

Motor Specifications and Characteristics

HC-KFS series servo motor specifications

Servo motor series		HC-KFS series (Low inertia, small capacity)					HC-KFS Ultra-high velocity series (Low inertia, small capacity)			
Specifications	Models	Servo motor model	HC-KFS	053 (B)	13 (B)	23 (B)	43 (B)	73 (B)	46	410
	Servo-amp model (Note 9)	MR-J2S-		10A (1)/B (1)/CP (1)/CL (1)	20A (1)/B (1)/CP (1)/CL (1)	40A (1)/B (1)/CP (1)/CL (1)	70A/B/CP/CL (Note 10)	70A/B/CP/CL-U005	70A/B/CP/CL-U006	
Servo motor	Power facility capacity (Note 2) (kVA)			0.3	0.3	0.5	0.9	1.3	0.9	0.9
	Continuous running duty	Rated output (W)		50	100	200	400	750	400	
		Rated torque (N·m [oz·in])		0.16 (22.7)	0.32 (45.3)	0.64 (90.6)	1.3 (184.1)	2.4 (339.8)	0.64 (90.6)	0.38 (53.8)
	Maximum torque (N·m [oz·in])			0.48 (68.0)	0.95 (134.5)	1.9 (269.0)	3.8 (538.1)	7.2 (1019.5)	2.87 (406.4)	1.91 (270.5)
	Rated speed (r/min)			3000					6000	10000
	Maximum speed (r/min)			4500					6000	10000
	Permissible instantaneous speed (r/min)			5175					6900	11500
	Power rate at continuous rated torque (kW/s)			4.78	12.1	15.8	36.7	37.7	6.4	3.1
	Rated current (A)			0.83	0.71	1.1	2.3	5.8	2.9	2.9
	Maximum current (A)			2.5	2.2	3.4	6.9	18.6	12.9	14.5
	Regenerative braking frequency (times/min) (Note 3, 4)	With no options		(Note 5)	(Note 5)	(Note 5)	220	190	110	55
		MR-RB032 (30W)		(Note 5)	(Note 5)	(Note 5)	660	280	160	80
		MR-RB12 (100W)		—	—	(Note 5)	2200	940	550	275
	Moment of inertia J ($\times 10^{-4}$ kg·m ²) [J (oz·in ²)]	Standard		0.053 (0.29)	0.084 (0.459)	0.260 (1.422)	0.460 (2.515)	1.51 (8.255)	0.64 (3.499)	0.47 (2.569)
		With electromagnetic brake		0.056 (0.306)	0.087 (0.476)	0.310 (1.695)	0.510 (2.788)	1.635 (8.938)	—	—
Recommended load/motor inertia moment ratio (Note 6)			Max. 15 times		Max. 24 times	Max. 22 times	Max. 15 times			
Speed/position detector			17-bit encoder (Resolution per encoder/servo motor rotation: 131072 p/rev)							
Attachments			—							
Structure			Totally enclosed non ventilated (protection level: IP55) (Note 1, 7)							
Environment	Ambient temperature		0 to 40°C (32 to 104°F) (non freezing), storage: -15 to 70°C (5 to 158°F) (non freezing)							
	Ambient humidity		80% RH maximum (non condensing), storage: 90% RH maximum (non condensing)							
	Atmosphere		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust							
	Elevation/vibration (Note 8)		1000m (3280ft) or less above sea level; X: 49m/s ² Y: 49m/s ²					1000m (3280ft) or less above sea level; X, Y: 19.6m/s ²		
Mass (kg [lb])	Standard		0.4 (0.88)	0.53 (1.17)	0.99 (2.18)	1.45 (3.19)	3.0 (6.61)	1.5 (3.30)	1.5 (3.30)	
	With electromagnetic brake		0.75 (1.65)	0.89 (1.96)	1.6 (3.53)	2.1 (4.63)	4.0 (8.81)	—	—	

Notes: 1. If used in location such as actual site of machinery where oil or water may contact the product, special specifications apply, so contact Mitsubishi.

2. The power facility capacity varies depending on the power supply's impedance.

3. The regenerative braking frequency shows the permissible frequency when the motor without a load decelerates from the rated speed to stop. When a load is connected; however, the value will be the table value/(m+1), where m=the load inertia moment/the motor inertia moment. When the operating speed exceeds the rated speed, the regenerative braking frequency is in inversely proportional to the square of (operating speed/rated speed). If the operating speed changes frequently or when the regeneration is constant (as with vertical feeds), find the regeneration heating value (W) while operating. Provisions must be made to keep the generated heat below the tolerable regenerative power (W). Optimal regenerative resistor varies for each system. Select the most suitable regenerative resistor by using the Servo Support software. Refer to the section "Options ● Optional regeneration unit" in this catalog for details on the tolerable regenerative power (W).

4. The regenerative braking frequency of the 600W or smaller servo amplifier may fluctuate with the affect of the power voltage due to the large energy ratio charged to the electrolytic capacitor in the servo amplifier.

5. There are no limits on regeneration frequency as long as the effective torque is within the rated torque range. However, the load/motor of inertia moment ratio must be within the value in the table above.

6. The value is a ratio of load inertia moment to motor inertia moment. Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.

7. The shaft-through portion and connector for cable terminal are excluded.

8. The vibration direction is shown in the right-side diagram. The numeric value indicates the maximum value of the component (commonly the bracket in the opposite direction of the motor shaft). Fretting of the bearing occurs easily when the motor stops, so maintain vibration to approximately one-half of the allowable value.

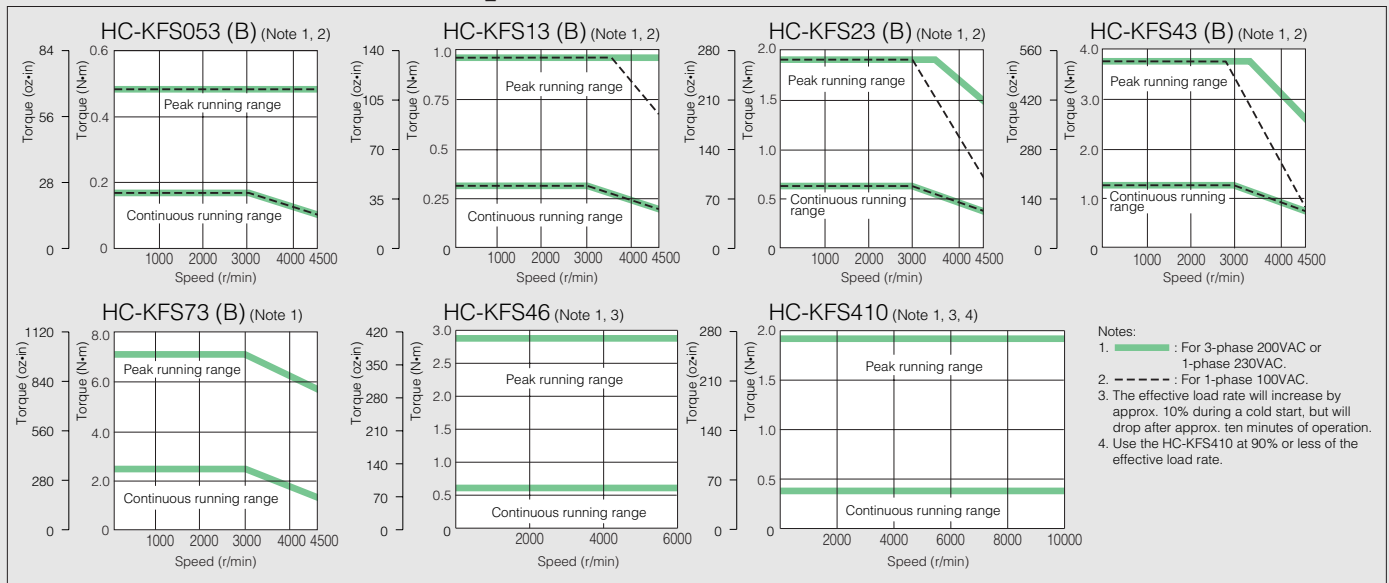
9. MR-J2S-CP (1)-S084 is also compatible. The compatible motor is the same as MR-J2S-CP (1).

10. The HC-KFS series 750W is compatible with the following amplifier software version.

A type: Version A4 or above B type: Version A3 or above



HC-KFS series servo motor torque characteristics



Motor Specifications and Characteristics

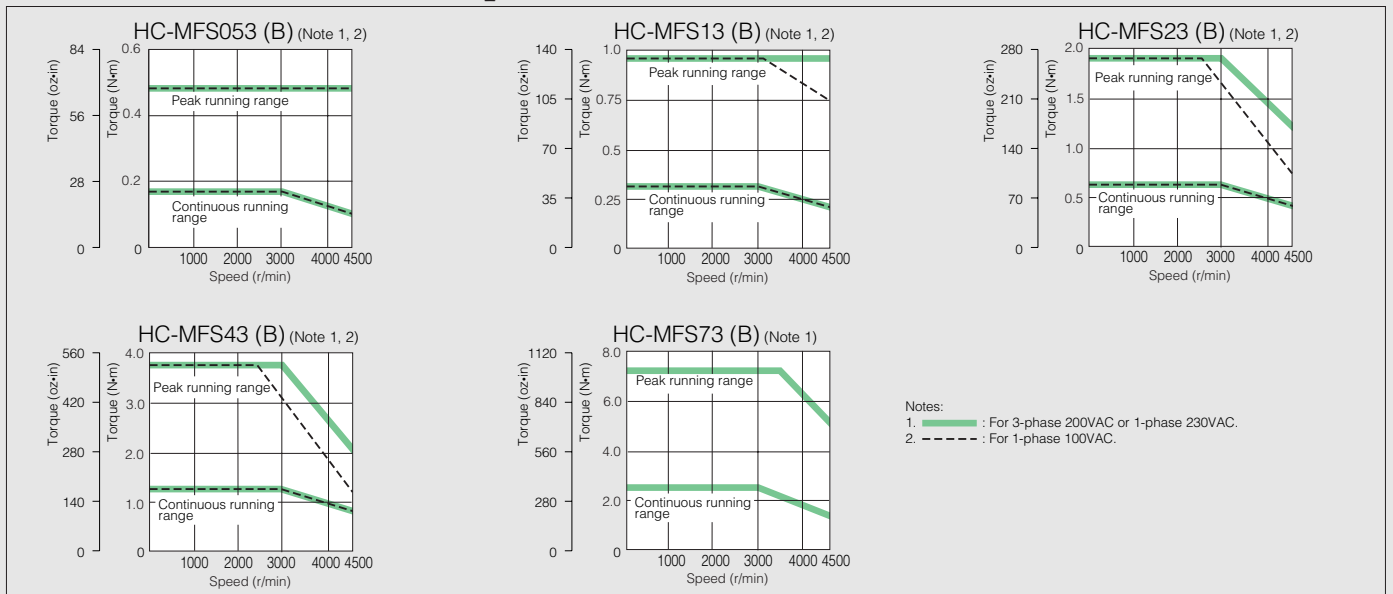
HC-MFS series servo motor specifications

Servo motor series		HC-MFS series (Ultra-low inertia, small capacity)					
Models	Servo motor model HC-MFS	053 (B)	13 (B)	23 (B)	43 (B)	73 (B)	
Specifications	Servo-amp model (Note 9) MR-J2S-	10A (1)/B (1)/CP (1)/CL (1)	20A (1)/B (1)/CP (1)/CL (1)	40A (1)/B (1)/CP (1)/CL (1)	70A/B/CP/CL		
Servo motor	Power facility capacity (Note 2) (kVA)	0.3	0.3	0.5	0.9	1.3	
	Continuous running duty	Rated output (W)	50	100	200	400	750
		Rated torque (N·m [oz·in])	0.16 (22.7)	0.32 (45.3)	0.64 (90.6)	1.3 (184.1)	2.4 (339.8)
	Maximum torque (N·m [oz·in])	0.48 (68.0)	0.95 (134.5)	1.9 (269.0)	3.8 (538.1)	7.2 (1019.5)	
	Rated speed (r/min)	3000					
	Maximum speed (r/min)	4500					
	Permissible instantaneous speed (r/min)	5175					
	Power rate at continuous rated torque (kW/s)	13.47	34.13	46.02	116.55	94.43	
	Rated current (A)	0.85		1.5	2.8	5.1	
	Maximum current (A)	2.6		5.0	9.0	18	
	Regenerative braking frequency (times/min) (Note 3, 4)	With no options	(Note 5)	(Note 5)	(Note 5)	1010	400
		MR-RB032 (30W)	(Note 5)	(Note 5)	(Note 5)	3000	600
		MR-RB12 (100W)	—	—	(Note 5)	(Note 5)	2400
		MR-RB32 (300W)	—	—	—	—	(Note 5)
	Moment of inertia J ($\times 10^{-4}$ kg·m ²) [J (oz·in ²)]	Standard	0.019 (0.104)	0.03 (0.164)	0.088 (0.481)	0.143 (0.782)	0.6 (3.28)
		With electromagnetic brake	0.022 (0.12)	0.032 (0.175)	0.136 (0.743)	0.191 (1.044)	0.725 (3.963)
	Recommended load/motor inertia moment ratio	30 times the servo motor's inertia moment maximum (Note 6)					
Speed/position detector	17-bit encoder (Resolution per encoder/servo motor rotation: 131072 p/rev)						
Attachments	—						
Structure	Totally enclosed non ventilated (protection level: IP55) (Note 1, 7)						
Environment	Ambient temperature	0 to 40°C (32 to 104°F) (non freezing), storage: -15 to 70°C (5 to 158°F) (non freezing)					
	Ambient humidity	80% RH maximum (non condensing), storage: 90% RH maximum (non condensing)					
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust					
	Elevation/vibration (Note 8)	1000m (3280ft) or less above sea level; X, Y: 49 m/s ²					
Mass (kg [lb])	Standard	0.4 (0.88)	0.53 (1.17)	0.99 (2.18)	1.45 (3.19)	3.0 (6.61)	
	With electromagnetic brake	0.75 (1.65)	0.89 (1.96)	1.6 (3.53)	2.1 (4.63)	4.0 (8.81)	

- Notes: 1. If used in location such as actual site of machinery where oil or water may contact the product, special specifications apply, so contact Mitsubishi.
 2. The power facility capacity varies depending on the power supply's impedance.
 3. The regenerative braking frequency shows the permissible frequency when the motor without a load decelerates from the rated speed to stop. When a load is connected; however, the value will be the table value/(m+1), where m—the load inertia moment/the motor inertia moment. When the operating speed exceeds the rated speed, the regenerative braking frequency is in inversely proportional to the square of (operating speed/rated speed). If the operating speed changes frequently or when the regeneration is constant (as with vertical feeds), find the regeneration heating value (W) while operating. Provisions must be made to keep the generated heat below the tolerable regenerative power (W). Optimal regenerative resistor varies for each system. Select the most suitable regenerative resistor by using the Servo Support software. Refer to the section "Options ● Optional regeneration unit" in this catalog for details on the tolerable regenerative power (W).
 4. The regenerative braking frequency of the 600W or smaller servo amplifier may fluctuate with the affect of the power voltage due to the large energy ratio charged to the electrolytic capacitor in the servo amplifier.
 5. There are no limits on regeneration frequency as long as the effective torque is within the rated torque range. However, the load/motor of inertia moment ratio must be 30 times or less.
 6. Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.
 7. The shaft-through portion and connector for cable terminal are excluded.
 8. The vibration direction is shown in the right-side diagram. The numeric value indicates the maximum value of the component (commonly the bracket in the opposite direction of the motor shaft). Fretting of the bearing occurs easily when the motor stops, so maintain vibration to approximately one-half of the allowable value.
 9. MR-J2S-□CP (1)-S084 is also compatible. The compatible motor is the same as MR-J2S-□CP (1).



HC-MFS series servo motor torque characteristics



Amplifier Specifications

MR-J2S-A (100V/200V) type

Servo amplifier model MR-J2S-		10A	20A	40A	60A	70A (-U□)	100A	200A	350A	500A	700A	11KA	15KA	22KA	30KA	37KA	10A1	20A1	40A1		
Converter unit model		—														MR-HP30KA		—			
Servo amplifier	Control circuit power supply	Voltage/frequency	1-phase 200 to 230VAC 50/60Hz														1-phase 100 to 120VAC 50/60Hz				
		Permissible voltage fluctuation	1-phase 170 to 253VAC														1-phase 85 to 127VAC				
		Permissible frequency fluctuation	±5% maximum														±5% maximum				
		Power consumption (W)	50														50				
	Main circuit power supply	Voltage/frequency (Note 1)	3-phase 200 to 230VAC 50/60Hz or 1-phase 230VAC 50/60Hz (Note 2)					3-phase 200 to 230VAC 50/60Hz (Note 2)					The servo amplifier's main circuit power is supplied from the converter unit.		1-phase 100 to 120VAC 50/60Hz (Note 2)						
		Permissible voltage fluctuation	3-phase 200 to 230VAC: 170 to 253VAC 1-phase 230VAC: 207 to 253VAC					3-phase 170 to 253VAC							1-phase 85 to 127VAC						
		Permissible frequency fluctuation	±5% maximum														±5% maximum				
	Control system		Sine-wave PWM control/current control system																		
	Dynamic brake		Built-in (Note 3)										External option				Built-in (Note 3)				
	Safety features		Overcurrent shutdown, regeneration overvoltage shutdown, overload shutdown (electronic thermal), servo motor overheat protection, encoder fault protection, regeneration fault protection, undervoltage/sudden power outage protection, overspeed protection, excess error protection																		
	Position control mode	Maximum input pulse frequency	500kpps (when using differential receiver), 200 kpps (when using open collector)																		
		Positioning feedback pulse	Resolution per encoder/servo motor rotation: 131072 p/rev																		
		Command pulse multiple	Electronic gear A/B multiple, A: 1 to 65535 or 131072, B: 1 to 65535 1/50 < A/B < 500																		
		Positioning complete width setting	0 to ±10000 pulses (command pulse unit)																		
		Excess error	±2.5 rotations																		
		Torque limit	Set by parameters or external analog input (0 to +10VDC/maximum torque)																		
	Speed control mode	Speed control range	Analog speed command 1:2000, internal speed command 1:5000																		
		Analog speed command input	0 to ±10VDC/rated speed (Note 4)																		
		Speed fluctuation rate	±0.01% maximum (load fluctuation 0 to 100%) 0% (power fluctuation ±10%) ±0.2% maximum (ambient temperature 25°C±10°C [77°F±50°F]), when using analog speed command																		
		Torque limit	Set by parameters or external analog input (0 to +10VDC/maximum torque)																		
Torque control mode	Analog torque command input	0 to ±8VDC/maximum torque (input impedance 10 to 12kΩ)																			
	Speed limit	Set by parameters or external analog input (0 to ±10VDC/rated speed)																			
Structure		Self-cooling open (IP00)						Fan cooling open (IP00)						Self-cooling open (IP00)							
Environment	Ambient temperature	0 to 55°C (32 to 131°F) (non freezing), storage: -20 to 65°C (-4 to 149°F) (non freezing)																			
	Ambient humidity	90% RH maximum (non condensing), storage: 90% RH maximum (non condensing)																			
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust																			
	Elevation	1000m (3280ft) or less above sea level																			
	Vibration	5.9m/s ² maximum																			
Mass (kg [lb])	0.7 (1.5)	0.7 (1.5)	1.1 (2.4)	1.1 (2.4)	1.7 (3.7)	1.7 (3.7)	2.0 (4.4)	2.0 (4.4)	4.9 (10.8)	7.2 (15.9)	15 (33)	16 (35.3)	20 (44.1)	47 (103.5)	47 (103.5)	0.7 (1.5)	0.7 (1.5)	1.1 (2.4)			
Converter unit	Main circuit power supply	Voltage/frequency (Note 1)	—														3-phase 200 to 230VAC 50/60Hz (Note 2)		—		
		Permissible voltage fluctuation	—														3-phase 170 to 253VAC		—		
		Permissible frequency fluctuation	—														±5% max.		—		
	Control circuit power supply	Voltage/frequency	—														1-phase 200 to 230VAC 50/60Hz		—		
		Permissible voltage fluctuation	—														1-phase 170 to 253VAC		—		
		Permissible frequency fluctuation	—														±5% max.		—		
		Power consumption (W)	—														50		—		
Mass (kg [lb])	—														22 (48.5)		—				

Notes: 1. Rated output and rated speed of the servo motor used in combination with the servo amplifier are as indicated when using the power supply voltage and frequency listed. The torque drops when the power supply voltage is less than specified.

2. For torque characteristics applied when the servo amplifier is combined with a servo motor, refer to "servo motor torque characteristics" in this catalog.

3. The special specification model without a dynamic brake, MR-J2S-□A-ED or MR-J2S-□A1-ED, is also available.

4. The speed in 10V can be changed with the parameter No.25.

Amplifier Specifications

MR-J2S-A (400V) type

Servo amplifier model MR-J2S-		60A4	100A4	200A4	350A4	500A4	700A4 (-U□)	11KA4	15KA4	22KA4	30KA4	37KA4	45KA4	55KA4	
Converter unit model		—									MR-HP55KA4				
Servo amplifier	Control circuit power supply	Voltage/frequency	24VDC					1-phase 380 to 480VAC 50/60Hz							
		Permissible voltage fluctuation	20.4 to 27.6VDC					1-phase 323 to 528VAC							
		Permissible frequency fluctuation	—					±5% maximum							
		Power consumption (W)	25					50							
	Main circuit power supply	Voltage/frequency (Note 1)	3-phase 380 to 480VAC 50/60Hz (Note 2)									The servo amplifier's main circuit power is supplied from the converter unit.			
		Permissible voltage fluctuation	3-phase 323 to 528VAC												
		Permissible frequency fluctuation	±5% maximum												
	Control system		Sine-wave PWM control/current control system												
	Dynamic brake		Built-in						External option						
	Safety features		Overcurrent shutdown, regeneration overvoltage shutdown, overload shutdown (electronic thermal), servo motor overheat protection, encoder fault protection, regeneration fault protection, undervoltage/sudden power outage protection, overspeed protection, excess error protection												
	Position control mode	Maximum input pulse frequency	500kpps (when using differential receiver), 200 kpps (when using open collector)												
		Positioning feedback pulse	Resolution per encoder/servo motor rotation: 131072 p/rev												
		Command pulse multiple	Electronic gear A/B multiple, A: 1 to 65535 or 131072, B: 1 to 65535 1/50 < A/B < 500												
		Positioning complete width setting	0 to ±10000 pulses (command pulse unit)												
		Excess error	±2.5 rotations												
		Torque limit	Set by parameters or external analog input (0 to +10VDC/maximum torque)												
	Speed control mode	Speed control range	Analog speed command 1:2000, internal speed command 1:5000												
		Analog speed command input	0 to ±10VDC/rated speed (Note 3)												
		Speed fluctuation rate	±0.01% maximum (load fluctuation 0 to 100%) 0% (power fluctuation ±10%) ±0.2% maximum (ambient temperature 25°C±10°C [77°F±50°F]), when using analog speed command												
		Torque limit	Set by parameters or external analog input (0 to +10VDC/maximum torque)												
Torque control mode	Analog torque command input	0 to ±8VDC/maximum torque (input impedance 10 to 12kΩ)													
	Speed limit	Set by parameters or external analog input (0 to ±10VDC/rated speed)													
Structure		Self-cooling, open (IP00)	Fan cooling, open (IP00) (Note 4)												
Environment	Ambient temperature	0 to 55°C (32 to 131°F) (non freezing), storage: -20 to 65°C (-4 to 149°F) (non freezing)													
	Ambient humidity	90% RH maximum (non condensing), storage: 90% RH maximum (non condensing)													
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust													
	Elevation	1000m (3280ft) or less above sea level													
	Vibration	5.9m/s ² maximum													
Mass (kg [lb])	2.1 (4.6)	2.2 (4.8)	2.2 (4.8)	5 (11)	5 (11)	7.2 (15.9)	15 (33)	16 (35.3)	20 (44.1)	36 (79.3)	47 (103.5)	47 (103.5)	47 (103.5)		
Converter unit	Main circuit power supply	Voltage/frequency (Note 1)	—									3-phase 380 to 480VAC 50/60Hz (Note 2)			
		Permissible voltage fluctuation	—									3-phase 323 to 528VAC			
		Permissible frequency fluctuation	—									±5% maximum			
	Control circuit power supply	Voltage/frequency	—									1-phase 380 to 480VAC 50/60Hz			
		Permissible voltage fluctuation	—									1-phase 323 to 528VAC			
		Permissible frequency fluctuation	—									±5% maximum			
		Power consumption (W)	—									50			
	Mass (kg [lb])	—									22 (48.5)				

- Notes: 1. Rated output and rated speed of the servo motor used in combination with the servo amplifier are as indicated when using the power supply voltage and frequency listed. The torque drops when the power supply voltage is less than specified.
2. For torque characteristics applied when the servo amplifier is combined with a servo motor, refer to "servo motor torque characteristics" in this catalog.
3. The speed in 10V can be changed with the parameter No.25.
4. For the structure of MR-J2S-60A4, "Self-cooling, open (IP00)" is applied.

Amplifier Specifications

MR-J2S-B (100V/200V) type

Servo amplifier model MR-J2S-		10B	20B	40B	60B	70B (-U□)	100B	200B	350B	500B	700B	11KB	15KB	22KB	30KB	37KB	10B1	20B1	40B1			
Converter unit model		—														MR-HP30KA		—				
Servo amplifier	Control circuit power supply	Voltage/frequency		1-phase 200 to 230VAC 50/60Hz														1-phase 100 to 120VAC 50/60Hz				
		Permissible voltage fluctuation		1-phase 170 to 253VAC														1-phase 85 to 127VAC				
		Permissible frequency fluctuation		±5% maximum														±5% maximum				
		Power consumption (W)		50														50				
	Main circuit power supply	Voltage/frequency (Note 1)		3-phase 200 to 230VAC 50/60Hz or 1-phase 230VAC 50/60Hz (Note 2)				3-phase 200 to 230VAC 50/60Hz (Note 2)				The servo amplifier's main circuit power is supplied from the converter unit.				1-phase 100 to 120VAC 50/60Hz (Note 2)						
		Permissible voltage fluctuation		3-phase 200 to 230VAC: 170 to 253VAC 1-phase 230VAC: 207 to 253VAC				3-phase 170 to 253VAC								1-phase 85 to 127VAC						
		Permissible frequency fluctuation		±5% maximum														±5% maximum				
	Control system		Sine-wave PWM control/current control system																			
	Dynamic brake		Built-in (Note 3)										External option				Built-in (Note 3)					
	Safety features		Overcurrent shutdown, regeneration overvoltage shutdown, overload shutdown (electronic thermal), servo motor overheat protection, encoder fault protection, regeneration fault protection, undervoltage/sudden power outage protection, overspeed protection, excess error protection																			
	Maximum command input at the position control		Approximately 10Mpps																			
	Structure		Self-cooling, open (IP00)						Fan cooling, open (IP00)						Self-cooling, open (IP00)							
	Environment	Ambient temperature		0 to 55°C (32 to 131°F) (non freezing), storage: -20 to 65°C (-4 to 149°F) (non freezing)																		
		Ambient humidity		90% RH maximum (non condensing), storage: 90% RH maximum (non condensing)																		
		Atmosphere		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust																		
Elevation		1000m (3280ft) or less above sea level																				
Vibration		5.9m/s ² maximum																				
Mass (kg [lb])		0.7 (1.5)	0.7 (1.5)	1.1 (2.4)	1.1 (2.4)	1.7 (3.7)	1.7 (3.7)	2.0 (4.4)	2.0 (4.4)	4.9 (10.8)	7.2 (15.9)	15 (33)	16 (35.3)	20 (44.1)	47 (103.5)	47 (103.5)	0.7 (1.5)	0.7 (1.5)	1.1 (2.4)			
Converter unit	Main circuit power supply	Voltage/frequency (Note 1)		—														3-phase 200 to 230VAC 50/60Hz (Note 2)		—		
		Permissible voltage fluctuation		—														3-phase 170 to 253VAC		—		
		Permissible frequency fluctuation		—														±5% max.		—		
	Control circuit power supply	Voltage/frequency		—														1-phase 200 to 230VAC 50/60Hz		—		
		Permissible voltage fluctuation		—														1-phase 170 to 253VAC		—		
		Permissible frequency fluctuation		—														±5% max.		—		
		Power consumption (W)		—														50		—		
Mass (kg [lb])		—														22 (48.5)		—				

- Notes: 1. Rated output and rated speed of the servo motor used in combination with the servo amplifier are as indicated when using the power supply voltage and frequency listed. The torque drops when the power supply voltage is less than specified.
2. For torque characteristics when combined with a servo motor, refer to "servo motor torque characteristics" in this catalog.
3. The special specification model without a dynamic brake, MR-J2S-□B-ED or MR-J2S-□B1-ED, is also available.

Amplifier Specifications

MR-J2S-B (400V) type

Servo amplifier model MR-J2S-		60B4	100B4	200B4	350B4	500B4	700B4 (-U□)	11KB4	15KB4	22KB4	30KB4	37KB4	45KB4	55KB4	
Converter unit model		—									MR-HP55KA4				
Servo amplifier	Control circuit power supply	Voltage/frequency	24VDC						1-phase 380 to 480VAC 50/60Hz						
		Permissible voltage fluctuation	20.4 to 27.6VDC						1-phase 323 to 528VAC						
		Permissible frequency fluctuation	—						±5% maximum						
		Power consumption (W)	25						50						
	Main circuit power supply	Voltage/frequency (Note 1)	3-phase 380 to 480VAC 50/60Hz (Note 2)										The servo amplifier's main circuit power is supplied from the converter unit.		
		Permissible voltage fluctuation	3-phase 323 to 528VAC												
		Permissible frequency fluctuation	±5% maximum												
	Control system		Sine-wave PWM control/current control system												
	Dynamic brake		Built-in						External option						
	Safety features		Overcurrent shutdown, regeneration overvoltage shutdown, overload shutdown (electronic thermal), servo motor overheat protection, encoder fault protection, regeneration fault protection, undervoltage/sudden power outage protection, overspeed protection, excess error protection												
	Maximum command input at the position control		Approximately 10Mpps												
	Structure		Self-cooling, open (IP00)	Fan cooling, open (IP00)											
	Environment	Ambient temperature	0 to 55°C (32 to 131°F) (non freezing), storage: -20 to 65°C (-4 to 149°F) (non freezing)												
		Ambient humidity	90% RH maximum (non condensing), storage: 90% RH maximum (non condensing)												
		Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust												
		Elevation	1000m (3280ft) or less above sea level												
Vibration		5.9m/s ² maximum													
Mass (kg [lb])		2.1 (4.6)	2.2 (4.8)	2.2 (4.8)	5 (11)	5 (11)	7.2 (15.9)	15 (33)	16 (35.3)	20 (44.1)	36 (79.3)	47 (103.5)	47 (103.5)	47 (103.5)	
Converter unit	Main circuit power supply	Voltage/frequency (Note 1)	—									3-phase 380 to 480VAC 50/60Hz (Note 2)			
		Permissible voltage fluctuation	—									3-phase 323 to 528VAC			
		Permissible frequency fluctuation	—									±5% maximum			
	Control circuit power supply	Voltage/frequency	—									1-phase 380 to 480VAC 50/60Hz			
		Permissible voltage fluctuation	—									1-phase 323 to 528VAC			
		Permissible frequency fluctuation	—									±5% maximum			
		Power consumption (W)	—									50			
Mass (kg [lb])		—									22 (48.5)				

Notes: 1. Rated output and rated speed of the servo motor used in combination with the servo amplifier are as indicated when using the power supply voltage and frequency listed. The torque drops when the power supply voltage is less than specified.
 2. For torque characteristics when combined with a servo motor, refer to "servo motor torque characteristics" in this catalog.