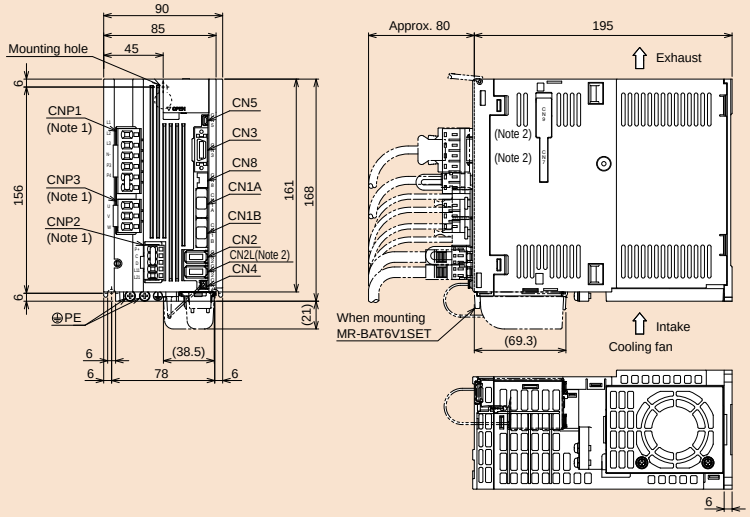
MR-J4-B/MR-J4-B-RJ Dimensions

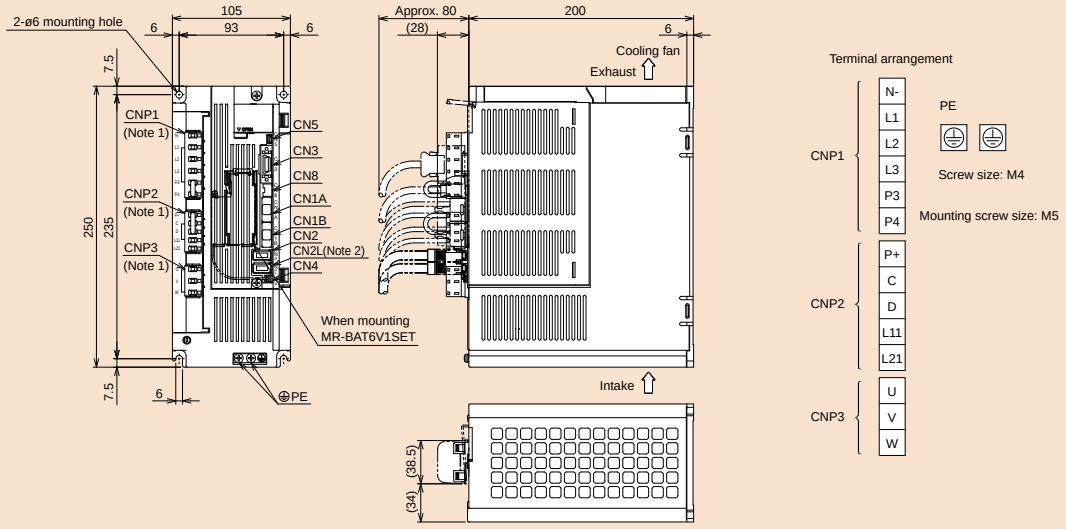
B B-RJ

●MR-J4-350B, MR-J4-350B-RJ



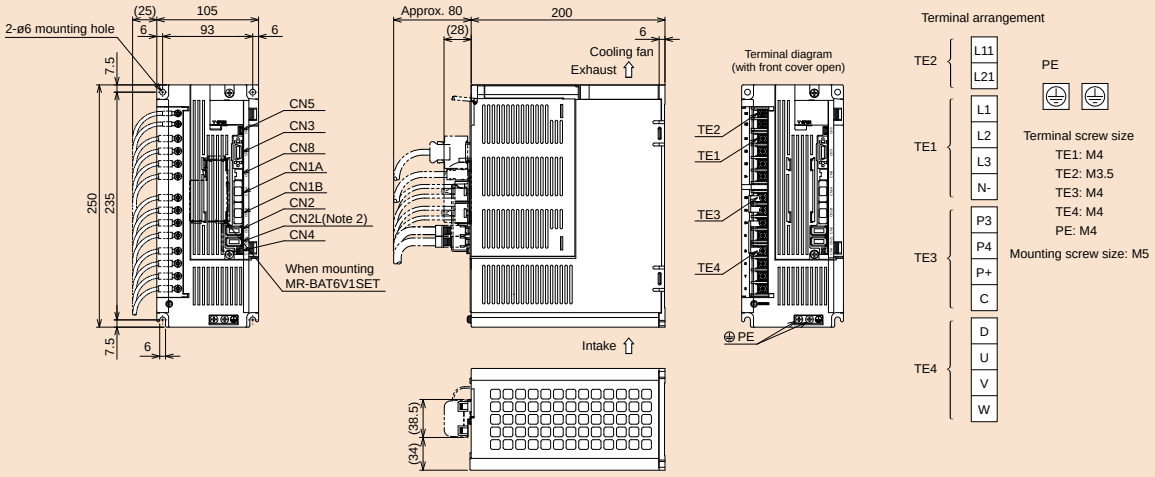
[Unit: mm]

●MR-J4-350B4, MR-J4-350B4-RJ



[Unit: mm]

●MR-J4-500B, MR-J4-500B-RJ



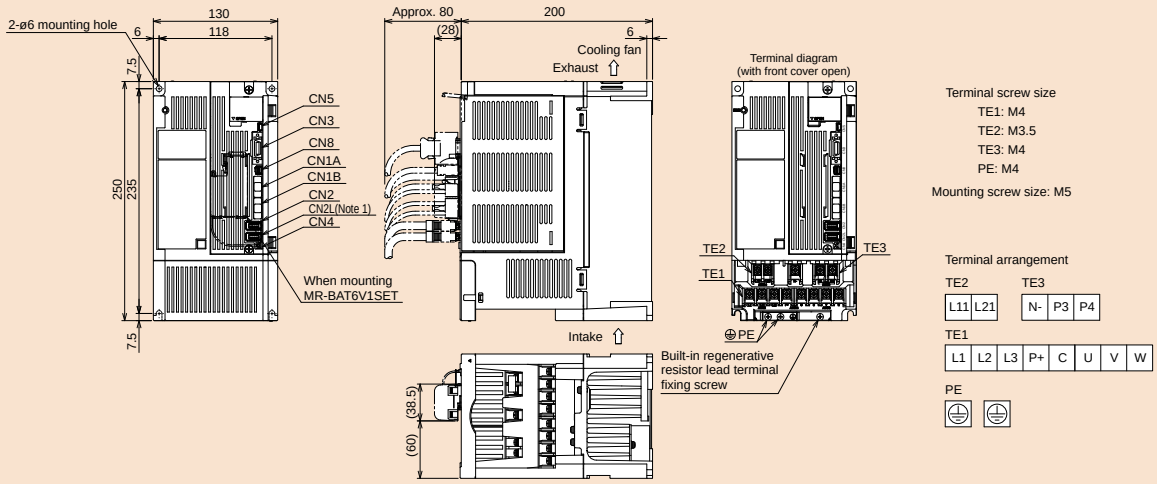
[Unit: mm]

Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier.
2. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.

MR-J4-B/MR-J4-B-RJ Dimensions

B B-RJ

●MR-J4-500B4, MR-J4-500B4-RJ



Terminal screw size
TE1: M4
TE2: M3.5
TE3: M4
PE: M4

Mounting screw size: M5

Terminal arrangement

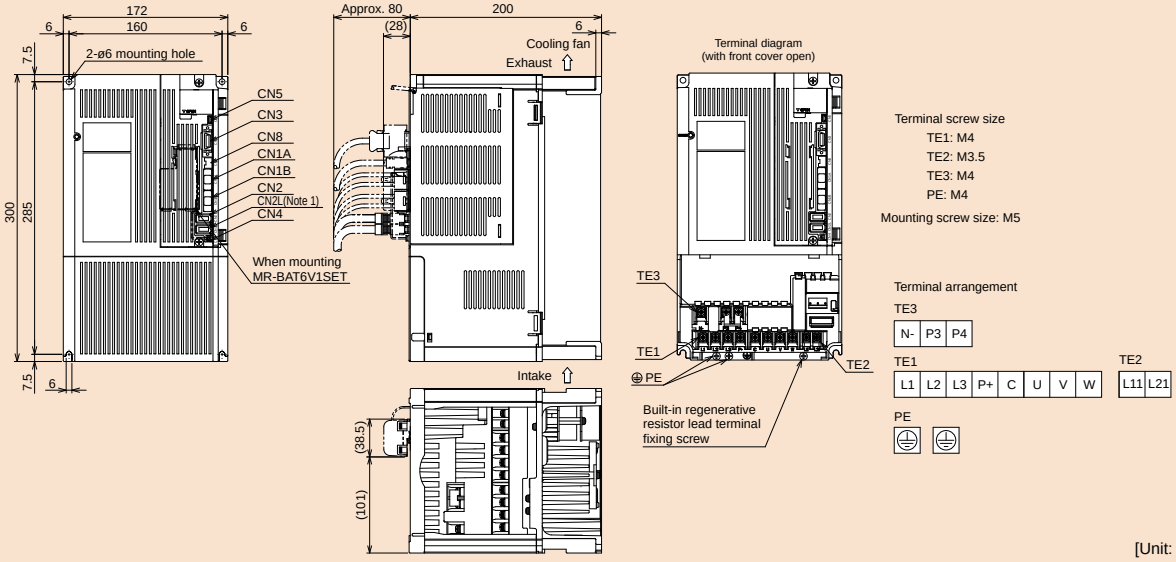
TE2		TE3		
L11	L21	N-	P3	P4

TE1								
L1	L2	L3	P+	C	U	V	W

PE

[Unit: mm]

●MR-J4-700B, MR-J4-700B-RJ, MR-J4-700B4, MR-J4-700B4-RJ



Terminal screw size
TE1: M4
TE2: M3.5
TE3: M4
PE: M4

Mounting screw size: M5

Terminal arrangement

TE3		
N-	P3	P4

TE1									TE2	
L1	L2	L3	P+	C	U	V	W		L11	L21

PE

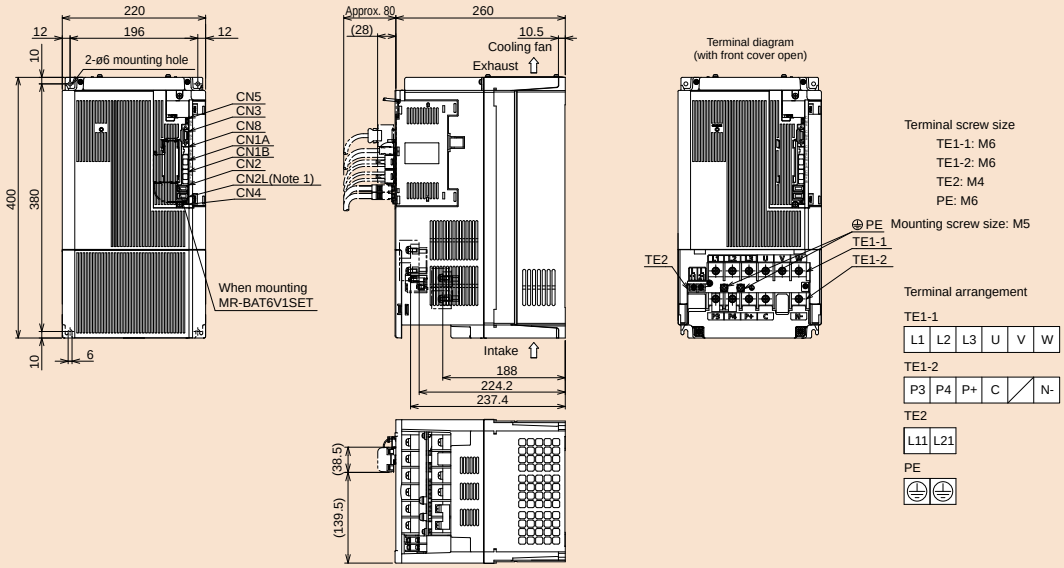
[Unit: mm]

Notes: 1. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.

MR-J4-B/MR-J4-B-RJ Dimensions

B B-RJ

●MR-J4-11KB, MR-J4-11KB-RJ, MR-J4-11KB4, MR-J4-11KB4-RJ
●MR-J4-15KB, MR-J4-15KB-RJ, MR-J4-15KB4, MR-J4-15KB4-RJ



Terminal screw size
TE1-1: M6
TE1-2: M6
TE2: M4
PE: M6
Mounting screw size: M5

Terminal arrangement

TE1-1

L1	L2	L3	U	V	W

TE1-2

P3	P4	P+	C		N-

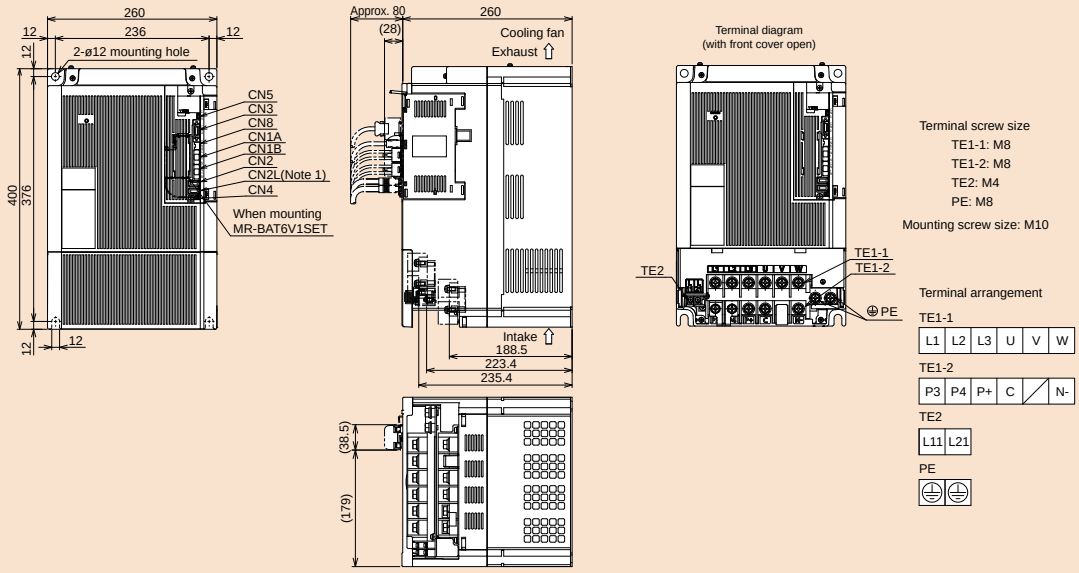
TE2

L11	L21

PE

[Unit: mm]

●MR-J4-22KB, MR-J4-22KB-RJ, MR-J4-22KB4, MR-J4-22KB4-RJ



Terminal screw size
TE1-1: M8
TE1-2: M8
TE2: M4
PE: M8
Mounting screw size: M10

Terminal arrangement

TE1-1

L1	L2	L3	U	V	W

TE1-2

P3	P4	P+	C		N-

TE2

L11	L21

PE

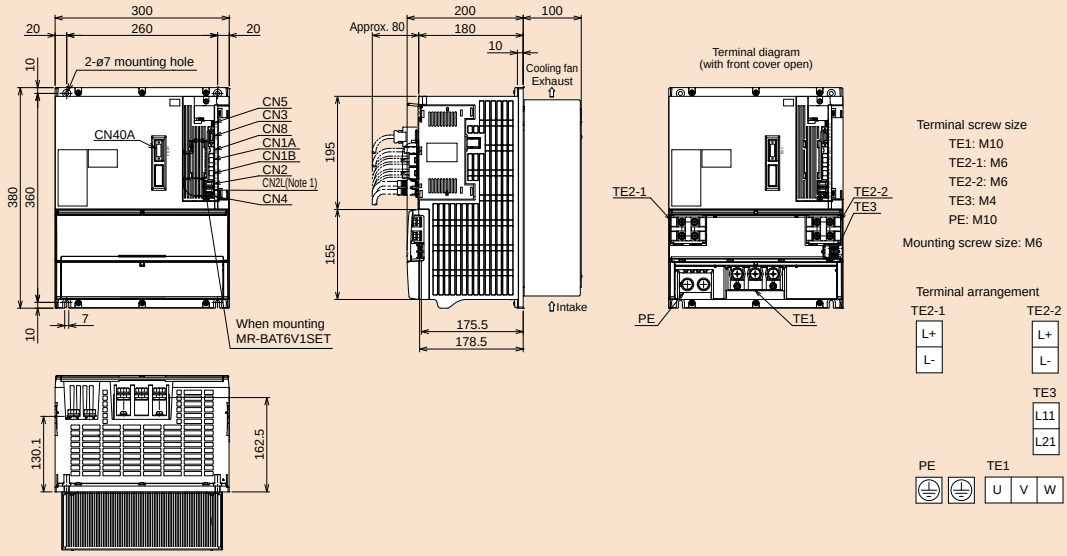
[Unit: mm]

Notes: 1. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.

MR-J4-DU_B/MR-J4-DU_B-RJ Dimensions

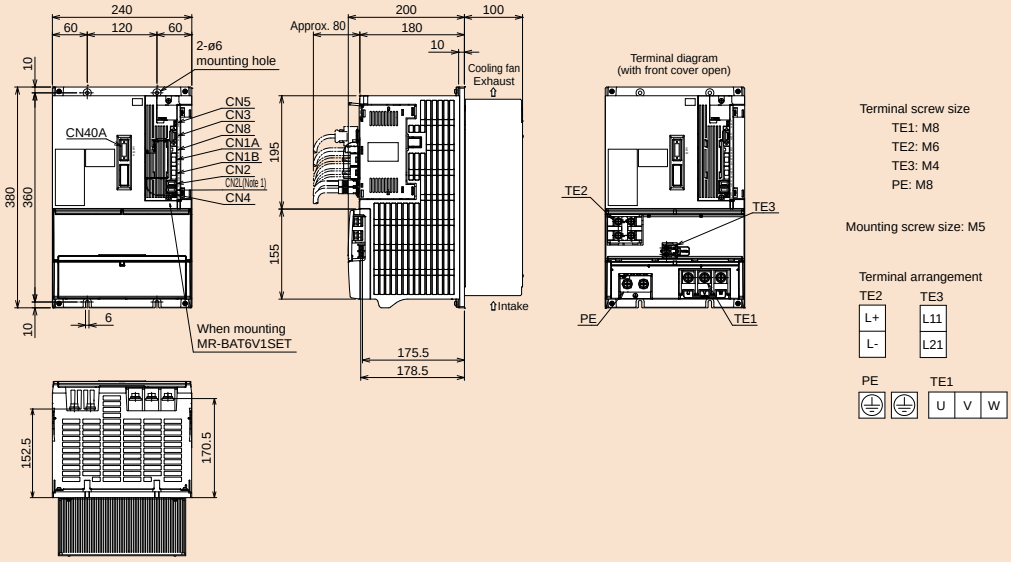
B B-RJ

- MR-J4-DU30KB, MR-J4-DU30KB-RJ
- MR-J4-DU37KB, MR-J4-DU37KB-RJ
- MR-J4-DU45KB4, MR-J4-DU45KB4-RJ
- MR-J4-DU55KB4, MR-J4-DU55KB4-RJ



[Unit: mm]

- MR-J4-DU30KB4, MR-J4-DU30KB4-RJ
- MR-J4-DU37KB4, MR-J4-DU37KB4-RJ



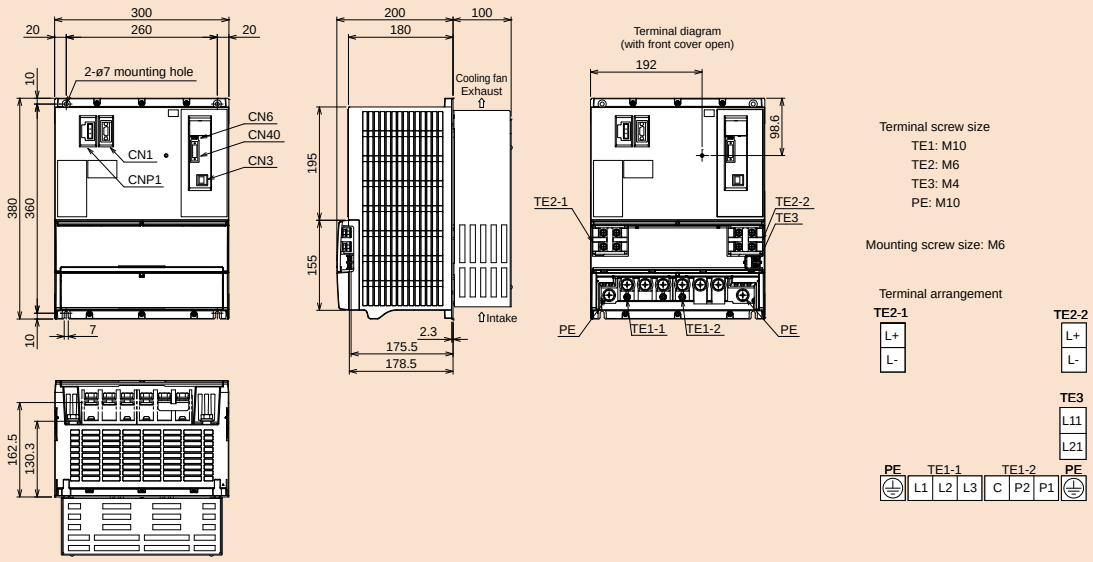
[Unit: mm]

Notes: 1. CN2L, CN7, and CN9 connectors are not available for MR-J4-DU_B_ drive unit. MR-J4-DU-B_-RJ is equipped with CN7 and CN9 connectors; however, these connectors are not for use.

MR-CR Dimensions

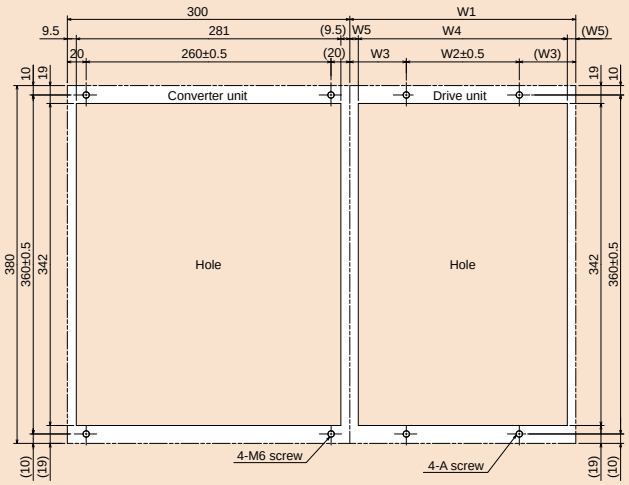
B B-RJ A A-RJ

●MR-CR55K, MR-CR55K4



[Unit: mm]

Panel Cut Dimensions for Converter Unit and Drive Unit (Note 1)



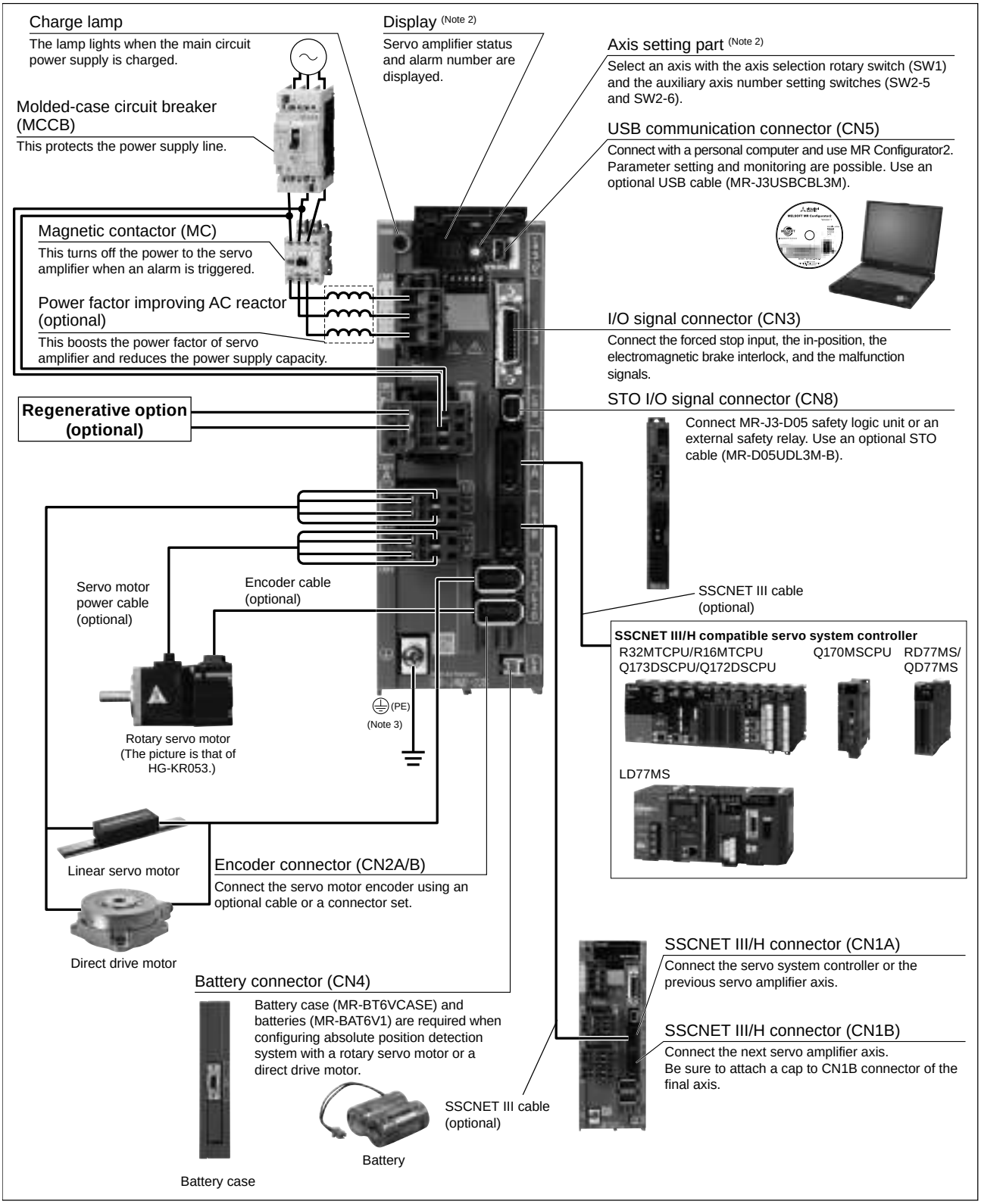
Drive unit model	Variable dimensions					
	W1	W2	W3	W4	W5	A
MR-J4-DU30KB/A, 37KB/A, 45KB4/A4, 55KB4/A4	300	260	20	281	9.5	M6
MR-J4-DU30KB4/A4, 37KB4/A4	240	120	60	222	9	M5

[Unit: mm]

Notes:1. The panel cut dimensions for converter unit and drive unit are applicable for MR-J4-DU_B_/MR-J4-DU_B_-RJ/MR-J4-DU_A_/MR-J4-DU_A_-RJ.

MR-J4W2-B/MR-J4W3-B Connections with Peripheral Equipment (Note 1) WB

Peripheral equipment is connected to MR-J4W2-B/MR-J4W3-B as described below. Connectors, cables, options, and other necessary equipment are available so that users can set up the servo amplifier easily and start using it right away.



Notes: 1. The connection with the peripheral equipment is an example for MR-J4W2-22B. CNP3C and CN2C connectors are available for MR-J4W3-B servo amplifier. Refer to "MR-J4W2-_B MR-J4W3-_B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for the actual connections of the multi-axis servo amplifier.
2. This picture shows when the display cover is open.
3. Connect the grounding terminal of the servo motor to ⏚ of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal (⏚) located on the lower front of the servo amplifier to the cabinet protective earth (PE).

MR-J4W2-B (2-axis, SSCNET III/H Interface) Specifications WB

Servo amplifier model MR-J4W2-			22B	44B	77B	1010B
Output	Rated voltage		3-phase 170 V AC			
	Rated current (each axis)	[A]	1.5	2.8	5.8	6.0
Main circuit power supply input	Voltage/frequency (Note 1)		3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz
	Rated current (Note 15)	[A]	2.9	5.2	7.5	9.8
	Permissible voltage fluctuation		3-phase or 1-phase 170 V AC to 264 V AC			3-phase 170 V AC to 264 V AC
	Permissible frequency fluctuation		±5% maximum			
Control circuit power supply input	Voltage/frequency		1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			
	Rated current	[A]	0.4			
	Permissible voltage fluctuation		1-phase 170 V AC to 264 V AC			
	Permissible frequency fluctuation		±5% maximum			
	Power consumption	[W]	55			
Interface power supply			24 V DC ± 10% (required current capacity: 0.35 A (including CN8 connector signals))			
Control method			Sine-wave PWM control/current control method			
Capacitor regeneration	Reusable regenerative energy (Note 5)	[J]	17	21	44	
	Moment of inertia (J) equivalent to permissible charging amount (Note 6)	[× 10^{-4} kg•m^2]	3.45	4.26	8.92	
	Mass equivalent to permissible charging amount (Note 7)	LM-H3 [kg]	3.8	4.7	9.8	
		LM-K2 LM-U2 [kg]	8.5	10.5	22.0	
Permissible regenerative power of the built-in regenerative resistor (Note 2, 3)		[W]	20		100	
Dynamic brake			Built-in (Note 4)			
SSCNET III/H command communication cycle (Note 13)			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-phase pulse)			
Analog monitor			None			
Fully closed loop control (Note 12)			Available (Note 11)			
Load-side encoder interface (Note 9)			Mitsubishi high-speed serial communication			
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, tightening & press-fit control, machine diagnosis function, power monitoring function, scale measurement function (Note 14), J3 compatibility mode			
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			

MR-J4W2-B (2-axis, SSCNET III/H Interface) Specifications

WB

Servo amplifier model MR-J4W2-		22B	44B	77B	1010B
Functional safety		STO (IEC/EN 61800-5-2) (Note 10)			
Safety performance	Standards certified by CB (Note 17)	EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2			
	Response performance	8 ms or less (STO input OFF → energy shut-off)			
	Test pulse input (STO) (Note 8)	Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum			
	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100 [years] (314a)			
	Diagnostic coverage (DC)	DC = Medium, 97.6 [%]			
	Probability of dangerous Failure per Hour (PFH)	PFH = 6.4 × 10^{-9} [1/h]			
Compliance to global standards		Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.			
Structure (IP rating)		Natural cooling, open (IP20)	Force cooling, open (IP20)		
Close mounting		Possible			
Environment	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)			
	Ambient humidity	Operation/storage: 90 %RH maximum (non-condensing)			
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust			
	Altitude	2000 m or less above sea level (Note 16)			
	Vibration resistance	5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)			
Mass	[kg]	1.5	1.5	2.0	2.0

Notes: 1. Rated output and speed of a rotary servo motor and a direct drive motor; and continuous thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.
2. Select the most suitable regenerative option for your system with our capacity selection software.
3. Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when regenerative option is used.
4. When using the built-in dynamic brake, refer to "MR-J4W2-_B MR-J4W3-_B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. Reusable regenerative energy is equivalent to the energy generated under the following conditions.
For rotary servo motor: the energy that is generated when the machine, whose moment of inertia is equivalent to the permissible charging amount, decelerates from the rated speed to a stop.
For linear servo motor: the energy that is generated when the machine, whose mass is equivalent to the permissible charging amount, decelerates from the maximum speed to a stop.
For direct drive motor: the energy that is generated when the machine, whose moment of inertia is equivalent to the permissible charging amount, decelerates from the rated speed to a stop.
6. This value is the moment of inertia when the rotary servo motor decelerates from the rated speed to a stop. When two axes are simultaneously decelerated, the permissible charging amount is equivalent to the total moments of inertia of the two axes. Otherwise, the permissible charging amount is equivalent to the moment of inertia of each axis. The value also applies to the direct drive motor.
7. This value is the mass when the linear servo motor decelerates from maximum speed to a stop. Mass of primary side (coil) is included. When two axes are simultaneously decelerated, the permissible charging amount is equivalent to the total masses of the two axes. Otherwise, the permissible charging amount is equivalent to the mass of each axis.
8. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
9. Not compatible with pulse train interface (A/B/Z-phase differential output type).
10. STO is common for all axes.
11. The load-side encoder and the servo motor encoder are compatible only with two-wire type communication method.
12. Fully closed loop control is available with the servo amplifiers with software version A3 or later.
13. The command communication cycle depends on the controller specifications and the number of axes connected.
14. This function is available with the servo amplifiers with software version A8 or later.
15. This value is applicable when a 3-phase power supply is used.
16. Refer to relevant Servo Amplifier Instruction Manual for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.
17. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to relevant Servo Amplifier Instruction Manual for details.

MR-J4W3-B (3-axis, SSCNET III/H Interface) Specifications WB

Servo amplifier model MR-J4W3-			222B	444B
Output	Rated voltage		3-phase 170 V AC	
	Rated current (each axis)	[A]	1.5	2.8
Main circuit power supply input	Voltage/frequency (Note 1)		3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz	
	Rated current (Note 12)	[A]	4.3	7.8
	Permissible voltage fluctuation		3-phase or 1-phase 170 V AC to 264 V AC	
	Permissible frequency fluctuation		±5% maximum	
Control circuit power supply input	Voltage/frequency		1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz	
	Rated current	[A]	0.4	
	Permissible voltage fluctuation		1-phase 170 V AC to 264 V AC	
	Permissible frequency fluctuation		±5% maximum	
	Power consumption	[W]	55	
Interface power supply			24 V DC ± 10% (required current capacity: 0.45 A (including CN8 connector signals))	
Control method			Sine-wave PWM control/current control method	
Capacitor regeneration	Reusable regenerative energy (Note 5)	[J]	21	30
	Moment of inertia (J) equivalent to permissible charging amount (Note 6)	[× 10^{-4} kg•m^2]	4.26	6.08
	Mass equivalent to permissible charging amount (Note 7)	LM-H3 [kg]	4.7	6.7
		LM-K2 LM-U2 [kg]	10.5	15.0
Permissible regenerative power of the built-in regenerative resistor (Note 2, 3)		[W]	30	
Dynamic brake			Built-in (Note 4)	
SSCNET III/H command communication cycle (Note 10)			0.222 ms (Note 11), 0.444 ms, 0.888 ms	
Communication function			USB: Connect a personal computer (MR Configurator2 compatible)	
Encoder output pulse			Not compatible	
Analog monitor			None	
Fully closed loop control			Not available	
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, tightening & press-fit control, machine diagnosis function, power monitoring function, J3 compatibility mode	
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	

MR-J4W3-B (3-axis, SSCNET III/H Interface) Specifications

WB

Servo amplifier model MR-J4W3-		222B	444B
Functional safety		STO (IEC/EN 61800-5-2) (Note 9)	
Safety performance	Standards certified by CB (Note 14)	EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2	
	Response performance	8 ms or less (STO input OFF → energy shut-off)	
	Test pulse input (STO) (Note 8)	Test pulse interval: 1 Hz to 25 Hz Test pulse off time: 1 ms maximum	
	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100 [years] (314a)	
	Diagnostic coverage (DC)	DC = Medium, 97.6 [%]	
	Probability of dangerous Failure per Hour (PFH)	PFH = 6.4 × 10^{-9} [1/h]	
Compliance to global standards		Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.	
Structure (IP rating)		Force cooling, open (IP20)	
Close mounting		Possible	
Environment	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)	
	Ambient humidity	Operation/storage: 90 %RH maximum (non-condensing)	
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust	
	Altitude	2000 m or less above sea level (Note 13)	
	Vibration resistance	5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)	
Mass [kg]		1.9	1.9

Notes:
1. Rated output and speed of a rotary servo motor and a direct drive motor; and continuous thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.
2. Select the most suitable regenerative option for your system with our capacity selection software.
3. Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when regenerative option is used.
4. When using the built-in dynamic brake, refer to "MR-J4W2-_B MR-J4W3-_B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. Reusable regenerative energy is equivalent to the energy generated under the following conditions.
   For rotary servo motor: the energy that is generated when the machine, whose moment of inertia is equivalent to the permissible charging amount, decelerates from the rated speed to a stop.
   For linear servo motor: the energy that is generated when the machine, whose mass is equivalent to the permissible charging amount, decelerates from the maximum speed to a stop.
   For direct drive motor: the energy that is generated when the machine, whose moment of inertia is equivalent to the permissible charging amount, decelerates from the rated speed to a stop.
6. This value is the moment of inertia when the rotary servo motor decelerates from the rated speed to a stop. When three axes are simultaneously decelerated, the permissible charging amount is equivalent to the total moments of inertia of the three axes. Otherwise, the permissible charging amount is equivalent to the moment of inertia of each axis. The value also applies to the direct drive motor.
7. This value is the mass when the linear servo motor decelerates from maximum speed to a stop. Mass of primary side (coil) is included. When three axes are simultaneously decelerated, the permissible charging amount is equivalent to the total masses of the three axes. Otherwise, the permissible charging amount is equivalent to the mass of each axis.
8. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
9. STO is common for all axes.
10. The command communication cycle depends on the controller specifications and the number of axes connected.
11. Servo amplifier with software version A3 or later is compatible with the command communication cycle of 0.222 ms. However, note that the following functions are not available when 0.222 ms is used: auto tuning (real time, one-touch, and vibration suppression control), adaptive filter II, vibration tough drive, and power monitoring.
12. This value is applicable when a 3-phase power supply is used.
13. Refer to relevant Servo Amplifier Instruction Manual for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.
14. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to relevant Servo Amplifier Instruction Manual for details.

MR-J4W2-0303B6 (2-axis, SSCNET III/H Interface) Specifications

WB

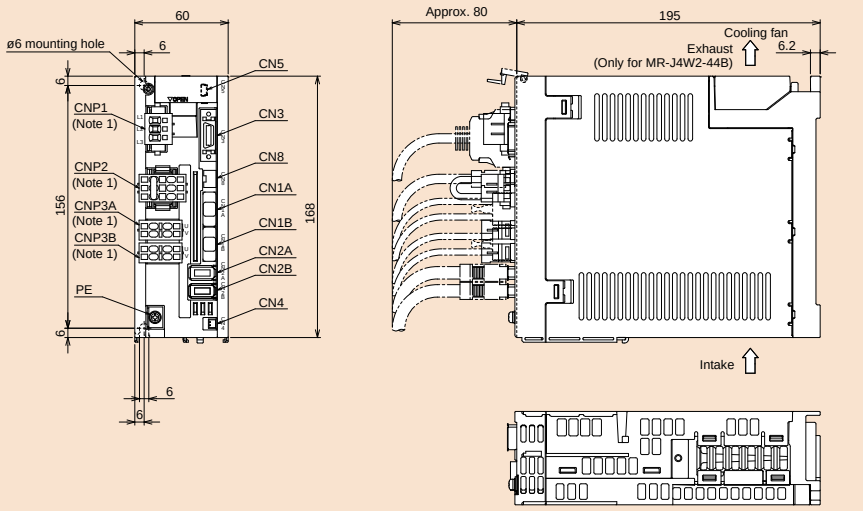
Servo amplifier model		MR-J4W2-0303B6
Output	Rated voltage	3-phase 13 V AC
	Rated current (each axis) [A]	2.4
Main circuit power supply input	Voltage (Note 1)	48 V DC/24 V DC (Note 4)
	Rated current [A]	For 48 V DC: 2.4 A For 24 V DC: 4.8 A
	Permissible voltage fluctuation	For 48 V DC: 40.8 V DC to 55.2 V DC For 24 V DC: 21.6 V DC to 26.4 V DC
Control circuit power supply input	Voltage	24 V DC
	Rated current [A]	0.5
	Permissible voltage fluctuation	21.6 V DC to 26.4 V DC
	Power consumption [W]	10
Interface power supply		24 V DC ± 10% (required current capacity: 0.25 A)
Control method		Sine-wave PWM control/current control method
Capacitor regeneration	Reusable regenerative energy (Note 2) [J]	0.9
	Moment of inertia (J) equivalent to permissible charging amount (Note 3) [× 10^{-4} kg•m^2]	0.18
Permissible regenerative power of the built-in regenerative resistor [W]		1.3
Dynamic brake		Built-in (Note 5, 6)
SSCNET III/H command communication cycle (Note 8)		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-phase pulse)
Analog monitor		2 channels
Fully closed loop control		Not compatible
Servo functions		Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, vibration tough drive function, drive recorder function, tightening & press-fit control, machine diagnosis function, power monitoring function, J3 compatibility mode
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
Compliance to global standards		Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.
Structure (IP rating)		Natural cooling, open (IP20)
Close mounting		Possible (Note 7)
DIN rail mounting (35 mm wide)		Possible
Environment	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)
	Ambient humidity	Operation/storage: 90 %RH maximum (non-condensing)
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust
	Altitude	1000 m or less above sea level
	Vibration resistance	5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)
Mass [kg]		0.3

Notes: 1. Rated output and speed of a servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage.
2. Reusable regenerative energy is equivalent to the energy that is generated when the machine, whose moment of inertia is equivalent to the permissible charging amount, decelerates from the rated speed to a stop.
3. This value is the moment of inertia when the rotary servo motor decelerates from the rated speed to a stop. When two axes are simultaneously decelerated, the permissible charging amount is equivalent to the total moments of inertia of the two axes. Otherwise, the permissible charging amount is equivalent to the moment of inertia of each axis.
4. Initial value is 48 V DC. For 24 V DC, set [Pr. PC05] to "_ 1 _ _." Servo motor characteristics vary depending whether the voltage is 48 V DC or 24 V DC. Refer to "HG-AK Series (Ultra-compact Size, Ultra-small Capacity) Specifications" and "HG-AK Series Torque Characteristics" in this catalog.
5. The dynamic brake is electronic. The electronic dynamic brake does not operate when the control circuit power is off. It may not operate depending on alarms and warnings. Refer to "MR-J4W2-_B MR-J4W3-_B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for details.
6. When using the built-in dynamic brake, refer to "MR-J4W2-_B MR-J4W3-_B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio.
7. When the servo amplifiers are closely mounted, keep the ambient temperature at 45 °C or lower, or keep the total load of the two axes at 45 W or lower.
8. The command communication cycle depends on the controller specifications and the number of axes connected.

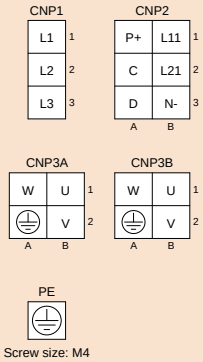
MR-J4W2-B Dimensions

WB

- MR-J4W2-22B
- MR-J4W2-44B



Terminal arrangement

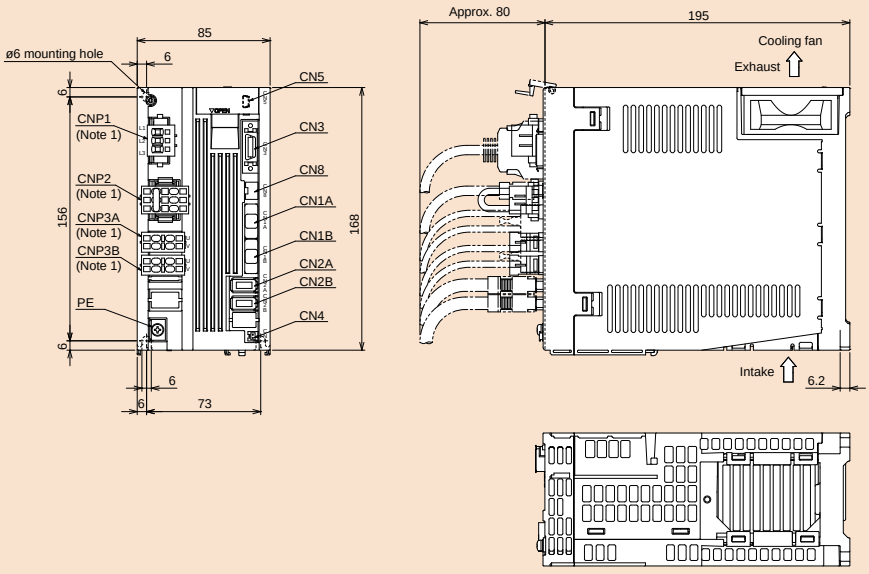


Screw size: M4

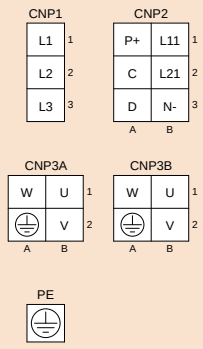
Mounting screw size: M5

[Unit: mm]

- MR-J4W2-77B
- MR-J4W2-1010B



Terminal arrangement



Screw size: M4

Mounting screw size: M5

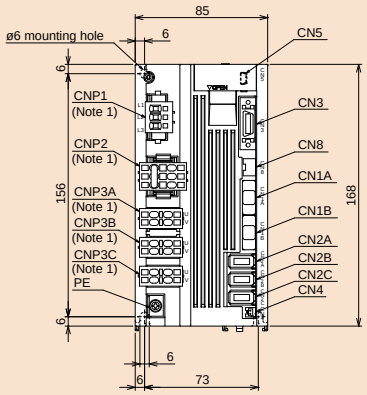
[Unit: mm]

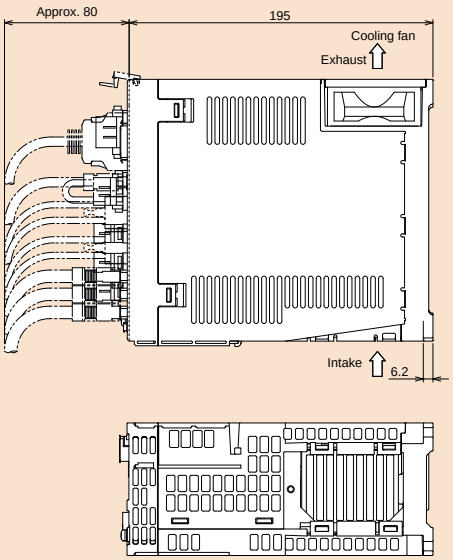
Notes: 1. CNP1, CNP2, CNP3A and CNP3B connectors (insertion type) are supplied with the servo amplifier.

MR-J4W3-B Dimensions

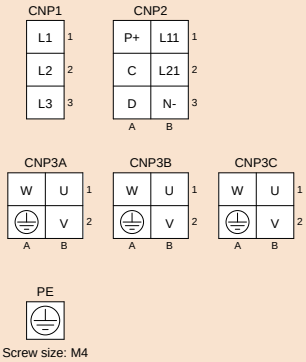
WB

- MR-J4W3-222B
- MR-J4W3-444B





Terminal arrangement



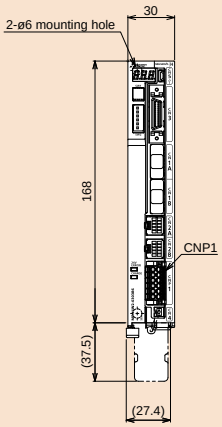
PE

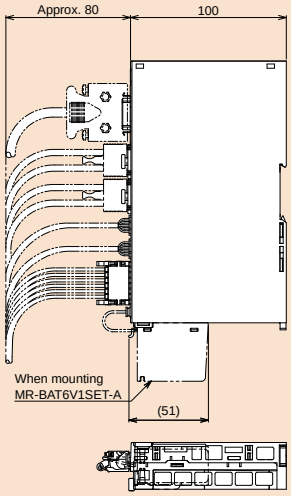
Screw size: M4

Mounting screw size: M5

[Unit: mm]

MR-J4W2-0303B6 Dimensions





Terminal arrangement

CNP1

6	24	0	12
5	PM	⏚	11
4	U1	W1	10
3	V1	E1	9
2	U2	W2	8
1	V2	E2	7

Mounting screw size: M5

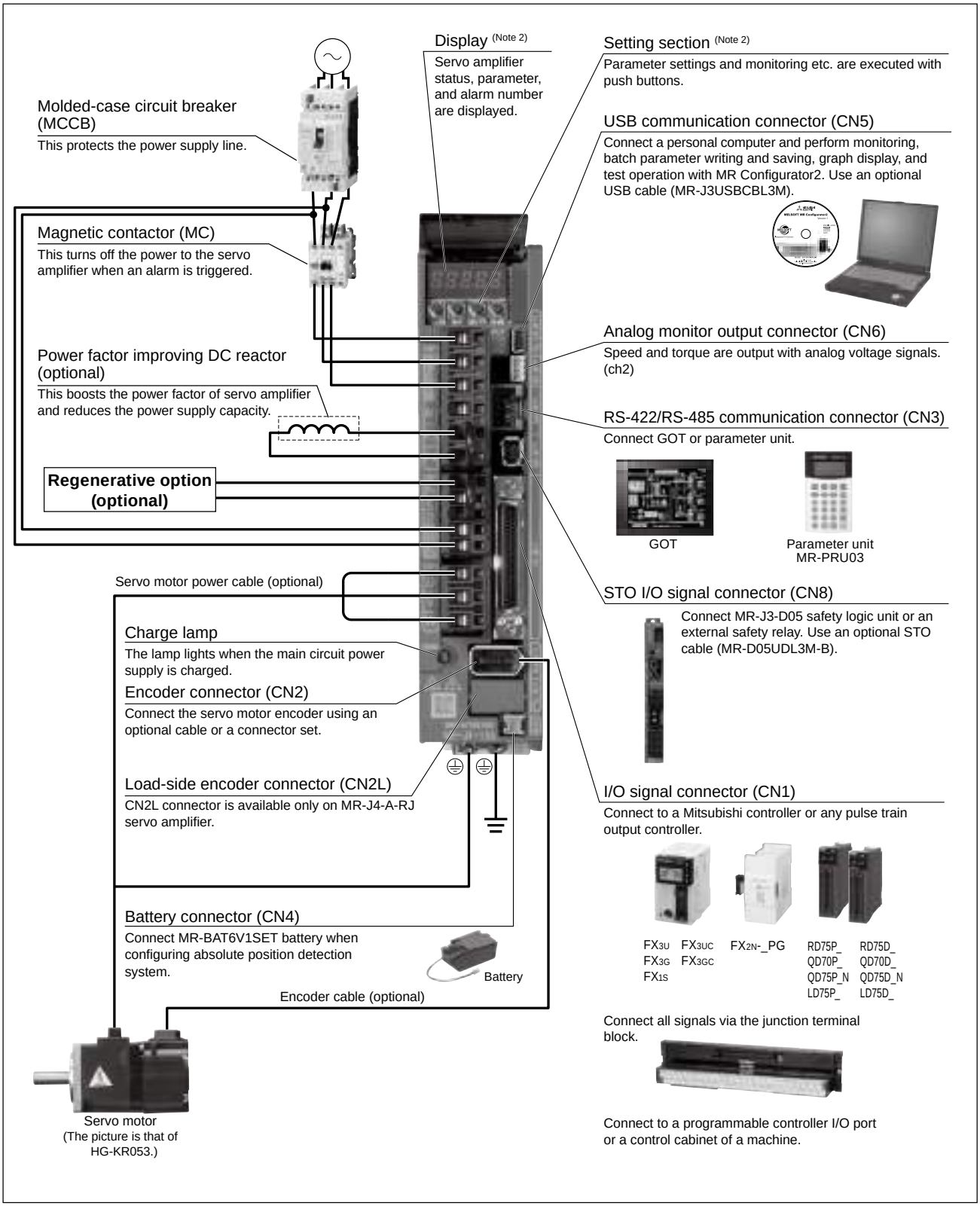
[Unit: mm]

Notes: 1. CNP1, CNP2, CNP3A, CNP3B and CNP3C connectors (insertion type) are supplied with the servo amplifier.

MR-J4-A/MR-J4-A-RJ Connections with Peripheral Equipment (Note 1)

A A-RJ

Peripheral equipment is connected to MR-J4-A/MR-J4-A-RJ as described below. Connectors, cables, options, and other necessary equipment are available so that users can set up the servo amplifier easily and start using it right away.



Notes: 1. The connection with the peripheral equipment is an example for MR-J4-350A/MR-J4-350A-RJ or smaller servo amplifiers. Refer to "MR-J4-_A_(-RJ) MR-J4-03A6(-RJ) Servo Amplifier Instruction Manual" for the actual connections.
2. This picture shows when the display cover is open.

MR-J4-A(1)/MR-J4-A(1)-RJ (General-purpose Interface) Specifications (200 V/100 V)

A A-RJ

Servo amplifier model MR-J4-_(-RJ)			10A	20A	40A	60A	70A	100A	200A	350A	500A	700A	11KA	15KA	22KA	10A1	20A1	40A1
Output	Rated voltage		3-phase 170 V AC															
	Rated current	[A]	1.1	1.5	2.8	3.2	5.8	6.0	11.0	17.0	28.0	37.0	68.0	87.0	126.0	1.1	1.5	2.8
Main circuit power supply input	Voltage/ frequency (Note 1)	AC input	3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz					3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz (Note 16)		3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz						1-phase 100 V AC to 120 V AC, 50 Hz/60 Hz		
		DC input (Note 19)	283 V DC to 340 V DC															
	Rated current (Note 14)	[A]	0.9	1.5	2.6	3.2 (Note 8)	3.8	5.0	10.5	16.0	21.7	28.9	46.0	64.0	95.0	3.0	5.0	9.0
	Permissible voltage fluctuation	AC input	3-phase or 1-phase 170 V AC to 264 V AC					3-phase or 1-phase 170 V AC to 264 V AC (Note 16)		3-phase 170 V AC to 264 V AC						1-phase 85 V AC to 132 V AC		
		DC input (Note 19)	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 100 V AC to 120 V AC, 50 Hz/60 Hz		
		DC input (Note 19)	283 V DC to 340 V DC															
	Rated current	[A]	0.2								0.3					0.4		
	Permissible voltage fluctuation	AC input	1-phase 170 V AC to 264 V AC													1-phase 85 V AC to 132 V AC		
		DC input (Note 19)	241 V DC to 374 V DC															
	Permissible frequency fluctuation		±5% maximum															
	Power consumption	[W]	30								45					30		
Interface power supply			24 V DC ± 10% (required current capacity: 0.5 A (including CN8 connector signals))															
Control method			Sine-wave PWM control/current control method															
Permissible regenerative power	Built-in regenerative resistor (Note 2, 3)	[W]	-	10	10	10	20	20	100	100	130	170	-	-	-	-	10	10
	External regenerative resistor (standard accessory) (Note 2, 3, 11, 12)	[W]	-	-	-	-	-	-	-	-	-	-	500 (800)	850 (1300)	850 (1300)	-	-	-
Dynamic brake			Built-in (Note 4)										External option (Note 13)			Built-in (Note 4)		
Communication function			USB: Connect a personal computer (MR Configurator2 compatible)															
			RS-422/RS-485: 1 : n communication (up to 32 axes) (Note 10)															
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: 22 bits															
	Command pulse multiplying factor		Electronic gear A/B multiple, A: 1 to 16777215, B: 1 to 16777215, 1/10 < A/B < 4000															
	Positioning complete width setting		0 pulse to ±65535 pulses (command pulse unit)															
	Error excessive		±3 rotations															
	Torque limit		Set by 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 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 parameters or external analog input (0 V DC to ± 10 V DC/rated speed)															
Positioning mode (Note 17)		MR-J4-A(1)	Not available															
		MR-J4-A(1)-RJ	Point table method, program method, indexer (turret) method															
Fully closed loop control		MR-J4-A(1) (Note 9)	Two-wire type communication method															
		MR-J4-A(1)-RJ	Two-wire/four-wire type communication method															
Load-side encoder interface		MR-J4-A(1)	Mitsubishi high-speed serial communication															
		MR-J4-A(1)-RJ	Mitsubishi high-speed serial communication, A/B/Z-phase differential input signal															
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function, power monitoring function, super trace control (Note 15), lost motion compensation (Note 15)															
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															

MR-J4-A(1)/MR-J4-A(1)-RJ (General-purpose Interface) Specifications (200 V/100 V)

A A-RJ

Servo amplifier model MR-J4-_(-RJ)		10A	20A	40A	60A	70A	100A	200A	350A	500A	700A	11KA	15KA	22KA	10A1	20A1	40A1
Functional safety		STO (IEC/EN 61800-5-2)															
Safety performance	Standards certified by CB (Note 20)	EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2															
	Response performance	8 ms or less (STO input OFF → energy shut-off)															
	Test pulse input (STO) (Note 7)	Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum															
	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100 [years] (314a)															
	Diagnostic coverage (DC)	DC = Medium, 97.6 [%]															
	Probability of dangerous Failure per Hour (PFH)	PFH = 6.4 × 10^{-9} [1/h]															
Compliance to global standards		Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.															
Structure (IP rating)		Natural cooling, open (IP20)				Force cooling, open (IP20)				Force cooling, open (IP20) (Note 5)					Natural cooling, open (IP20)		
Close mounting	3-phase power input	Possible (Note 6)								Not possible					-		
	1-phase power input	Possible (Note 6)				Not possible			-						Possible (Note 6)		
Environment	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)															
	Ambient humidity	Operation/storage: 90 %RH maximum (non-condensing)															
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust															
	Altitude	2000 m or less above sea level (Note 18)															
	Vibration resistance	5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)															
Mass	[kg]	0.8	0.8	1.0	1.0	1.4	1.4	2.1	2.3	4.0	6.2	13.4	13.4	18.2	0.8	0.8	1.0

Notes:
1. Rated output and speed of a rotary servo motor and a direct drive motor; and continuous thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.
2. Select the most suitable regenerative option for your system with our capacity selection software.
3. Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when regenerative option is used.
4. When using the built-in dynamic brake, refer to "MR-J4-_A_(-RJ) MR-J4-03A6(-RJ) Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. Terminal blocks are excluded.
6. When the servo amplifiers are closely mounted, keep the ambient temperature within 0 °C to 45 °C, or use the servo amplifier with 75% or less of the effective load ratio.
7. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
8. The rated current is 2.9 A when the servo amplifier is used with UL or CSA compliant servo motor.
9. Fully closed loop control is available with the servo amplifiers with software version A5 or later.
10. RS-422/RS-485 communication function is available with the servo amplifiers with software version A3 or later.
11. The value in brackets is 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.
12. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "1-Axis Servo Amplifier Model Designation" in this catalog for details.
13. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.
14. This value is applicable when a 3-phase power supply is used.
15. This function is available with the servo amplifiers with software version B4 or later.
16. Use the servo amplifier with 75% or less of the effective load ratio when servo amplifiers are used with a 1-phase 200 V AC to 240 V AC power supply.
17. The positioning mode is available with MR-J4-A-RJ servo amplifier with software version B3 or later.
18. Refer to relevant Servo Amplifier Instruction Manual for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.
19. MR-J4-_A-RJ and MR-J4-_A-EG servo amplifiers are available with DC power input. For a connection example of power circuit with DC input, refer to relevant Servo Amplifier Instruction Manual.
20. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to relevant Servo Amplifier Instruction Manual for details.

MR-J4-DU_A/MR-J4-DU_A-RJ (General-purpose Interface) Specifications (200 V)

A A-RJ

Drive unit model MR-J4-_(-RJ)			DU30KA	DU37KA
Compatible converter unit model			MR-CR55K (Note 4)	
Output	Rated voltage		3-phase 170 V AC	
	Rated current	[A]	174	204
Main circuit power supply input			Main circuit power is supplied from the converter unit to the drive unit. (Note 4)	
Control circuit power supply input	Voltage/frequency		1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz	
	Rated current	[A]	0.3	
	Permissible voltage fluctuation		1-phase 170 V AC to 264 V AC	
	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	
Dynamic brake			External option (Note 3)	
Communication function			USB: Connect a personal computer (MR Configurator2 compatible)	
			RS-422/RS-485: 1 : n communication (up to 32 axes) (Note 5)	
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: 22 bits	
	Command pulse multiplying factor		Electronic gear A/B multiple, A: 1 to 16777215, B: 1 to 16777215, 1/10 < A/B < 4000	
	Positioning complete width setting		0 pulse to ±65535 pulses (command pulse unit)	
	Error excessive		±3 rotations	
	Torque limit		Set by 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 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 parameters or external analog input (0 V DC to ± 10 V DC/rated speed)	
Positioning mode (Note 6)		MR-J4-DU_A	Not available	
		MR-J4-DU_A-RJ	Point table method, program method, indexer (turret) method	
Fully closed loop control		MR-J4-DU_A	Two-wire type communication method	
		MR-J4-DU_A-RJ	Two-wire/four-wire type communication method	
Load-side encoder interface		MR-J4-DU_A	Mitsubishi high-speed serial communication	
		MR-J4-DU_A-RJ	Mitsubishi high-speed serial communication, A/B/Z-phase differential input signal	
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function, power monitoring function, super trace control, lost motion compensation	
Protective functions			Overcurrent shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection	

MR-J4-DU_A/MR-J4-DU_A-RJ (General-purpose Interface) Specifications (200 V) A A-RJ

Drive unit model MR-J4-_(-RJ)		DU30KA	DU37KA
Functional safety		STO (IEC/EN 61800-5-2)	
Safety performance	Standards certified by CB (Note 8)	EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2	
	Response performance	8 ms or less (STO input OFF → energy shut-off)	
	Test pulse input (STO) (Note 2)	Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum	
	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100 [years] (314a)	
	Diagnostic coverage (DC)	DC = Medium, 97.6 [%]	
	Probability of dangerous Failure per Hour (PFH)	PFH = 6.4 × 10^{-9} [1/h]	
Compliance to global standards		Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.	
Structure (IP rating)		Force cooling, open (IP20) (Note 1)	
Close mounting		Not possible	
Environment	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)	
	Ambient humidity	Operation/storage: 90 %RH maximum (non-condensing)	
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust	
	Altitude	2000 m or less above sea level (Note 7)	
	Vibration resistance	5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)	
Mass [kg]		21	

Notes: 1. Terminal blocks are excluded.
2. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the drive unit instantaneously at regular intervals.
3. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.
4. One unit of converter unit is required for each drive unit. Refer to "MR-CR Converter Unit Specifications (200 V/400 V)" on p. 302 in this catalog for the specifications of the converter unit.
5. RS-485 communication function is available with the drive units manufactured in January 2015 or later. Refer to "MR-J4-DU_(-RJ) MR-CR-55K_Servo Amplifier Instruction Manual" for checking procedure of manufacture data.
6. The positioning mode is available with MR-J4-DU_A-RJ drive unit with software version B3 or later.
7. Refer to relevant Servo Amplifier Instruction Manual for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.
8. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to relevant Servo Amplifier Instruction Manual for details.

MR-J4-A4/MR-J4-A4-RJ (General-purpose Interface) Specifications (400 V) A A-RJ

Servo amplifier model MR-J4-_(-RJ)			60A4	100A4	200A4	350A4	500A4	700A4	11KA4	15KA4	22KA4
Output	Rated voltage		3-phase 323 V AC								
	Rated current	[A]	1.5	2.8	5.4	8.6	14.0	17.0	32.0	41.0	63.0
Main circuit power supply input	Voltage/frequency (Note 1)		3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz								
	Rated current	[A]	1.4	2.5	5.1	7.9	10.8	14.4	23.1	31.8	47.6
	Permissible voltage fluctuation		3-phase 323 V AC to 528 V AC								
	Permissible frequency fluctuation		±5% maximum								
Control circuit power supply input	Voltage/frequency		1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz								
	Rated current	[A]	0.1			0.2					
	Permissible voltage fluctuation		1-phase 323 V AC to 528 V AC								
	Permissible frequency fluctuation		±5% maximum								
	Power consumption	[W]	30			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	Built-in regenerative resistor (Note 2, 3)	[W]	15	15	100	100	130 (Note 10)	170 (Note 10)	-	-	-
	External regenerative resistor (standard accessory) (Note 2, 3, 7, 8)	[W]	-	-	-	-	-	-	500 (800)	850 (1300)	850 (1300)
Dynamic brake			Built-in (Note 4)						External option (Note 9)		
Communication function			USB: Connect a personal computer (MR Configurator2 compatible)								
			RS-422/RS-485: 1 : n communication (up to 32 axes) (Note 12)								
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: 22 bits								
	Command pulse multiplying factor		Electronic gear A/B multiple, A: 1 to 16777215, B: 1 to 16777215, 1/10 < A/B < 4000								
	Positioning complete width setting		0 pulse to ±65535 pulses (command pulse unit)								
	Error excessive		±3 rotations								
	Torque limit		Set by 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 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 parameters or external analog input (0 V DC to ± 10 V DC/rated speed)								
Positioning mode (Note 13)		MR-J4-A4	Not available								
		MR-J4-A4-RJ	Point table method, program method, indexer (turret) method								
Fully closed loop control		MR-J4-A4	Two-wire type communication method								
		MR-J4-A4-RJ	Two-wire/four-wire type communication method								
Load-side encoder interface		MR-J4-A4	Mitsubishi high-speed serial communication								
		MR-J4-A4-RJ	Mitsubishi high-speed serial communication, A/B/Z-phase differential input signal								
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function, power monitoring function, super trace control (Note 11), lost motion compensation (Note 11)								
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								

MR-J4-A4/MR-J4-A4-RJ (General-purpose Interface) Specifications (400 V)

A A-RJ

Servo amplifier model MR-J4-_(-RJ)		60A4	100A4	200A4	350A4	500A4	700A4	11KA4	15KA4	22KA4
Functional safety		STO (IEC/EN 61800-5-2)								
Safety performance	Standards certified by CB (Note 15)	EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2								
	Response performance	8 ms or less (STO input OFF → energy shut-off)								
	Test pulse input (STO) (Note 6)	Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum								
	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100 [years] (314a)								
	Diagnostic coverage (DC)	DC = Medium, 97.6 [%]								
	Probability of dangerous Failure per Hour (PFH)	PFH = 6.4 × 10^{-9} [1/h]								
Compliance to global standards		Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.								
Structure (IP rating)		Natural cooling, open (IP20)		Force cooling, open (IP20)		Force cooling, open (IP20) (Note 5)				
Close mounting		Not possible								
Environment	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)								
	Ambient humidity	Operation/storage: 90 %RH maximum (non-condensing)								
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust								
	Altitude	2000 m or less above sea level (Note 14)								
	Vibration resistance	5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)								
Mass	[kg]	1.7	1.7	2.1	3.6	4.3	6.5	13.4	13.4	18.2

Notes: 1. Rated output and speed of a rotary servo motor, and continuous thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.
2. Select the most suitable regenerative option for your system with our capacity selection software.
3. Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when regenerative option is used.
4. When using the built-in dynamic brake, refer to "MR-J4-_A_(-RJ) MR-J4-03A6(-RJ) Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. Terminal blocks are excluded.
6. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
7. The value in brackets is 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.
8. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "1-Axis Servo Amplifier Model Designation" in this catalog for details.
9. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.
10. The servo amplifier built-in regenerative resistor is compatible with the maximum torque deceleration when the servo motor is used within the rated speed and the recommended load to motor inertia ratio. Contact your local sales office if the operating motor speed or the load to motor inertia ratio exceeds the rated speed or the recommended ratio.
11. This function is available with the servo amplifiers with software version B4 or later.
12. RS-485 communication function is available with the servo amplifiers manufactured in November 2014 or later. Refer to "MR-J4-_A_(-RJ) MR-J4-03A6(-RJ) Servo Amplifier Instruction Manual" for checking procedure of manufacture data.
13. The positioning mode is available with MR-J4-A4-RJ servo amplifier with software version B3 or later.
14. Refer to relevant Servo Amplifier Instruction Manual for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.
15. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to relevant Servo Amplifier Instruction Manual for details.

MR-J4-DU_A4/MR-J4-DU_A4-RJ (General-purpose Interface) Specifications (400 V)

A A-RJ

Drive unit model MR-J4-_(-RJ)			DU30KA4	DU37KA4	DU45KA4	DU55KA4
Compatible converter unit model			MR-CR55K4 (Note 4)			
Output	Rated voltage		3-phase 323 V AC			
	Rated current	[A]	87	102	131	143
Main circuit power supply input			Main circuit power is supplied from the converter unit to the drive unit. (Note 4)			
Control circuit power supply input	Voltage/frequency		1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz			
	Rated current	[A]	0.2			
	Permissible voltage fluctuation		1-phase 323 V AC to 528 V AC			
	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			
Dynamic brake			External option (Note 3)			
Communication function			USB: Connect a personal computer (MR Configurator2 compatible)			
			RS-422/RS-485: 1 : n communication (up to 32 axes) (Note 5)			
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: 22 bits			
	Command pulse multiplying factor		Electronic gear A/B multiple, A: 1 to 16777215, B: 1 to 16777215, 1/10 < A/B < 4000			
	Positioning complete width setting		0 pulse to ±65535 pulses (command pulse unit)			
	Error excessive		±3 rotations			
	Torque limit		Set by 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 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 parameters or external analog input (0 V DC to ± 10 V DC/rated speed)			
Positioning mode (Note 6)		MR-J4-DU_A4	Not available			
		MR-J4-DU_A4-RJ	Point table method, program method, indexer (turret) method			
Fully closed loop control		MR-J4-DU_A4	Two-wire type communication method			
		MR-J4-DU_A4-RJ	Two-wire/four-wire type communication method			
Load-side encoder interface		MR-J4-DU_A4	Mitsubishi high-speed serial communication			
		MR-J4-DU_A4-RJ	Mitsubishi high-speed serial communication, A/B/Z-phase differential input signal			
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function, power monitoring function, super trace control, lost motion compensation			
Protective functions			Overcurrent shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection,			

MR-J4-DU_A4/MR-J4-DU_A4-RJ (General-purpose Interface) Specifications (400 V) A A-RJ

Drive unit model MR-J4-_(-RJ)		DU30KA4	DU37KA4	DU45KA4	DU55KA4
Functional safety		STO (IEC/EN 61800-5-2)			
Safety performance	Standards certified by CB (Note 8)	EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2			
	Response performance	8 ms or less (STO input OFF → energy shut-off)			
	Test pulse input (STO) (Note 2)	Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum			
	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100 [years] (314a)			
	Diagnostic coverage (DC)	DC = Medium, 97.6 [%]			
	Probability of dangerous Failure per Hour (PFH)	PFH = 6.4 × 10^{-9} [1/h]			
Compliance to global standards		Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.			
Structure (IP rating)		Force cooling, open (IP20) (Note 1)			
Close mounting		Not possible			
Environment	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)			
	Ambient humidity	Operation/storage: 90 %RH maximum (non-condensing)			
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust			
	Altitude	2000 m or less above sea level (Note 7)			
	Vibration resistance	5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)			
Mass	[kg]	16		21	

Notes: 1. Terminal blocks are excluded.
2. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the drive unit instantaneously at regular intervals.
3. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.
4. One unit of converter unit is required for each drive unit. Refer to "MR-CR Converter Unit Specifications (200 V/400 V)" on p. 302 in this catalog for the specifications of the converter unit.
5. RS-485 communication function is available with the drive units manufactured in January 2015 or later. Refer to "MR-J4-DU_(-RJ) MR-CR-55K_Servo Amplifier Instruction Manual" for checking procedure of manufacture data.
6. The positioning mode is available with MR-J4-DU_A4-RJ drive unit with software version B3 or later.
7. Refer to relevant Servo Amplifier Instruction Manual for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.
8. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to relevant Servo Amplifier Instruction Manual for details.

MR-J4-03A6/MR-J4-03A6-RJ (General-purpose Interface) Specifications

A A-RJ

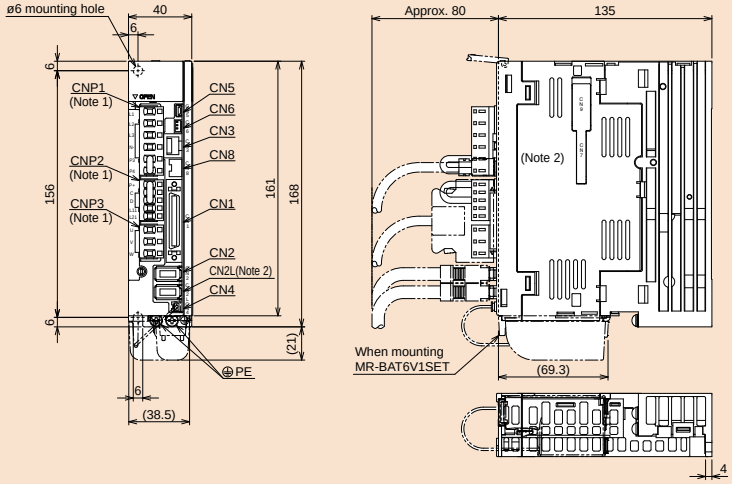
Servo amplifier model			MR-J4-03A6	MR-J4-03A6-RJ
Output	Rated voltage		3-phase 13 V AC	
	Rated current	[A]	2.4	
Main circuit power supply input	Voltage (Note 1)		48 V DC/24 V DC (Note 2)	
	Rated current	[A]	For 48 V DC: 1.2 A For 24 V DC: 2.4 A	
	Permissible voltage fluctuation		For 48 V DC: 40.8 V DC to 55.2 V DC For 24 V DC: 21.6 V DC to 26.4 V DC	
Control circuit power supply input	Voltage		24 V DC	
	Rated current	[A]	0.2	
	Permissible voltage fluctuation		21.6 V DC to 26.4 V DC	
	Power consumption	[W]	5.0	
Interface power supply			24 V DC ± 10% (required current capacity: 0.3 A)	
Control method			Sine-wave PWM control/current control method	
Permissible regenerative power of the built-in regenerative resistor		[W]	0.7	
Dynamic brake			Built-in (Note 3, 4)	
Communication function			USB: Connect a personal computer (MR Configurator2 compatible)	
			RS-422: 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: 18 bits	
	Command pulse multiplying factor		Electronic gear A/B multiple, A: 1 to 16777215, B: 1 to 16777215, 1/10 < A/B < 4000	
	Positioning complete width setting		0 pulse to ±65535 pulses (command pulse unit)	
	Error excessive		±3 rotations	
	Torque limit		Set by 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 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 parameters or external analog input (0 V DC to ± 10 V DC/rated speed)	
Positioning mode			Not available	Point table method, program method, indexer (turret) method
Fully closed loop control			Not compatible	
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, vibration tough drive function, drive recorder function, machine diagnosis function, power monitoring 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	
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.	
Structure (IP rating)			Natural cooling, open (IP20)	
Close mounting			Possible (Note 5)	
DIN rail mounting (35 mm wide)			Possible	
Environment	Ambient temperature		Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)	
	Ambient humidity		Operation/storage: 90 %RH maximum (non-condensing)	
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust	
	Altitude		1000 m or less above sea level	
	Vibration resistance		5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)	
Mass		[kg]	0.2	

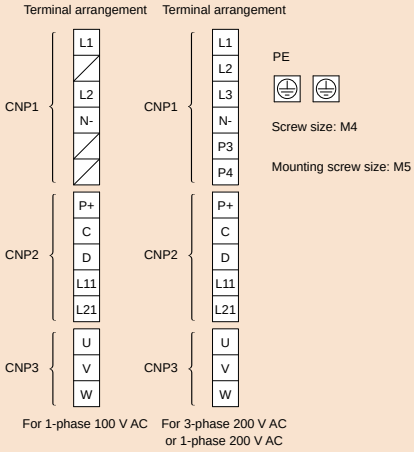
Notes: 1. Rated output and speed of a servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage.
2. Initial value is 48 V DC. For 24 V DC, set [Pr. PC27] to "_ _1 _." Servo motor characteristics vary depending on whether the voltage is 48 V DC or 24 V DC. Refer to "HG-AK Series (Ultra-compact Size, Ultra-small Capacity) Specifications" and "HG-AK Series Torque Characteristics" in this catalog.
3. The dynamic brake is electronic. The electronic dynamic brake does not operate when the control circuit power is off. It may not operate depending on alarms and warnings. Refer to "MR-J4-_A_(-RJ) MR-J4-03A6(-RJ) Servo Amplifier Instruction Manual" for details.
4. When using the built-in dynamic brake, refer to "MR-J4-_A_(-RJ) MR-J4-03A6(-RJ) Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio.
5. When the servo amplifiers are closely mounted, keep the ambient temperature within 0 °C to 45 °C.

MR-J4-A/MR-J4-A-RJ Dimensions

A A-RJ

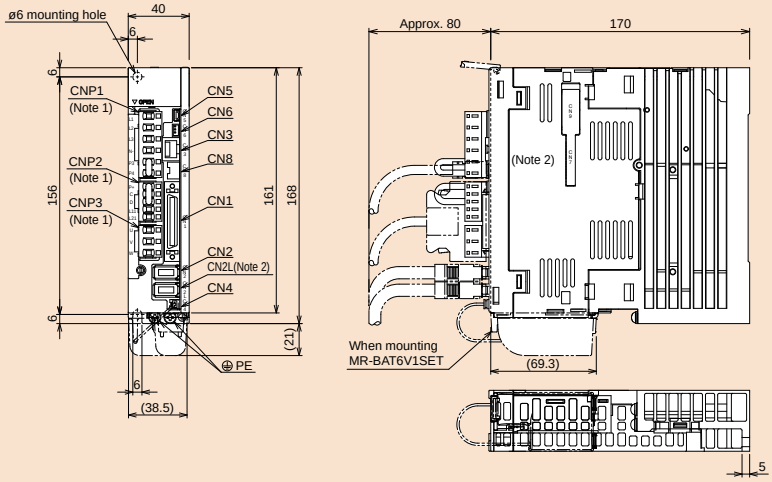
●MR-J4-10A, MR-J4-10A-RJ, MR-J4-10A1, MR-J4-10A1-RJ
●MR-J4-20A, MR-J4-20A-RJ, MR-J4-20A1, MR-J4-20A1-RJ

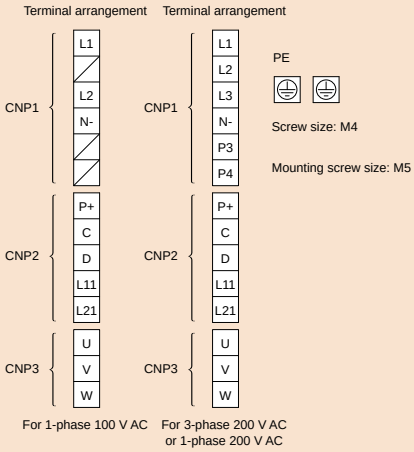




[Unit: mm]

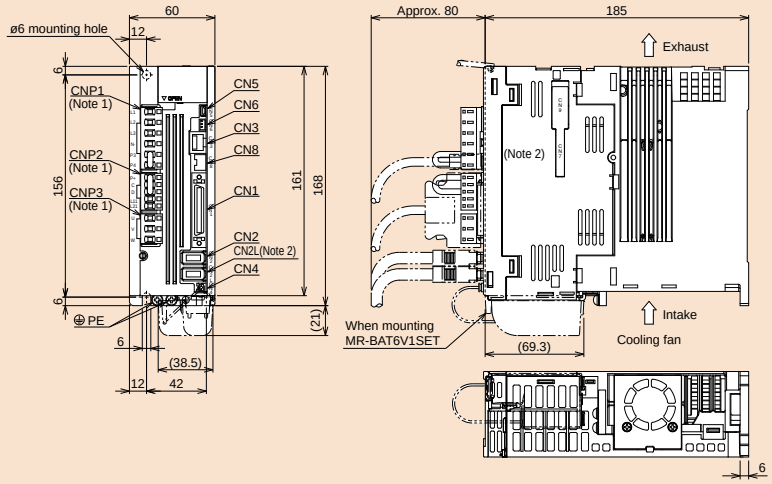
●MR-J4-40A, MR-J4-40A-RJ, MR-J4-40A1, MR-J4-40A1-RJ
●MR-J4-60A, MR-J4-60A-RJ

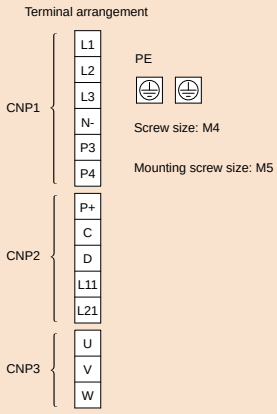




[Unit: mm]

●MR-J4-70A, MR-J4-70A-RJ
●MR-J4-100A, MR-J4-100A-RJ





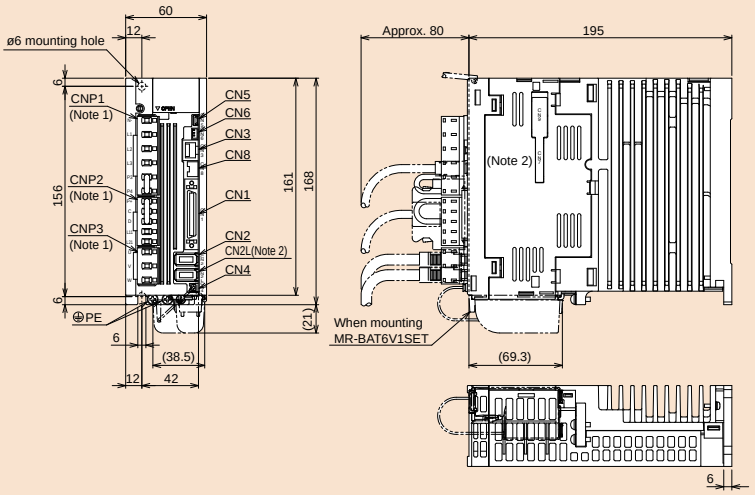
[Unit: mm]

Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier.
2. CN2L, CN7, and CN9 connectors are not available for MR-J4-A servo amplifier. CN9 connector is available with MR-J4-A-RJ servo amplifiers manufactured in November 2014 or later.

MR-J4-A/MR-J4-A-RJ Dimensions

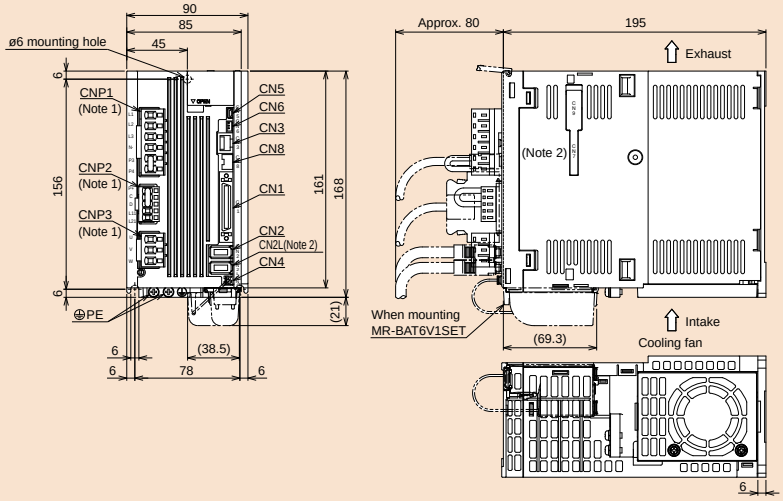
A A-RJ

●MR-J4-60A4, MR-J4-60A4-RJ
●MR-J4-100A4, MR-J4-100A4-RJ



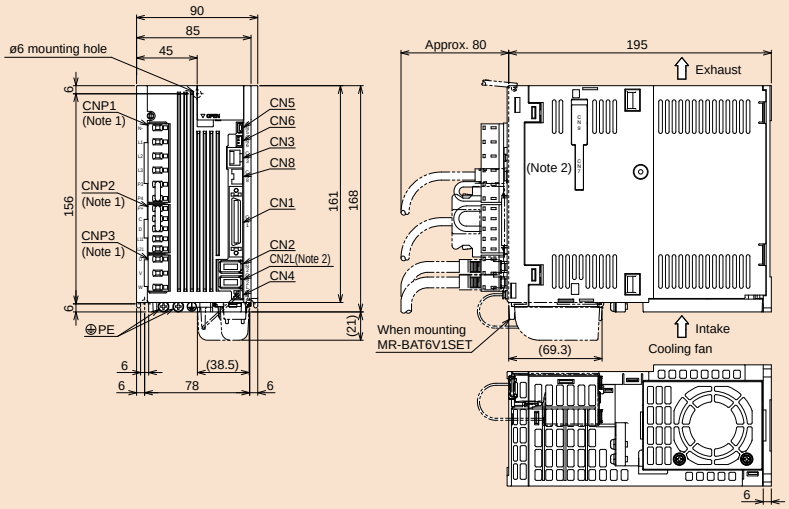
[Unit: mm]

●MR-J4-200A, MR-J4-200A-RJ



[Unit: mm]

●MR-J4-200A4, MR-J4-200A4-RJ



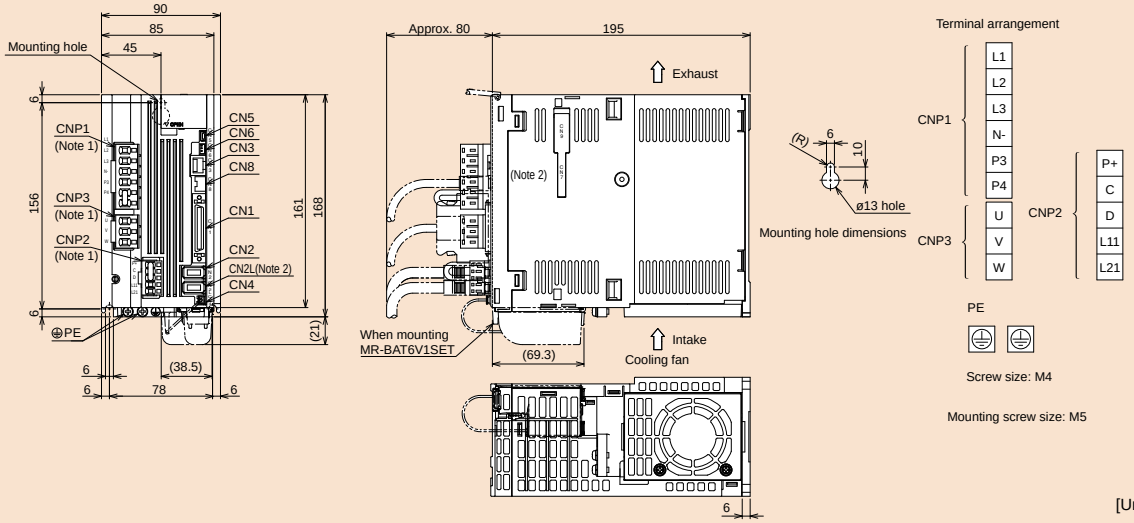
[Unit: mm]

Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier.
2. CN2L, CN7, and CN9 connectors are not available for MR-J4-A servo amplifier. CN9 connector is available with MR-J4-A-RJ servo amplifiers manufactured in November 2014 or later.

MR-J4-A/MR-J4-A-RJ Dimensions

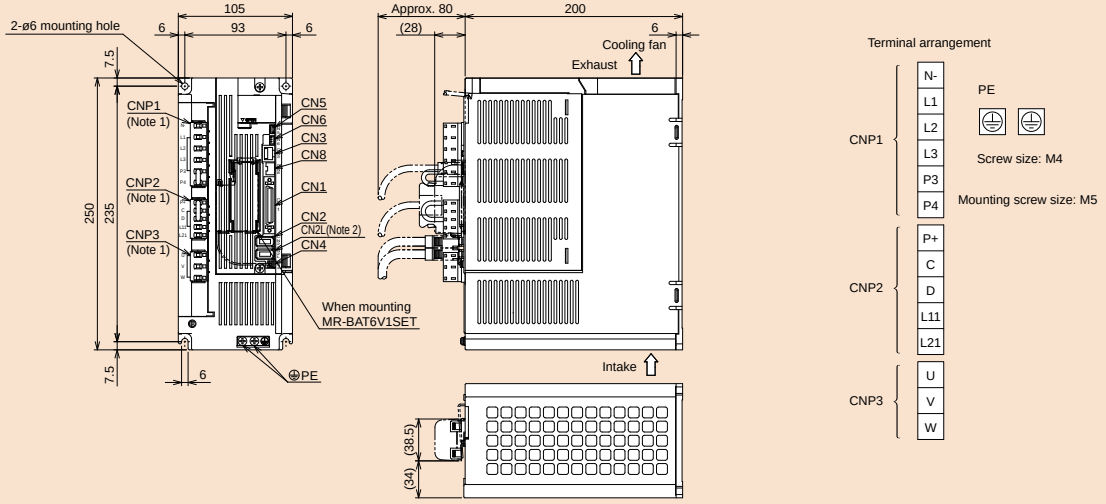
A A-RJ

●MR-J4-350A, MR-J4-350A-RJ



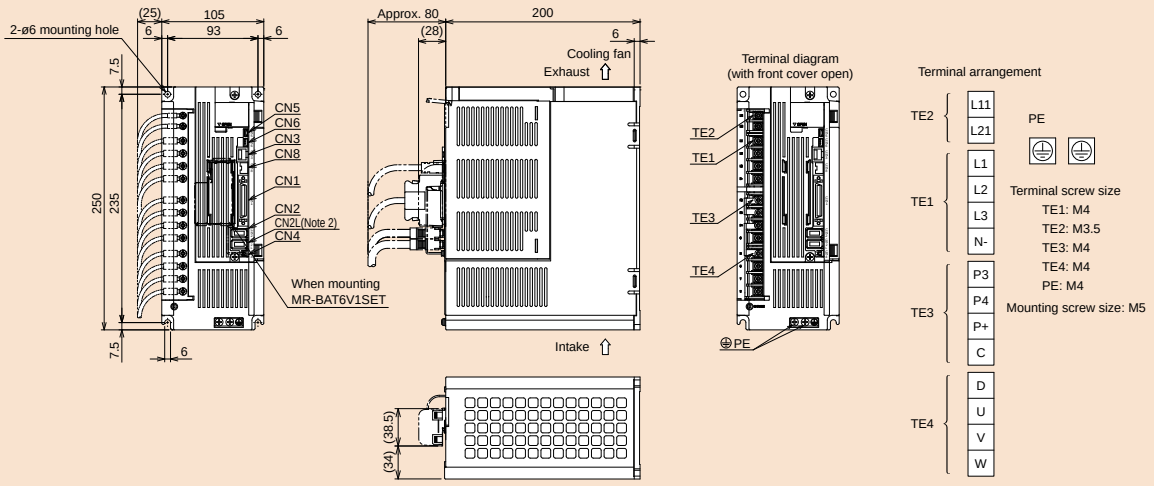
[Unit: mm]

●MR-J4-350A4, MR-J4-350A4-RJ



[Unit: mm]

●MR-J4-500A, MR-J4-500A-RJ



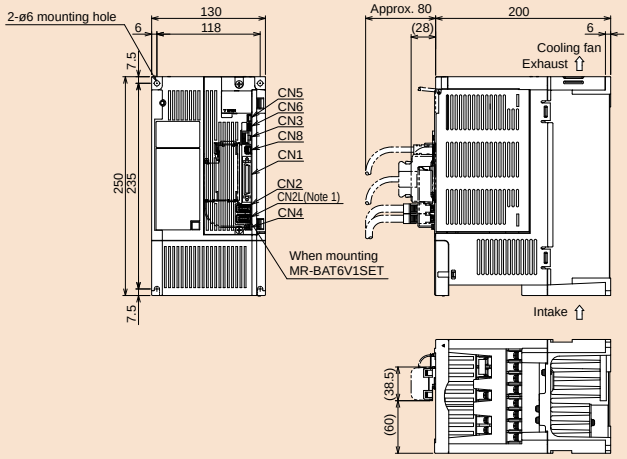
[Unit: mm]

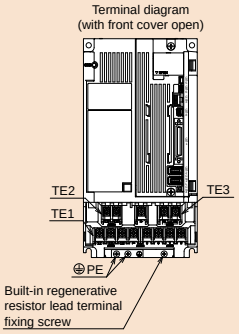
Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier.
2. CN2L, CN7, and CN9 connectors are not available for MR-J4-A servo amplifier. CN9 connector is available with MR-J4-A-RJ servo amplifiers manufactured in November 2014 or later.

MR-J4-A/MR-J4-A-RJ Dimensions

A A-RJ

●MR-J4-500A4, MR-J4-500A4-RJ





Terminal screw size
TE1: M4
TE2: M3.5
TE3: M4
PE: M4

Mounting screw size: M5

Terminal arrangement

TE2: L11 L21

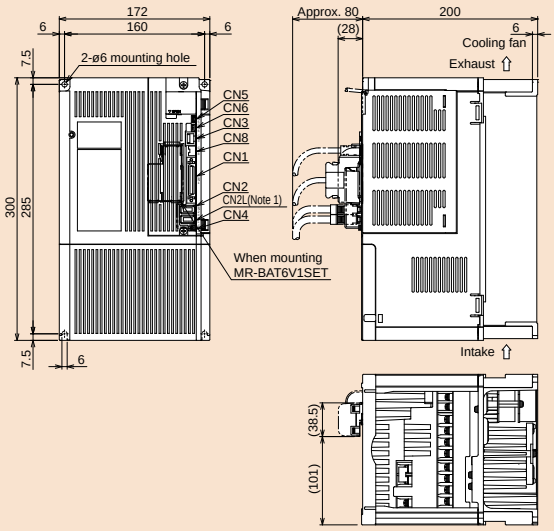
TE3: N- P3 P4

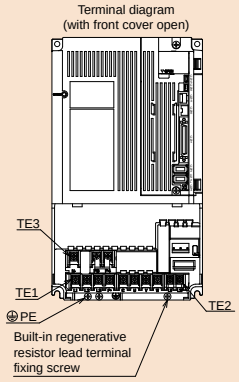
TE1: L1 L2 L3 P+ C U V W

PE

[Unit: mm]

●MR-J4-700A, MR-J4-700A-RJ, MR-J4-700A4, MR-J4-700A4-RJ





Terminal screw size
TE1: M4
TE2: M3.5
TE3: M4
PE: M4

Mounting screw size: M5

Terminal arrangement

TE3: N- P3 P4

TE1: L1 L2 L3 P+ C U V W

TE2: L11 L21

PE

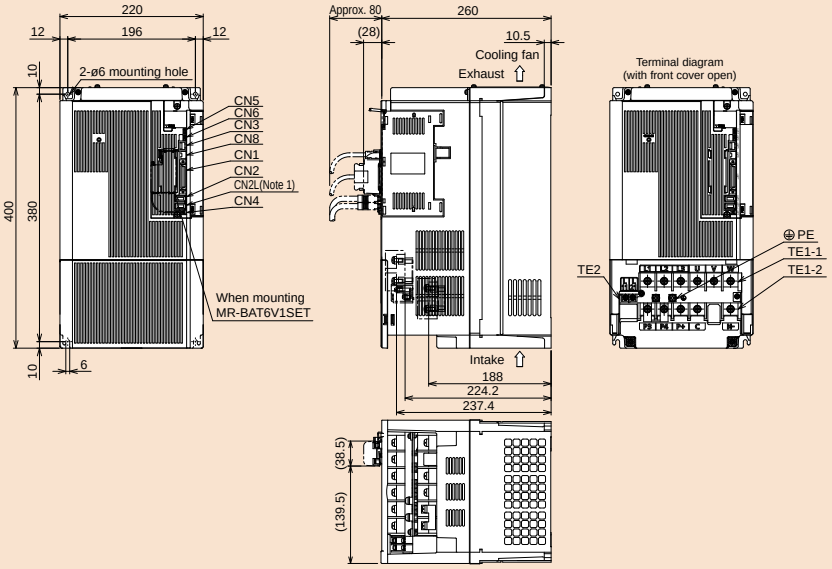
[Unit: mm]

Notes: 1. CN2L, CN7, and CN9 connectors are not available for MR-J4-A servo amplifier. CN9 connector is available with MR-J4-A-RJ servo amplifiers manufactured in November 2014 or later.

MR-J4-A/MR-J4-A-RJ Dimensions

A A-RJ

●MR-J4-11KA, MR-J4-11KA-RJ, MR-J4-11KA4, MR-J4-11KA4-RJ
●MR-J4-15KA, MR-J4-15KA-RJ, MR-J4-15KA4, MR-J4-15KA4-RJ



Terminal screw size
TE1-1: M6
TE1-2: M6
TE2: M4
PE: M6
Mounting screw size: M5

Terminal arrangement

TE1-1

L1	L2	L3	U	V	W

TE1-2

P3	P4	P+	C		N-

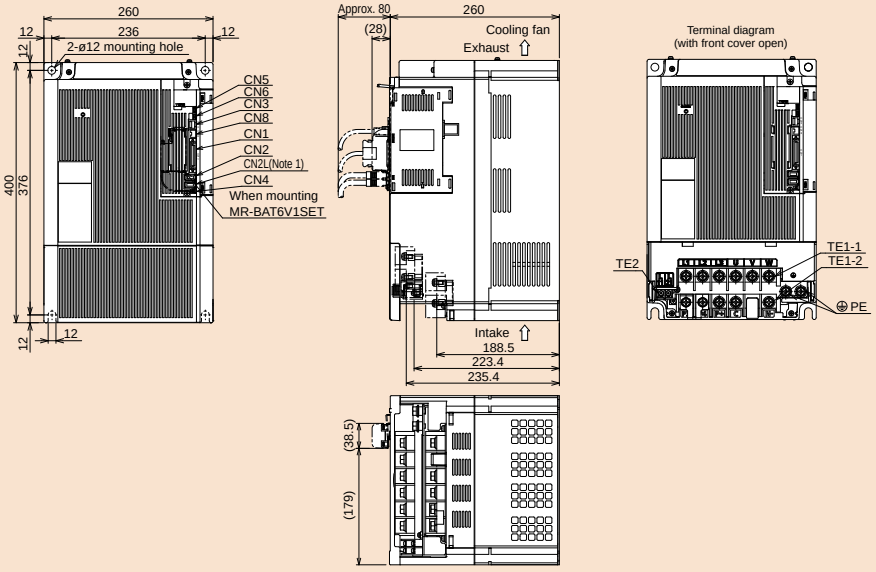
TE2

L11	L21

PE

[Unit: mm]

●MR-J4-22KA, MR-J4-22KA-RJ, MR-J4-22KA4, MR-J4-22KA4-RJ



Terminal screw size
TE1-1: M8
TE1-2: M8
TE2: M4
PE: M8
Mounting screw size: M10

Terminal arrangement

TE1-1

L1	L2	L3	U	V	W

TE1-2

P3	P4	P+	C		N-

TE2

L11	L21

PE

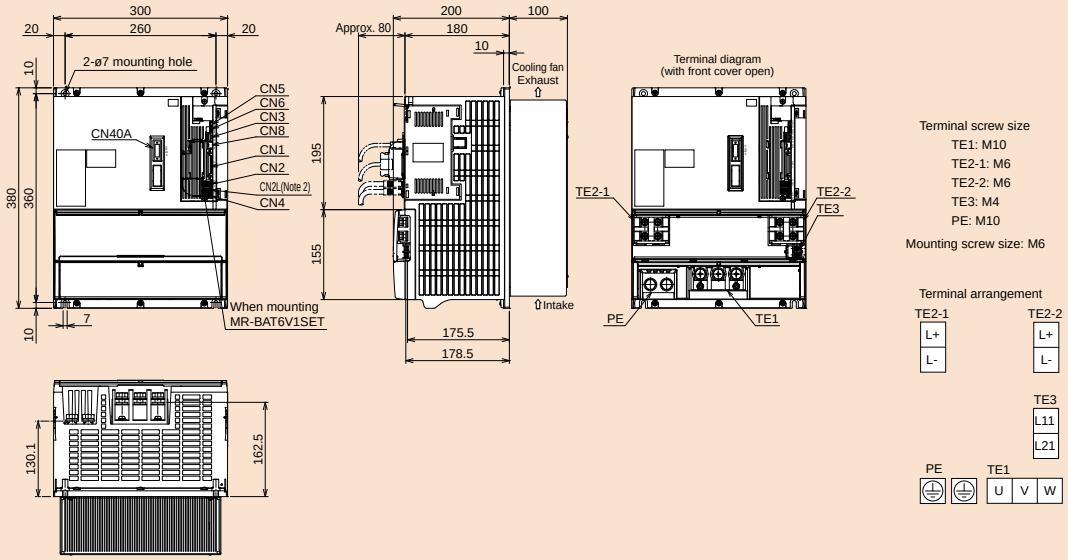
[Unit: mm]

Notes: 1. CN2L, CN7, and CN9 connectors are not available for MR-J4-A servo amplifier. CN9 connector is available with MR-J4-A-RJ servo amplifiers manufactured in November 2014 or later.

MR-J4-DU_A/MR-J4-DU_A-RJ Dimensions (Note 1)

A A-RJ

- MR-J4-DU30KA, MR-J4-DU30KA-RJ
- MR-J4-DU37KA, MR-J4-DU37KA-RJ
- MR-J4-DU45KA4, MR-J4-DU45KA4-RJ
- MR-J4-DU55KA4, MR-J4-DU55KA4-RJ



Terminal screw size
TE1: M10
TE2-1: M6
TE2-2: M6
TE3: M4
PE: M10

Mounting screw size: M6

Terminal arrangement

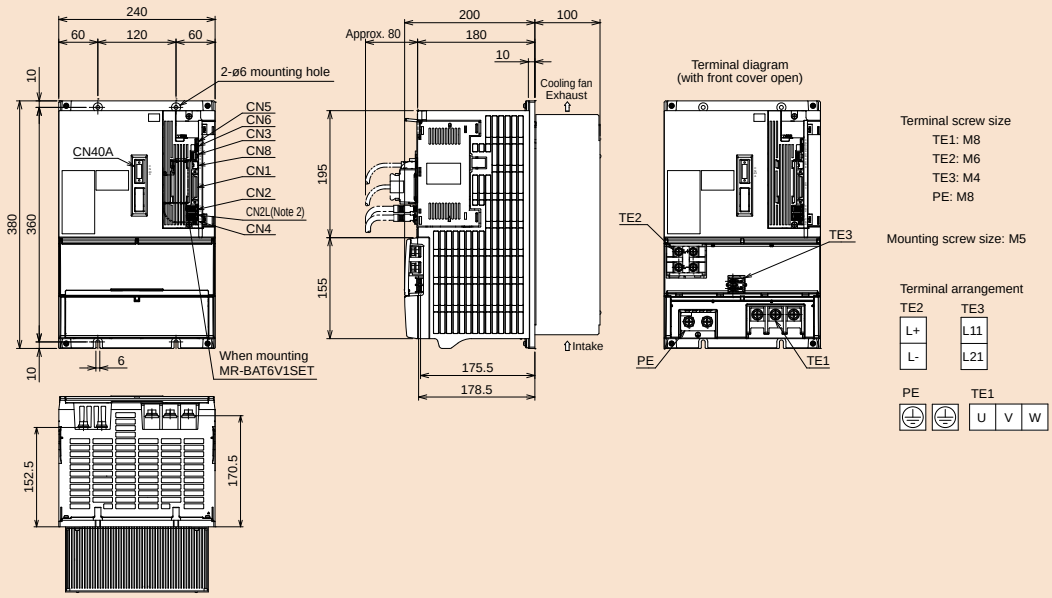
TE2-1	TE2-2
L+	L+
L-	L-

TE3
L11
L21

PE		TE1		
⏚	⏚	U	V	W

[Unit: mm]

- MR-J4-DU30KA4, MR-J4-DU30KA4-RJ
- MR-J4-DU37KA4, MR-J4-DU37KA4-RJ



Terminal screw size
TE1: M8
TE2: M6
TE3: M4
PE: M8

Mounting screw size: M5

Terminal arrangement

TE2	TE3
L+	L11
L-	L21

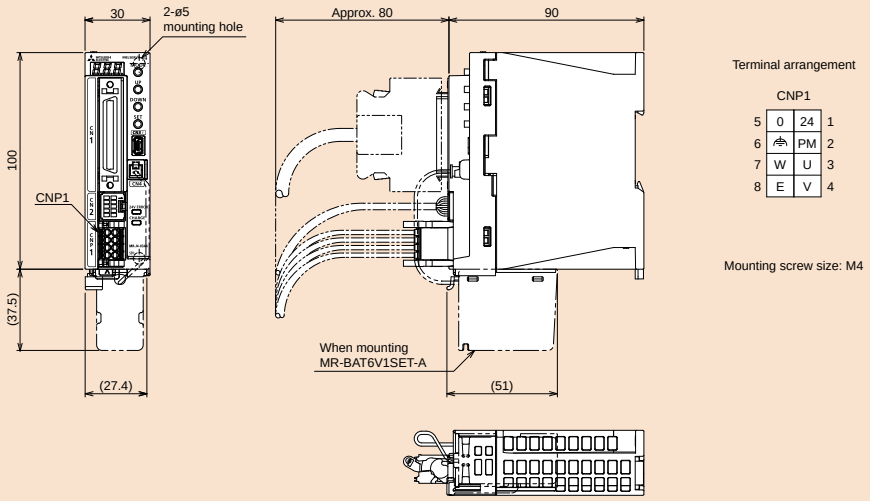
PE		TE1		
⏚	⏚	U	V	W

[Unit: mm]

Notes: 1. For the panel cut dimensions, refer to "Panel Cut Dimensions for Converter Unit and Drive Unit" in this catalog.
2. CN2L, CN7, and CN9 connectors are not available for MR-J4-DU_A_ drive unit. MR-J4-DU_A_-RJ is equipped with CN7 and CN9 connectors; however, these connectors are not for use.

MR-J4-03A6/MR-J4-03A6-RJ Dimensions

A A-RJ



Terminal arrangement

CNP1

5	0	24	1
6	⏚	PM	2
7	W	U	3
8	E	V	4

Mounting screw size: M4

[Unit: mm]

MEMO

● Rotary Servo Motors

Model Designation

● For 200 V class

H G - K R 0 5 3 B

Symbol	Special specifications
None	Standard
W0C	Servo motors with functional safety

Symbol	Shaft end
None	Standard (Straight shaft) (Note 6)
K	Key shaft (with/without key) (Note 7)
D	D-cut shaft (Note 7)

Symbol	Reducer (Note 5)
None	None
G1	With reducer for general industrial machines, flange mounting
G1H	With reducer for general industrial machines, foot mounting
G5	With flange-output type reducer for high precision applications, flange mounting
G7	With shaft-output type reducer for high precision applications, flange mounting

Symbol	Oil seal
None	None (Note 8)
J	Installed (Note 2, 3, 4)

Symbol	Electromagnetic brake
None	None
B	Installed (Note 1)

Symbol	Rated speed [r/min]
1	1000
1M	1500
2	2000
3	3000

Symbol	Rated output [kW]	Symbol	Rated output [kW]
05	0.05	50	5.0
1	0.1	60	6.0
2	0.2	70	7.0
4	0.4	80	8.0
5	0.5	90	9.0
7	0.75	11K	11
8	0.85	12K	12
10	1.0	15K	15
12	1.2	20K	20
15	1.5	22K	22
20	2.0	25K	25
30	3.0	30K	30
35	3.5 (Note 9)	37K	37
42	4.2		

Symbol	Inertia/capacity
HG-KR	Low inertia, small capacity
HG-MR	Ultra-low inertia, small capacity
HG-SR	Medium inertia, medium capacity
HG-JR	Low inertia, medium-large capacity
HG-RR	Ultra-low inertia, medium capacity
HG-UR	Flat type, medium capacity

Notes: 1. Refer to electromagnetic brake specifications of each servo motor series in this catalog for the available models and detailed specifications.
2. Available in 0.1 kW or larger HG-KR/HG-MR series and all HG-SR series.
3. Oil seal is not installed in the geared servo motor.
4. Dimensions for HG-KR/HG-MR series with oil seal are different from those without oil seal. Contact your local sales office for more details. For HG-SR series, dimensions are the same regardless of whether or not oil seal is installed.
5. Refer to "Geared Servo Motor Specifications" in this catalog for the available models and detailed specifications.
6. Standard HG-SR G1/G1H has a key shaft (with key).
7. Refer to special shaft end specifications of each servo motor series in this catalog for the available models and detailed specifications.
8. Oil seal is installed in HG-JR, HG-RR, and HG-UR series as a standard.
9. For HG-JR353(B), the rated output varies depending on the servo amplifier to be combined. Refer to "HG-JR 3000 r/min Series (Low Inertia, Medium Capacity) (200 V Class) Specifications" for details.

Model Designation

● For 400 V class

HG-SR 5 2 4 B

Symbol	Special specifications
None	Standard
W0C	Servo motors with functional safety

Symbol	Shaft end
None	Standard (Straight shaft) (Note 6)
K	Key shaft (with/without key) (Note 7)

Symbol	Reducer (Note 5)
None	None
G1	With reducer for general industrial machines, flange mounting
G1H	With reducer for general industrial machines, foot mounting
G5	With flange-output type reducer for high precision applications, flange mounting
G7	With shaft-output type reducer for high precision applications, flange mounting

Symbol	Oil seal
None	None (Note 4)
J	Installed (Note 2, 3)

Symbol	Electromagnetic brake
None	None
B	Installed (Note 1)

400 V class

Symbol	Rated speed [r/min]
1	1000
1M	1500
2	2000
3	3000

Symbol	Rated output [kW]	Symbol	Rated output [kW]
5	0.5	11K	11
7	0.75	12K	12
10	1.0	15K	15
15	1.5	20K	20
20	2.0	22K	22
35	3.5 (Note 8)	25K	25
50	5.0	30K	30
60	6.0	37K	37
70	7.0	45K	45
80	8.0	55K	55
90	9.0		

Symbol	Inertia/capacity
HG-SR	Medium inertia, medium capacity
HG-JR	Low inertia, medium-large capacity

Notes: 1. Refer to electromagnetic brake specifications of each servo motor series in this catalog for the available models and detailed specifications.
2. Available in HG-SR series.
3. Oil seal is not installed in the geared servo motor.
4. Oil seal is installed in HG-JR series as a standard.
5. Refer to "Geared Servo Motor Specifications" in this catalog for the available models and detailed specifications.
6. Standard HG-SR G1/G1H has a key shaft (with key).
7. Refer to special shaft end specifications of each servo motor series in this catalog for the available models and detailed specifications.
8. For HG-JR3534(B), the rated output varies depending on the servo amplifier to be combined. Refer to "HG-JR 3000 r/min Series (Low Inertia, Medium Capacity) (400 V Class) Specifications" for details.

Model Designation

● For 48 V DC/24 V DC

H G - A K 0 1 3 6 B _ - _ _

Symbol	Special specification
None	Standard
S100	Vertical encoder cable lead

Symbol	Shaft end
None	Standard (Straight shaft)
D	D-cut shaft (Note 2)

Symbol	Electromagnetic brake
None	None
B	Installed (Note 1)

Symbol	Power supply
6	48 V DC/24 V DC

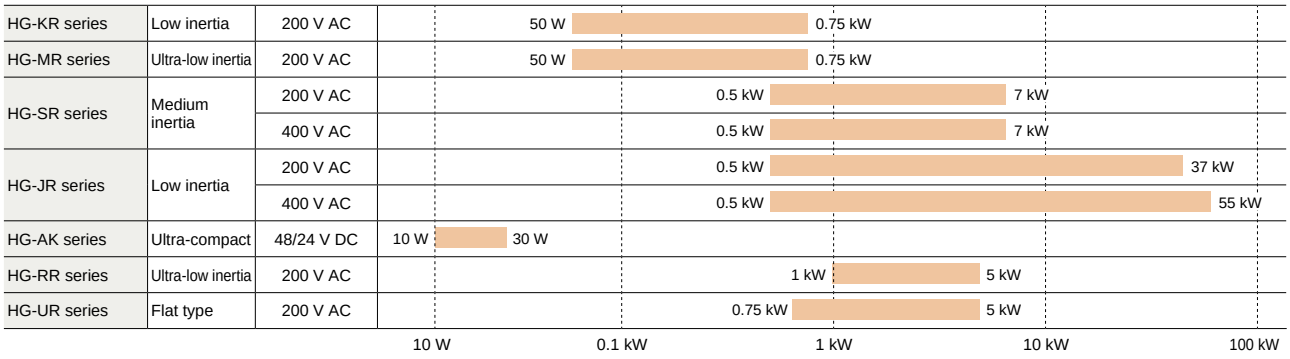
Symbol	Rated speed [r/min]
3	3000

Symbol	Rated output [W]
01	10
02	20
03	30

Symbol	Inertia/capacity
HG-AK	Ultra-compact size, ultra-small capacity

Notes: 1. Refer to "HG-AK Series Electromagnetic Brake Specifications" in this catalog for the available models and detailed specifications.
2. Refer to "HG-AK Series Special Shaft End Specifications" in this catalog for details.

Product Lines



Servo motor lineup with a reduction gear (Note 3)

Rotary servo motor series	Built-in reduction gear compatible with general industrial machineries (G1)										Flange-mounting output type with a built-in reduction gear for high precision applications (G5)						Flange-mounting shaft output type with a built-in reduction gear for high precision applications (G7)					
	1/6	1/11	1/17	1/29	1/35	1/43	1/59	1/5 (Note 1)	1/12 (Note 1)	1/20 (Note 1)	1/5	1/9	1/11	1/21	1/33	1/45	1/5	1/9	1/11	1/21	1/33	1/45
HG-KR	—	—	—	—	—	—	—	●	●	●	● □40 (Note 2) □60 (Note 2)	●	●	●	●	●	● □40 (Note 2) □60 (Note 2)	●	●	●	●	●
HG-MR	—										—						—					
HG-SR 1000 r/min series	—										—						—					
HG-SR 2000 r/min series	●	●	●	●	●	●	●	—	—	—	●	—	●	●	●	●	●	—	●	●	●	●
HG-JR	—										—						—					
HG-RR	—										—						—					
HG-UR	—										—						—					

Notes: 1. This reduction ratio is the nominal value and may differ slightly from the actual reduction ratio.
2. Indicate the flange dimensions.
3. Refer to the “MELSERVO-J4 Catalogue (L (NA) 03056)” for available capacity options.

HG-KR Series (Low Inertia, Small Capacity) Specifications

Rotary servo motor model			HG-KR	053(B)	13(B)	23(B)	43(B)	73(B)
Compatible servo amplifier model			MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.				
			MR-J4W_-					
Power supply capacity *1			[kVA]	0.3	0.3	0.5	0.9	1.3
Continuous running duty	Rated output		[W]	50	100	200	400	750
	Rated torque (Note 3)		[N•m]	0.16	0.32	0.64	1.3	2.4
Maximum torque			[N•m]	0.56	1.1	2.2	4.5	8.4
Rated speed			[r/min]	3000				
Maximum speed			[r/min]	6000				
Permissible instantaneous speed			[r/min]	6900				
Power rate at continuous rated torque	Standard		[kW/s]	5.63	13.0	18.3	43.7	45.2
	With electromagnetic brake		[kW/s]	5.37	12.1	16.7	41.3	41.6
Rated current			[A]	0.9	0.8	1.3	2.6	4.8
Maximum current			[A]	3.2	2.5	4.6	9.1	17
Regenerative braking frequency *2	MR-J4-		[times/min]	(Note 4)	(Note 4)	453	268	157
	MR-J4W_-		[times/min]	2500	1350	451	268	393
Moment of inertia J	Standard		[× 10^{-4} kg•m^2]	0.0450	0.0777	0.221	0.371	1.26
	With electromagnetic brake		[× 10^{-4} kg•m^2]	0.0472	0.0837	0.243	0.393	1.37
Recommended load to motor inertia ratio (Note 1)				17 times or less		26 times or less	25 times or less	17 times or less
Speed/position detector				Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)				
Oil seal				None	None (Servo motors with oil seal are available. (HG-KR_J))			
Insulation class				130 (B)				
Structure				Totally enclosed, natural cooling (IP rating: IP65) (Note 2)				
Environment *3	Ambient temperature			Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)				
	Ambient humidity			Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)				
	Ambience			Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust				
	Altitude			2000 m or less above sea level (Note 5)				
	Vibration resistance *4			X: 49 m/s² Y: 49 m/s²				
Vibration rank				V10 *6				
Compliance to global standards				Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.				
Permissible load for the shaft *5	L		[mm]	25	25	30	30	40
	Radial		[N]	88	88	245	245	392
	Thrust		[N]	59	59	98	98	147
Mass	Standard		[kg]	0.34	0.54	0.91	1.4	2.8
	With electromagnetic brake		[kg]	0.54	0.74	1.3	1.8	3.8

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. For geared servo motor, IP rating of the reducer portion is equivalent to IP44. Refer to the asterisk 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. When the servo motor decelerates to a stop from the rated speed, the regenerative frequency will not be limited if the effective torque is within the rated torque range. When the servo motor decelerates to a stop from the maximum speed, the regenerative frequency will not be limited if the following requirements are met.
• HG-KR053(B): The load to motor inertia ratio is 8 times or less, and the effective torque is within the rated torque range.
• HG-KR13(B): The load to motor inertia ratio is 4 times or less, and the effective torque is within the rated torque range.
5. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

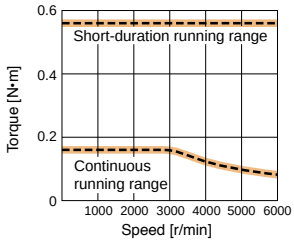
HG-KR Series Electromagnetic Brake Specifications (Note 1)

Model		HG-KR	053B	13B	23B	43B	73B
Type			Spring actuated type safety brake				
Rated voltage			24 V DC $^{0}_{-10}$%				
Power consumption		[W] at 20 °C	6.3	6.3	7.9	7.9	10
Electromagnetic brake static friction torque		[N•m]	0.32	0.32	1.3	1.3	2.4
Permissible braking work	Per braking	[J]	5.6	5.6	22	22	64
	Per hour	[J]	56	56	220	220	640
Electromagnetic brake life (Note 2)	Number of brakings	[Times]	20000	20000	20000	20000	20000
	Work per braking	[J]	5.6	5.6	22	22	64

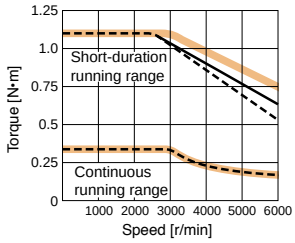
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-KR Series Torque Characteristics

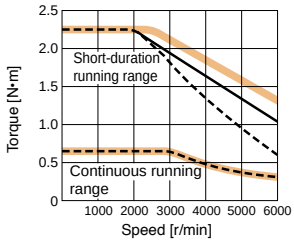
HG-KR053(B) (Note 1, 2, 3, 4)



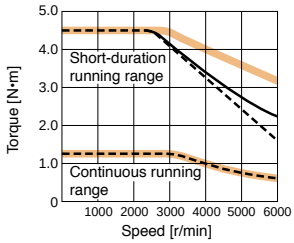
HG-KR13(B) (Note 1, 2, 3, 4)



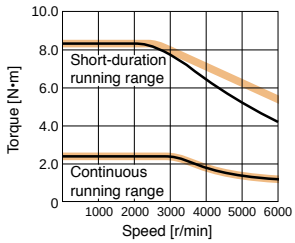
HG-KR23(B) (Note 1, 2, 3, 4)



HG-KR43(B) (Note 1, 2, 3, 4)



HG-KR73(B) (Note 1, 3, 4)

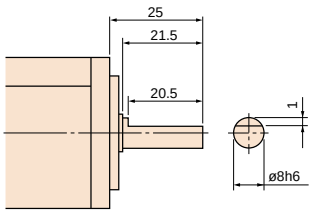


Notes: 1. ▬▬ : For 3-phase 200 V AC or 1-phase 230 V AC.
2. - - - - : For 1-phase 100 V AC.
3. ——— : For 1-phase 200 V AC. This line is drawn only where differs from the other two lines.
4. Torque drops when the power supply voltage is below the specified value.

HG-KR Series Special Shaft End Specifications

Motors with the following specifications are also available.

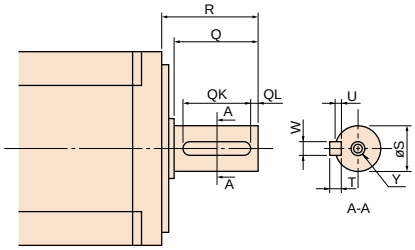
D-cut shaft (Note 1): 50 W and 100 W



[Unit: mm]

Key shaft (with key) (Note 1, 2): 200 W, 400 W, and 750 W

Model	Variable dimensions								
	T	S	R	Q	W	QK	QL	U	Y
HG-KR23(B)K, 43(B)K	5	14h6	30	26	5	20	3	3	M4 screw Depth: 15
HG-KR73(B)K	6	19h6	40	36	6	25	5	3.5	M5 screw Depth: 20



[Unit: mm]

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. 2 round end key is attached.

HG-MR Series (Ultra-low Inertia, Small Capacity) Specifications

Rotary servo motor model		HG-MR	053(B)	13(B)	23(B)	43(B)	73(B)
Compatible servo amplifier model		MR-J4- / MR-J4W_-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.				
Power supply capacity *1		[kVA]	0.3	0.3	0.5	0.9	1.3
Continuous running duty	Rated output	[W]	50	100	200	400	750
	Rated torque (Note 3)	[N•m]	0.16	0.32	0.64	1.3	2.4
Maximum torque		[N•m]	0.48	0.95	1.9	3.8	7.2
Rated speed		[r/min]	3000				
Maximum speed		[r/min]	6000				
Permissible instantaneous speed		[r/min]	6900				
Power rate at continuous rated torque	Standard	[kW/s]	15.6	33.8	46.9	114.2	97.3
	With electromagnetic brake	[kW/s]	11.3	28.0	37.2	98.8	82.1
Rated current		[A]	1.0	0.9	1.5	2.6	5.8
Maximum current		[A]	3.1	2.5	5.3	9.0	20
Regenerative braking frequency *2	MR-J4-	[times/min]	(Note 4)	(Note 4)	1180	713	338
	MR-J4W_-	[times/min]	7310	3620	1170	710	846
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	0.0162	0.0300	0.0865	0.142	0.586
	With electromagnetic brake	[× 10^{-4} kg•m^2]	0.0224	0.0362	0.109	0.164	0.694
Recommended load to motor inertia ratio (Note 1)			35 times or less	32 times or less			
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)				
Oil seal			None	None (Servo motors with oil seal are available. (HG-MR_J))			
Insulation class			130 (B)				
Structure			Totally enclosed, natural cooling (IP rating: IP65) (Note 2)				
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)				
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)				
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust				
	Altitude		2000 m or less above sea level (Note 5)				
	Vibration resistance *4		X: 49 m/s^2 Y: 49 m/s^2				
Vibration rank			V10 *6				
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.				
Permissible load for the shaft *5	L	[mm]	25	25	30	30	40
	Radial	[N]	88	88	245	245	392
	Thrust	[N]	59	59	98	98	147
Mass	Standard	[kg]	0.34	0.54	0.91	1.4	2.8
	With electromagnetic brake	[kg]	0.54	0.74	1.3	1.8	3.8

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 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. When the servo motor decelerates to a stop from the rated speed, the regenerative frequency will not be limited if the effective torque is within the rated torque range.
When the servo motor decelerates to a stop from the maximum speed, the regenerative frequency will not be limited if the following requirements are met.
• HG-MR053(B): The load to motor inertia ratio is 24 times or less, and the effective torque is within the rated torque range.
• HG-MR13(B): The load to motor inertia ratio is 12 times or less, and the effective torque is within the rated torque range.
5. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

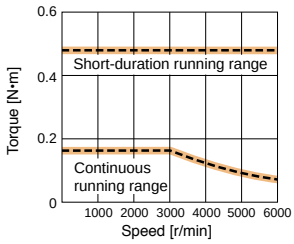
HG-MR Series Electromagnetic Brake Specifications (Note 1)

Model	HG-MR	053B	13B	23B	43B	73B
Type		Spring actuated type safety brake				
Rated voltage		24 V DC $^{0}_{-10}$%				
Power consumption	[W] at 20 °C	6.3	6.3	7.9	7.9	10
Electromagnetic brake static friction torque	[N•m]	0.32	0.32	1.3	1.3	2.4
Permissible braking work	Per braking [J]	5.6	5.6	22	22	64
	Per hour [J]	56	56	220	220	640
Electromagnetic brake life (Note 2)	Number of brakings [Times]	20000	20000	20000	20000	20000
	Work per braking [J]	5.6	5.6	22	22	64

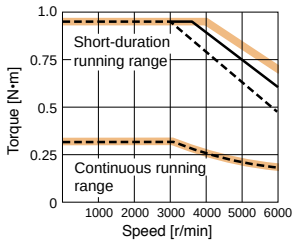
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-MR Series Torque Characteristics

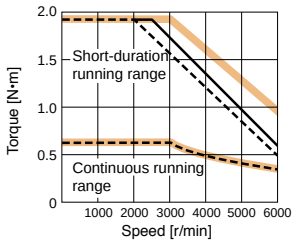
HG-MR053(B) (Note 1, 2, 3, 4)



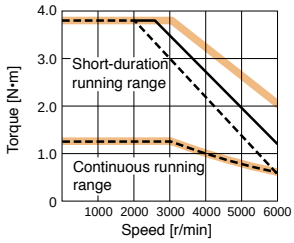
HG-MR13(B) (Note 1, 2, 3, 4)



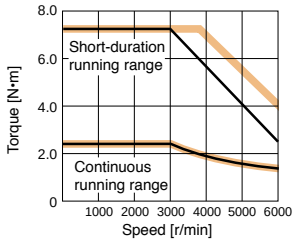
HG-MR23(B) (Note 1, 2, 3, 4)



HG-MR43(B) (Note 1, 2, 3, 4)



HG-MR73(B) (Note 1, 3, 4)

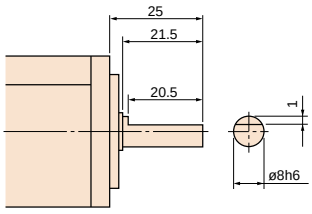


Notes: 1. ▬▬ : For 3-phase 200 V AC or 1-phase 230 V AC.
2. - - - : For 1-phase 100 V AC.
3. ——— : For 1-phase 200 V AC. This line is drawn only where differs from the other two lines.
4. Torque drops when the power supply voltage is below the specified value.

HG-MR Series Special Shaft End Specifications

Motors with the following specifications are also available.

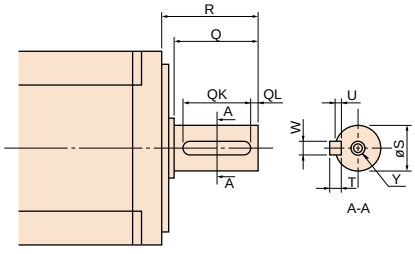
D-cut shaft (Note 1): 50 W and 100 W



[Unit: mm]

Key shaft (with key) (Note 1, 2): 200 W, 400 W, and 750 W

Model	Variable dimensions								
	T	S	R	Q	W	QK	QL	U	Y
HG-MR23(B)K, 43(B)K	5	14h6	30	26	5	20	3	3	M4 screw Depth: 15
HG-MR73(B)K	6	19h6	40	36	6	25	5	3.5	M5 screw Depth: 20



[Unit: mm]

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. 2 round end key is attached.

HG-SR 1000 r/min Series (Medium Inertia, Medium Capacity) Specifications

Rotary servo motor model		HG-SR	51(B)	81(B)	121(B)	201(B)	301(B)	421(B)
Compatible servo amplifier model		MR-J4- / MR-J4W_-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.					
Power supply capacity *1		[kVA]	1.0	1.5	2.1	3.5	4.8	6.3
Continuous running duty	Rated output	[kW]	0.5	0.85	1.2	2.0	3.0	4.2
	Rated torque (Note 3)	[N•m]	4.8	8.1	11.5	19.1	28.6	40.1
Maximum torque		[N•m]	14.3	24.4	34.4	57.3	85.9	120
Rated speed		[r/min]	1000					
Maximum speed		[r/min]	1500					
Permissible instantaneous speed		[r/min]	1725					
Power rate at continuous rated torque	Standard	[kW/s]	19.7	41.2	28.1	46.4	82.3	107
	With electromagnetic brake	[kW/s]	16.5	36.2	23.2	41.4	75.3	99.9
Rated current		[A]	2.8	5.2	7.1	9.4	13	19
Maximum current		[A]	9.0	17	23	30	42	61
Regenerative braking frequency *2	MR-J4-	[times/min]	77	114	191	113	89	76
	MR-J4W_-	[times/min]	392	286	-	-	-	-
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	11.6	16.0	46.8	78.6	99.7	151
	With electromagnetic brake	[× 10^{-4} kg•m^2]	13.8	18.2	56.5	88.2	109	161
Recommended load to motor inertia ratio (Note 1)			17 times or less		15 times or less			
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)					
Oil seal			None (Servo motors with oil seal are available. (HG-SR_J))					
Insulation class			155 (F)					
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)					
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)					
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)					
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust					
	Altitude		2000 m or less above sea level (Note 4)					
	Vibration resistance *4		X: 24.5 m/s^2 Y: 24.5 m/s^2		X: 24.5 m/s^2 Y: 49 m/s^2		X: 24.5 m/s^2 Y: 29.4 m/s^2	
Vibration rank			V10 *6					
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.					
Permissible load for the shaft *5	L	[mm]	55	55	79	79	79	79
	Radial	[N]	980	980	2058	2058	2058	2058
	Thrust	[N]	490	490	980	980	980	980
Mass	Standard	[kg]	6.2	7.3	11	16	20	27
	With electromagnetic brake	[kg]	8.2	9.3	17	22	26	33

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. The servo motor with oil seal is rated IP67 as well (excluding the shaft-through portion). Refer to the asterisk 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

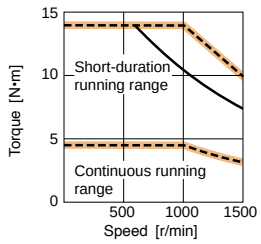
HG-SR 1000 r/min Series Electromagnetic Brake Specifications (Note 1)

Model	HG-SR	51B	81B	121B	201B	301B	421B
Type		Spring actuated type safety brake					
Rated voltage		24 V DC $^{0}_{-10}$%					
Power consumption	[W] at 20 °C	20	20	34	34	34	34
Electromagnetic brake static friction torque	[N•m]	8.5	8.5	44	44	44	44
Permissible braking work	Per braking [J]	400	400	4500	4500	4500	4500
	Per hour [J]	4000	4000	45000	45000	45000	45000
Electromagnetic brake life (Note 2)	Number of brakings [Times]	20000	20000	20000	20000	20000	20000
	Work per braking [J]	200	200	1000	1000	1000	1000

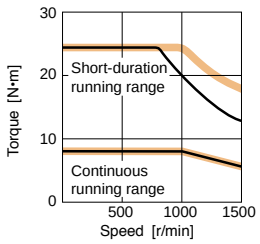
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-SR 1000 r/min Series Torque Characteristics

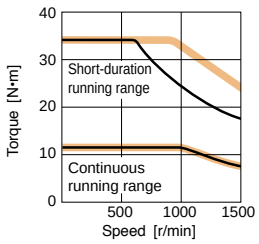
HG-SR51(B) (Note 1, 2, 3, 4)



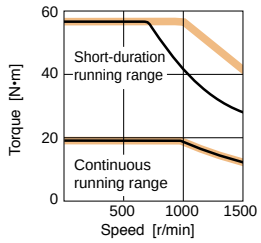
HG-SR81(B) (Note 1, 4)



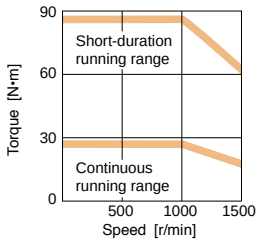
HG-SR121(B) (Note 1, 4)



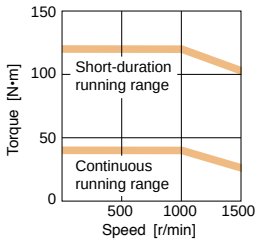
HG-SR201(B) (Note 1, 4)



HG-SR301(B) (Note 1, 4)



HG-SR421(B) (Note 1, 4)



Notes: 1. ▬▬ : For 3-phase 200 V AC.
2. - - - - : For 1-phase 230 V AC.
3. ——— : For 1-phase 200 V AC.
This line is drawn only where differs from the other two lines.
4. Torque drops when the power supply voltage is below the specified value.

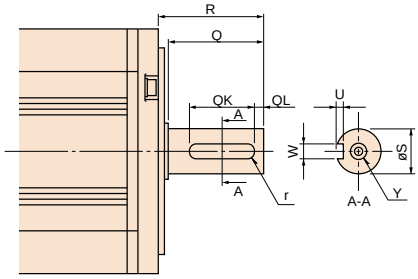
HG-SR 1000 r/min Series Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions								
	S	R	Q	W	QK	QL	U	r	Y
HG-SR51(B)K, 81(B)K	24h6	55	50	8 $^{0}_{-0.036}$	36	5	4 $^{+0.2}_{0}$	4	M8 screw Depth: 20
HG-SR121(B)K, 201(B)K, 301(B)K, 421(B)K	35 $^{+0.010}_{0}$	79	75	10 $^{0}_{-0.036}$	55	5	5 $^{+0.2}_{0}$	5	

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.



[Unit: mm]

HG-SR 2000 r/min Series (Medium Inertia, Medium Capacity) (200 V Class) Specifications

Rotary servo motor model		HG-SR	52(B)	102(B)	152(B)	202(B)	352(B)	502(B)	702(B)
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.						
		MR-J4W_-							
Power supply capacity *1		[kVA]	1.0	1.7	2.5	3.5	5.5	7.5	10
Continuous running duty	Rated output	[kW]	0.5	1.0	1.5	2.0	3.5	5.0	7.0
	Rated torque (Note 3)	[N•m]	2.4	4.8	7.2	9.5	16.7	23.9	33.4
Maximum torque		[N•m]	7.2	14.3	21.5	28.6	50.1	71.6	100
Rated speed		[r/min]	2000						
Maximum speed		[r/min]	3000						
Permissible instantaneous speed		[r/min]	3450						
Power rate at continuous rated torque	Standard	[kW/s]	7.85	19.7	32.1	19.5	35.5	57.2	74.0
	With electromagnetic brake	[kW/s]	6.01	16.5	28.2	16.1	31.7	52.3	69.4
Rated current		[A]	2.9	5.6	9.4	9.6	14	22	26
Maximum current		[A]	9.0	17	29	31	45	70	83
Regenerative braking frequency *2	MR-J4-	[times/min]	31	38	139	47	28	29	25
	MR-J4W_-	[times/min]	154	96	-	-	-	-	-
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	7.26	11.6	16.0	46.8	78.6	99.7	151
	With electromagnetic brake	[× 10^{-4} kg•m^2]	9.48	13.8	18.2	56.5	88.2	109	161
Recommended load to motor inertia ratio (Note 1)			15 times or less	17 times or less		15 times or less			
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)						
Oil seal			None (Servo motors with oil seal are available. (HG-SR_J))						
Insulation class			155 (F)						
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)						
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)						
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)						
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust						
	Altitude		2000 m or less above sea level (Note 4)						
	Vibration resistance *4		X: 24.5 m/s^2 Y: 24.5 m/s^2			X: 24.5 m/s^2 Y: 49 m/s^2		X: 24.5 m/s^2 Y: 29.4 m/s^2	
Vibration rank			V10 *6						
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.						
Permissible load for the shaft *5	L	[mm]	55	55	55	79	79	79	79
	Radial	[N]	980	980	980	2058	2058	2058	2058
	Thrust	[N]	490	490	490	980	980	980	980
Mass	Standard	[kg]	4.8	6.2	7.3	11	16	20	27
	With electromagnetic brake	[kg]	6.7	8.2	9.3	17	22	26	33

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. The servo motor with oil seal is rated IP67 as well (excluding the shaft-through portion), and for geared servo motor, IP rating of the reducer portion is equivalent to IP44. Refer to the asterisk 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

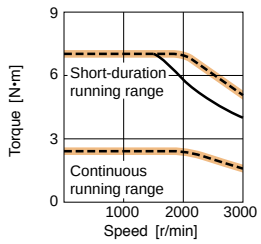
HG-SR 2000 r/min Series (200 V Class) Electromagnetic Brake Specifications (Note 1)

Model	HG-SR	52B	102B	152B	202B	352B	502B	702B
Type		Spring actuated type safety brake						
Rated voltage		24 V DC$^{0}_{-10}$%						
Power consumption	[W] at 20 °C	20	20	20	34	34	34	34
Electromagnetic brake static friction torque	[N•m]	8.5	8.5	8.5	44	44	44	44
Permissible braking work	Per braking [J]	400	400	400	4500	4500	4500	4500
	Per hour [J]	4000	4000	4000	45000	45000	45000	45000
Electromagnetic brake life (Note 2)	Number of brakings [Times]	20000	20000	20000	20000	20000	20000	20000
	Work per braking [J]	200	200	200	1000	1000	1000	1000

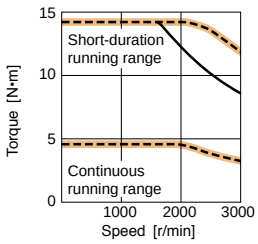
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-SR 2000 r/min Series (200 V Class) Torque Characteristics

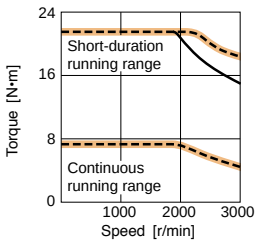
HG-SR52(B) (Note 1, 2, 3, 4)



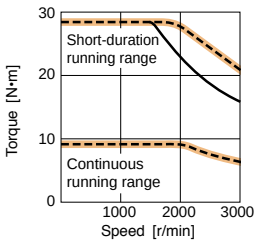
HG-SR102(B) (Note 1, 3, 4)



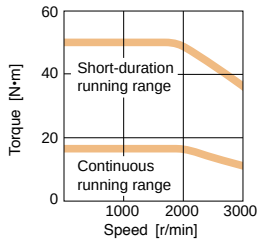
HG-SR152(B) (Note 1, 3, 4)



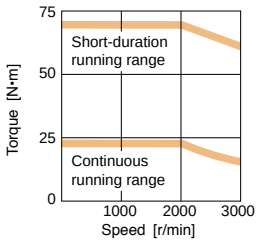
HG-SR202(B) (Note 1, 3, 4)



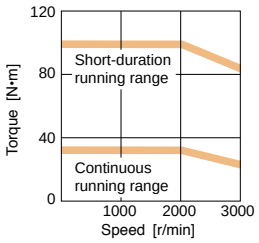
HG-SR352(B) (Note 1, 4)



HG-SR502(B) (Note 1, 4)



HG-SR702(B) (Note 1, 4)



Notes: 1. ▬ : For 3-phase 200 V AC.
2. - - - - : For 1-phase 230 V AC.
3. ——— : For 1-phase 200 V AC.
This line is drawn only where differs from the other two lines.
4. Torque drops when the power supply voltage is below the specified value.

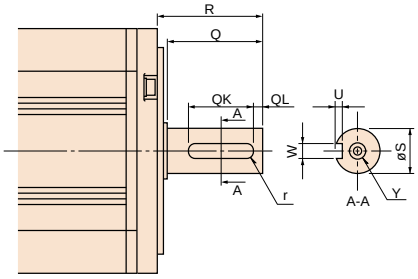
HG-SR 2000 r/min Series (200 V Class) Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions								
	S	R	Q	W	QK	QL	U	r	Y
HG-SR52(B)K, 102(B)K, 152(B)K	24h6	55	50	8 $^{0}_{-0.036}$	36	5	4 $^{+0.2}_{0}$	4	M8 screw Depth: 20
HG-SR202(B)K, 352(B)K, 502(B)K, 702(B)K	35 $^{+0.010}_{0}$	79	75	10 $^{0}_{-0.036}$	55	5	5 $^{+0.2}_{0}$	5	

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.



[Unit: mm]

HG-SR 2000 r/min Series (Medium Inertia, Medium Capacity) (400 V Class) Specifications

Rotary servo motor model		HG-SR	524(B)	1024(B)	1524(B)	2024(B)	3524(B)	5024(B)	7024(B)
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.						
Power supply capacity *1		[kVA]	1.0	1.7	2.5	3.5	5.5	7.5	10
Continuous running duty	Rated output	[kW]	0.5	1.0	1.5	2.0	3.5	5.0	7.0
	Rated torque (Note 3)	[N•m]	2.4	4.8	7.2	9.5	16.7	23.9	33.4
Maximum torque		[N•m]	7.2	14.3	21.5	28.6	50.1	71.6	100
Rated speed		[r/min]	2000						
Maximum speed		[r/min]	3000						
Permissible instantaneous speed		[r/min]	3450						
Power rate at continuous rated torque	Standard	[kW/s]	7.85	19.7	32.1	19.5	35.5	57.2	74.0
	With electromagnetic brake	[kW/s]	6.01	16.5	28.2	16.1	31.7	52.3	69.4
Rated current		[A]	1.5	2.8	4.7	4.9	7.0	11	13
Maximum current		[A]	4.5	8.9	17	17	27	42	59
Regenerative braking frequency *2	MR-J4-	[times/min]	46	29	139	47	34	29	25
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	7.26	11.6	16.0	46.8	78.6	99.7	151
	With electromagnetic brake	[× 10^{-4} kg•m^2]	9.48	13.8	18.2	56.5	88.2	109	161
Recommended load to motor inertia ratio (Note 1)			15 times or less	17 times or less		15 times or less			
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)						
Oil seal			None (Servo motors with oil seal are available. (HG-SR_J))						
Insulation class			155 (F)						
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)						
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)						
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)						
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust						
	Altitude		2000 m or less above sea level (Note 4)						
	Vibration resistance *4		X: 24.5 m/s^2 Y: 24.5 m/s^2			X: 24.5 m/s^2 Y: 49 m/s^2		X: 24.5 m/s^2 Y: 29.4 m/s^2	
Vibration rank			V10 *6						
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.						
Permissible load for the shaft *5	L	[mm]	55	55	55	79	79	79	79
	Radial	[N]	980	980	980	2058	2058	2058	2058
	Thrust	[N]	490	490	490	980	980	980	980
Mass	Standard	[kg]	4.8	6.2	7.3	11	16	20	27
	With electromagnetic brake	[kg]	6.7	8.2	9.3	17	22	26	33

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. The servo motor with oil seal is rated IP67 as well (excluding the shaft-through portion), and for geared servo motor, IP rating of the reducer portion is equivalent to IP44. Refer to the asterisk 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

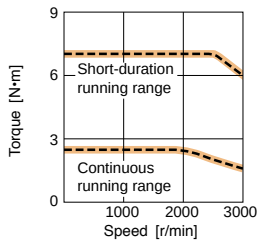
HG-SR 2000 r/min Series (400 V Class) Electromagnetic Brake Specifications (Note 1)

Model		HG-SR	524B	1024B	1524B	2024B	3524B	5024B	7024B
Type			Spring actuated type safety brake						
Rated voltage			24 V DC$^{0}_{-10}$%						
Power consumption		[W] at 20 °C	20	20	20	34	34	34	34
Electromagnetic brake static friction torque		[N•m]	8.5	8.5	8.5	44	44	44	44
Permissible braking work	Per braking	[J]	400	400	400	4500	4500	4500	4500
	Per hour	[J]	4000	4000	4000	45000	45000	45000	45000
Electromagnetic brake life (Note 2)	Number of brakings	[Times]	20000	20000	20000	20000	20000	20000	20000
	Work per braking	[J]	200	200	200	1000	1000	1000	1000

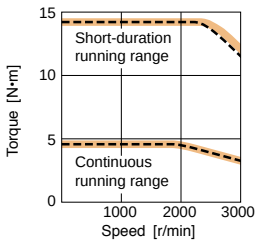
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-SR 2000 r/min Series (400 V Class) Torque Characteristics

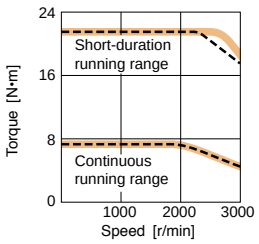
HG-SR524(B) (Note 1, 2, 3)



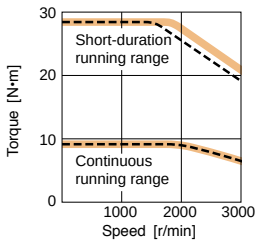
HG-SR1024(B) (Note 1, 2, 3)



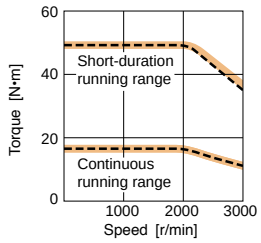
HG-SR1524(B) (Note 1, 2, 3)



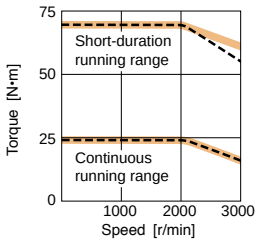
HG-SR2024(B) (Note 1, 2, 3)



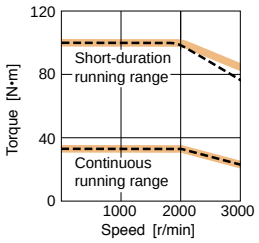
HG-SR3524(B) (Note 1, 2, 3)



HG-SR5024(B) (Note 1, 2, 3)



HG-SR7024(B) (Note 1, 2, 3)



Notes: 1. ▬ : For 3-phase 400 V AC.
2. - - - - : For 3-phase 380 V AC.
3. Torque drops when the power supply voltage is below the specified value.

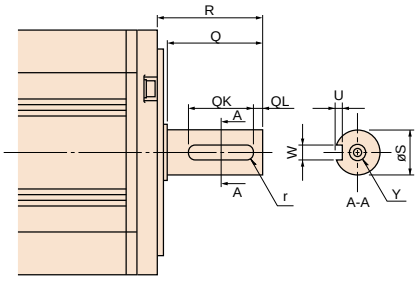
HG-SR 2000 r/min Series (400 V Class) Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions								
	S	R	Q	W	QK	QL	U	r	Y
HG-SR524(B)K, 1024(B)K, 1524(B)K	24h6	55	50	8 $^{0}_{-0.036}$	36	5	4 $^{+0.2}_{0}$	4	M8 screw Depth: 20
HG-SR2024(B)K, 3524(B)K, 5024(B)K, 7024(B)K	35 $^{+0.010}_{0}$	79	75	10 $^{0}_{-0.036}$	55	5	5 $^{+0.2}_{0}$	5	

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.



[Unit: mm]

HG-JR 3000 r/min Series (Low Inertia, Medium Capacity) (200 V Class) Specifications

Rotary servo motor model		HG-JR	53(B)	73(B)	103(B)	153(B)	203(B)	353(B)	503(B)	703(B)	903(B)
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.								
		MR-J4W_-									
Power supply capacity *1		[kVA]	1.0	1.3	1.7	2.5	3.5	5.5	7.5	10	13
Continuous running duty	Rated output	[kW]	0.5	0.75	1.0	1.5	2.0	3.3 <3.5> (Note 4)	5.0	7.0	9.0
	Rated torque (Note 3)	[N•m]	1.6	2.4	3.2	4.8	6.4	10.5 <11.1> (Note 4)	15.9	22.3	28.6
Maximum torque (Note 5)		[N•m]	4.8 <6.4>	7.2 <9.6>	9.6 <12.7>	14.3 <19.1>	19.1 <25.5>	32.0 <44.6>	47.7 <63.7>	66.8	85.8
Rated speed		[r/min]	3000								
Maximum speed		[r/min]	6000							5000	
Permissible instantaneous speed		[r/min]	6900							5750	
Power rate at continuous rated torque	Standard	[kW/s]	16.7	27.3	38.2	60.2	82.4	83.5	133	115	147
	With electromagnetic brake	[kW/s]	12.5	22.0	32.2	53.1	74.8	71.6	119	93.9	125
Rated current		[A]	3.0	5.6	5.6	11	11	17 <18> (Note 4)	27	34	41
Maximum current (Note 5)		[A]	9.0 <12>	17 <23>	17 <23>	32 <43>	32 <43>	51 <71>	81 <108>	103	134
Regenerative braking frequency *2 (Note 5)	MR-J4-	[times/min]	67 <137>	98 <511>	76 <396>	271 <271>	206 <206>	73 <98>	68 <89>	56	204 (Note 6)
	MR-J4W_-	[times/min]	328 <328>	237	186	-	-	-	-	-	-
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	1.52	2.09	2.65	3.79	4.92	13.2	19.0	43.3	55.8
	With electromagnetic brake	[× 10^{-4} kg•m^2]	2.02	2.59	3.15	4.29	5.42	15.4	21.2	52.9	65.4
Recommended load to motor inertia ratio (Note 1)			10 times or less								
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)								
Oil seal			Attached								
Insulation class			155 (F)								
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)								
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)								
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)								
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust								
	Altitude		2000 m or less above sea level (Note 7)								
	Vibration resistance *4		X: 24.5 m/s² Y: 24.5 m/s²							X: 24.5 m/s² Y: 29.4 m/s²	
Vibration rank			V10 *6								
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.								
Permissible load for the shaft *5	L	[mm]	40	40	40	40	40	55	55	79	79
	Radial	[N]	323	323	323	323	323	980	980	2450	2450
	Thrust	[N]	284	284	284	284	284	490	490	980	980
Mass	Standard	[kg]	3.0	3.7	4.5	5.9	7.5	13	18	29	36
	With electromagnetic brake	[kg]	4.4	5.1	5.9	7.3	8.9	15	20	35	42

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 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. The value in angle brackets is applicable when the servo motor is used with MR-J4-500GF/MR-J4-500GF-RJ/MR-J4-500B/MR-J4-500B-RJ/MR-J4-500A/MR-J4-500A-RJ.
5. The value in angle brackets is applicable when the maximum torque is increased. The maximum torque will be increased by changing the servo amplifier to be combined. Refer to "Combinations of HG-JR Servo Motor Series and Servo Amplifier (200 V Class) for Increasing the Maximum Torque to 400% of the Rated Torque" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog for the available combinations.
6. The value is applicable when the external regenerative resistors, GRZG400-_Ω (standard accessory) are used with cooling fans (two units of 92 mm × 92 mm, minimum airflow: 1.0 m^3/min). Note that [Pr. PA02] must be changed.
7. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

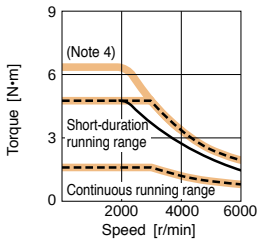
HG-JR 3000 r/min Series (200 V Class) Electromagnetic Brake Specifications (Note 1)

Model		HG-JR	53B	73B	103B	153B	203B	353B	503B	703B	903B
Type			Spring actuated type safety brake								
Rated voltage			24 V DC $^{0}_{-10}$%								
Power consumption		[W] at 20 °C	11.7	11.7	11.7	11.7	11.7	23	23	34	34
Electromagnetic brake static friction torque		[N•m]	6.6	6.6	6.6	6.6	6.6	16	16	44	44
Permissible braking work	Per braking	[J]	64	64	64	64	64	400	400	4500	4500
	Per hour	[J]	640	640	640	640	640	4000	4000	45000	45000
Electromagnetic brake life (Note 2)	Number of brakings	[Times]	5000	5000	5000	5000	5000	5000	5000	20000	20000
	Work per braking	[J]	64	64	64	64	64	400	400	1000	1000

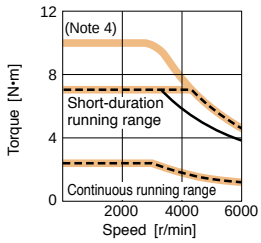
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-JR 3000 r/min Series (200 V Class) Torque Characteristics

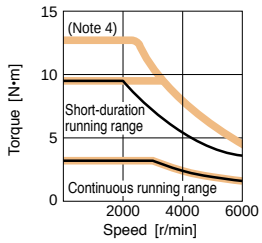
HG-JR53(B) (Note 1, 2, 3, 5, 6)



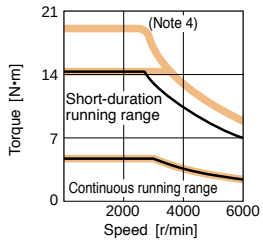
HG-JR73(B) (Note 1, 3, 5, 6)



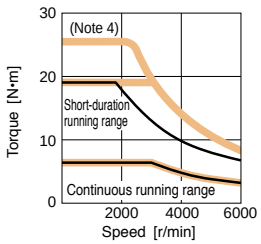
HG-JR103(B) (Note 1, 3, 5, 6, 7)



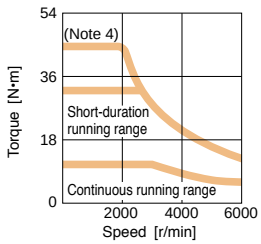
HG-JR153(B) (Note 1, 3, 5, 6, 7)



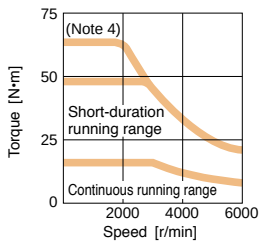
HG-JR203(B) (Note 1, 3, 5, 6, 7)



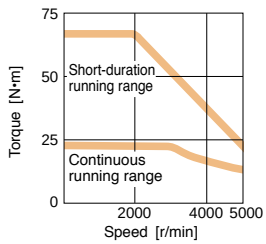
HG-JR353(B) (Note 1, 5)



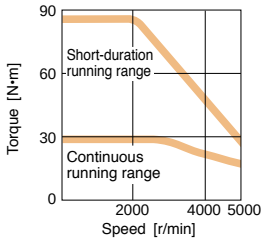
HG-JR503(B) (Note 1, 5)



HG-JR703(B) (Note 1, 5)



HG-JR903(B) (Note 1, 5)



Notes: 1. ▬▬ : For 3-phase 200 V AC.
2. - - - - : For 1-phase 230 V AC.
3. ——— : For 1-phase 200 V AC.
This line is drawn only where differs from the other two lines.
4. This value is applicable when the torque is maximally increased. Refer to "Combinations of HG-JR Servo Motor Series and Servo Amplifier (200 V Class) for Increasing the Maximum Torque to 400% of the Rated Torque" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.
5. Torque drops when the power supply voltage is below the specified value.
6. When 1-phase 200 V AC input is used, increasing the maximum torque to 400% is not possible with HG-JR servo motor series.
7. Contact your local sales office for the torque characteristics when using the servo amplifier with 1-phase 200 V AC input.

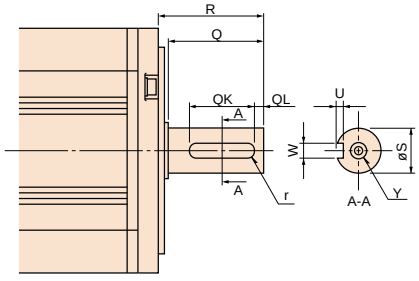
HG-JR 3000 r/min Series (200 V Class) Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions								
	S	R	Q	W	QK	QL	U	r	Y
HG-JR53(B)K, 73(B)K, 103(B)K, 153(B)K, 203(B)K	16h6	40	30	5 $^{0}_{-0.030}$	25	2	3 $^{+0.1}_{0}$	2.5	M4 screw Depth: 15
HG-JR353(B)K, 503(B)K	28h6	55	50	8 $^{0}_{-0.036}$	36	5	4 $^{+0.2}_{0}$	4	M8 screw Depth: 20
HG-JR703(B)K, 903(B)K	35 $^{+0.010}_{0}$	79	75	10 $^{0}_{-0.036}$	55	5	5 $^{+0.2}_{0}$	5	

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.



[Unit: mm]

HG-JR 3000 r/min Series (Low Inertia, Medium Capacity) (400 V Class) Specifications

Rotary servo motor model		HG-JR	534(B)	734(B)	1034(B)	1534(B)	2034(B)	3534(B)	5034(B)	7034(B)	9034(B)
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.								
Power supply capacity *1		[kVA]	1.0	1.3	1.7	2.5	3.5	5.5	7.5	10	13
Continuous running duty	Rated output	[kW]	0.5	0.75	1.0	1.5	2.0	3.3 <3.5> (Note 4)	5.0	7.0	9.0
	Rated torque (Note 3)	[N•m]	1.6	2.4	3.2	4.8	6.4	10.5 <11.1> (Note 4)	15.9	22.3	28.6
Maximum torque (Note 5)		[N•m]	4.8 <6.4>	7.2 <9.6>	9.6 <12.7>	14.3 <19.1>	19.1 <25.5>	32.0 <44.6>	47.7 <63.7>	66.8	85.8
Rated speed		[r/min]	3000								
Maximum speed		[r/min]	6000							5000	
Permissible instantaneous speed		[r/min]	6900							5750	
Power rate at continuous rated torque	Standard	[kW/s]	16.7	27.3	38.2	60.2	82.4	83.5	133	115	147
	With electromagnetic brake	[kW/s]	12.5	22.0	32.2	53.1	74.8	71.6	119	93.9	125
Rated current		[A]	1.5	2.8	2.8	5.4	5.4	8.3 <8.8> (Note 4)	14	17	21
Maximum current (Note 5)		[A]	4.5 <6.0>	8.4 <12>	8.4 <12>	17 <22>	17 <22>	26 <36>	41 <54>	52	67
Regenerative braking frequency *2 (Note 5)	MR-J4-	[times/min]	99 <100>	72 <489>	56 <382>	265 <275>	203 <209>	75 <98>	68 <89>	56	205 (Note 6)
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	1.52	2.09	2.65	3.79	4.92	13.2	19.0	43.3	55.8
	With electromagnetic brake	[× 10^{-4} kg•m^2]	2.02	2.59	3.15	4.29	5.42	15.4	21.2	52.9	65.4
Recommended load to motor inertia ratio (Note 1)			10 times or less								
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)								
Oil seal			Attached								
Insulation class			155 (F)								
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)								
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)								
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)								
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust								
	Altitude		2000 m or less above sea level (Note 7)								
	Vibration resistance *4		X: 24.5 m/s² Y: 24.5 m/s²							X: 24.5 m/s² Y: 29.4 m/s²	
Vibration rank			V10 *6								
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.								
Permissible load for the shaft *5	L	[mm]	40	40	40	40	40	55	55	79	79
	Radial	[N]	323	323	323	323	323	980	980	2450	2450
	Thrust	[N]	284	284	284	284	284	490	490	980	980
Mass	Standard	[kg]	3.0	3.7	4.5	5.9	7.5	13	18	29	36
	With electromagnetic brake	[kg]	4.4	5.1	5.9	7.3	8.9	15	20	35	42

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 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. The value in angle brackets is applicable when the servo motor is used with MR-J4-500GF4/MR-J4-500GF4-RJ/MR-J4-500B4/MR-J4-500B4-RJ/MR-J4-500A4/MR-J4-500A4-RJ.
5. The value in angle brackets is applicable when the maximum torque is increased. The maximum torque will be increased by changing the servo amplifier to be combined. Refer to "Combinations of HG-JR Servo Motor Series and Servo Amplifier (400 V Class) for Increasing the Maximum Torque to 400% of the Rated Torque" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog for the available combinations.
6. The value is applicable when the external regenerative resistors, GRZG400-_Ω (standard accessory) are used with cooling fans (two units of 92 mm × 92 mm, minimum airflow: 1.0 m^3/min). Note that [Pr. PA02] must be changed.
7. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

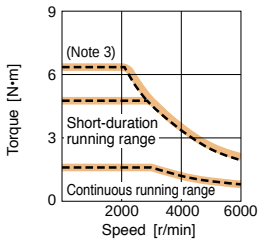
HG-JR 3000 r/min Series (400 V Class) Electromagnetic Brake Specifications (Note 1)

Model		HG-JR	534B	734B	1034B	1534B	2034B	3534B	5034B	7034B	9034B
Type			Spring actuated type safety brake								
Rated voltage			24 V DC $^{0}_{-10}$%								
Power consumption		[W] at 20 °C	11.7	11.7	11.7	11.7	11.7	23	23	34	34
Electromagnetic brake static friction torque		[N•m]	6.6	6.6	6.6	6.6	6.6	16	16	44	44
Permissible braking work	Per braking	[J]	64	64	64	64	64	400	400	4500	4500
	Per hour	[J]	640	640	640	640	640	4000	4000	45000	45000
Electromagnetic brake life (Note 2)	Number of brakings	[Times]	5000	5000	5000	5000	5000	5000	5000	20000	20000
	Work per braking	[J]	64	64	64	64	64	400	400	1000	1000

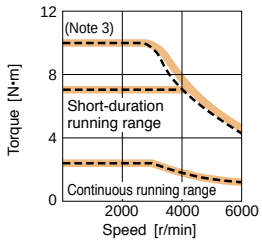
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-JR 3000 r/min Series (400 V Class) Torque Characteristics

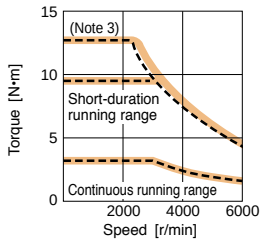
HG-JR534(B) (Note 1, 2, 4)



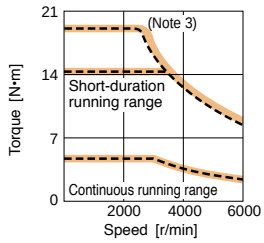
HG-JR734(B) (Note 1, 2, 4)



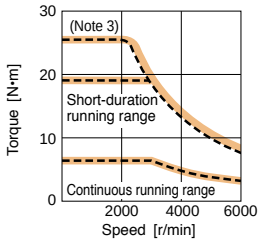
HG-JR1034(B) (Note 1, 2, 4)



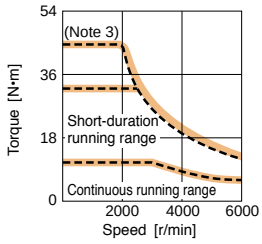
HG-JR1534(B) (Note 1, 2, 4)



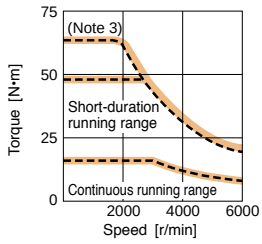
HG-JR2034(B) (Note 1, 2, 4)



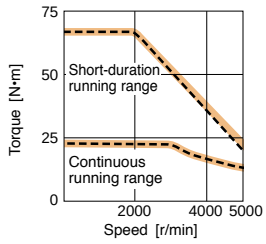
HG-JR3534(B) (Note 1, 2, 4)



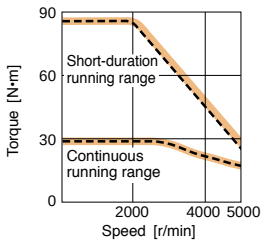
HG-JR5034(B) (Note 1, 2, 4)



HG-JR7034(B) (Note 1, 2, 4)



HG-JR9034(B) (Note 1, 2, 4)



Notes: 1. ——— : For 3-phase 400 V AC.
2. - - - - - : For 3-phase 380 V AC.
3. This value is applicable when the torque is maximally increased. Refer to "Combinations of HG-JR Servo Motor Series and Servo Amplifier (400 V Class) for Increasing the Maximum Torque to 400% of the Rated Torque" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.
4. Torque drops when the power supply voltage is below the specified value.

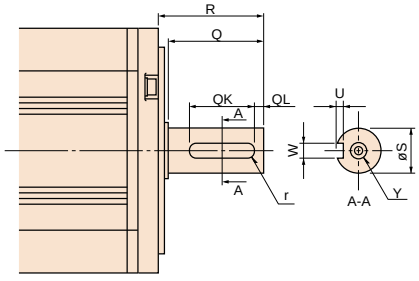
HG-JR 3000 r/min Series (400 V Class) Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions								
	S	R	Q	W	QK	QL	U	r	Y
HG-JR534(B)K, 734(B)K, 1034(B)K, 1534(B)K, 2034(B)K	16h6	40	30	$5^{\ 0}_{-0.030}$	25	2	$3^{+0.1}_{\ 0}$	2.5	M4 screw Depth: 15
HG-JR3534(B)K, 5034(B)K	28h6	55	50	$8^{\ 0}_{-0.036}$	36	5	$4^{+0.2}_{\ 0}$	4	M8 screw Depth: 20
HG-JR7034(B)K, 9034(B)K	$35^{+0.010}_{\ 0}$	79	75	$10^{\ 0}_{-0.036}$	55	5	$5^{+0.2}_{\ 0}$	5	

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.



[Unit: mm]

HG-JR 1000 r/min Series (Low Inertia, Medium/Large Capacity) (200 V Class) Specifications

Rotary servo motor model		HG-JR	601(B)	801(B)	12K1(B)	15K1	20K1	25K1	30K1	37K1
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.							
Power supply capacity *1		[kVA]	8.6	12	18	22	30	38	48	59
Continuous running duty	Rated output	[kW]	6.0	8.0	12	15	20	25	30	37
	Rated torque (Note 3)	[N•m]	57.3	76.4	115	143	191	239	286	353
Maximum torque		[N•m]	172	229	345	429	573	717	858	1059
Rated speed		[r/min]	1000							
Maximum speed		[r/min]	2000			1500				
Permissible instantaneous speed		[r/min]	2300			1725				
Power rate at continuous rated torque	Standard	[kW/s]	187	265	420	418	582	748	594	761
	With electromagnetic brake	[kW/s]	167	243	394	-	-	-	-	-
Rated current		[A]	31	47	60	67	94	95	121	152
Maximum current		[A]	108	165	208	231	318	313	399	495
Regenerative braking frequency *2	MR-J4-	[times/min]	82	322 (Note 4)	224 (Note 4)	234 (Note 4)	183 (Note 4)	150 (Note 4)	-	-
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	176	220	315	489	627	764	1377	1637
	With electromagnetic brake	[× 10^{-4} kg•m^2]	196	240	336	-	-	-	-	-
Recommended load to motor inertia ratio (Note 1)			10 times or less							
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)							
Oil seal			Attached							
Insulation class			155 (F)							
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)			Totally enclosed, force cooling (IP rating: IP44) (Note 2)				
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)							
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)							
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust							
	Altitude		2000 m or less above sea level (Note 5)							
	Vibration resistance *4		X: 24.5 m/s^2 Y: 24.5 m/s^2						X: 9.8 m/s^2 Y: 9.8 m/s^2	
Vibration rank			V10 *6							
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.							
Permissible load for the shaft *5	L	[mm]	85	116	116	140	140	140	140	140
	Radial	[N]	2450	2940	2940	3234	3234	3234	4900	4900
	Thrust	[N]	980	980	980	1470	1470	1470	1960	1960
Mass	Standard	[kg]	53	62	86	120	145	165	215	240
	With electromagnetic brake	[kg]	65	74	97	-	-	-	-	-
Cooling fan	Power supply	Voltage/ frequency	-	-	-	3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz				
		Input [W]	-	-	-	65 (50 Hz)/85 (60 Hz)			120 (50 Hz)/175 (60 Hz)	
	Rated current	[A]	-	-	-	0.20 (50 Hz)/0.22 (60 Hz)			0.39 (50 Hz)/0.52 (60 Hz)	

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 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. The value is applicable when the external regenerative resistors, GRZG400-_Ω (standard accessory) are used with cooling fans (two units of 92 mm × 92 mm, minimum airflow: 1.0 m^3/min). Note that [Pr. PA02] must be changed.
5. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

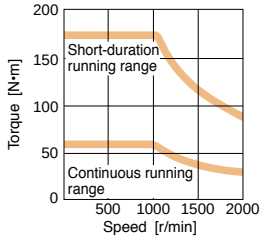
HG-JR 1000 r/min Series (200 V Class) Electromagnetic Brake Specifications (Note 1)

Model	HG-JR	601B	801B	12K1B
Type		Spring actuated type safety brake		
Rated voltage		24 V DC $^{0}_{-10}$%		
Power consumption	[W] at 20 °C	32	32	32
Electromagnetic brake static friction torque	[N•m]	126	126	126
Permissible braking work	Per braking [J]	5000	5000	5000
	Per hour [J]	45200	45200	45200
Electromagnetic brake life (Note 2)	Number of brakings [Times]	20000	20000	20000
	Work per braking [J]	400	400	400

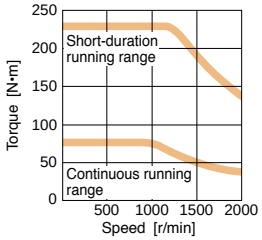
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-JR 1000 r/min Series (200 V Class) Torque Characteristics

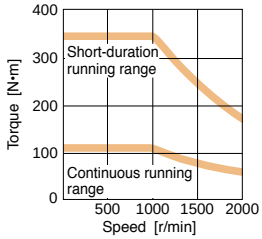
HG-JR601(B) (Note 1, 2)



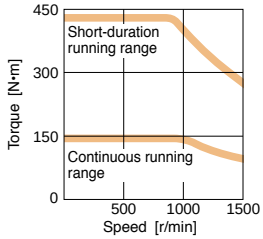
HG-JR801(B) (Note 1, 2)



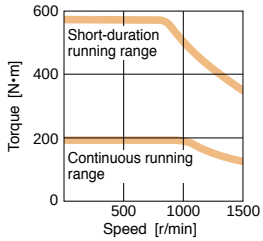
HG-JR12K1(B) (Note 1, 2)



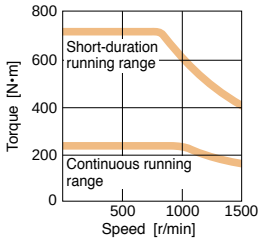
HG-JR15K1 (Note 1, 2)



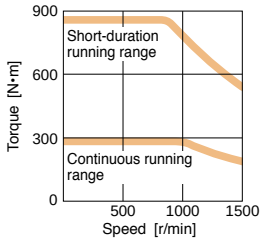
HG-JR20K1 (Note 1, 2)



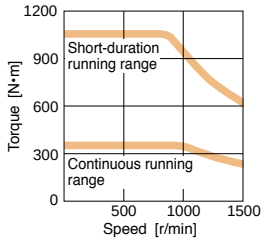
HG-JR25K1 (Note 1, 2)



HG-JR30K1 (Note 1, 2)



HG-JR37K1 (Note 1, 2)



Notes: 1. : For 3-phase 200 V AC.
2. Torque drops when the power supply voltage is below the specified value.

HG-JR 1000 r/min Series (200 V Class) Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions									Fig.
	S	R	Q	W	QK	QL	U	r	Y	
HG-JR601(B)K	42h6	85	79	12 $^{0}_{-0.040}$	70	5	5 $^{+0.2}_{0}$	6	M8 screw Depth: 19.8	A
HG-JR801(B)K, 12K1(B)K	55m6	116	110	16 $^{0}_{-0.040}$	90	5	6 $^{+0.2}_{0}$	8	M10 screw Depth: 27	
HG-JR15K1K, 20K1K, 25K1K	65m6	140	130	18 $^{0}_{-0.040}$	120	5	7 $^{+0.2}_{0}$	9	M12 screw Depth: 25	
HG-JR30K1K, 37K1K	80m6	140	140	22 $^{0}_{-0.040}$	132	7	9 $^{+0.2}_{0}$	11	M16 screw Depth: 30	B

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.

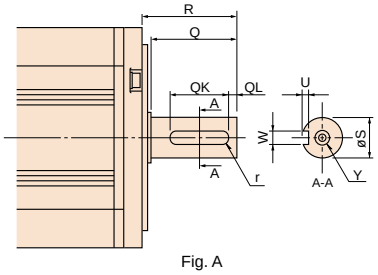


Fig. A

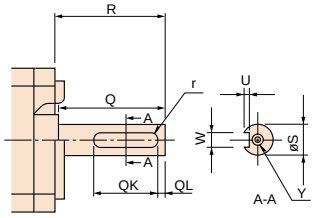


Fig. B [Unit: mm]

HG-JR 1000 r/min Series (Low Inertia, Medium/Large Capacity) (400 V Class) Specifications

Rotary servo motor model		HG-JR	6014(B)	8014(B)	12K14(B)	15K14	20K14	25K14	30K14	37K14
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.							
Power supply capacity *1		[kVA]	8.6	12	18	22	30	38	48	59
Continuous running duty	Rated output	[kW]	6.0	8.0	12	15	20	25	30	37
	Rated torque (Note 3)	[N•m]	57.3	76.4	115	143	191	239	286	353
Maximum torque		[N•m]	172	229	345	429	573	717	858	1059
Rated speed		[r/min]	1000							
Maximum speed		[r/min]	2000			1500				
Permissible instantaneous speed		[r/min]	2300			1725				
Power rate at continuous rated torque	Standard	[kW/s]	187	265	420	418	582	748	594	761
	With electromagnetic brake	[kW/s]	167	243	394	-	-	-	-	-
Rated current		[A]	16	23	30	33	47	48	60	76
Maximum current		[A]	54	80	104	114	161	160	202	248
Regenerative braking frequency *2	MR-J4-	[times/min]	83	331 (Note 4)	229 (Note 4)	239 (Note 4)	187 (Note 4)	152 (Note 4)	-	-
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	176	220	315	489	627	764	1377	1637
	With electromagnetic brake	[× 10^{-4} kg•m^2]	196	240	336	-	-	-	-	-
Recommended load to motor inertia ratio (Note 1)			10 times or less							
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)							
Oil seal			Attached							
Insulation class			155 (F)							
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)			Totally enclosed, force cooling (IP rating: IP44) (Note 2)				
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)							
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)							
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust							
	Altitude		2000 m or less above sea level (Note 5)							
	Vibration resistance *4		X: 24.5 m/s^2 Y: 24.5 m/s^2						X: 9.8 m/s^2 Y: 9.8 m/s^2	
Vibration rank			V10 *6							
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.							
Permissible load for the shaft *5	L	[mm]	85	116	116	140	140	140	140	140
	Radial	[N]	2450	2940	2940	3234	3234	3234	4900	4900
	Thrust	[N]	980	980	980	1470	1470	1470	1960	1960
Mass	Standard	[kg]	53	62	86	120	145	165	215	240
	With electromagnetic brake	[kg]	65	74	97	-	-	-	-	-
Cooling fan	Power supply	Voltage/ frequency	-	-	-	3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz			3-phase 380 V AC to 460 V AC, 50 Hz/60 Hz	
		Input [W]	-	-	-	65 (50 Hz)/85 (60 Hz)			110 (50 Hz)/150 (60 Hz)	
	Rated current	[A]	-	-	-	0.12 (50 Hz)/0.14 (60 Hz)			0.20 (50 Hz)/0.22 (60 Hz)	

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 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. The value is applicable when the external regenerative resistors, GRZG400-_Ω (standard accessory) are used with cooling fans (two units of 92 mm × 92 mm, minimum airflow: 1.0 m^3/min). Note that [Pr. PA02] must be changed.
5. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

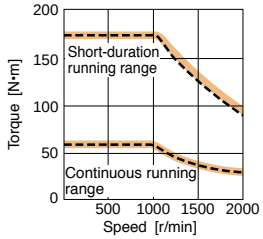
HG-JR 1000 r/min Series (400 V Class) Electromagnetic Brake Specifications (Note 1)

Model	HG-JR	6014B	8014B	12K14B
Type		Spring actuated type safety brake		
Rated voltage		24 V DC $^{0}_{-10}$%		
Power consumption	[W] at 20 °C	32	32	32
Electromagnetic brake static friction torque	[N•m]	126	126	126
Permissible braking work	Per braking [J]	5000	5000	5000
	Per hour [J]	45200	45200	45200
Electromagnetic brake life (Note 2)	Number of brakings [Times]	20000	20000	20000
	Work per braking [J]	400	400	400

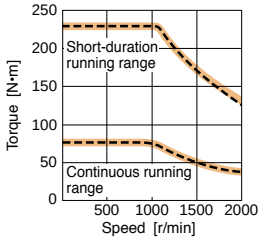
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-JR 1000 r/min Series (400 V Class) Torque Characteristics

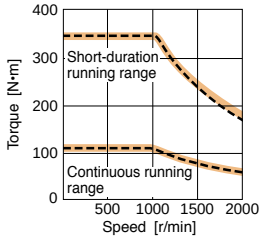
HG-JR6014(B) (Note 1, 2, 3)



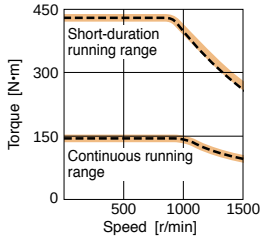
HG-JR8014(B) (Note 1, 2, 3)



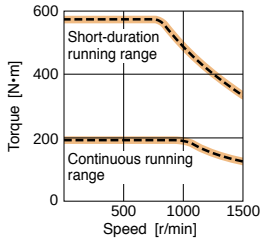
HG-JR12K14(B) (Note 1, 2, 3)



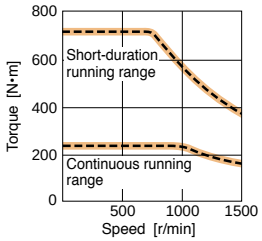
HG-JR15K14 (Note 1, 2, 3)



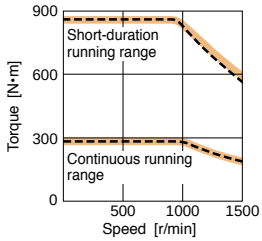
HG-JR20K14 (Note 1, 2, 3)



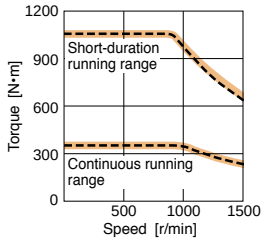
HG-JR25K14 (Note 1, 2, 3)



HG-JR30K14 (Note 1, 2, 3)



HG-JR37K14 (Note 1, 2, 3)



Notes: 1. ▬ : For 3-phase 400 V AC.
2. - - - - : For 3-phase 380 V AC.
3. Torque drops when the power supply voltage is below the specified value.

HG-JR 1000 r/min Series (400 V Class) Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions									Fig.
	S	R	Q	W	QK	QL	U	r	Y	
HG-JR6014(B)K	42h6	85	79	12 $^{0}_{-0.040}$	70	5	5 $^{+0.2}_{0}$	6	M8 screw Depth: 19.8	A
HG-JR8014(B)K, 12K14(B)K	55m6	116	110	16 $^{0}_{-0.040}$	90	5	6 $^{+0.2}_{0}$	8	M10 screw Depth: 27	
HG-JR15K14K, 20K14K, 25K14K	65m6	140	130	18 $^{0}_{-0.040}$	120	5	7 $^{+0.2}_{0}$	9	M12 screw Depth: 25	
HG-JR30K14K, 37K14K	80m6	140	140	22 $^{0}_{-0.040}$	132	7	9 $^{+0.2}_{0}$	11	M16 screw Depth: 30	B

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.

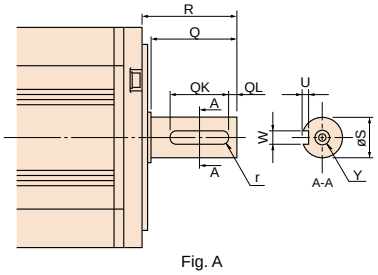


Fig. A

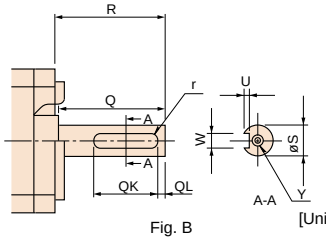


Fig. B

[Unit: mm]

HG-JR 1500 r/min Series (Low Inertia, Medium/Large Capacity) (200 V Class) Specifications

Rotary servo motor model		HG-JR	701M(B)	11K1M(B)	15K1M(B)	22K1M	30K1M	37K1M
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.					
Power supply capacity *1		[kVA]	10	16	22	33	48	59
Continuous running duty	Rated output	[kW]	7.0	11	15	22	30	37
	Rated torque (Note 3)	[N•m]	44.6	70.0	95.5	140	191	236
Maximum torque		[N•m]	134	210	286	420	573	707
Rated speed		[r/min]	1500					
Maximum speed		[r/min]	3000			2500		
Permissible instantaneous speed		[r/min]	3450			2875		
Power rate at continuous rated torque	Standard	[kW/s]	113	223	289	401	582	726
	With electromagnetic brake	[kW/s]	101	204	271	-	-	-
Rated current		[A]	34	61	76	99	139	151
Maximum current		[A]	111	200	246	315	479	561
Regenerative braking frequency *2	MR-J4-	[times/min]	36	143 (Note 4)	162 (Note 4)	104 (Note 4)	-	-
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	176	220	315	489	627	764
	With electromagnetic brake	[× 10^{-4} kg•m^2]	196	240	336	-	-	-
Recommended load to motor inertia ratio (Note 1)			10 times or less					
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)					
Oil seal			Attached					
Insulation class			155 (F)					
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)			Totally enclosed, force cooling (IP rating: IP44) (Note 2)		
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)					
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)					
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust					
	Altitude		2000 m or less above sea level (Note 5)					
	Vibration resistance *4		X: 24.5 m/s^2 Y: 24.5 m/s^2					
Vibration rank			V10 *6					
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.					
Permissible load for the shaft *5	L	[mm]	85	116	116	140	140	140
	Radial	[N]	2450	2940	2940	3234	3234	3234
	Thrust	[N]	980	980	980	1470	1470	1470
Mass	Standard	[kg]	53	62	86	120	145	165
	With electromagnetic brake	[kg]	65	74	97	-	-	-
Cooling fan	Power supply	Voltage/ frequency	-	-	-	3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz		
		Input [W]	-	-	-	65 (50 Hz)/85 (60 Hz)		
	Rated current	[A]	-	-	-	0.20 (50 Hz)/0.22 (60 Hz)		

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 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. The value is applicable when the external regenerative resistors, GRZG400-_Ω (standard accessory) are used with cooling fans (two units of 92 mm × 92 mm, minimum airflow: 1.0 m^3/min). Note that [Pr. PA02] must be changed.
5. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

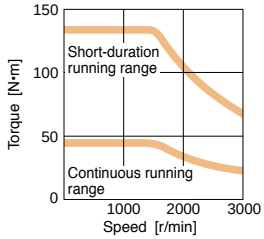
HG-JR 1500 r/min Series (200 V Class) Electromagnetic Brake Specifications (Note 1)

Model		HG-JR	701MB	11K1MB	15K1MB
Type			Spring actuated type safety brake		
Rated voltage			24 V DC$^{0}_{-10}$%		
Power consumption		[W] at 20 °C	32	32	32
Electromagnetic brake static friction torque		[N•m]	126	126	126
Permissible braking work	Per braking	[J]	5000	5000	5000
	Per hour	[J]	45200	45200	45200
Electromagnetic brake life (Note 2)	Number of brakings	[Times]	20000	20000	20000
	Work per braking	[J]	400	400	400

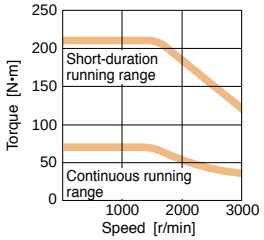
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-JR 1500 r/min Series (200 V Class) Torque Characteristics

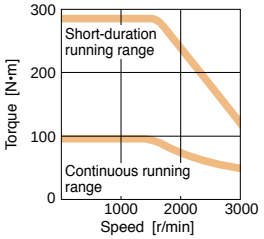
HG-JR701M(B) (Note 1, 2)



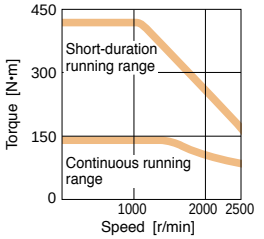
HG-JR11K1M(B) (Note 1, 2)



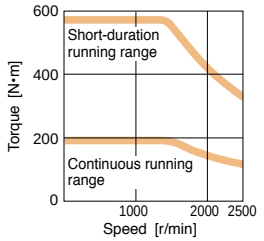
HG-JR15K1M(B) (Note 1, 2)



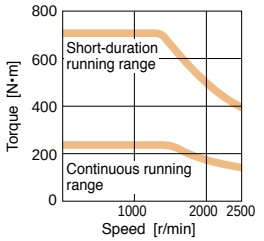
HG-JR22K1M (Note 1, 2)



HG-JR30K1M (Note 1, 2)



HG-JR37K1M (Note 1, 2)



Notes: 1. : For 3-phase 200 V AC.
2. Torque drops when the power supply voltage is below the specified value.

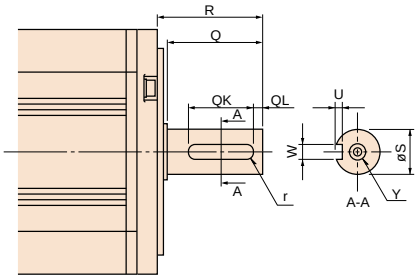
HG-JR 1500 r/min Series (200 V Class) Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions								
	S	R	Q	W	QK	QL	U	r	Y
HG-JR701M(B)K	42h6	85	79	12 $^{0}_{-0.040}$	70	5	5 $^{+0.2}_{0}$	6	M8 screw Depth: 19.8
HG-JR11K1M(B)K, 15K1M(B)K	55m6	116	110	16 $^{0}_{-0.040}$	90	5	6 $^{+0.2}_{0}$	8	M10 screw Depth: 27
HG-JR22K1MK, 30K1MK, 37K1MK	65m6	140	130	18 $^{0}_{-0.040}$	120	5	7 $^{+0.2}_{0}$	9	M12 screw Depth: 25

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.



[Unit: mm]

HG-JR 1500 r/min Series (Low Inertia, Medium/Large Capacity) (400 V Class) Specifications

Rotary servo motor model		HG-JR	701M4(B)	11K1M4(B)	15K1M4(B)	22K1M4	30K1M4	37K1M4	45K1M4	55K1M4
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.							
Power supply capacity *1		[kVA]	10	16	22	33	48	59	71	80
Continuous running duty	Rated output	[kW]	7.0	11	15	22	30	37	45	55
	Rated torque (Note 3)	[N•m]	44.6	70.0	95.5	140	191	236	286	350
Maximum torque		[N•m]	134	210	286	420	573	707	859	1050
Rated speed		[r/min]	1500							
Maximum speed		[r/min]	3000			2500				
Permissible instantaneous speed		[r/min]	3450			2875				
Power rate at continuous rated torque	Standard	[kW/s]	113	223	289	401	582	726	596	749
	With electromagnetic brake	[kW/s]	101	204	271	-	-	-	-	-
Rated current		[A]	17	31	38	50	68	79	85	110
Maximum current		[A]	56	100	123	170	235	263	288	357
Regenerative braking frequency *2	MR-J4-	[times/min]	36	143 (Note 4)	162 (Note 4)	104 (Note 4)	-	-	-	-
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	176	220	315	489	627	764	1377	1637
	With electromagnetic brake	[× 10^{-4} kg•m^2]	196	240	336	-	-	-	-	-
Recommended load to motor inertia ratio (Note 1)			10 times or less							
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)							
Oil seal			Attached							
Insulation class			155 (F)							
Structure			Totally enclosed, natural cooling (IP rating: IP67) (Note 2)			Totally enclosed, force cooling (IP rating: IP44) (Note 2)				
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)							
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)							
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust							
	Altitude		2000 m or less above sea level (Note 5)							
	Vibration resistance *4		X: 24.5 m/s^2 Y: 24.5 m/s^2						X: 9.8 m/s^2 Y: 9.8 m/s^2	
Vibration rank			V10 *6							
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.							
Permissible load for the shaft *5	L	[mm]	85	116	116	140	140	140	140	140
	Radial	[N]	2450	2940	2940	3234	3234	3234	4900	4900
	Thrust	[N]	980	980	980	1470	1470	1470	1960	1960
Mass	Standard	[kg]	53	62	86	120	145	165	215	240
	With electromagnetic brake	[kg]	65	74	97	-	-	-	-	-
Cooling fan	Power supply	Voltage/ frequency	-	-	-	3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz			3-phase 380 V AC to 460 V AC, 50 Hz/60 Hz	
		Input [W]	-	-	-	65 (50 Hz)/85 (60 Hz)			110 (50 Hz)/150 (60 Hz)	
	Rated current	[A]	-	-	-	0.12 (50 Hz)/0.14 (60 Hz)			0.20 (50 Hz)/0.22 (60 Hz)	

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 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. The value is applicable when the external regenerative resistors, GRZG400-_Ω (standard accessory) are used with cooling fans (two units of 92 mm × 92 mm, minimum airflow: 1.0 m^3/min). Note that [Pr. PA02] must be changed.
5. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

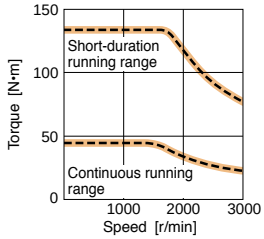
HG-JR 1500 r/min Series (400 V Class) Electromagnetic Brake Specifications (Note 1)

Model		HG-JR	701M4B	11K1M4B	15K1M4B
Type			Spring actuated type safety brake		
Rated voltage			24 V DC $^{0}_{-10}$%		
Power consumption		[W] at 20 °C	32	32	32
Electromagnetic brake static friction torque		[N•m]	126	126	126
Permissible braking work	Per braking	[J]	5000	5000	5000
	Per hour	[J]	45200	45200	45200
Electromagnetic brake life (Note 2)	Number of brakings	[Times]	20000	20000	20000
	Work per braking	[J]	400	400	400

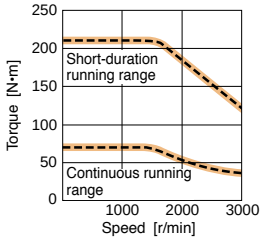
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-JR 1500 r/min Series (400 V Class) Torque Characteristics

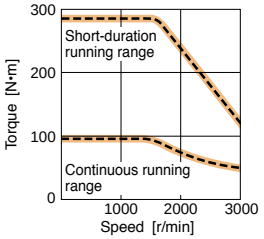
HG-JR701M4(B) (Note 1, 2, 3)



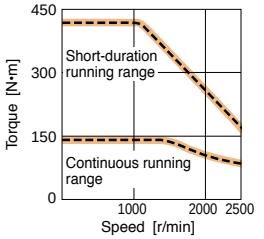
HG-JR11K1M4(B) (Note 1, 2, 3)



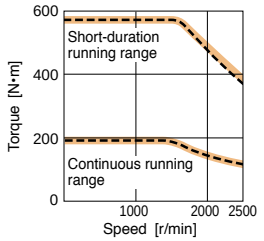
HG-JR15K1M4(B) (Note 1, 2, 3)



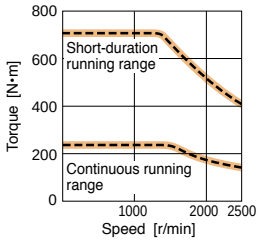
HG-JR22K1M4 (Note 1, 2, 3)



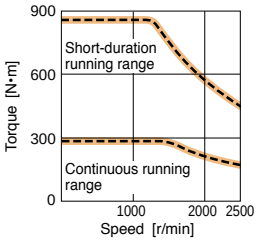
HG-JR30K1M4 (Note 1, 2, 3)



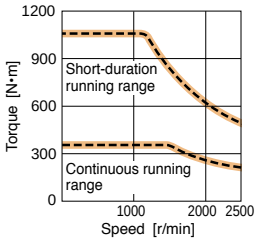
HG-JR37K1M4 (Note 1, 2, 3)



HG-JR45K1M4 (Note 1, 2, 3)



HG-JR55K1M4 (Note 1, 2, 3)



Notes: 1. ▬ : For 3-phase 400 V AC.
2. - - - - : For 3-phase 380 V AC.
3. Torque drops when the power supply voltage is below the specified value.

HG-JR 1500 r/min Series (400 V Class) Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions									Fig.
	S	R	Q	W	QK	QL	U	r	Y	
HG-JR701M4(B)K	42h6	85	79	12 $^{0}_{-0.040}$	70	5	5 $^{+0.2}_{0}$	6	M8 screw Depth: 19.8	A
HG-JR11K1M4(B)K, 15K1M4(B)K	55m6	116	110	16 $^{0}_{-0.040}$	90	5	6 $^{+0.2}_{0}$	8	M10 screw Depth: 27	
HG-JR22K1M4K, 30K1M4K, 37K1M4K	65m6	140	130	18 $^{0}_{-0.040}$	120	5	7 $^{+0.2}_{0}$	9	M12 screw Depth: 25	
HG-JR45K1M4K, 55K1M4K	80m6	140	140	22 $^{0}_{-0.040}$	132	7	9 $^{+0.2}_{0}$	11	M16 screw Depth: 30	B

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.

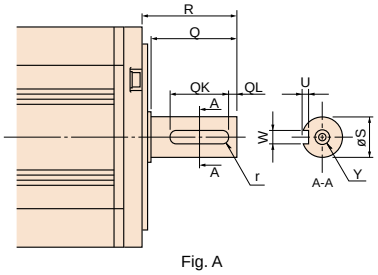


Fig. A

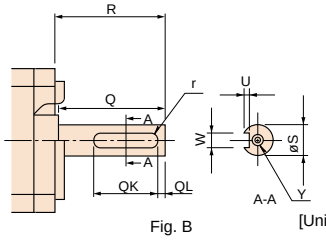


Fig. B

[Unit: mm]

HG-RR Series (Ultra-low Inertia, Medium Capacity) Specifications

Rotary servo motor model		HG-RR	103(B)	153(B)	203(B)	353(B)	503(B)
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.				
Power supply capacity *1		[kVA]	1.7	2.5	3.5	5.5	7.5
Continuous running duty	Rated output	[kW]	1.0	1.5	2.0	3.5	5.0
	Rated torque (Note 3)	[N•m]	3.2	4.8	6.4	11.1	15.9
Maximum torque		[N•m]	8.0	11.9	15.9	27.9	39.8
Rated speed		[r/min]	3000				
Maximum speed		[r/min]	4500				
Permissible instantaneous speed		[r/min]	5175				
Power rate at continuous rated torque	Standard	[kW/s]	67.4	120	176	150	211
	With electromagnetic brake	[kW/s]	54.8	101	153	105	163
Rated current		[A]	6.1	8.8	14	23	28
Maximum current		[A]	18	23	37	58	70
Regenerative braking frequency *2	MR-J4-	[times/min]	1090	860	710	174	125
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	1.50	1.90	2.30	8.30	12.0
	With electromagnetic brake	[× 10^{-4} kg•m^2]	1.85	2.25	2.65	11.8	15.5
Recommended load to motor inertia ratio (Note 1)			5 times or less				
Speed/position detector			Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)				
Oil seal			Attached				
Insulation class			155 (F)				
Structure			Totally enclosed, natural cooling (IP rating: IP65) (Note 2)				
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)				
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)				
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust				
	Altitude		2000 m or less above sea level (Note 4)				
	Vibration resistance *4		X: 24.5 m/s^2 Y: 24.5 m/s^2				
Vibration rank			V10 *6				
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.				
Permissible load for the shaft *5	L	[mm]	45	45	45	63	63
	Radial	[N]	686	686	686	980	980
	Thrust	[N]	196	196	196	392	392
Mass	Standard	[kg]	3.9	5.0	6.2	12	17
	With electromagnetic brake	[kg]	6.0	7.0	8.3	15	21

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 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

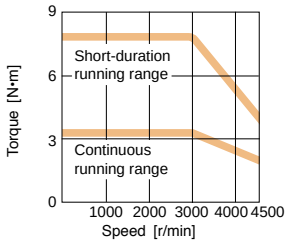
HG-RR Series Electromagnetic Brake Specifications (Note 1)

Model		HG-RR	103B	153B	203B	353B	503B
Type			Spring actuated type safety brake				
Rated voltage			24 V DC $^{0}_{-10}$%				
Power consumption		[W] at 20 °C	19	19	19	23	23
Electromagnetic brake static friction torque		[N•m]	7.0	7.0	7.0	17	17
Permissible braking work	Per braking	[J]	400	400	400	400	400
	Per hour	[J]	4000	4000	4000	4000	4000
Electromagnetic brake life (Note 2)	Number of brakings	[Times]	20000	20000	20000	20000	20000
	Work per braking	[J]	200	200	200	200	200

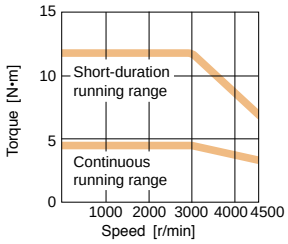
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-RR Series Torque Characteristics

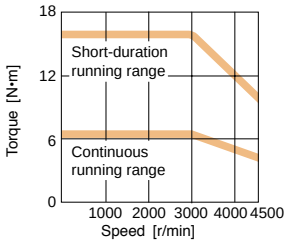
HG-RR103(B) (Note 1, 2, 3)



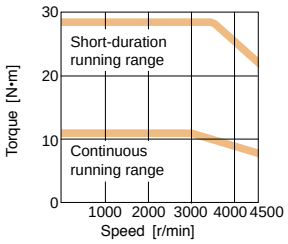
HG-RR153(B) (Note 1, 2, 3)



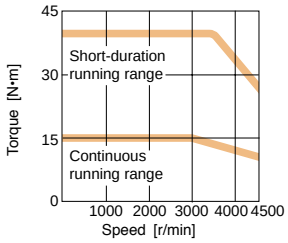
HG-RR203(B) (Note 1, 2)



HG-RR353(B) (Note 1, 2)



HG-RR503(B) (Note 1, 2)



Notes: 1. ▬ : For 3-phase 200 V AC.
2. Torque drops when the power supply voltage is below the specified value.
3. Contact your local sales office for the torque characteristics when using the servo amplifier with 1-phase 200 V AC input.

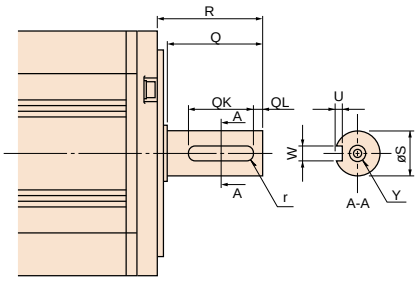
HG-RR Series Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions								
	S	R	Q	W	QK	QL	U	r	Y
HG-RR103(B)K, 153(B)K, 203(B)K	24h6	45	40	8 $^{0}_{-0.036}$	25	5	4 $^{+0.2}_{0}$	4	M8 screw Depth: 20
HG-RR353(B)K, 503(B)K	28h6	63	58	8 $^{0}_{-0.036}$	53	3	4 $^{+0.2}_{0}$	4	

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.



[Unit: mm]

HG-UR Series (Flat Type, Medium Capacity) Specifications

Rotary servo motor model			HG-UR	72(B)	152(B)	202(B)	352(B)	502(B)
Compatible servo amplifier model			MR-J4-	Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.				
			MR-J4W_-					
Power supply capacity *1			[kVA]	1.3	2.5	3.5	5.5	7.5
Continuous running duty	Rated output		[kW]	0.75	1.5	2.0	3.5	5.0
	Rated torque (Note 3)		[N•m]	3.6	7.2	9.5	16.7	23.9
Maximum torque			[N•m]	10.7	21.5	28.6	50.1	71.6
Rated speed			[r/min]	2000				
Maximum speed			[r/min]	3000			2500	
Permissible instantaneous speed			[r/min]	3450			2875	
Power rate at continuous rated torque	Standard		[kW/s]	12.3	23.2	23.9	36.5	49.6
	With electromagnetic brake		[kW/s]	10.3	21.2	19.5	32.8	46.0
Rated current			[A]	5.4	9.7	14	23	28
Maximum current			[A]	16	29	42	69	84
Regenerative braking frequency *2	MR-J4-		[times/min]	53	124	68	44	31
	MR-J4W_-		[times/min]	107	-	-	-	-
Moment of inertia J	Standard		[× 10^{-4} kg•m^2]	10.4	22.1	38.2	76.5	115
	With electromagnetic brake		[× 10^{-4} kg•m^2]	12.5	24.2	46.8	85.1	124
Recommended load to motor inertia ratio (Note 1)				15 times or less				
Speed/position detector				Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)				
Oil seal				Attached				
Insulation class				155 (F)				
Structure				Totally enclosed, natural cooling (IP rating: IP65) (Note 2)				
Environment *3	Ambient temperature			Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)				
	Ambient humidity			Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)				
	Ambience			Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust				
	Altitude			2000 m or less above sea level (Note 4)				
	Vibration resistance *4			X: 24.5 m/s^2 Y: 24.5 m/s^2		X: 24.5 m/s^2 Y: 49 m/s^2		
Vibration rank				V10 *6				
Compliance to global standards				Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.				
Permissible load for the shaft *5	L		[mm]	55	55	65	65	65
	Radial		[N]	637	637	882	1176	1176
	Thrust		[N]	490	490	784	784	784
Mass	Standard		[kg]	8.0	11	16	20	24
	With electromagnetic brake		[kg]	10	13	22	26	30

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 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 1 to 6.

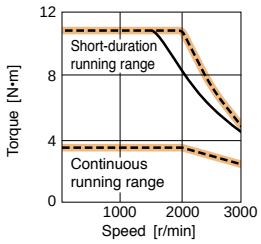
HG-UR Series Electromagnetic Brake Specifications (Note 1)

Model		HG-UR	72B	152B	202B	352B	502B
Type			Spring actuated type safety brake				
Rated voltage			24 V DC $^{0}_{-10}$%				
Power consumption		[W] at 20 °C	19	19	34	34	34
Electromagnetic brake static friction torque		[N•m]	8.5	8.5	44	44	44
Permissible braking work	Per braking	[J]	400	400	4500	4500	4500
	Per hour	[J]	4000	4000	45000	45000	45000
Electromagnetic brake life (Note 2)	Number of brakings	[Times]	20000	20000	20000	20000	20000
	Work per braking	[J]	200	200	1000	1000	1000

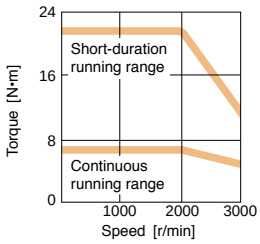
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-UR Series Torque Characteristics

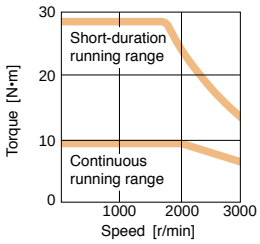
HG-UR72(B) (Note 1, 2, 3, 4)



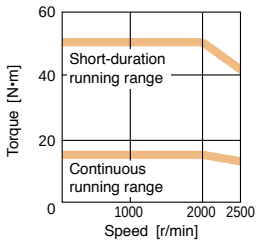
HG-UR152(B) (Note 1, 4, 5)



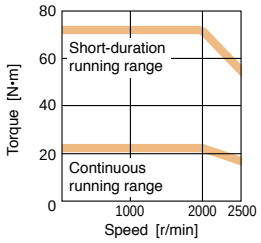
HG-UR202(B) (Note 1, 4)



HG-UR352(B) (Note 1, 4)



HG-UR502(B) (Note 1, 4)



Notes: 1. ▬▬ : For 3-phase 200 V AC.
2. - - - - : For 1-phase 230 V AC.
3. ——— : For 1-phase 200 V AC.
This line is drawn only where differs from the other two lines.
4. Torque drops when the power supply voltage is below the specified value.
5. Contact your local sales office for the torque characteristics when using the servo amplifier with 1-phase 200 V AC input.

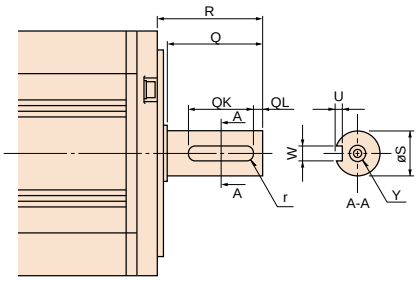
HG-UR Series Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions								
	S	R	Q	W	QK	QL	U	r	Y
HG-UR72(B)K	22h6	55	50	6 $^{0}_{-0.036}$	42	3	3.5 $^{+0.1}_{0}$	3	M8 screw Depth: 20
HG-UR152(B)K	28h6	55	50	8 $^{0}_{-0.036}$	40	3	4 $^{+0.2}_{0}$	4	
HG-UR202(B)K, 352(B)K, 502(B)K	35 $^{+0.010}_{0}$	65	60	10 $^{0}_{-0.036}$	50	5	5 $^{+0.2}_{0}$	5	

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
2. A key is not supplied with the servo motor. The key shall be installed by the user.



[Unit: mm]

HG-AK Series (Ultra-compact Size, Ultra-small Capacity) Specifications (Note 4)

Servo motor model		HG-AK	0136(B)	0236(B)	0336(B)
Compatible servo amplifier model			Refer to "Combinations of Rotary Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.		
Power supply capacity *8		[W]	230	360	480
Continuous running duty	Rated output	[W]	10	20	30
	Rated torque (Note 3)	[N•m]	0.032	0.064	0.095
Maximum torque		[N•m]	0.095	0.191	0.286
Rated speed		[r/min]	3000		
Maximum speed	48 V DC	[r/min]	6000		
	24 V DC	[r/min]	6000		5000
Permissible instantaneous speed	48 V DC	[r/min]	6900		
	24 V DC	[r/min]	6900		5750
Power rate at continuous rated torque	Standard	[kW/s]	3.54	9.01	14.95
	With electromagnetic brake	[kW/s]	2.41	6.99	12.32
Rated current		[A]	2.1	2.1	2.2
Maximum current		[A]	6.3	6.3	6.6
Regenerative braking frequency *2		[times/min]	1700	1200	900
Moment of inertia J	Standard	[× 10^{-4} kg•m^2]	0.0029	0.0045	0.0061
	With electromagnetic brake	[× 10^{-4} kg•m^2]	0.0042	0.0058	0.0074
Recommended load to motor inertia ratio (Note 1)			30 times or less		
Speed/position detector			Absolute/incremental 18-bit encoder (resolution: 262144 pulses/rev)		
Oil seal			None		
Insulation class			130 (B)		
Structure			Totally enclosed, natural cooling (IP rating: IP55) (Note 2)		
Environment *3	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)		
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)		
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust		
	Altitude		1000 m or less above sea level		
	Vibration resistance *4		X: 49 m/s^2 Y: 49 m/s^2		
Vibration rank			V10 *6		
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.		
Permissible load for the shaft *5	L	[mm]	16	16	16
	Radial	[N]	34	44	49
	Thrust	[N]	14	14	14
Mass	Standard	[kg]	0.12	0.14	0.16
	With electromagnetic brake	[kg]	0.22	0.24	0.26

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, the connector, and the power cable leading part are excluded. Refer to the asterisk 7 of "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the shaft-through portion.
3. 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.
4. Specifications of HG-AK_-S100 are the same as those of HG-AK_ except for the dimensions.

Refer to "Annotations for Rotary Servo Motor Specifications" on p. 368 in this catalog for the asterisks 2 to 6 and 8.

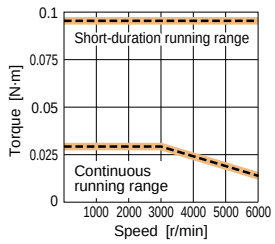
HG-AK Series Electromagnetic Brake Specifications (Note 1)

Model		HG-AK	0136B	0236B	0336B
Type			Spring actuated type safety brake		
Rated voltage			24 V DC$^{0}_{-10}$%		
Power consumption		[W] at 20 °C	1.8		
Electromagnetic brake static friction torque		[N•m]	0.095		
Permissible braking work	Per braking	[J]	4.6		
	Per hour	[J]	46		
Electromagnetic brake life (Note 2)	Number of brakings	[Times]	20000		
	Work per braking	[J]	1		

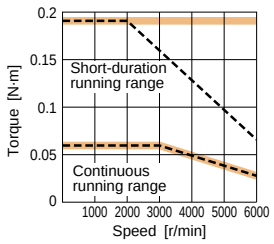
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-AK Series Torque Characteristics

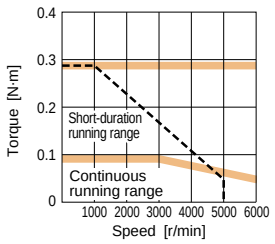
HG-AK0136(B) (Note 1, 2, 3, 4)



HG-AK0236(B) (Note 1, 2, 3, 4)



HG-AK0336(B) (Note 1, 2, 3, 4)

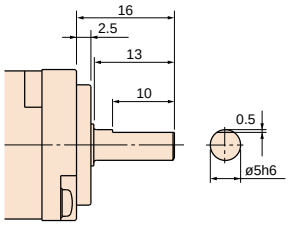


Notes: 1. ▬▬: For 48 V DC.
2. - - - -: For 24 V DC.
3. Torque drops when the power supply voltage is below the specified value.
4. The torque characteristics are applicable when optional MR-J4W03PWCBL5M-H or MR-J4W03PWBRCBL5M-H is used between the servo amplifier and the servo motor. When an option cable longer than 5 m is used, the torque characteristics in the short-duration running range may be lower because of voltage drop.

HG-AK Series Special Shaft End Specifications (Note 1)

Motors with the following specifications are also available.

D-cut shaft

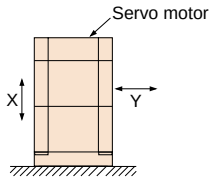


[Unit: mm]

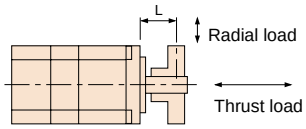
Notes: 1. Specifications of HG-AK_-S100 are the same as those of HG-AK_ except for the dimensions.

Annotations for Rotary Servo Motor Specifications

* 1. The power supply capacity varies depending on the power supply impedance.
* 2. The regenerative braking frequency shows the permissible frequency when the servo motor, without a load and a regenerative option, decelerates from the rated speed to a stop. When a load is connected; however, the value will be the table value/(m+1), where m = Moment of inertia of load/Moment of inertia of servo motor.
When the operating speed exceeds the rated speed, the regenerative braking frequency is inversely proportional to the square of (operating speed/rated speed). Take measures to keep the regenerative power [W] during operation below the permissible regenerative power [W]. Use caution, especially when the operating speed changes frequently or when the regeneration is constant (as with vertical feeds). Select the most suitable regenerative option for your system with our capacity selection software.
Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when regenerative option is used.
* 3. In the environment where the servo motor is exposed to oil mist, oil and/or water, a standard specification servo motor may not be usable. Contact your local sales office for more details.
* 4. 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 servo motor shaft).
Fretting more likely occurs on the bearing when the servo motor stops. Thus, maintain vibration level at approximately one-half of the allowable value.

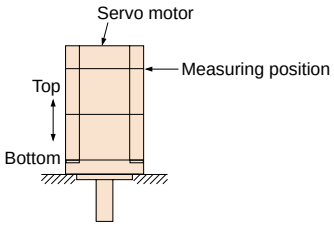


* 5. Refer to the diagram below for the permissible load for the shaft. Do not apply a load exceeding the value specified in the table on the shaft. The values in the table are applicable when each load is applied singly.

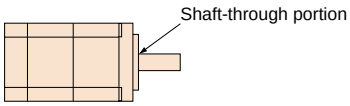


L: Distance between the flange mounting surface and the center of load

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



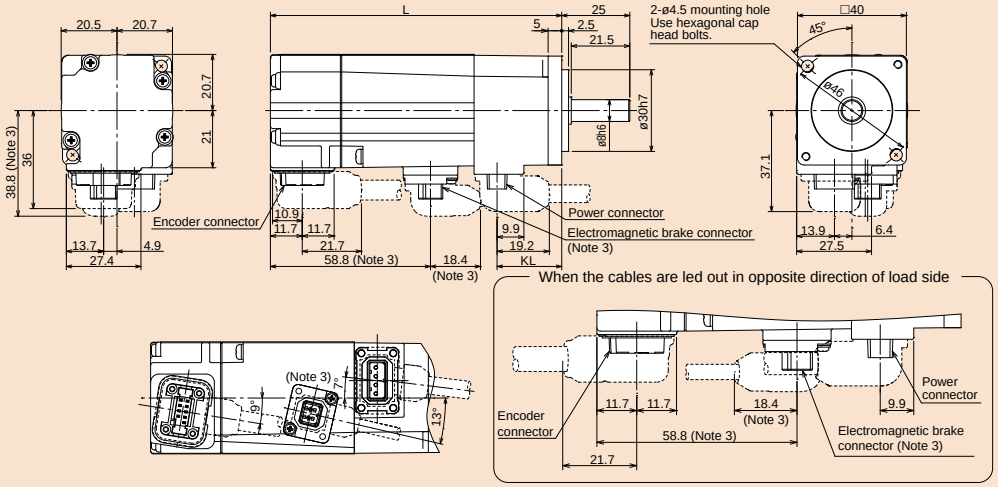
* 7. Refer to the diagram below for shaft-through portion.



* 8. The power supply capacity varies depending on the DC power supply and the wiring impedance.

HG-KR/HG-MR Series Dimensions (Note 1, 5, 6)

●HG-KR053(B), HG-KR13(B)
●HG-MR053(B), HG-MR13(B)



Power connector

Pin No.	Signal name
1	⏚ (PE)
2	U
3	V
4	W

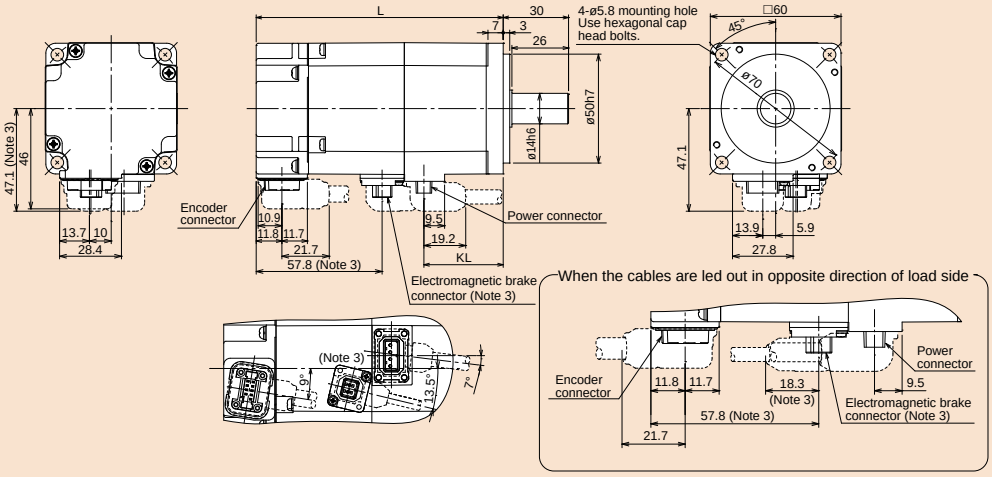
Electromagnetic brake connector (Note 2)

Pin No.	Signal name
1	B1
2	B2

Model	Variable dimensions (Note 4)	
	L	KL
HG-KR053(B) HG-MR053(B)	66.4 (107)	23.8
HG-KR13(B) HG-MR13(B)	82.4 (123)	39.8

[Unit: mm]

●HG-KR23(B), HG-KR43(B)
●HG-MR23(B), HG-MR43(B)



Power connector

Pin No.	Signal name
1	⏚ (PE)
2	U
3	V
4	W

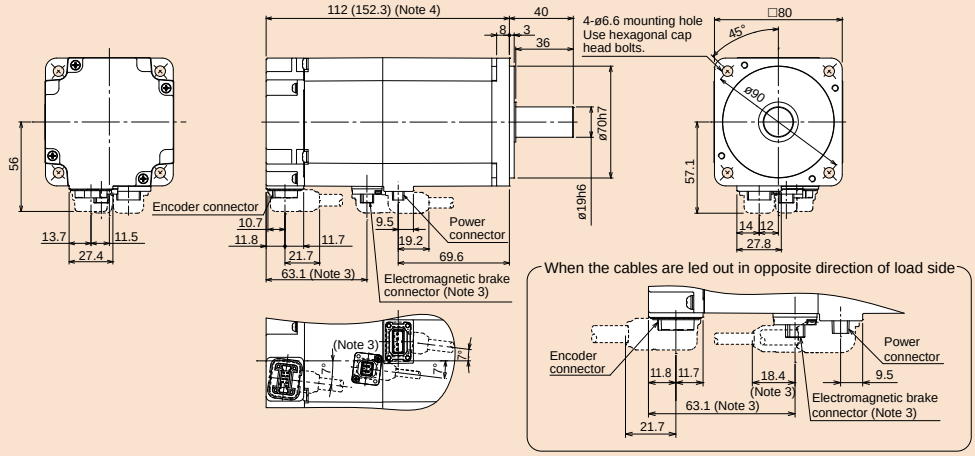
Electromagnetic brake connector (Note 2)

Pin No.	Signal name
1	B1
2	B2

Model	Variable dimensions (Note 4)	
	L	KL
HG-KR23(B) HG-MR23(B)	76.6 (113.4)	36.4
HG-KR43(B) HG-MR43(B)	98.3 (135.1)	58.1

[Unit: mm]

●HG-KR73(B)
●HG-MR73(B)



Power connector

Pin No.	Signal name
1	⏚ (PE)
2	U
3	V
4	W

Electromagnetic brake connector (Note 2)

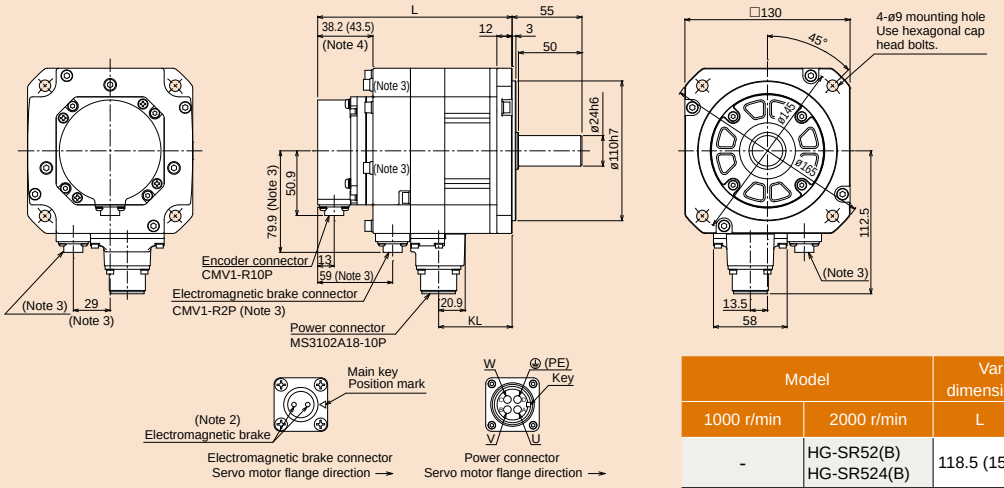
Pin No.	Signal name
1	B1
2	B2

[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies.
2. The electromagnetic brake terminals (B1, B2) do not have polarity.
3. Only for the models with electromagnetic brake.
4. Dimensions in brackets are for the models with electromagnetic brake.
5. Use a friction coupling to fasten a load.
6. Servo motors with oil seal (HG-KR_J and HG-MR_J) have different dimensions. Contact your local sales office for more details.

HG-SR Series Dimensions (Note 1, 5)

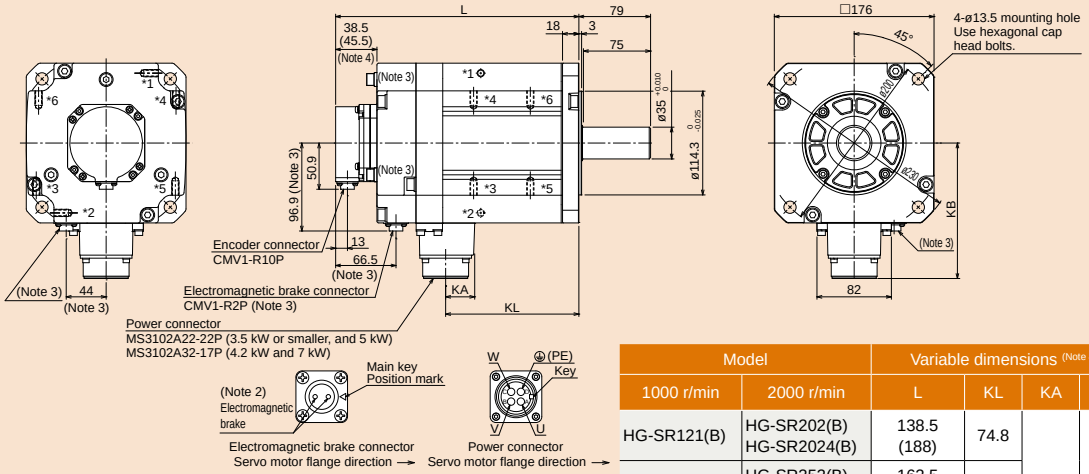
- HG-SR51(B), HG-SR81(B)
- HG-SR52(B), HG-SR102(B), HG-SR152(B), HG-SR524(B), HG-SR1024(B), HG-SR1524(B)



Model		Variable dimensions (Note 4)	
1000 r/min	2000 r/min	L	KL
-	HG-SR52(B) HG-SR524(B)	118.5 (153)	57.8
HG-SR51(B)	HG-SR102(B) HG-SR1024(B)	132.5 (167)	71.8
HG-SR81(B)	HG-SR152(B) HG-SR1524(B)	146.5 (181)	85.8

[Unit: mm]

- HG-SR121(B), HG-SR201(B), HG-SR301(B), HG-SR421(B)
- HG-SR202(B), HG-SR352(B), HG-SR502(B), HG-SR702(B), HG-SR2024(B), HG-SR3524(B), HG-SR5024(B), HG-SR7024(B)



*1, *2, *3, *4, *5 and *6 are screw holes (M8) for eyebolt.
•HG-SR201(B), 301(B), 352(4)(B), 502(4)(B): *1, *2
•HG-SR421(B), 702(4)(B): *3, *4, *5, *6

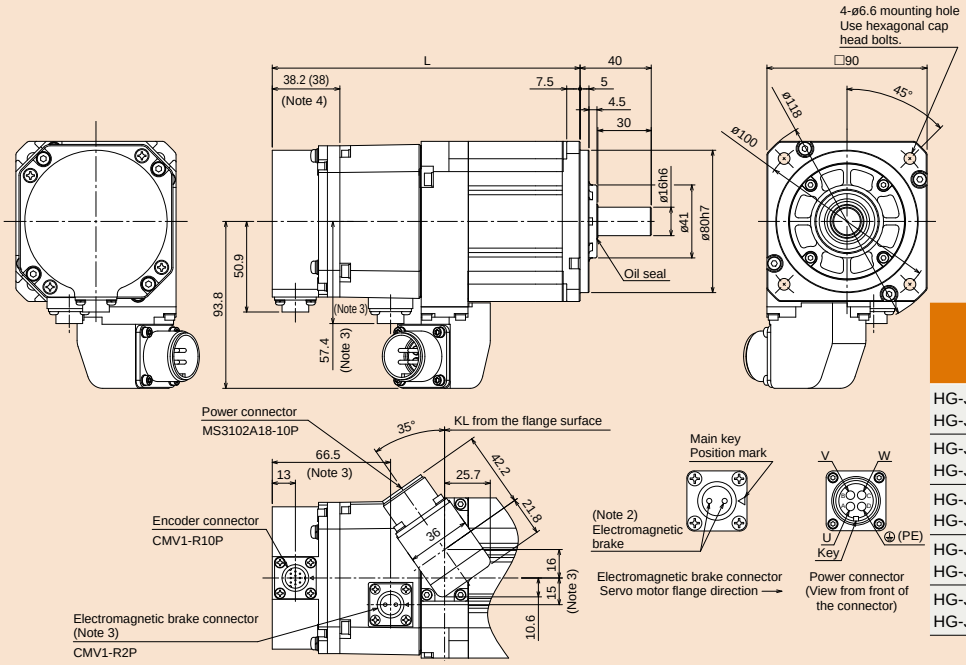
Model		Variable dimensions (Note 4)			
1000 r/min	2000 r/min	L	KL	KA	KB
HG-SR121(B)	HG-SR202(B) HG-SR2024(B)	138.5 (188)	74.8	24.8	140.9
HG-SR201(B)	HG-SR352(B) HG-SR3524(B)	162.5 (212)	98.8		
HG-SR301(B)	HG-SR502(B) HG-SR5024(B)	178.5 (228)	114.8		
HG-SR421(B)	HG-SR702(B) HG-SR7024(B)	218.5 (268)	146.8	32	149.1

[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies.
2. The electromagnetic brake terminals do not have polarity.
3. Only for the models with electromagnetic brake.
4. Dimensions in brackets are for the models with electromagnetic brake.
5. Use a friction coupling to fasten a load.

HG-JR Series Dimensions (Note 1, 5)

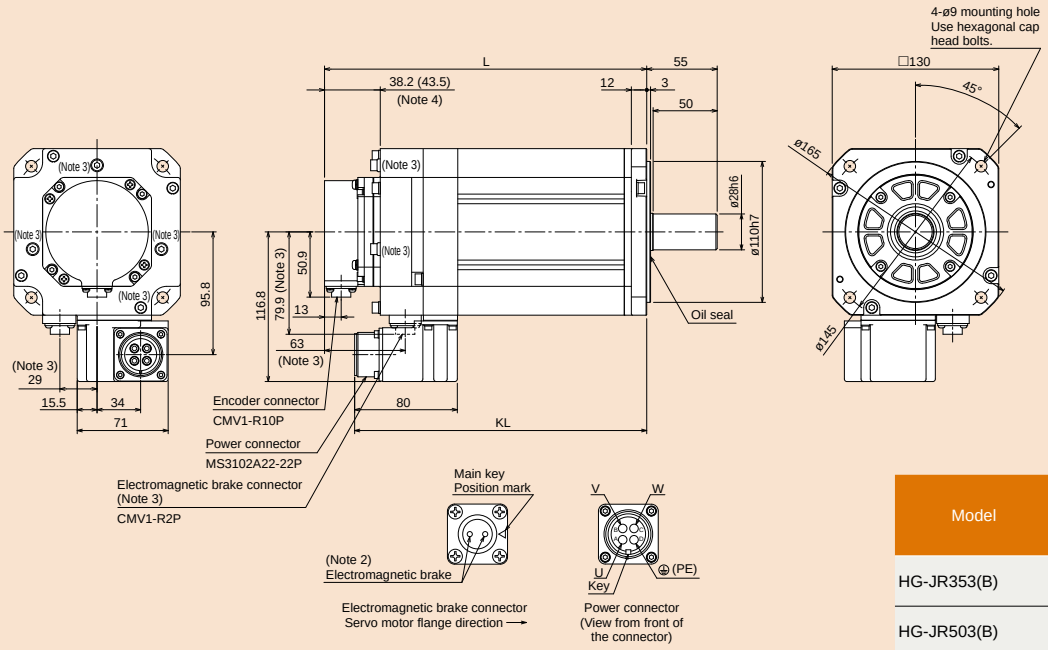
●HG-JR53(B), HG-JR73(B), HG-JR103(B), HG-JR153(B), HG-JR203(B), HG-JR534(B), HG-JR734(B), HG-JR1034(B), HG-JR1534(B), HG-JR2034(B)



Model	Variable dimensions (Note 4)	
	L	KL
HG-JR53(B) HG-JR534(B)	127.5 (173)	76
HG-JR73(B) HG-JR734(B)	145.5 (191)	94
HG-JR103(B) HG-JR1034(B)	163.5 (209)	112
HG-JR153(B) HG-JR1534(B)	199.5 (245)	148
HG-JR203(B) HG-JR2034(B)	235.5 (281)	184

[Unit: mm]

●HG-JR353(B), HG-JR503(B)



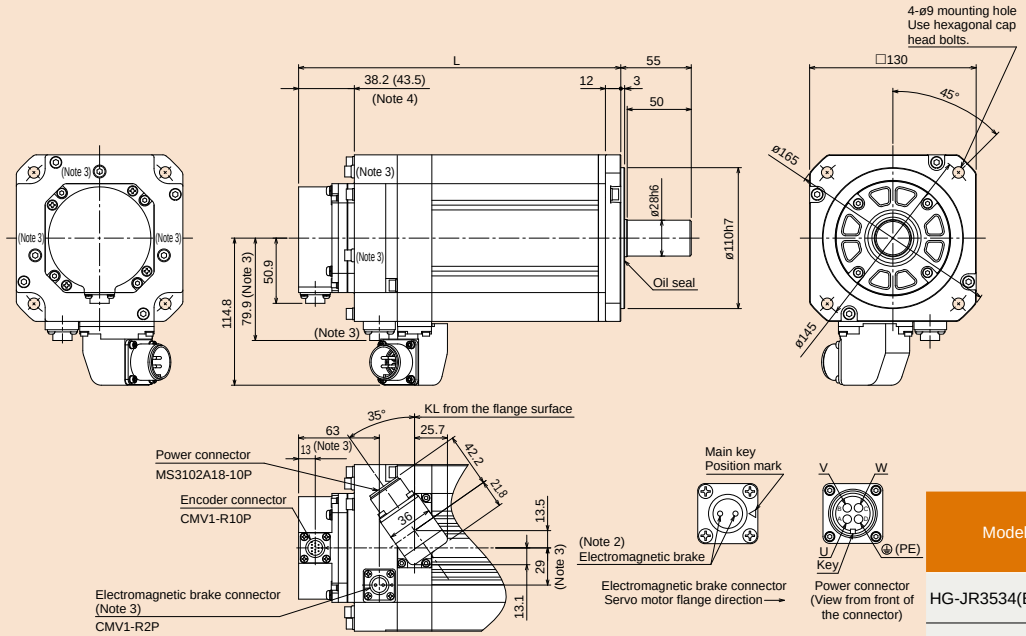
Model	Variable dimensions (Note 4)	
	L	KL
HG-JR353(B)	213 (251.5)	228
HG-JR503(B)	267 (305.5)	282

[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies.
2. The electromagnetic brake terminals do not have polarity.
3. Only for the models with electromagnetic brake.
4. Dimensions in brackets are for the models with electromagnetic brake.
5. Use a friction coupling to fasten a load.

HG-JR Series Dimensions (Note 1, 5)

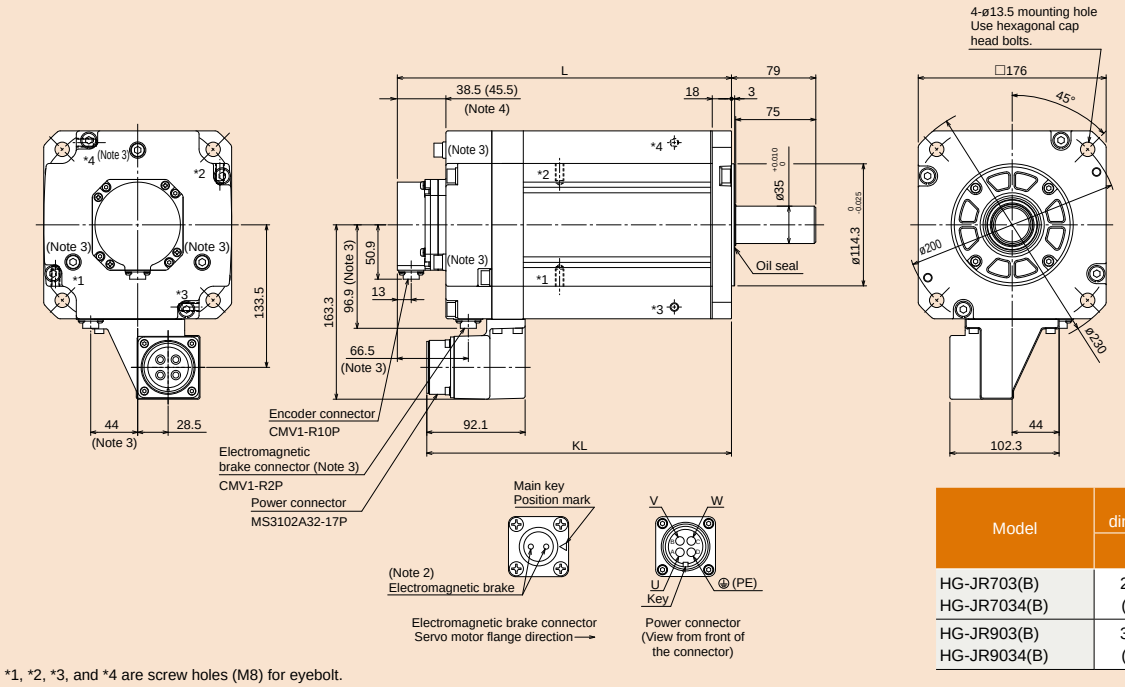
●HG-JR3534(B), HG-JR5034(B)



Model	Variable dimensions (Note 4)	
	L	KL
HG-JR3534(B)	213 (251.5)	161
HG-JR5034(B)	267 (305.5)	215

[Unit: mm]

●HG-JR703(B), HG-JR903(B), HG-JR7034(B), HG-JR9034(B)



*1, *2, *3, and *4 are screw holes (M8) for eyebolt.

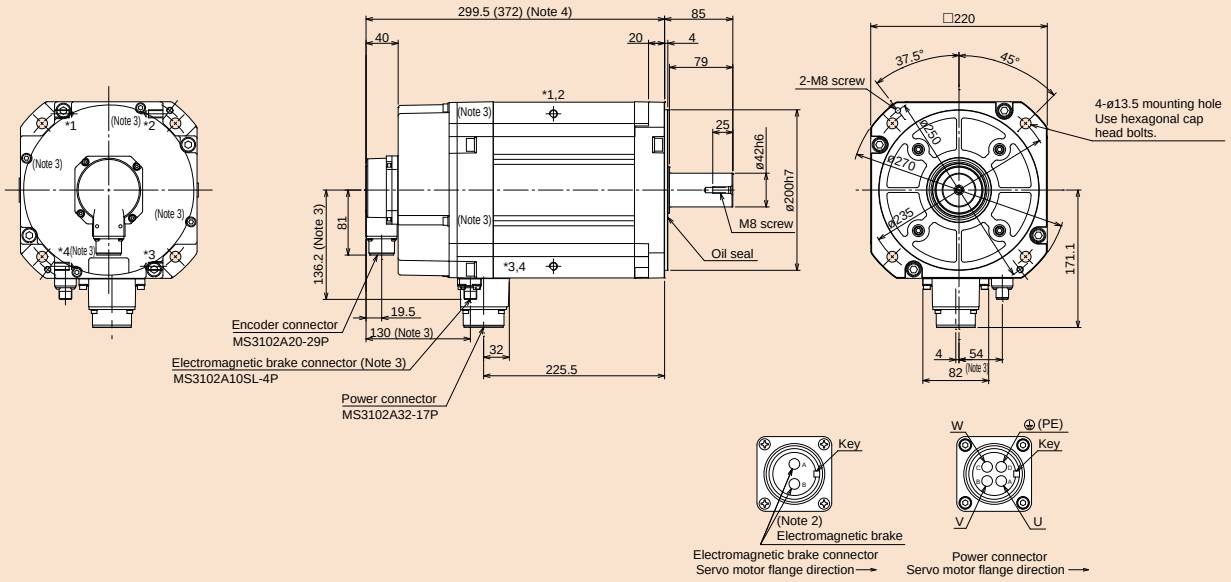
Model	Variable dimensions (Note 4)	
	L	KL
HG-JR703(B) HG-JR7034(B)	263.5 (313)	285.4
HG-JR903(B) HG-JR9034(B)	303.5 (353)	325.4

[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies.
2. The electromagnetic brake terminals do not have polarity.
3. Only for the models with electromagnetic brake.
4. Dimensions in brackets are for the models with electromagnetic brake.
5. Use a friction coupling to fasten a load.

HG-JR Series Dimensions (Note 1, 5)

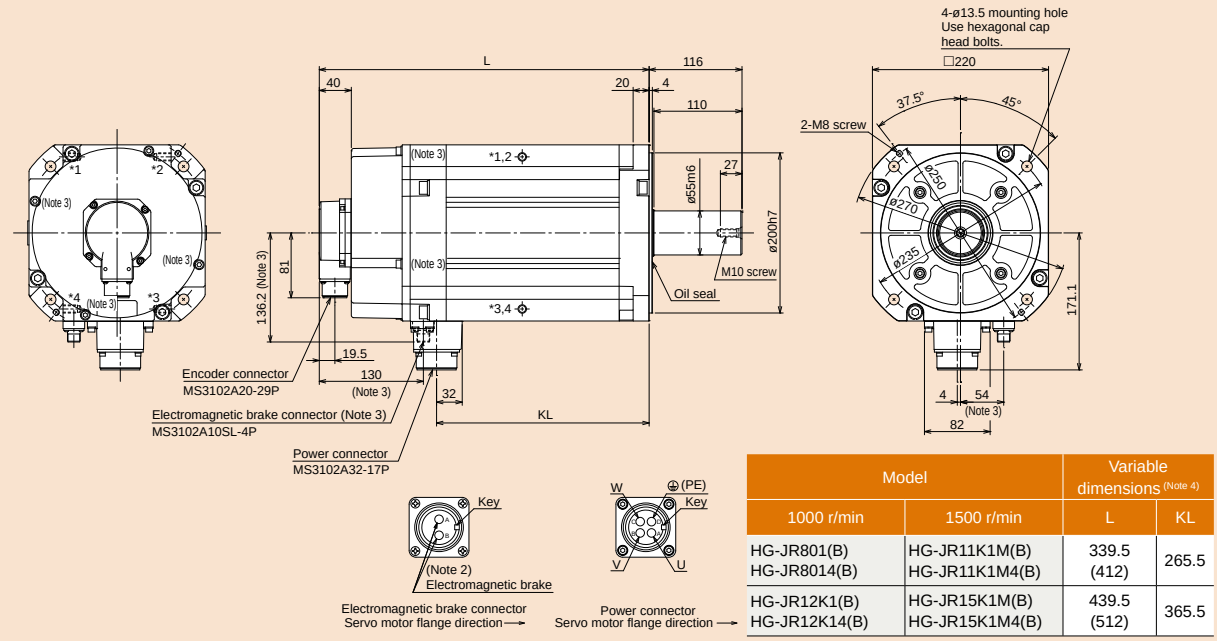
●HG-JR601(B), HG-JR701M(B), HG-JR6014(B), HG-JR701M4(B)



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

[Unit: mm]

●HG-JR801(B), HG-JR12K1(B), HG-JR8014(B), HG-JR12K14(B)
●HG-JR11K1M(B), HG-JR15K1M(B), HG-JR11K1M4(B), HG-JR15K1M4(B)



Model		Variable dimensions (Note 4)	
1000 r/min	1500 r/min	L	KL
HG-JR801(B) HG-JR8014(B)	HG-JR11K1M(B) HG-JR11K1M4(B)	339.5 (412)	265.5
HG-JR12K1(B) HG-JR12K14(B)	HG-JR15K1M(B) HG-JR15K1M4(B)	439.5 (512)	365.5

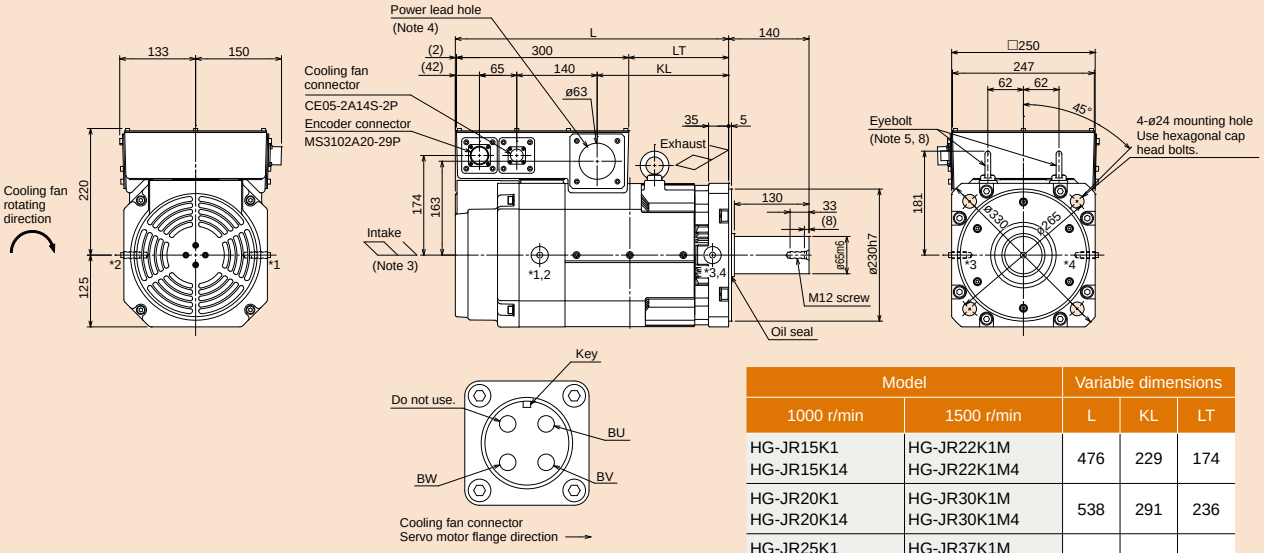
*1, *2, *3, and *4 are screw holes (M10) for eyebolt.

[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies.
2. The electromagnetic brake terminals do not have polarity.
3. Only for the models with electromagnetic brake.
4. Dimensions in brackets are for the models with electromagnetic brake.
5. Use a friction coupling to fasten a load.

HG-JR Series Dimensions (Note 1, 2, 6)

●HG-JR15K1, HG-JR20K1, HG-JR25K1, HG-JR15K14, HG-JR20K14, HG-JR25K14
●HG-JR22K1M (Note 7), HG-JR30K1M, HG-JR37K1M, HG-JR22K1M4 (Note 7), HG-JR30K1M4, HG-JR37K1M4

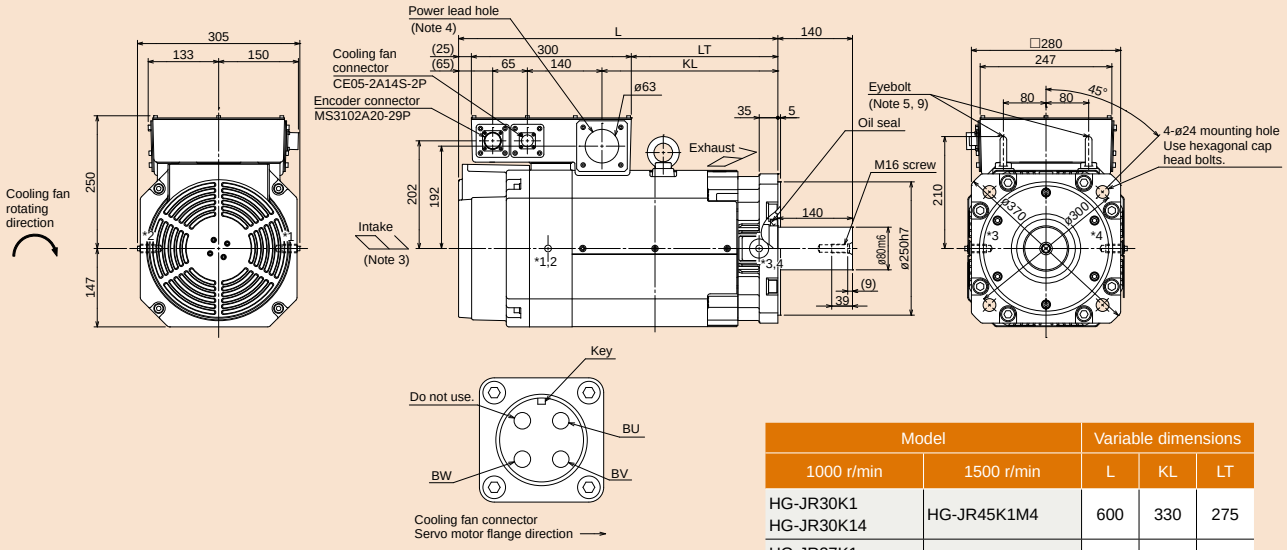


Model		Variable dimensions		
1000 r/min	1500 r/min	L	KL	LT
HG-JR15K1 HG-JR15K14	HG-JR22K1M HG-JR22K1M4	476	229	174
HG-JR20K1 HG-JR20K14	HG-JR30K1M HG-JR30K1M4	538	291	236
HG-JR25K1 HG-JR25K14	HG-JR37K1M HG-JR37K1M4	600	353	298

*1, *2, *3, and *4 are screw holes (M12) for eyebolt.

[Unit: mm]

●HG-JR30K1, HG-JR37K1, HG-JR30K14, HG-JR37K14
●HG-JR45K1M4, HG-JR55K1M4



Model		Variable dimensions		
1000 r/min	1500 r/min	L	KL	LT
HG-JR30K1 HG-JR30K14	HG-JR45K1M4	600	330	275
HG-JR37K1 HG-JR37K14	HG-JR55K1M4	664	394	339

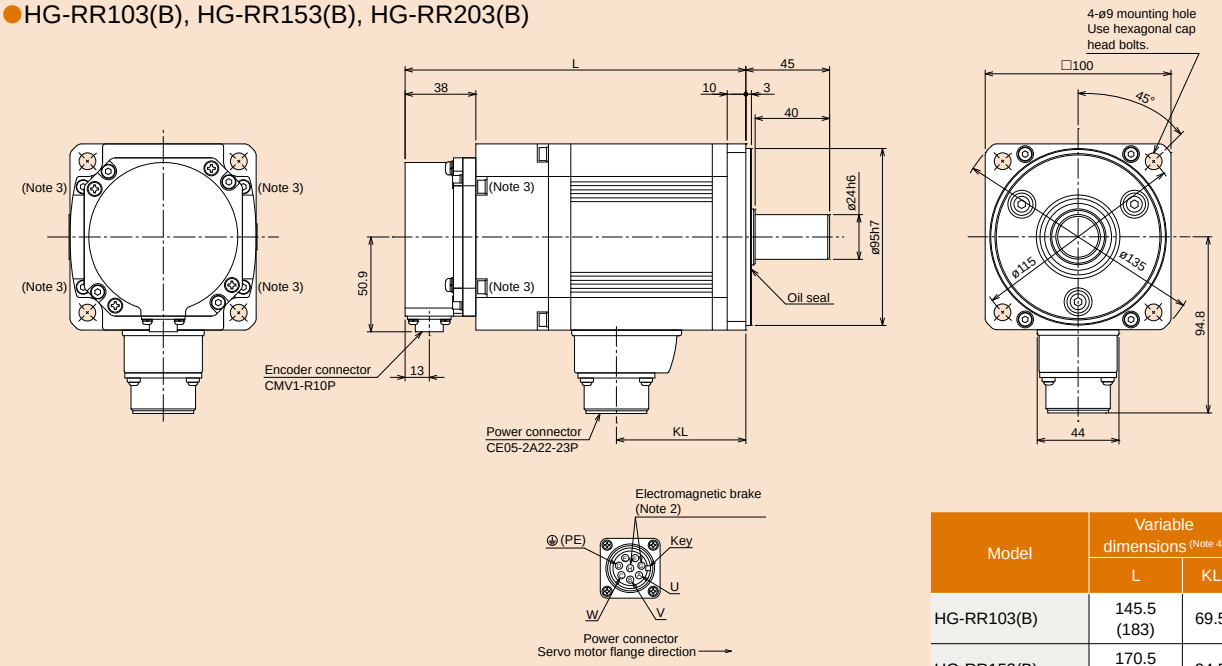
*1, *2, *3, and *4 are screw holes (M16) for eyebolt.

[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies.
2. Use a friction coupling to fasten a load.
3. Leave a clearance of at least 150 mm between the intake side of the servo motor and wall.
4. Prevent oil, water, dust, and other foreign matter from entering the servo motor through the lead hole.
5. A washer is placed between the eyebolt and the servo motor to adjust the bolt angle.
6. The terminal block in the terminal box consists of M10 screws for the motor power input (U, V, and W).
7. HG-JR22K1M/HG-JR22K1M4 have been modified from September 2014 production. Refer to "Servo Motor Instruction Manual (Vol. 3)" for the previous dimensions.
8. When using the servo motor without the eyebolt, plug the threaded hole with a bolt of M12 × 20 or shorter.
9. When using the servo motor without the eyebolt, plug the threaded hole with a bolt of M16 × 20 or shorter.

HG-RR Series Dimensions (Note 1, 5)

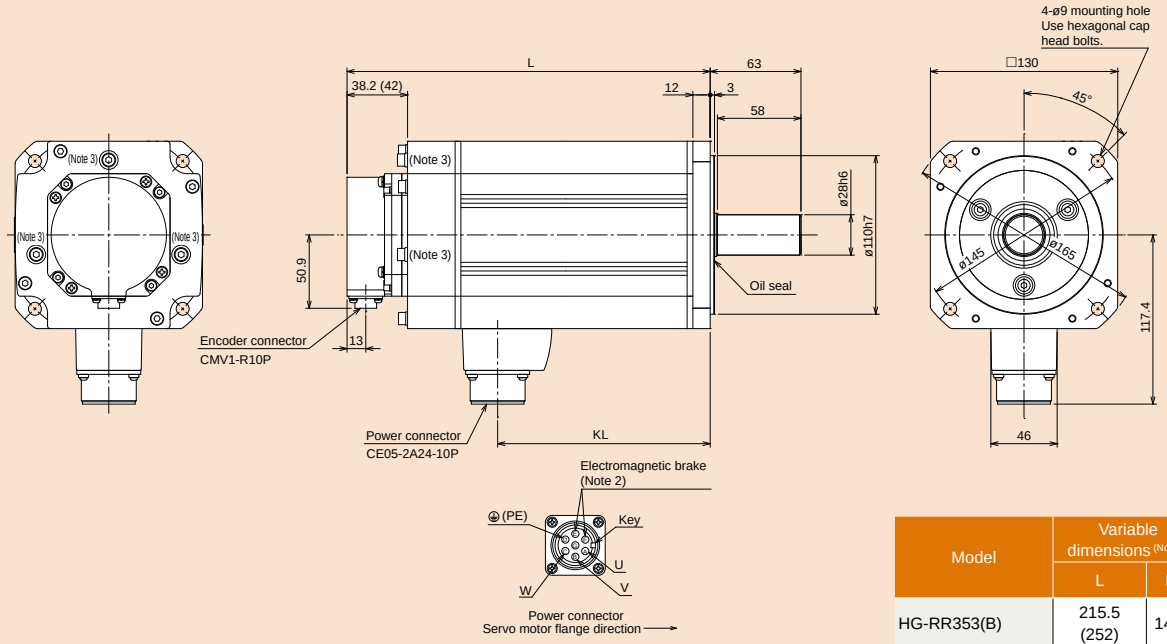
●HG-RR103(B), HG-RR153(B), HG-RR203(B)



Model	Variable dimensions (Note 4)	
	L	KL
HG-RR103(B)	145.5 (183)	69.5
HG-RR153(B)	170.5 (208)	94.5
HG-RR203(B)	195.5 (233)	119.5

[Unit: mm]

●HG-RR353(B), HG-RR503(B)



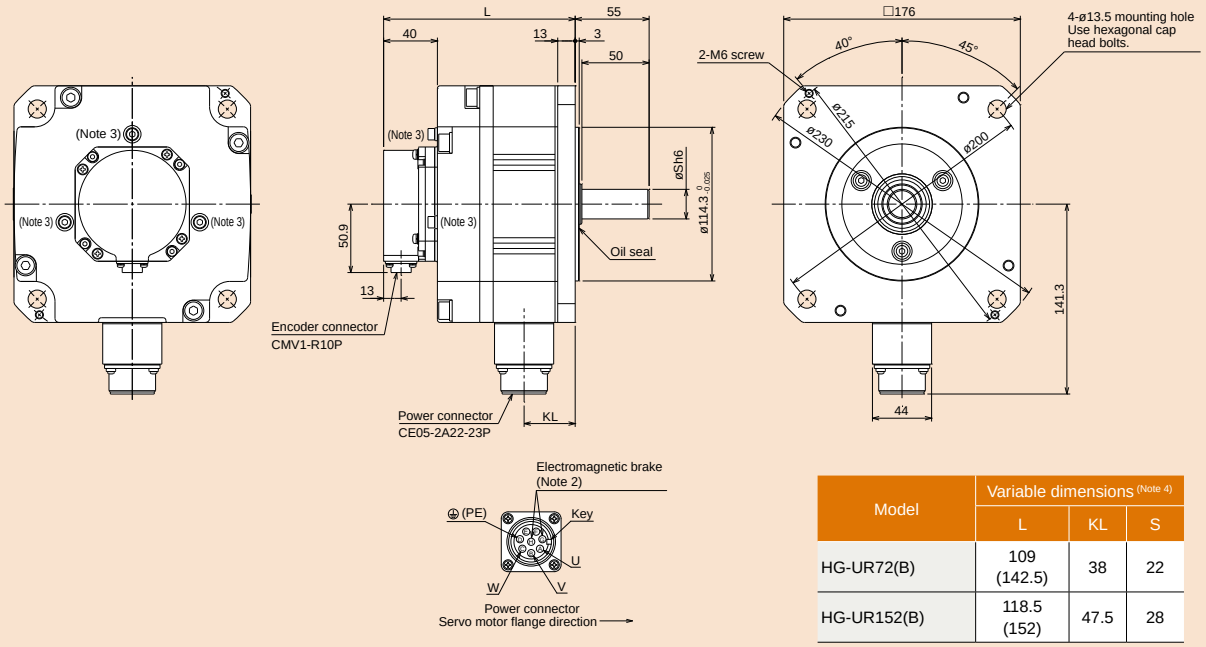
Model	Variable dimensions (Note 4)	
	L	KL
HG-RR353(B)	215.5 (252)	147.5
HG-RR503(B)	272.5 (309)	204.5

[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies.
2. The electromagnetic brake terminals do not have polarity.
3. Only for the models with electromagnetic brake.
4. Dimensions in brackets are for the models with electromagnetic brake.
5. Use a friction coupling to fasten a load.

HG-UR Series Dimensions (Note 1, 5)

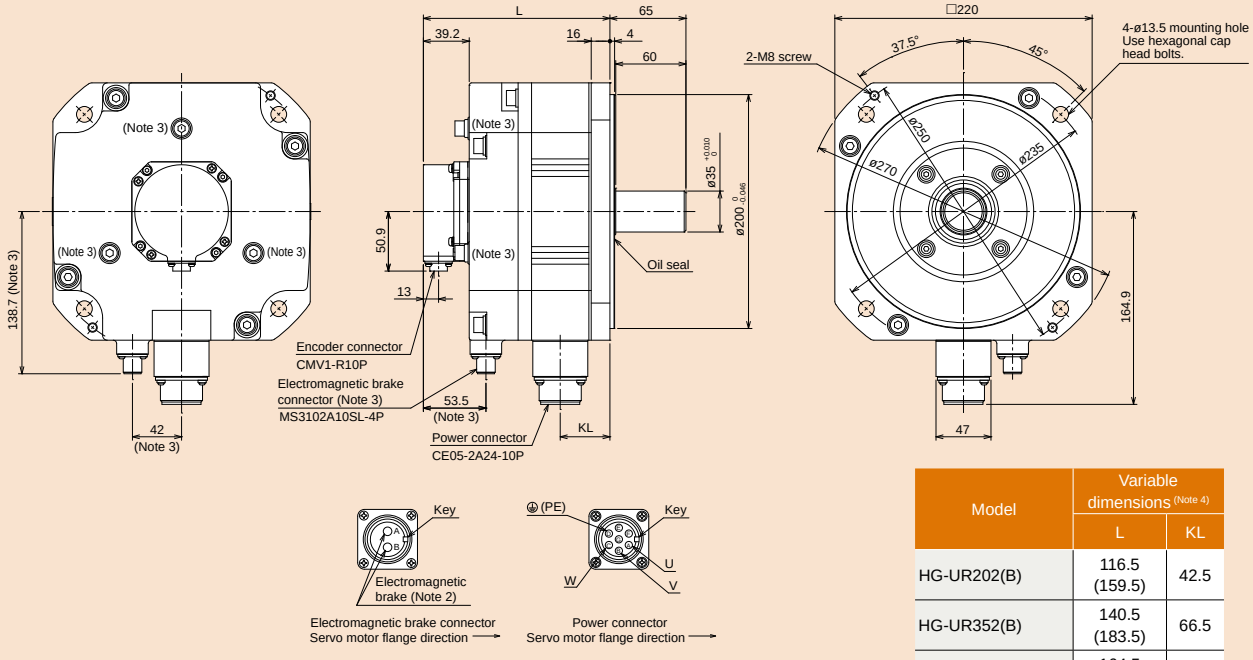
●HG-UR72(B), HG-UR152(B)



Model	Variable dimensions (Note 4)		
	L	KL	S
HG-UR72(B)	109 (142.5)	38	22
HG-UR152(B)	118.5 (152)	47.5	28

[Unit: mm]

●HG-UR202(B), HG-UR352(B), HG-UR502(B)



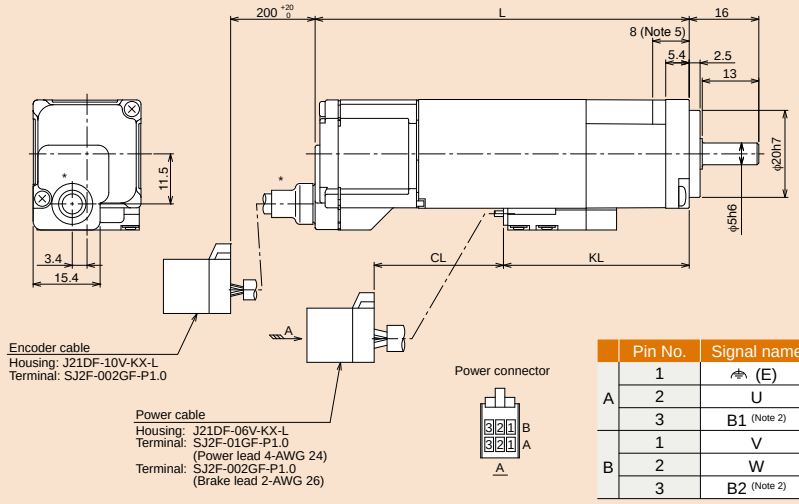
Model	Variable dimensions (Note 4)	
	L	KL
HG-UR202(B)	116.5 (159.5)	42.5
HG-UR352(B)	140.5 (183.5)	66.5
HG-UR502(B)	164.5 (207.5)	90.5

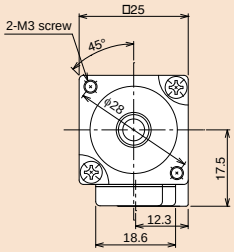
[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies.
2. The electromagnetic brake terminals do not have polarity.
3. Only for the models with electromagnetic brake.
4. Dimensions in brackets are for the models with electromagnetic brake.
5. Use a friction coupling to fasten a load.

HG-AK Series Dimensions (Note 1, 4)

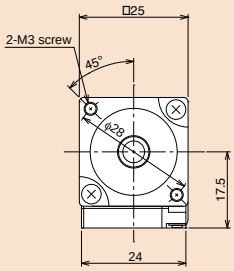
●HG-AK0136(B), HG-AK0236(B), HG-AK0336(B)





For servo motor without electromagnetic brake

	Pin No.	Signal name
A	1	(E)
	2	U
	3	B1 (Note 2)
B	1	V
	2	W
	3	B2 (Note 2)



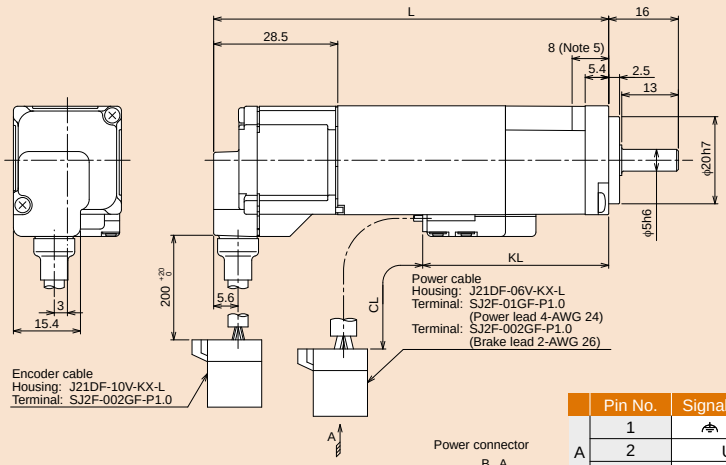
For servo motor with electromagnetic brake

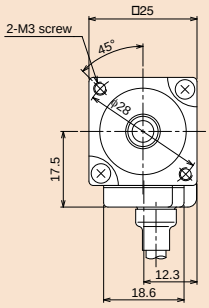
* The encoder cable leading portion has been modified from April 2013 production.

Model	Variable dimensions (Note 3)		
	L	KL	CL
HG-AK0136(B)	54 (86)	30.7 (42.7)	225^{+20}_{0} (245^{+20}_{0})
HG-AK0236(B)	61 (93)	37.7 (49.7)	
HG-AK0336(B)	68 (100)	44.7 (56.7)	

[Unit: mm]

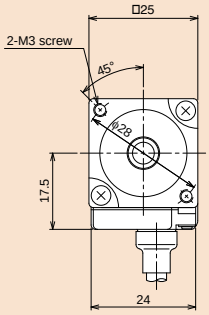
●HG-AK0136(B)-S100, HG-AK0236(B)-S100, HG-AK0336(B)-S100





For servo motor without electromagnetic brake

	Pin No.	Signal name
A	1	(E)
	2	U
	3	B1 (Note 2)
B	1	V
	2	W
	3	B2 (Note 2)



For servo motor with electromagnetic brake

Model	Variable dimensions (Note 3)		
	L	KL	CL
HG-AK0136(B)-S100	58.7 (90.7)	30.7 (42.7)	225^{+20}_{0} (245^{+20}_{0})
HG-AK0236(B)-S100	65.7 (97.7)	37.7 (49.7)	
HG-AK0336(B)-S100	72.7 (104.7)	44.7 (56.7)	

[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies.
2. The electromagnetic brake terminals (B1, B2) do not have polarity.
3. Dimensions in brackets are for the models with electromagnetic brake.
4. Use a friction coupling to fasten a load.
5. Select a mounting screw whose length is within this dimension.

● Linear Servo Motors

Model Designation

● LM-H3 series

L M - H 3 P 2 A - 0 7 P - □ (Primary side: coil)

Symbol	Linear servo motor model
BSS0	LM-H3P2A-07P
CSS0	LM-H3P3A-12P
	LM-H3P3B-24P
	LM-H3P3C-36P
	LM-H3P3D-48P
ASS0	LM-H3P7A-24P
	LM-H3P7B-48P
	LM-H3P7C-72P
	LM-H3P7D-96P

Symbol	Maximum speed [m/s]
P	3.0

Symbol	Continuous thrust [N]
07	70
12	120
24	240
36	360
48	480
72	720
96	960

Symbol	Length (nominal) [mm]
A	128
B	224
C	320
D	416

Symbol	Width (nominal) [mm]
2	50
3	65
7	100

Primary side (coil)

L M - H 3 S 2 0 - 2 8 8 - □ (Secondary side: magnet)

Symbol	Linear servo motor model
BSS0	LM-H3S20-288
	LM-H3S20-384
	LM-H3S20-480
	LM-H3S20-768
CSS0	LM-H3S30-288
	LM-H3S30-384
	LM-H3S30-480
	LM-H3S30-768
ASS0	LM-H3S70-288
	LM-H3S70-384
	LM-H3S70-480
	LM-H3S70-768

Symbol	Length (nominal) [mm]
288	288
384	384
480	480
768	768

Symbol	Width (nominal) [mm]
2	42
3	60
7	95

Secondary side (magnet)

Model Designation

●LM-F series

L M - F P 2 B - 0 6 M - □ (primary side: coil)

Symbol	Linear servo motor model
1SS0	LM-FP2B-06M
	LM-FP2D-12M
	LM-FP2F-18M
	LM-FP4B-12M
	LM-FP4D-24M
	LM-FP4F-36M
	LM-FP4H-48M
	LM-FP5H-60M

Symbol	Maximum speed [m/s]
M	2.0

Symbol	Continuous thrust [N]	
	Natural cooling	Liquid cooling
06	300	600
12	600	1200
18	900	1800
24	1200	2400
36	1800	3600
48	2400	4800
60	3000	6000

Symbol	Length (nominal) [mm]
B	290
D	530
F	770
H	1010

Symbol	Width (nominal) [mm]
2	120
4	200
5	240

Primary side (coil)

L M - F S 2 0 - 4 8 0 - □ (Secondary side: magnet)

Symbol	Linear servo motor model
1SS0	LM-FS20-480
	LM-FS20-576
	LM-FS40-480
	LM-FS40-576
	LM-FS50-480
	LM-FS50-576

Symbol	Length (nominal) [mm]
480	480
576	576

Symbol	Width (nominal) [mm]
2	120
4	200
5	240

Secondary side (magnet)

Model Designation

●LM-K2 series

L M - K 2 P 1 A - 0 1 M - □ (Primary side: coil)

Symbol	Length (nominal) [mm]
A	138
C	330
E	522

Symbol	Height (nominal) [mm]
1	54
2	74.5
3	114.5

Symbol	Maximum speed [m/s]
M	2.0

Symbol	Continuous thrust [N]
01	120
02	240
03	360
07	720
12	1200
14	1440
24	2400

Symbol	Linear servo motor model
2SS1	LM-K2P1A-01M
	LM-K2P1C-03M
1SS1	LM-K2P2A-02M
	LM-K2P2C-07M
	LM-K2P2E-12M
	LM-K2P3C-14M
	LM-K2P3E-24M

Primary side (coil)

L M - K 2 S 1 0 - 2 8 8 - □ (Secondary side: magnet)

Symbol	Width (nominal) [mm]
1	46
2	61
3	101

Symbol	Length (nominal) [mm]
288	288
384	384
480	480
768	768

Symbol	Linear servo motor model
2SS1	LM-K2S10-288
	LM-K2S10-384
	LM-K2S10-480
	LM-K2S10-768
1SS1	LM-K2S20-288
	LM-K2S20-384
	LM-K2S20-480
	LM-K2S20-768
	LM-K2S30-288
	LM-K2S30-384
	LM-K2S30-480
	LM-K2S30-768

Secondary side (magnet)

Model Designation

●LM-U2 (medium thrust) series

L M - U 2 P A B - 0 5 M - □ (Primary side: coil)

Symbol	Linear servo motor model
0SS0	LM-U2PAB-05M
	LM-U2PAD-10M
	LM-U2PAF-15M
1SS0	LM-U2PBB-07M
	LM-U2PBD-15M
	LM-U2PBF-22M

Symbol	Maximum speed [m/s]
M	2.0

Symbol	Continuous thrust [N]
05	50
07	75
10	100
15	150
22	225

Symbol	Length (nominal) [mm]
B	130
D	250
F	370

Symbol	Width (nominal) [mm]
A	66.5
B	86.5

Primary side (coil)

L M - U 2 S A 0 - 2 4 0 - □ (Secondary side: magnet)

Symbol	Linear servo motor model
0SS0	LM-U2SA0-240
	LM-U2SA0-300
	LM-U2SA0-420
1SS0	LM-U2SB0-240
	LM-U2SB0-300
	LM-U2SB0-420

Symbol	Length (nominal) [mm]
240	240
300	300
420	420

Symbol	Width (nominal) [mm]
A	62
B	82

Secondary side (magnet)

●LM-U2 (large thrust) series

L M - U 2 P 2 B - 4 0 M - □ (Primary side: coil)

Symbol	Linear servo motor model
2SS0	LM-U2P2B-40M
	LM-U2P2C-60M
	LM-U2P2D-80M

Symbol	Maximum speed [m/s]
M	2.0

Symbol	Continuous thrust [N]
40	400
60	600
80	800

Symbol	Length (nominal) [mm]
B	286
C	406
D	526

Primary side (coil)

L M - U 2 S 2 0 - 3 0 0 - □ (Secondary side: magnet)

Symbol	Linear servo motor model
2SS0	LM-U2S20-300
	LM-U2S20-480

Symbol	Length (nominal) [mm]
300	300
480	480

Secondary side (magnet)

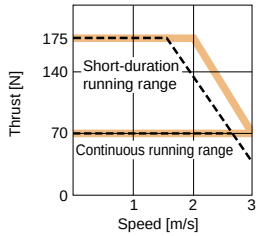
LM-H3 Series Specifications

Linear servo motor model	Primary side (coil) LM-H3		P2A-07P-BSS0	P3A-12P-CSS0	P3B-24P-CSS0	P3C-36P-CSS0	P3D-48P-CSS0	P7A-24P-ASS0	P7B-48P-ASS0	P7C-72P-ASS0	P7D-96P-ASS0
	Secondary side (magnet) LM-H3		S20-288-BSS0 S20-384-BSS0 S20-480-BSS0 S20-768-BSS0	S30-288-CSS0 S30-384-CSS0 S30-480-CSS0 S30-768-CSS0				S70-288-ASS0 S70-384-ASS0 S70-480-ASS0 S70-768-ASS0			
Compatible servo amplifier model		MR-J4- MR-J4W_-	Refer to "Combinations of Linear Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.								
Power supply capacity		[kVA]	0.9	0.9	1.3	1.9	3.5	1.3	3.5	3.8	5.5
Cooling method			Natural cooling								
Thrust	Continuous (Note 5)	[N]	70	120	240	360	480	240	480	720	960
	Maximum	[N]	175	300	600	900	1200	600	1200	1800	2400
Maximum speed (Note 1)		[m/s]	3.0								
Magnetic attraction force		[N]	630	1100	2200	3300	4400	2200	4400	6600	8800
Rated current		[A]	1.8	1.7	3.4	5.1	6.8	3.4	6.8	10.2	13.6
Maximum current		[A]	5.8	5.0	9.9	14.9	19.8	9.6	19.1	28.6	38.1
Regenerative braking frequency (Note 2)	MR-J4-	[times/min]	175	95	108	78	300	108	308	210	159
	MR-J4W_-	[times/min]	173 (Note 3)	95 (Note 4)	271	197	-	241	-	-	-
Recommended load to motor mass ratio			Maximum of 35 times the mass of the linear servo motor primary side								
Insulation class			155 (F)								
Structure			Open (IP rating: IP00)								
Environment	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)								
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)								
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust								
	Altitude		1000 m or less above sea level								
	Vibration resistance		49 m/s^2								
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.								
Mass	Primary side (coil)	[kg]	0.9	1.3	2.3	3.3	4.3	2.2	3.9	5.6	7.3
	Secondary side (magnet)	[kg]	288 mm/pc: 0.7 384 mm/pc: 0.9 480 mm/pc: 1.1 768 mm/pc: 1.8	288 mm/pc: 1.0 384 mm/pc: 1.4 480 mm/pc: 1.7 768 mm/pc: 2.7				288 mm/pc: 2.8 384 mm/pc: 3.7 480 mm/pc: 4.7 768 mm/pc: 7.4			

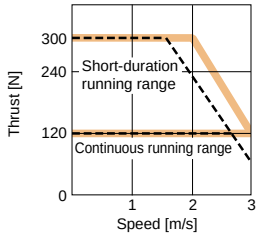
Notes: 1. The maximum speed of the linear servo motor or the rated speed of the linear encoder, whichever is smaller, is the upper limit of the linear servo motor speed.
2. The regenerative braking frequency shows the permissible frequency when the linear servo motor, without a load and a regenerative option, decelerates from the maximum speed to a stop. When a load is connected; however, the value will be the table value/(m+1), where m = Mass of load/Mass of motor primary side (coil). Take measures to keep the regenerative power [W] during operation below the permissible regenerative power [W]. Use caution, especially when the operating speed changes frequently or when the regeneration is constant (as with vertical feeds). Select the most suitable regenerative option for your system with our capacity selection software. Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when regenerative option is used.
3. This value is applicable when MR-J4W2-44B or MR-J4W3-444B is used. The value is 942 for MR-J4W2-77B or MR-J4W2-1010B.
4. This value is applicable when MR-J4W2-44B or MR-J4W3-444B is used. The value is 497 for MR-J4W2-77B or MR-J4W2-1010B.
5. Use the linear servo motor with 70% or less of the effective load ratio when it is in the servo lock state or in a small reciprocating motion.

LM-H3 Series Thrust Characteristics

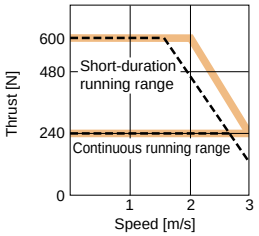
LM-H3P2A-07P-BSS0 (Note 1, 2, 4)



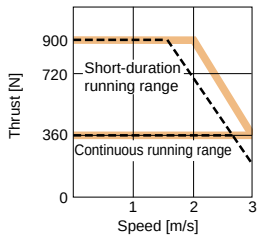
LM-H3P3A-12P-CSS0 (Note 1, 2, 4)



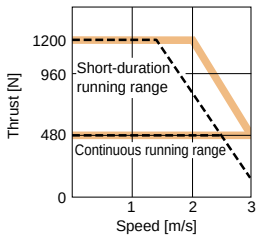
LM-H3P3B-24P-CSS0 (Note 1, 3, 4)



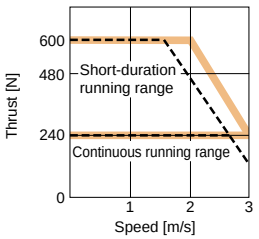
LM-H3P3C-36P-CSS0 (Note 1, 3, 4)



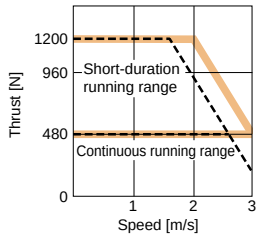
LM-H3P3D-48P-CSS0 (Note 1, 3, 4)



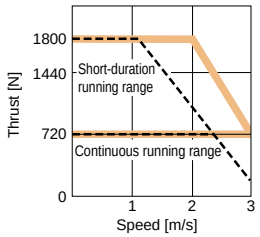
LM-H3P7A-24P-ASS0 (Note 1, 3, 4)



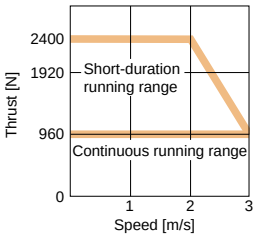
LM-H3P7B-48P-ASS0 (Note 1, 3, 4)



LM-H3P7C-72P-ASS0 (Note 1, 3, 4)



LM-H3P7D-96P-ASS0 (Note 1, 4)



Notes: 1. ▬ : For 3-phase 200 V AC.
2. - - - - : For 1-phase 200 V AC or 1-phase 100 V AC.
3. - - - - : For 1-phase 200 V AC.
4. Thrust drops when the power supply voltage is below the specified value.

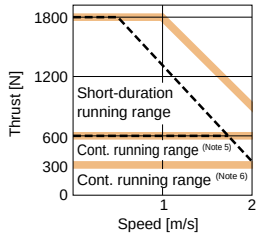
LM-F Series Specifications

Linear servo motor model	Primary side (coil) LM-F			P2B-06M-1SS0	P2D-12M-1SS0	P2F-18M-1SS0	P4B-12M-1SS0	P4D-24M-1SS0	P4F-36M-1SS0	P4H-48M-1SS0	P5H-60M-1SS0 (Note 3)
	Secondary side (magnet) LM-F			S20-480-1SS0 S20-576-1SS0			S40-480-1SS0 S40-576-1SS0				S50-480-1SS0 (Note 3) S50-576-1SS0 (Note 3)
Compatible servo amplifier model			MR-J4-	Refer to "Combinations of Linear Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.							
Power supply capacity			[kVA]	3.5	7.5	10	7.5	10	14	18	22
Cooling method				Natural cooling or liquid cooling							
Thrust	Continuous (natural cooling) (Note 4)		[N]	300	600	900	600	1200	1800	2400	3000
	Continuous (liquid cooling) (Note 4)		[N]	600	1200	1800	1200	2400	3600	4800	6000
	Maximum		[N]	1800	3600	5400	3600	7200	10800	14400	18000
Maximum speed (Note 1)			[m/s]	2.0							
Magnetic attraction force			[N]	4500	9000	13500	9000	18000	27000	36000	45000
Rated current		Natural cooling	[A]	4.0	7.8	12	7.8	15	21	28	22
		Liquid cooling	[A]	7.8	16	23	17	31	44	59	45
Maximum current			[A]	30	58	87	57	109	159	212	157
Regenerative braking frequency (Note 2)	MR-J4-	Natural cooling	[times/min]	348	264	318	393	169	577	715	4230
		Liquid cooling	[times/min]	671	396	No limit	366	224	859	1050	No limit
Recommended load to motor mass ratio				Maximum of 15 times the mass of the linear servo motor primary side							
Insulation class				155 (F)							
Structure				Open (IP rating: IP00)							
Environment	Ambient temperature			Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)							
	Ambient humidity			Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)							
	Ambience			Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust							
	Altitude			1000 m or less above sea level							
	Vibration resistance			49 m/s^2							
Compliance to global standards				Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.							
Mass	Primary side (coil)		[kg]	9.0	18	27	14	28	42	56	67
	Secondary side (magnet)		[kg]	480 mm/pc: 7.0 576 mm/pc: 9.0			480 mm/pc: 12 576 mm/pc: 15				480 mm/pc: 20 576 mm/pc: 24

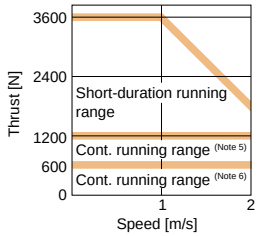
Notes: 1. The maximum speed of the linear servo motor or the rated speed of the linear encoder, whichever is smaller, is the upper limit of the linear servo motor speed.
2. The regenerative braking frequency shows the permissible frequency when the linear servo motor, without a load and a regenerative option, decelerates from the maximum speed to a stop. When a load is connected; however, the value will be the table value/(m+1), where m = Mass of load/Mass of motor primary side (coil). Take measures to keep the regenerative power [W] during operation below the permissible regenerative power [W]. Use caution, especially when the operating speed changes frequently or when the regeneration is constant (as with vertical feeds). Select the most suitable regenerative option for your system with our capacity selection software. Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when regenerative option is used.
3. Use 400 V AC type servo amplifier for this linear servo motor.
4. Use the linear servo motor with 70% or less of the effective load ratio when it is in the servo lock state or in a small reciprocating motion.

LM-F Series Thrust Characteristics

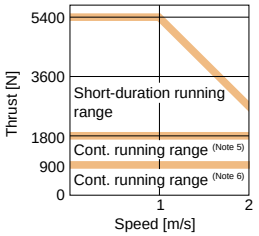
LM-FP2B-06M-1SS0 (Note 1, 3, 4)



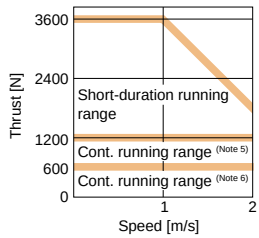
LM-FP2D-12M-1SS0 (Note 1, 4)



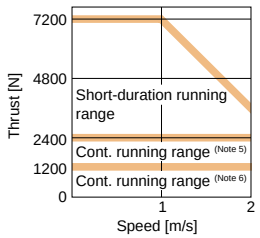
LM-FP2F-18M-1SS0 (Note 1, 4)



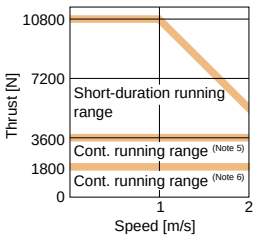
LM-FP4B-12M-1SS0 (Note 1, 4)



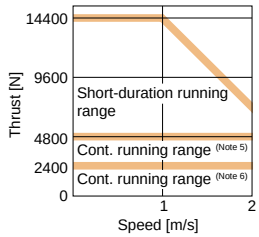
LM-FP4D-24M-1SS0 (Note 1, 4)



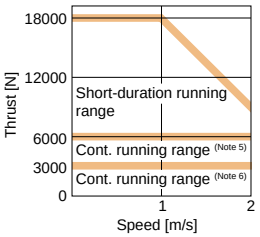
LM-FP4F-36M-1SS0 (Note 1, 4)



LM-FP4H-48M-1SS0 (Note 1, 4)



LM-FP5H-60M-1SS0 (Note 2, 4)



Notes: 1. ▬ : For 3-phase 200 V AC.
2. ▬ : For 3-phase 400 V AC.
3. - - - - : For 1-phase 200 V AC.
4. Thrust drops when the power supply voltage is below the specified value.
5. Continuous running range (liquid cooling)
6. Continuous running range (natural cooling)

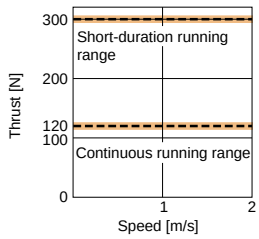
LM-K2 Series Specifications

Linear servo motor model	Primary side (coil) LM-K2		P1A-01M-2SS1	P1C-03M-2SS1	P2A-02M-1SS1	P2C-07M-1SS1	P2E-12M-1SS1	P3C-14M-1SS1	P3E-24M-1SS1
	Secondary side (magnet) (Note 4) LM-K2		S10-288-2SS1 S10-384-2SS1 S10-480-2SS1 S10-768-2SS1		S20-288-1SS1 S20-384-1SS1 S20-480-1SS1 S20-768-1SS1			S30-288-1SS1 S30-384-1SS1 S30-480-1SS1 S30-768-1SS1	
Compatible servo amplifier model		MR-J4- MR-J4W_-	Refer to "Combinations of Linear Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.						
Power supply capacity		[kVA]	0.9	3.5	1.3	5.5	7.5	5.5	7.5
Cooling method			Natural cooling						
Thrust	Continuous (Note 5)	[N]	120	360	240	720	1200	1440	2400
	Maximum	[N]	300	900	600	1800	3000	3600	6000
Maximum speed (Note 1)		[m/s]	2.0						
Magnetic attraction force (Note 6)		[N]	0						
Magnetic attraction force (one side) (Note 7)			800	2400	1100	3200	5300	6400	10700
Rated current		[A]	2.3	6.8	3.7	12	19	15	25
Maximum current		[A]	7.6	23	13	39	65	47	79
Regenerative braking frequency (Note 2)	MR-J4-	[times/min]	111	427	142	281	226	152	124
	MR-J4W_-	[times/min]	110 (Note 3)	-	355	-	-	-	-
Recommended load to motor mass ratio			Maximum of 30 times the mass of the linear servo motor primary side						
Insulation class			155 (F)						
Structure			Open (IP rating: IP00)						
Environment	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)						
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)						
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust						
	Altitude		1000 m or less above sea level						
	Vibration resistance		49 m/s^2						
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.						
Mass	Primary side (coil)	[kg]	2.5	6.5	4.0	10	16	18	27
	Secondary side (magnet)	[kg]	288 mm/pc: 1.5 384 mm/pc: 2.0 480 mm/pc: 2.5 768 mm/pc: 3.9		288 mm/pc: 1.9 384 mm/pc: 2.5 480 mm/pc: 3.2 768 mm/pc: 5.0			288 mm/pc: 5.5 384 mm/pc: 7.3 480 mm/pc: 9.2 768 mm/pc: 14.6	

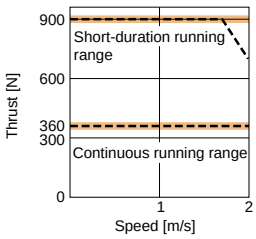
Notes: 1. The maximum speed of the linear servo motor or the rated speed of the linear encoder, whichever is smaller, is the upper limit of the linear servo motor speed.
2. The regenerative braking frequency shows the permissible frequency when the linear servo motor, without a load and a regenerative option, decelerates from the maximum speed to a stop. When a load is connected; however, the value will be the table value/(m+1), where m = Mass of load/Mass of motor primary side (coil). Take measures to keep the regenerative power [W] during operation below the permissible regenerative power [W]. Use caution, especially when the operating speed changes frequently or when the regeneration is constant (as with vertical feeds). Select the most suitable regenerative option for your system with our capacity selection software. Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when regenerative option is used.
3. This value is applicable when MR-J4W2-44B or MR-J4W3-444B is used. The value is 584 for MR-J4W2-77B or MR-J4W2-1010B.
4. LM-K2 series has a structure of magnetic attraction counter-force and requires at least two blocks of identical secondary side (magnet).
5. Use the linear servo motor with 70% or less of the effective load ratio when it is in the servo lock state or in a small reciprocating motion.
6. Magnetic attraction force is caused by assembly precision, etc.
7. Magnetic attraction force which occurs on one side of the secondary side is shown.

LM-K2 Series Thrust Characteristics

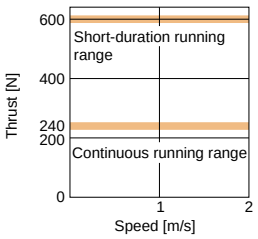
LM-K2P1A-01M-2SS1 (Note 1, 3, 5)



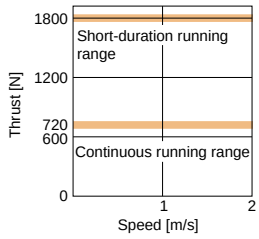
LM-K2P1C-03M-2SS1 (Note 2, 4, 5)



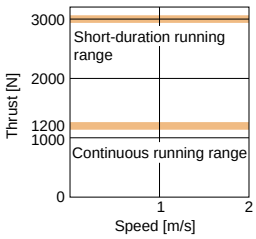
LM-K2P2A-02M-1SS1 (Note 1, 5)



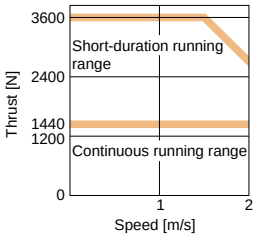
LM-K2P2C-07M-1SS1 (Note 2, 5)



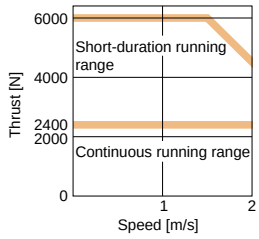
LM-K2P2E-12M-1SS1 (Note 2, 5)



LM-K2P3C-14M-1SS1 (Note 2, 5)



LM-K2P3E-24M-1SS1 (Note 2, 5)



Notes: 1. ▬ : For 3-phase 200 V AC or 1-phase 200 V AC.
2. ▬ : For 3-phase 200 V AC.
3. - - - - : For 1-phase 100 V AC.
4. - - - - : For 1-phase 200 V AC.
5. Thrust drops when the power supply voltage is below the specified value.

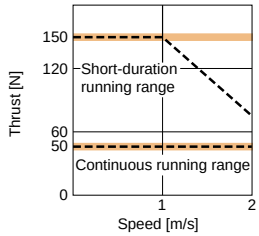
LM-U2 Series Specifications

Linear servo motor model			PAB-05M-0SS0	PAD-10M-0SS0	PAF-15M-0SS0	PBB-07M-1SS0	PBD-15M-1SS0	PBF-22M-1SS0	P2B-40M-2SS0	P2C-60M-2SS0	P2D-80M-2SS0
	Primary side (coil) LM-U2										
	Secondary side (magnet) LM-U2		SA0-240-0SS0 SA0-300-0SS0 SA0-420-0SS0			SB0-240-1SS0 SB0-300-1SS0 SB0-420-1SS0			S20-300-2SS0 S20-480-2SS0		
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Linear Servo Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.								
		MR-J4W_-									
Power supply capacity		[kVA]	0.5	0.9	0.9	0.5	1.0	1.3	3.5	5.5	7.5
Cooling method			Natural cooling								
Thrust	Continuous (Note 3)	[N]	50	100	150	75	150	225	400	600	800
	Maximum	[N]	150	300	450	225	450	675	1600	2400	3200
Maximum speed (Note 1)		[m/s]	2.0								
Magnetic attraction force		[N]	0								
Rated current		[A]	0.9	1.9	2.7	1.5	3.0	4.6	6.6	9.8	13.1
Maximum current		[A]	2.7	5.5	8.3	4.5	8.9	13.7	26.7	40.3	53.7
Regenerative braking frequency (Note 2)	MR-J4-	[times/min]	No limit	No limit	No limit	No limit	3480	No limit	1820	2800	1190
	MR-J4W_-	[times/min]	No limit	No limit	No limit	6030	No limit	No limit	-	-	-
Recommended load to motor mass ratio			Maximum of 30 times the mass of the linear servo motor primary side								
Insulation class			155 (F)								
Structure			Open (IP rating: IP00)								
Environment	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)								
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)								
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust								
	Altitude		1000 m or less above sea level								
	Vibration resistance		49 m/s^2								
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.								
Mass	Primary side (coil)	[kg]	0.3	0.6	0.8	0.4	0.8	1.1	2.9	4.2	5.5
	Secondary side (magnet)	[kg]	240 mm/pc: 2.0 300 mm/pc: 2.5 420 mm/pc: 3.5			240 mm/pc: 2.6 300 mm/pc: 3.2 420 mm/pc: 4.5			300 mm/pc: 9.6 480 mm/pc: 15.3		

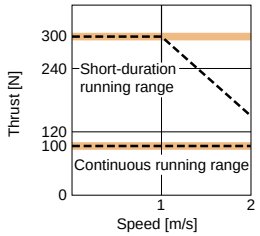
Notes: 1. The maximum speed of the linear servo motor or the rated speed of the linear encoder, whichever is smaller, is the upper limit of the linear servo motor speed.
2. The regenerative braking frequency shows the permissible frequency when the linear servo motor, without a load and a regenerative option, decelerates from the maximum speed to a stop. When a load is connected; however, the value will be the table value/(m+1), where m = Mass of load/Mass of motor primary side (coil). Take measures to keep the regenerative power [W] during operation below the permissible regenerative power [W]. Use caution, especially when the operating speed changes frequently or when the regeneration is constant (as with vertical feeds). Select the most suitable regenerative option for your system with our capacity selection software. Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when regenerative option is used.
3. Use the linear servo motor with 70% or less of the effective load ratio when it is in the servo lock state or in a small reciprocating motion.

LM-U2 Series Thrust Characteristics

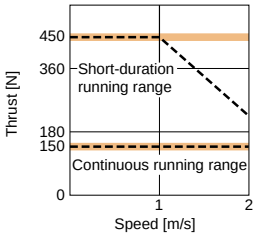
LM-U2PAB-05M-0SS0 (Note 1, 3, 5)



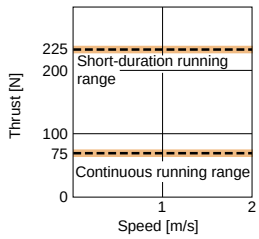
LM-U2PAD-10M-0SS0 (Note 1, 3, 5)



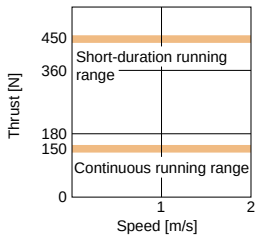
LM-U2PAF-15M-0SS0 (Note 1, 3, 5)



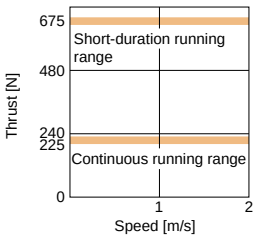
LM-U2PBB-07M-1SS0 (Note 1, 3, 5)



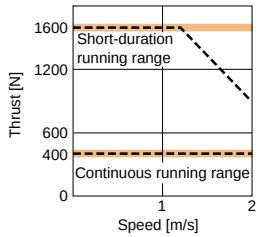
LM-U2PBD-15M-1SS0 (Note 1, 5)



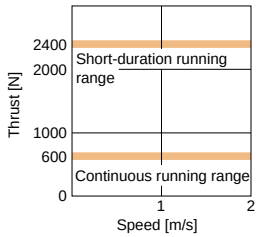
LM-U2PBF-22M-1SS0 (Note 1, 5)



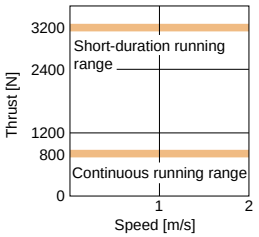
LM-U2P2B-40M-2SS0 (Note 2, 4, 5)



LM-U2P2C-60M-2SS0 (Note 2, 5)



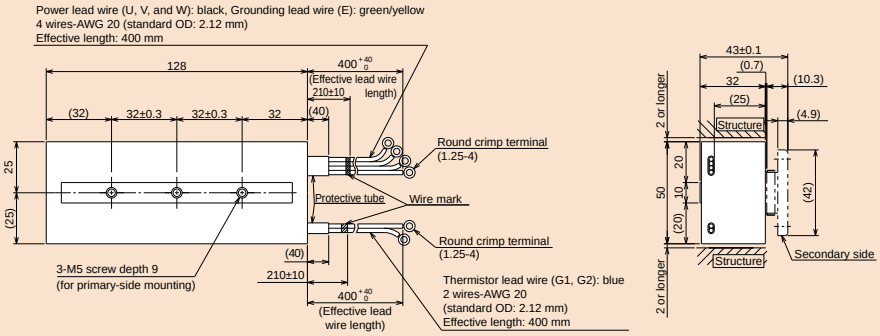
LM-U2P2D-80M-2SS0 (Note 2, 5)



Notes: 1. ▬ : For 3-phase 200 V AC or 1-phase 200 V AC.
2. ▬ : For 3-phase 200 V AC.
3. - - - - : For 1-phase 100 V AC.
4. - - - - : For 1-phase 200 V AC.
5. Thrust drops when the power supply voltage is below the specified value.

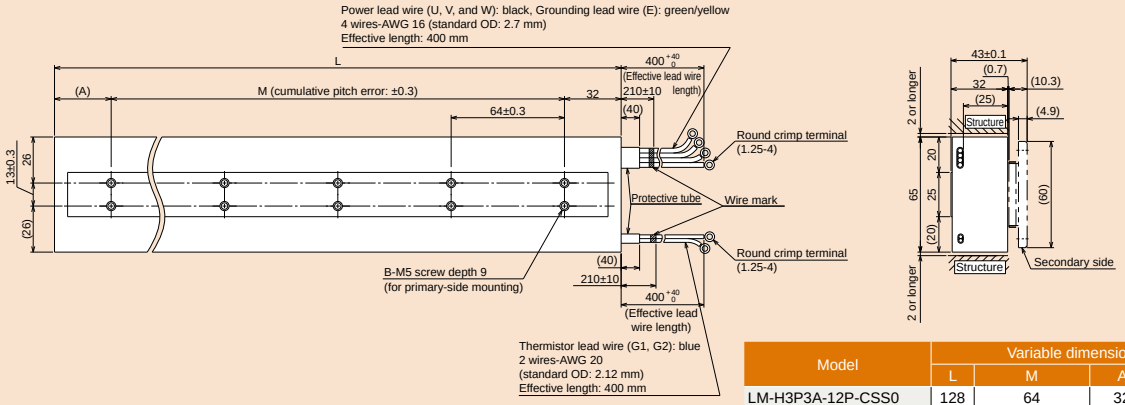
LM-H3 Series Primary Side (Coil) Dimensions (Note 1, 2)

●LM-H3P2A-07P-BSS0



[Unit: mm]

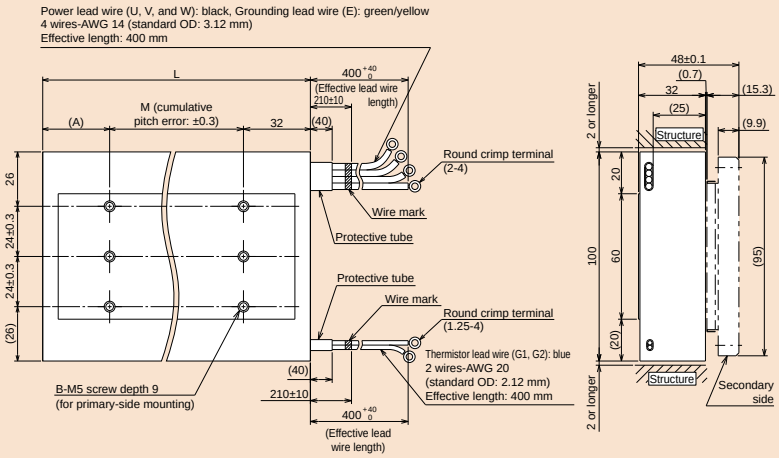
●LM-H3P3A-12P-CSS0 ●LM-H3P3B-24P-CSS0 ●LM-H3P3C-36P-CSS0 ●LM-H3P3D-48P-CSS0



[Unit: mm]

Model	Variable dimensions			
	L	M	A	B
LM-H3P3A-12P-CSS0	128	64	32	2 × 2
LM-H3P3B-24P-CSS0	224	2 × 64 = 128	64	2 × 3
LM-H3P3C-36P-CSS0	320	4 × 64 = 256	32	2 × 5
LM-H3P3D-48P-CSS0	416	5 × 64 = 320	64	2 × 6

●LM-H3P7A-24P-ASS0 ●LM-H3P7B-48P-ASS0 ●LM-H3P7C-72P-ASS0 ●LM-H3P7D-96P-ASS0



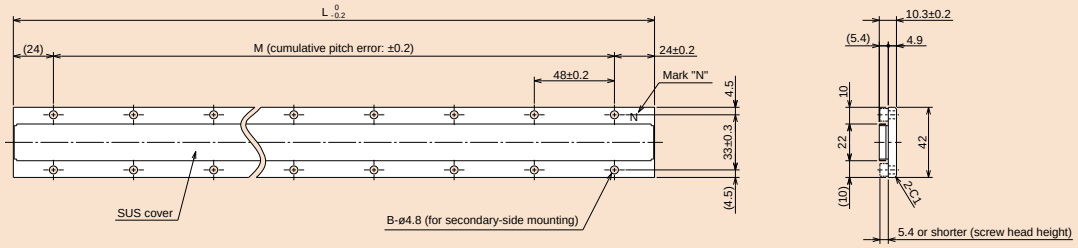
[Unit: mm]

Model	Variable dimensions			
	L	M	A	B
LM-H3P7A-24P-ASS0	128	64	32	3 × 2
LM-H3P7B-48P-ASS0	224	2 × 64 = 128	64	3 × 3
LM-H3P7C-72P-ASS0	320	4 × 64 = 256	32	3 × 5
LM-H3P7D-96P-ASS0	416	5 × 64 = 320	64	3 × 6

Notes: 1. Power, grounding and thermistor lead wires do not have a long bending life. Fix the lead wires led from the primary side (coil) to a moving part to prevent the lead wires from repetitive bending.
2. Minimum bending radius of the lead wire equals to six times the standard overall diameter of the lead wire.

LM-H3 Series Secondary Side (Magnet) Dimensions

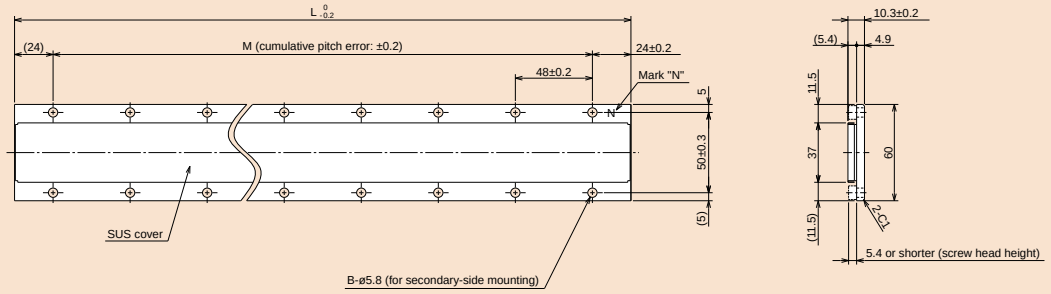
●LM-H3S20-288-BSS0 ●LM-H3S20-384-BSS0 ●LM-H3S20-480-BSS0
●LM-H3S20-768-BSS0



[Unit: mm]

Model	Variable dimensions		
	L	M	B
LM-H3S20-288-BSS0	288	5 × 48 = 240	2 × 6
LM-H3S20-384-BSS0	384	7 × 48 = 336	2 × 8
LM-H3S20-480-BSS0	480	9 × 48 = 432	2 × 10
LM-H3S20-768-BSS0	768	15 × 48 = 720	2 × 16

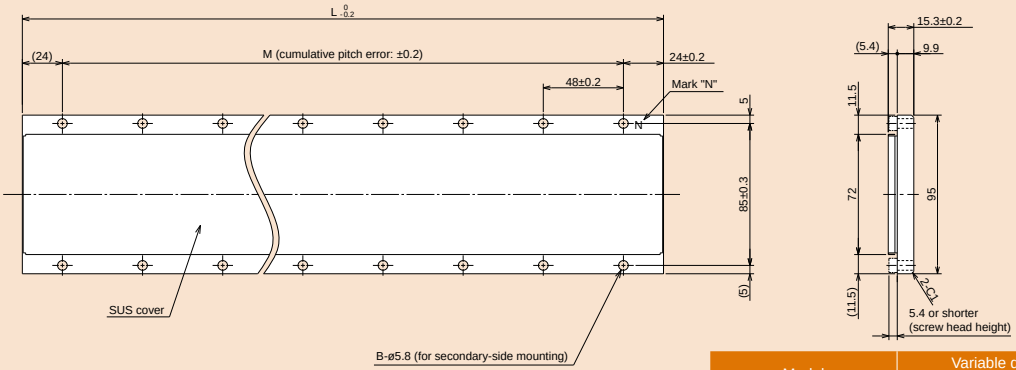
●LM-H3S30-288-CSS0 ●LM-H3S30-384-CSS0 ●LM-H3S30-480-CSS0
●LM-H3S30-768-CSS0



[Unit: mm]

Model	Variable dimensions		
	L	M	B
LM-H3S30-288-CSS0	288	5 × 48 = 240	2 × 6
LM-H3S30-384-CSS0	384	7 × 48 = 336	2 × 8
LM-H3S30-480-CSS0	480	9 × 48 = 432	2 × 10
LM-H3S30-768-CSS0	768	15 × 48 = 720	2 × 16

●LM-H3S70-288-ASS0 ●LM-H3S70-384-ASS0 ●LM-H3S70-480-ASS0
●LM-H3S70-768-ASS0

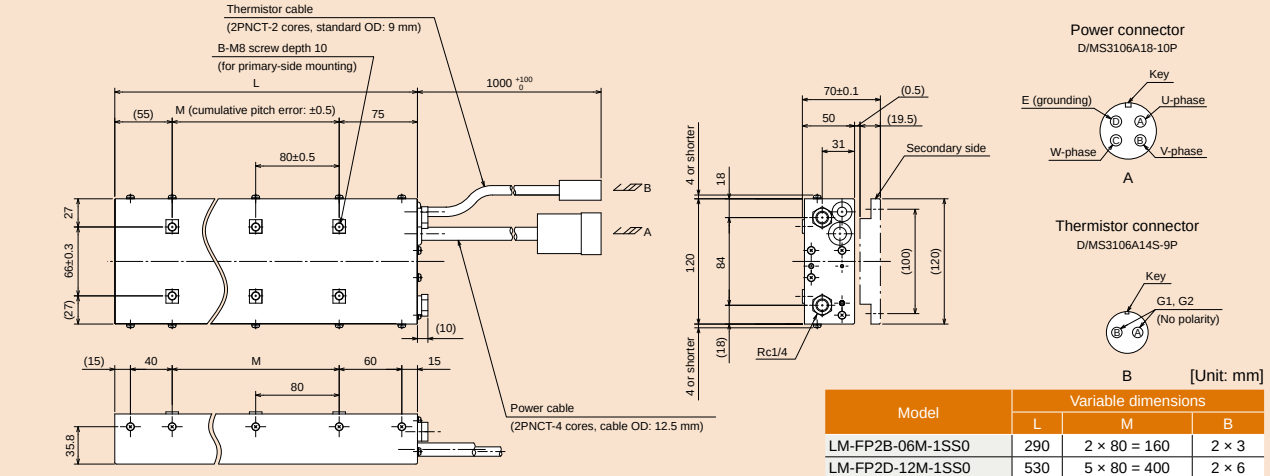


[Unit: mm]

Model	Variable dimensions		
	L	M	B
LM-H3S70-288-ASS0	288	5 × 48 = 240	2 × 6
LM-H3S70-384-ASS0	384	7 × 48 = 336	2 × 8
LM-H3S70-480-ASS0	480	9 × 48 = 432	2 × 10
LM-H3S70-768-ASS0	768	15 × 48 = 720	2 × 16

LM-F Series Primary Side (Coil) Dimensions (Note 1, 2)

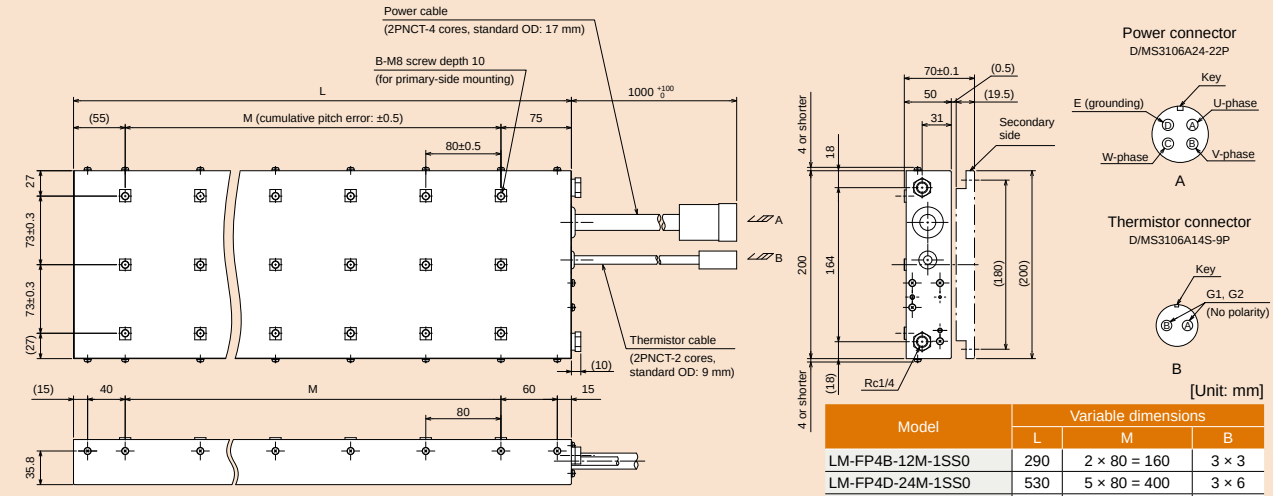
●LM-FP2B-06M-1SS0 ●LM-FP2D-12M-1SS0 ●LM-FP2F-18M-1SS0



[Unit: mm]

Model	Variable dimensions		
	L	M	B
LM-FP2B-06M-1SS0	290	2 × 80 = 160	2 × 3
LM-FP2D-12M-1SS0	530	5 × 80 = 400	2 × 6
LM-FP2F-18M-1SS0	770	8 × 80 = 640	2 × 9

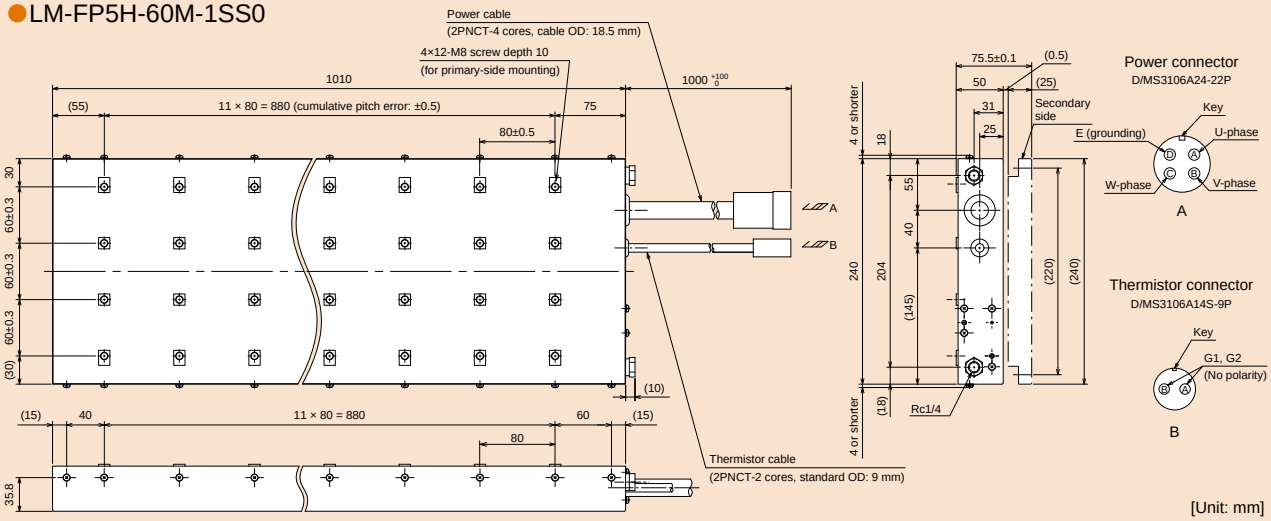
●LM-FP4B-12M-1SS0 ●LM-FP4D-24M-1SS0 ●LM-FP4F-36M-1SS0 ●LM-FP4H-48M-1SS0



[Unit: mm]

Model	Variable dimensions		
	L	M	B
LM-FP4B-12M-1SS0	290	2 × 80 = 160	3 × 3
LM-FP4D-24M-1SS0	530	5 × 80 = 400	3 × 6
LM-FP4F-36M-1SS0	770	8 × 80 = 640	3 × 9
LM-FP4H-48M-1SS0	1010	11 × 80 = 880	3 × 12

●LM-FP5H-60M-1SS0

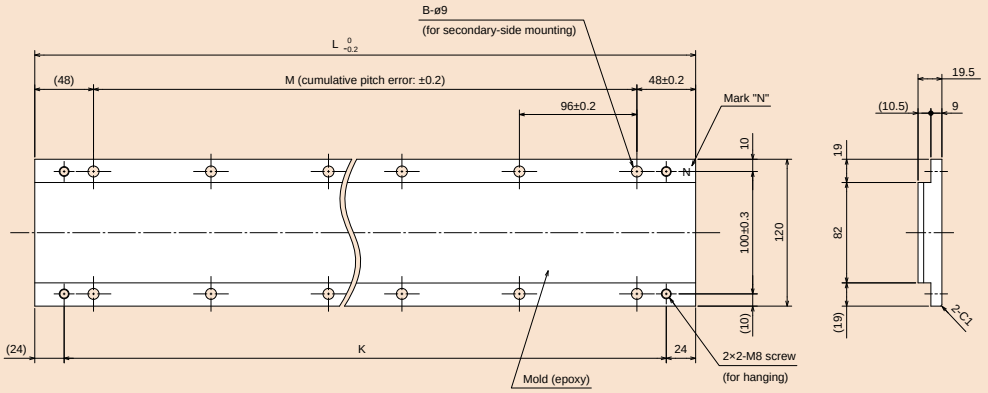


[Unit: mm]

Notes: 1. Power and thermistor cables do not have a long bending life. Fix the cables led from the primary side (coil) to a moving part to prevent the cables from repetitive bending.
2. Minimum bending radius of the cable equals to six times the standard overall diameter of the cable.

LM-F Series Secondary Side (Magnet) Dimensions

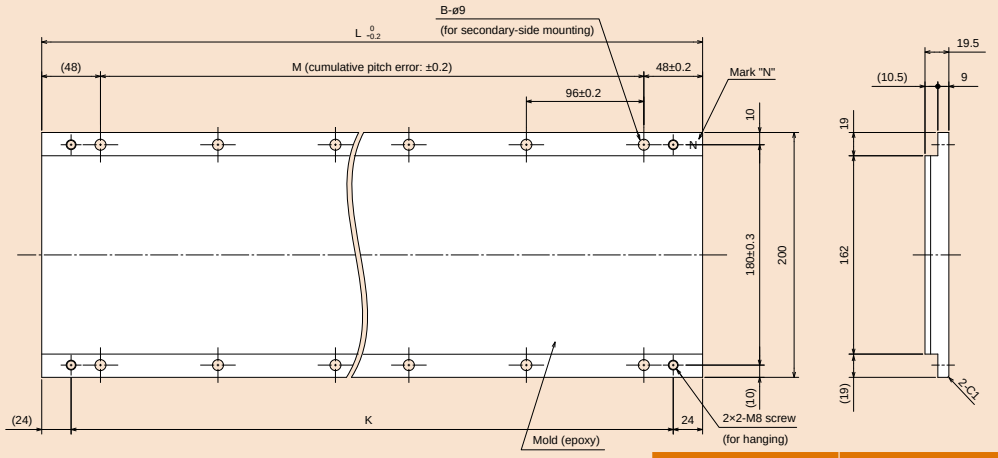
●LM-FS20-480-1SS0 ●LM-FS20-576-1SS0



[Unit: mm]

Model	Variable dimensions			
	L	M	B	K
LM-FS20-480-1SS0	480	4 × 96 = 384	2 × 5	432
LM-FS20-576-1SS0	576	5 × 96 = 480	2 × 6	528

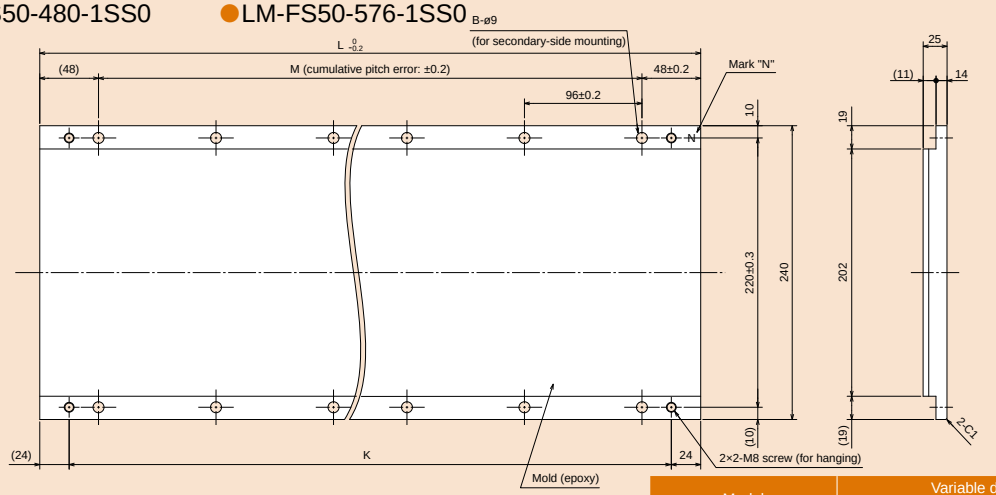
●LM-FS40-480-1SS0 ●LM-FS40-576-1SS0



[Unit: mm]

Model	Variable dimensions			
	L	M	B	K
LM-FS40-480-1SS0	480	4 × 96 = 384	2 × 5	432
LM-FS40-576-1SS0	576	5 × 96 = 480	2 × 6	528

●LM-FS50-480-1SS0 ●LM-FS50-576-1SS0

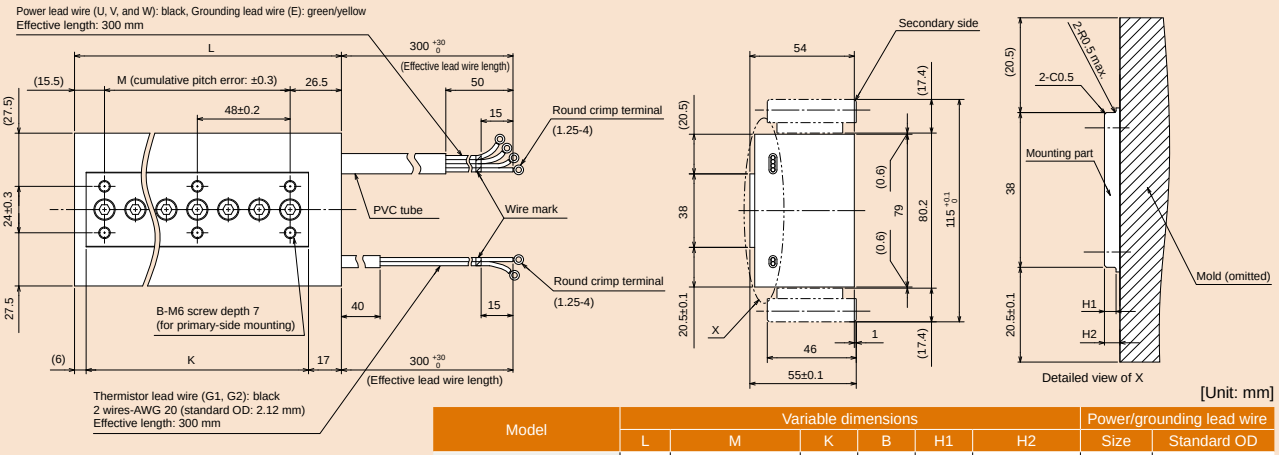


[Unit: mm]

Model	Variable dimensions			
	L	M	B	K
LM-FS50-480-1SS0	480	4 × 96 = 384	2 × 5	432
LM-FS50-576-1SS0	576	5 × 96 = 480	2 × 6	528

LM-K2 Series Primary Side (Coil) Dimensions (Note 1, 2)

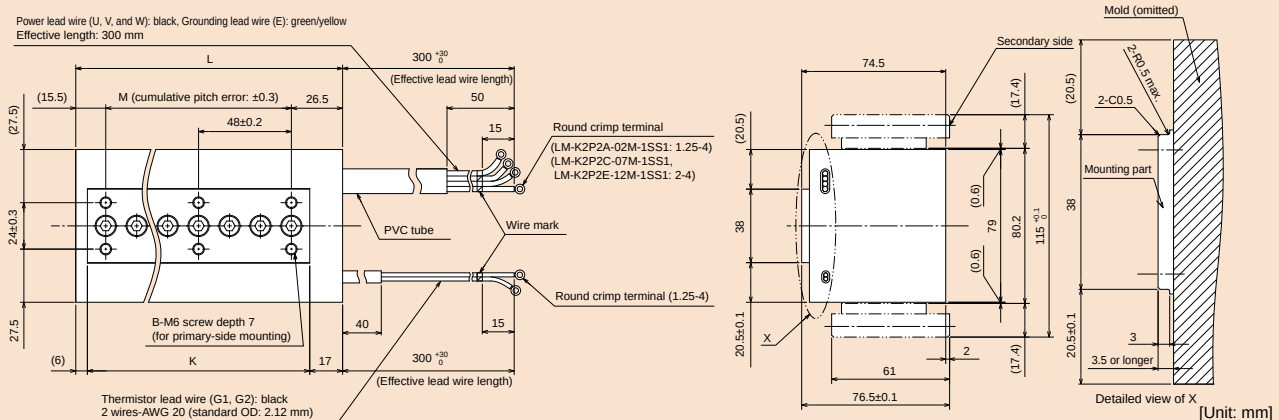
●LM-K2P1A-01M-2SS1 ●LM-K2P1C-03M-2SS1



[Unit: mm]

Model	Variable dimensions						Power/grounding lead wire	
	L	M	K	B	H1	H2	Size	Standard OD
LM-K2P1A-01M-2SS1	138	2 × 48 = 96	115	2 × 3	3	3.5 or longer	AWG 20	2.12
LM-K2P1C-03M-2SS1	330	6 × 48 = 288	307	2 × 7	1.5	2.5 or longer	AWG 16	2.7

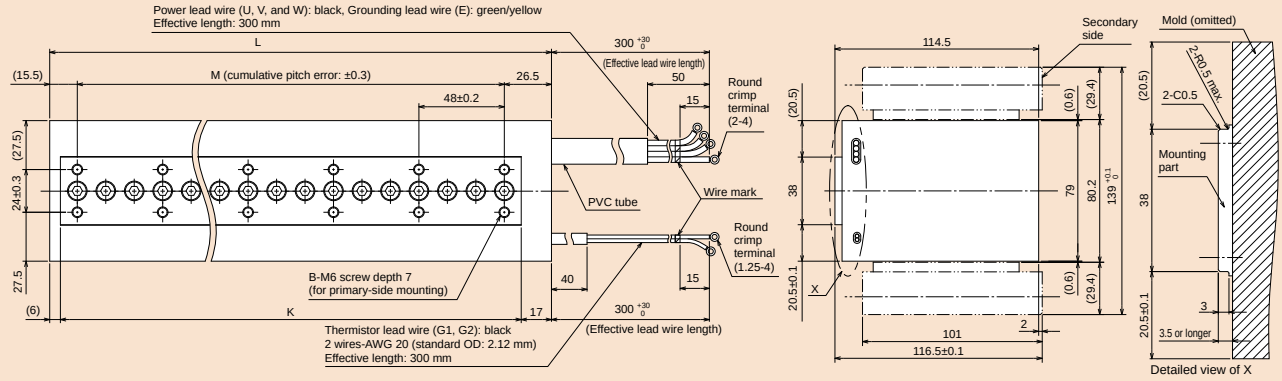
●LM-K2P2A-02M-1SS1 ●LM-K2P2C-07M-1SS1 ●LM-K2P2E-12M-1SS1



[Unit: mm]

Model	Variable dimensions				Power/grounding lead wire	
	L	M	K	B	Size	Standard OD
LM-K2P2A-02M-1SS1	138	2 × 48 = 96	115	2 × 3	AWG 16	2.7
LM-K2P2C-07M-1SS1	330	6 × 48 = 288	307	2 × 7	AWG 14	3.12
LM-K2P2E-12M-1SS1	522	10 × 48 = 480	499	2 × 11		

●LM-K2P3C-14M-1SS1 ●LM-K2P3E-24M-1SS1



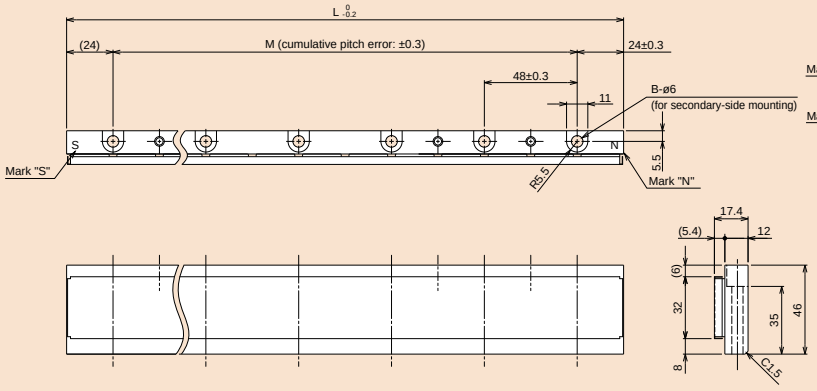
[Unit: mm]

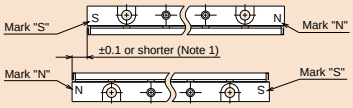
Model	Variable dimensions				Power/grounding lead wire	
	L	M	K	B	Size	Standard OD
LM-K2P3C-14M-1SS1	330	6 × 48 = 288	307	2 × 7	AWG 14	3.12
LM-K2P3E-24M-1SS1	522	10 × 48 = 480	499	2 × 11		

Notes: 1. Power, grounding and thermistor lead wires do not have a long bending life. Fix the lead wires led from the primary side (coil) to a moving part to prevent the lead wires from repetitive bending.
2. Minimum bending radius of the lead wire equals to six times the standard overall diameter of the lead wire.

LM-K2 Series Secondary Side (Magnet) Dimensions

●LM-K2S10-288-2SS1 ●LM-K2S10-384-2SS1 ●LM-K2S10-480-2SS1
●LM-K2S10-768-2SS1



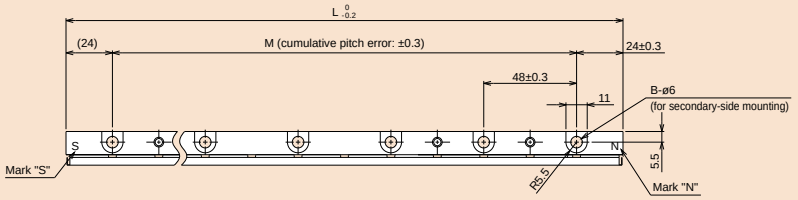


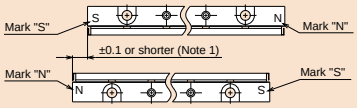
Detailed view of secondary-side ends

[Unit: mm]

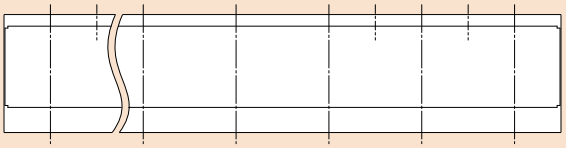
Model	Variable dimensions		
	L	M	B
LM-K2S10-288-2SS1	288	5 × 48 = 240	6
LM-K2S10-384-2SS1	384	7 × 48 = 336	8
LM-K2S10-480-2SS1	480	9 × 48 = 432	10
LM-K2S10-768-2SS1	768	15 × 48 = 720	16

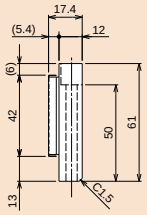
●LM-K2S20-288-1SS1 ●LM-K2S20-384-1SS1 ●LM-K2S20-480-1SS1
●LM-K2S20-768-1SS1





Detailed view of secondary-side ends

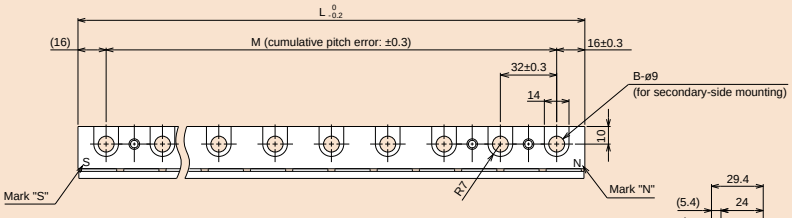


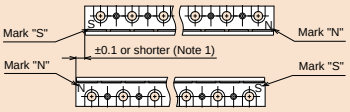


[Unit: mm]

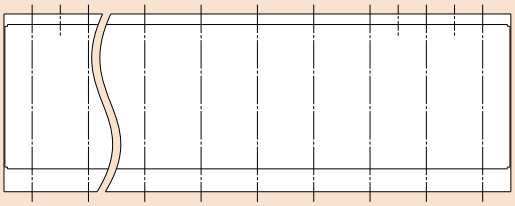
Model	Variable dimensions		
	L	M	B
LM-K2S20-288-1SS1	288	5 × 48 = 240	6
LM-K2S20-384-1SS1	384	7 × 48 = 336	8
LM-K2S20-480-1SS1	480	9 × 48 = 432	10
LM-K2S20-768-1SS1	768	15 × 48 = 720	16

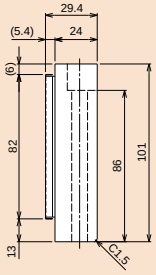
●LM-K2S30-288-1SS1 ●LM-K2S30-384-1SS1 ●LM-K2S30-480-1SS1
●LM-K2S30-768-1SS1





Detailed view of secondary-side ends





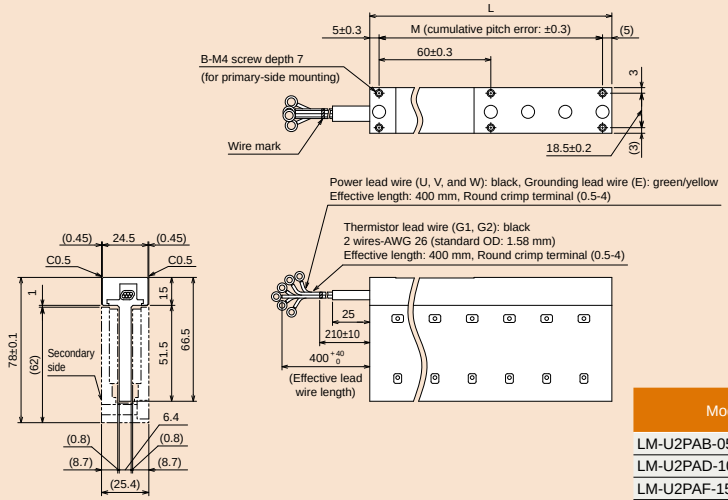
[Unit: mm]

Model	Variable dimensions		
	L	M	B
LM-K2S30-288-1SS1	288	8 × 32 = 256	9
LM-K2S30-384-1SS1	384	11 × 32 = 352	12
LM-K2S30-480-1SS1	480	14 × 32 = 448	15
LM-K2S30-768-1SS1	768	23 × 32 = 736	24

Notes: 1. Longitudinal deviation of the secondary side must be within ±0.1 mm.

LM-U2 Series Primary Side (Coil) Dimensions (Note 1, 2)

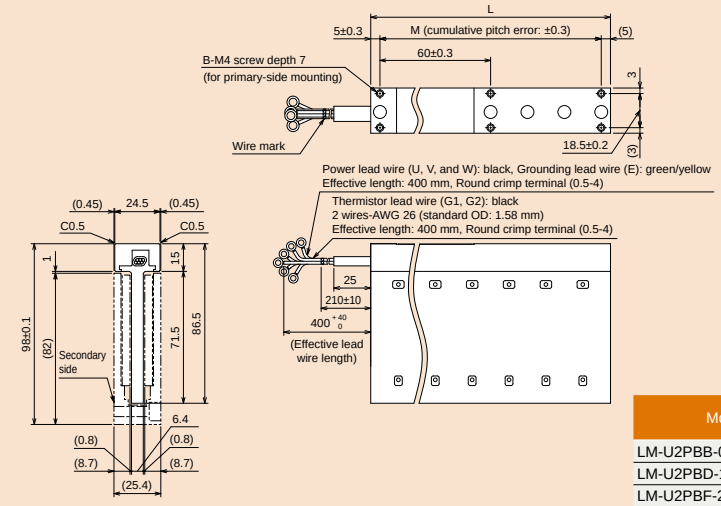
●LM-U2PAB-05M-0SS0 ●LM-U2PAD-10M-0SS0 ●LM-U2PAF-15M-0SS0



[Unit: mm]

Model	Variable dimensions			Power/grounding lead wire	
	L	M	B	Size	Standard OD
LM-U2PAB-05M-0SS0	130	2 × 60 = 120	2 × 3	AWG 26	1.58
LM-U2PAD-10M-0SS0	250	4 × 60 = 240	2 × 5		
LM-U2PAF-15M-0SS0	370	6 × 60 = 360	2 × 7		

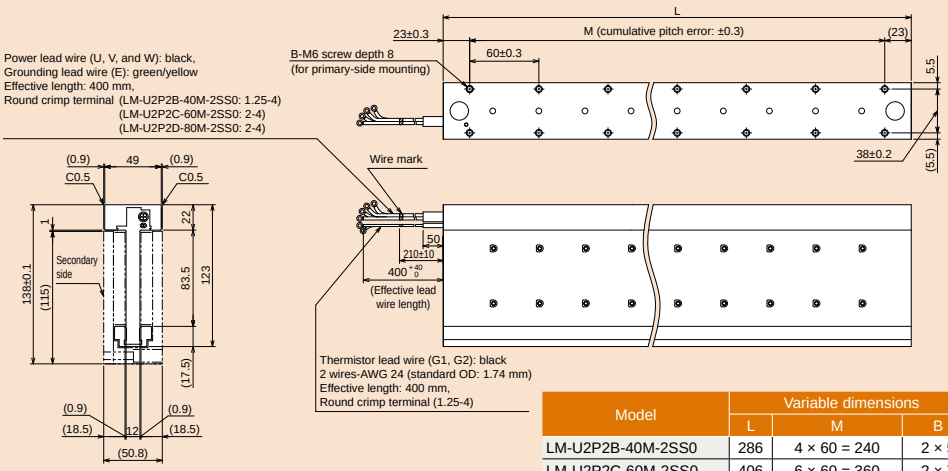
●LM-U2PBB-07M-1SS0 ●LM-U2PBD-15M-1SS0 ●LM-U2PBF-22M-1SS0



[Unit: mm]

Model	Variable dimensions			Power/grounding lead wire	
	L	M	B	Size	Standard OD
LM-U2PBB-07M-1SS0	130	2 × 60 = 120	2 × 3	AWG 26	1.58
LM-U2PBD-15M-1SS0	250	4 × 60 = 240	2 × 5		
LM-U2PBF-22M-1SS0	370	6 × 60 = 360	2 × 7		

●LM-U2P2B-40M-2SS0 ●LM-U2P2C-60M-2SS0 ●LM-U2P2D-80M-2SS0



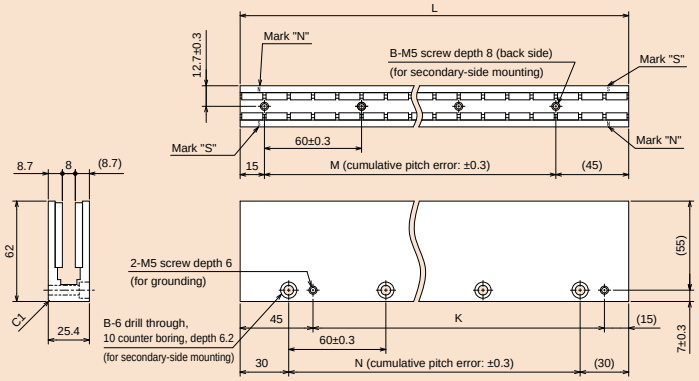
[Unit: mm]

Model	Variable dimensions			Power/grounding lead wire	
	L	M	B	Size	Standard OD
LM-U2P2B-40M-2SS0	286	4 × 60 = 240	2 × 5	AWG 16	2.7
LM-U2P2C-60M-2SS0	406	6 × 60 = 360	2 × 7	AWG 14	3.12
LM-U2P2D-80M-2SS0	526	8 × 60 = 480	2 × 9		

Notes: 1. Power, grounding and thermistor lead wires do not have a long bending life. Fix the lead wires led from the primary side (coil) to a moving part to prevent the lead wires from repetitive bending.
2. Minimum bending radius of the lead wire equals to six times the standard overall diameter of the lead wire.

LM-U2 Series Secondary Side (Magnet) Dimensions

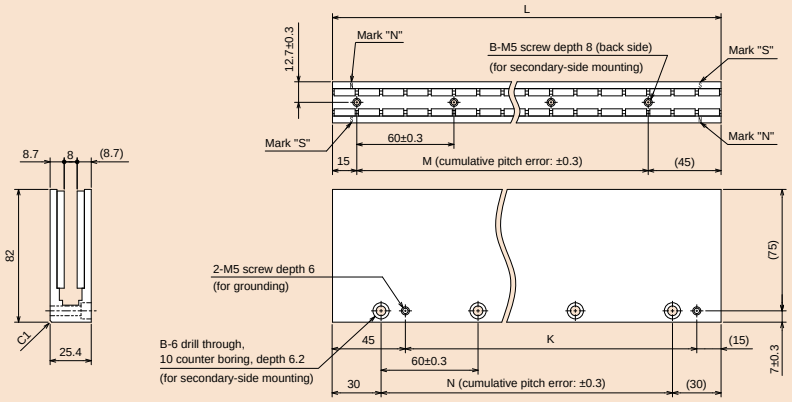
●LM-U2SA0-240-0SS0 ●LM-U2SA0-300-0SS0 ●LM-U2SA0-420-0SS0



[Unit: mm]

Model	Variable dimensions				
	L	M	B	K	N
LM-U2SA0-240-0SS0	240	3 × 60 = 180	4	180	3 × 60 = 180
LM-U2SA0-300-0SS0	300	4 × 60 = 240	5	240	4 × 60 = 240
LM-U2SA0-420-0SS0	420	6 × 60 = 360	7	360	6 × 60 = 360

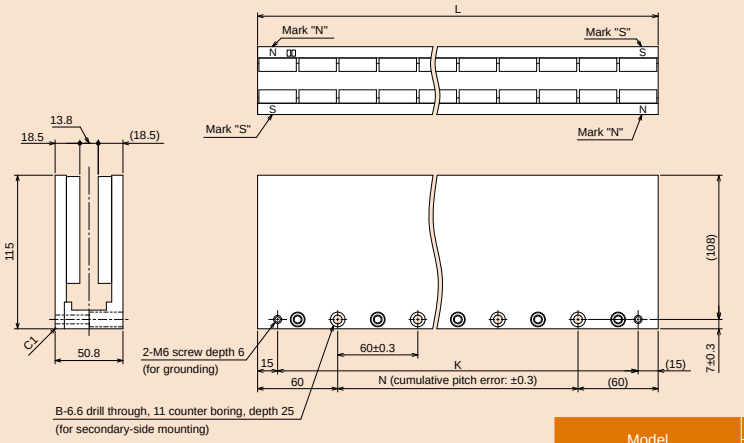
●LM-U2SB0-240-1SS0 ●LM-U2SB0-300-1SS0 ●LM-U2SB0-420-1SS0



[Unit: mm]

Model	Variable dimensions				
	L	M	B	K	N
LM-U2SB0-240-1SS0	240	3 × 60 = 180	4	180	3 × 60 = 180
LM-U2SB0-300-1SS0	300	4 × 60 = 240	5	240	4 × 60 = 240
LM-U2SB0-420-1SS0	420	6 × 60 = 360	7	360	6 × 60 = 360

●LM-U2S20-300-2SS0 ●LM-U2S20-480-2SS0



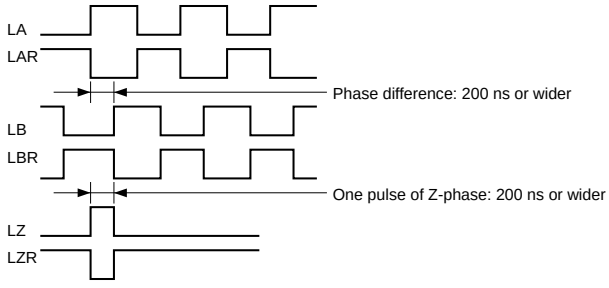
[Unit: mm]

Model	Variable dimensions			
	L	N	B	K
LM-U2S20-300-2SS0	300	3 × 60 = 180	4	270
LM-U2S20-480-2SS0	480	6 × 60 = 360	7	450

List of Linear Encoders (Note 1)

Linear encoder type		Manufacturer	Model	Resolution	Rated speed (Note 2)	Maximum effective measurement length (Note 3)	Communication method
Mitsubishi serial interface compatible	Absolute type	Magnescale Co., Ltd.	SR77	0.05 μm/0.01 μm	3.3 m/s	2040 mm	Two-wire type
			SR87			3040 mm	
		Mitutoyo Corporation	AT343A	0.05 μm	2.0 m/s	3000 mm	Two-wire type
			AT543A-SC		2.5 m/s	2200 mm	
			AT545A-SC	20 μm/4096 (Approx. 0.005 μm)	2.5 m/s	2200 mm	
			ST741A	0.5 μm	4.0 m/s	6000 mm	
			ST742A				
			ST743A	0.1 μm			
			ST744A				
			ST748A				
		Renishaw	RESOLUTE RL40M	1 nm/50 nm	4.0 m/s	10000 mm	Two-wire type
		Heidenhain	LC 493M	0.05 μm/0.01 μm	3.0 m/s	2040 mm	Four-wire type (Note 4)
			LC 193M			4240 mm	
			LIC 4193M	0.01 μm	4.0 m/s	3040 mm	Two-wire/ Four-wire type (Note 4)
			LIC 4195M			28440 mm	
			LIC 4197M			6040 mm	
			LIC 4199M			1020 mm	
	Incremental type	Magnescale Co., Ltd.	SR75	0.05 μm/0.01 μm	3.3 m/s	2040 mm	Two-wire type
			SR85			3040 mm	
			SL710 + PL101-RM/RHM	0.1 μm	4.0 m/s	100000 mm	
		Heidenhain	LIDA 483 + EIB 392M (/16384)	20 μm/16384 (Approx. 1.22 nm)	4.0 m/s	3040 mm	Four-wire type (Note 4)
			LIDA 485			30040 mm	
			LIDA 487			6040 mm	
			LIDA 489			1020 mm	
			LIDA 287 + EIB 392M (/16384)	200 μm/16384 (Approx. 12.2 nm)		10000 mm	
			LIDA 289				
			LIF 481 + EIB 392M (/4096)	4 μm/4096 (Approx. 0.977 nm)	1.2 m/s	1020 mm	
			LIP 581			1440 mm	
		Nidec Sankyo Corporation	PSLH041 (Note 7)	0.1 μm	5.0 m/s	2400 mm	Two-wire type
A/B/Z-phase differential output type (Note 5, 8)		Not designated	-	0.001 μm to 5 μm (Note 6)	Depends on the linear encoder	Depends on the linear encoder	A/B/Z-phase differential output method

Notes: 1. Contact the relevant linear encoder manufacturer for details on operating environment and specifications of the linear encoder such as ambient temperature, vibration resistance and IP rating.
2. The rated speed of the linear encoder is applicable when the linear encoder is used with MR-J4 series servo amplifier. The values may differ from the manufacturers' specifications.
3. The length is specified by the linear encoder manufacturers. The maximum length of the encoder cable between linear encoder and servo amplifier is 30 m.
4. When using the four-wire type linear encoder in fully closed loop control system, use MR-J4-_B_-RJ or MR-J4-_A_-RJ servo amplifier. When using four-wire type linear encoder with the scale measurement function, use MR-J4-_B_-RJ servo amplifier.
5. When using the A/B/Z-phase differential output type linear encoder, use MR-J4-_B_-RJ or MR-J4-_A_-RJ servo amplifier.
6. Select the linear encoder within this range.
7. Use MR-J4-_B_(-RJ)/MR-J4W_-_B/MR-J4-_A_(-RJ) servo amplifier with software version B3 or later.
8. Output A-phase, B-phase, and Z-phase signals in the differential line driver. The phase difference of the A-phase pulse and the B-phase pulse, and the width of the Z-phase pulse must be 200 ns or wider. The output pulse of A-phase and B-phase of the A/B/Z-phase differential output linear encoder is in the multiply-by-four count method. Home position return is not possible with a linear encoder without Z-phase.



MEMO

● Direct Drive Motors

Model Designation

TM-RFM □ □ □

Direct drive motor series

Symbol	Rated torque [N•m]
002	2
004	4
006	6
012	12
018	18
040	40
048	48
072	72
120	120
240	240

Symbol	Motor outer diameter [mm] (Frame dimensions)
C	ø130
E	ø180
G	ø230
J	ø330

Symbol	Rated speed [r/min]
10	100
20	200

Combinations of Direct Drive Motor and Servo Amplifier

Direct drive motor		Servo amplifier		
		MR-J4	MR-J4W2 (Note 1)	MR-J4W3 (Note 1)
TM-RFM series	TM-RFM002C20	MR-J4-20GF(-RJ), MR-J4-20B(-RJ), MR-J4-20B1(-RJ), MR-J4-20A(-RJ), MR-J4-20A1(-RJ)	MR-J4W2-22B, MR-J4W2-44B	MR-J4W3-222B, MR-J4W3-444B
	TM-RFM004C20	MR-J4-40GF(-RJ), MR-J4-40B(-RJ), MR-J4-40B1(-RJ), MR-J4-40A(-RJ), MR-J4-40A1(-RJ)	MR-J4W2-44B, MR-J4W2-77B, MR-J4W2-1010B	MR-J4W3-444B
	TM-RFM006C20	MR-J4-60GF(-RJ), MR-J4-60B(-RJ), MR-J4-60A(-RJ)	MR-J4W2-77B, MR-J4W2-1010B	-
	TM-RFM006E20	MR-J4-60GF(-RJ), MR-J4-60B(-RJ), MR-J4-60A(-RJ)	MR-J4W2-77B, MR-J4W2-1010B	-
	TM-RFM012E20	MR-J4-70GF(-RJ), MR-J4-70B(-RJ), MR-J4-70A(-RJ)	MR-J4W2-77B, MR-J4W2-1010B	-
	TM-RFM018E20	MR-J4-100GF(-RJ), MR-J4-100B(-RJ), MR-J4-100A(-RJ)	MR-J4W2-1010B	-
	TM-RFM012G20	MR-J4-70GF(-RJ), MR-J4-70B(-RJ), MR-J4-70A(-RJ)	MR-J4W2-77B, MR-J4W2-1010B	-
	TM-RFM048G20	MR-J4-350GF(-RJ), MR-J4-350B(-RJ), MR-J4-350A(-RJ)	-	-
	TM-RFM072G20	MR-J4-350GF(-RJ), MR-J4-350B(-RJ), MR-J4-350A(-RJ)	-	-
	TM-RFM040J10	MR-J4-70GF(-RJ), MR-J4-70B(-RJ), MR-J4-70A(-RJ)	MR-J4W2-77B, MR-J4W2-1010B	-
	TM-RFM120J10	MR-J4-350GF(-RJ), MR-J4-350B(-RJ), MR-J4-350A(-RJ)	-	-
	TM-RFM240J10	MR-J4-500GF(-RJ), MR-J4-500B(-RJ), MR-J4-500A(-RJ)	-	-

Notes: 1. Any combination of the servo motors is available. Refer to "Combinations of Multi-Axis Servo Amplifier and Servo Motors" on p. 285 in this catalog.

TM-RFM Series Specifications

Direct drive motor model		TM-RFM	002C20	004C20	006C20	006E20	012E20	018E20
Compatible servo amplifier model		MR-J4-	Refer to "Combinations of Direct Drive Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.					
		MR-J4W_-						
Motor outer diameter (frame dimensions)		[mm]	ø130			ø180		
Power supply capacity *1		[kVA]	0.25	0.38	0.53	0.46	0.81	1.3
Continuous running duty	Rated output	[W]	42	84	126	126	251	377
	Rated torque (Note 3)	[N•m]	2	4	6	6	12	18
Maximum torque		[N•m]	6	12	18	18	36	54
Rated speed		[r/min]	200					
Maximum speed		[r/min]	500					
Permissible instantaneous speed		[r/min]	575					
Power rate at continuous rated torque		[kW/s]	3.7	9.6	16.1	4.9	12.9	21.8
Rated current		[A]	1.3	2.1	3.2	3.2	3.8	5.9
Maximum current		[A]	3.9	6.3	9.6	9.6	12	18
Regenerative braking frequency *2	MR-J4-	[times/min]	No limit	5830	2950	464	572	421
	MR-J4W_-	[times/min]	No limit	5620	No limit	2370	1430	1050
Moment of inertia J		[× 10^{-4} kg•m^2]	10.9	16.6	22.4	74.0	111	149
Recommended load to motor inertia ratio (Note 1)			50 times or less					
Absolute accuracy		[s]	±15			±12.5		
Speed/position detector			Absolute/incremental 20-bit encoder *3 (resolution: 1048576 pulses/rev)					
Insulation class			155 (F)					
Structure			Totally enclosed, natural cooling (IP rating: IP42) (Note 2)					
Environment *4	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)					
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)					
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or splash of oil or water					
	Altitude		1000 m or less above sea level					
	Vibration resistance *5		X: 49 m/s^2 Y: 49 m/s^2					
Vibration rank			V10 *7					
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.					
Rotor permissible load *6	Moment load	[N•m]	22.5			70		
	Axial load	[N]	1100			3300		
Mass		[kg]	5.2	6.8	8.4	11	15	18

Notes: 1. Contact your local sales office if the load to motor inertia ratio exceeds the value in the table.
2. Connectors and gap between rotor and stator are excluded.
3. When unbalanced torque is generated, such as in a vertical lift machine, be sure to use the absolute position detection system, and keep the unbalanced torque under 70% of the servo motor rated torque.

Refer to "Annotations for Direct Drive Motor Specifications" on p. 404 in this catalog for the asterisks 1 to 7.

TM-RFM Series Specifications

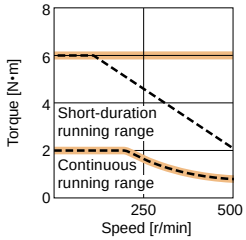
Direct drive motor model		TM-RFM	012G20	048G20	072G20	040J10	120J10	240J10
Compatible servo amplifier model		MR-J4- / MR-J4W_-	Refer to "Combinations of Direct Drive Motor and Servo Amplifier" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.					
Motor outer diameter (frame dimensions)		[mm]	ø230			ø330		
Power supply capacity *1		[kVA]	0.71	2.7	3.8	1.2	3.4	6.6
Continuous running duty	Rated output	[W]	251	1005	1508	419	1257	2513
	Rated torque (Note 3)	[N•m]	12	48	72	40	120	240
Maximum torque		[N•m]	36	144	216	120	360	720
Rated speed		[r/min]	200			100		
Maximum speed		[r/min]	500			200		
Permissible instantaneous speed		[r/min]	575			230		
Power rate at continuous rated torque		[kW/s]	6.0	37.5	59.3	9.4	40.9	91.4
Rated current		[A]	3.6	11	16	4.3	11	19
Maximum current		[A]	11	33	48	13	33	57
Regenerative braking frequency *2	MR-J4-	[times/min]	202	373	251	125	281	171
	MR-J4W_-	[times/min]	507	-	-	313	-	-
Moment of inertia J		[× 10^{-4} kg•m^2]	238	615	875	1694	3519	6303
Recommended load to motor inertia ratio (Note 1)			50 times or less					
Absolute accuracy		[s]	±12.5			±10		
Speed/position detector			Absolute/incremental 20-bit encoder *3 (resolution: 1048576 pulses/rev)					
Insulation class			155 (F)					
Structure			Totally enclosed, natural cooling (IP rating: IP42) (Note 2)					
Environment *4	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)					
	Ambient humidity		Operation: 80 %RH maximum (non-condensing), storage: 90 %RH maximum (non-condensing)					
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or splash of oil or water					
	Altitude		1000 m or less above sea level					
	Vibration resistance *5		X: 49 m/s² Y: 49 m/s²			X: 24.5 m/s² Y: 24.5 m/s²		
Vibration rank			V10 *7					
Compliance to global standards			Refer to "Conformity with Global Standards and Regulations" on "SERVO AMPLIFIERS & MOTORS L(NA)03058" catalog.					
Rotor permissible load *6	Moment load	[N•m]	93			350		
	Axial load	[N]	5500			16000		
Mass		[kg]	17	38	52	48	85	150

Notes: 1. Contact your local sales office if the load to motor inertia ratio exceeds the value in the table.
2. Connectors and gap between rotor and stator are excluded.
3. When unbalanced torque is generated, such as in a vertical lift machine, be sure to use the absolute position detection system, and keep the unbalanced torque under 70% of the servo motor rated torque.

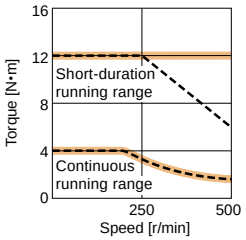
Refer to "Annotations for Direct Drive Motor Specifications" on p. 404 in this catalog for the asterisks 1 to 7.

TM-RFM Series Torque Characteristics

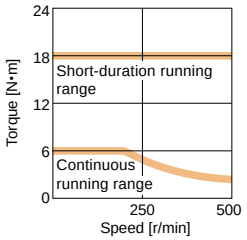
TM-RFM002C20 (Note 1, 2, 4)



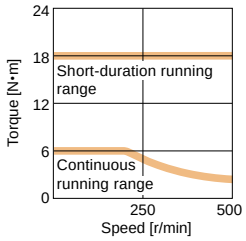
TM-RFM004C20 (Note 1, 2, 4)



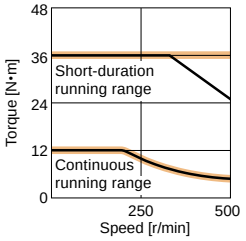
TM-RFM006C20 (Note 1, 3, 4)



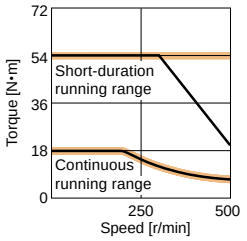
TM-RFM006E20 (Note 1, 3, 4)



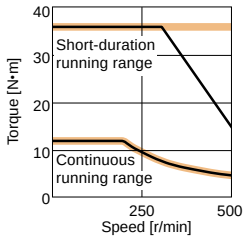
TM-RFM012E20 (Note 1, 3, 4)



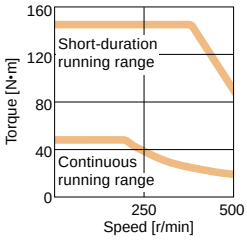
TM-RFM018E20 (Note 1, 3, 4)



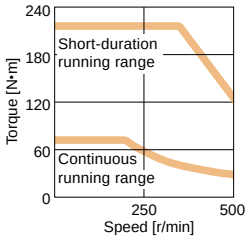
TM-RFM012G20 (Note 1, 3, 4)



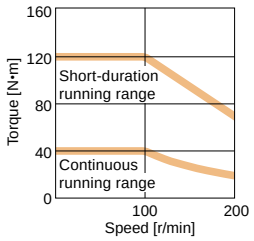
TM-RFM048G20 (Note 1, 4)



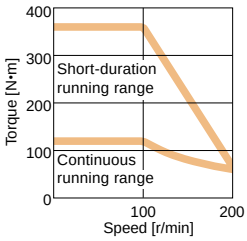
TM-RFM072G20 (Note 1, 4)



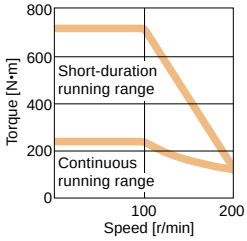
TM-RFM040J10 (Note 1, 3, 4)



TM-RFM120J10 (Note 1, 4)



TM-RFM240J10 (Note 1, 4)

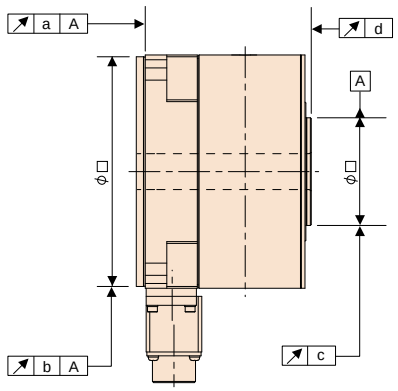


Notes: 1. ▬ : For 3-phase 200 V AC or 1-phase 230 V AC.
The following direct drive motors are compatible with 1-phase 230 V AC:
TM-RFM002C20, TM-RFM004C20, TM-RFM006C20, TM-RFM006E20, TM-RFM012E20, TM-RFM018E20, TM-RFM012G20, TM-RFM040J10
2. - - - - : For 1-phase 200 V AC or 1-phase 100 V AC.
3. ——— : For 1-phase 200 V AC.
This line is drawn only where differs from the other two lines.
4. Torque drops when the power supply voltage is below the specified value.

Direct Drive Motor Machine Accuracy

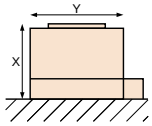
The machine accuracy related to the direct drive motor rotor (output shaft) and installation is indicated below:

Item	Measuring position	Accuracy [mm]
Runout of flange surface about rotor (output shaft)	a	0.05
Runout of fitting outer diameter of flange surface	b	0.07
Runout of rotor (output shaft)	c	0.04
Runout of rotor (output shaft) end	d	0.02

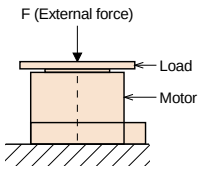


Annotations for Direct Drive Motor Specifications

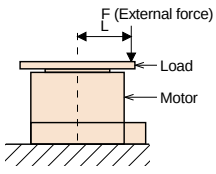
* 1. The power supply capacity varies depending on the power supply impedance.
* 2. The regenerative braking frequency shows the permissible frequency when the direct drive motor, without a load and a regenerative option, decelerates from the rated speed to a stop. When a load is connected; however, the value will be the table value/(m + 1), where m = Moment of inertia of load/Moment of inertia of direct drive motor. When the operating speed exceeds the rated speed, the regenerative braking frequency is inversely proportional to the square of (operating speed/rated speed). Take measures to keep the regenerative power [W] during operation below the permissible regenerative power [W]. Use caution, especially when the operating speed changes frequently or when the regeneration is constant (as with vertical feeds). Select the most suitable regenerative option for your system with our capacity selection software. Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when regenerative option is used.
* 3. Be sure to connect the following options for absolute position detection system.
  • MR-J4: battery (MR-BAT6V1SET) and absolute position storage unit (MR-BTAS01).
  • MR-J4W_: battery case (MR-BT6VCASE), battery (MR-BAT6V1) × 5 pcs, and absolute position storage unit (MR-BTAS01).
  Refer to relevant Servo Amplifier Instruction Manual for details.
* 4. In the environment where the direct drive motor is exposed to oil mist, oil and/or water, a standard specification direct drive motor may not be usable. Contact your local sales office for more details.
* 5. The vibration direction is shown in the diagram below. The numerical value indicates the maximum value of the component.
  Fretting more likely occurs on the bearing when the direct drive motor stops. Thus, maintain vibration level at approximately one-half of the allowable value.



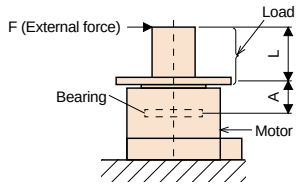
* 6. The following is calculation examples of axial and moment loads to the rotor (output shaft) of the direct drive motor. The axial and moment loads must be maintained equal to or below the permissible value.



Axial load
= F + Load mass



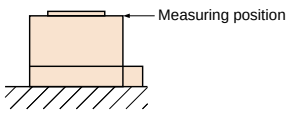
Axial load
= F + Load mass
Moment load
= F × L



Axial load = Load mass
Moment load = F × (L + A)

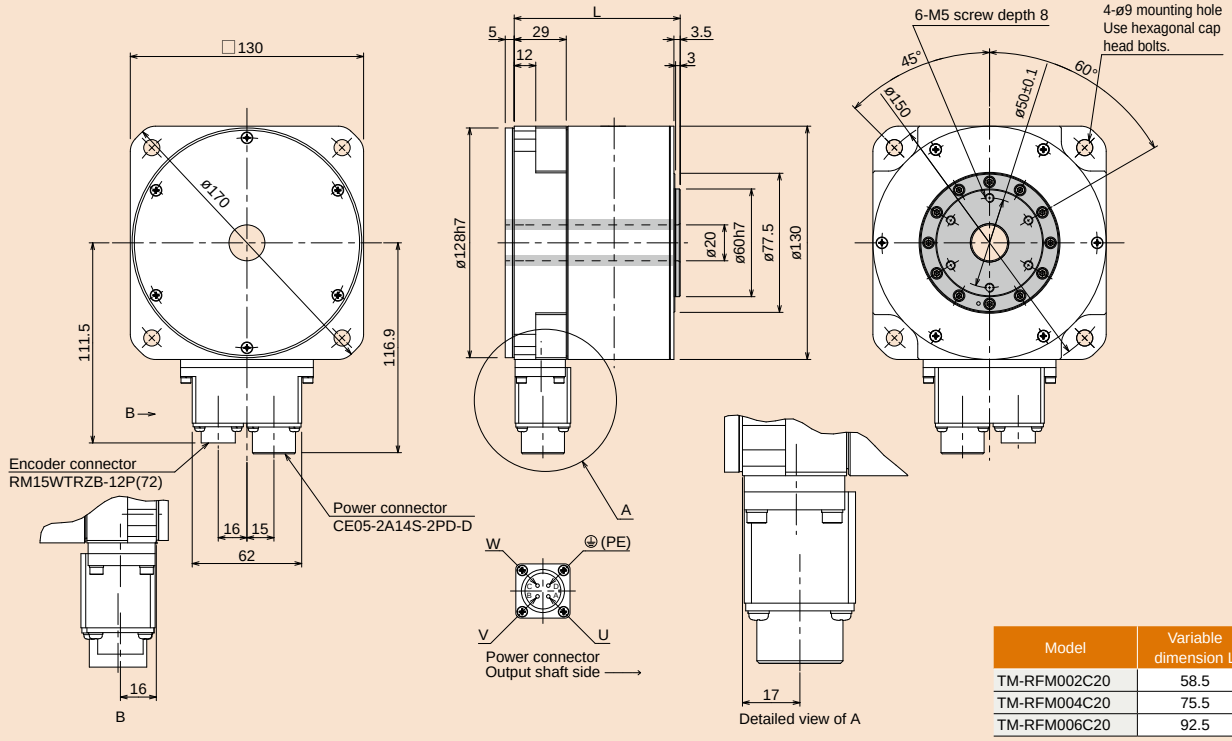
Motor outer diameter [mm] (Frame dimensions)	Dimension A [mm]
ø130	19.1
ø180	20.2
ø230	24.4
ø330	32.5

* 7. V10 indicates that the amplitude of the direct drive motor itself is 10 µm or less. The following shows mounting posture and measuring position of the direct drive motor during the measurement:



TM-RFM Series Dimensions (Note 1, 2)

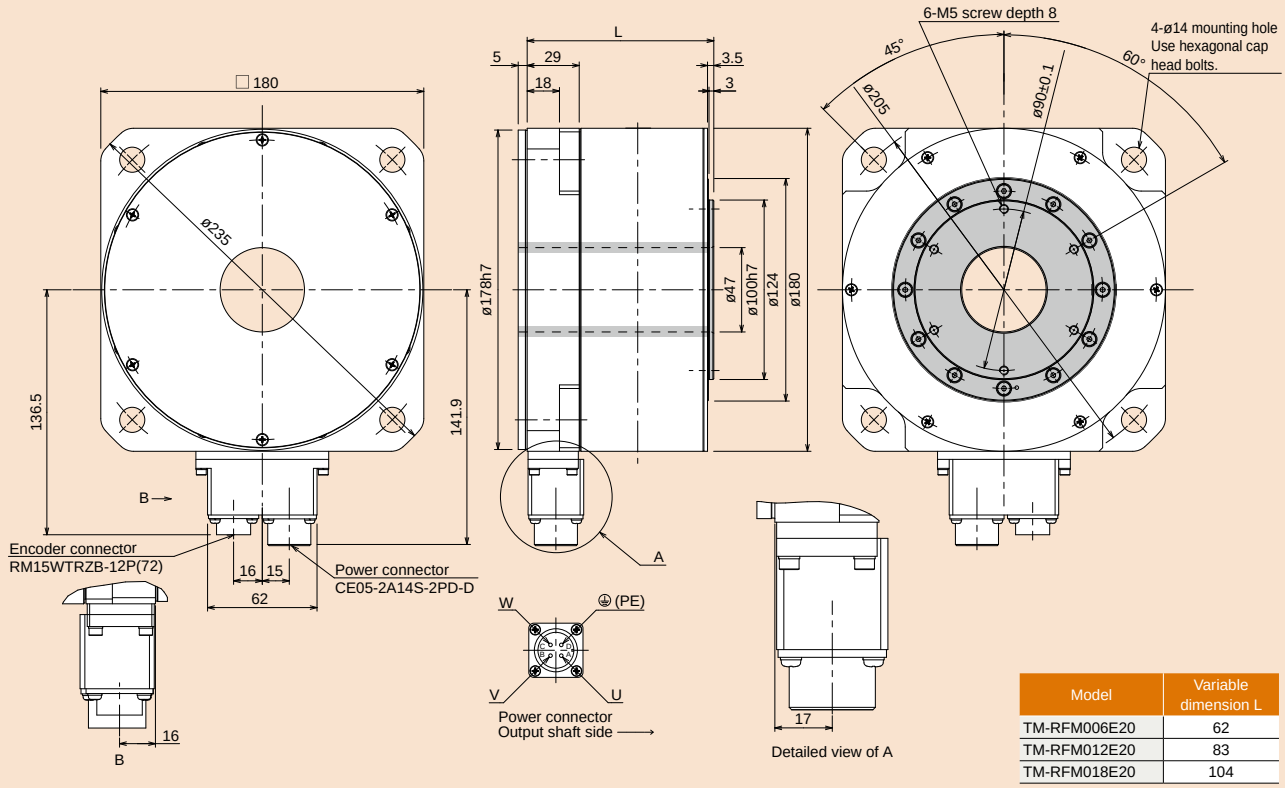
●TM-RFM002C20, TM-RFM004C20, TM-RFM006C20



Model	Variable dimension L
TM-RFM002C20	58.5
TM-RFM004C20	75.5
TM-RFM006C20	92.5

[Unit: mm]

●TM-RFM006E20, TM-RFM012E20, TM-RFM018E20



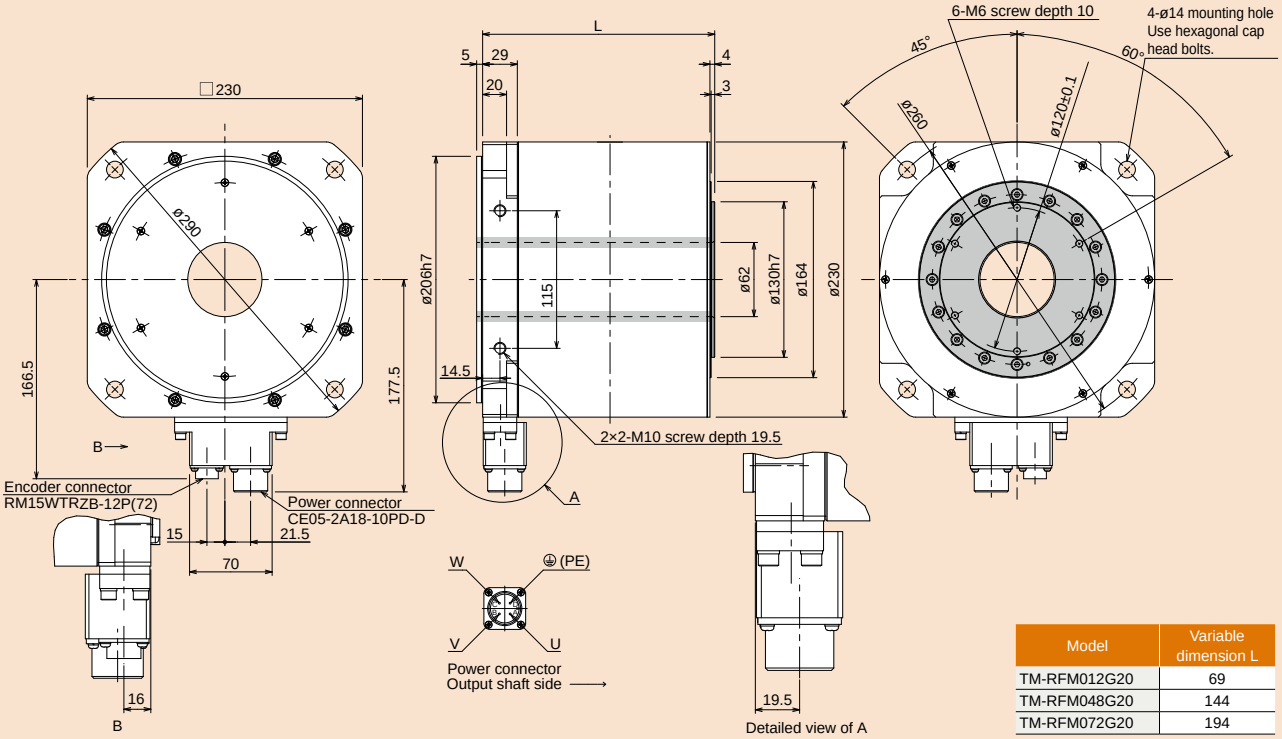
Model	Variable dimension L
TM-RFM006E20	62
TM-RFM012E20	83
TM-RFM018E20	104

[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies. The actual dimensions may be 1 mm to 3 mm larger than the dimensions indicated. Make allowances for the tolerance when designing a machine.
2. ▭ indicates rotor.

TM-RFM Series Dimensions (Note 1, 2)

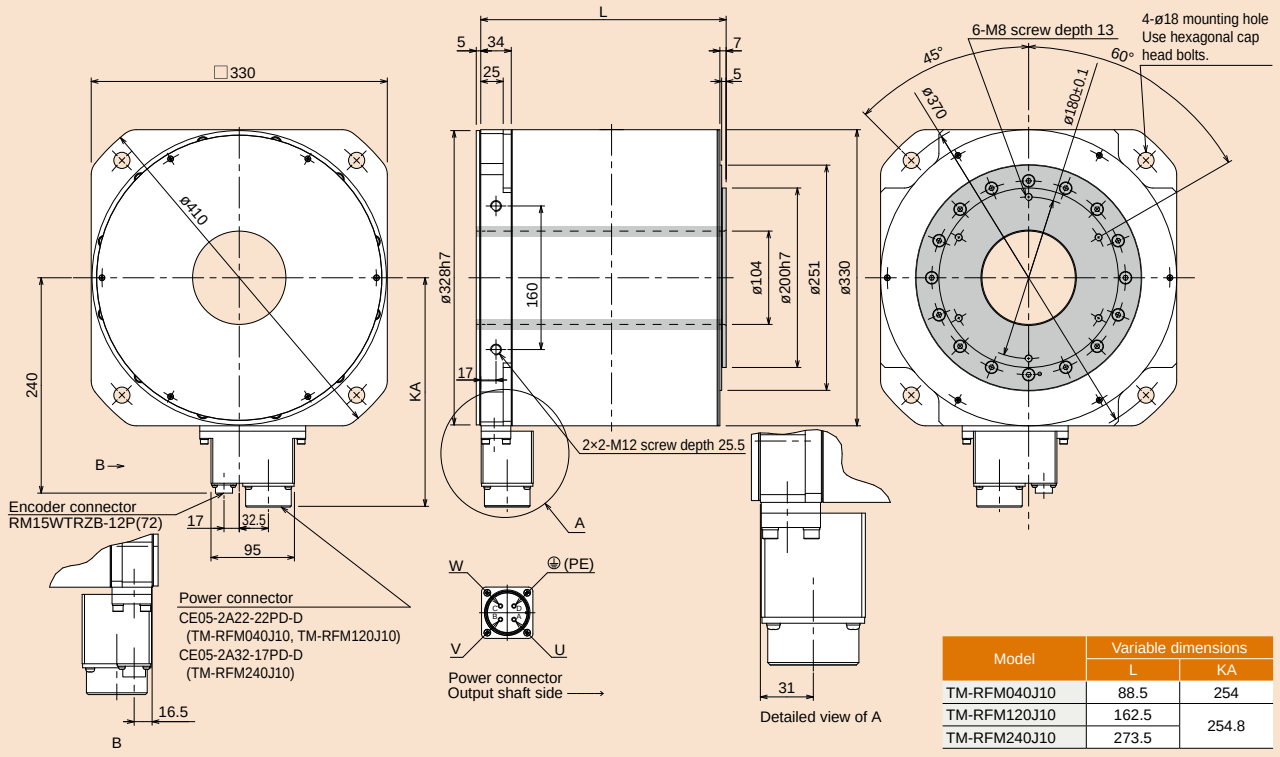
●TM-RFM012G20, TM-RFM048G20, TM-RFM072G20



Model	Variable dimension L
TM-RFM012G20	69
TM-RFM048G20	144
TM-RFM072G20	194

[Unit: mm]

●TM-RFM040J10, TM-RFM120J10, TM-RFM240J10



Model	Variable dimensions	
	L	KA
TM-RFM040J10	88.5	254
TM-RFM120J10	162.5	254.8
TM-RFM240J10	273.5	

[Unit: mm]

Notes: 1. For dimensions without tolerance, general tolerance applies. The actual dimensions may be 1 mm to 3 mm larger than the dimensions indicated. Make allowances for the tolerance when designing a machine.
2. ▭ indicates rotor.

MEMO

MITSUBISHI SERVO AMPLIFIERS & MOTORS

MELSERVO-JE

Apply servos to all machines with reliable basic performance and advanced ease-of-use!

With Mitsubishi's commitment to total system solutions and global supports,
the MELSERVO-JE becomes the answer to the world-wide needs in driving control.

Fast, Trouble-Free Setup

Mitsubishi Electric's unique "Advanced one-touch tuning" enables servo gain adjustment with one-touch ease.
The increased tolerance against instantaneous power failure, the ease of maintenance, and the simple setup software would add further usability for all MELSERVO-JE users.

High-Precision Tuning

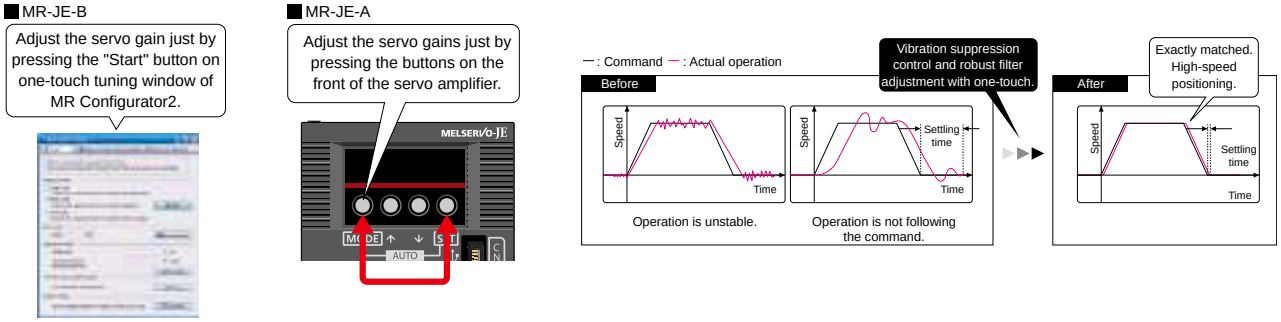
Servo gain adjustment with one-touch ease

JE-B JE-A

Advanced One-Touch Tuning Function

Servo gain adjustment is complete just by turning on the one-touch tuning function. With this function, machine resonance suppression filter, advanced vibration suppression control II*, and robust filter are automatically adjusted to maximize your machine performance.

* The advanced vibration suppression control II automatically adjusts one frequency.



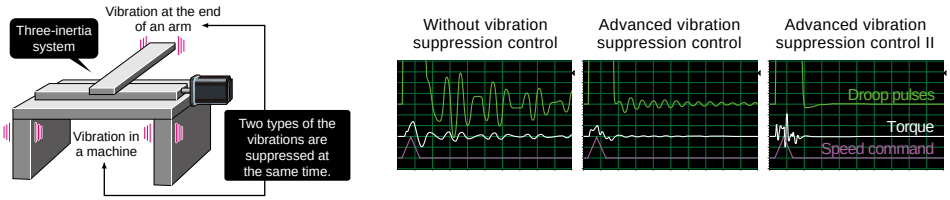
Suppress two types of low frequency vibrations at once

JE-B JE-A

Patent pending

Advanced Vibration Suppression Control II

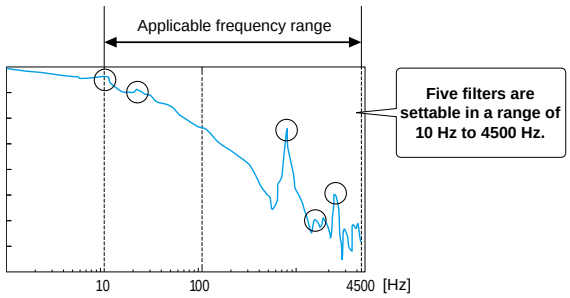
The advanced vibration suppression control II suppresses two types of low frequency vibrations owing to vibration suppression algorithm which supports three-inertia system. This function is effective in suppressing residual vibration generated at the end of an arm and in a machine, enabling a shorter settling time. Adjustment is easily performed on MR Configurator2.



Wide frequency range JE-B JE-A

Machine Resonance Suppression Filter

With advanced filter structure, applicable frequency range is expanded to between 10 Hz and 4500 Hz. Additionally, the number of simultaneously applicable filters is increased to five, improving vibration suppression performance of a machine.

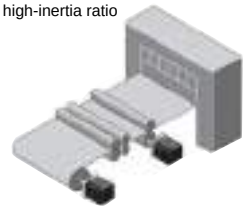


High responsivity and stability JE-B JE-A Patent pending

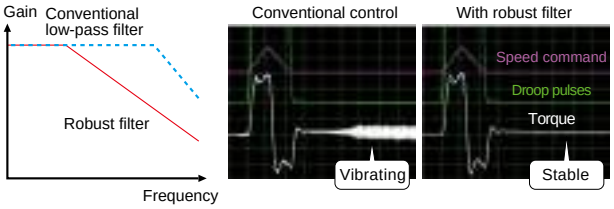
Robust Filter

Achieving both high responsivity and stability was difficult with the conventional control in high-inertia systems with belts and gears such as printing and packaging machines. Now, this function enables the high responsivity and the stability at the same time without adjustment. The robust filter gradually reduces the fluctuation of torque in wide frequency range and achieves more stability as compared to the prior model.

■ Machine with a high-inertia ratio



■ Robust filter

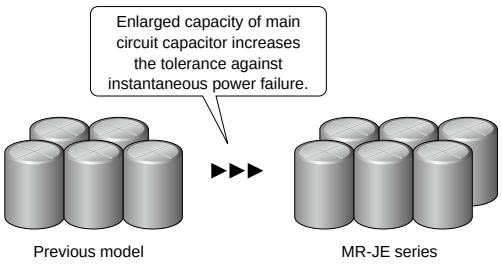


For Changes in Power Supply Environment

Reduce machine downtime JE-B JE-A

Large Capacity Main Circuit Capacitor

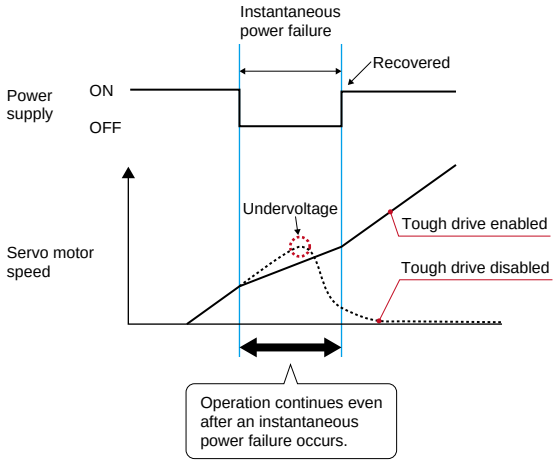
The capacity of main circuit capacitor is increased by 20% as compared to the previous model, increasing the tolerance against instantaneous power failure. The increased tolerance reduces machine downtime and then improves productivity.



Reduce undervoltage alarms JE-B JE-A

Instantaneous Power Failure Tough Drive

When an instantaneous power failure is detected, this function allows the servo amplifier to use the electric energy charged in the main circuit capacitor in the servo amplifier to avoid an alarm occurrence, increasing the machine availability even with an unstable power supply.

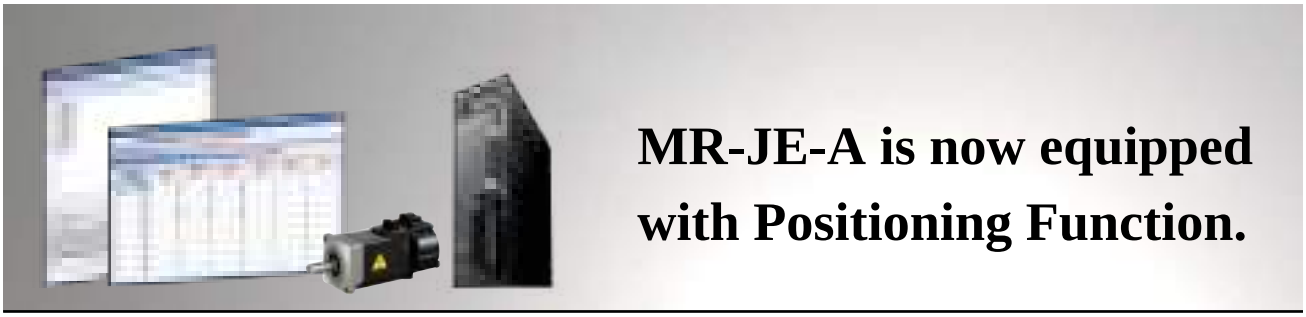


Wide power supply voltage input range JE-B JE-A

Compatible with 1-phase 200 to 240 V AC Input

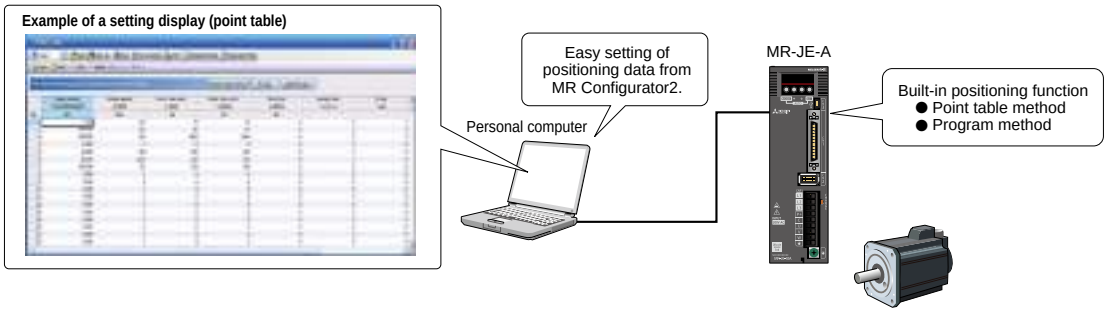
Servo amplifiers of 2 kW or smaller are compatible with power supply voltage of 1-phase 200 V AC to 240 V AC.

* When 1-phase 200 V AC to 240 V AC power supply is used with servo amplifiers of 1 kW and 2 kW, use the servo amplifiers with 75% or less of the effective load ratio. The servo amplifiers of 1 kW and 2 kW cannot be mounted closely when 1-phase power is input.



MR-JE-A is now equipped with Positioning Function.

Positioning operation with point table and program based methods became capable by built-in positioning function in MR-JE-A*1, allowing to configure positioning system without controller such as Positioning module.
Features:
- Equipped with simple cam, encoder following, and mark detection functions, making it possible to increase machine functionality.
- Command interface compatible with DIO or RS-422/RS-485 serial communication (maximum 32 axes)
- Easy setting of positioning data from MR Configurator2.



*1. Use MR-JE-A servo amplifiers with software version B7 or later when using the positioning function.

A Variety of Positioning Functions

Easy to set a positioning data

JE-A

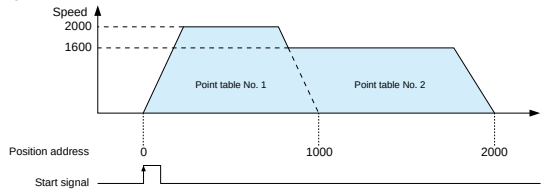
Point Table Method

Setting position data (target position), servo motor speed, and acceleration/deceleration time constants in point table is as easy as setting a parameter. Up to 31 points are settable for the point table. The positioning operation is performed with a start signal after selecting the point table No.

Point table example

Point table No.	Position data	Servo motor speed	Acceleration time constant	Deceleration time constant	Dwell	Sub function	M code
1	1000	2000	200	200	0	1	1
2	2000	1600	100	100	0	0	2
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
31	3000	3000	100	100	0	2	99

Operation



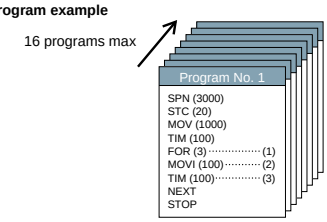
Easy operation by program

JE-A

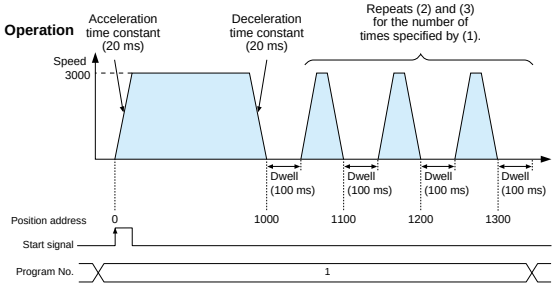
Program Method*

Create positioning programs with dedicated commands. The positioning operation is performed with a start signal after selecting the program No. The program method enables more complex positioning operation than the point table method. Maximum of 16 programs are settable. (The total number of steps of program: 480)

Program example



Operation



* MR Configurator2 is required to create programs.