °C.

HK-JT_4J (Low Inertia, Medium/Large Capacity)

Specifications when connected with a 400 V servo amplifier (Note 6)

Flange size		[mm]	220 × 220			250 × 250	
Rotary servo motor model		HK-JT	701M4J	11K1M4J	15K1M4J	22K1M4J	
Continuous running duty (Note 3)	Rated output	[kW]	7.0	11	15	22	
	Rated torque (Note 4)	[N•m]	44.6	70.0	95.5	140	
Maximum torque		[N•m]	134	210	286	420	
Rated speed (Note 3)		[r/min]	1500				
Maximum speed (Note 3)		[r/min]	3000			2500	
Power rate at continuous rated torque [kW/s]	Without electromagnetic brake		113	223	289	401	
	With electromagnetic brake		101	204	271	-	
Rated current		[A]	17	31	38	50	
Maximum current		[A]	56	100	123	170	
Moment of inertia J [× 10^{-4} kg•m^2]	Without electromagnetic brake		176	220	315	489	
	With electromagnetic brake		196	240	336	-	
Recommended load to motor inertia ratio (Note 1)			10 times or less (Note 5)	10 times or less			
Speed/position detector			Batteryless absolute/incremental 26-bit encoder (resolution: 67,108,864 pulses/rev)				
Type			Permanent magnet synchronous motor				
Oil seal			Installed				
Electromagnetic brake			None (Servo motors with an electromagnetic brake are available.)			None	
Thermistor			None			Built-in	
Insulation class			155 (F)				
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)			Totally enclosed, force cooling (IP rating: IP44) (Note 2)	
Vibration resistance *1		[m/s^2]	X: 24.5, Y: 24.5				
Vibration rank			V10 *3				
Permissible load for the shaft *2	L	[mm]	85	116		140	
	Radial	[N]	2450	2940		3234	
	Thrust	[N]	980			1470	
Mass [kg]	Without electromagnetic brake		53	62	86	120	
	With electromagnetic brake		65	74	97	-	
Cooling fan	Power supply voltage		-			3-phase 380 V AC to 480 V AC	
	Frequency	[Hz]	-			50	60
	Input	[W]	-			65	90
	Current	[A]	-			0.12	0.14

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" on p. 27 in this brochure for the shaft-through portion.
3. The continuous running duty and the speed are not guaranteed when the power supply voltage is dropped.
4. 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.
5. When the speed exceeds 2000 r/min, the recommended load to motor inertia ratio is 7 times or less.
6. Refer to "Environment" in "MELSERVO-J5 catalog (L(NA)03179ENG)" for the operating environment of the servo motors.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 27 in this brochure for details about asterisks 1 to 3.

Electromagnetic Brake Specifications (Note 1)

Model		HK-JT	701M4BJ	11K1M4BJ	15K1M4BJ
Type (Note 3)			Spring actuated type safety brake		
Rated voltage (Note 4)			24 V DC (-10 % to 0 %)		
Power consumption		[W] at 20 °C	32		
Electromagnetic brake static friction torque (Note 5)		[N•m]	126 or higher		
Permissible braking work	Per braking	[J]	5000		
	Per hour	[J]	45200		
Electromagnetic brake life (Note 2)	Number of braking times		20000		
	Work per braking	[J]	400		

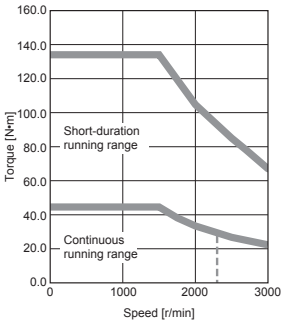
Notes: 1. The electromagnetic brake is for holding. It cannot be used for deceleration applications.
2. Brake lining wear due to braking will increase the brake gap, but the gap is not adjustable. Therefore, the brake life indicates the number of times the brake can be applied before gap adjustment becomes necessary.
3. This type does not have a manual release mechanism. Use a 24 V DC power supply to release the brake electrically.
4. Prepare a power supply exclusively for the electromagnetic brake.
5. The value of the brake static friction torque is the lower limit in the initial state at 20 °C.

HK-JT_J Torque Characteristics (Note 1)

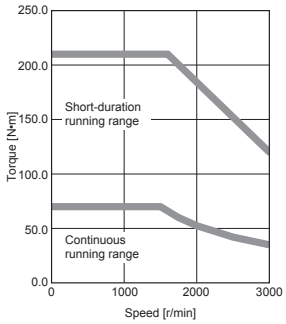
When connected with a 200 V servo amplifier

: For 3-phase 200 V AC

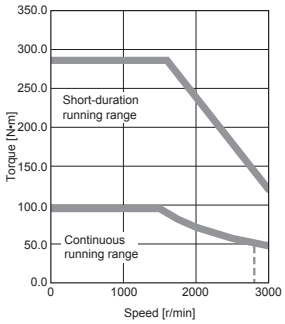
HK-JT701MJ
Standard torque



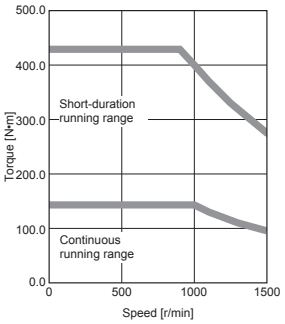
HK-JT11K1MJ
Standard torque



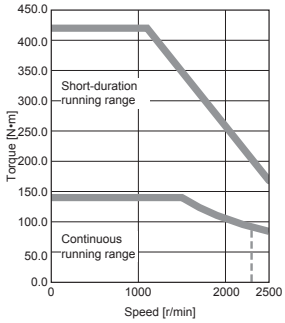
HK-JT15K1MJ
Standard torque



HK-JT15K1J
Standard torque



HK-JT22K1MJ
Standard torque

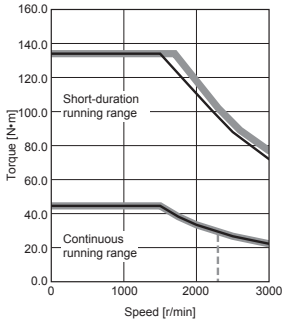


HK-JT_4J Torque Characteristics (Note 2)

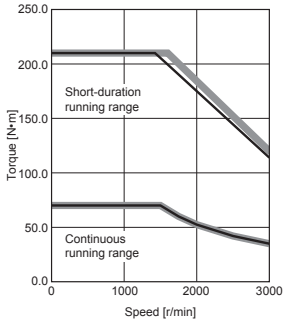
When connected with a 400 V servo amplifier

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

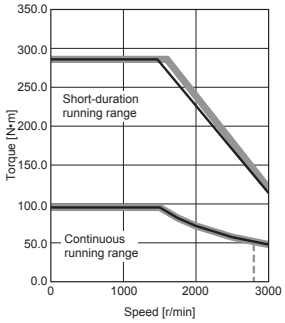
HK-JT701M4J
Standard torque



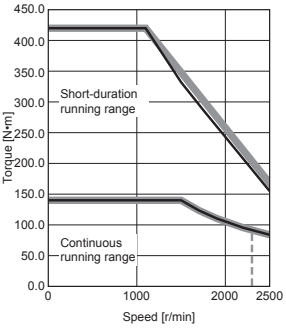
HK-JT11K1M4J
Standard torque



HK-JT15K1M4J
Standard torque



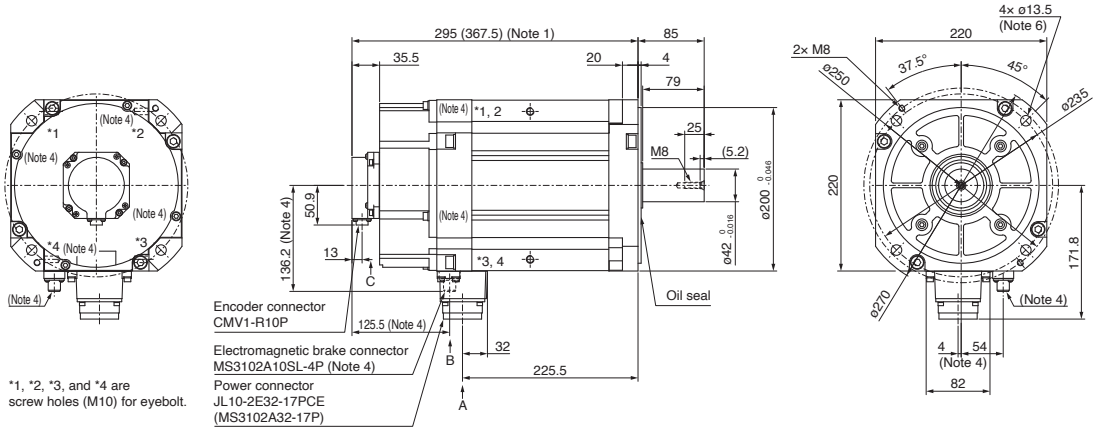
HK-JT22K1M4J
Standard torque



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 170 V AC
2. 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

HK-JT Series Dimensions (Note 3, 5)

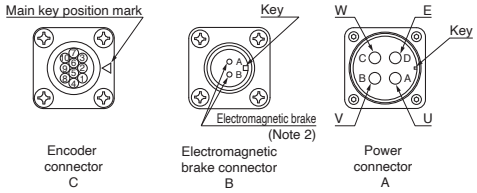
HK-JT701M(B)J,
HK-JT701M4(B)J



*1, *2, *3, and *4 are screw holes (M10) for eyebolt.

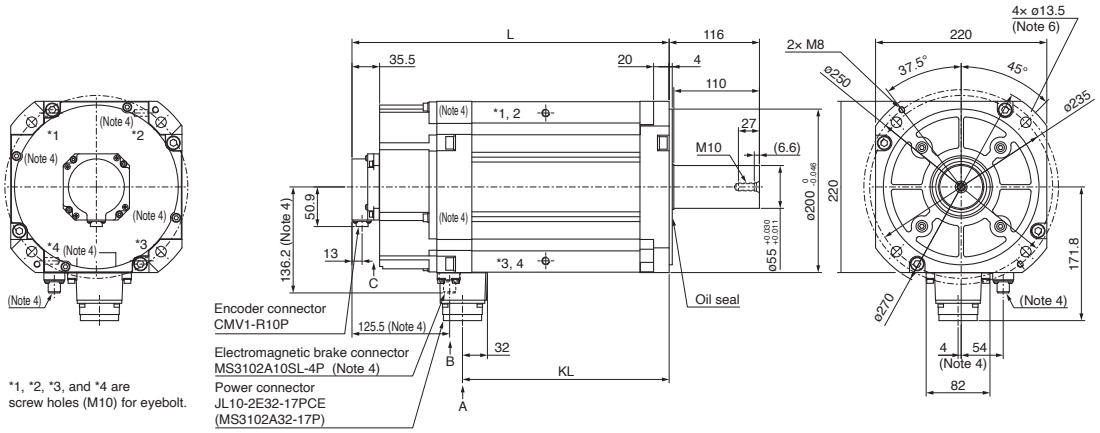
Encoder

Pin No.	Signal name	Pin No.	Signal name
1	MR	6	-
2	MRR	7	-
3	-	8	P5
4	-	9	-
5	LG	10	SHD



[Unit: mm]

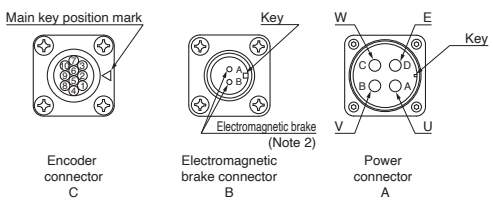
HK-JT11K1M(B)J, HK-JT15K1M(B)J,
HK-JT11K1M4(B)J, HK-JT15K1M4(B)J



*1, *2, *3, and *4 are screw holes (M10) for eyebolt.

Encoder

Pin No.	Signal name	Pin No.	Signal name
1	MR	6	-
2	MRR	7	-
3	-	8	P5
4	-	9	-
5	LG	10	SHD



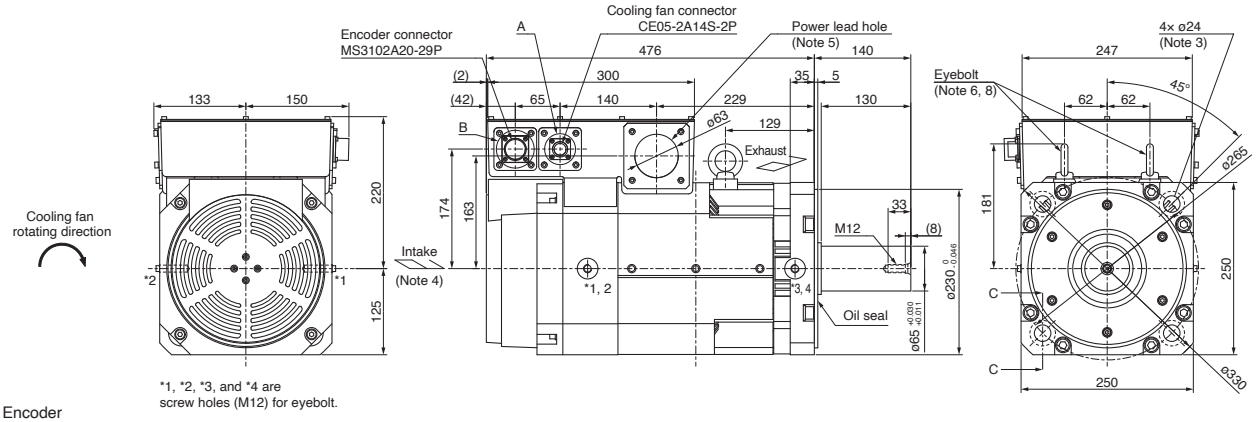
Model	Variable dimensions (Note 1)	
	L	KL
HK-JT11K1M(B)J HK-JT11K1M4(B)J	335 (407.5)	265.5
HK-JT15K1M(B)J HK-JT15K1M4(B)J	435 (507.5)	365.5

[Unit: mm]

Notes:
1. The dimensions in brackets are for the models with an electromagnetic brake.
2. The electromagnetic brake terminals do not have polarity.
3. Use a friction coupling to fasten a load.
4. Only for the models with an electromagnetic brake.
5. The actual dimensions may be up to 3 mm larger than those shown in the drawing because of shifting and variance of parts that occur during the assembly and manufacture of the rotary servo motors. The dimensions and tolerances shown are applicable at a temperature of 20 °C and may vary depending on the ambient temperature. Design the machine to allow for sufficient space.
6. Use hexagon socket head cap screws when mounting the servo motor.

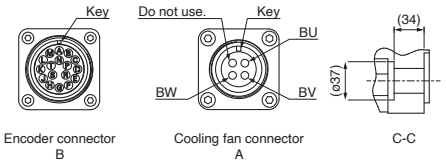
HK-JT Series Dimensions (Note 1, 2, 7)

HK-JT15K1J, HK-JT22K1MJ,
HK-JT22K1M4J



Encoder

Pin No.	Signal name	Pin No.	Signal name
A	-	K	THM1
B	-	L	THM2
C	MR	M	-
D	MRR	N	SHD
E	-	P	-
F	-	R	LG
G	LG	S	P5
H	-	T	-
J	-	-	-



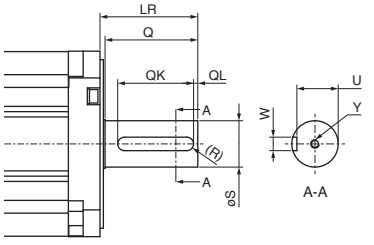
[Unit: mm]

Notes:
1. Use a friction coupling to fasten a load.
2. The actual dimensions may be up to 3 mm larger than those shown in the drawing because of shifting and variance of parts that occur during the assembly and manufacture of the rotary servo motors. The dimensions and tolerances shown are applicable at a temperature of 20 °C and may vary depending on the ambient temperature. Design the machine to allow for sufficient space.
3. Use hexagon socket head cap screws when mounting the servo motor.
4. Leave a clearance of at least 150 mm between the intake side of the servo motor and wall.
5. Prevent oil, water, dust, and other foreign matter from entering the servo motor through the lead hole.
6. A washer is placed between the eyebolt and the servo motor to adjust the bolt angle.
7. The terminal block in the terminal box consists of M10 screws for the motor power input (U/V/W).
8. When using the servo motor without the eyebolt, plug the threaded hole with a bolt of M12 × 20 or shorter.

HK-JT Series with Special Shaft Dimensions

N: Keyed shaft (without a key) (Note 1, 2)

Model	Variable dimension								
	S	LR	Q	W	QK	QL	U	R	Y
HK-JT701M(4)JN	$42^{\ 0}_{-0.016}$	85	79	$12^{\ 0}_{-0.040}$	70	5	$37^{\ 0}_{-0.12}$	6	M8×25
HK-JT11K1M(4)JN HK-JT15K1M(4)JN	$55^{+0.030}_{+0.011}$	116	110	$16^{\ 0}_{-0.040}$	90	5	$49^{\ 0}_{-0.12}$	8	M10×27
HK-JT15K1JN HK-JT22K1M(4)JN	$65^{+0.030}_{+0.011}$	140	130	$18^{\ 0}_{-0.040}$	120	5	$58^{\ 0}_{-0.12}$	9	M12×33



[Unit: mm]

Notes:
1. Do not use the servo motors with a keyed shaft for frequent start/stop applications as this may cause the damage to the shaft.
2. The servo motor is supplied without a key. The user needs to prepare a key.

Power Supply Capacity

The power supply capacity of servo amplifier is the same when used with either a 3-phase power supply input or a 1-phase power supply input.
When the servo motor runs at less than the rated speed, the power supply capacity is smaller than the value in the table.

200 V

Rotary servo motor		Servo amplifier	Power supply capacity [kVA] (Note 1)
HK-JT	HK-JT701MJ	MR-J5-700G/B/A	10
	HK-JT11K1MJ	MR-J5-12KG/B/A	16
	HK-JT15K1MJ	MR-J5-17KG/B/A	22
	HK-JT15K1J	MR-J5-17KG/B/A	22
	HK-JT22K1MJ	MR-J5-25KG/B/A	33

Notes: 1. The power supply capacity varies depending on the power supply impedance.

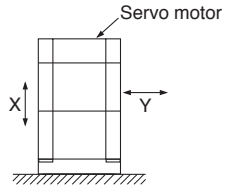
400 V

Rotary servo motor		Servo amplifier	Power supply capacity [kVA] (Note 1)
HK-JT	HK-JT701M4J	MR-J5-700G4/B4/A4	10
	HK-JT11K1M4J	MR-J5-12KG4/B4/A4	16
	HK-JT15K1M4J	MR-J5-17KG4/B4/A4	22
	HK-JT22K1M4J	MR-J5-25KG4/B4/A4	33

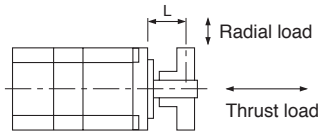
Notes: 1. The power supply capacity varies depending on the power supply impedance.

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.

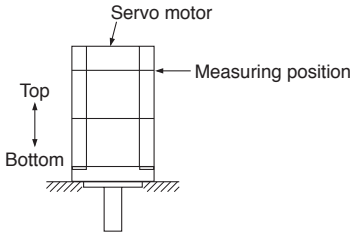


*2. Refer to the diagram below for the permissible load for the shaft. Ensure that loads applied on the shaft do not exceed the values specified in the table. The values in the table are applicable when each load is applied singly.

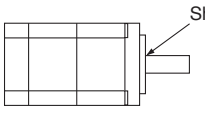


L: Distance between the flange mounting surface and the center of load

*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:

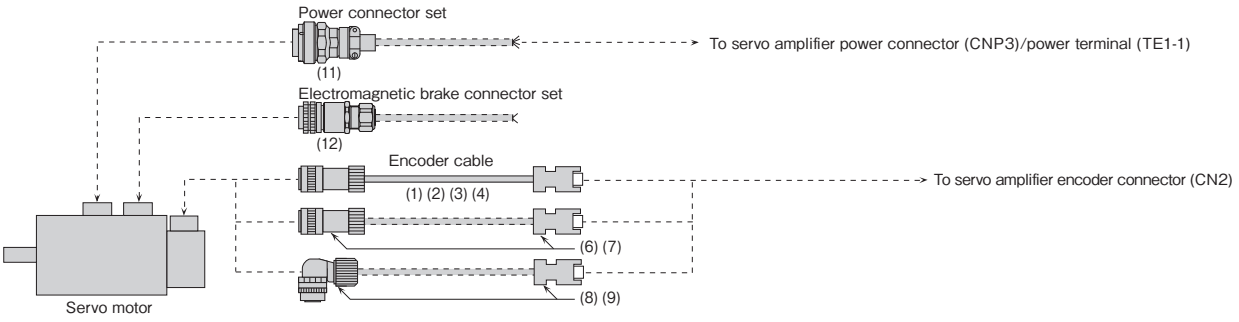


*4. Refer to the diagram below for the shaft-through portion.

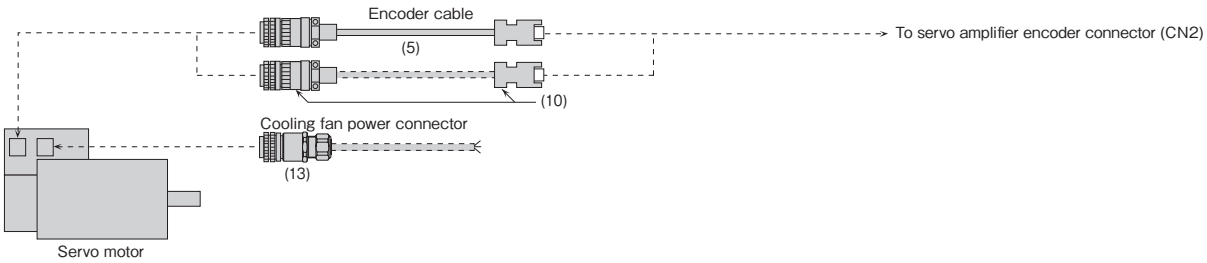


Configuration Example for Rotary Servo Motors (Note 1)

HK-JT 1500 r/min (7 kW to 15 kW) series



HK-JT 1000 r/min (15 kW) series/HK-JT 1500 r/min (22 kW) series



Notes: 1. Cables drawn with dashed lines need to be fabricated by users. Refer to "Rotary Servo Motor User's Manual (For MR-J5)" when fabricating the cables.

Cables and Connectors for Rotary Servo Motors

Refer to "Details of Option Connectors for Rotary Servo Motors" in this brochure for the detailed models.

No.	Item	Application	Bending life (Note 4)	Cable length	Model	Description/IP rating (Note 1)
(1)	Encoder cable (Note 2, 3)	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J	Long bending life	2 m	MR-J3ENSCBL2M-H	Encoder connector — Servo amplifier connector IP67
				5 m	MR-J3ENSCBL5M-H	
				10 m	MR-J3ENSCBL10M-H	
(2)				20 m	MR-AENSCBL20M-H	
				30 m	MR-AENSCBL30M-H	
				40 m	MR-AENSCBL40M-H	
				50 m	MR-AENSCBL50M-H	
(3)			Standard	2 m	MR-J3ENSCBL2M-L	
				5 m	MR-J3ENSCBL5M-L	
				10 m	MR-J3ENSCBL10M-L	
(4)				20 m	MR-AENSCBL20M-L	
				30 m	MR-AENSCBL30M-L	
(5)	Encoder cable (Note 3, 5)	HK-JT15K1J, 22K1M(4)J	Long bending life	2 m	MR-AENECBL2M-H-MTH	Encoder connector — Servo amplifier connector IP67
				5 m	MR-AENECBL5M-H-MTH	
				10 m	MR-AENECBL10M-H-MTH	
				20 m	MR-AENECBL20M-H-MTH	
				30 m	MR-AENECBL30M-H-MTH	
				40 m	MR-AENECBL40M-H-MTH	
				50 m	MR-AENECBL50M-H-MTH	

Notes: 1. The IP rating indicated is for the connector's protection against ingress of dust and water when coupled to a servo motor. If the IP rating of the servo motor differs from that of these connectors, overall IP rating depends on the lowest of all.
2. For unlisted lengths of the cables, please contact Mitsubishi Electric System & Service Co., Ltd. OVERSEAS SERVICE SECTION. (Email: osb.webmaster@melsc.jp)
3. Encoder cables are not subject to Low Voltage Directive (50 V AC to 1000 V AC and 75 V DC to 1500 V DC).
4. Long bending life cables and standard cables are for moving parts and fixed parts respectively.
5. This encoder cable includes thermistor signal wires.

Cables and Connectors for Rotary Servo Motors

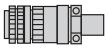
Refer to "Details of Option Connectors for Rotary Servo Motors" in this brochure for the detailed models.

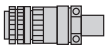
No.	Item	Application	Bending life	Cable length	Model	Description/IP rating (Note 1)
(6)	Encoder connector set (Note 2, 3) (one-touch connection type)	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J (straight type)	-	-	MR-J3SCNS	Encoder connector / Servo amplifier connector  IP67 Applicable cable Wire size: 0.5 mm² (AWG 20) or smaller Cable OD: 5.5 mm to 9.0 mm
(7)	Encoder connector set (Note 2, 3, 4) (screw type)		-	-	MR-ENCNS2	
(8)	Encoder connector set (Note 2, 3, 4) (one-touch connection type)	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J (angle type)	-	-	MR-J3SCNSA	Encoder connector / Servo amplifier connector  IP67 Applicable cable Wire size: 0.5 mm² (AWG 20) or smaller Cable OD: 5.5 mm to 9.0 mm
(9)	Encoder connector set (Note 2, 3, 4) (screw type)		-	-	MR-ENCNS2A	
(10)	Encoder connector set	HK-JT15K1J, 22K1M(4)J	-	-	MR-ENECNS	Encoder connector / Servo amplifier connector  IP67 Applicable cable Wire size: 0.3 mm² to 1.25 mm² (AWG 22 to 16) Cable OD: 6.8 mm to 10 mm
(11)	Power connector set (Note 4, 5) (one-touch connection type)	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J	-	-	MR-APWCNS3	Power connector  IP67 Applicable cable Wire size: 22 mm² (AWG 4) or smaller Cable OD: 22 mm to 25 mm
(12)	Electromagnetic brake connector set	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J	-	-	MR-BKCN	Electromagnetic brake connector  IP67 Applicable cable Wire size: 0.3 mm² to 1.25 mm² (AWG 22 to 16) Cable OD: 5.0 mm to 8.3 mm
(13)	Cooling fan power connector set (Note 4)	HK-JT15K1J, 22K1M(4)J	-	-	MR-PWCNF	Power connector  IP67 Applicable cable Wire size: 0.3 mm² to 1.25 mm² (AWG 22 to 16) Cable OD: 8.3 mm to 11.3 mm

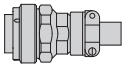
Notes: 1. The IP rating indicated is for the connector's protection against ingress of dust and water when coupled to a servo motor. If the IP rating of the servo motor differs from that of these connectors, overall IP rating depends on the lowest of all.
2. Cable clamps and bushings for cable OD of 5.5 mm to 7.5 mm and of 7.0 mm to 9.0 mm are included in the set.
3. The connector set contains a plug and contacts. Using contacts for other plugs may damage the connector. Use the enclosed contacts.
4. When fabricating the cables, please contact Mitsubishi Electric System & Service Co., Ltd. OVERSEAS SERVICE SECTION. (Email: osb.webmaster@melsc.jp)
5. When the screw type is required, refer to "Products on the Market for Rotary Servo Motors" in this brochure.

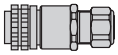
Details of Option Connectors for Rotary Servo Motors

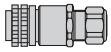
For details on connectors not described here, refer to "MELSERVO-J5 catalog (L(NA)03179ENG)".

Model	Encoder connector	Servo amplifier connector
MR-AENECBL_M-H-MTH	 Plug: D/MS3106A20-29S(D190)(R1) Backshell: CE02-20BS-S-D(R1) (straight) Cable clamp: CE3057-12A-3-D(R1) (DDK Ltd.)	 Connector set: 54599-1016 (Molex, LLC) or Receptacle: 36210-0100PL Shell kit: 36310-3200-008 (3M)

Model	Encoder connector	Servo amplifier connector
MR-ENECNS	 Plug: D/MS3106A20-29S(D190) Backshell: CE02-20BS-S-D (straight) Cable clamp: CE3057-12A-3-D (DDK Ltd.)	 Receptacle: 36210-0100PL Shell kit: 36310-3200-008 (3M) or Connector set: 54599-1019 (Molex, LLC)

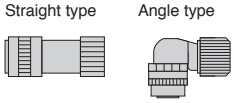
Model	Power connector	
MR-APWCNS3		Plug: JL10-6A32-17SE-EB (straight) Cable clamp: JL04-32CK(24)-RK (Japan Aviation Electronics Industry, Limited)

Model	Electromagnetic brake connector	
MR-BKCN		Plug: D/MS3106A10SL-4S(D190) (DDK Ltd.) Cable clamp: YSO10-5 to 8 (straight) (Daiwa Dengyo Co., Ltd.)

Model	Cooling fan power connector	
MR-PWCNF		Plug: CE05-6A14S-2SD-D (straight) (DDK Ltd.) Cable clamp: YSO14-9 to 11 (Daiwa Dengyo Co., Ltd.)

Products on the Market for Rotary Servo Motors

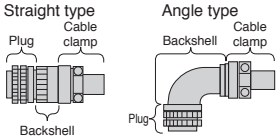
Contact the relevant manufacturers directly.
When fabricating a cable with the following connectors, refer to the relevant manufacturers' instruction manuals for wiring and assembling procedures.



Encoder connector for HK-JT 1500 r/min (7 kW to 15 kW) series

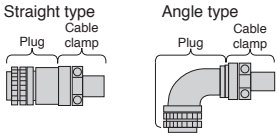
Applicable servo motor	IP rating (Note 1)	Connector (DDK Ltd.)				Applicable cable example
		Type	Type of connection	Plug	Socket contact	Cable OD [mm]
HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J	IP67	Straight	One-touch connection type	CMV1-SP10S-M1	Select a solder or press bonding type. (Refer to the table below.)	5.5 to 7.5
				CMV1-SP10S-M2		7.0 to 9.0
			Screw type	CMV1S-SP10S-M1		5.5 to 7.5
				CMV1S-SP10S-M2		7.0 to 9.0
		Angle	One-touch connection type	CMV1-AP10S-M1		5.5 to 7.5
				CMV1-AP10S-M2		7.0 to 9.0
			Screw type	CMV1S-AP10S-M1		5.5 to 7.5
				CMV1S-AP10S-M2		7.0 to 9.0

Contact	Socket contact (DDK Ltd.)	Wire size (Note 2)
Solder type	CMV1-#22ASC-S1-100	0.5 mm² (AWG 20) or smaller
Press bonding type	CMV1-#22ASC-C1-100	0.2 mm² to 0.5 mm² (AWG 24 to 20) Crimping tool (357J-53162T) is required.
	CMV1-#22ASC-C2-100	0.08 mm² to 0.2 mm² (AWG 28 to 24) Crimping tool (357J-53163T) is required.



Encoder connector for HK-JT 1000 r/min (15 kW) series/HK-JT 1500 r/min (22 kW) series

Applicable servo motor	IP rating (Note 1)	Plug (DDK Ltd.)	Backshell (DDK Ltd.)		Cable clamp (DDK Ltd.)	Applicable cable example	
		Model	Type	Model	Model	Wire size (Note 2)	Cable OD [mm]
HK-JT15K1J, 22K1M(4)J	IP67	D/MS3106A20-29S (D190)(R1)	Straight	CE02-20BS-S-D(R1)	CE3057-12A-3-D(R1)	0.3 mm² to 1.25 mm² (AWG 22 to 16)	6.8 to 10
			Angle	CE-20BA-S-D(R1)			

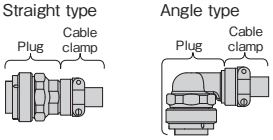


Applicable servo motor	IP rating	Plug (with backshell) (DDK Ltd.)		Cable clamp (DDK Ltd.)	Applicable cable example	
		Type	Model	Model	Wire size (Note 2)	Cable OD [mm]
HK-JT15K1J, 22K1M(4)J	-	Straight	D/MS3106B20-29S	CE3057-12A-3-D(R1)	0.3 mm² to 1.25 mm² (AWG 22 to 16)	6.8 to 10
		Angle	D/MS3108B20-29S			

Notes: 1. The IP rating indicated is for the connector's protection against ingress of dust and water when coupled to a servo amplifier/servo motor. If the IP rating of the servo amplifier/servo motor differs from that of these connectors, overall IP rating depends on the lowest of all.
2. The wire size shows wiring specifications of the connector. Refer to "Selection Example in HIV Wires for Servo Motors" in this brochure for examples of wire size selection.

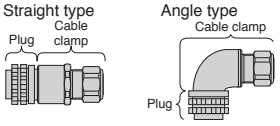
Products on the Market for Rotary Servo Motors

Contact the relevant manufacturers directly.
When fabricating a cable with the following connectors, refer to the relevant manufacturers' instruction manuals for wiring and assembling procedures.



Power connector for HK-JT 1500 r/min (7 kW to 15 kW) series

Applicable servo motor	IP rating (Note 1)	Plug (Japan Aviation Electronics Industry, Limited)				Cable clamp (Japan Aviation Electronics Industry, Limited)	Applicable cable example	
		Type	Type of connection	Plug model	Endbell model	Model	Wire size (Note 2)	Cable OD [mm]
HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J	IP67	Straight	One-touch connection type	JL10-6A32-17SE-EB (Note 4)	-	JL04-32CK(24)_ (Note 5)	22 mm² (AWG 4) or smaller	22 to 25
				JL10-6A32-17SE	JL10-6A32EB1	JL10-36CK(30)		27.5 to 30
						JL10-36CK(32)		30 to 32.5
			Screw type	JL04V-6A32-17SE-EB-RK (Note 4)	-	JL04-32CK(24)_ (Note 5)		22 to 25
		Angle	One-touch connection type	JL10-8A32-17SE-EB (Note 4)				



Electromagnetic brake connector for HK-JT 1500 r/min (7 kW to 15 kW) series

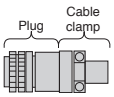
Applicable servo motor	IP rating (Note 1)	Plug (DDK Ltd.)	Cable clamp			Applicable cable example	
		Model	Type	Model	Manufacturer	Wire size (Note 2)	Cable OD [mm]
HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J	IP67	D/MS3106A10SL-4S(D190)	Straight	C2KD0810	Sankei Manufacturing Co., Ltd. (Note 3)	0.3 mm² to 1.25 mm² (AWG 22 to 16)	4 to 8
				C2KD1210			8 to 12
				YSO10-5 to 8	Daiwa Dengyo Co., Ltd.		5 to 8.3
			Angle	C29KD0810	Sankei Manufacturing Co., Ltd. (Note 3)		4 to 8
				C29KD1210			8 to 12
				YLO10-5 to 8	Daiwa Dengyo Co., Ltd.		5 to 8.3

Notes: 1. The IP rating indicated is for the connector's protection against ingress of dust and water when coupled to a servo amplifier/servo motor. If the IP rating of the servo amplifier/servo motor differs from that of these connectors, overall IP rating depends on the lowest of all.
2. The wire size shows wiring specifications of the connector. Refer to "Selection Example in HIV Wires for Servo Motors" in this brochure for examples of wire size selection.
3. Contact: Sankei Manufacturing Co., Ltd. and Mikuni Electric Co., Ltd.
4. Endbell is installed.
5. "_" in the model name indicates the following symbols depending on the materials of the rubber bushing for the cable clamps:
-RK: nitrile rubber
-EPDM-R: terpolymer rubber of ethylene, propylene, and dimethylene

Products on the Market for Rotary Servo Motors

Contact the relevant manufacturers directly.
When fabricating a cable with the following connectors, refer to the relevant manufacturers' instruction manuals for wiring and assembling procedures.

Electromagnetic brake connector for HK-JT 1500 r/min (7 kW to 15 kW) series

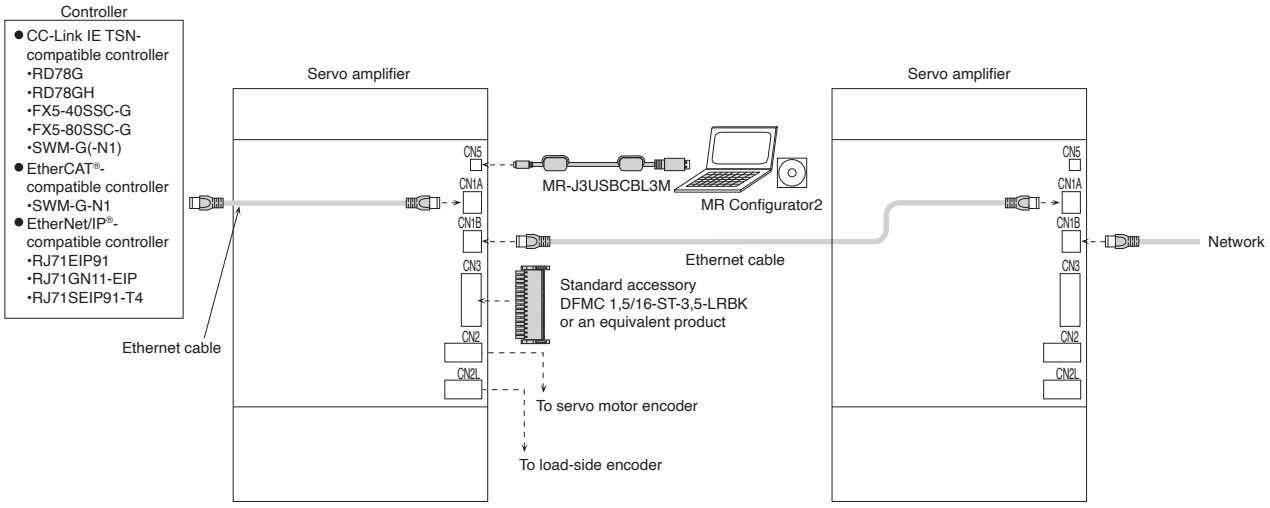


Applicable servo motor	IP rating	Plug (with backshell) (DDK Ltd.)		Cable clamp (DDK Ltd.)	Applicable cable example	
		Type	Model	Model	Wire size (Note 1)	Cable OD [mm]
HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J	-	Straight	D/MS3106A10SL-4S	D/MS3057-4A	0.3 mm^2 to 1.25 mm^2 (AWG 22 to 16)	5.6 or smaller (bushing ID)

Notes: 1. The wire size shows wiring specifications of the connector. Refer to "Selection Example in HIV Wires for Servo Motors" in this brochure for examples of wire size selection.

Configuration Example for MR-J5-_G(4)-HS

Refer to "MELSERVO-J5 catalog (L(NA)03179ENG)" for details on the options and configuration examples for MR-J5-_G(4), MR-J5-_B(4)(-RJ), and MR-J5-_A(4)(-RJ).



Regenerative Option

Servo amplifier model	Permissible regenerative power [W] (Note 2)									
	External regenerative resistor (standard accessory) (Note 3)					Regenerative option				
	GRZG400-					MR-RB				
	0.8 Ω × 4 (Note 1)	0.6 Ω × 5 (Note 1)	0.5 Ω × 5 (Note 1)	2.5 Ω × 4 (Note 1)	2 Ω × 5 (Note 1)	5R (Note 1)	9F (Note 1)	9T (Note 1)	5K-4 (Note 1)	6K-4 (Note 1)
						3.2 Ω	3 Ω	2.5 Ω	10 Ω	10 Ω
MR-J5-12KG/B/A	500 (800)	-	-	-	-	500 (800)	-	-	-	-
MR-J5-17KG/B/A	-	850 (1300)	-	-	-	-	850 (1300)	-	-	-
MR-J5-25KG/B/A	-	-	850 (1300)	-	-	-	-	850 (1300)	-	-
MR-J5-12KG4/B4/A4	-	-	-	500 (800)		-	-	-	500 (800)	-
MR-J5-17KG4/B4/A4	-	-	-		850 (1300)	-	-	-		850 (1300)
MR-J5-25KG4/B4/A4	-	-	-		850 (1300)	-	-	-		850 (1300)

Notes: 1. The values in brackets are applicable when cooling fans (two units of 92 mm × 92 mm, minimum air flow: 1.0 m^3/min) are installed, and then [Pr. PA02] is changed.
2. The power values in this table are resistor-generated powers, not rated powers.
3. The regenerative resistors enclosed with the servo amplifiers of 12 kW to 25 kW is rated IP00. Take proper safety measures according to the device configuration.

* Precautions when installing and connecting the regenerative option

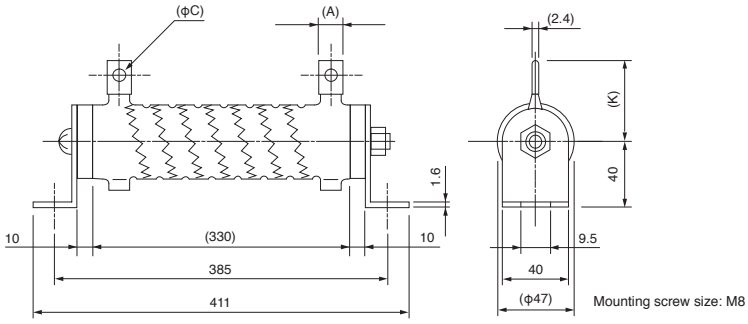
1. The regenerative option causes a temperature rise of 100 °C or higher relative to the ambient temperature. Fully examine heat dissipation, installation position, wires used before installing the unit. Use flame-retardant wires or apply flame retardant on wires, and keep the wires clear of the unit.
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.

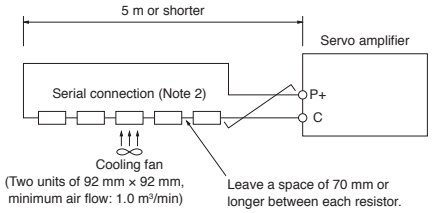
Regenerative Option

Dimensions [Unit: mm]

Connections

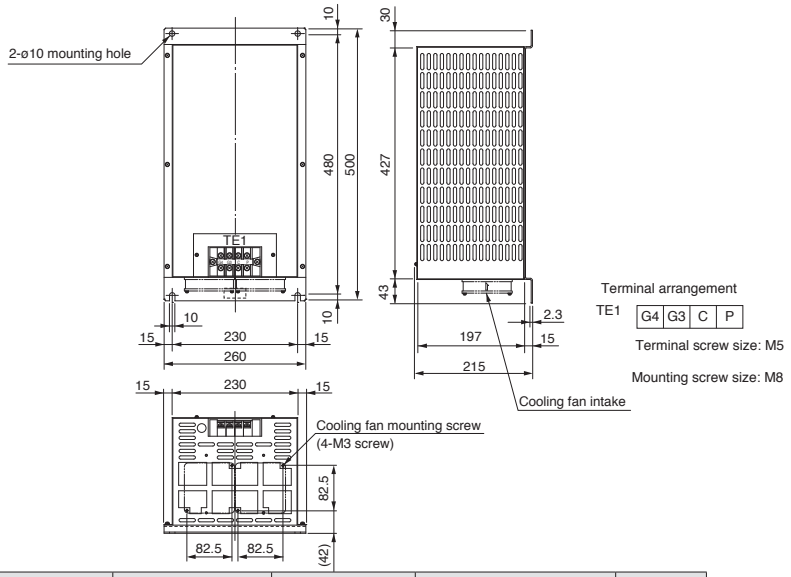
Standard accessory (Note 1)
GRZG400-0.8Ω, GRZG400-0.6Ω, GRZG400-0.5Ω (for 200 V)
GRZG400-2.5Ω, GRZG400-2Ω (for 400 V)

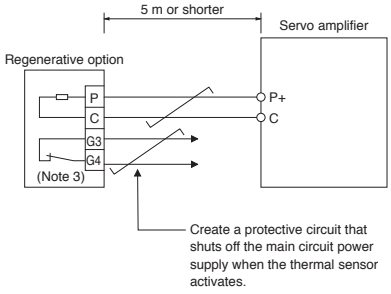




Model	Qty.	Permissible regenerative power [W]	With cooling fan [W]	Resistance value [Ω]	Variable dimensions			Mass/unit [kg]
					A	C	K	
GRZG400-0.8Ω	4	500	800	3.2 (0.8 Ω × 4)	10	5.5	39	0.8
GRZG400-0.6Ω	5	850	1300	3 (0.6 Ω × 5)	16	8.2	46	
GRZG400-0.5Ω	5	850	1300	2.5 (0.5 Ω × 5)				
GRZG400-2.5Ω	4	500	800	10 (2.5 Ω × 4)	10	5.5	39	
GRZG400-2Ω	5	850	1300	10 (2 Ω × 5)				

MR-RB5R, MR-RB9F, MR-RB9T (for 200 V) (Note 1)
MR-RB5K-4, MR-RB6K-4 (for 400 V) (Note 1)





Model	Permissible regenerative power [W]	With cooling fan [W]	Description	Mass [kg]
MR-RB5R	500	800	GRZG400-0.8Ω × 4	10
MR-RB9F	850	1300	GRZG400-0.6Ω × 5	11
MR-RB9T	850	1300	GRZG400-0.5Ω × 5	11
MR-RB5K-4	500	800	GRZG400-2.5Ω × 4	10
MR-RB6K-4	850	1300	GRZG400-2Ω × 5	11

Notes: 1. To increase the regenerative braking frequency, install cooling fans (two units of 92 mm × 92 mm, minimum air flow: 1.0 m³/min), and then change [Pr. PA02]. The cooling fans must be prepared by users.
2. By installing a thermal sensor, create a safety circuit that shuts off the main circuit power supply when abnormal overheating occurs.
3. G3 and G4 terminals are thermal sensor. G3-G4 opens when the regenerative option overheats abnormally.

Dynamic Brake

Use the following external dynamic brake (option) with the 12 kW or larger servo amplifiers.
Failure to do so will cause an accident because the servo motor does not stop immediately but coasts at an alarm occurrence for which the servo motor does not decelerate to stop. Ensure the safety in the entire equipment. The external dynamic brake cannot be used to comply with the SEMI-F47 standard. Do not assign DB (Dynamic brake interlock) to the output device. If DB (Dynamic brake interlock) is assigned, the servo amplifier switches to servo-off status when an instantaneous power failure occurs.

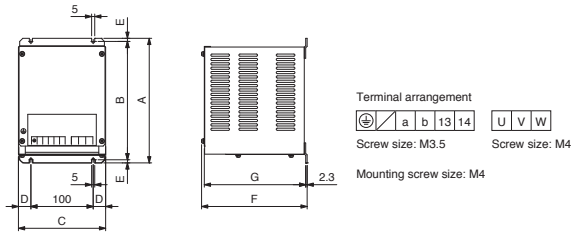
Servo amplifier model	Dynamic brake model	Fig.
MR-J5-12KG/B/A	DBU-11K	A
MR-J5-17KG/B/A	DBU-15K	
MR-J5-25KG/B/A	DBU-22K-R1	

Servo amplifier model	Dynamic brake model	Fig.
MR-J5-12KG4/B4/A4	DBU-11K-4	B
MR-J5-17KG4/B4/A4 MR-J5-25KG4/B4/A4	DBU-22K-4	

Dimensions

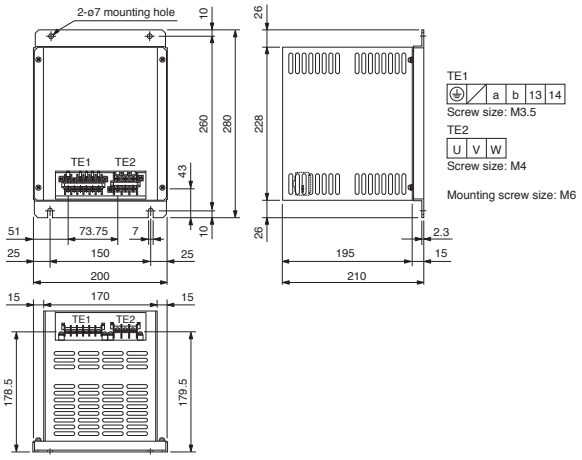
[Unit: mm]

A



Model	A	B	C	D	E	F	G	Mass [kg]	Wire size [mm²] (Note 1)	
									U/V/W	Other than U/V/W
DBU-11K	200	190	140	20	5	170	163.5	2	5.5 (AWG 10)	2 (AWG 14)
DBU-15K DBU-22K-R1	250	238	150	25	6	235	228	6		

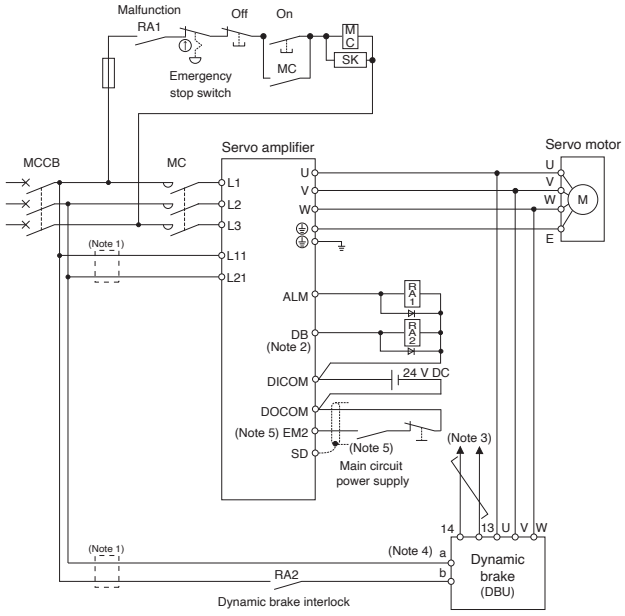
B



Model	Mass [kg]	Wire size [mm²] (Note 1)	
		U/V/W	Other than U/V/W
DBU-11K-4	6.7	5.5 (AWG 10)	2 (AWG 14)
DBU-22K-4			

Notes: 1. The wire size is applicable when 600 V grade heat-resistant polyvinyl chloride insulated wire (HIV wires) is used.

Dimensions

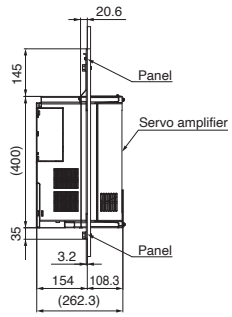
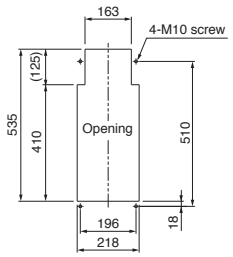
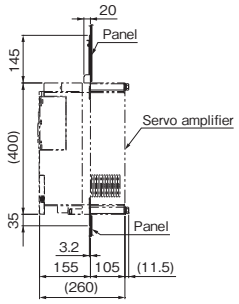
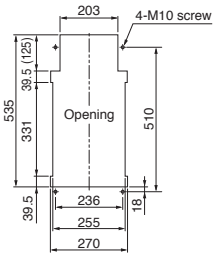


Notes:
1. Install an overcurrent protection device (molded-case circuit breaker, fuse, etc.) to protect the branch circuit.
2. Assign DB (Dynamic brake interlock) to any of the pins for the output device.
3. The terminals 13 and 14 are normally opened outputs. If the dynamic brake is welded, the terminals 13 and 14 will be opened. Thus, create an external sequence circuit so that SON (Servo-on) does not turn on when the terminals 13 and 14 are opened.
4. When using DBU-11K-4 or DBU-22K-4, the power supply voltage must be between 1-phase 380 V AC and 463 V AC, 50 Hz/60 Hz. Refer to "MR-J5 User's Manual" for details.
5. 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.

Panel Through Attachment (MR-J4ACN15K, MR-J3ACN)

By attaching a panel through attachment to the servo amplifier of 12 kW to 25 kW, the heat-generating part of the servo amplifier can be placed outside a cabinet. This allows the heat generated by the servo amplifier to be dissipated outside the cabinet, thereby reducing the amount of heat in the cabinet and making the cabinet more compact.

Servo amplifier model	Panel through attachment model	Fig.
MR-J5-12KG/B/A, MR-J5-12KG4/B4/A4 MR-J5-17KG/B/A, MR-J5-17KG4/B4/A4	MR-J4ACN15K	A
MR-J5-25KG/B/A, MR-J5-25KG4/B4/A4	MR-J3ACN	B

	Mounting [Unit: mm]	Panel cut dimensions [Unit: mm]
A		
B		

Replacement Fan Unit

Servo amplifier model	Replacement fan unit model
MR-J5-12KG/B/A, MR-J5-12KG4/B4/A4 MR-J5-17KG/B/A, MR-J5-17KG4/B4/A4	MR-J5-FAN8
MR-J5-25KG/B/A, MR-J5-25KG4/B4/A4	MR-J5-FAN9 (2 units per set)

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 (Note 3)	Rated current [A]	Rated voltage [V AC]	Operating temperature [°C]	Mass [kg]	Manufacturer (Note 2)
IEC/EN 61800-3 Category C2/C3 (Note 1)	50 m or shorter	FSB-100-324-HU	100	250	-40 to 85	6.3	COSEL Co., Ltd.
		FSB-150-324-HU	150			8.8	
		FSB-30-355	30	500		1.8	
		FSB-40-355	40			3.3	
		FSB-60-355	60				
		FN3288-40-33-C35-R65	40	530	-40 to 50	1.8	Schaffner EMC K.K.
		FN3288-63-53-C35-R65	63			2.7	
		FN3288-100-35-C35-R65	100			4.2	
		FN3288-125-35-C35-R65	125			4.6	

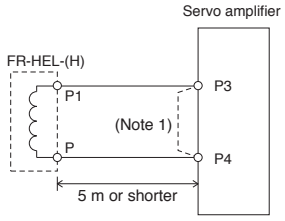
Notes: 1. Category C2: Intended to be installed in either the first environment (residential environment) by a professional or in the second environment (commercial, light industrial, and industrial environments).
Category C3: Intended to be installed in the second environment (commercial, light industrial, and industrial environments).
2. For details, please contact the relevant manufacturers directly.
3. Refer to website of the relevant manufacturers for the dimensions of the products. Refer to "MELSERVO-J5 catalog (L(NA)03179ENG)" for connection diagrams.

Power Factor Improving DC Reactor (FR-HEL, 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, FR-HAL-H), the DC reactor (FR-HEL, 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.)

Servo amplifier model	Power factor improving DC reactor model	Fig.
MR-J5-12KG/B/A	FR-HEL-15K	A
MR-J5-17KG/B/A	FR-HEL-22K	B
MR-J5-25KG/B/A	FR-HEL-30K	
MR-J5-12KG4/B4/A4	FR-HEL-H15K	C
MR-J5-17KG4/B4/A4	FR-HEL-H22K	
MR-J5-25KG4/B4/A4	FR-HEL-H30K	

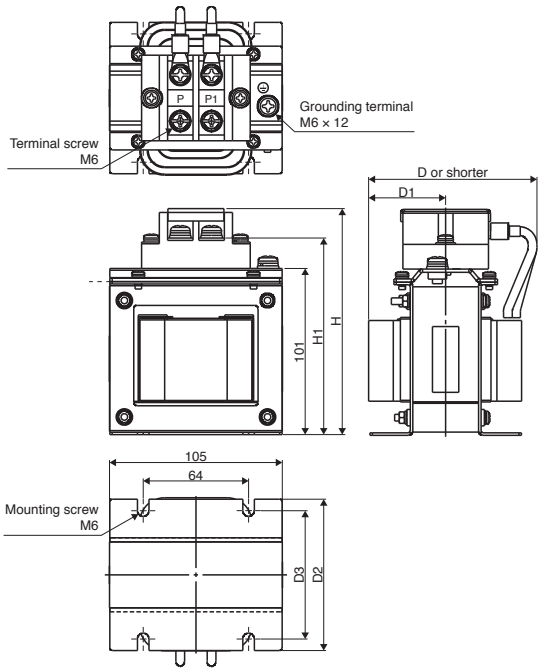
Connections



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

Dimensions

A



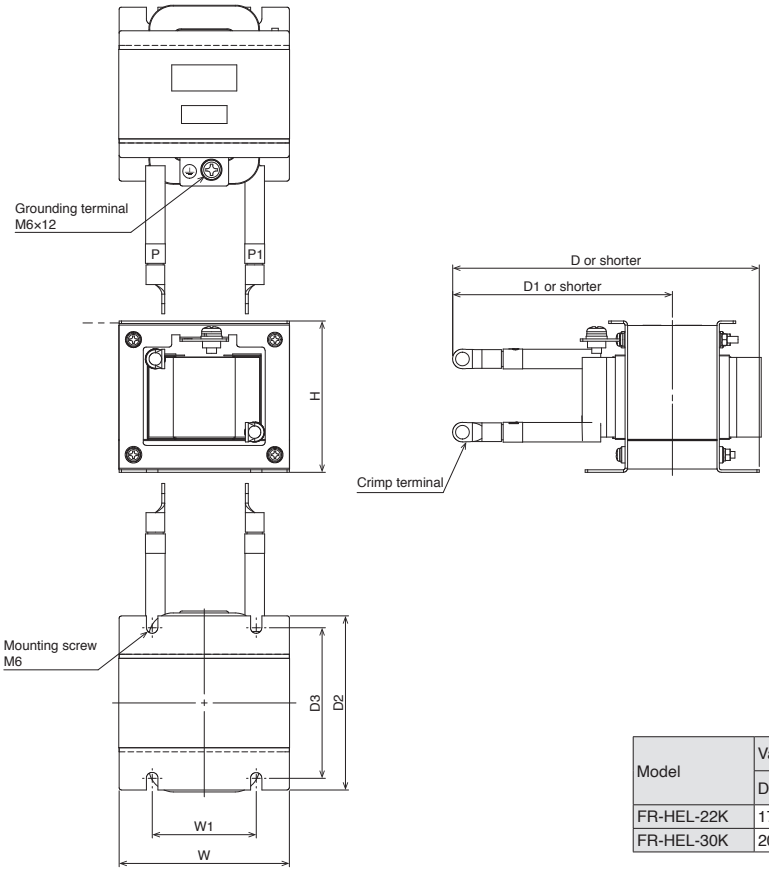
Model	Variable dimensions [mm]						Mass [kg]	Wire size [mm²] (Note 2)
	D (Note 1)	D1	D2	D3	H	H1		
FR-HEL-15K	115	49	97	83	142	120	3.8	14 (AWG 6)

Notes: 1. This indicates the maximum dimension. The dimension varies depending on the bending degree of the input/output lines.
2. The wire size is applicable when 600 V grade heat-resistant polyvinyl chloride insulated wire (HIV wires) is used.

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

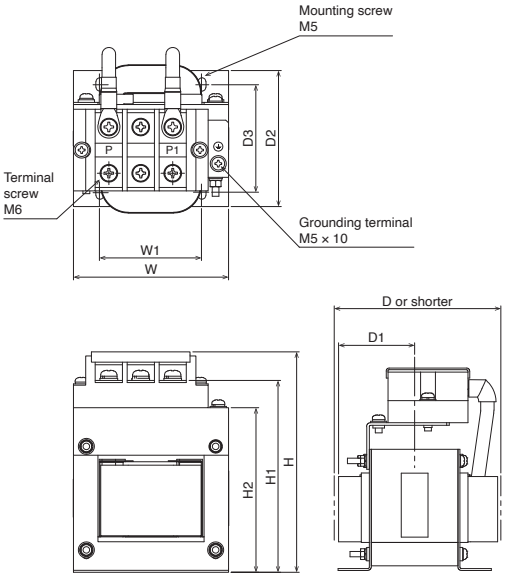
Dimensions

B



Model	Variable dimensions [mm]							Mass [kg]	Wire size [mm²] (Note 2)
	D (Note 1)	D1	D2	D3	W	W1	H		
FR-HEL-22K	175	115	117	103	105	64	93	4.8	22 (AWG 4)
FR-HEL-30K	200	135	125	100	114	72	100	6.7	38 (AWG 2)

C



Model	Variable dimensions [mm]									Mass [kg]	Wire size [mm²] (Note 2)
	D (Note 1)	D1	D2	D3	W	W1	H	H1	H2		
FR-HEL-H15K	125	57	115	95	105	75	152	130	111	5.0	8 (AWG 8)
FR-HEL-H22K	120	55	95	75	133	90	180	157	137	6.0	8 (AWG 8)
FR-HEL-H30K	120	58	100	80	133	90	180	157	137	6.5	14 (AWG 6)

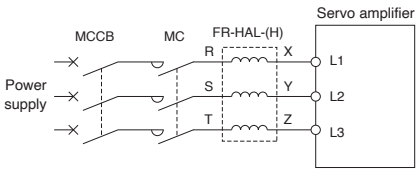
Notes: 1. This indicates the maximum dimension. The dimension varies depending on the bending degree of the input/output lines.
2. The wire size is applicable when 600 V grade heat-resistant polyvinyl chloride insulated wires (HIV wires) are used.

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

This boosts the power factor of servo amplifier and reduces the power supply capacity.

Servo amplifier model	Power factor improving AC reactor model (Note 1)	Fig.
MR-J5-12KG/B/A	FR-HAL-15K	A
MR-J5-17KG/B/A	FR-HAL-22K	B
MR-J5-25KG/B/A	FR-HAL-30K	
MR-J5-12KG4/B4/A4	FR-HAL-H15K	C
MR-J5-17KG4/B4/A4	FR-HAL-H22K	D
MR-J5-25KG4/B4/A4	FR-HAL-H30K	

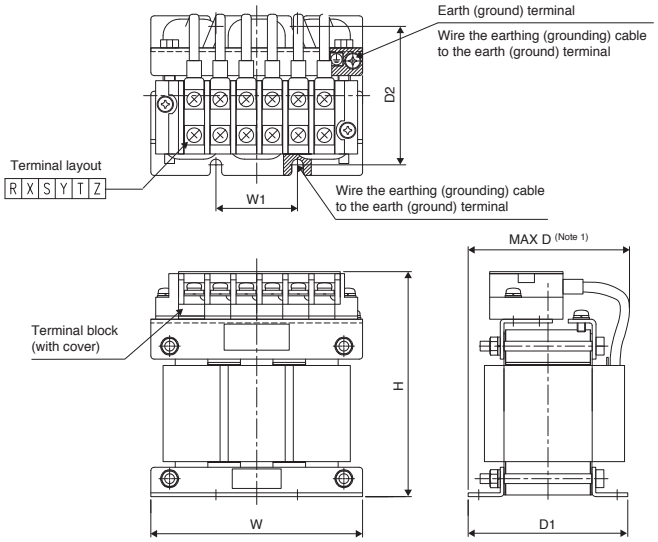
Connections



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

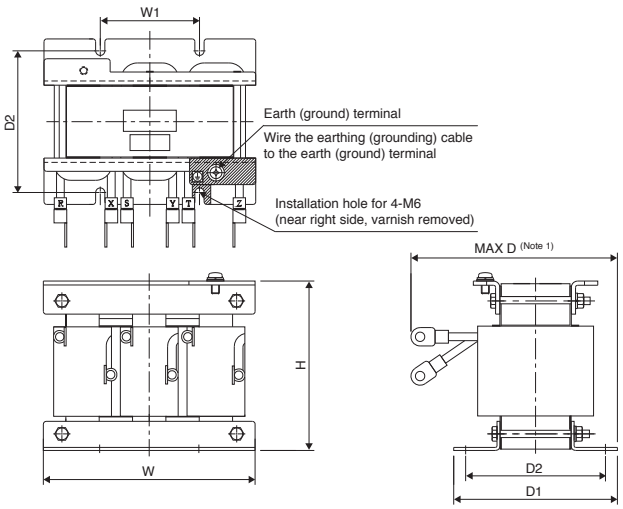
Dimensions

A



Model	Variable dimensions [mm]							Mass [kg]	Terminal size
	W	W1	H	D (Note 1)	D1	D2	d		
FR-HAL-15K	160	75	167	126	124	107	M6	7.0	M6

B



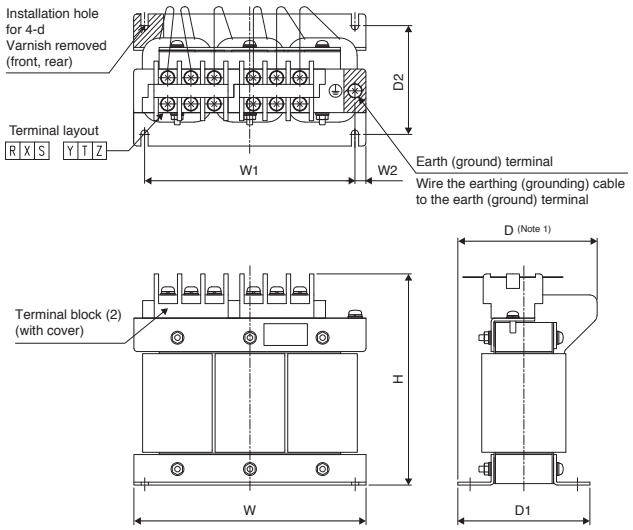
Model	Variable dimensions [mm]						Mass [kg]	Terminal size
	W	W1	H	D (Note 1)	D1	D2		
FR-HAL-22K	185	75	150	158	100	87	9.0	M8
FR-HAL-30K	185	75	150	168	100	87	9.7	M10

Notes: 1. This indicates the maximum dimension. The dimension varies depending on the bending degree of the input/output lines.

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

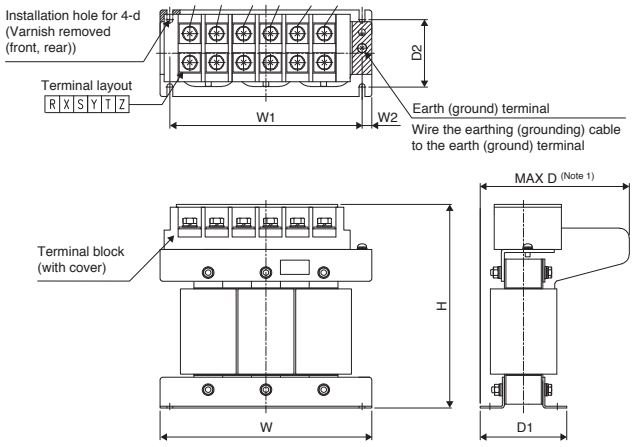
Dimensions

C



Model	Variable dimensions [mm]								Mass [kg]	Terminal size
	W	W1	W2	H	D (Note 1)	D1	D2	d		
FR-HAL-H15K	220	200	10	195	105	90	70	M5	9.0	M5

D



Model	Variable dimensions [mm]								Mass [kg]	Terminal size
	W	W1	W2	H	D (Note 1)	D1	D2	d		
FR-HAL-H22K	220	200	10	212	155	90	70	M5	9.5	M5
FR-HAL-H30K	220	200	10	212	153	96	75	M5	11	M5

Notes: 1. This indicates the maximum dimension. The dimension varies depending on the bending degree of the input/output lines.

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/E varies depending on the servo motor. Refer to "Selection Example in HIV Wires for Servo Motors" in this brochure 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)	Wire size [mm²] (Note 4)			
		L1/L2/L3/⏚	L11/L21	P+/C (Note 1)	U/V/W/E
MR-J5-12KG/B/A (Note 7)	100 A frame 100 A (100 A frame 100 A)	14 (AWG 6)	1.25 to 2 (AWG 16 to 14)	3.5 (AWG 12)	14 (AWG 6) (Note 3)
MR-J5-17KG/B/A (Note 7)	125 A frame 125 A (125 A frame 125 A)	22 (AWG 4)		5.5 (AWG 10)	22 (AWG 4) (Note 3)
MR-J5-25KG/B/A (Note 7)	225 A frame 175 A (225 A frame 175 A)	38 (AWG 2)			38 (AWG 2) (Note 3)
MR-J5-12KG4/B4/A4 (Note 7)	50 A frame 50 A (50 A frame 50 A)	5.5 (AWG 10)		2 (AWG 14)	8 (AWG 8) (Note 3)
MR-J5-17KG4/B4/A4 (Note 7)	60 A frame 60 A (60 A frame 60 A)	8 (AWG 8)		3.5 (AWG 12)	
MR-J5-25KG4/B4/A4 (Note 7)	100 A frame 100 A (100 A frame 100 A)	14 (AWG 6)			14 (AWG 6) (Note 3)

Magnetic contactors

Servo amplifier model	Magnetic contactor (Note 2, 5)	
	On/off of main circuit power supply	
	AC power supply	DC power supply
MR-J5-12KG/B/A (Note 7)	S-T50	SD-T50
MR-J5-17KG/B/A (Note 7)	S-T65	SD-T65
MR-J5-25KG/B/A (Note 7)	S-T100	SD-T100
MR-J5-12KG4/B4/A4 (Note 7)	S-T35	SD-T35
MR-J5-17KG4/B4/A4 (Note 7)	S-T35	SD-T35
MR-J5-25KG4/B4/A4 (Note 7)	S-T50	SD-T50

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 (90 ms or less when driving on/off of main circuit power supply with DC power supply). 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 terminal block.
4. When complying with IEC/EN/UL/CSA standard, refer to "Selection Example According to IEC/EN/UL 61800-5-1 and CSA C22.2 No. 274" in this brochure.
5. Install one molded-case circuit breaker and one magnetic contactor for each servo amplifier.
6. When using a power improving reactor, use a molded-case circuit breaker listed in the brackets.
7. When connecting the wires to the terminal blocks, use the screws attached to the terminal blocks.

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

The following are examples of molded-case circuit breakers (MCCB), semiconductor fuses, and recommended wire sizes selected on the basis of the rated inputs/outputs of the servo amplifiers.

Molded-case circuit breakers/semiconductor fuses

Servo amplifier model	Molded-case circuit breaker (240 V AC) SCCR 50 kA (Mitsubishi Electric)	Molded-case circuit breaker (480 V AC) SCCR 30 kA (Mitsubishi Electric)	Semiconductor fuse (700 V) SCCR 100 kA (Bussmann)
MR-J5-12KG/B/A (Note 1)	NF125-SVU-75A	-	170M1418 (125 A)
MR-J5-17KG/B/A (Note 1)	NF125-SVU-100A	-	170M1419 (160 A)
MR-J5-25KG/B/A (Note 1)	NF125-SVU-150A	-	170M1421 (250 A)
MR-J5-12KG4/B4/A4 (Note 1)	-	NF125-SVU-40A	170M1416 (80 A)
MR-J5-17KG4/B4/A4 (Note 1)	-	NF125-SVU-50A	170M1418 (125 A)
MR-J5-25KG4/B4/A4 (Note 1)	-	NF125-SVU-75A	

Recommended wires

Servo amplifier model	75 °C stranded wire [AWG]			
	L1/L2/L3/⏚	L11/L21	P+/C	U/V/W/E
MR-J5-12KG/B/A (Note 1)	4	14	12	4
MR-J5-17KG/B/A (Note 1)	2		10	2
MR-J5-25KG/B/A (Note 1)	1/0			2/0
MR-J5-12KG4/B4/A4 (Note 1)	8		14	8
MR-J5-17KG4/B4/A4 (Note 1)	6		12	6
MR-J5-25KG4/B4/A4 (Note 1)	4			4

Notes: 1. When connecting the wires to the terminal blocks, use the screws attached to the terminal blocks.

Selection Example in HIV Wires for Servo Motors

The following are examples of wire sizes when 600 V grade heat-resistant polyvinyl chloride insulated wires (HIV wires) with a length of 30 m are used.

Refer to "Rotary Servo Motor User's Manual (For MR-J5)" when using cab-tire cables for supplying power (U/V/W) to HK-JT series.

Rotary servo motor model	Wire size [mm^2]		
	For power and grounding (U/V/W/E)	For electromagnetic brake (B1/B2)	For cooling fan (BU/BV/BW)
HK-JT701MJ	8 (AWG 8)	1.25 (AWG 16)	-
HK-JT11K1MJ	14 (AWG 6)		
HK-JT15K1MJ	22 (AWG 4)		
HK-JT15K1J		-	1.25 (AWG 16)
HK-JT22K1MJ	38 (AWG 2)		
HK-JT701M4J	5.5 (AWG 10)	1.25 (AWG 16)	-
HK-JT11K1M4J	8 (AWG 8)		
HK-JT15K1M4J			
HK-JT22K1M4J	14 (AWG 6)	-	1.25 (AWG 16)

Servo amplifiers

Item		Model	Rated output	Main circuit power supply
MR-J5-G	200 V	MR-J5-12KG	12 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-17KG	17 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-25KG	25 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
MR-J5-G4	400 V	MR-J5-12KG4	12 kW	3-phase 380 V AC to 480 V AC
		MR-J5-17KG4	17 kW	3-phase 380 V AC to 480 V AC
		MR-J5-25KG4	25 kW	3-phase 380 V AC to 480 V AC
MR-J5-G-HS	200 V	MR-J5-12KG-HS	12 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-17KG-HS	17 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-25KG-HS	25 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
MR-J5-G4-HS	400 V	MR-J5-12KG4-HS	12 kW	3-phase 380 V AC to 480 V AC
		MR-J5-17KG4-HS	17 kW	3-phase 380 V AC to 480 V AC
		MR-J5-25KG4-HS	25 kW	3-phase 380 V AC to 480 V AC
MR-J5-G-N1	200 V	MR-J5-12KG-N1	12 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-17KG-N1	17 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-25KG-N1	25 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
MR-J5-G4-N1	400 V	MR-J5-12KG4-N1	12 kW	3-phase 380 V AC to 480 V AC
		MR-J5-17KG4-N1	17 kW	3-phase 380 V AC to 480 V AC
		MR-J5-25KG4-N1	25 kW	3-phase 380 V AC to 480 V AC
MR-J5-G-HSN1	200 V	MR-J5-12KG-HSN1	12 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-17KG-HSN1	17 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-25KG-HSN1	25 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
MR-J5-G4-HSN1	400 V	MR-J5-12KG4-HSN1	12 kW	3-phase 380 V AC to 480 V AC
		MR-J5-17KG4-HSN1	17 kW	3-phase 380 V AC to 480 V AC
		MR-J5-25KG4-HSN1	25 kW	3-phase 380 V AC to 480 V AC
MR-J5-B	200 V	MR-J5-12KB	12 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-17KB	17 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-25KB	25 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
MR-J5-B4	400 V	MR-J5-12KB4	12 kW	3-phase 380 V AC to 480 V AC
		MR-J5-17KB4	17 kW	3-phase 380 V AC to 480 V AC
		MR-J5-25KB4	25 kW	3-phase 380 V AC to 480 V AC
MR-J5-B-RJ	200 V	MR-J5-12KB-RJ	12 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-17KB-RJ	17 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-25KB-RJ	25 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
MR-J5-B4-RJ	400 V	MR-J5-12KB4-RJ	12 kW	3-phase 380 V AC to 480 V AC
		MR-J5-17KB4-RJ	17 kW	3-phase 380 V AC to 480 V AC
		MR-J5-25KB4-RJ	25 kW	3-phase 380 V AC to 480 V AC
MR-J5-A	200 V	MR-J5-12KA	12 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-17KA	17 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-25KA	25 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
MR-J5-A4	400 V	MR-J5-12KA4	12 kW	3-phase 380 V AC to 480 V AC
		MR-J5-17KA4	17 kW	3-phase 380 V AC to 480 V AC
		MR-J5-25KA4	25 kW	3-phase 380 V AC to 480 V AC
MR-J5-A-RJ	200 V	MR-J5-12KA-RJ	12 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-17KA-RJ	17 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
		MR-J5-25KA-RJ	25 kW	3-phase 200 V AC to 240 V AC, 283 V DC to 340 V DC
MR-J5-A4-RJ	400 V	MR-J5-12KA4-RJ	12 kW	3-phase 380 V AC to 480 V AC
		MR-J5-17KA4-RJ	17 kW	3-phase 380 V AC to 480 V AC
		MR-J5-25KA4-RJ	25 kW	3-phase 380 V AC to 480 V AC

Product List

Rotary servo motors

Item		Flange size [mm]	Model	Rated output	Rated speed
HK-JT series B: With an electromagnetic brake	HK-JT_	220 x 220	HK-JT701M(B)J	7.0 kW	1500 r/min
			HK-JT11K1M(B)J	11 kW	1500 r/min
			HK-JT15K1M(B)J	15 kW	1500 r/min
		250 x 250	HK-JT15K1J	15 kW	1000 r/min
			HK-JT22K1MJ	22 kW	1500 r/min
	HK-JT_4	220 x 220	HK-JT701M4(B)J	7.0 kW	1500 r/min
			HK-JT11K1M4(B)J	11 kW	1500 r/min
			HK-JT15K1M4(B)J	15 kW	1500 r/min
		250 x 250	HK-JT22K1M4J	22 kW	1500 r/min
Servo motors with functional safety HK-JT series B: With an electromagnetic brake	HK-JT_	220 x 220	HK-JT701M(B)JWS	7.0 kW	1500 r/min
			HK-JT11K1M(B)JWS	11 kW	1500 r/min
			HK-JT15K1M(B)JWS	15 kW	1500 r/min
		250 x 250	HK-JT22K1MJWS	22 kW	1500 r/min
	HK-JT_4	220 x 220	HK-JT701M4(B)JWS	7.0 kW	1500 r/min
			HK-JT11K1M4(B)JWS	11 kW	1500 r/min
			HK-JT15K1M4(B)JWS	15 kW	1500 r/min
		250 x 250	HK-JT22K1M4JWS	22 kW	1500 r/min

Encoder cables for rotary servo motors

Item	Model	Length	Bending life	IP rating	Application
Encoder cable	MR-J3ENSCBL2M-H	2 m	Long bending life	IP67	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J
	MR-J3ENSCBL5M-H	5 m	Long bending life	IP67	
	MR-J3ENSCBL10M-H	10 m	Long bending life	IP67	
	MR-AENSCBL20M-H	20 m	Long bending life	IP67	
	MR-AENSCBL30M-H	30 m	Long bending life	IP67	
	MR-AENSCBL40M-H	40 m	Long bending life	IP67	
	MR-AENSCBL50M-H	50 m	Long bending life	IP67	
	MR-J3ENSCBL2M-L	2 m	Standard	IP67	
	MR-J3ENSCBL5M-L	5 m	Standard	IP67	
	MR-J3ENSCBL10M-L	10 m	Standard	IP67	
	MR-AENSCBL20M-L	20 m	Standard	IP67	
	MR-AENSCBL30M-L	30 m	Standard	IP67	
	MR-AENECBL2M-H-MTH	2 m	Long bending life	IP67	HK-JT15K1J, 22K1M(4)J
	MR-AENECBL5M-H-MTH	5 m	Long bending life	IP67	
	MR-AENECBL10M-H-MTH	10 m	Long bending life	IP67	
	MR-AENECBL20M-H-MTH	20 m	Long bending life	IP67	
	MR-AENECBL30M-H-MTH	30 m	Long bending life	IP67	
	MR-AENECBL40M-H-MTH	40 m	Long bending life	IP67	
	MR-AENECBL50M-H-MTH	50 m	Long bending life	IP67	

Connector sets for rotary servo motors

Item	Model	Description	IP rating	Application
Encoder connector set	MR-J3SCNS	Encoder connector × 1, Servo amplifier connector × 1	IP67	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J (straight type) (one-touch connection type)
	MR-ENCNS2	Encoder connector × 1, Servo amplifier connector × 1	IP67	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J (straight type) (screw type)
	MR-J3SCNSA	Encoder connector × 1, Servo amplifier connector × 1	IP67	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J (angle type) (one-touch connection type)
	MR-ENCNS2A	Encoder connector × 1, Servo amplifier connector × 1	IP67	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J (angle type) (screw type)
	MR-ENECNS	Encoder connector × 1, Servo amplifier connector × 1	IP67	HK-JT15K1J, 22K1M(4)J
Power connector set	MR-APWCNS3	Power connector × 1	IP67	HK-JT701M(4)J, 11K1M(4)J, 15K1M(4)J (one-touch connection type)
Electromagnetic brake connector set	MR-BKCN	Electromagnetic brake connector × 1	IP67	HK-JT701M(4)BJ, 11K1M(4)BJ, 15K1M(4)BJ (straight type)
Cooling fan power connector set	MR-PWCNF	Power connector × 1	IP67	HK-JT15K1J, 22K1M(4)J

Regenerative options

Item	Model	Permissible regenerative power	Resistance value	Application (Note 1)
Regenerative option (200 V)	MR-RB5R	500 (800) W	3.2 Ω	MR-J5-12KG/B/A
	MR-RB9F	850 (1300) W	3 Ω	MR-J5-17KG/B/A
	MR-RB9T	850 (1300) W	2.5 Ω	MR-J5-25KG/B/A
Regenerative option (400 V)	MR-RB5K-4	500 (800) W	10 Ω	MR-J5-12KG4/B4/A4
	MR-RB6K-4	850 (1300) W	10 Ω	MR-J5-17KG4/B4/A4, 25KG4/B4/A4

Peripheral units

Item	Model	Application (Note 1)
Dynamic brake (200 V)	DBU-11K	MR-J5-12KG/B/A
	DBU-15K	MR-J5-17KG/B/A
	DBU-22K-R1	MR-J5-25KG/B/A
Dynamic brake (400 V)	DBU-11K-4	MR-J5-12KG4/B4/A4
	DBU-22K-4	MR-J5-17KG4/B4/A4, 25KG4/B4/A4
Panel through attachment	MR-J4ACN15K	MR-J5-12KG_/B_/A_, 17KG_/B_/A_
	MR-J3ACN	MR-J5-25KG_/B_/A_
Replacement fan unit	MR-J5-FAN8	MR-J5-12KG_/B_/A_, 17KG_/B_/A_
	MR-J5-FAN9	MR-J5-25KG_/B_/A_

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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e-F@ctory Alliance

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