Changes for the Better



MELSERVO-J2-Super



Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001(standards for quality assurance management systems)





Servo Amplifier Series and Servo Motor Models

1. Flexible specifications corresponding to users' needs



Notes: 1. The capacity selection software (MRZJW3-MOTSZ111E) can be obtained for free. Contact Mitsubishi for details.

 Indicates compliance with standard parts. O indicates compliance with special parts.
 For further details of the fully closed loop control compatible servo amplifier, refer to "Fully Closed Loop Control Compatible INSTRUCTION MANUAL". 4. Use the manual pulse generator (MR-HDP01).

5. For further details of MR-J2M, refer to "MELSERVO-J2M Series SERVO AMPLIFIER INSTRUCTION MANUAL".

6. The expansion IO unit (MR-J2M-D01) is required. 7. Compatible with MR-J2S-_CP-S084.

This

 indicates "Override" and "Analog torque limit" command.

 Actual product availability may vary according to region.

		Rated speed	mum speed) (r/min) Hated output (kW) With electro- magnetic brake (B) Outbound EN UL cUL level (Note 2) 3000 (4500) 5 types 0.05, 0.1, 0.2, 0.4, 0.75 0.4 •				Protection		Application	
	Motor series (Note 7)	(maximum speed) (r/min)		Features	Application examples					
es	HC-KFS series	3000 (4500)	0.05, 0.1, 0.2, 0.4,	•	•	•	Excluding the shaft- through portion and connector	Low inertia Perfect for general industrial machines. Ultra-high velocity	 Belt drive Robots Mounters Sewing machines X-Y tables Food processing machines 	
Small capacity series	-100	6000 (6000)		_	•	•	Excluding	motors, 6000 or 10000r/min, have been prepared.	 Semiconductor manufacturing devices 	
iall capa		10000 (10000)		_	٠	•	through portion		Knitting and embroidery machines	
L.S.	HC-MFS series			•	•	•	Excluding the shaft- through portion and connector	Ultra-low inertia Well suited for high- frequency operation.	 Inserters Mounters 	
	HC-SFS series	1000 (1500 : 0.85kW 1200 : 1.2~3kW)	0.85, 1.2,	•	•	•	IP65			
ω		2000 (3000 : 0.5~1.5kW (2500 : 2, 3.5kW 2000 : 5, 7kW	0.5, 1.0, 1.5, 2.0, 3.5, 5.0, 7.0 0.5, 1.0, 1.5, 2.0,	•	•	•	IP65	Medium inertia Three models, from low to high-speed, are available for various applications.	 Material handling systems Robots X-Y tables 	
acity serie		3000 (3000)	0.5, 1.0, 1.5, 2.0,	•	•	•	IP65			
Medium capacity series	HC-LFS series	2000 (3000)	0.5, 1.0, 1.5, 2.0,	•	•	•	IP65	Low inertia Perfect for general industrial machines.	 Roll feeders Loaders and unloaders High-frequency material handling systems 	
	HC-RFS series	3000 1.0, 1.5, (4500) 2.0, 3.5,		•	•	•	IP65	Ultra-low inertia Well suited for high- frequency operation.	Ultra-high- frequency material handling systems	
y series	HA-LFS series	1000 (1200)	16 types 6.0, 8.0, 12, 15, 20, 25, 30, 37 6.0, 8.0, 12, 15, 20, 25, 30, 37	(For only 6.0kW to 12kW	•	•	IP44	Low inertia Three models, from low to medium- speed, are available	 Injection molding machines Semiconductor manufacturing 	
Medium/Large capacity series		1500 (2000)	14 types 7.0, 11, 15, 22, 30, 37 7.0, 11, 15, 22, 30, 37, 45, 50	(For only (7.0kW to 15kW	•	•	IP44	for various applications. As standard, 30kW and larger capacities are	equipment Large material handling systems	
Medium		2000 (2000)	14 types 5.0, 7.0, 11, 15, 22, 30, 37 11, 15, 22, 30, 37, 45, 55	(For only 11kW to 22kW	•	•	IP44 IP65 for HA-LFS502 or HA-LFS702	compatible with flange mounting or leg mounting. (Note 6)		
l/Medium / series	HC-UFS series	2000 (3000 : 0.75~2kW) (2500 : 3.5, 5kW)	5 types 0.75, 1.5, 2.0, 3.5, 5.0	•	•	•	IP65	Flat type The flat design makes this unit well	 Robots Food processing machines 	
Flat Small/Medium capacity series		3000 (4500) 0.1, 0 0.4, 0		•	•	•	IP65 Excluding the connector (Note 4)	suited for situations where the installation space is restricted.		

Notes: 1. A ● mark shows production range.
2. The protection level inside () can be complied with special products. Consult Mitsubishi for details.
3. Motor capacity 50W is excluded.
4. IP65-compliant product (HC-UFS□-S1) including connector components is also available.

are for 400V type.
 Some motors from 15 to 25kW capacities can be mounted with the legs. Refer to "Motor Dimensions" shown in this catalog.
 Actual product availability may vary according to region.

2. High Functionality, High Performance

High-resolution Encoder 131072p/rev (17bit)

- The inclusion of a high-resolution encoder ensures high performance and stability at low speeds.
- Motor sizes are the same as previous products and wiring is compatible.

High-performance CPU Incorporated for Improved Response

• The application of a high-performance CPU has enhanced response significantly. Speed loop frequency response is improved to 550Hz or more.

The MR-J2-Super series are the best choice for use in high-speed positioning applications.

Absolute encoder is Standard Equipment

• The absolute positioning method, which does not require home position return, can be used by adding a battery to the servo amplifier. The servo motor does not need to be replaced.

SSCNET, high-speed serial bus compatible: B type

- A completely synchronized system can be made using SSCNET utilizing high-speed serial communication with cycle times of up to 0.888ms between controller and amplifier. Such a system will provide high levels of reliability with high levels of performance.
- As the SSCNET bus system is used to connect the servo system together, the consolidated management features such as servo amplifier parameter settings and data gathering are all present in the motion controller.
- A dedicated cable is used for the SSCNET system that simply connects the amplifiers and controllers. This simple connection method reduces wiring time and also helps to prevent noise (due to the serial data transfer when using SSCNET).
- The command frequency is not limited even when using the high resolution encoders standard on the MELSERVO-J2-Super series products.
- SSCNET is a completely synchronized network, so synchronized control and synchronized starting for advanced interpolation etc. can all be carried out.
- An absolute system can be made by simply adding a battery to the Servo amplifier.
- More than 1,000,000 SSCNET amplifier units of this highly reliable network are in use.

Global standard

142.5

• Wiring is reduced, and trouble caused by incorrect wiring is prevented.



CEU

TÜV Rheinland

3. Optimum Tuning

Easy tuning

Model Adaptive Control/ Advanced Real-time Auto-tuning



The load inertia moment (machine system's ideal model) is automatically estimated by the auto-tuning function.

Stable control is carried out following the ideal model estimated by the model adaptive control.

A simple parameter change allows gain settings to change, tuning the Servo

High performance tuning :Perfect Tuning using Personal Computer and MR configurator (Setup Software)

• When machine resonates

Machine Analysis Function The servo motor is automatically oscillated, and the machine system's frequency characteristics are analyzed. The "Machine Resonance Suppression Filter" can be set easily based on the result.



When thinking about changing motors
When thinking about changing command patterns

Machine Simulation Function

The performance can be confirmed without actually replacing the motor. The results of the machine analysis function can be read in, and the response in the machine system can be simulated.



• To see the motor state

Monitor/Diagnostic Function

The graph function to display the motor state, such as the motor's speed and torque, and functions to diagnose the motor state at an alarm occurance are provided.



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Note: The cables and connectors in the section "Options
Cables and connectors" in this catalog are sold separately. The motor power supply connector is different for each motor, so carefully look through this catalog before ordering.

Model Configurations

■ For servo amplifier 100V/200V

Mitsubishi general-purpose

AC servo amplifier

MELSERVO-J2-Super Series





Symbol	Power supply
None	3-phase 200VAC or 1-phase 230VAC (Note 1)
1	1-phase 100VAC (Note 2)

CL: Program operation function built-in (Note) Note: The MR-J2S-CP type and CL type are compatible with the 0.05 to 7kW capacity motors.

CP: Positioning function built-in (Note)

A : General-purpose interface

B : SSCNET compatible

Notes: 1. The 1-phase 230VAC is available only for the MR-J25-70 or smaller servo amplifiers. 2. Only for the MR-J2S-40 1 or smaller servo amplifiers.

Conform followin standar EN, UL

A conve (MR-HP required 30kW o amplifie

	Lis	st of compatib	le motors			۷.	Only for the MR-J25-40	
	Symbol	HC-KFS	HC-MFS	HC-SFS	HC-LFS	HC-RFS	HA-LFS	HC-UFS
is to	10	053, 13	053, 13		—	_		13
3	20	23	23		—		—	23
s:	40	43	43		_		—	43
nd cUL	60	—		52, 53	52		—	—
	70	73, 46, 410	73	—	—	—	—	72, 73
	100	—	—	81, 102, 103	102	_	—	_
ter unit	200 —		—	121, 201, 152, 202, 153, 203	152	103, 153	—	152
OKA) is	350		_	301, 352, 353	202	203		202
•	500			502	302	353, 503	502	352, 502
for the arger	700	—	—	702	—	—	601, 701M, 702	—
	11K			—	—			—
	15K	—	_	—	—	_	15K1, 15K1M, 15K2	—
	22K	_	_	—	—	_	20K1, 25K1, 22K1M, 22K2	_
	30K	—	_	—	—	—	30K1, 30K1M, 30K2	—
	37K	—	_	—	—	—	37K1, 37K1M, 37K2	—

Note: some motors that a annot be co depending on the amplifier's software version. Refer to the servo motor specifications in this catalog

■For servo amplifier 400V

	pme	1007			
MR-J	23	S- <u>30K</u>	4-		
Mitsubishi general- AC servo ampl MELSERVO-J2-Sup	lifier	A: General-pr B: SSCNET	Special product urpose interface 3-phase 400VAC		
	L	ist of compatible motors			
Conforms to	Symbol	HC-SFS	HA-LFS		
	60	524	_		
following standards:	100	1024	_		
EN, UL and CUL	200	1524, 2024	_		
EN, OL and COL	350	3524	_		
• A converter unit	500	5024	—		
(MR-HP55KA4) is	700	7024	6014, 701M4		
required for the	11K	—	8014, 12K14, 11K1M4, 11K24		
30kW or larger	15K	_	15K14, 15K1M4, 15K24		
amplifier.	22K	—	20K14, 22K1M4, 22K24		
ampimer.	30K		25K14, 30K14, 30K1M4, 30K24		
	37K	—	37K14, 37K1M4, 37K24		
	45K	—	45K1M4, 45K24		
	55K	_	50K1M4, 55K24		

Note: There are some motors that cannot be connected depending on the amplifier's software version. Refer to the servo motor specifications in this catalog



■F	or se	erv	o motor 400V										
		\-	LFS	3(0K		24	· [B				
				1						Symbol None	Shaft of Standard (Stra	-	
	nbol -SFS	Mod	Motor series ium inertia, medium capacity		400VAC type				e	К	Key way (Note)		
	-LFS		ow inertia, medium-large capacity							in this	o "Special shaft end catalog for the con tailed specifications.		
	Symb	ol	Rated output (kW)		Symbol	Rated s	oeed (r/min)		Symbol	Electrom	agnetic brake		
	5		0.5		1	1	000		None		None		
	10 to	80	1.0 to 8.0		1M	1	500		В	In	stalled		
	11K to 55	-	11 to 55		2	2	2000		in this		netic brake specifica e compatible models s.		

Conforms to following

standards: EN, UL and cUL

HC-KFS series servo motor specifications

	Ser	vo motor series		HC-KFS serie	es (Low inertia, sr	nall capacity)			gh velocity series mall capacity)
	Models	Servo motor model HC-KFS	053 (B)	13 (B)	23 (B)	43 (B)	73 (B)	46	410
Spe	cifications	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
	Power facility	/ capacity (Note 2) (kVA)	0.3	0.3	0.5	0.9	1.3	0.9	0.9
	Continuous	Rated output (W)	50	50 100 200 400 750				40	00
	running duty	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 to	rque (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	l (r/min)			3000			6000	10000
	Maximum sp	eed (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 currer	nt (A)	0.83	0.71	1.1	2.3	5.8	2.9	2.9
	Maximum cu	irrent (A)	2.5	2.2	3.4	6.9	18.6	12.9	14.5
	Regenerative braking frequency (times/min)	With no options	(Note 5)	(Note 5)	(Note 5)	220	190	110	55
õ		ency MR-RB032 (30W)	(Note 5)	(Note 5)	(Note 5)	660	280	160	80
motor		MR-RB12 (100W)	—	—	(Note 5)	2200	940	550	275
Servo	(Note 3, 4)	MR-RB32 (300W)	—	—	—	—	2800	1650	825
Se	Moment of ine J (×10 ⁻⁴ kg·m ²)		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)
	[J (oz·in ²)]	With electromagnetic brake	0.056 (0.306)	0.087 (0.476)	0.310 (1.695)	0.510 (2.788)	1.635 (8.938)	—	—
	Recommended lo	bad/motor inertia moment ratio (Note 6)	Max. 1	5 times	Max. 24 times	Max. 22 times		Max. 15 times	
	Speed/positi	on detector		17-bit encod	ler (Resolution pe	er encoder/servo	motor rotation: 13	31072 p/rev)	
	Attachments					—			
	Structure			Totally	enclosed non ver	ntilated (protectio	n level: IP55) (No	ote 1, 7)	
		Ambient temperature	0	to 40°C (32 to 1	04°F) (non freezir	ng), storage: -15	to 70°C (5 to 158	3°F) (non freezing)
	Environment	Ambient humidity		80% RH maximu	m (non condensi	ng), storage: 90%	6 RH maximum (I	non condensing)	
		Atmosphere		Indoors (no di	rect sunlight); no	corrosive gas, in	flammable gas, o	oil mist or dust	
		Elevation/vibration (Note 8)	1000	m (3280ft) or less	above sea level	; X: 49m/s ² Y: 49)m/s²	1000m (3280ft) or less abo	ove sea level; X, Y: 19.6m/s ²
	Mass	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)
	(kg [lb])	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.

The regenerative braking frequency of the 600W or smaller serve amplifier may fluctuate with the affect of the power voltage due to the large energy ratio charged to the electrolic capacitor in the serve amplifier may fluctuate with the affect of the power voltage due to the large energy ratio charged to the electrolic capacitor in the serve amplifier may fluctuate with the affect of the power voltage due to the large energy ratio charged to the electrolic capacitor in the serve amplifier may fluctuate within the rated torque range. However, the load/motor of inertia moment ratio must be within the value in the table above

5 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

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). Freting 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.

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

HC-KFS series servo motor torque characteristics



HC-MFS series servo motor specifications

	Servo r	notor series		HC-MFS ser	ies (Ultra-low inertia, sn	nall capacity)			
	Models	Servo motor model HC-MFS	053 (B)	13 (B)	23 (B)	43 (B)	73 (B)		
Sp	ecifications	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		
	Power facility capa	acity (Note 2) (kVA)	0.3	0.3	0.5	0.9	1.3		
	Continuous	Rated output (W)	50	100	200	400	750		
	running duty	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 (I	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/mir	n)		·	3000				
	Maximum speed (I	r/min)			4500				
	Permissible instanta	neous speed (r/min)			5175				
	Power rate at conti	nuous 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		
or		MR-RB032 (30W)	(Note 5)	(Note 5)	(Note 5)	3000	600		
Servo motor		MR-RB12 (100W)	—	_	(Note 5)	(Note 5)	2400		
UV0		MR-RB32 (300W)	—	—	_	—	(Note 5)		
Se	Moment of inertia J (×10 ⁻⁴ kg·m ²)	Standard	0.019 (0.104)	0.03 (0.164)	0.088 (0.481)	0.143 (0.782)	0.6 (3.28)		
	[J (oz·in2)]	With electromagnetic brake	0.022 (0.12)	0.032 (0.175)	0.136 (0.743)	0.191 (1.044)	0.725 (3.963)		
	Recommended loa	d/motor inertia moment ratio	30 times the servo motor's inertia moment maximum (Note 6)						
	Speed/position de	tector	17-bit encoder (Resolution per encoder/servo motor rotation: 131072 p/rev)						
	Attachments				—				
	Structure			Totally enclosed non	ventilated (protection le	evel: IP55) (Note 1, 7)			
		Ambient temperature	0 to 40°C	C (32 to 104°F) (non fre	ezing), storage: -15 to	70°C (5 to 158°F) (non f	reezing)		
	Environment	Ambient humidity	80% RH	l maximum (non conde	ensing), storage: 90% R	H maximum (non conde	ensing)		
	Littinoriment	Atmosphere	Indoo	ors (no direct sunlight);	no corrosive gas, inflar	mmable gas, oil mist or	dust		
		Elevation/vibration (Note 8)		1000m (3280ft	t) or less above sea leve	el; X, Y: 49 m/s ²			
	Mass	Standard	0.4 (0.88)	0.53 (1.17)	0.99 (2.18)	1.45 (3.19)	3.0 (6.61)		
	(kg [lb])	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.

 The power facility capacity varies depending on the power supply's impedance.
 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 The regenerative braining inequency shows the permissible inequency when the indico without a load becelerates from the rated speed to stop, when a load is connected, however, 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.

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

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). Freting 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



HC-SFS series servo motor specifications (200VAC type)

	Sei	vo motor series	- HC-SES1000	r/min series (Med	hium inertia medi	ium canacity)	HC-SFS2000 r/min series			
		Servo motor model HC-SFS	81 (B)	121 (B)	201 (B)	301 (B)	52 (B)	102 (B)	152 (B)	
Specif	ications	Servo-amp model (Note 7) MR-J2S-	100A/B/CP/CL (Note 8)	. ,	/CP/CL	350A/B/CP/CL (Note 8)	60A/B/CP/CL	100A/B/CP/CL	200A/B/CP/CL	
		cility capacity (Note 1) (kVA)	1.5	2.1	3.5	4.8	1.0	1.7	2.5	
	Continuous	Rated output (kW)	0.85	1.2	2.0	3.0	0.5	1.0	1.5	
	running duty	Rated torque (N·m [oz·in])	8.12 (1149.8)	11.5 (1628.4)	19.1 (2704.6)	28.6 (4049.8)	2.39 (338.4)	4.78 (676.8)	7.16 (1013.9)	
	Maximum	n torque (N·m [oz·in])	24.4 (3455.0)	34.4 (4871.0)	57.3 (8113.7)	85.9 (12163.4)	7.16 (1013.9)	14.4 (2039.0)	21.6 (3058.6)	
	Rated sp	eed (r/min)		10	00			2000		
	Maximum	n speed (r/min)	1500		1200			3000		
	Permissib	le instantaneous speed (r/min)	1725		1380			3450		
	Power rate	at continuous rated torque (kW/s)	32.9	30.9	44.5	81.3	8.7	16.7	25.6	
	Rated cu	rrent (A)	5.1	7.1	9.6	16	3.2	6	9	
	Maximum	n current (A)	15.3	21.3	28.8	48	9.6	18	27	
		With no options	140	240	100	84	56	54	136	
		MR-RB032 (30W)	220	—	—	—	165	80	—	
	Regenerative braking frequene	, MR-RB12 (100W)	740	—	—	—	560	270	—	
		Jency MR-RB30 (300W)	—	730	330	250	_	—	408	
otor	(times/min)	MR-RB31 (300W)	—	—	—	—	_	_	—	
Ĕ	(Note 2, 3)	MR-RB32 (300W)	2220	—		—		810	—	
Servo motor		MR-RB50 (500W) (Note 6)	_	1216	550	430			680	
Se		MR-RB51 (500W) (Note 6)	_			—			—	
	Moment of in	nertia 1 ²) Standard	20.0 (109)	42.5 (232)	82.0 (448)	101 (552)	6.6 (36.1)	13.7 (74.9)	20.0 (109)	
	[J (oz·in ²)]	with electromagnetic brake	22.0 (120)	52.5 (287)	92.0 (503)	111 (607)	8.6 (47.0)	15.7 (85.8)	22.0 (120)	
	Recommen	ded load/motor inertia moment ratio				tor's inertia mome	``	,		
		osition detector		17-bit enco	der (Resolution p	er encoder/servo i	motor rotation: 13	1072 p/rev)		
	Attachme	ents				Oil seal				
	Structure				,	on ventilated (prot		,		
		Ambient temperature	(, ,	ng), storage: -15 t		,		
		Ambient humidity				ng), storage: 90%		8,		
	Environm	Atmosphere		Indoors (no d	0 ,.	corrosive gas, inf	e .	I mist or dust		
		Elevation			1000m (32	80ft) or less abov	e sea level			
		Vibration (Note 5)	X,Y : 24.5m/s ²	X : 24 Y : 49	.5m/s² m/s²	X : 24.5m/s ² Y : 29.4m/s ²		X,Y : 24.5m/s ²		
	Mass	Standard	9 (19.8)	12 (26.4)	19 (41.9)	23 (50.7)	5 (11.0)	7 (15.4)	9 (19.8)	
	(kg [lb])	With electromagnetic brake	11 (24.2)	18 (39.7)	25 (55.1)	29 (63.9)	7 (15.4)	9 (19.8)	11 (24.2)	

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

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 regenerative 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 regeneration 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).

3. 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 serve amplifier. 4. Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table

HC-SFS series servo motor torque characteristics (200VAC type)



(Medium inertia, m	edium capacity)			НС	C-SFS3000 r/min se	eries (Medium inert	ia. medium capac	itv)
202 (B)	352 (B)	502 (B)	702 (B)	53 (B)	103 (B)	153 (B)	203 (B)	353 (B)
200A/B/CP/CL	350A/B/CP/CL	500A/B/CP/CL (Note 9)	700A/B/CP/CL (Note 9)	60A/B/CP/CL (Note 10)	100A/B/CP/CL (Note 10)	200A/B (Note	/CP/CL e 10)	350A/B/CP/CL (Note 10)
3.5	5.5	7.5	10.0	1.0	1.7	2.5	3.5	5.5
2.0	3.5	5.0	7.0	0.5	1.0	1.5	2.0	3.5
9.55 (1352.3)	16.7 (2364.7)	23.9 (3384.2)	33.4 (4729.4)	1.59 (225.1)	3.18 (450.3)	4.78 (676.8)	6.37 (902.0)	11.1 (1571.8)
28.5 (4035.6)	50.1 (7094.2)	71.6 (10138.6)	100 (14160)	4.77 (675.4)	9.55 (1352.3)	14.3 (2024.9)	19.1 (2704.6)	33.4 (4729.4)
	20	00				3000		
 25			00			3000		
 28			00		7.4	3450	0.5	45.4
 21.5	34.1	56.5	69.7	3.8	7.4	11.4	9.5	15.1
 11	17	26	35	3.2	5.3	8.6	10.4	16.4
33	51	84	105	9.6	15.9	25.8	31.2	49.2
64	31	39	32	25 73	24 36	82	24	14
				250	120			
 192	95	90		230	120	250	70	42
 192	95	90	57				70	42
 					360			
320	158	150				410	110	70
 			95			410		
 42.5 (232)	82.0 (448)	101(552)	160 (875)	6.6 (36.1)	13.7 (74.9)	20.0 (109)	42.5 (232)	82.0 (448)
52.5 (287)	92.0 (503)	111 (607)	170 (929)	8.6 (47.0)	15.7 (85.8)	22.0 (120)	52.5 (287)	92.0 (503)
	(000)	. ,	· · ·	. ,	nt maximum (Note	()	(-0.)	(000)
					motor rotation: 1310	,		
			,	Oil seal		. ,		
			Totally enclosed n	on ventilated (prote	ection level: IP65)			
		0 to 40°C (32 to			o 70°C (5 to 158°F)) (non freezing)		
		80% RH maxir	num (non condens	ing), storage: 90%	RH maximum (nor	condensing)		
		Indoors (no	direct sunlight); no	corrosive gas, infl	ammable gas, oil n	nist, or dust		
			1000m (32	280ft) or less above	e sea level			
X : 24	5m/s ²		.5m/s ²		X,Y : 24.5m/s ²		X : 24	.5m/s ²
Y : 49	m/s²	Y : 29	.4m/s²		A, T. 24.011/S ²		Y : 49	m/s²
12 (26.4)	19 (41.9)	23 (50.7)	32 (70.5)	5 (11)	7 (15.4)	9 (19.8)	12 (26.4)	19 (41.9)
 18 (39.7)	25 (55.1)	29 (63.9)	38 (83.7)	7 (15.4)	9 (19.8)	11 (24.2)	18 (39.7)	25 (55.1)
7. MR-J2S-CCF 8. The HC-SFS A type: Versio 9. The HC-SFS A type, B typ 10. The HC-SFS	1000r/min series is co on A1 or above 2000r/min series 5.0k e: Version B0 or above	ible. The compatible i mpatible with the follo W/7.0kW is compatible	motor is the same as f wing amplifier softwa e with the following an owing amplifier softwa	re version: nplifier software versio	on:			× Trinin
(1-20) (1-20)	Peak (Li, ZO) ange of bo	HC-SFS352 (1 8400 5600 2800 2800 20 20 Continue running 1000 Speed (r/m	11200	Peak 9 60 running	16800 12 (1-2) 12 10-2 10-2 12 12 12 12 12 12 12 12 12 1	0 – Peak running – range)	
(u;z) anbor 280 2 280 2 0 0 0 0	3 (B) (Note 1, 2)	560 d Continuo 0 0 1000	B) (Note 1) hing range us running 2000 3000 0 (r/min)	Peak running ra	ange (1700) (1700) 1960 - 1000 1960 - 1000 1970 - 100	Peak running range Continuous running range 0 Continuous running range 1000 2000 30 Speed (r/min)	5460 (128) 99 3640 1820 1320 1320 1320 1320 1320 1320 1320 13	353 (B) (Note 1)

HC-SFS series servo motor specifications (400VAC type)

	Servo r	notor series		HC-S	SFS2000 r/min se	ries (Medium ine	rtia, medium capa	acity)				
	Models Ser	vo motor model HC-SFS	524 (B)	1024 (B)	1524 (B)	2024 (B)	3524 (B)	5024 (B)	7024 (B)			
Specif	ications Ser	vo-amp model MR-J2S-	60A4/B4	100A4/B4	200A	4/B4	350A4/B4	500A4/B4	700A4/B4			
	Power facility	capacity (Note 1) (kVA)	1.0	1.7	2.5	3.5	5.5	7.5	10.0			
	Continuous Ra	ted output (kW)	0.5	1.0	1.5	2.0	3.5	5.0	7.0			
	duty Ra	ted torque (N·m [oz·in])	2.39 (338.4)	4.78 (676.8)	7.16 (1013.9)	9.55 (1352.3)	16.7 (2364.7)	23.9 (3384.2)	33.4 (4729.4)			
	Maximum tor	que (N·m [oz·in])	7.16 (1013.9)	14.4 (2039.0)	21.6 (3058.6)	28.5 (4035.6)	50.1 (7094.2)	71.6 (10138.6)	100 (14160)			
	Rated speed	(r/min)				2000						
	Maximum sp	eed (r/min)		3000		25	00	20	00			
	Permissible in	stantaneous speed (r/min)		3450		28	75	23	00			
	Power rate at co	ontinuous rated torque (kW/s)	8.7	16.7	25.6	21.5	34.1	56.5	69.7			
	Rated curren	t (A)	1.5	2.8	4.4	5.4	8.6	14	17			
	Maximum cu	rrent (A)	4.5	8.4	13.2	16.2	25.8	42	51			
		With no options	56	54	136	64	31	39	32			
		MR-RB1L-4 (100W)	560	_	_	—	_	—	—			
		MR-RB3M-4 (300W)	_	810	—		_	—	—			
	Regenerative	MR-RB3H-4 (300W)	—	_	408	192	_	—	—			
2	braking frequency (times/min)	MR-RB5H-4 (500W) (Note 6)	—	—	680	320	_	—	—			
Servo motor	(Note 2, 3)	MR-RB3G-4 (300W)	—	—	—	—	95	90	_			
μo	(11010 2, 0)	MR-RB5G-4 (500W) (Note 6)	_	—	—	—	158	150	—			
er		MR-RB34-4 (300W)	—	—	—	—	_	_	57			
S		MR-RB54-4 (500W) (Note 6)	—	—	—	—	_	_	95			
	Moment of inertia	^a Standard	6.6 (36.1)	13.7 (74.9)	20.0 (109)	42.5 (232)	82.0 (448)	101 (552)	160 (875)			
	[J (oz·in ²)]	With electromagnetic brake	8.6 (47.0)	15.7 (85.8)	22.0 (120)	52.5 (287)	92.0 (503)	111 (607)	170 (929)			
	Recommended I	oad/motor inertia moment ratio	15 times the servo motor's inertia moment maximum (Note 4)									
	Speed/position	on detector	17-bit encoder (Resolution per encoder/servo motor rotation: 131072 p/rev)									
	Attachments					Oil seal						
	Structure			Т	otally enclosed n	on ventilated (pro	tection level: IP6	ō)				
		Ambient temperature		D to 40°C (32 to 1	04°F) (non freezi	ng), storage: –15	to 70°C (5 to 158	^{s°} F) (non freezing)				
		Ambient humidity		80% RH maximu	um (non condens	ing), storage: 90%	6 RH maximum (r	non condensing)				
	-	Atmosphere		Indoors (no d	lirect sunlight); no	corrosive gas, in	flammable gas, c	oil mist or dust				
	Environment	Elevation			1000m (32	80ft) or less abov	ve sea level					
		Vibration (Note 5)		X,Y : 24.5m/s ²		X : 24. Y : 49r		X : 24.5m/s ² Y : 29.4m/s ²				
	Mass	Mass Standard		7 (15.4)	9 (19.8)	12 (26.4)	19 (41.9)	23 (50.7)	32 (70.5)			
	(kg [lb])	With electromagnetic brake	7 (15.4)	9 (19.8)	11 (24.2)	18 (39.7)	25 (55.1)	29 (63.9)	38 (83.7)			
		ility conceity verice dependin										

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

 The gover radius daparty values depending on no power suppry simple and on the power radius.
 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 inverse). reductory in the regeneration heating value (W) while operating. Provisions must be made to keep the generated heat below the tolerable regenerative provisions must be made to keep the generated heat below the tolerable 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 heating value (W) while operating. Provisions must be made to keep the generated heat below the tolerable 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 heating value (W) while operating. Provisions must be made to keep the generated heat below the tolerable 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 heating value (W) while operating. Provisions must be made to keep the generated heat below the tolerable 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 heating value (W) while optional regeneration unit" in this section "Optional regeneration heating value (W) while optional regenerative resistor by using the Servo Support software. Refer to the section "Optional regeneration heating" optional regeneration heating value (W) while optional regeneration heating catalog for details on the tolerable regenerative power (W)

3. 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 serve amplifier. 4. Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.

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.
 Install a cooling fan (approx. 1.0m³/min, __92).
 The HC-SFS series 400V is compatible with the following amplifier software version:

• For 0.5kW to 2.0kW, A type: Version A2 or above • For 7.0kW, A type: Version A1 or above

HC-SFS series servo motor torque characteristics (400VAC type)



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HC-LFS series servo motor specifications

	Servo mot	or series		HC-LFS ser	ies (Low inertia, mediu	m capacity)			
	Models	Servo motor model HC-LFS	52 (B)	102 (B)	152 (B)	202 (B)	302 (B)		
Spe	ecifications	Servo-amp model (Note 7) MR-J2S-	60A/B/CP/CL (Note 8)	100A/B/CP/CL (Note 8)	200A/B/CP/CL (Note 8)	350A/B/CP/CL (Note 8)	500A/B/CP/CL (Note 8)		
	Power facility capa	city (Note 1) (kVA)	1.0	1.7	2.5	3.5	4.8		
	Continuous	Rated output (kW)	0.5	1.0	1.5	2.0	3.0		
	running duty	Rated torque (N·m [oz·in])	2.39 (338.4)	4.78 (676.8)	7.16 (1013.9)	9.55 (1352.3)	14.3 (2024.9)		
	Maximum torque (N	√m [oz·in])	7.16 (1013.9)	14.4 (2039.0)	21.6 (3058.6)	28.5 (4035.6)	42.9 (6074.6)		
	Rated speed (r/min)			2000				
	Maximum speed (r/	/min)			3000				
	Permissible instanta	aneous speed (r/min)			3450				
	Power rate at contin	nuous rated torque (kW/s)	17.9	49.7	80.1	41.5	56.8		
	Rated current (A)		3.2	5.9	9.9	14	23		
	Maximum current (/	А)	9.6	18	30	42	69		
	Regenerative braking frequency	With no options	115	160	425	120	70		
		MR-RB032 (30W)	340	235	—	—	—		
to		MR-RB12 (100W)	1150	800	—	—	—		
motor	(times/min)	MR-RB30 (300W)	—	—	1270	370	215		
Servo	(Note 2, 3)	MR-RB32 (300W)	—	2410	—	—	—		
Sei		MR-RB50 (500W) (Note 6)	—	—	2120	615	355		
	Moment of inertia	Standard	3.2 (17.5)	4.6 (25.1)	6.4 (35.0)	22 (120)	36 (197)		
	J (×10 ⁻⁴ kg·m ²) [J (oz·in ²)]	With electromagnetic brake	5.2 (28.4)	6.6 (36.1)	8.4 (45.9)	32 (175)	46 (251)		
	Recommended load	d/motor inertia moment ratio		10 times the servo	motor's inertia moment	maximum (Note 4)			
	Speed/position det	ector	17-bit encoder (Resolution per encoder/servo motor rotation: 131072 p/rev)						
	Attachments				Oil seal				
	Structure			Totally enclosed non v	ventilated (protection le	vel: IP65)			
		Ambient temperature	0 to 40°C	C (32 to 104°F) (non free	ezing), storage: -15 to	70°C (5 to 158°F) (non	freezing)		
	Environment	Ambient humidity	80% RH	I maximum (non conde	ensing), storage: 90% F	RH maximum (non conc	lensing)		
	Environmont	Atmosphere				mmable gas, oil mist or	dust		
		Elevation/vibration (Note 5)	1000m (3280ft) or le	ess above sea level/X:	9.8m/s ² Y: 24.5m/s ²	1000m (3280ft) or less above s	sea level/X: 19.6m/s ² Y: 49m/s ²		
	Mass	Standard	6.5 (14.3)	8.0 (17.6)	10.0 (22.0)	21 (46.3)	28 (61.7)		
	(kg [lb])	With electromagnetic brake	9.0 (19.8)	10.5 (23.1)	12.5 (27.5)	27 (59.5)	34 (74.9)		

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

2. 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 the value will be the table value((m+1), where methe load inertia momentum motor inertia moment. When the operating speed exceeds the rated speed, the regenerative tracking speed rated speed, the regenerative tracking speed rated speed. If the operating speed rated speed 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).

3. 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.

 Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.
 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 6. Install a cooling fan (approx. 1.0m³/min, []92).



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7. MR-J2S-_CP-S084 is also compatible. The compatible motor is the same as the MR-J2S-_CP. 8. The HC-LFS series is compatible with the following amplifier software version:

A type, B type: Version B3 or above CP type: Version A2 or above

HC-LFS series servo motor torque characteristics



HA-LFS 1000r/min series servo motor specifications (200VAC type)

	Servo motor series		HA-LF	S 1000r/min ser	ies (Low inertia	, medium capa	city to large ca	pacity)		
Models	Servo motor model HA-LFS	601 (B)	801 (B)	12K1 (B)	15K1	20K1	25K1	30K1	37K1 (Note 1)	
	Servo-amp model MR-J2S-	700A/B/CP/CL (-U058) (Note 8, 9)		(A/B e 10)	15KA/B (Note 10)		(A/B te 10)	30KA/B (Note 10)	37KA/B (Note 10)	
Specifications	Converter unit model		-	_			_		P30KA	
Power fac	cility capacity (Note 2) (kVA)	8.6	12	18	22	30	38	48	59	
Continuou		6.0	8.0	12	15	20	25	30	37 (75%ED)	
running d			76.4 (10818.2)			191 (27045.6)		286 (40497.6)		
Maximum	n torque (N·m [oz·in])	172 (24355.2)	229 (32426.4)	344 (48710.4)	415 (58764)	477 (67543.2)	597 (84535.2)	716 (101385.6)	883 (125032.8)	
	eed (r/min)	172 (24355.2) 229 (32426.4) 344 (48710.4) 415 (58764) 477 (67543.2) 597 (84535.2) 716 (101385.6) 883 (125032.8) 1000								
	n speed (r/min)				12	:00				
	ble instantaneous speed (r/min)					80				
Power rate	at continuous rated torque (kW/s)	313	265	445	373	561	528	626	668	
Rated cu	rrent (A)	34	42	61	83	118	118	154	188	
	n current (A)	102	126	183	249	295	295	385	470	
	With no options	158		-	_			-	-	
	MR-RB31 (300W)	278	_	_	_	_	—	_	_	
	MR-RB51 (500W) (Note 4)		_	_	_	_	_	_	_	
	GRZG400-2Ω (4 units), MR-RB65 (800W) (Note 5)		354	264		_	_	_	_	
	GRZG400-1Ω (5 units), MR-RB66 (1300W) (Note 5)	_	_		230			_	_	
Regenerat	GRZG400-0.8Ω (5 units)					195	117	_	_	
broking	MR-RB139 (1300W)							97	68	
frequency								290	203	
biaking frequency E (times/min								290	203	
<pre>\$ (Note 3)</pre>	MR-RB54-4 (500W)									
S (Note 3)	GRZG400-5Ω (4 units),	_						_	_	
	MR-RB6B-4 (800W) (Note 5) GRZG400-2.5Ω (5 units)									
	MR-RB60-4 (1300W) (Note 5) GRZG400-2Ω (5 units),									
	MR-RB6K-4 (1300W) (Note 5)		_	—	—	_	—	—	—	
	MR-RB136-4 (1300W)	_	—		_	_				
	MB-BB138-4 (3900W)	_	_	_	_		_		_	
Moment of ine	ertia Standard	105 (574.0)	220 (1202.7)	295 (1612.6)	550 (3006.6)	650 (3553.3)	1080 (5903.9)	1310 (7161.2)	1870 (10222.5)	
Moment of ine J (×10 ⁻⁴ kg·m ² [J (oz·in ²)]	With electromagnetic brake	113 (617.7)	293 (1601.7)	369 (2017.2)	—	—	—	—	—	
Recommen	nded load/motor inertia moment ratio			10 times the se	rvo motor's iner	rtia moment ma	ximum (Note 6))		
	osition detector			encoder (Resolu						
Attachme						seal				
Structure				Totally en	closed ventilate	ed (protection le	evel: IP44)			
	Ambient temperature		0 to 40°C (32	2 to 104°F) (non	freezing), stora	age: –15 to 70°	C (5 to 158°F) (non freezing)		
	Ambient humidity		80% RH ma	aximum (non co	ndensing), stor	age: 90% RH n	naximum (non d	condensing)		
Environme			Indoors (no direct sunlig				st or dust		
	Elevation				0m (3280ft) or le					
	Vibration (Note 7)	X: 11	7m/s ² Y: 29	.4m/s ²	X: 9.	.8m/s ² Y: 9.8	8m/s ²	X:9.8m/s ²	Y:9.8m/s ²	
Mass	Standard	55 (121.2)	95 (209.3)	115 (253.4)	160 (352.5)	180 (396.6)	230 (506.7)	250 (550.8)	335 (738)	
(kg [lb])	With electromagnetic brake		126 (277.6)	146 (321.7)	—	_	_	—	—	
Power	Voltage, frequency	1-phase 200 to 220VAC/50Hz 1-phase 200 to 230VAC/60Hz			3-phase	e 200 to 220VA e 200 to 230VA	C/60Hz			
	Input (W)	42 (50Hz)/54 (60Hz)		40 (60Hz)			120 (50Hz)/175 (60Hz)		/175 (60Hz)	
	rrent (A)	0.21 (50Hz)/0.25 (60Hz)	0.20 (50 Ц-)	/0.25 (60Hz)	0.22 (50Hz)	/0.35 (60Hz)	0.65 (500-)/0.00 (600-)	0.65 (50Hz)	10 90 (COUZ)	

Notes: 1. Make sure that the effective torque is 75% or less of the 37kW capacity during the power factor improvement. Always use a DC reactor (MR-DCL37K).

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/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. Install a cooling fan (approx. 1.0m3/min, 92).

5. The values apply when the parameter No.0 (for the MR-J2S-A type) or No.2 (for the MR-J2S-B type) is changed, and cooling fans (approx. 1.0m³/min, _92 x 2 units) are installed. The GBZG400-O is a standard accessory 62 76 60 85

Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.

3-phase 200 to 230VAC 50/60Hz 0.18 0.17 0.22 0.22

HA-LFS 1000r/min series servo motor torque characteristics (200VAC type)



HA-LFS 1000r/min series servo motor specifications (400VAC type)

		UALES 1000r/m	in corios (Low inortio	a, medium capacity to			
			``````````````````````````````````````	í			
6014 (B)	8014 (B)	12K14 (B)	15K14	20K14	25K14	30K14	37K14
70044/0411071	11KA4/B4	11KA4/B4	15KA4/B4	22KA4/B4	30KA4/B4	30KA4/B4	37KA4/B4
700A4/B4-U071	(Note 10)	(Note 10)	(Note 10)	(Note 10)	(Note 10)	(Note 10)	(Note 10)
—	-	_	_	—		MR-HP55KA4	
8.6	12	18	22	30	38	48	59
6.0	8.0	12	15	20	25	30	37
57.3 (8113.7)	76.4 (10818.2)	115 (16284)	143 (20248.8)	191 (27045.6)	239 (33842.4)	286 (40497.6)	353 (49984.8
172 (24355.2)	229 (32426.4)	344 (48710.4)	415 (58764)	477 (67543.2)	597 (84535.2)	716 (101385.6)	883 (125032.8
			00				
			00				
313	265	13 445	373	561	E00	626	668
17	205	30	40	55	528 70		95
51	60	90	120	138	175	77 193	238
158	00	90	120	130	175	193	230
-							
—	—	—	—	—	—	—	—
-	—	—	—	_	—	—	—
_	_	—	_	_	_	_	_
_	_	_	_	_	_	—	_
_	—		_	—		_	
278	—	—		—		_	_
464	—	—	—	—	—	_	—
_	354	264	—	—	—	—	_
_	_	_	230		_	_	_
_		_		195		_	_
_	_	_	_	_	118	97	68
_	_	_	_	_	354	290	203
105 (574.0)	220 (1202.7)	295 (1612.6)	550 (3006.6)	650 (3553.3)	1080 (5903.9)	1310 (7161.2)	1870 (10222.5
113 (617.7)	293 (1601.7)	369 (2017.2)					—
				rtia moment maximur			
		17-bit encoder (F		er/servo motor rotatio	on: 131072 p/rev)		
				seal			
				ed (protection level: I		<u>,</u>	
		to 40°C (32 to 104°F					
		80% RH maximum (n					
		indoors (no direct		e gas, inflammable g	jas, oil mist or dust		
V.	11.7m/o2 V. 00.4-	2/22	1000m (3280ft) or le	ess above sea level	0.0m/o ² V.0.0m/	2	
	11.7m/s ² Y: 29.4n		160 (352.5)	180 (396.6)	: 9.8m/s ² Y: 9.8m/s 230 (506.7)	s ² 250 (550.8)	335 (738)
55 (121.2) 70 (154.2)	95 (209.3) 126 (277.6)	115 (253.4) 146 (321.7)					
1-phase 200 to 220VAC/50Hz 1-phase 200 to 230VAC/60Hz	· · · · · · · · · · · · · · · · · · ·	420VAC 50/60Hz		3-pha		/60Hz	
42 (50Hz)/54 (60Hz)	55 (50Hz)	/75 (60Hz)	65 (50Hz)	/85 (60Hz)	1	10 (50Hz)/150 (60Hz	7)
0.21 (50Hz)/0.25 (60Hz)		/0.11 (60Hz)	0.12 (50Hz)			20 (50Hz)/0.22 (60H	
7. The vibration dir direction of the r 8. MR-J2SCP-S 9U058 is attache	ection is shown in the rig notor shaft). Fretting of t 084 is also compatible. In to the CL type only.	ght-side diagram. The nu he bearing occurs easily The compatible motor is t ble with the following am	meric value indicates the when the motor stops, s he same as MR-J2S-	e maximum value of the so maintain vibration to a	component (commonly ti	he bracket in the opposi	/

• For 6kW (200V)

10. The HA-LFS 1000r/min series is compatible with the following amplifier software version:

- For 15kW (200V)
- For 20kW (200V)
- A type: Version A3 or above B type: Version A6 or above For 37kW (400V)

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For 37kW (200V), 8kW to 30kW (400V) A type, B type: Version B2 or above A type: Version A3 or above B type: Version B0 or above

- A type: Version B5 or above B type: Version B4 or above CP type: Version A3 or above • For 25kW or 30kW (200V)
- A type: Version A2 or above B type: Version A5 or above
- HA-LFS 1000r/min series servo motor torque characteristics (400VAC type)



#### HA-LFS 1500r/min series servo motor specifications (200VAC type)

			-		• •							
Se	ervo motor series		HA-LFS 1500r/m	in series (Low inertia	, medium capacity t	o large capacity)						
Models	Servo motor model HA-LFS	701M (B)	11K1M (B)	15K1M (B)	22K1M	30K1M	37K1M (Note 1)					
	Servo-amp model MR-J2S-	700A/B/CP/CL (-U059) (Note 8, 9)	11KA/B (Note 10)	15KA/B (Note 10)	22KA/B (Note 10)	30KA/B (Note 10)	37KA/B (Note 10)					
Specifications	Converter unit model	—	—	—	—	MR-H	P30KA					
Power fac	ility capacity (Note 2) (kVA)	10	16	22	33	48	59					
Continuou	s Rated output (kW)	7.0	11	15	22	30	37 (75% ED)					
running du	uty Rated torque (N·m [oz·in])	44.6 (6315.4)	70.0 (9912)	95.5 (13522.8)	140 (19824)	191 (27045.6)	236 (33417.6)					
Maximum	torque (N·m [oz·in])	134 (18974.4)	210 (29736)	286 (40497.6)	350 (49560)	477 (67543.2)	589 (83402.4)					
Rated spe	ed (r/min)	,		15	00							
Maximum	speed (r/min)			20	00							
	le instantaneous speed (r/min)		2300									
Power rate	at continuous rated torque (kW/s)	189	223	309	357	561	514					
Rated cur		37	65	87	126	174	202					
	current (A)	111	195	261	315	435	505					
	With no options	70	_		_	_	-					
	MR-RB31 (300W)	124	_	_		_	_					
	MR-RB51 (500W) (Note 4)	206	_	_	_	_	_					
	GRZG400-2Ω (4 units), MR-RB65 (800W) (Note 5)	_	158	_	_	_	_					
	GRZG400-1Ω (5 units), MR-RB66 (1300W) (Note 5)	—	_	191	_	_	_					
Regenerati	GRZG400-0.8Ω (5 units),	_	_	_	102	_	_					
braking E frequency	MR-RB139 (1300W)	_	_	_	_	87	52					
E frequency	MR-RB137 (3900W)	_	_	_		260	156					
S (times/min)		_	_	_	_	_	_					
S (times/min) (Note 3)	MR-RB54-4 (500W)	_	_	—	_	_	_					
N N N	GRZG400-5Ω (4 units), MR-RB6B-4 (800W) (Note 5)	_	_	_	_	_	_					
	GRZG400-2.5Ω (5 units), MR-RB60-4 (1300W) (Note 5)	—	_	_	—	_	_					
	GRZG400-2Ω (5 units), MR-RB6K-4 (1300W) (Note 5)	—	—	_	—	_	_					
	MR-RB136-4 (1300W)	—	_	—	_	—	—					
	MB-BB138-4 (3900W)	—	_	—		—	—					
Moment of ine J (×10 ⁻⁴ kg·m ² ) [J (oz·in ² )]	^{rtia} Standard	105 (574.0)	220 (1202.7)	295 (1612.6)	550 (3006.6)	650 (3553.3)	1080 (5903.9)					
[J (oz·in ² )]	With electromagnetic brake	113 (617.7)	293 (1601.7)	369 (2017.2)	—	—	—					
Recommend	ded load/motor inertia moment ratio				rtia moment maximu							
	sition detector		17-bit encoder (R		er/servo motor rotati	on: 131072 p/rev)						
Attachmer	nts				seal							
Structure					ed (protection level: I							
	Ambient temperature				age: –15 to 70°C (5 t							
	Ambient humidity	80			age: 90% RH maxim		g)					
Environme			Indoors (no direct s		e gas, inflammable	gas, oil mist or dust						
	Elevation			· · · ·	ess above sea level							
	Vibration (Note 7)	X: 1	11.7m/s ² Y: 29.4r			9.8m/s ² Y: 9.8m						
Mass	Standard	55 (121.2)	95 (209.3)	115 (253.4)	160 (352.5)	180 (396.6)	230 (506.7)					
(kg [lb])	With electromagnetic brake	70 (154.2)	126 (277.6)	146 (321.7)	—	—						
ඩි Power	Voltage, frequency	1-phase 200 to 220VAC/50Hz 1-phase 200 to 230VAC/60Hz		3-ph	ase 200 to 220VAC/ ase 200 to 230VAC/	60Hz						
Power Rated curr	Input (W)	42 (50Hz)/54 (60Hz)	32 (50Hz)	/40 (60Hz)	45 (50Hz),	/63 (60Hz)	120 (50Hz)/175 (60Hz)					
0 -	rent (A)	0.21 (50Hz)/0.25 (60Hz)		(0.25 (60Hz)	0.32 (50Hz),	(0.35 (60Hz)	0.65 (50Hz)/0.80 (60Hz)					

Notes:1. Make sure that the effective torque is 75% or less of the 37kW capacity during the power factor improvement. Always use a DC reactor (MR-DCL37K).

 The power facility capacity varies depending on the power supply's impedance.
 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 in inversely proportional to the square of (operating speed/rated speed). If the operating speed charges 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 regenerative to the operating speed charges frequently or when the regenerative resistor varies for each system. Select the most regenerative power (W). 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. Install a cooling fan (approx. 1.0m³/min, []92).

5. The values apply when the parameter No.0 (for the MR-J2S-A type) or No.2 (for the MR-J2S-B type) is changed, and cooling fans (approx. 1.0m³/min, []92 x 2 units) are installed. The GRZG400-[]Ω is a standard accessory.

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

#### HA-LFS 1500r/min series servo motor torque characteristics (200VAC type)



#### HA-LFS 1500r/min series servo motor specifications (400VAC type)

		HA-LFS 1500r/m	in series (Low inertia	a, medium capacity to	o large capacity)		
701M4 (B)	11K1M4 (B)	15K1M4 (B)	22K1M4	30K1M4	37K1M4	45K1M4	50K1M4
700A4/B4-U073	11KA4/B4	15KA4/B4	22KA4/B4	30KA4/B4	37KA4/B4	45KA4/B4	55KA4/B4
100/11/21 00/0	(Note 10)	(Note 10)	(Note 10)	(Note 10)	(Note 10)	(Note 10)	(Note 10)
—	—	—	—		MR-HP		
10	16	22	33	48	59	71	80
7.0	11	15	22	30	37	45	50
44.6 (6315.4)	70.0 (9912)	95.5 (13522.8)	140 (19824)	191 (27045.6)	236 (33417.6)	286 (40497.6)	318 (45028.8
134 (18974.4)	210 (29736)	286 (40497.6)	350 (49560)	477 (67543.2)	589 (83402.4)	716 (101385.6)	796 (112713.6
				500			
				000			
				300			
189	223	309	357	561	514	626	542
18	31	41	63	87	101	128	143
54	93	123	158	218	253	320	358
70		—	_	—	_		—
—		—	—	—	—		—
—		—	—	—	—		
_	_	_	—	_	_	_	_
				_			
124							
206							
	158						
		191					
_		191					
—	—	—	102	—	—	—	—
—	—	—	—	87	52	43	30
—	—	—	—	260	156	129	90
105 (574.0)	220 (1202.7)	295 (1612.6)	550 (3006.6)	650 (3553.3)	1080 (5903.9)	1310 (7161.2)	1870 (10222.5
113 (617.7)	293 (1601.7)	369 (2017.2)		—	—	_	—
				rtia moment maximur			
		17-bit encoder (F		ler/servo motor rotatio	on: 131072 p/rev)		
				seal			
				ed (protection level: I			
	0	to 40°C (32 to 104°F)	(non freezing), stora	age: -15 to 70°C (5 to	o 158°F) (non freezing	g)	
		80% RH maximum (n					
		Indoors (no direct :		/e gas, inflammable g	as, oil mist or dust		
			1000m (3280ft) or l	ess above sea level			
	11.7m/s ² Y: 29.4m				: 9.8m/s ² Y: 9.8m/		
55 (121.2)	95 (209.3)	115 (253.4)	160 (352.5)	180 (396.6)	230 (506.7)	250 (550.8)	335 (738)
70 (154.2)	126 (277.6)	146 (321.7)	_	—	—	—	—
1-phase 200 to 220VAC/50Hz 1-phase 200 to 230VAC/60Hz	3-phase 380 to 4	20VAC 50/60Hz		3-pha	se 380 to 460VAC 50	/60Hz	
42 (50Hz)/54 (60Hz)	55 (50Hz)	/75 (60Hz)	65 (50Hz)	/85 (60Hz)	1	10 (50Hz)/150 (60Hz	<u>z)</u>
0.21 (50Hz)/0.25 (60Hz)	0.12 (50Hz)			/0.14 (60Hz)		20 (50Hz)/0.22 (60H	
0.21 (50Hz)/0.25 (60Hz) 7. The vibration direction of the n 8. MR-J2S-□CP-S0	0.12 (50Hz) ection is shown in the rig notor shaft). Fretting of the 1084 is also compatible. The d to the CL type only.		0.12 (50Hz) meric value indicates th when the motor stops, s he same as MR-J2S-	/0.14 (60Hz) e maximum value of the so maintain vibration to a	0. component (commonly tl	20 (50Hz)/0.22 (60H ne bracket in the opposi	z)



A type: Version A3 or above B type: Version B0 or above

For 10kW (Version A4 or above
For 11kW or larger (400V) A type, B type: Version B2 or above

#### HA-LFS 1500r/min series servo motor torque characteristics (400VAC type)



#### HA-LFS 2000r/min series servo motor specifications (200VAC type)

	Ser	vo motor series			Or/min series (Lov					
$\sim$	Models	Servo motor model HA-LFS	502	702	11K2 (B)	15K2 (B)	22K2 (B)	30K2	37K2 (Note1)	
			500A/B/CP/CL	700A/B/CP/CL	11KA/B	15KA/B	22KA/B	30KA/B	37KA/B	
		Servo-amp model MR-J2S-	(Note 8, 9)	(Note 8, 9)	(Note 9)	(Note 9)	(Note 9)	(Note 9)	(Note 9)	
Spec	ifications	Converter unit model							P30KA	
	Power fac	lity capacity (Note 2) (kVA)	7.5	10.0	16	22	33	48	59	
	Continuous	Rated output (kW)	5.0	7.0	11	15	22	30	37 (75%ED)	
	running duty	Rated torque (N·m [oz·in])	23.9 (3384.2)	33.4 (4729.4)	52.5 (7434)		105 (14868)	143 (20248.8)	177 (25063.2)	
		Rated torque (N·m [oz·m])				71.6 (10138.6)				
		torque (N·m [oz·in])	71.6 (10138.6)	100 (14160)	158 (22372.8)	215 (30444)	263 (37240.8)	358 (50692.8)	442 (62587.2)	
	Rated spe					2000				
		speed (r/min)				2000				
		e instantaneous speed (r/min)				2300				
		t continuous rated torque (kW/s)	77.2	118	263	233	374	373	480	
	Rated curi	rent (A)	25	34	63	77	112	166	204	
	Maximum	current (A)	75	102	189	231	280	415	510	
		With no options	50	50	_			_	_	
		MR-RB30 (300W)	120		_				_	
		MR-RB31 (300W)	120	95						
		MR-RB50 (500W) (Note 4)	200							
		MR-RB51 (500W) (Note 4)	200	160				_	_	
				160						
		$GRZG400-2\Omega$ (4 units),	—	_	186	_	_	_	_	
		MR-RB65 (800W) (Note 5)								
		GRZG400-1Ω (5 units),	_	_	_	144	_		_	
	Regenerativ									
	braking	GRZG400-0.8Ω (5 units),			_		107		_	
د د	frequency	MR-RB67 (1300W) (Note 5)					107			
motor	(times/min)	MR-RB139 (1300W)	_	—	—	—	—	58	49	
	(Note 3)	MR-RB137 (3900W)	_	_	—	_	_	174	147	
Servo	(NOLE S)	GRZG400-5 $\Omega$ (4 units),								
Ger		MR-RB6B-4 (800W) (Note 5)	—	_	_	_	-	_		
0,		GRZG400-2.5Ω (5 units),								
		MR-RB60-4 (1300W) (Note 5)	—	_	-	—	_	—	-	
		$GRZG400-2\Omega$ (5 units),								
		MR-RB6K-4 (1300W) (Note 5)	—	_	-	—	_	—	_	
		MR-RB136-4 (1300W)		_		_		_	_	
		MR-RB138-4 (3900W)		—		—	—	_	—	
	Moment of ir J (×10⁻⁴kg·m	ertia Standard	74.0 (404.5)	94.2 (515.0)	105 (574.0)	220 (1202.7)	295 (1612.6)	550 (3006.6)	650 (3553.3)	
	[J (oz·in ² )]	With electromagnetic brake			113 (617.7)	293 (1601.7)	369 (2017.2)			
				10 +	mes the servo mo			to 6)		
		ed load/motor inertia moment ratio								
		sition detector		17-bit enco	der (Resolution p		motor rotation: 13	s 1072 p/rev)		
	Attachmer	Its				Oil seal				
	Structure			d non ventilated		Totally enclosed	ventilated (prote	ction level (IP44)		
	Olluciale		(protection	level: IP65)		,	NI NI	· · ·		
		Ambient temperature		0 to 40°C (32 to 1	104°F) (non freezii	ng), storage: –15	to 70°C (5 to 158	°F) (non freezing)	)	
		Ambient humidity		80% RH maximu	um (non condensi	ng), storage: 90%	6 RH maximum (r	ion condensing)		
	Environme	nt Atmosphere		Indoors (no d	irect sunlight); no	corrosive gas, in	flammable gas, o	il mist or dust		
		Elevation		· · · · ·		80ft) or less abov				
		Vibration (Note 7)		X··	11.7m/s ² Y : 29.4			X : 9.8m/s ²	Y : 9.8m/s ²	
	Mass	Standard	28 (61.7)	35 (77.1)	55 (121.2)	95 (209.3)	115 (253.4)	160 (352.5)	180 (396.6)	
	(kg [lb])	With electromagnetic brake			70 (154.2)	126 (277.6)	146 (321.7)	.00 (002.0)		
	(9[10])	mar ciccaromagnetic brake			1-phase 200 to 220VAC/50Hz					
fan	Davisa	Voltage, frequency	—	—			3-phase 200 to	220VAC/50Hz 230VAC/60Hz		
Cooling f	Power				1-phase 200 to 230VAC/60Hz				100 (0011)	
8	<b>D</b>	Input (W)	—		42 (50Hz)/54 (60Hz)		/40 (60Hz)		<u>/63 (60Hz)</u>	
	Rated curr		—		0.21 (50Hz)/0.25 (60Hz)			0.32 (50Hz)	/0.35 (60Hz)	
Notes	s:1. Make sure	that the effective torque is 75% o	r less of the 37kW c	apacity during the p	ower factor improver	ment. Alwavs use a l	DC reactor (MR-DCL	.37K).		

Notes: 1. Make sure that the effective torque is 75% or less of the 37kW capacity during the power factor improvement. Always use a DC reactor (MR-DCL37K).

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S:1. Make sure that the effective torque is 75% or less of the 37kW capacity during the power factor improvement. Always use a DC reactor (MR-DCL37K).
The power facility capacity varies depending on the power supply's impedance.
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 shows the permissible frequency shows the permissible frequency when 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 regenerated 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).
Install a cooling fan (approx. 1.0m³/min, [92).

#### HA-LFS 2000r/min series servo motor torque characteristics (200VAC type)



#### HA-LFS 2000r/min series servo motor specifications (400VAC type)

11K24 (B) 11KA4/B4 (Note 9)	15K24 (B) 15KA4/B4 (Note 9)	A-LFS 2000r/min series ( 22K24 (B) 22KA4/B4 (Note 9)	30K24 30KA4/B4 (Note 9)	37K24 37KA4/B4 (Note 9)	45K24 45KA4/B4 (Note 9)	55K24 55KA4/B4 (Note 9)
 16	22	33	48	MR-HF 59	255KA4 71	87
11 52.5 (7434) 158 (22372.8)	15 71.6 (10138.6) 215 (30444)	22 105 (14868) 263 (37240.8)	30 143 (20248.8) 358 (50692.8)	37 177 (25063.2) 442 (62587.2)	45 215 (30444) 537 (76039.2)	55 263 (37240.8) 657 (93031.2)
· · · · ·			2000			
			2300			
263	233	374	373	480	427	526
<u>32</u> 96	40	57 171	83 208	102 255	131 328	143 358
—	—	—		—	—	—
				—	—	
—	—	_	_	_	—	—
—	_	_	—	_	—	_
_				_		
—	—	—	—	—	—	—
—	—	-		—	—	—
	—		—	—		
186	—	—		—	—	—
_	144		_	_	_	_
		107				
_	-	107	_	_	_	_
_	—		58	49	30	24
105 (574.0)	220 (1202.7)	295 (1612.6)	174 550 (3006.6)	147 650 (3553.3)	89 1080 (5903.9)	73 1310 (7161.2)
113 (617.7)	293 (1601.7)	369 (2017.2)				
	0   10					
	80% F	RH maximum (non conde	ensing), storage: 90% F	70°C (5 to 158°F) (non fr H maximum (non conde	nsing)	
	80% F	RH maximum (non conde oors (no direct sunlight); 1000m	ensing), storage: 90% F	RH maximum (non conde mmable gas, oil mist or c sea level	nsing) Just	
	80% F Ind X : 11.7m/s² Y : 29.4m/s	RH maximum (non conde oors (no direct sunlight); 1000m s ²	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s	RH maximum (non conde mmable gas, oil mist or c sea level X : 9.8m/s ²	nsing) Just Y : 9.8m/s ²	250 (550 8)
55 (121.2) 70 (154.2)	80% F Ind X : 11.7m/s² Y : 29.4m/s 95 (209.3) 126 (277.6)	RH maximum (non conde oors (no direct sunlight); 1000m	ensing), storage: 90% F no corrosive gas, infla	RH maximum (non conde mmable gas, oil mist or c sea level	nsing) Just	250 (550.8)
55 (121.2) 70 (154.2) phase 200 to 220VAC/50Hz	80% F Inde X : 11.7m/s ² Y : 29.4m/s 95 (209.3) 126 (277.6)	RH maximum (non conde           oors (no direct sunlight);           1000m           S ² 115 (253.4)           146 (321.7)	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s	RH maximum (non conde mmable gas, oil mist or c sea level X : 9.8m/s ²	nsing) lust Y : 9.8m/s ² 230 (506.7) —	250 (550.8)
55 (121.2) 70 (154.2) phase 200 to 220VAC/50Hz phase 200 to 230VAC/60Hz	80% F Ind X : 11.7m/s ² Y : 29.4m/s 95 (209.3) 126 (277.6) 3-phase 380 to 4	RH maximum (non conde           oors (no direct sunlight);           1000m           S ² 115 (253.4)           146 (321.7)	ensing), storage: 90% F no corrosive gas, infla (3280ft) or less above s 160 (352.5) —	IH maximum (non conde mmable gas, oil mist or c sea level X : 9.8m/s ² 180 (396.6) —	nsing) lust Y : 9.8m/s ² 230 (506.7) — — VAC 50/60Hz	250 (550.8) — /150 (60Hz)
55 (121.2) 70 (154.2) phase 200 to 220VAC/60Hz phase 200 to 230VAC/60Hz 42 (50Hz)/54 (60Hz) .21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GBZ(	80% F Ind X : 11.7m/s ² Y : 29.4m/s 95 (209.3) 126 (277.6) 3-phase 380 to 4 55 (50Hz) 0.12 (50Hz) hen the parameter No. 0 (fo 4400- 10 is a standard acco	RH maximum (non conde           oors (no direct sunlight);           1000m           s²           115 (253.4)           146 (321.7)           20VAC 50/60Hz           //75 (60Hz)           //0.11 (60Hz)           r the MR-J2S-A type) or No.           essory.	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 65 (50Hz 0.12 (50Hz 2 (for the MR-J2S-B type) i	IH maximum (non conde mmable gas, oil mist or c sea level X : 9.8m/s ² 180 (396.6) — 3-phase 380 to 460	nsing) Just Y : 9.8m/s ² 230 (506.7) — DVAC 50/60Hz 110 (50Hz) 0.20 (50Hz)	/150 (60Hz) /0.22 (60Hz)
55 (121.2) 70 (154.2) phase 200 to 220VAC/50Hz phase 200 to 230VAC/60Hz 42 (50Hz)/54 (60Hz) 21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GRZC 6. Contact Mitsubishi 7. The vibration direct of the motor shaft). 8. MR-J2S-□CP-S084 9. The HA-LFS 2000r// • For 5kW, 7kW (20 A type, B type: Ver	80% F           Ind           X: 11.7m/s² Y: 29.4m/s           95 (209.3)           126 (277.6)           3-phase 380 to 4           55 (50Hz)           0.12 (50Hz)           hen the parameter No. 0 (fo           6400-Ω0 is a standard accc           if the load/motor of inertia m           ion is shown in the right-sidd           Fretting of the bearing occu           is also compatible. The com           min series is compatible. The com           ov)         € For           0v)         € For           stato constatible witt         0v)	RH maximum (non conde         oors (no direct sunlight);         1000m         s²         115 (253.4)         146 (321.7)         20VAC 50/60Hz         //75 (60Hz)         //0.11 (60Hz)         r the MR-J2S-A type) or No.         essory.         owment ratio exceeds the valid         e diagram. The numeric valuars easily when the motor storm matible motor is the same a h the following amplifier softh 30kW, 37kW (200V) or 45kW         pe: Version A3 or above	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 65 (50Hz 0.12 (50Hz 2 (for the MR-J2S-B type) i ue in the table. e indicates the maximum v ps, so maintain vibration to as MR-J2S-[CP. ware version: (400V) • For 15kW (4 A type, B typ	IH maximum (non conde mmable gas, oil mist or o sea level X : 9.8m/s ² 180 (396.6) 3-phase 380 to 460 )/85 (60Hz) )/0.14 (60Hz) s changed, and cooling fans alue of the component (com approximately one-half of th	nsing) Just Y : 9.8m/s ² 230 (506.7) — DVAC 50/60Hz 110 (50Hz) 0.20 (50Hz) (approx. 1.0m ³ /min, □92 × monly the bracket in the opp e allowable value. • For 11kW, 22kW or 55kW ( B type: Version A4 or above	/150 (60Hz) /0.22 (60Hz) 2 units) are cosite direction x↓ 
55 (121.2) 70 (154.2) phase 200 to 220VAC/50Hz phase 200 to 220VAC/60Hz 42 (50Hz)/54 (60Hz) 21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GRZ( 6. Contact Mitsubishi 7. The vibration direct of the motor shaft). 8. MR-J2S-□CP-S084 9. The HA-LFS 2000/ • For 5kW, 7kW (20 A type, B type: Ver <b>IA-LFS 20000</b> HA-LF	80% F           Ind           X: 11.7m/s² Y: 29.4m/s           95 (209.3)           126 (277.6)           3-phase 380 to 4           55 (50Hz)           0.12 (50Hz)           hen the parameter No. 0 (fo           6400-Ω0 is a standard accc           if the load/motor of inertia m           ion is shown in the right-sidd           Fretting of the bearing occu           is also compatible. The com           min series is compatible. The com           ov)         € For           0v)         € For           stato constatible witt         0v)	AH maximum (non conde oors (no direct sunlight); 1000m 3 ² 115 (253.4) 146 (321.7) 20VAC 50/60Hz //75 (60Hz) //0.11 (60Hz) rr the MR-J2S-A type) or No. essory. Int the MR-J2S-A type) or No. essory. Int the MR-J2S-A type) or No. essory. Int the the sume is the same a h the following amplifier soft 30kW, 37kW (200V) or 45kW pe: Version A3 or above	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 65 (50Hz 0.12 (50Hz 2 (for the MR-J2S-B type) i ue in the table. e indicates the maximum v ps, so maintain vibration to as MR-J2S-CP. ware version: (400V) • For 15kW (4 A type, B type) torque chara	IH maximum (non conde mmable gas, oil mist or o sea level X : 9.8m/s ² 180 (396.6) 	nsing) Just Y : 9.8m/s ² 230 (506.7) — OVAC 50/60Hz 110 (50Hz) 0.20 (50Hz) (approx. 1.0m ³ /min, □92 x monly the bracket in the opp e allowable value. • For 11kW, 22kW or 55kW ( B type: Version A4 or above <b>OVAC type)</b> a 1.2) HA-LESS	/150 (60Hz) /0.22 (60Hz) 2 units) are cosite direction x↓ 
55 (121.2) 70 (154.2) obase 200 to 220VAC/50Hz obase 200 to 230VAC/60Hz 42 (50Hz)/54 (60Hz) 21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GRZC 6. Contact Mitsubishi 7. The vibration direct of the motor shaft). 8. MR-J2S-[CP-S084 9. The HA-LFS 2000r/ • For 5kW, 7kW (20 A type, B type: Ver <b>IA-LFS 2000</b>	80% F         Ind         X: 11.7m/s² Y: 29.4m/s         95 (209.3)         126 (277.6)         3-phase 380 to 4         55 (50Hz)         0.12 (50Hz)         hen the parameter No. 0 (fo G400- $\Box \Omega$ is a standard acc if the load/motor of inertia m ion is shown in the right-sidd Fretting of the bearing occu i is also compatible. The cor min series is compatible with 0V) • For rsion B0 or above B ty         http://min series	AH maximum (non conde oors (no direct sunlight); 1000m s ² 115 (253.4) 146 (321.7) 20VAC 50/60Hz //75 (60Hz) //0.11 (60Hz) rt he MR-J2S-A type) or No. essory. In the following amplifier soft 30kW, 37kW (200V) or 45kW pe: Version A3 or above Servo motor 1 HA-LFS15K24	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 65 (50Hz 0.12 (50Hz 2 (for the MR-J2S-B type) i ue in the table. e indicates the maximum v ps, so maintain vibration to as MR-J2S-CP. ware version: (400V) • For 15kW (4 A type, B type) torque chara	IH maximum (non conde mmable gas, oil mist or o sea level X : 9.8m/s ² 180 (396.6) 	nsing) iust Y : 9.8m/s ² 230 (506.7) — DVAC 50/60Hz 110 (50Hz) 0.20 (50Hz) (approx. 1.0m ³ /min, □92 x monly the bracket in the opp e allowable value. • For 11kW, 22kW or 55kW ( B type: Version A4 or above <b>DVAC type)</b> = 1, 2) HA-LESS	/150 (60Hz) /0.22 (60Hz) 2 units) are posite direction x↓ ////// ///// ///// ///// ///// ////// ////
55 (121.2) 70 (154.2) obase 200 to 220VAC/50Hz obase 200 to 230VAC/60Hz 42 (50Hz)/54 (60Hz) 21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GRZC 6. Contact Mitsubishi 7. The vibration direct of the motor shaft). 8. MR-J2S-[CP-S084 9. The HA-LFS 2000r/ • For 5kW, 7kW (20 A type, B type: Ver <b>IA-LFS 2000</b>	80% F         Ind         X: 11.7m/s² Y: 29.4m/s         95 (209.3)         126 (277.6)         3-phase 380 to 4         55 (50Hz)         0.12 (50Hz)         hen the parameter No. 0 (fo G400- $\Box \Omega$ is a standard accordifted in the bearing occurd is also compatible. The cordination is shown in the right-sidd Fretting of the bearing occurd is also compatible. The cordination is compatible with OV) • For rision B0 or above B ty         rt/min series         S11K24 (B) (Note 1, 2)	AH maximum (non conde oors (no direct sunlight); 1000m s ² 115 (253.4) 146 (321.7) 20VAC 50/60Hz //75 (60Hz) //0.11 (60Hz) rt he MR-J2S-A type) or No. essory. In the following amplifier soft 30kW, 37kW (200V) or 45kW pe: Version A3 or above Servo motor 1 HA-LFS15K24	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 65 (50Hz 0.12 (50Hz 2 (for the MR-J2S-B type) i ue in the table. e indicates the maximum v ps, so maintain vibration to as MR-J2S-CP. ware version: (400V) • For 15kW (4 A type, B type) torque chara	IH maximum (non conde mmable gas, oil mist or co- sea level X : 9.8m/s ² 3-phase 380 to 460 )/85 (60Hz) )/0.14 (60Hz) s changed, and cooling fans alue of the component (com approximately one-half of th 100V) be: Version B2 or above <b>cteristics (400</b> HA-LFS22K24 (B) (Note gam) Peak running range	nsing) iust Y : 9.8m/s ² 230 (506.7) — DVAC 50/60Hz 110 (50Hz) 0.20 (50Hz) (approx. 1.0m ³ /min, □92 x monly the bracket in the opp e allowable value. • For 11kW, 22kW or 55kW ( B type: Version A4 or above <b>DVAC type)</b> = 1, 2) HA-LESS	/150 (60Hz) /0.22 (60Hz) 2 units) are posite direction x↓ ///////////////////////////////////
55 (121.2) 70 (154.2) phase 200 to 220VAC/50Hz phase 200 to 230VAC/60Hz 42 (50Hz)/54 (60Hz) 21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GRZ( 6. Contact Mitsubishi 7. The vibration direct of the motor shaft), 8. MR-J2S-□CP-S084 9. The HA-LFS 20007( • For 5kW, 7kW (20 A type, B type: Ver <b>IA-LFS 2000</b> E 28000 E 28000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 200 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 2000 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 200 E 20	80% F         Ind         X: 11.7m/s² Y: 29.4m/s         95 (209.3)         126 (277.6)         3-phase 380 to 4         55 (50Hz)         0.12 (50Hz)         hen the parameter No. 0 (fo G400- $\Box \Omega$ is a standard acc if the load/motor of inertia m ion is shown in the right-sidd Fretting of the bearing occu i is also compatible. The cor min series is compatible with 0V) • For rsion B0 or above B ty         http://min series	RH maximum (non conde         oors (no direct sunlight);         1000m         32         115 (253.4)         146 (321.7)         20VAC 50/60Hz         //75 (60Hz)         //0.11 (60Hz)         //0.11 (60Hz)         rt the MR-J2S-A type) or No.         essory.         omment ratio exceeds the valid         urs easily when the motor stom mpatible motor is the same of the the following amplifier soldwy, 37kW (200V) or 45kW         pe: Version A3 or above         BETVO MODOT         Image: State of the same of the same of the the following amplifier soldwy or 45kW         pe: Version A3 or above         HA-LFS15K24         Image: State of the same of t	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 	IH maximum (non conde mmable gas, oil mist or o sea level X : 9.8m/s ² 3-phase 380 to 460 )/85 (60Hz) )/0.14 (60Hz) s changed, and cooling fans alue of the component (common approximately one-half of th 00V) be: Version B2 or above <b>cteristics (400</b> HA-LFS22K24 (B) (Note	nsing) Just Y : 9.8m/s ² 230 (506.7) — OVAC 50/60Hz 110 (50Hz) 0.20 (50Hz) (approx. 1.0m ³ /min, □92 x monly the bracket in the opp e allowable value. • For 11kW, 22kW or 55kW ( B type: Version A4 or above <b>OVAC type</b> ) = 1, 2) HA-LFS3 § 56000 § 400 Per	/150 (60Hz) /0.22 (60Hz) 2 units) are posite direction x↓ ////// ///// ///// ///// ///// ////// ////
55 (121.2) 70 (154.2) phase 200 to 220VAC/50Hz phase 200 to 230VAC/60Hz 42 (50Hz)/54 (60Hz) 21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GRZC 6. Contact Mitsubishi 7. The vibration direct of the motor shaft). 8. MR-J2S-[CP-S084 9. The HA-LFS 2000r/ • For 5kW, 7kW (20 A type, B type: Ver <b>TA-LFS 2000</b> § 28000 8 2000 9 21000 9 21000 150 150 150 150 150 150 150	80% F       Ind       X: 11.7m/s² Y: 29.4m/s       95 (209.3)       126 (277.6)       3-phase 380 to 4       55 (50Hz)       0.12 (50Hz)       hen the parameter No. 0 (fo       G400- $\Box \Omega$ is a standard acc       if the load/motor of inertia m       no is shown in the right-sidd       Fretting of the bearing occu       is also compatible. The cor       wins series is compatible with       0V)     • For       rsion B0 or above     B ty       tr/min series       S11K24 (B) (Note 1, 2)       Peak running range	RH maximum (non conde         oors (no direct sunlight);         1000m         115 (253.4)         146 (321.7)         :20VAC 50/60Hz         //75 (60Hz)         //0.11 (60Hz)         //0.11 (60Hz)         in the MR-J2S-A type) or No.         essory.         in the MR-J2S-A type) or No.         essory.         in the following amplifier soft         30kW, 37kW (200V) or 45kW         per Version A3 or above         SETVO motor         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)         (200)	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 	H maximum (non conde         mmable gas, oil mist or cosea level         X: 9.8m/s²         180 (396.6)         3-phase 380 to 460         //85 (60Hz)         //0.14 (60Hz)         s changed, and cooling fans         alue of the component (comma pproximately one-half of th         00V)         be: Version B2 or above         Cteristics (400         HA-LFS22K24 (B) (Note         200         9         100         Continuous running	nsing) iust Y : 9.8m/s ² 230 (506.7) 	/150 (60Hz) /0.22 (60Hz) 2 units) are posite direction x↓ (400V) 30K24 (Note 1, 2) ak running range
55 (121.2) 70 (154.2) ohase 200 to 220VAC/50Hz ohase 200 to 220VAC/60Hz 21 (50Hz)/54 (60Hz) 21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GRZ( 6. Contact Mitsubishi 7. The vibration direct of the motor shaft). 8. MR-J2S-□CP-S084 9. The HA-LFS 2000( • For 5kW, 7kW (20 A type, B type: Ver <b>IA-LFS 20000</b> 9 21000- 9 21000- 9 150 10 14000- 10 10 10 10 10	80% F       Ind       X: 111.7m/s ² Y: 29.4m/s       95 (209.3)       126 (277.6)       3-phase 380 to 4       55 (50Hz)       0.12 (50Hz)       hen the parameter No. 0 (fo       G400- $\Box \Omega$ is a standard acc       if the load/motor of inertia m       ino is shown in the right-sidd       Fretting of the bearing occu       is also compatible. The cor       min series is compatible with       0V)     • For       rsion B0 or above     B ty <b>tr/min series</b> S11K24 (B) (Note 1, 2)       Peak running range       Continuous running       range       1000     2000	RH maximum (non conde oors (no direct sunlight); 1000m 1000m 115 (253.4) 146 (321.7) 20VAC 50/60Hz 7/75 (60Hz) 7/0.11 (60Hz) 7/0.11 (60Hz) 7/75 (60Hz) 7/0.11 (60Hz) 7/75 (70Hz) 7/75 (70Hz)	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 	IH maximum (non conde mmable gas, oil mist or co- sea level X : 9.8m/s ² 3-phase 380 to 460 )/85 (60Hz) )/0.14 (60Hz) s changed, and cooling fans alue of the component (comm approximately one-half of th 00V) be: Version B2 or above <b>cteristics (400</b> HA-LFS22K24 (B) (Note BACLFS22K24 (B) (Note Continuous running range 100 Continuous running range 100 200	nsing) iust Y : 9.8m/s ² 230 (506.7) 	/150 (60Hz) /0.22 (60Hz) 2 units) are posite direction x↓ ////// (400V) 30K24 (Note 1, 2) ak running range
55 (121.2) 70 (154.2) phase 200 to 220VAC/50Hz phase 200 to 220VAC/60Hz 21 (50Hz)/54 (60Hz) 21 (50Hz)/526 (60Hz) 5. The values apply w installed. The GRZ( 6. Contact Mitsubishi 7. The vibration direct of the motor shaft). 8. MR-J2S-[CP-S084 9. The HA-LFS 20007 • For 5kW, 7kW (20 A type, B type: Ver <b>HA-LFS 20000</b> • [2000] • [20	80% F Ind X : 11.7m/s ² Y : 29.4m/s 95 (209.3) 126 (277.6) 3-phase 380 to 4 55 (50Hz) 0.12 (50Hz) hen the parameter No. 0 (fo 63400-□Ω is a standard acc if the load/motor of inertia m ion is shown in the right-side Fretting of the bearing occu t is also compatible. The cor min series is compatible. The cor min series is compatible with 0V) • For rsion B0 or above B ty <b>T/min series</b> S11K24 (B) (Note 1, 2) Peak running range	BH maximum (non conde oors (no direct sunlight); 1000m 3 ² 115 (253.4) 146 (321.7) 20VAC 50/60Hz V/75 (60Hz) V/0.11 (60Hz) r the MR-J2S-A type) or No. essory. oment ratio exceeds the vali urs easily when the motor sto mpatible motor is the same a h the following amplifier soft 30KW, 37KW (200V) or 45kW pe: Version A3 or above Servo motor HA-LFS15K24 $\left(\frac{2}{9}\right)^{3000}_{0}$ $\left(\frac{2}{9}\right)^{2200}_{0}$ $\left(\frac{2}{9}\right)^{2200}_{0}$ $\left(\frac{2}{9}\right)^{2200}_{0}$ $\left(\frac{2}{9}\right)^{2200}_{0}$ $\left(\frac{2}{9}\right)^{2200}_{0}$ $\left(\frac{2}{9}\right)^{2200}_{0}$ $\left(\frac{2}{9}\right)^{2200}_{0}$ $\left(\frac{2}{9}\right)^{2200}_{0}$ $\left(\frac{2}{9}\right)^{200}_{0}$ $\left(\frac{2}{9}\right)^{200}_{0}$ $\left(\frac{2}{9}\right)^{200}_{0}$ $\left(\frac{2}{9}\right)^{100}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^{1000}_{0}$ $\left(\frac{2}{9}\right)^$	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 	H maximum (non conde mmable gas, oil mist or co- sea level X : 9.8m/s ² 180 (396.6) 	nsing) Just Y : 9.8m/s ² 230 (506.7) — OVAC 50/60Hz 110 (50Hz) 0.20 (50Hz) (approx. 1.0m ³ /min, □92 x monly the bracket in the opp e allowable value. • For 11kW, 22kW or 55kW ( B type: Version A4 or above <b>DVAC type)</b> = 1, 2) HA-LFS3 = 28000 - 100 Con 28000 - 100 Con 14000 - 100 Con 100 Con	/150 (60Hz) /0.22 (60Hz) 2 units) are posite direction x↓ (400V) 30K24 (Note 1, 2) ak running range ntinuous running - ge
55 (121.2) 70 (154.2) phase 200 to 220VAC/50Hz phase 200 to 230VAC/60Hz 42 (50Hz)/54 (60Hz) 21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GRZ 6. Contact Mitsubishi 7. The vibration direct of the motor shaft). 8. MR-J2S-□CP-S084 9. The HA-LFS 20000 A type, B type: Ver <b>TA-LFS 2000</b> (2000 - 500 - 50 - 50 - 50 - 50 - 50 - 50	80% F Ind X : 11.7m/s² Y : 29.4m/s 95 (209.3) 126 (277.6) 3-phase 380 to 4 55 (50Hz) 0.12	AH maximum (non conde oors (no direct sunlight); 1000m 32 115 (253.4) 146 (321.7) 20VAC 50/60Hz //75 (60Hz) //75 (7	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 	H maximum (non conde mmable gas, oil mist or c sea level X : 9.8m/s ² 180 (396.6) 	nsing) Just Y : 9.8m/s ² 230 (506.7) — OVAC 50/60Hz 110 (50Hz) 0.20 (50Hz) (approx. 1.0m ³ /min, □92 x monly the bracket in the opp e allowable value. • For 11kW, 22kW or 55kW ( B type: Version A4 or above <b>OVAC type)</b> • 1, 2) HA-LFS3 9 300 Per 9 300 14000- 100 Cor 100	/150 (60Hz) /0.22 (60Hz) 2 units) are posite direction (400V) 30K24 (Note 1, 2) ak running range ntinuous running - gge 1000 2000 Speed (r/min)
55 (121.2) 70 (154.2) phase 200 to 220VAC/50Hz phase 200 to 220VAC/60Hz 42 (50Hz)/54 (60Hz) .21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GRZ( 6. Contact Mitsubishi 7. The vibration direct of the motor shaft). 8. MR-J2S-[CP-S084 9. The HA-LFS 20007 • For SkW, 7kW (20 A type, B type: Ver HA-LFS 20000 • [22000] • [22000] • [2000] • [2000] • [2000] • [2000] • [2000] • [1000- • [2000] • [	80% F Ind X : 11.7m/s² Y : 29.4m/s 95 (209.3) 126 (277.6) 3-phase 380 to 4 55 (50Hz) 0.12	3H maximum (non conde oors (no direct sunlight); 1000m         115 (253.4)         146 (321.7)         20VAC 50/60Hz         //75 (60Hz)         //0.11 (60Hz)         r the MR-J2S-A type) or No.         essory.         woment ratio exceeds the valie e diagram. The numeric value in the following amplifier soft h the following amplifier soft 30kW, 37kW (200V) or 45kW pe: Version A3 or above         Settvo mototor         16800- 0       120 0         400- 0       25200- 0         8400- 0       25400- 0         8400- 0       120 0	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 	H maximum (non conde mmable gas, oil mist or co- sea level X : 9.8m/s ² 180 (396.6) 	nsing) iust Y : 9.8m/s ² 230 (506.7)  DVAC 50/60Hz 110 (50Hz) 0.20 (50Hz) (approx. 1.0m ³ /min, □92 x monly the bracket in the opp e allowable value. • For 11kW, 22kW or 55kW ( B type: Version A4 or above <b>DVAC type)</b> e 1, 2) $(\frac{c}{2} \frac{56000}{2} \frac{c}{2} \frac{400}{200} \frac{c}{100} \frac{c}{ran}$ 14000- 100 Cran 100 Con 100 Co	/150 (60Hz) /0.22 (60Hz) 2 units) are posite direction x↓ (400V) 30K24 (Note 1, 2) ak running range ntinuous running - ge
55 (121.2) 70 (154.2) phase 200 to 220VAC/50Hz 42 (50Hz)/54 (60Hz) 21 (50Hz)/0.25 (60Hz) 5. The values apply w installed. The GRZ 6. Contact Mitsubishi 7. The vibration direct of the motor shaft). 8. MR-J2S-□CP-S084 9. The HA-LFS 20007 • For 5kW, 7kW (20 A type, B type: Ver <b>TA-LFS 2000</b> HA-LF (2000- 50 - 1000- 7000- 0 - 0 - 0 - 0 - 0 - 0 - 0 -	80% F Ind X : 11.7m/s² Y : 29.4m/s 95 (209.3) 126 (277.6) 3-phase 380 to 4 55 (50Hz) 0.12	AH maximum (non conde oors (no direct sunlight); 1000m 32 115 (253.4) 146 (321.7) 20VAC 50/60Hz //75 (60Hz) //75 (7	ensing), storage: 90% F no corrosive gas, inflar (3280ft) or less above s 160 (352.5) 	H maximum (non conde mmable gas, oil mist or co- sea level X : 9.8m/s ² 3-phase 380 to 460 )/85 (60Hz) )/0.14 (60Hz) s changed, and cooling fans alue of the component (comm approximately one-half of th 00V/) be: Version B2 or above <b>cteristics (400</b> HA-LFS22K24 (B) (Note HA-LFS55K24 (Note 1, 2 ) 0 Deak running range 0 Deak running range	nsing) iust Y : 9.8m/s ² 230 (506.7)  DVAC 50/60Hz 110 (50Hz) 0.20 (50Hz) (approx. 1.0m ³ /min, □92 x monly the bracket in the opp e allowable value. • For 11kW, 22kW or 55kW ( B type: Version A4 or above <b>DVAC type)</b> e 1, 2) $(\frac{c}{2} \frac{56000}{2} \frac{c}{2} \frac{400}{200} \frac{c}{100} \frac{c}{ran}$ 14000- 100 Cran 100 Con 100 Co	/150 (60Hz) /0.22 (60Hz) 2 units) are posite direction x↓ ////// /400V) 30K24 (Note 1, 2) ak running range 1000 2000 Speed (r/min) 3-phase 400VAC.

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<b>HC-RFS</b> serie	s servo motor	specifications
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	Servo mo	tor series		HC-RFS series	s (Ultra-low inertia, med	dium capacity)			
$\square$	Models	Servo motor model HC-RFS	103 (B)	153 (B)	203 (B)	353 (B)	503 (B)		
Sp	ecifications	Servo-amp model MR-J2S- (Note 6)	200A/B/CP/CL		350A/B/CP/CL	500A/B/CP/CL (Note 7)			
	Power facility capa	city (Note 1) (kVA)	1.7	2.5	3.5	5.5	7.5		
	Continuous	Rated output (kW)	1.0	1.5	2.0	3.5	5.0		
	running duty	Rated torque (N·m [oz·in])	3.18 (450.3)	4.78 (676.8)	6.37 (902.1)	11.1 (1571.8)	15.9 (2251.4)		
	Maximum torque (I	√m [oz·in])	7.95 (1125.7)	11.9 (1685.0)	15.9 (2251.4)	27.9 (3950.6)	39.7 (5621.5)		
	Rated speed (r/mir	ו)			3000				
	Maximum speed (r	/min)			4500				
	Permissible instanta	neous speed (r/min)			5175				
	Power rate at conti	nuous rated torque (kW/s)	67.4	120	176	150	211		
	Rated current (A)		6.1	8.8	14	23	28		
	Maximum current (A)		18.4	23.4	37	58	70		
۲ ا	Regenerative	With no options	1090	860	710	174	125		
Servo motor	braking frequency	MR-RB30 (300W)	3270	2580	2130	401	288		
۲۷	(times/min) (Note 2)	MR-RB50 (500W) (Note 5)	5450	4300	3550	669	479		
Se	Moment of inertia J (×10 ⁻⁴ kg·m ² )	Standard	1.5 (8.2)	1.9 (10.4)	2.3 (12.6)	8.6 (47.0)	12.0 (65.6)		
	[J (oz·in ² )]	With electromagnetic brake	1.85 (10.1)	2.25 (12.3)	2.65 (14.5)	11.8 (64.5)	15.5 (84.7)		
	Recommended loa	d/motor inertia moment ratio	5 times the servo motor's inertia moment maximum (Note 3)						
	Speed/position det	ector	17-l	oit encoder (Resolution	i per encoder/servo mo	otor rotation: 131072 p/	rev)		
	Attachments				Oil seal				
	Structure		Totally enclosed non ventilated (protection level: IP65)						
		Ambient temperature	0 to 40°C	(32 to 104°F) (non free	ezing), storage: -15 to 2	70°C (5 to 158°F) (non	freezing)		
	Environment	Ambient humidity	80% RH	maximum (non conde	nsing), storage: 90% R	H maximum (non conc	lensing)		
	Livionnent	Atmosphere	Indoc	ors (no direct sunlight);	no corrosive gas, inflai	mmable gas, oil mist o	r dust		
		Elevation/vibration (Note 4)		1000m (3280ft) or les	s above sea level; X: 2	4.5 m/s ² , Y: 24.5 m/s ²			
	Mass	Standard	3.9 (8.6)	5.0 (11.0)	6.2 (13.7)	12 (26.4)	17 (37.5)		
	(kg [lb])	With electromagnetic brake	6.0 (13.2)	7.0 (15.4)	8.3 (18.3)	15 (33.0)	21 (46.3)		

Notes: 1. The power facility capacity varies depending on the power supply's impedance. 2. 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). Þ

details on the tolerable regenerative power (W).
Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.
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). Freting of the bearing occurs easily when the motor stops, so maintain vibration to approximately one-half of the allowable value.

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5. Install a coling fan (aprox. 1.0m³/min, ^{[192}). 6. MR-J2S-^[]CP-S084 is also compatible. The compatible motor is the same as MR-J2S-^[]CP. 7. The HC-RFS series 3.5kW/5.0kW is compatible with the following amplifier software version:

A type, B type: Version B0 or above

#### HC-RFS series servo motor torque characteristics



#### **HC-UFS series servo motor specifications**

Ser	rvo mot	tor series	HC-UFS	2000r/min se	eries (Flat mo	del, medium	capacity)	HC-UFS 300	Or/min series (	Flat model, sr	nall capacity)
M	lodels	Servo motor model HC-UFS	72 (B)	152 (B)	202 (B)	352 (B)	502 (B)	13 (B)	23 (B)	43 (B)	73 (B)
Specifications	Servo-amp model MR-J2S- (Note 9)		70A/B/CP/CL	200A/B/CP/CL	350A/B/CP/CL	500A/E (Not	8/CP/CL e 10)		20A (1)/B (1)/ CP (1)/CL (1)		70A/B/CP/CL
Power facility	y capa	city (Note 1) (kVA)	1.3	2.5	3.5	5.5	7.5	0.3	0.5	0.9	1.3
Continuous		Rated output (kW)	0.75	1.5	2.0	3.5	5.0	0.1	0.2	0.4	0.75
running duty	/	Rated torque (N·m [oz·in])	3.58 (506.9)	7.16 (1013.8)	9.55 (1352.3)	16.7 (2364.7)	23.9 (3384.2)	0.32 (45.3)	0.64 (90.6)	1.3 (184.1)	2.4 (339.8)
Maximum tor	rque (N	√m [oz·in])	10.7 (1515.1)	21.6 (3058.6)	28.5 (4035.6)	50.1 (7094.2)	71.6 (10138.6)	0.95 (134.5)	1.9 (269.0)	3.8 (538.1)	7.2 (1019.5)
Rated speed	d (r/min	1)			2000				30	000	
Maximum sp	beed (r,	/min)		3000		25	00		45	500	
Permissible i	instant	aneous speed (r/min)		3450		28	75		51	75	
Power rate a	at conti	nuous rated torque (kW/s)	12.3	23.2	23.9	36.5	49.6	15.5	19.2	47.7	9.76
Rated currer	nt (A)		5.4	9.7	14	23	28	0.76	1.5	2.8	4.3
Maximum cu	urrent (	A)	16.2	29.1	42	69	84	2.5	4.95	9.24	12.9
		With no options	53	124	68	44	31	(Note 4)	(Note 4)	410	41
Regenerative	Regenerative braking frequency (times/min)	MR-RB032 (30W)	79	_	_	_	_	(Note 4)	(Note 4)	1230	62
braking freq		MR-RB12 (100W)	264	_	_	_	_	_	(Note 4)	4100	206
		MR-RB30 (300W)	_	372	203	102	72			_	—
E (Note 2, 3)		MR-RB32 (300W)	791	_	_	_	_	_		_	618
erv		MR-RB50 (500W) (Note 8)	_	620	338	169	119	_		_	_
Moment of ir J (×10 ⁻⁴ kg·m ²		Standard	10.4 (56.9)	22.1 (120.8)	38.2 (208.8)	76.5 (418.2)	115 (628.7)	0.066 (0.361)	0.241 (1.317)	0.365 (1.995)	5.90 (32.3)
[J (oz·in ² )]	-)	With electromagnetic brake	12.4 (67.8)	24.1 (131.7)	46.8 (255.8)	85.1 (465.2)	123.6 (675.7)	0.074 (0.405)	0.323 (1.766)	0.447 (2.444)	6.10 (33.3)
Recommend	led loa	d/motor inertia moment ratio	15 times the servo motor's inertia moment maximum (Note 5)								
Speed/positi	ion det	ector	17-bit encoder (Resolution per encoder/servo motor rotation: 131072 p/rev)								
Attachments	3						Oil seal				
Structure			Totally e	enclosed non	ventilated (p	protection lev	el: IP65)	Totally enclose	d non ventilated	(protection leve	I: IP65) (Note 6)
		Ambient temperature		0 to 40°C (3	32 to 104°F)	(non freezing	), storage:	15 to 70°C (5	to 158°F) (n	on freezing)	
		Ambient humidity		80% RH n	naximum (no	n condensing	g), storage: 9	0% RH maxi	mum (non co	ondensing)	
Environment		Atmosphere		Indoors	(no direct si	unlight); no c	orrosive gas,	inflammable	e gas, oil mis	t or dust	
		Elevation				1000m (3280	)ft) or less ab	ove sea leve	el		
		Vibration (Note 7)	X, Y: 2	4.5m/s²	X: 24	4.5m/s², Y: 49	)m/s²		X, Y: 4	49m/s²	
Mass		Standard	8 (17.6)	11 (24.2)	16 (35.3)	20 (44.1)	24 (52.9)	0.8 (1.76)	1.5 (3.30)	1.7 (3.75)	5.0 (11.02)
(kg [lb])		With electromagnetic brake	10 (22.0)	13 (28.6)	22 (48.5)	26 (57.3)	30 (66.1)	1.2 (2.64)	2.2 (4.85)	2.4 (5.29)	6.2 (13.66)

Notes: 1. The power facility capacity varies depending on the power supply's impedance. 2. 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 "Optional regeneration unit" in this catalog for details on the tolerable regenerative power (W). 3. 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 4. There are no limits on regeneration frequency as long as the effective torque is within the rated torque range.

Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.
 Connector for cable terminal are excluded. However, IP65-compliant products (HC-UFS_-S1) including connector components have been prepared.

7. 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. Install a cooling fan (approx. 1.0m³/min, []92).
 MR-J2S-[CP (1)-S084 is also compatible. The compatible motor is the same as MR-J2S-[CP (1).

10. The HC-UFS 2000r/min series is compatible with the following amplifier software version • For 3.5kW • For 5.0kW

A type, B type: Version B0 or above

A type: Version B5 or above B type: Version B4 or above CP type: Version A3 or above

#### **HC-UFS** series servo motor torque characteristics



## **Motor Dimensions**

65.5 (2.58)

2-0.3² 0.3m (11.8inch)

Brake lead (Note 3)

#### •HC-KFS053 (B), HC-KFS13 (B)

6 ø

28.7 (1.1

25.2

8

 $\otimes$  $\otimes$ 

Unit: mm (inch)

•HC-MFS053 (B), HC-MFS13 (B) 42 (1.65) 5 (0.20 40.5 (1.59) Q  $\bigotimes$ 

L

Encoder cable 0.3m (11.8inch) With 1-172169-9 cor



ith Brake	Power supply connector pin assignment					
1.4	Pin No.	Signal name				
2 5	1	U phase				
	2	V phase				
3 6	3	W phase				
A	4	Earth				
А	5	B1				
	6	B2				

Model	Variable dimensions				
woder	L	KL			
HC-KFS053 (B) HC-MFS053 (B)	81.5 (3.21) <109.5 (4.31)>	29.5 (1.16)			
HC-KFS13(B) HC-MFS13(B)	96.5 (3.80) <124.5 (4.90)>	44.5 (1.75)			

#### •HC-KFS23 (B), HC-KFS43 (B) HC-MFS23 (B), HC-MFS43 (B)

nade by AMP)



(Note 3)

9.9 (0.39)

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ff‡

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57

1_A

25 (0.98)

2.5 (0.10)

21.5 (0.85

(Note 5)

× Sh 6 150

ulok (Note 3)

Protective tubing

(ø 0.3

Power supply lead 4-AWG19 0.3m (11.8inch)

40 (1.57)

20 (0.79)

ø

Ø

35.7 (1.41)

45

Ø

ത

2-ø4.5 (ø0.177)

\$30h7 181

Power supply connector (made by Molex)

5557-04R-210 (receptacle) in standard case 5557-06R-210 (receptacle) (Note 3) 5556PBT (female terminal)

01.

Standard	Power supply connector pin assignme				
13	Pin No.	Signal name			
2 4	1	U phase			
	2	V phase			
A	3	W phase			
	4	Earth			

	Power supply connector pin assignm					
1.4	Pin No.	Signal name				
2 5	1	U phase				
	2	V phase				
3 6	3	W phase				
	4	Earth				
A	5	B1				
	6	B2				

Model	Variable dimensions			
Woder	L	KL		
HC-KFS23(B) HC-MFS23(B)	99.5 (3.92) <131.5 (5.18)>	49.1 (1.93)		
HC-KFS43(B) HC-MFS43(B)	124.5 (4.90) <156.5 (6.16)>	72.1 (2.84)		

#### HC-KFS73 (B), HC-MFS73 (B)



	Power sup connector	
3	Pin No.	Signal n
4	1	U pha

	Pin No.	Signal name
+	1	U phase
	2	V phase
	3	W phase
	4	Earth

	connector pin assignment						
1	Pin No.	Signal name					
	1	U phase					
2 V phase							
	3	W phase					
4 Earth							
5 B1							
	6	B2					

- Notes:
- Use a friction coupling to fasten a load

Dimensions inside <> are for the models with an electromagnetic brake.
 Only for the models with an electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have the polarity.

4. For dimensions where there is no tolerance listed, use general tolerance.

5. For HC-KFS053 (B) and KFS13 (B).

## **Motor Dimensions**

#### • HC-KFS46

Unit: mm (inch)



#### HC-KFS410



Notes:

Use a friction coupling to fasten a load.
 For dimensions where there is no tolerance listed, use general tolerance.



Unit: mm (inch)

- HC-SFS52 (B), HC-SFS102 (B), HC-SFS152 (B), HC-SFS524 (B), HC-SFS1024 (B), HC-SFS1524 (B)
- HC-SFS53 (B), HC-SFS103 (B), HC-SFS153 (B)



- HC-SFS121 (B), HC-SFS201 (B), HC-SFS301 (B)
- HC-SFS202 (B), HC-SFS352 (B), HC-SFS502 (B), HC-SFS702 (B), HC-SFS2024 (B), HC-SFS3524 (B), HC-SFS5024 (B), HC-SFS7024 (B)
- HC-SFS203 (B), HC-SFS353 (B)



Model			Variable dimensions			
1000 r/min	2000 r/min	3000 r/min	L	KL	KL KA KB	
HC-SFS121 (B)	HC-SFS202 (B) HC-SFS2024 (B)	HC-SFS203 (B)	145 (5.71) <193 (7.60)>	68.5 (2.70)	142 (5.59)	46 (1.81)
HC-SFS201 (B)	HC-SFS352 (B) HC-SFS3524 (B)	HC-SFS353 (B)	187 (7.36) <235 (9.25)>	110.5 (4.35)	142 (5.59)	46 (1.81)
HC-SFS301 (B)	HC-SFS502 (B) HC-SFS5024 (B)	—	208 (8.19) <256 (10.08)>	131.5 (5.18)	142 (5.59)	46 (1.81)
-	HC-SFS702 (B) HC-SFS7024 (B)	—	292 (11.50) <340 (13.39)>	210.5 (8.29)	150 (5.91)	58 (2.28)

Notes

- 1. Use a friction coupling to fasten a load.
- 2. Dimensions inside < > are for the models with an electromagnetic brake.
- 3. Only for the models with an electromagnetic brake. The electromagnetic brake terminals do not have the polarity.
- 4. For dimensions where there is no tolerance listed, use general tolerance.

• HC-LFS52 (B), HC-LFS102 (B), HC-LFS152 (B)

Unit: mm (inch)



#### • HC-LFS202 (B), HC-LFS302 (B)



Model	Variable dimensions			
Widder	L	KL		
HC-LFS202 (B)	200 (7.87) <248 (9.76)>	123.5 (4.86)		
HC-LFS302 (B)	250 (9.84) <298 (11.73)>	173.5 (6.83)		

Notes:

- Use a friction coupling to fasten a load.
   Dimensions inside < > are for the models with an electromagnetic brake.
   Only for the models with an electromagnetic brake. The electromagnetic brake terminals do not have the polarity.
- 4. For dimensions where there is no tolerance listed, use general tolerance.

• HC-RFS103 (B), HC-RFS153 (B), HC-RFS203 (B)

Unit: mm (inch)



HC-RFS353	(B).	HC-RFS503	(B)



Model	Variable dimensions			
L		KL		
HC-RFS353 (B)	217 (8.54) <254 (10.00)>	148 (5.83)		
HC-RFS503 (B)	274 (10.79) <311 (12.24)>	205 (8.07)		

172 (6.77) <210 (8.27)>

197 (7.76) <235 (9.25);

96 (3.78)

121 (4.76)

HC-RFS153 (B)

HC-RFS203 (B)

Notes:

- Use a friction coupling to fasten a load.
   Dimensions inside < > are for the models with an electromagnetic brake.
   Only for the models with an electromagnetic brake. The electromagnetic brake terminals do not have the polarity.
- 4. For dimensions where there is no tolerance listed, use general tolerance.

## **Motor Dimensions**

#### • HA-LFS502

Unit: mm (inch)







• HA-LFS702







Notes:

Use a friction coupling to fasten a load.
 For dimensions where there is no tolerance listed, use general tolerance.

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- HA-LFS601 (B), HA-LFS6014 (B)
- HA-LFS701M (B), HA-LFS701M4 (B)
- HA-LFS11K2 (B), HA-LFS11K24 (B)



Unit: mm (inch)

*1 When the motor is used without a hanger, plug the thread hole with a bolt of M10×20 (0.7874) or shorter *2 The terminal block on the terminal box housing consists of M6 screws for the motor power supply (U, V, W), and M4 screws for the cooling fan (BU, BV) and for the thermal protector (OHS1, OHS2)

- HA-LFS801 (B), HA-LFS12K1 (B), HA-LFS8014 (B), HA-LFS12K14 (B)
- HA-LFS11K1M (B), HA-LFS15K1M (B), HA-LFS11K1M4 (B), HA-LFS15K1M4 (B)
- HA-LFS15K2 (B), HA-LFS22K2 (B), HA-LFS15K24 (B), HA-LFS22K24 (B)



- *1 When the motor is used without a hanger, plug the thread hole with a bolt of M12x20 (0.7874) or shorter. *2 The terminal block on the terminal box housing consists of M8 screws for the motor power supply (U, V, W), and M4 screws for the cooling fan (BU, BV, BW) and for the thermal protector (OHS1, OHS2).

Notes:

- . Use a friction coupling to fasten a load.
- 2. For dimensions where there is no tolerance listed, use general tolerance.
- 3. Dimensions inside < > are for the models with an electromagnetic brake
- Only for the models with an electromagnetic brake. The electromagnetic brake terminals do not have the polarity. 4.
- 5. Leave a clearance of at least 100mm (3.94inch) between the motor's suction side and wall.
- 6. Make sure that oil, water and dust, etc., will not enter the motor from the lead-in hole.

#### HA-LFS30K1M

Unit: mm (inch)



Мо		Vai	iable dimensi	ons		
1500r/min	2000r/min	L	LT	KL	FA	FB
—	HA-LFS30K2	615 (24.21)	381 (15)	421 (16.57)	105 (4.13)	260 (10.24)
HA-LFS30K1M	HA-LFS37K2	660 (25.98)	426 (16.77)	466 (18.35)	127 (5)	304 (11.97)

* The terminal block on the terminal box housing consists of M10 screws for the motor power supply (U, V, W), and M4 screws for the cooling fan (BU, BV, BW) and for the thermal protector (OHS1, OHS2).

#### HA-LFS37K1, HA-LFS37K14

#### HA-LFS50K1M4



* The terminal block on the terminal box housing consists of M10 screws for the motor power supply (U, V, W), and M4 screws for the cooling fan (BU, BV, BW) and for the thermal protector (OHS1, OHS2)

Notes

- 1. Use a friction coupling to fasten a load.
- 2. For dimensions where there is no tolerance listed, use general tolerance.
- Leave a clearance of at least 150mm (5.91inch) between the motor's suction side and wall.
   When the motor is used without a hanger, plug the threaded hole with a bolt of M16x20 (0.7874) or shorter.
- 5. Make sure that oil, water and dust, etc., will not enter the motor from the lead-in hole.
- 6. When mounting the motor with the shaft horizontal, fix the motor either with the legs or the flange, keeping the legs downward. Note that when fixing the motor with the flange, also fix the legs to support the motor.

- HA-LFS15K1, HA-LFS20K1, HA-LFS15K14, HA-LFS20K14
- HA-LFS22K1M, HA-LFS22K1M4, HA-LFS30K1M4
- HA-LFS30K24, HA-LFS37K24



Model			Variable dimensions				
1000r/min	1500r/min	2000r/min	L	LT	KL	FA	FB
HA-LFS15K1 HA-LFS15K14	HA-LFS22K1M HA-LFS22K1M4	HA-LFS30K24	605 (23.82)	386 (15.2)	426 (16.77)	105 (4.13)	260 (10.24)
HA-LFS20K1 HA-LFS20K14	HA-LFS30K1M4	HA-LFS37K24	650 (25.59)	431 (16.97)	471 (18.54)	127 (5)	304 (11.97)

* The terminal block on the terminal box housing consists of M8 screws for the motor power supply (U, V, W), and M4 screws for the cooling fan (BU, BV, BW) and for the thermal protector (OHS1, OHS2)

#### HA-LFS25K1, HA-LFS30K1, HA-LFS25K14, HA-LFS30K14

#### HA-LFS37K1M, HA-LFS37K1M4, HA-LFS45K1M4

HA-LFS45K24, HA-LFS55K24



	Model		Variable dimensions					
1000r/min	1500r/min 2000r/min		L	LT	KL	FA	FB	
HA-LFS25K1 HA-LFS25K14	HA-LFS37K1M HA-LFS37K1M4	HA-LFS45K24	640 (25.2)	399 (15.71)	439 (17.28)	101.5 (4)	262 (10.31)	
HA-LFS30K1 HA-LFS30K14	HA-LFS45K1M4	HA-LFS55K24	685 (26.97)	444 (17.48)	484 (19.06)	120.5 (4.74)	300 (11.81)	

* The terminal block on the terminal box housing consists of M10 screws for the motor power supply (U, V, W), and M4 screws for the cooling fan (BU, BV, BW) and for the thermal protector (OHS1, OHS2).

Notes:

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- . Use a friction coupling to fasten a load.
- For dimensions where there is no tolerance listed, use general tolerance.
   Leave a clearance of at least 150mm (5.91inch) between the motor's suction side and wall
- 4. When the motor is used without a hanger, plug the threaded hole with a bolt of M16x20 (0.7874) or shorter.
- 5. Make sure that oil, water and dust, etc., will not enter the motor from the lead-in hole.
- 6. When mounting the motor with the shaft horizontal, fix the motor either with the legs or the flange, keeping the legs downward. Note that when fixing the motor with the flange, also fix the legs to support the motor

Unit: mm (inch)

Unit: mm (inch)



Model	Variable dimensions								
Widder	L	KL	S						
HC-UFS72 (B)	110.5 (4.35) <144 (5.67)>	38 (1.50)	22 (0.8661)						
HC-UFS152 (B)	120 (4.72) <153.5 (6.04)>	47.5 (1.87)	28 (1.1024)						

#### • HC-UFS202 (B), HC-UFS352 (B), HC-UFS502 (B)



Model	Variable d	imensions
Woder	L	KL
HC-UFS202 (B)	118 (4.65) <161 (6.34)>	42.5 (1.67)
HC-UFS352 (B)	142 (5.59) <185 (7.28)>	66.5 (2.62)
HC-UFS502 (B)	166 (6.54) <209 (8.23)>	90.5 (3.56)

Notes

- Use a friction coupling to fasten a load.
   Dimensions inside < > are for the models with an electromagnetic brake.
- 3. Only for the models with an electromagnetic brake. The electromagnetic brake terminals do not have the polarity.
- 4. For dimensions where there is no tolerance listed, use general tolerance.

### **Motor Dimensions**

#### • HC-UFS13 (B)

Unit: mm (inch)



	Power sup connector	ply pin assignme
13	Pin No.	Signal name
	1	U phase
- تقرق	2	V phase
A	3	W phase
	4	Earth



HC-UFS23 (B), HC-UFS43 (B)





Standard	Power sup connector	ply pin assignment
13	Pin No.	Signal name
24	1	U phase
ر چېک	2	V phase
A	3	W phase
	4	Earth

ith Brake	Power supply
	connector pin assign

1

1	connector	pinassigninen
4	Pin No.	Signal name
5	1	U phase
	2	V phase
6	3	W phase
	4	Earth
A	5	B1
	6	B2

Notes

31

- 1. Use a friction coupling to fasten a load.
- 2. Dimensions inside < > are for the models with an electromagnetic brake.

3. Only for the models with an electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have the polarity.

4. For dimensions where there is no tolerance listed, use general tolerance.

#### Special shaft end specifications

Motors with the following specifications are available.

#### HC-KFS, HC-MFS, HC-UFS 3000r/min series

• With key (200, 400, 750W)



#### HC-SFS, HC-LFS, HC-RFS, HC-UFS 2000r/min, HA-LFS series

#### Key way

Motor	Capacity				Variabl	le dimens	ions					
model	(kW)	S	R	Q	W	QK	QL	U	r	Y	Fig.	<u>− R</u>
HC-SFS	K 0.5 to 1.5	24h6 (0.9449 _{-0.0005} )	(2.17) (1	50 .97) (	8 _0.036 (0.315_0.001	36 ) (1.42)	5 (0.20)	$4^{+0.2}_{0}_{0}_{0}_{0}_{0}_{0}_{0}_{0}_{0}_{0$	4 (0.16)			
HC-LFS (Note 3)	2.0 to 7.0	35 ^{+0.01} (1.3780 ^{+0.0004} )	79 (3.11) (2	75 2.95) (	10 _0.036 (0.394 _0.001	55 ) (2.17)	5 (0.20)		5 (0.20)			
HC-RFS K	1.0, 1.5, 2.0	24h6 (0.9449 ⁰ 0.0005)	(1.77) (1	40 .57) (	8 _ _{0.036} (0.315_ _{0.001}	) (0.98)	5 (0.20)		4 (0.16)	M8 screw		
	·	28h6 (1.1024 _{-0.0005} )	(2.48) (2	58 2.28) (	8 _0.036 (0.315_0.001	53 ) (2.09)	3 (0.12)		(0.16)	Depth: 20mm (0.787inch)	А	
	0.75	22h6 (0.8661_0_0005)	(2.17) (1	50 .97) (	6 _0.036 (0.236_0.001	42 ) (1.65)	3 (0.12)	$\begin{array}{c} 3.5 \stackrel{+0.1}{_{-}0} \\ (0.14 \stackrel{+0.004}{_{-}0}) \end{array}$	3 (0.12)	(0.707 men)		A-A
HC-UFS		28h6 (1.1024 _0_00005)	(2.17) (1		8 _0.036 (0.315_0.001		(0.20)	$\begin{pmatrix} 4 & +0.2 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\$	4 (0.16)			Fig. A
	2.0, 3.5, 5.0	$35  {}^{+0.01}_{0}_{0}_{0}_{0}_{0}_{0}_{0}_{0}_{0}_{0$		60 2.36) (	10 _ _{0.036} (0.394_ _{0.001}	) (1.97)	5 (0.20)	$\begin{bmatrix} 5 & +0.2 \\ 0 & 0 \\ (0.20 & +0.008 \\ 0 \end{bmatrix}$	5 (0.20)			
Note 1, 2)												R .
					Voria	blo dimo	nciono					I I I I I I I I I I I I I I I I I I I
Motor series		odel .FS_K)	S	R	Varia Q	able dime		QL U	r	Y	Fig.	• • • • •
series 6 7	(HA-L) 01, 6014 01M, 701M4	.FS_K)	42h6	85	Q	W 2-0.04	QK 70	$\begin{array}{c c} QL & U \\ 5 & 5 \\ 0.2) & (0.2 + 0.00) \\ \end{array}$	r ⁰⁸ ) (0.24			
series 6 7 5 8 1	(HA-L 01, 6014 01M, 701M4 02, 702, 11K 01, 12K1, 8014	, , ,2,11K24 4, 12K14, 11K1M4,15K1M4	42h6 (1.6535_0_0000	85 6)(3.35	Q 80 1 (3.15) (0.4	W 2-0.04 47-0.002) 6-0.04	QK 70 2.76) ( 90	5 5 0	⁰⁸ ) (0.24	)	Fig.	
Series 6 7 5 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(HA-L 01, 6014 01M, 701M4 02, 702, 11K 01, 12K1, 8014 1K1M,15K1M, 5K2, 22K2, 15 5K1, 20K1, 15k	, ,2,11K24 4,12K14, 11K1M4,15K1M4 K24,22K24 (14,20K14, 22K1M4,30K1M4	42h6 (1.6535 _{-0.000} , 55m6 , (2.1654 _{0.0004}	85 (3.35 (110 (4.33 140	Q 80 1 (3.15) (0.4 100 1 (3.94) (0.4	$     W     2^{0}_{-0.04}     47^{-0}_{-0.002})     6^{0}_{-0.04}     63^{0}_{-0.002})     8^{-0.04}     8^{-0.04} $	QK 70 (2.76) ( 90 (3.54) ( 128	$\begin{array}{c c} 5 & 5 & {}^{+0.2}_{0} \\ \hline 0.2) & (0.2 & {}^{+0.0}_{0} \\ \hline 5 & 6 & {}^{+0.2}_{0} \\ \end{array}$	⁰⁸ ) (0.24 ⁰⁸ ) (0.31 9	Same as standard motor's straight		
series 6 7 5 8 1 1 1 1 1 1 1 1 2 3 3 2 3 3	(HA-L 01, 6014 01M, 701M4 02, 702, 11K 01, 12K1, 801- 1K1M, 15K1M, 5K2, 22K2, 15 5K1, 20K1, 15k 2K1M, 30K1M, 0K2, 37K2, 30K	.FS	42h6 (1.6535_0.0001 555m6 (2.1654_0.0012 (2.3622_0.0012 (2.3622_0.0012 65m6	⁸⁵ (3.35 (3.35 (4.33 (4.33 (4.33 (5.51) (5.51)	Q           80         1           (3.15)         (0.4           100         1           (3.94)         (0.4           140         1           (5.51)         (0.7           140         1	W     2 - 0.04     47 - 0.002)     6 - 0.04     63 - 0.002)     8 - 0.04     71 - 0.002)     8 - 0.04     71 - 0.002)     8 - 0.04     71 - 0.002)	QK 70 (2.76) ( 90 (3.54) ( 128 (5.04) (( 128	$\begin{array}{c} 5 \\ 5 \\ 0.2 \end{array} \left( \begin{array}{c} 5 \\ 0.2 \end{array} \right) \left( \begin{array}{c} 0.2 \\ 0.2 \end{array} \right) \left( \begin{array}{c} 0.2 \\ 0.2 \end{array} \right) \left( \begin{array}{c} 0.2 \\ 0 \end{array} \right) \left( \begin{array}{$	⁰⁸ ) (0.24 ⁰⁸ ) (0.31 ⁰⁸ ) (0.35 9 9	Same as standard motor's straight shaft.		

Notes:

Notes: 1. Cannot be used in applications that involve high frequency. Loose keys may damage the motor shaft. 2. A key is not supplied with the motor. The key shall be installed by the user. 3. The HC-SFS121 is the same as the lower row (2.0 to 7.0kW). 4. The HC-KFS46 and HC-KFS410 servo motors are also compatible with the keyway specifications. The dimensions are the same for the HC-KFS23K and HC-KFS43K.

#### **Electromagnetic brake specifications**

Motor n	nodol				HC-KF	S, MFS							ŀ	HC-SFS 1	000r/mi	n		
Motor model		053B	053B 13B 23B 43B 73B															301B
Туре				5	Spring-actio		rake				_		Spri	ng-action		orake		
Rated voltage	(					DC-10%					_			24VD				
Brake static	(N·m)	0.32		0.32		.3	1.3			.4	_	8.3	43		43			43.1
friction torque	(oz·in)	45.3		45.3		84	184			40		1176		03		03		6103
Power consumption (	· · · · · · · · · · · · · · · · · · ·	6.3		6.3		7.9	7.9			9		19	-	4		4		34
	(J)/time	5.6		5.6		22	22			64		400	-	00		00		4500
Permissible braking work	(oz.in)/time	793.6	<u> </u>	793.6		17.6	3117			69.3		6683.3		687.1	6376			37687.1
DIAKING WORK	(J)/hour (oz.in)/hour	56		56		20	220			40	-	4000	-	000	450			45000
	(02.111)/11001	7936	j	7936	31	176	3117	6	90	693	5	66833	637	6871	6376	5871	63	376871
Brake life (Note 1) (Braking work per braking action)	Times	20000 (4J)	D	20000 (4J)		000 5J)	2000 (15.			000 2J)		20000 200J)		000 00J)		000 00J)		20000 1000J)
Matau								ŀ	IC-SFS	2000r/r	nin							
Motor n	nodel	52B	102B	152B	202B	352B	502	2B	702B	524	B 1	024B	1524B	2024B	3524	B	5024B	7024B
Туре				Sprin	g-action sa	fety brake							Spring-a	ction safe	ety brake	9		
Rated voltage					24VDC-1	0%							2	4VDC_10	%			
Brake static	(N⋅m)	8.3	8.3	8.3	43.1	43.1	43.	.1	43.1	8.3	3	8.3	8.3	43.1	43.1		43.1	43.1
friction torque	(oz₊in)	1176	1176	1176	6103	6103	610	03	6103	117	'6 1	176	1176	6103	6103	3	6103	6103
Power consumption (	(W) at 20°C (68°F)	19	19	19	34	34	34	1	34	19		19	19	34	34		34	34
	(J)/time	400	400	400	4500	4500	450	00	4500	400	0	400	400	4500	4500	0	4500	4500
Permissible	(oz.in)/time	56683.3	56683.3	56683.	3 637687.	1 637687	.1 63768	87.1 6	37687.1	5668	3.3 56	683.3 5	6683.3	637687.1	63768	7.1 6	637687.1	637687.
braking work	(J)/hour	4000	4000	4000	45000	45000	) 450	00	45000	400	0 4	4000	4000	45000	4500	0	45000	45000
	(oz.in)/hour	566833	566833	56683	3 637687	1 637687	71 6376	871 6	376871	5668	33 56	6833	566833	6376871	63768	71 6	6376871	637687
Brake life (Note 1) (Braking work per braking action)	Times	20000 (200J)	20000 (200J)	20000 (200J)		20000			20000 1000J)	2000 (200		0000 200J)	20000 (200J)	20000 (1000J)	2000 (1000		20000 (1000J)	20000 (1000J)
Motor n	nodel	53B	HC- 103B	SFS 3000 153B	r/min 203B	353B	52B	102		52B	202B	302B	103B	153		RFS 3B	353B	503B
Туре				action safe	-			Spr	ng-actio		-			Sprir	-		ety brake	
Rated voltage			2	24VDC_10	%				24V[	DC-10%					24VD	C_10%	6	
Brake static	(N·m)	8.3	8.3	8.3	43.1	43.1	8.3	8.3	3 1	8.3	43.1	43.1	6.8	6.8		.8	16.7	16.7
friction torque	(oz.in)	1176	1176	1176	6103	6103	1176	117		176	6103	6103	964	964		64	2365	2365
Power consumption (		19	19	19	34	34	19	19		19	34	34	19	19		9	23	23
	(J)/time	400	400	400	4500	4500	400	40		100	4500	4500	400	400		00	400	400
Permissible	(oz.in)/time	56683.3	56683.3	56683.3	637687.1	637687.1	56683.3	-			637687.	-	_	-		83.3	56683.3	-
braking work	(J)/hour	4000	4000	4000	45000	45000	4000	400		000	45000	45000	4000	400		000	4000	4000
	(oz₊in)/hour	566833	566833	566833	6376871	6376871	566833	5668	33 56	6833	6376871	637687	1 56683	3 5668	33 566	833	566833	566833
Brake life (Note 1) (Braking work per braking action)	Times	20000 (200J)	20000 (200J)	20000 (200J)	20000 (1000J)	20000 (1000J)	20000 (200J)	200 (200		0000 00J)	20000 (1000J)	20000 (1000J				000 00J)	20000 (200J)	20000 (200J)
				F	A-LFS 100	0r/min							HA-I	FS 1500	r/min			
Motor n	nodel	601B	801			6014B	8014B	12	2K14B	701	MB	11K1MB	15K1M		1M4B	11K	1M4B   1	I5K1M4B
Туре					g-action sa									ction safe				
Rated voltage					24VDC-1	-								4VDC_10	-			
Brake static	(N·m)	82	160	.5	160.5	82	160.5	-	60.5	8	2	160.5	160.	5	82	16	60.5	160.5
friction torque	(oz.in)	11618	2274	41 2	2741	11618	22741	2	2741	116	618	22741	2274	1 1	1618	22	741	22741
Power consumption		30	46		46	30	46		46		0	46	46		30		46	46
	(J)/time	3000	500		5000	3000	5000		5000	-	00	5000	500		3000		000	5000
Permissible	(oz.in)/time	425058	7084			25058	708430	_	08430		058	708430	7084		25058		3430	708430
braking work	(J)/hour	30000	500			30000	50000	_	0000		000	50000	5000		0000		000	50000
	(oz.in)/hour	4250580				250580	7084300		84300	4250		7084300	70843		50580			7084300
Brake life (Note 1) (Braking work per braking action)	Times	20000 (1000J)	200	200	20000	20000 1000J)	20000 (3000J)	2	0000 000J)	200	000 00J)	20000 (3000J)	2000	00 2	0000 000J)	20	0000 000J)	20000 (3000J)
				HA-LFS2	000r/min					HC-U	FS 2000	r/min			HC-	UFS (	3000r/min	1
Motor n	nodel	11K2B	15K2B		11K24B	15K24B	22K24B	72B	15		202B	352B	502B	13B			43B	73B
Туре					safety bral			, 20	-			ty brake					safety br	
Rated voltage			Cpi	24VD													C_10%	
	(N·m)	82	160.5	160.5	82	160.5	160.5	8.3	8		43.1	43.1	43.1	0.32			1.3	2.4
Brake static friction torque	(oz.in)	11618	22741	22741	11618	22741	22741	1176			6103	6103	6103	45.3	_		1.3	340
Power consumption (	. ,	30	46	46	30	46	46	19	1		34	34	34	6.3	7.		7.9	10
- inclusion of the second seco	(J)/time	3000	5000	5000	3000	5000	5000	400	40		4500	4500	4500	5.6	2		22	64
Permissible	(oz.in)/time		708430	708430			708430	56683					1 637687.	-	_		3117.6	9069.3
1 CITIISSIDIE	(02)/ 01110	120000	. 00 100	. 00+00	120000			55000	.5 500	0 0.0	57007.1	307007.	. 1007 007.	. 700.0		1.0	0.17.0	0000.0

braking work

Brake life (Note 1) (Braking work per braking action)

(J)/hour

Times

(oz.in)/hour

Notes The brake gap cannot be adjusted. The brake life shows the time until the readjustment is needed.
 The electromagnetic brake is for holding. It cannot be used for braking applications.

(3000J)

(3000J)

(1000J)

4250580 7084300 7084300

(3000J)

(3000J)

(200J)

(200J)

(1000J)

(1000J)

(1000J)

(4J)

(15J)

(15J)

(32J)

(1000J)

## Peripheral Equipment (MR-J2S-A)

#### Connections with peripheral equipment

Peripheral equipment is connected to MR-J2S-A as described below. Connectors, options, and other necessary equipment are available so that users can set up MR-J2S-A easily and begin using it right away.



3. The connections with the peripheral devices shown above apply for the MR-J2S-350A or smaller servo amplifier. Connect MR-J2S-500A or larger and MR-J2S-60A4 (400V type) or larger as shown in the standard connection diagram.

4. For MR-J2S-100A or smaller, the special specification model with the conventional screw type terminal block connector, MR-J2S-

## **Amplifier Specifications**

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

	Servo a	amplifier model MR-J2S-	10A 20A 40A 60A 70A	100A 200A 350A 500	0A 700A 1	1KA 15KA 2	22KA 30KA 37	KA 10A1 20A1	1 40A1		
	Co	nverter unit model		_			MR-HP30	KA —			
		Voltage/frequency		1-phase 100 to 50/60H							
	Control circuit power	Permissible voltage fluctuation		1-phase 85 to							
	supply	Permissible frequency fluctuation		±5% maximum	n			±5% maxi	imum		
		Power consumption (W)		50				50			
	Main	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 or 2 phase 200 to 220VAC 50/00Ltz (Mate 2)							
	circuit power supply	Permissible voltage fluctuation	3-phase 200 to 230VAC: 170 to 253VAC 1-phase 230VAC: 207 to 253VAC	3-phase	170 to 253\	/AC	power is supplied from the converter	1-phase 85 to	) 127VAC		
		Permissible frequency fluctuation		±5% maximum	n		unit.	±5% maxi	imum		
	Control s	ystem		Sine-wave PWM con	ntrol/current	control syste	em				
	Dynamic	brake	Built-in	(Note 3)		Exteri	nal option	Built-in (N	lote 3)		
	Safety fe	atures		regeneration overvoltag neat protection, encode n power outage protecti	er fault prote	ction, regene	eration fault prot	ection,			
		Maximum input pulse frequency	500kpps (whe	n using differential rece	eiver), 200 k	pps (when u	sing open colle	ctor)			
5		Positioning feedback pulse	Re	solution per encoder/se	ervo motor r	otation: 1310	72 p/rev				
Servo amplifier	Position	Command pulse multiple	Electronic gear	A/B multiple, A: 1 to 655	535 or 1310	72, B: 1 to 65	535 1/50 < A/B	< 500			
amp	control	Positioning complete width setting		0 to ±10000 pulse	es (comman	d pulse unit)					
02	mode	Excess error	±2.5 rotations								
Ser		Torque limit	Set by parameters or external analog input (0 to +10VDC/maximum torque)								
		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 control mode	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	Analog torque command input		$0$ to ±8VDC/maximum torque (input impedance 10 to 12k $\Omega$ )							
	mode	Speed limit		arameters or external ar		-					
	Structure		Self-cooling open (IP00) Fan cooling open (IP00) Self-cooling open (I								
		Ambient temperature	0 to 55°C (32 to 131°F) (non freezing), storage: -20 to 65°C (-4 to 149°F) (non freezing) 90% RH maximum (non condensing), storage: 90% RH maximum (non condensing)								
	Environ-	Ambient humidity									
	ment	Atmosphere	Indoors (no d	direct sunlight); no corro	osive gas, ir	iflammable g	as, oil mist or d	ust			
		Elevation		1000m (3280ft) o							
	Mass (	Vibration (kg [lb])	0.7 0.7 1.1 1.1 1.7 (1.5) (1.5) (2.4) (2.4) (3.7)	1.7 2.0 2.0 4.		15 16	20 47 4		1.1		
	Main	Voltage/frequency (Note 1)	(1.5) (1.5) (2.4) (2.4) (3.7)	(3.7) (4.4) (4.4) (10 —	).8)(15.9) (	33) (33.3)(	44.1)(103.5)(103 3-phase 200 to 230\ 50/60Hz (Note 2)	AC	) (2.4)		
ţ	circuit power supply	Permissible voltage fluctuation									
inni		Permissible frequency fluctuation		_			±5% ma	K. —			
Converter unit	Orintinal	Voltage/frequency		_			1-phase 200 to 230V 50/60Hz	AC —			
Ö	Control circuit	Permissible voltage fluctuation		_			1-phase 170 to 253V				
	power	nucluation									
	power supply	Permissible frequency fluctuation		_			±5% ma	к. <u> </u>			
				_			±5% ma 50	к. — —			

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 a	amplifier model MR-J2S-	60A4	100A4	200A4	350A4	500A4	700A4 (-U_)	11KA4	15KA4	22KA4	30KA4	37KA4	45KA4	55KA4
	Cc	onverter unit model					_	1	1				MR-H		
		Voltage/frequency			24\	/DC				1_r	haca 38(	0 to 480V		)Hz	
	Control				241					1-6		0 10 400 0		JI 12	
	circuit power	Permissible voltage fluctuation			20.4 to 2	27.6VDC					1-phase	e 323 to 5	528VAC		
	supply	Permissible frequency fluctuation			-	_					±5'	% maxim	um		
		Power consumption (W)			2	25						50			
	Main	Voltage/frequency (Note 1)			3-phas	e 380 to 4	480VAC 5	60/60Hz (	(Note 2)			The ser	vo ampli	ifier's mai	n oirouit
	circuit power supply	Permissible voltage fluctuation				3-phas	e 323 to !	528VAC					er is sup	plied fror rter unit.	
	bappiy	Permissible frequency fluctuation				±5	% maxim	um				-			
	Control s	system				:	Sine-wav	e PWM co	ontrol/cur	rent contr	ol system	n			
	Dynamic				Bui	ilt-in					Ext	ternal opt	ion		
	Safety fe	atures	Ov	servo	motor ov	verheat p	rotection,	encoder	e shutdow fault prot on, oversj	ection, re	generatio	on fault p	rotection	,	
		Maximum input pulse frequency			500kpps	(when u	sing diffe	rential rec	ceiver), 20	00 kpps (v	when usii	ng open d	collector)	)	
L.		Positioning feedback pulse				Resolu	ution per	encoder/s	servo mot	or rotatio	n: 13107	2 p/rev			
Servo amplifier	Position	Command pulse multiple		E	lectronic	gear A/B	multiple,	A: 1 to 65	5535 or 1	31072, B:	1 to 655	35 1/50 <	: A/B < 5	00	
amp	control	Positioning complete width setting					0 to ±1	0000 puls	ses (comr	mand pul	se unit)				
٢٧	mode	Excess error						±2	2.5 rotatio	ns					
Se		Torque limit		Set by parameters or external analog input (0 to +10VDC/maximum torque) Analog speed command 1:2000, internal speed command 1:5000											
		Speed control range			A	Analog sp	eed com	mand 1:2	2000, inter	nal spee	d comma	and 1:500	0		
		Analog speed command input					0 to	±10VDC	/rated sp	eed (Note	e 3)				
	Speed control mode	Speed fluctuation rate	±	:0.2% ma	ximum (a		(	)% (powe	(load fluc er fluctuat 10°C [77°	ion ±10%	)	·	ig speed	comman	d
		Torque limit			Set b	y parame	ters or ex	ternal an	alog inpu	t (0 to +1	0VDC/ma	aximum to	orque)		
	Torque control	Analog torque command input				0 to ±8	VDC/ma>	kimum tor	que (inpu	it impeda	nce 10 to	o 12kΩ)			
	mode	Speed limit			Set	by parar	meters or	external	analog in	put (0 to :	±10VDC/i	rated spe	ed)		
	Structure	9	Self-cooling, open (IP00)				Fai	n cooling,	, open (IF	'00) (Note	e 4)				
		Ambient temperature		0 t	o 55°C (3	32 to 131°	°F) (non fr	reezing), :	storage: -	-20 to 65°	°C (–4 to	149°F) (n	on freezi	ing)	
	_ ·	Ambient humidity		ç	90% RH n	naximum	(non con	densing),	, storage:	90% RH	maximur	m (non co	ndensing	g)	
	Environ- ment	Atmosphere			Indoors	s (no dire	ct sunligh	it); no cor	rosive ga	s, inflamn	nable ga	s, oil mist	or dust		
		Elevation					1000r	m (3280ft	) or less a	lbove sea	a level				
		Vibration						5.9m	n/s² maxir	num					
	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
	Main	Voltage/frequency (Note 1)					_					380 to 4		hase 50/60Hz (	Note 2)
ij	circuit power supply	Permissible voltage fluctuation					_					3-p	bhase 32	3 to 528V	AC
r un		Permissible frequency fluctuation					_						±5% m	aximum	
erte		Voltage/frequency	_									1-phas	e 380 to	480VAC 5	50/60Hz
Converter unit	Control circuit	Permissible voltage fluctuation					_					1-p	bhase 32	3 to 528V	AC
	power supply	Permissible frequency fluctuation					_						±5% m	aximum	
	1 2 2 1 2 2 1 2 1 2 1 2	Power consumption (W)					_					50			

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.

## MR-J2S-A (1)/MR-J2S-A (4) type: Position control operation

## Connection to QD75D (position servo, incremental)



Notes

- 1. Do not reverse the diode's direction. Connecting it backwards could cause the amplifier to malfunction that signals are not output, and emergency stop and other safety circuits are inoperable
- 2. Make sure that sum of the current flowing to external relays does not exceed 80mA. If it exceeds 80mA, supply interface power from an external source
- 3. EMG (emergency stop) contact (normally closed contact) must be installed. If it is not installed, operation will be impossible 4. LSP and LSN contacts must be closed for normal operation. If they are not closed, the commands will not be accepted.
- 5. Signals with the same name are connected inside.
- 6. CN1A, CN1B, CN2 and CN3 are all the same shape. Make sure to connect them correctly. Wrong connection can cause damage
- Malfunction signal (ALM) is turned on during normal operation when no alarms have been triggered.
- Connect the shield wire securely to the plate inside the connector (ground plate).
   This connection is not necessary for QD75D of the positioning unit. Note that the connection between LG and Control common terminal is recommended to increase noise resistance depending on the positioning unit being used. 10. Always connect the servo amplifier protection ground (PE) (for preventing shocks) to the control box's protection ground (PE).

## MR-J2S-A (1)/MR-J2S-A (4) type: Speed control operation

## Connection



Notes

1. Do not reverse the diode's direction. Connecting it backwards could cause the amplifier to malfunction that signals are not output, and emergency stop and other safety circuits are inoperable

2. Make sure that sum of the current flowing to external relays does not exceed 80mA. If it exceeds 80mA, supply interface power from an external source.

EMG (emergency stop) contact (normally closed contact) must be installed. If it is not installed, operation will be impossible
 LSP and LSN contacts must be closed for normal operation. If they are not closed, the commands will not be accepted.

Signals with the same name are connected inside.
 CN1A, CN1B, CN2 and CN3 are all the same shape. Make sure to connect them correctly. Wrong connection can cause damage

Malfunction signal (ALM) is turned on during normal operation when no alarms have been triggered
 Connect the shield wire securely to the plate inside the connector (ground plate).

9. Always connect the servo amplifier protection ground (PE) (for preventing shocks) to the control box's protection ground (PE)

## MR-J2S-A (1)/MR-J2S-A (4) type: Torque control operation

### Connection



#### Notes

- 1. Do not reverse the diode's direction. Connecting it backwards could cause the amplifier to malfunction that signals are not output, and emergency stop and other safety circuits are inoperable
- 2. Make sure that sum of the current flowing to external relays does not exceed 80mA. If it exceeds 80mA, supply interface power from an external source. 3. EMG (emergency stop) contact (normally closed contact) must be installed. If it is not installed, operation will be impossible
- 4. Signals with the same name are connected inside.
- Conta, CNTB, CN2 and CN3 are all the same shape. Make sure to connect them correctly. Wrong connection can cause damage
   Malfunction signal (ALM) is turned on during normal operation when no alarms have been triggered.
- . Connect the shield wire securely to the plate inside the connector (ground plate).
- 8. Always connect the servo amplifier protection ground (PE) (for preventing shocks) to the control box's protection ground (PE).

## Main circuit/control circuit power supply connection examples

## (1) 1-phase 100V



## (2) 1-phase 230V



#### (3) 3-phase 200V 3.5kW or smaller



### (4) 3-phase 200V 5, 7kW



Note:

1. When using a 1-phase 230VAC, connect the power supply to the L1 and L2 terminals. Do not connect anything to L3. The 1-phase 230VAC power supply can be used for the MR-J2S-70A/B/CP/CL or smaller servo amplifier.

## Main circuit/control circuit power supply connection examples

### (5) 3-phase 200V and 3-phase 400V 11 to 22kW



#### (6) 3-phase 200V and 3-phase 400V 30kW or larger

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(

CN5A

CN5B

(Note 5)

TE3 L11 (Note 6)

Servo amplifier MR-J2S-30KA(4)/B(4) or larger

TE1

U

V

W

### (8) 3-phase 400V 3.5 to 7kW





#### Notes:

- 1. The 11kW or larger capacity does not have a built-in regenerative resistor. 2. This is for MR-RB137 (for 200V) or MR-RB138-4 (for 400V). Three units of MR-RB137 or MR-RB138-4 are required for each converter unit. (tolerable regenerative power 3900W).
- . Remove the short bar across P and P1 when using the DC reactor. . Remove the short bar across P1 and P2 when using the DC reactor. 3
- 4
- Always connect the terminal connector (MR-A-TM) to CN5B 5

(7) 3-phase 400V 2kW or smaller

- 6. The phases of the power supply connected to L11 and L21 on the converter unit and servo amplifier must always match the phases connected to L1 and L2. An incorrect connection could damage the servo amplifier. . This is for the 400V. The 200V does not require a step-down transformer
- 8. Do not reverse the diode's direction. Connecting it backwards could cause the amplifier to malfunction that signals are not output, and emergency stop and other safety circuits are inoperable 9. Make sure that sum of the current flowing to external relays does not exceed 80mA. If it exceeds 80mA, supply interface power from an external source.
- Malfunction signal (ALM) is turned on during normal operation when no alarms have been triggered.
   Create a sequence that cuts off the MC when a servo alarm occurs. Use the "Malfunction" output for the MR-J2S-A type, CP type or CL type.

## **Connector CN2 connection examples**

#### (9) HC-KFS, MFS, UFS3000r/min series



#### (10) HC-SFS, LFS, RFS, UFS2000r/min series and HA-LFS502, 702



Notes: 1. Refer to "MR-J2S SERVO AMPLIFIER INSTRUCTION MANUAL" for details.

2. This is for the motor with an electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have the polarity. A separate connector from the motor power supply connector is prepared as an electromagnetic brake connector for the HC-SFS121B to 301B, 202(4)B to 702(4)B, 203B, 353B,

HC-LFS202B, 302B, HC-UFS202B to 502B motors

3. For grounding, connect the ground wire to the control box's protection ground terminal via the servo amplifier's protection ground (PE) terminal.

## **Connector CN2 connection examples**

(11) HA-LFS601(4), 701M(4), 801(4) and HA-LFS11kW or larger



Notes

- Refer to "MR-J2S SERVO AMPLIFIER INSTRUCTION MANUAL" for details.
   This is for the motor with an electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have the polarity. A separate connector from the motor power is prepared as an electromagnetic brake connector.
   Always supply power to the fan terminal. The power supply differs according to the motor. Refer to "Cooling fan power supply" under the Servo motor Specifications in this catalog.
  4. For MR-J2S-30KA(4)/B(4) or larger, the terminals L1, L2 and L3 are attached to the converter unit.
- For grounding, connect the ground wire to the control box's protection ground terminal via the servo amplifier's protection ground (PE) terminal.
   Only for HA-LFS30K or larger.
- 7. Make sure that the current flowing to the servo motor thermal is between 0.15A and 3A.

## Connector CN3/CN4 connection examples





Notes

RS-232C and RS-422 are mutually exclusive.
 RS-232C and RS-422 are mutually exclusive.
 A shielded multicore cable must be used. The cable length up to 15m (49.21ft) is possible in a low noise environment. However, if the RS-232C communication is set up with a baud rate of 38400bps or higher, keep the cable length to within 3m (9.84ft).
 For the final axis, connect TRE and RDN.

Second the limit axis, connect the and box.
 Use the maintenance relay card (MR-J2CN3TM) when connecting the analog monitor output 1 (MO1), analog monitor output 2 (MO2) and a personal computer.
 Connect the shield wire securely to the plate inside the connector (ground plate).

#### <u>50 (1.97)</u> 6 (0.24) Approx. 70 (2.76) ø6 (0.236) 135 (5.31) Terminal diagram (with terminal cover open) . d for heat radi 20 mounting hole pace req (40 mm (1.57inch) min.) Display setting section cover TE1 168 (6.61) 156 (6.14) For 1-phas 100VAC Name plate M4 screws TE1 TE1 000 Terminal cov IUUUUUUUUUUUU (0.24) Space required fo € For 3-phase 200VAC নি তাত্ৰত † ⊠୍ତ୍ (0.28) 6 ( or 1-phase 230VAC Three ground (PE) heat radiation لإلإلار (40 mm (1.57inch) min terminals (M4) 6 (0.24) PE terminal 00000 000 Mounting screw size: M5 לה ססויי TE2 4 (0.16)

## •MR-J2S-10A/B/CP/CL, 20A/B/CP/CL, 10A1/B1/CP1/CL1, 20A1/B1/CP1/CL1 (Note 1)

•MR-J2S-40A/B/CP/CL, 60A/B/CP/CL, 40A1/B1/CP1/CL1 (Note 1)



## ●MR-J2S-70A/B/CP/CL (-U□), 100A/B/CP/CL (Note 1)



Unit: mm (inch)

45

•MR-J2S-200A/B/CP/CL, 350A/B/CP/CL (Note 1)

Unit: mm (inch)



## •MR-J2S-500A/B/CP/CL (Note 1), 350A4/B4, 500A4/B4



•MR-J2S-700A/B/CP/CL (Note 1), 700A4/B4



1. The outline drawings for MR-J2S-CP(1)-S084 are the same as MR-J2S-CP (1).



## •MR-J2S-11KA/B, 15KA/B, 22KA/B, 11KA4/B4, 15KA4/B4, 22KA4/B4

Approx. 75 (2.95) Fan (airflow direction) Unit: mm (inch)

#### TE1 L1 L2 L3 U V W P1 P C N Screw size: M6 (Epr MP, I2S, 11KA (4)/8 (4) or MP, I2S,

Screw size: M6 (For MR-J2S-11KA (4)/B (4) or MR-J2S-15KA (4)/B (4)) Screw size: M8 (For MR-J2S-22KA (4)/B (4))

## TE2

Screw size: M4

PE terminals

Screw size: M6 (For MR-J2S-11KA (4)/B (4) or MR-J2S-15KA (4)/B (4)) Screw size: M8 (For MR-J2S-22KA (4)/B (4))

Model	Variable dimensions					
Model	Α	В				
MR-J2S-11KA/B MR-J2S-15KA/B MR-J2S-11KA4/B4 MR-J2S-15KA4/B4	236 (9.29)	260 (10.24)				
MR-J2S-22KA/B MR-J2S-22KA4/B4	326 (12.83)	350 (13.78)				

•MR-J2S-60A4/B4, 100A4/B4, 200A4/B4



Note: The connectors CNP1, CNP2, CNP3 and CNP4 are supplied with the servo amplifier.

## **Amplifier Dimensions**

## •MR-J2S-30KA/B, 37KA/B, 30KA4/B4~55KA4/B4









Model	Variable d	limensions
Woder	A	В
MR-J2S-30KA4/B4	290 (11.42)	380 (14.96)
MR-J2S-30KA/B MR-J2S-37KA/B MR-J2S-37KA4/B4 MR-J2S-45KA4/B4 MR-J2S-55KA4/B4	360 (14.17)	450 (17.72)

#### Converter unit MR-HP30KA, MR-HP55KA4

#### Mounting dimensions







Servo amplifier model	Variable d	imensions
Serve amplifier moder	W1	W2
MR-J2S-30KA4/B4	380 (14.96)	290 (11.42)
MR-J2S-30KA/B, 37KA/B MR-J2S-37KA4/B4, 45KA4/B4 MR-J2S-55KA4/B4	450 (17.72)	360 (14.17)

Unit: mm (inch)

# Peripheral Equipment (MR-J2S-B)

## **Connections with peripheral equipment**

Peripheral equipment is connected to MR-J2S-B as described below. Connectors, cables, options, and other necessary equipment are available so that users can set up MR-J2S-B easily and begin using it right away. Through its SSCNET-compatible one-touch connections, the MR-J2S-B series reduce the number of wires and the chances of wiring errors.



Notes: 1. Refer to page 34 for the connection with the peripheral device with the MR-J2S-350B or smaller servo amplifier. Connect MR-J2S-500B or larger and MR-J2S-60B4 (400V type) or larger as shown in the standard connection diagram.
 2. For MR-J2S-100B or smaller, the special specification model with the conventional screw type terminal block connector, MR-J2S-B-RT, is also available.

# **Amplifier Specifications**

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

	Servo a	mplifier model MR-J2S-	10B	20B 4	0B	60B	70B (-U	100	3 2008	3 350E	3 500E	3 700E	3 11KE	3 15KE	22KE	3 30KB 37KE	3 10B	1 20B1	40B1
	Conve	rter unit model									_		_		1	MR-HP30KA	1		
	Control	Voltage/frequency						1-ph	ase 20	) to 23	OVAC 5	50/60H	z				1-phas	se 100 to 50/60Hz	
	circuit	Permissible voltage fluctuation							1-phas	e 170 t	o 253V	'AC						1-phas to 127	
	supply	Permissible frequency fluctuation							±5	% max	imum						±5°	% maxir	mum
		Power consumption (W)								50								50	
	Main	Voltage/frequency (Note 1)		se 200 to 2 se 230VA					3-pha	se 200	to 230	VAC 5	0/60Hz	: (Note	2)	The servo amplifier's main circuit	FO	se 100 to 60Hz (No	
	circuit power supply	Permissible voltage fluctuation		e 200 to 23 ase 230VA						3-pł	nase 17	70 to 2	53VAC			power is supplied from the		1-phase to 127	
5	1- 1- 7	Permissible frequency fluctuation						_	±5	% max	imum					converter unit.	±5°	% maxir	mum
lifie	Control s	ystem						Si	ne-wav	e PWN	1 contr	ol/curr	ent cor	trol sys	stem	-			
amp	Dynamic	brake				I	Built-ir	n (Note	3)					Exte	ernal o	ption	Bui	lt-in (No	ote 3)
Servo amplifier	Safety fe	atures			serv	o moto	or ove	rheat p	protecti	on, en	coder f	ault pr	otectio	n, rege	neratic	own (electron on fault protec xcess error pi	ction,		
	Maximum	command input at the position control								Арр	proxima	ately 10	Mpps						
	Structure	)		Self-coc	ling,	, open	(IP00	)			F	an coc	ling, o	oen (IP	00)		Self-co	oling, ope	en (IP00)
		Ambient temperature			0 to	55°C	(32 to	131°F	) (non 1	reezin	g), stor	age: –	20 to 6	5°C (–4	1 to 14	9°F) (non free	zing)		
		Ambient humidity		90% RH maximum (non condensing), storage: 90% RH maximum (non condensing)															
	Environ- ment	Atmosphere		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust															
	mont	Elevation		1000m (3280ft) or less above sea level															
		Vibration				_				5	.9m/s²	maxin	num						
	Mass (	(kg [lb])	0.7 (1.5)		.1 2.4)	1.1 (2.4)	1.7 (3.7	) (3.7	2.0		4.9 (10.8	7.2 ) (15.9	15 ) (33)	16 (35.3	20 ) (44.1	47 47 ) (103.5) (103.5	0.7 ) (1.5)	0.7 (1.5)	1.1 (2.4)
	Main circuit	Voltage/frequency (Note 1)							_							3-phase 200 to 230VA0 50/60Hz (Note 2)		_	
it	power supply	Permissible voltage fluctuation							_							3-phase 170 to 253VAC	;	_	
un 1		Permissible frequency fluctuation							_							±5% max.		_	
Converter unit	Control	Voltage/frequency														1-phase 200 to 230VAC 50/60Hz	;	_	
0	circuit power	Permissible voltage fluctuation							_							1-phase 170 to 253VAC		_	
	supply	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 a	amplifier model MR-J2S-	60B4	100B4	200B4	350B4	500B4	700B4 (-U□)	11KB4	15KB4	22KB4	30KB4	37KB4	45KB4	55KB4
	Conve	rter unit model											MR-HP	55KA4	
	Control	Voltage/frequency			24\	/DC				1-p	ohase 38	0 to 480V	AC 50/60	Hz	
	circuit	Permissible voltage fluctuation			20.4 to 2	27.6VDC					1-phase	e 323 to 5	28VAC		
	power	Permissible frequency fluctuation			_	_					±5	% maxim	um		
	supply	Power consumption (W)			2	25						50			
	Main	Voltage/frequency (Note 1)			3-phas	e 380 to -	480VAC 5	50/60Hz (	Note 2)			The se	rvo amplif	ier's mair	n circuit
	circuit power	Permissible voltage fluctuation				3-phas	e 323 to \$	528VAC				pow	er is supp		n the
	supply	Permissible frequency fluctuation				±5	% maxim	um					convert	er unit.	
	Control s	ystem				:	Sine-wav	e PWM co	ontrol/curi	rent contr	rol systen	n			
	Dynamic	brake			Bui	lt-in					Ex	ternal opt	ion		
Servo amplifier	Safety fe	atures		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											
Serv	Maximum o	command input at the position control						Approx	imately 1	0Mpps					
	Structure	3	Self-cooling, open (IP00)					Far	n cooling,	open (IP	00)				
		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		g	90% RH m	naximum	(non con	densing)	storage:	90% RH	maximur	m (non co	ndensing	)	
	Environ- ment	Atmosphere			Indoors	(no dired	ct sunligh	it); no cor	rosive ga	s, inflamr	nable ga	s, oil mist	or dust		
	mont	Elevation					1000r	m (3280ft	) or less a	bove sea	a level				
		Vibration						5.9n	n/s² maxir	num					
	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)
	Main	Voltage/frequency (Note 1)					_					3-phase 3	80 to 480V	AC 50/60H	z (Note 2)
	circuit power	Permissible voltage fluctuation					_					3-p	ohase 323	3 to 528V	AC
In it	supply	Permissible frequency fluctuation					_						±5% ma	aximum	
Converter unit	Oantral	Voltage/frequency					_					1-phas	e 380 to 4	180VAC 5	50/60Hz
Control Control Permissible voltage fluctuation — 1-phase 32						phase 323	3 to 528V	AC							
Con	power	Permissible frequency fluctuation											±5% ma	aximum	
	supply	Power consumption (W)	_								50				
	Mass	(kg [lb])					—						22 (4	18.5)	

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.

## MR-J2S-B (1)/MR-J2S-B (4) type

### Connection



#### Notes

- 1. The total length of MR-J2HBUS_M-A and MR-J2HBUS_M cables must be kept to within 30m (98.43ft). Using a cable clamp or data line filter (three or four connected in serial) near the connector lead-out port is recommended to increase noise resistance. 2. Refer to the catalog "MOTION CONTROLLER Q SERIES (L(NA)03014)" for details on the cable connected between Q172/Q173 and the amplifier.

- The motor side connections for the second and following axes are omitted from the above diagram.
   Up to eight axes (n=1 to 8) can be connected. The MR-H_BN type servo can also be connected to the same bus. (Note that the cable differs in this case.)
- 5. CN1A, CN1B, CN2 and CN3 are all the same shape. Make sure to connect them correctly. Wrong connection can cause damage 6. Always connect the servo amplifier protection ground (PE) (for preventing shocks) to the control box's protection ground (PE).

## Standard Wiring Diagram

## Connector CN3/CN4/CON2 connection examples

#### (14) MR-J2S-700B(4) or smaller

#### (15) MR-J2S-11KB(4) or larger



Notes:

- 1. A shielded multicore cable must be used. The cable length up to 15m (49.21ft) is possible in a low noise environment. However, if the RS-232C communication is set up with a baud rate of 38400bps or higher, keep the cable length to within 3m (9.84ft).
- 2. Use the maintenance relay card (MR-J2CN3TM) when connecting the analog monitor output 1 (MO1), analog monitor output 2 (MO2) and a personal computer
- Connect the shield wire securely to the plate inside the connector (ground plate).
   Independent forced stop for each servo amplifier of each axis. Use this as necessary when A1SD75M, QD75M, Q172 or Q173 is connected. Do not use this when A171SH, A172SH or A173UH is connected. When not used, cancel the forced stop input with the parameter No.23, or short-circuit EM1-SG in the connector.
- Provide emergency stop for the entire system on the controller side. 5. Do not reverse the diode's direction. Connecting it backwards could cause the amplifier to malfunction that signals are not output.

## Features

- Settings such as position data (target positions), motor speed, and acceleration/deceleration times can be set in a point table with the feel of parameters.
- You can position using DI/O easily.
- Allows multi-drop operation (up to 32 axes) using RS-422 serial communications.

## System configuration

#### Simple positioning using DI/O

Positioning operation is executed using built in digital I/O while monitoring with a personal computer.



#### Serial communication operation by RS-422

Connecting servo amplifiers in the multi-drop configuration to perform positioning operation.

Each servo amplifier can be started from the master controller. The RS-422 protocol communication specifications have been released, so the user can create a program. The monitor and parameter settings can be made with the MR Configurator (setup software), MRZJW3-SETUP151E or above, using a personal computer. (Maximum 32-axis)



Note: The external digital display (MR-DP60) cannot be used for serial communication operation based on RS-422 or RS-232C.

#### **Communications specifications**

The RS-422 (RS-232C) specifications are as follows.

- Baud rate : 9600, 19200, 38400 or 57600 asynchronous.
- Transfer code : 1 start bit, 8 data bits, 1 parity bit, 1 stop bit.
- Transfer protocol: Character system, half-duplex communication.



# Peripheral Equipment (MR-J2S-CP)

## Connections with peripheral equipment

Peripheral equipment is connected to MR-J2S-CP as described below. Connectors, options, and other necessary equipment are available so that users can set up MR-J2S-CP easily and begin using it right away.



3. The manual pulse generator cable car be made by using the optional CN1 connector (MR-J2CN1). 4. The connection with the peripheral devices shown above is for the MR-J2S-350CP or smaller servo amplifier. Connect MR-J2S-500CP or larger as shown in the standard connection diagram. 5. For MR-J2S-100CP or smaller, the special specification model with the conventional screw type terminal block connector, MR-J2S-<u>CP-RT</u>, is also available.

# **Amplifier Specifications**

## MR-J2S-CP type

	Servo ar	mplifier model MR-J2S-	10CP	20CP	40CP	60CP	70CP (-U_)	100CP	200CP	350CP	500CP	700CP	10CP1	20CP1	40CP
		Voltage/frequency (Note 1)				.C 50/60H 60Hz (Not		3-phas	e 200 to :	230VAC 5	0/60Hz (	Note 2)	1 1	e 100 to 60Hz (No	
Pow	ver supply	Permissible voltage fluctuation				170 to 25 7 to 253V			3-phas	e 170 to 2	253VAC		1-phas	e 85 to 1	27VAC
		Permissible frequency fluctuation						±59	% maxim	um					
Cor	ntrol system	1				S	Sine-wav	e PWM co	ontrol/cur	rent contr	ol system	n			
Dyn	amic brake	e						Bui	lt-in (Note	e 3)					
Safe	ety features	3				coder fau	t protect	oltage shi ion, reger rspeed p	eration f	ault prote	ction, une	dervoltag			
		Operating specification			Posi	tions acc	ording to	the spec	ification of	of the poir	nt table N	lo. (31 pc	oints)		
	lagut	Input positioning command		S	et in poir	nt table. F	eed leng	th for 1 p	oint setta	ble betwe	en ±1µm	n and ±99	9.999mm	۱.	
	Input point table	Input speed command			Set in p	point table	. Accele	ration/dec decelerat	eleratior	i time cor	istant is s	set in poir	nt table.		
ethod	number	System		s				ommand s nand/incr						۱.	
E g		Operating specification				Posit	ionina by	(RS-422)	RS-2320	) commu	nication	data.			
Command method		Input positioning command			F			y RS-422 oint setta					٦.		
Ó	Input position data	Input speed command		Ac		n/deceler	ation tim	y RS-422 e constan decelerat	t also set	by RS-42	22 (RS-23	32C) com		on.	
		System		S				ommand s nand/incr						۱.	
	Automatic operation	Point table			Ea			nber inpu eration ba					ds.		
	mode	Automatic continuous operation	Sp	beed cha	nging op	eration (2	to 31 sp	eeds), au	tomatic c	ontinuou	s positior	ning oper	ation (2 to	o 31 poin	ts)
	Manual	JOG	Inches	upon co	ntact inp	ut or RS-4	122 (RS-2	232C) con	nmunicat	ion based	d on spee	ed comm	ands set	by a para	ameter
	operation mode	Manual pulse generator			Co	mmand p		al feed by b: Selectal		0		e parame	eter.		
		Dog system	Directio	n for retu	rn to hom	ne positio	n selecta	Z phase   ble. Home k to home	e positior	n shift am	ount and	home po	sition ad	dress sel	ectabl
ode		Count system	Directio	n for retu	rn to hom	ne positio	n selecta	oon encoo ble. Hom k to home	e positior	n shift am	ount and	home po	sition ad	dress sel	ectabl
εI		Data set system	Returr	ns to hom	e positio	n without		any posit ttable hor				sing manu	ual opera	tion or th	e like.
ating	Manual	Stopper system			Direction	Ret		omo noci		bitting o	nd of stro	oke.			
Operating mode	home				Direction		urns to h n to hom	e position					settable.		
Operating		Ignore home (Servo-on position as home position)	Uses (	position v		n for retur	n to hom		selectab	le. Home	position	address		osition ac	dress.
Operating	home position return	Ignore home (Servo-on		n for retu	/here the Retu rn to hom	servo on rns to hor ne positio	n to hom signal (S ne position n selecta	e position	selectab omes ON spect to e positior	as home as home the rear e	position position nd of a n ount and	address . Settable lear-point home po	e home po dog. psition ado	dress sel	
Operating	home position return	Ignore home (Servo-on position as home position) Dog system rear end	Directio	n for retu Au	where the Retu rn to hom utomatic Retur rn to hom	servo on rns to hor ne position retreat on rns to hor ne position	n to home signal (S ne position selecta dog bac ne position n selecta	ON) beco	selectab omes ON spect to e position e position spect to t e position	le. Home as home the rear e shift amo and auto he front e shift amo	position position nd of a n ount and pmatic str end of a r ount and	address . Settable ear-point home po roke retre hear-point home po	e home po dog. osition ado at functio : dog. osition ado	dress sel n. dress sel	ectabl
Operating	home position return	Ignore home (Servo-on position as home position) Dog system rear end reference Count system front end	Directio	n for retu Au n for retu Au Returns to n for retu	where the Return to hom utomatic Return to hom utomatic o home p rn to hom	n for return servo on rns to hor ne position retreat on retreat on position w ne position was position	n to hom signal (S ne position n selecta dog bac ne position n selecta dog bac th respen n selecta	on with responsion with respon	selectab spect to to e position e position e position e position ront end e position	le. Home as home the rear en shift am and auto he front en shift am and auto of a near- shift am	position position nd of a n pount and pomatic str pount and pomatic str point dog pount and	address . Settable lear-point home po roke retre home po roke retre g by the fi home po	a home po dog. sition add at function dog. sition add at function irst Z-pha sition add	dress sel on. dress sel on. ise pulse dress sel	ectable
O	home position return	Ignore home (Servo-on position as home position) Dog system rear end reference Count system front end reference	Directio	n for retu Au n for retu Au Returns tu n for retu Au	Antere the Return to horr utomatic Return to horr utomatic o home p rn to horr utomatic	n for return servo on rns to hor ne position retreat on retreat on position w ne position was position	n to hom signal (S ne positin n selecta dog bac ne positio n selecta dog bac th respen n selecta dog bac	e position CON) beca on with re- ble. Home k to home ble. Home k to home ct to the fi ble. Home	selectab spect to a position a position a position a position a position a position a position a position	le. Home as home the rear en shift am and auto he front en shift am and auto of a near- shift am	position position nd of a n ount and ormatic str nd of a r ount and ormatic str point dog ount and point dog ount and	address . Settable ear-point home pc roke retre near-point home pc roke retre g by the fi home pc roke retre	e home po dog. sition ad- at functic dog. sition ad- at functic irst Z-pha sition ad- at functic	dress sel on. dress sel on. ise pulse dress sel	ectabl
O	home position return mode	Ignore home (Servo-on position as home position) Dog system rear end reference Count system front end reference	Directio	n for retu Au n for retu Au Returns tu n for retu Au Sel	Arrent the Return to hom utomatic Return to hom utomatic o home p rn to hom utomatic -cooling.	n for return servo on rns to hor retreat on rns to hor retreat on position w ne position retreat on osition w ne position retreat on open (IP	n to home signal (S ne position n selecta dog bac ne position n selecta dog bac ith respen n selecta dog bac 00)	e position CON) beca on with re- ble. Home k to home ble. Home k to home ct to the fi ble. Home	selectab spect to a position a po	as home as home the rear e b shift am and auto he front e b shift am and auto of a near- b shift am and auto of a near- b shift am and auto	position position nd of a n ount and omatic str nd of a r ount and omatic str point dog ount and omatic str open (IF	address . Settable ear-point home po roke retre hear-point home po roke retre g by the fi home po roke retre 200)	dog. sistion ad- sistion ad- at functic dog. sistion ad- sistion ad- sistion ad- at functic zelf-coo	dress sel on. dress sel on. dress sel on. oling, ope	ectabl
Stru	home position return mode	Ignore home (Servo-on position as home position) Dog system rear end reference Count system front end reference Dog cradle system	Directio	n for retu Au n for retu Returns tu n for retu Au Sel 0 tu	Arhere the Return to horr utomatic Return to horr utomatic o home p rn to horr utomatic -cooling, o 55°C (3	n for return servo on rns to hor retreat on retreat on position w ne position retreat on open (IP 2 to 131°	n to hom signal (S ne position n selecta dog bac ne position n selecta dog bac tith respen n selecta dog bac 00) F) (non fr	e position SON) beca on with re- ble. Home k to home ble. Home k to home ct to the fi ble. Home k to home	selectab pomes ON spect to position spect to t position position e position e position e position Far storage: -	as home as home the rear e b shift am and auto he front e b shift am and auto of a near- b shift am and auto of a near- b shift am and auto cooling, -20 to 65°	position position nd of a n ount and omatic str nd of a r ount and omatic str point dog ount and omatic str open (IF C (-4 to	address . Settable ear-point home po roke retre ear-point home po roke retre g by the fi home po roke retre 200) 149°F) (n	dog. sistion ad- sistion ad- at functic dog. sistion ad- at functic irst Z-pha sistion ad- at functic Self-coc on freezi	dress sel n. dress sel n. ise pulse dress sel n. oling, ope ng)	ectabl
Stru	home position return mode	Ignore home (Servo-on position as home position) Dog system rear end reference Count system front end reference Dog cradle system Ambient temperature	Directio	n for retu Au n for retu Returns tu n for retu Au Sel 0 tu	Arrent the Return to horr utomatic Return to horr utomatic o home p rn to horr utomatic -cooling, -cooling, 0 55°C (3 0% RH m	n for return servo on rns to hor retreat on ros to hor retreat on ros to hor retreat on position w re position retreat on open (IP 20 to 131° naximum	n to hom signal (S ne position n selecta dog bac ne position n selecta dog bac dog bac dog bac 00) F) (non fr (non con	e position SON) beca on with re- ble. Home k to home ble. Home k to home ct to the fi ble. Home k to home eezing), s	selectab spect to a position position position position a position a position a position a position Far storage: - storage:	le. Home as home the rear e h shift arm and auto he front e h shift arm and auto of a near- h shift arm and auto of a near- cooling, -20 to 65° 90% RH	position nd of a n ount and omatic str nd of a r ount and omatic str point dog ount and opmatic str open (IF rC (-4 to maximur	address . Settable ear-point home pc roke retre home pc roke retre g by the fi home pc roke retre 200) 149°F) (n n (non cc	e home po dog. sistion ad- at functio c dog. sistion ad- at functio irst Z-pha sistion ad- sistion ad- at functio Self-coo ion freezii indensing	dress sel n. dress sel n. ise pulse dress sel n. oling, ope ng)	ectabl
Stru	home position return mode	Ignore home (Servo-on position as home position) Dog system rear end reference Count system front end reference Dog cradle system Ambient temperature Ambient humidity	Directio	n for retu Au n for retu Returns tu n for retu Au Sel 0 tu	Arrent the Return to horr utomatic Return to horr utomatic b home p rn to horr utomatic -cooling, -cooling, 0 55°C (3 0% RH m	n for return servo on rns to hor retreat on ros to hor retreat on ros to hor retreat on osition w ne positio retreat on osition w retreat on open (IP 12 to 131° naximum 6 (no direct	n to hom signal (S ne position n selecta dog bac ne position n selecta dog bac dog bac dog bac f) (non fr (non con t sunligh	e position GON) becconsistent on with re- ble. Hom- sk to home on with re- ble. Hom- sk to home ct to the fi ble. Hom- sk to home sk to home	selectab spect to a position a position a position a position a position a position a position a position Far storage: storage: osive ga	le. Home as home the rear e h shift am and auto he front e h shift am and auto of a near- n shift am a nd auto of a near- n cooling, -20 to 65° 90% RH s, inflamm	position nd of a n ount and omatic stu- nd of a r ount and omatic stu- point dop ount and opmatic stu- open (IF °C (-4 to maximur nable ga	address . Settable ear-point home pc roke retre aear-point home pc roke retre g by the fi home pc roke retre 200) 149°F) (n n (non cc s, oil mist	e home po dog. sistion ad- at functio c dog. sistion ad- at functio irst Z-pha sistion ad- sistion ad- at functio Self-coo ion freezii indensing	dress sel n. dress sel n. ise pulse dress sel n. oling, ope ng)	ectabl

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-_CP-ED or MR-J2S-_CP1-ED, is also available.

## MR-J2S-CP (built-in positioning function) command methods

### The following two types of command methods are available

The felletting t		
	Operating specification	Positions according to the specification of the point table No. (31 points)
Input point	Input positioning command	Set in point table. Feed length for 1 point settable between $\pm 1\mu m$ and $\pm 999.999mm$ .
table number	Input speed command	Set in point table. Acceleration/deceleration time is set in point table. S-curve acceleration/deceleration constant is set by parameter 14.
	System	Signed absolute value command system, increment value command system, signed absolute value command/incremental value command specification system.
	Operating specification	Positioning by RS-422 (RS-232C) communication data.
la a de la calificación	Input positioning command	Setting by RS-422 (RS-232C) communication. Feed length for 1 point settable between ±1µm and ±999.999mm.
Input position data	Input speed command	Setting by RS-422 (RS-232C) communication. Acceleration/deceleration time also set by RS-422 (RS-232C) communication.
Uala		S-curve acceleration/deceleration constant is set by parameter 14.
	System	Signed absolute value command system, increment value command system, signed absolute value command/incremental value command specification system.

#### Point table: The following three types of point tables are available. (1) Absolute value command method: Moves to the address (absolute value) based on the home position.

Item	Setting range	Unit	Description
Position data	-999999 to 999999	×10 ^{STM} μm	Sets the address. STM is the ratio to the data.
Servo motor speed	0 to permissible	r/min	Sets the command speed for the servo motor used for positioning.
Acceleration time constant	0 to 20000	ms	Sets the acceleration time constant.
Deceleration time constant	0 to 20000	ms	Sets the deceleration time constant.
Dwell time	0 to 20000	ms	Runs the next point table after the set dwell time.
Auxiliary function	0 to 1		<ul><li>0: Positions and stops (waits for start signal).</li><li>1: Continues operation for the next point table without stopping.</li></ul>

### (Example of setting point table data)

Point table No.	Position data	motor	Acceler- ation time constant	ation time		Auxiliary function
1	1000	2000	200	200	0	1
2	2000	1600	100	100	0	0
:	:	:	:	:	:	:
31	-1000	3000	100	100	0	0

If the point table No.1's auxiliary function is 1, continuous positioning is carried out based on the point table as shown in the "Auxiliary function 1" below.

must be issued as shown in "Auxiliary function 0" below.



#### (2) Incremental value command method: Moves from the current value according to the set position data

Item	Setting range	Unit	Description
Position data	0 to 999999	X10 ^{STM} μm	Sets the movement amount.
Servo motor speed	0 to permissible	r/min	Sets the command speed for the servo motor used for positioning.
Acceleration time constant	0 to 20000	ms	Sets the acceleration time constant.
Deceleration time constant	0 to 20000	ms	Sets the deceleration time constant.
Dwell time	0 to 20000	ms	Runs the next point table after the set dwell time.
Auxiliary function	0 to 1	_	<ul><li>0: Positions and stops (waits for start signal).</li><li>1: Continues operation for the next point table without stopping.</li></ul>

## (Example of setting point table data)

Point table No.	Position data	motor	Acceler- ation time constant	ation time		Auxiliary function
1	1000	2000	200	200	0	1
2	1000	1600	100	100	0	0
:	:	:	:	:	:	:
31	500	3000	100	100	0	0
If the noir	nt table N	lo 1's au	viliary fu	nction is	1 contin	

positioning is carried out based on the point table as shown

in the "Q-uxiliary function 1" above. If the point table No.1's auxiliary function is 0, a start signal must be issued as shown in "Q-uxiliary function 0" above.

### (3) Absolute value command/incremental command designation method: The absolute value and incremental value are designated with the point table.

Item	Setting range	Unit	Description
Position data	-999999 to 999999	×10 ^{STM} μm	<ul> <li>Using as the absolute value command method Sets the address. STM is the ratio to the data.</li> <li>Using as the incremental value command method Sets the movement amount. STM is the ratio to the data.</li> </ul>
Servo motor speed	0 to permissible	r/min	Sets the command speed for the servo motor used for positioning.
Acceleration time constant	0 to 20000	ms	Sets the acceleration time constant.
Deceleration time constant	0 to 20000	ms	Sets the deceleration time constant.
Dwell time	0 to 20000	ms	Runs the next point table after the set dwell time.
Auxiliary function	0 to 3	_	<ul> <li>Using as the absolute value command method</li> <li>O: Positions and stops (waits for start signal).</li> <li>1: Continues operation for the next point table without stopping.</li> <li>Using as the incremental value command method</li> <li>2: Positions and stops (waits for start signal).</li> <li>3: Continues operation for the next point table without stopping.</li> </ul>

## (Example of setting point table data)

Point table No.	Position data	motor	Acceler- ation time constant	ation time		Auxiliary function
1	1000	2000	200	200	0	1
2	1000	1600	100	100	0	2
:	:	:	:	:	:	:
31	3000	3000	100	100	0	2

If the point table No.1's auxiliary function is 1 or 3. If the point table No.1's auxiliary function is 1 or 3, continuous positioning is carried out based on the point table as shown in the "@Auxiliary function 1 or 3" below. If the point table No.1's auxiliary function is 0 or 2, a start signal must be issued as shown in "@Auxiliary function 0 or 2" below.



Auxiliary function 1 or 3

Position

Start signal

point tab No.1

Speed

## MR-J2S-CP (1) type

#### Connection



#### Notes

1. Do not reverse the diode's direction. Connecting it backwards could cause the amplifier to malfunction that signals are not output, and emergency stop and other safety circuits are inoperable.

2. Make sure that sum of the current flowing to external relays does not exceed 80mA. If it exceeds 80mA, supply interface power from an external source 3. LSP and LSN contacts must be closed for normal operation. If they are not closed, the commands will not be accepted.

10. Always connect the servo amplifier protection ground (PE) (for preventing shocks) to the control box's protection ground (PE).

Signals with the same name are connected inside.
 CN1A, CN1B, CN2 and CN3 are all the same shape. Make sure to connect them correctly. Wrong connection can cause damage.

 ^{6.} Malfunction signal (ALM) is turned on during normal operation when no alarms have been triggered
 7. If using the override (VC), make the override selection (OVR) device available.

If using the analog torque limit (TLA), make the external torque limit selection (TL) device available
 Connect the shield wire securely to the plate inside the connector (ground plate).

# Features/Specifications (MR-J2S-CP-S084)

By using the CC-Link compatible servo amplifier "MR-J2S-CP-SO84" and interface unit "MR-J2S-TO1", positioning can be carried out just with simple point table settings. The AC servo can be used as the field network's drive source.

## **Features**

- Using the servo amplifier with built-in positioning function, the position data and speed data, etc. can be set via the CC-Link.
- Start, stop and monitor display can also be communicated via CC-Link.
- Serial communication reduces wiring.
- An AC servo distributed control system can be easily structured.

## System configuration





## Specifications (MR-J2S-CP-S084)

Servo amplifier model MR-J2S-			20CP -S084	40CP -S084	60CP -S084	70CP -S084 (-U_)	100CP -S084	200CP -S084	350CP -S084	500CP -S084	700CP -S084	10CP1 -S084	20CP1 -S084	40CP1 -S084
	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)					1-phase 100 to 120VAC 50/60Hz (Note 2)			
Power supply	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											
Control system	1				:	Sine-wav	e PWM c	ontrol/cur	rent cont	rol syster	n			
Dynamic brake	9	Built-in												
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											
Structure	Structure			Self-cooling, open (IP00) Fan cooling, open (IP00) Self-cooling, o								oling, ope	n (IP00)	
	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)												
Environment	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					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)	0.7 (1.5)	0.7 (1.5)	1.1 (2.4)

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

## Specifications (MR-J2S-T01)

## The CC-Link interface unit is compatible only with the MR-J2S-CP-S084 type.

CC-Link interface unit model			MR-J2S-T01							
Power supply			5VDC supplied from servo amplifier							
	Compatik	ole CC-Link version	Ver. 1.10							
	Compatik	ole servo amplifier	MR-J2S- CP (1)-S084							
	Commun	ication speed		101	N/5M/2.5M/625K/156Kb	ops				
	Commun	ication method		E	Broadcast poling metho	d				
	Synchror	nization method		Fran	me synchronization met	hod				
	Coding n	nethod			NRZI					
~	Transmis	sion path format		Bus fo	ormat (EIA RS-485 com	pliant)				
Link	Error con	trol method			CRC $(X^{16}+X^{12}+X^5+1)$					
Error control method Transmission format			HDLC compliant							
0	Remote station number		1 to 64							
	Connecti	on cable	CC-Link Ver 1.10 compatible cable (shielded 3-core twisted pair cable)							
		Communication speed	156Kbps	625Kbps	2.5Mbps	5Mbps	10Mbps			
	Cable length	Maximum cable total length	1200m (3937.01ft)	900m (2952.76ft)	400m (1312.34ft)	160m (524.93ft)	100m (328.08ft)			
	longar	Inter-station cable length		Maximum 0.2m (0.66ft)						
Number of connected units		of connected units	Maximum 42 units only with remote device station (when occupying one station/unit), (maximum 32 units when occupying two stations/unit), use with other devices possible							
Safe	ety features	3	CC-Link error							
		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)							
Env	rironment	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust							
		Elevation		1000m	(3280ft) or less above s	ea level				
		Vibration			5.9m/s ² maximum					
Mas	ss (kg [lb]	)			0.3 (0.66)					

## **Positioning function**

## (1) **Operation mode:** Positioning with three command methods

- Input point table number: Positioning is executed by designating the point table number. Refer to the previous page "MR-J2S-CP (built-in positioning function) command method" for details.
- Positioning command, speed and acceleration/deceleration time constant point table number command:

The position data is set via the CC-Link. Positioning is executed based on the designated point table number's motor speed, acceleration time constant and deceleration time constant.

• Position and speed command:

The position data and motor speed are set via the CC-Link. Positioning is executed based on the acceleration time constant and deceleration time constant set in point table number 1.

### (2) Manual home position return mode

The home position return includes the "dog system", "count system", "data set system", "stopper system", "ignore home position (servo-on position as home position)", "dog system rear end reference", "count system front end reference" and "dog cradle system".

Refer to the previous page "MR-J2S-CP type Servo Amplifier Specifications" for details.

## **CC-Link interface unit dimensions**

### • MR-J2S-T01



## MR-J2S-CP (1)-S084 type

### Connection



#### Notes

1. Do not reverse the diode's direction. Connecting it backwards could cause the amplifier to malfunction that signals are not output, and emergency stop and other safety circuits are inoperable

2. Make sure that sum of the current flowing to external relays does not exceed 80mA. If it exceeds 80mA, supply interface power from an external source.

3. LSP and LSN contacts must be closed for normal operation. If they are not closed, the commands will not be accepted

- Signals with the same name are connected inside.
   CN1A, CN1B, CN2 and CN3 are all the same shape. Make sure to connect them correctly. Wrong connection can cause damage.

6. Malfunction signal (ALM) is turned on during normal operation when no alarms have been triggered

The signals are not assigned in the default state.
 Connect the shield wire securely to the plate inside the connector (ground plate).
 Always connect the servo amplifier protection ground (PE) (for preventing shocks) to the control box's protection ground (PE).

## Features

- Positioning operation is performed in accordance to the program created by the user.
- Up to 16 programs or 120 steps per axis can be created.
- Multi-drop operation can be performed for up to 32 axes by serial communication.
- This product has advanced functions such as the high-level real-time auto tuning, machine resonance suppression filter, adaptive vibration suppression control, and machine analysis. Use the MR Configurator (setup software), MRZIW3-SETUP151E version E1 or above.
- By simply fitting the battery, you can configure an absolute system (linear axis compatibility).

## System configuration

#### Simple positioning using DI/O

Positioning operation is executed using built in digital I/O while monitoring with a personal computer.



## Serial communication operation by RS-422

Connecting servo amplifiers in the multi-drop configuration to perform positioning operation. Each servo amplifier can be started from the master controller. The RS-422 protocol communication specifications have been released, so the user can create a program. The monitor and parameter settings can be made with the MR Configurator (setup software), MRZJW3-SETUP151E or above (Note 1), using a personal computer. (Maximum 32-axis)



Notes: 1. MR-J2S-_CL(1) is compatible with the MRZJW3-SETUP151E software version E1. 2. The external digital display (MR-DP60) cannot be used for serial communication operation based on RS-422 or RS-232C

#### **Communications specifications**

The RS-422 (RS-232C) specifications are as follows.

- Baud rate : 9600, 19200, 38400 or 57600 asynchronous.
- Transfer code : 1 start bit, 8 data bits, 1 parity bit, 1 stop bit.
- Transfer protocol : Character system, half-duplex communication.



# Peripheral Equipment (MR-J2S-CL)

## Connections with peripheral equipment

Peripheral equipment is connected to MR-J2S-CL as described below. Connectors, options, and other necessary equipment are available so that users can set up MR-J2S-CL easily and begin using it right away.



4. The connection with the peripheral devices shown above is for the MR-J2S-350CL or smaller servo amplifier. Connect MR-J2S-500CL or larger as shown in the standard connection diagram. 5. For MR-J2S-100CL or smaller, the special specification model with the conventional screw type terminal block connector, MR-J2S-CL-RT, is also available.

# **Amplifier Specifications**

## MR-J2S-CL type

plifier model MR-J2S-	10CL 2	20CL	40CL	60CL	70CL (-U_)	100CL	200CL	350CL	500CL	700CL (-U_)	10CL1	20CL1	40CL1
Voltage/frequency (Note 1)				L .C 50/60H 60Hz (Not	lz or	3-phas	e 200 to	230VAC	50/60Hz			1 e 100 to ⁻ 60Hz (No	
Power supply 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 127 ⁴								,			
Permissible frequency fluctuation						+5	% maxim	um					
					Sine-wav	e PWM co			rol systen	n			
						Bu	ilt-in (Note	e 3)					
Dynamic brake Safety features				coder fau	It protect	oltage sh ion, reger erspeed p	utdown, o neration f	overload ault prote	ction, un	dervoltag			
Operating specification		Pr	ogram la	inguage (	program	med by th	e setup	software)	Program	capacity	: 120 ste	ps	
Input positioning command						ne-point fe							
Input speed command			pattern a	accelerat	on and c	d, acceler leceleratio eleration t	on time c	onstants	are set by	y the prog	gram lang		
System		Sign	ed abso	lute value	commar	nd system	, and sig	ned incre	emental v	alue com	mand sy	stem	
peration mode				D	epends o	on the set	ting of the	e prograr	n languag	ge			
JOG	Inches up	oon coi	ntact inp	ut or RS-4	422 (RS-2	232C) cor	nmunicat	ion base	d on spee	ed comm	ands set	by a para	ameter.
Manual pulse generator			Со	mmand p		al feed by b: Selecta				e parame	eter.		
Dog system	Returns to home position upon Z phase pulse count after passing through near-point dog. Direction for return to home position selectable. Home position shift amount and home position address selectab Automatic retreat on dog back to home position and automatic stroke retreat function.								ectable				
Count system	Direction fo	Returns to home position upon encoder pulse count after touching near-point dog. Direction for return to home position selectable. Home position shift amount and home position address selecta Automatic retreat on dog back to home position and automatic stroke retreat function.								ectable			
Data set system	Returns t	Returns to home position without dog. Set any position as the home position using manual operation or the like. Settable home position address.								e like.			
Stopper system		Returns to home position upon hitting end of stroke. Direction for return to home position selectable. Home position address settable.											
Ignore home (Servo-on position as home position)	Uses pos	Uses position where the servo on signal (SON) becomes ON as home position. Settable home position addres								idress.			
Dog system rear end reference	Direction fo	Returns to home position with respect to the rear end of a near-point dog. Direction for return to home position selectable. Home position shift amount and home position addres Automatic retreat on dog back to home position and automatic stroke retreat function.								ectable			
Count system front end reference	Direction fo	Returns to home position with respect to the front end of a near-point dog. Direction for return to home position selectable. Home position shift amount and home position address select Automatic retreat on dog back to home position and automatic stroke retreat function.								ectable			
Dog cradle system         Returns to home position with respect to the front end of a near-point dog by the first Z-phase pulse.           Direction for return to home position selectable. Home position shift amount and home position address sele         Automatic retreat on dog back to home position and automatic stroke retreat function.													
Other functions			Absolute position detection, backlash correction, overtravel protection by the external limit switch, software stroke limit, override by external analog control										
Structure		Self	-cooling	, open (IF	00)		Fai	n cooling	, open (IF	200)	Self-co	oling, ope	n (IPO
Ambient temperature		0 to	55°C (3	32 to 131°	F) (non fi	reezing), s	storage: -	-20 to 65	°C (–4 to	149°F) (n	ion freezi	ng)	
Ambient humidity		9	0% RH n	naximum	(non con	densing),	storage:	90% RH	maximur	m (non co	ondensing	g)	
Atmosphere			Indoors	(no dired	ct sunligh	it); no cor	rosive ga	is, inflami	nable ga	s, oil mist	or dust		
Elevation					1000	m (3280ft)	or less a	above sea	a level				
Vibration						5.9m	n/s² maxii	mum					
	0.7	0.7	1.1	1.1	1.7	1.7	2.0	2.0	4.9	7.2	0.7	0.7	1.1
		0.7	0.7 0.7	0.7 0.7 1.1	0.7 0.7 1.1 1.1	0.7 0.7 1.1 1.1 1.7	Diration 5.9m 0.7 0.7 1.1 1.1 1.7 1.7	oration         5.9m/s² maxi           0.7         0.7         1.1         1.7         1.7         2.0	oration         5.9m/s² maximum           0.7         0.7         1.1         1.1         1.7         2.0         2.0	Diration         5.9m/s² maximum           0.7         0.7         1.1         1.1         1.7         2.0         2.0         4.9	5.9m/s² maximum           0.7         0.7         1.1         1.7         1.7         2.0         2.0         4.9         7.2	5.9m/s² maximum           0.7         0.7         1.1         1.7         1.7         2.0         2.0         4.9         7.2         0.7	Diration         5.9m/s² maximum           0.7         0.7         1.1         1.1         1.7         2.0         2.0         4.9         7.2         0.7         0.7

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-_CL-ED or MR-J2S-_CL1-ED, is also available.

## **Program Operation**

Position data, servo motor speed, acceleration and deceleration time constants and so on are created as programs beforehand. Positioning operation is performed by selecting the created programs and executing them.

## **Command list**

Command	Name	Setting	Setting range	Unit	Indirect specification (Note 7)	Description
SPN (Note 1)	Motor speed	SPN (setting)	0 to instantaneous permissible speed	r/min	0	Sets the command speed of the servo motor for positioning. The setting value must not exceed the instantaneous permissible speed of the servo motor used.
STA (Note 2)	Acceleration time constant	STA (setting)	0 to 20000	ms	0	Sets the acceleration time constant.
STB (Note 2)	Deceleration time constant	STB (setting)	0 to 20000	ms	0	Sets the deceleration time constant.
STC (Note 2)	constants	STC (setting)	0 to 20000	ms	0	Sets the acceleration and deceleration time constants.
STD (Note 2)	S-pattern acceleration and deceleration time constants	STD (setting)	0 to 100	ms	0	Sets the S-pattern acceleration and deceleration time constants.
MOV	Absolute value move command	MOV (setting)	-9999999 to 999999	(Note 6) ×10 ^{STM} µm	0	Moves the set value as an absolute value.
MOVA	Absolute value continuous move command	MOVA (setting)	-9999999 to 999999	(Note 6) ×10 ^{STM} µm	0	Moves the set value continuously as an absolute value. Be sure to use this command together with the [MOV] command.
MOVI	Incremental value move command	MOVI (setting)	-9999999 to 999999	(Note 6) ×10 ^{STM} µm	0	Moves the set value as an incremental value.
MOVIA	Incremental value continuous move command	MOVIA (setting)	-9999999 to 999999	×10 ^{S™} μm	0	Moves the set value continuously as an incremental value. Be sure to use this command together with the [MOVI] command.
SYNC (Note 3)	Waiting for external signal to switch on	SYNC (setting)	1 to 3	_	_	Stops the next step until the program input 1 (PI1) to program input 3 (PI3) are turned ON after the synchronous output (SOUT) command is output.
OUTON (Note 3, 4)	External signal ON output	OUTON (setting)	1 to 3	_	_	Turns ON the program output 1 (OUT1) to program output 3 (OUT3). This signal can be turned OFF after a setup time has elapsed, by setting an ON time with the parameters No. 74 to 76.
OUTOF (Note 3)	External signal OFF output	OUTOF (setting)	1 to 3	_	_	Turns OFF the program output 1 (OUT1) to program output 3 (OUT3), which were turned ON by the [OUTON] command.
TRIP (Note 3)	Absolute value passage point specification	TRIP (setting)	-9999999 to 999999	(Note 6) ×10 ^{STM} µm	_	When the motor passes through the current position set by user, the next step is executed.
TRIPI (Note 3)	Incremental value passage point specification	TRIPI (setting)	-9999999 to 999999	(Note 6) ×10 ^{S™} µm	_	While the motor moves by the [MOVI] command or [MOVIA] command, if the motor has moved for the moving distance set by the [TRIPI] command since the [MOVI] command or [MOVIA] command is performed, the next step is executed. Be sure to write the [TRIPI] command after the [MOVI] command or [MOVIA] command.
ITP (Note 3, 5)	Interrupt positioning	ITP (setting)	0 to 999999	(Note 6) ×10 ^{STM} µm	_	When the interrupt signal is ON, the motor moves for the distance set by this command, and it stops. Use this command after the [SYNC] command in combination.
COUNT (Note 3)	External pulse count	COUNT (setting)	-9999999 to 999999	pulse	_	When the value of the pulse counter exceeds the count value set in the [COUNT] command, the next step is executed. Setting [COUNT (0)] clears the pulse counter to zero.
FOR NEXT	Step repeat command	FOR (setting) NEXT	0, 1 to 10000	times	_	The steps, enclosed with the [FOR (setting value)] command and the [NEXT] command, are repeated for the number of times set beforehand. If zero is set, the steps are repeated unlimitedly.
LPOS (Note 3)	Current position latch	LPOS	_	_	_	The current position is latched by the rising edge of the input device "current position latch input (LPS)". The latched current position data can be read by a communication command.
TIM	Dwell	TIM (setting)	1 to 2000	×10ms	0	The next step is waited until the time set beforehand has elapsed.
ZRT	Home position return	ZRT	—	_	—	A manual home position return is executed.
TIMES	Program count instruction	TIMES (setting)	0, 1 to 10000	times	0	Put the [TIMES (setting value)] command on the top of the program to set the number of times of program execution. If zero is set, the program is repeated unlimitedly.
STOP	Program stop	STOP	_	_	_	The program being executed is stopped. Be sure to write this command in the final line.

Notes: 1. The [SPN] command is valid when the [MOV], [MOVA], [MOVI], or [MOVIA] command is executed. 2. The [STA], [STB], [STC], and [STD] commands are valid when the [MOV] or [MOVI] command is executed. 3. The [SYNC], [OUTON], [OUTOF], [TRIP], [TRIPI, [COUNT] and [LPOS] commands are valid even while an instruction is output. 4. If the ON time is set by the parameters No. 74 to 76, the next command is executed after the set time has elapsed. 5. If the remaining distance is the setting value or less, the servo motor is not running, or the servo motor is decelerating, the [ITP] command is skipped and control goes to the next step. 6. STM is magnification to data. 7. General purpose registrary (P1 to P4) con be precified to the commend entities unlined.

General-purpose registers (R1 to R4 and D1 to D4) can be specified to the command setting values.
 For the content of each command, be sure to confirm "MR-J2S-__CL SERVO AMPLIFIER INSTRUCTION MANUAL."

## **Program examples**

#### <Example 1>

Two types of operation, with which the servo motor speed, acceleration time constant, and deceleration time constant are the same and the move instruction is different, are executed.



Notes

The values set as steps ①, ②, and ③ are valid as long as they are not set again.
 The setting value is the time elapsing from the stop of the servo motor to the rated speed.

3. The setting value is the time elapsing from the rated speed to the stop of the servo motor.

## <Example 2>

The steps enclosed with the [FOR (setting value)] command and the [NEXT] command are repeated for the number of times set beforehand.

Program	Description
SPN (1000)	Servo motor speed 1000 (r/min)
STC (20)	Acceleration and deceleration time constants 20 (ms)
MOV (1000)	Absolute value move instruction 1000 (X10 ^{STM} µm)
TIM (10)	Dwell 100 (ms)
FOR (3)	Step repeat command start 3 (times)
MOVI (100)	Incremental value move instruction 100 (X10 ^{s™} µm)··········· ②
TIM (10)	Dwell 100 (ms)
NEXT	Step repeat command end
STOP	Program stop



## MR-J2S-CL (1) type

### Connection



Notes

1. Do not reverse the diode's direction. Connecting it backwards could cause the amplifier to malfunction that signals are not output, and emergency stop and other safety circuits are inoperable

2. Make sure that sum of the current flowing to external relays does not exceed 80mA. If it exceeds 80mA, supply interface power from an external source. 3. LSP and LSN contacts must be closed for normal operation. If they are not closed, the commands will not be accepted.

- Signals with the same name are connected inside.
   CN1A, CN1B, CN2 and CN3 are all the same shape. Make sure to connect them correctly. Wrong connection can cause damage.
- Malfunction signal (ALM) is turned on during normal operation when no alarms have been triggered.
   If using the override (VC), make the override selection (OVR) device available.

If using the analog torque limit (TLA), make the external torque limit selection (TL) device available
 Connect the shield wire securely to the plate inside the connector (ground plate).

10. Always connect the servo amplifier protection ground (PE) (for preventing shocks) to the control box's protection ground (PE).

## Options

### • Dynamic brake

When using an 11kW or larger servo amplifier, use the dynamic brake if the servo motor must be suddenly stopped during a power failure or when the protection circuit functions.



### • Junction terminal block (MR-TB20)

All signals can be recieved with this junction terminal block without a connection to CN1.



## • Cables and connectors (for MR-J2S-700A (4)/CP/CL or smaller)

Optional cables and connectors are shown in the diagram below.



Notes: 1.

-H and -L indicate bending life. -H products have a long bending life. AMP 172161-1 (white) can be used for the connector housing. For connector pins, 170363-1 (bulk) can be used. The connector and the shell kit are soldered type. The models for press bonding are 10120-6000EL (connector) and 10320-3210-000 (shell kit). 2

3

MR-JHSCBL_M-H and -L are not IP65 compliant. Use the MR-J2CN1 connector when the RS-422 communication cable is supplied by the customer 5.

The HA-LFS601, 6014, 701M and 701M4 do not have a connector type motor power supply. Use only (2), (3), (5), (6) or (18).
 Use a 0.5m (1.64ft) or shorter cable between the amplifier and CC-Link interface unit.
 The CN10 connector is enclosed with the unit. The user must manufacture the CC-Link cable with the enclosed CN10 connector.

10. Use the terminator enclosed with the CC-Link master unit.

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### • Cables and connectors (for MR-J2S-11KA (4) to MR-J2S-22KA (4))

Optional cables and connectors are shown in the diagram below.





• Cables and connectors (for MR-J2S-30KA (4) or larger)

Optional cables and connectors are shown in the diagram below.

Notes: 1. -H and -L indicate bending life. -H products have a long bending life. 2. The connector and the shell kit are soldered type. The models for press bonding are 10120-6000EL (connector) and 10320-3210-000 (shell kit). 3. MR-JHSCBL_M-H and -L are not IP65 compliant. 4. Use the MR-J2CN1 connector when the RS-422 communication cable is supplied by the customer.

5. The encoder cable is not oil-resistant.
 6. Keep the CN5 cable length to 1m (3.28ft) or shorter.
|                    |    | Item                                        | Model                                                            | Protection<br>level | Description                                                                                                                                                                                                                                                                                  |
|--------------------|----|---------------------------------------------|------------------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For CN3            | 7  | Personal computer<br>communication<br>cable | MR-CPCATCBL3M<br>Cable length 3m (9.84ft)                        | _                   | Amplifier-side connector (made by 3M or an equivalent product)       Personal computer-side connector (made by Japan Aviation Electronics Industry)         10120-3000VE (connector)       DE-9SF-N (connector)         10320-52F0-008 (shell kit) (Note 2)       DE-C1-J6-S6 (case)         |
| For CN4            | 8  | CN4 cable                                   | MR-H3CBL1M<br>Cable length 1m (3.28ft)                           | _                   | Amplifier-side connector (AMP)<br>171822-4 (housing)                                                                                                                                                                                                                                         |
| For CN5A           | 9  | CN5 cable                                   | MR-J2HBUS⊡M □=cable length<br>0.5, 1m (1.64, 3.28ft)<br>(Note 6) | _                   | Converter unit-side connector<br>(made by 3M or an equivalent product)<br>10120-3000VE (connector)       Amplifier-side connector (made by<br>3M or an equivalent product)<br>10120-3000VE (connector)         10320-52F0-008 (shell kit) (Note 2)       10320-52F0-008 (shell kit) (Note 2) |
| For CN5B           | 10 | Terminal connector                          | MR-A-TM                                                          | _                   | Terminal connector                                                                                                                                                                                                                                                                           |
| For converter unit | 1) | CN1 connector<br>for converter unit         | MR-HP4CN1                                                        | _                   | Converter unit-side connector<br>(made by 3M or an equivalent product)<br>10114-3000VE (connector)<br>10314-52F0-008 (shell kit)                                                                                                                                                             |
|                    | 12 | Junction terminal<br>block                  | MR-TB20                                                          | _                   |                                                                                                                                                                                                                                                                                              |

9 • A171SH Controlle • A172SH • A173UH 1 (11 1 • A1SD75M Terminal connector 13 ଜ 0 8 • QD75M ⊫ TE2 Servo motor HC-SFS, HC-LFS, HC-RFS, HC-UFS 2000r/min series HA-LFS5 to 7kW (Note 7) Servo motor HC-KFS, HC-MFS HC-UFS 3000r/min series 56 (4) Cable attached to motor ▦▦ 10 ÌIIIII 0.3m (11.8inch) (13(1)20 • Q172 (Note 6) 민 OI • Q173 23 Protection Item Model Description level MR-JCCBL□M-H □=cable length 2, 5, 10, 20, 30, 50m (6.56, 16.40, 32.81, 65.62, 98.43, 164.04ft) (Note 1) Junction connector (made by AMP) 1-172161-9 (black connector housing) 170359-1 (connector pin) MTI-0002 (cable clamp, made by E TOA ELECTRIC INDUSTRIAL) Amplifier-side connector (made by 3M 10120-3000VE (connector) 10320-52F0-008 (shell kit) (Note 3) IP20 Encoder cable for HC-KFS, HC-MFS, HC-UFS 3000r/min Encoder 1 MR-JCCBL_M-L =cable length 2, 5, 10, 20, 30m (6.56, 16.40, 32.81, 65.62, 98.43ft) (Note 1) IP20 series motor ]]:::: MR-JHSCBL_M-H _=cable length 2, 5, 10, 20, 30, 50m (6.56, 16.40, 32.81, 65.62, 98.43, 164.04ft) (Note 1) Amplifier-side connector (made by 3M or an equivalent product) 10120-3000VE (connector) 10320-52F0-008 (shell kit) (Note 3) Encoder connector (made by DDK) MS3057-12A (cable clamp) MS3106B20-29S (straight plug) IP20 Encoder 2 Encoder cable for HC-SFS, HC-LFS, HC-RFS, HC-UFS 2000r/min series, HA-LFS series motor (Note 4) MR-JHSCBL_M-L _=cable length 2, 5, 10, 20, 30m (6.56, 16.40, 32.81, 65.62, 98.43ft) (Note 1) IP20 Plug (made by DDK) MS3106A20-29S (D190) Backshell (made by DDK) CE02-20BS-S CN2 IP65 with (Note 4) (3) IP67  $\overline{}$ use (Note 1.5) Cable clamp (made by DDK) CE3057-12A-3 (D265) one for Amplifier-side connector (made by 3M or an equivalent product) 10120-3000VE (connector) 10320-52F0-008 (shell kit) (Note 3) Junction connector (made by AMP) 1-172161-9 (black connector housing) 170359-1 (connector pin) MTI-0002 (cable clamp, made by TOA ELECTRIC INDUSTRIAL) (Note 2) Encoder Select connector set for HC-KFS, HC-MFS, HC-UFS 3000r/min series motor (4) MR-J2CNM IP20 (Note 2) Amplifier-side connector (made by 3M or an equivalent product) 10120-3000VE (connector) 10320-52F0-008 (shell kit) (Note 3) Encoder connector (made by DDK) MS3057-12A (cable clamp) MS3106B20-29S (straight plug) (5) MR-J2CNS IP20 Encoder Encoder connector set for HC-SFS, HC-LFS, HC-RFS, HC-UFS 2000r/min series, HA-LFS Plug (made by DDK) MS3106A20-29S (D190) Cable clamp (made by DDK) CE3057-12A-3 (D265) IP65 series motor (6) **MR-ENCNS** Amplifier-side connector (made by Backshell (straight) (made by DDK) CE02-20BS-S IP67 3M or an equivalent product) 10120-3000VE (connector) 10320-52F0-008 (shell kit) (Note 3) Controller-side connector (made by HONDA TSUSHIN KOGYO) PCR-S20FS (connector) PCR-LS20LA1 (case) Amplifier-side connector (made by 3M or an equivalent product) 10120-3000VE (connector) 10320-52F0-008 (shell kit) (Note 3) MR-J2HBUS M-A =cable length 0.5, 1, 5m (1.64, 3.28, 16.40ft) Controller to amplifier bus cable 7 CN1A For Controller-side connector (made by HONDA TSUSHIN KOGYO) PCR-S20FS (connector) PCR-LS20LA1 (case) Amplifier-side connector (made by 3M or an equivalent product) 10120-3000VE (connector) 10320-52F0-008 (shell kit) (Note 3) For controller to amplifier connector set 8 MR-J2CN1-A

• Cables and connectors (for MR-J2S-700B (4) or smaller)

Optional cables and connectors are shown in the diagram below.

Notes: 1. -H and -L indicate bending life. -H products have a long bending life

AMP 172161-1 (white) can be used for the connector housing. For connector pins, 170363-1 (bulk) can be used.
 The connector and the shell kit are soldered type. The models for press bonding are 10120-6000EL (connector) and 10320-3210-000 (shell kit).

MR-JHSCBL M-H and -L are not IP65 compliant 4

The encoder cable is not oil-resistant

Refer to the catalog "MOTION CONTROLLER Q SERIES (L(NA)03014)" for the Q172 and Q173.

7. The HA-LFS601, 6014, 701M and 701M4 do not have a connector type motor power supply. Use only @, ③, ⑤, ⑥ or ⑳.

#### • Cables and connectors (for MR-J2S-11KB (4) to MR-J2S-22KB (4))

Optional cables and connectors are shown in the diagram below



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### • Cables and connectors (for MR-J2S-30KB (4) or larger)

Optional cables and connectors are shown in the diagram below.

Notes: 1. -H and -L indicate bending life. -H products have a long bending life.

2. The connector and the shell kit are soldered type. The models for press bonding are 10120-6000EL (connector) and 10320-3210-000 (shell kit) 3. MR-JHSCBL M-H and -L are not IP65 compliant.

 The encoder cable is not oil-resistant.
 Refer to the catalog "MOTION CONTROLLER Q SERIES (L(NA)03014)" for the Q172 and Q173. 6. Keep the CN5 cable length to 1m (3.28ft) or shorter.

		Item	Model	Protection level	Description
For CN1A, CN1B, CN5A, converter unit	7	Controller to amplifier cable Amplifier to amplifier bus cable CN5 cable	MR-J2HBUS M ==cable length 0.5, 1, 5m (1.64, 3.28, 16.40ft) (Note 6)	_	Controller-side connector, amplifier-side connector or converter unit-side connector (made by 3M or an equivalent product) 10120-3000VE (connector) 10320-52F0-008 (shell kit) (Note 2)
For CN1A, CN1B,	8	Connector for controller, CN1 or CN5	MR-J2CN1	_	Controller-side connector, amplifier-side connector or converter unit-side connector (made by 3M or an equivalent product) 10120-3000VE (connector) 10320-52F0-008 (shell kit) (Note 2)
For CN1B, CN5B	9	Terminal connector	MR-A-TM	_	Terminal connector
For CN3	10	Personal computer communication cable	MR-CPCATCBL3M Cable length 3m (9.84ft)	_	Amplifier-side connector (made by 3M or an equivalent product)       Personal computer-side connector (made by Japan Aviation Electronics Industry)         10120-3000VE (connector)       DE-9SF-N (connector)         10320-52F0-008 (shell kit) (Note 2)       DE-C1-J6-S6 (case)
For CN4	1)	CN4 cable	MR-H3CBL1M Cable length 1m (3.28ft)	_	Amplifier-side connector (AMP) 171822-4 (housing)
For converter unit	12	CN1 connector for converter unit	MR-HP4CN1	_	Converter unit-side connector (made by 3M or an equivalent product) 10114-3000VE (connector) 10314-52F0-008 (shell kit)
For CON2	13	CON2 connector	MR-J2CMP2	_	Amplifier-side connector (made by 3M or an equivalent product) 10126-3000VE (connector) 10326-52F0-008 (shell kit)

# **Ordering Information for Customers**

### Ordering information for customers

#### • Servo motor power supply connectors

Power supply connectors are not supplied with the motors. Order the optional connectors from the previous pages or the following recommended products. To order the following products, contact the relevant manufacturers directly.

	② Cable ① Plug clamp Cable	① Plug	② Cable clamp	Ci
ectors				
wing	(Straight type)		(Angled type	e)



Motor model	Protection level	1 Pl	ug (made by DDK)	② Cable clamp (made by DDK)		
Motor model	THOLEGEIGHTIEVEI	Туре	Model	Cable diameter mm (inch)	Model	
HC-SES81		Straight	CE05-6A22-23SD-B-BSS	9.5 to 13 (0.374 to 0.512)	CE3057-12A-2 (D265)	
HC-SFS52, 102, 152, 524, 1024, 1524	IP65, IP67	Straight	CE05-0A22-233D-B-B33	12.5 to 16 (0.492 to 0.630)	CE3057-12A-1 (D265)	
HC-SFS53, 103, 153	EN standards	Angled	CE05-8A22-23SD-B-BAS	9.5 to 13 (0.374 to 0.512)	CE3057-12A-2 (D265)	
HC-LFS52, 102, 152		Angleu	CE05-6A22-233D-B-BA3	12.5 to 16 (0.492 to 0.630)	CE3057-12A-1 (D265)	
HC-RFS103, 153, 203	(Note)	Straight	MS3106B22-23S	15.9 (0.626)	MS3057-12A	
HC-UFS72, 152	General environment	Angled	MS3108B22-23S	(Inner diameter of bushing)	MS3057-12A	
HC-SFS121, 201, 301		Straight	Angled MS3108B22-23S Straight CE05-6A24-10SD-B-BSS	13 to 15.5 (0.512 to 0.610)	CE3057-16A-2 (D265)	
HC-SFS202, 352, 502, 2024, 3524, 5024	IP65, IP67 EN standards	Straight	CE03-0A24-103D-D-B33	15 to 19.1 (0.591 to 0.752)	CE3057-16A-1 (D265)	
HC-SFS203, 353 HC-LFS202, 302		Angled	CE05-8A24-10SD-B-BAS	13 to 15.5 (0.512 to 0.610)	CE3057-16A-2 (D265)	
HC-RFS353, 503		Angleu	CE03-8A24-103D-D-BA3	15 to 19.1 (0.591 to 0.752)	CE3057-16A-1 (D265)	
HA-LFS502	(Note)	Straight	MS3106B24-10S	15.9 (0.626), 19.1 (0.752)	MS3057-16A	
HC-UFS202, 352, 502	General environment	Angled	MS3108B24-10S	(Inner diameter of bushing)	MS3057-16A	
	IP65, IP67	Straight	CE05-6A32-17SD-B-BSS	22 to 23.8 (0.866 to 0.937)	CE3057-20A-1 (D265)	
HC-SFS702, 7024	EN standards	Angled	CE05-8A32-17SD-B-BAS	22 to 23.8 (0.866 to 0.937)	CE3057-20A-1 (D265)	
HA-LFS702	(Note)	Straight	MS3106B32-17S	23.8 (0.937)	MS3057-20A	
	General environment	Angled	MS3108B32-17S	(Inner diameter of bushing)	MS3057-20A	

Note: Not compliant with EN standards.

Motor model	Protection level		(made by Molex)
HC-KFS, HC-MFS series	General environment	without Brake	Plug 5559-04P-210 male terminal 5558PBT3L (AWG16)
HC-UFS 3000r/min series	EN standards	with Brake	Plug 5559-06P-210 male terminal 5558PBT3L (AWG16)

#### • Encoder connectors

Encoder connectors are not supplied with the motors. Order the optional connectors from the previous pages or the following recommended products. To order the following recommended products, contact the relevant manufacturer directly.

Motor model	Protection lovel	① Plug (made by DDK)	② Backs	hell (made by DDK)	③ Cable clamp (	made by DDK)	
Motor moder	TIOLECTIONIEVEL	() Tidg (made by DDI()	Туре	Model	Cable diameter mm (inch)	Model	
HC-SFS, HC-LFS, HC-RFS, HA-LFS series	IP65, IP67	MS3106A20-29S (D190)	Straight	CE02-20BS-S	6.8 to 10 (0.268 to 0.394)	CE3057-12A-3 (D265)	
HC-UFS 2000r/min series	1905, 1907	100A20-293 (D190)	Analed	CE-20BA-S	0.0 10 10 (0.200 10 0.394)	GE3037-12A-3 (D203)	



Motor model	Protection level	<ol> <li>Plug (ma</li> </ol>	de by DDK)	② Cable clamp (made by DDK)		
Motor moder	1 TOLECTION IEVEI	Туре	Model	Cable diameter mm (inch)	Model	
HC-SFS, HC-LFS, HC-RFS, HA-LFS series	O	Straight	MS3106B20-29S	15.9 (0.626)	MS3057-12A	
HC-UFS 2000r/min series	General environment	Angled	MS3108B20-29S	(Inner diameter of bushing)	ning) INISSUST-TZA	

#### • Brake connectors

① Pluc

Brake connectors are not supplied with the motors. Order the optional connectors from the previous pages or the following recommended products. To order the following products, contact the relevant manufacturer directly.



© Cable connector Cable

Motor model	Protection level	<ol> <li>Plug (made by DDK)</li> </ol>		<li>② Cable of Cable</li>	connector	
Motor model	Protection level	Model	Туре	Cable diameter mm (inch)	Model	Manufacturer
HC-SFS121B, 201B, 301B				4 to 8 (0.157 to 0.315)	ACS-08RL-MS10F	Nippon Flex
HC-SFS121B, 201B, 301B HC-SFS202B, 352B, 502B, 702B,			Straight	8 to 12 (0.315 to 0.472)	ACS-12RL-MS10F	Nippon Flex
2024B, 3524B, 5024B, 7024B	IP65	MS3106A10SL-4S (D190)		5 to 8.3 (0.197 to 0.327)	YSO10-5~8	Daiwa Dengyo
HC-SFS203B, 353B	IP67	1000 1000 100E 40 (B 100)		4 to 8 (0.157 to 0.315)	ACA-08RL-MS10F	Nippon Flex
HC-LFS202B, 302B			Angled	8 to 12 (0.315 to 0.472)	ACA-12RL-MS10F	Nippon Flex
HC-UFS202B, 352B, 502B				5 to 8.3 (0.197 to 0.327)	YLO10-5~8	Daiwa Dengyo

Plug Cable
 Cable
 Cable
 Cable
 Cable
 Cable

(Straight type)

ſ	Motor model	Protection level	<ol> <li>Plug (ma</li> </ol>	ade by DDK)	② Cable clamp	(made by DDK)
	WOLDI MODEI	FIDIECTIONIEVEI	Туре	Model	Cable diameter mm (inch)	Model
	HC-SFS121B, 201B, 301B HC-SFS202B, 352B, 502B, 702B, 2024B, 3524B, 5024B, 7024B HC-SFS203B, 353B HC-LFS202B, 302B HA-LFS601B, 801B, 12K1B, 6014B, 8014B, 12K14B HA-LFS701MB, 11K1MB, 15K1MB, 701M4B, 11K1M4B, 15K1M4B HA-LFS11K2B, 15K2B, 22K2B, 11K24B, 15K24B, 22K24B HC-UFS202B, 352B, 502B	General environment	Straight	MS3106A10SL-4S	5.6 (0.220) (Inner diameter of bushing)	MS3057-4A





• Power factor improvement reactor (FR-BAL, FR-BEL, MR-DCL) This reactor enables users to boost the servo amplifier's power factor and reduce its power supply capacity.

Туре	Model	Applicable servo amplifier	Fig.				
	FB-BAL-0.4K	MR-J2S-10A/A1/B/B1/CP/CP1/CL/CL1					
	TH-DAL-0.4K	MR-J2S-20A/B/CP/CL					
	FB-BAL-0.75K	MR-J2S-40A/B/CP/CL					
	FR-DAL-0.75K	MR-J2S-20A1/B1/CP1/CL1					
		MR-J2S-60A/B/CP/CL					
	FR-BAL-1.5K	MR-J2S-70A/B/CP/CL (-U_)					
		MR-J2S-40A1/B1/CP1/CL1					
AC reactor	FR-BAL-2.2K MR-J2S-100A/B/CP/CL						
	FR-BAL-3.7K	FR-BAL-3.7K MR-J2S-200A/B/CP/CL					
	FR-BAL-7.5K	MR-J2S-350A/B/CP/CL					
	FR-BAL-11K	MR-J2S-500A/B/CP/CL					
	FB-BAL-15K	MR-J2S-700A/B/CP/CL					
	FR-DAL-10K	MR-J2S-11KA/B					
	FR-BAL-22K	MR-J2S-15KA/B					
	FR-BAL-30K	MR-J2S-22KA/B					

Туре	Model	Applicable servo amplifier	Fig.
	FR-BAL-H1.5K	MR-J2S-60A4/B4	
	FR-BAL-H2.2K	MR-J2S-100A4/B4	]
	FR-BAL-H3.7K	MR-J2S-200A4/B4	1
	FR-BAL-H7.5K	MR-J2S-350A4/B4	1
AC reactor	FR-BAL-H11K	MR-J2S-500A4/B4	A
	FB-BAL-H15K	MR-J2S-700A4/B4	]
	FR-DAL-FILIDA	MR-J2S-11KA4/B4	
	FR-BAL-H22K	MR-J2S-15KA4/B4	1
	FR-BAL-H30K	MR-J2S-22KA4/B4	1
	FR-BEL-15K	MR-J2S-11KA/B	
	FR-BEL-22K	MR-J2S-15KA/B	]
	FR-BEL-30K	MR-J2S-22KA/B	В
	FR-BEL-H15K	MR-J2S-11KA4/B4	
	FR-BEL-H22K	MR-J2S-15KA4/B4	
DC reactor	FR-BEL-H30K	MR-J2S-22KA4/B4	
DC reactor	MR-DCL30K	MR-J2S-30KA/B	
	MR-DCL37K	MR-J2S-37KA/B	]
	MR-DCL30K-4	MR-J2S-30KA4/B4	- C
	MR-DCL37K-4	MR-J2S-37KA4/B4	
	MR-DCL45K-4	MR-J2S-45KA4/B4	
	MR-DCL55K-4	MR-J2S-55KA4/B4	

A       Wardsbe dremetors       Mounting scores       Mounting sco	Connections	nm (inch)	Unit: n								ensions	ernal dim	Exte			
Model       W       H       D       D1       C       more size       more si	Servo am MR-J2S-700A(4)/B(4)/C		<b>.</b>					iono	dimono	/orioblo						
A       W       FPB-BAL-078K       136531       100/221       116(453)       68/22       25/31/22       5/31/31       M4       M35       20/421       100/323       00/323       00/323       M4       M35       20/421       100/323       00/323       M4       M35       20/421       100/323       M4       M35       37/623       M4       M35	or sn					С	1					w	Model			
A       Image: Constraint of the standard of the stand	Power supply	2.0 (4.4)	M3.5	4	B) M4	7.5 (0.3)	7 -0.0964)	45.25(1.3	9 (2.32)	5 (4.53)	20 (4.72) 11	135 (5.31)	FR-BAL-0.4K			
A       W       FRBAL-15K       ft(65)       ft(55)       ft(26)       ft(55)       ft(26)       ft(57)       ft(26)       ft(57)       ft(26)       ft(57)       ft(50)       ft(76)       ft(57)       ft(50)       ft(76)       ft(57)       ft(50)       ft(76)       <	200 to 230VAC O S O V L2	2.8 (6.2)	M3.5	4	B) M4	7.5 (0.3)	4-0.0984)	57.25 (2.2	9 (2.72)	5 (4.53)	20 (4.72) 11	135 (5.31)	FR-BAL-0.75K	▼ ┍═⊑		
A       w       0.1       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y       y		3.7 (8.2)	M3.5	4	B) M4	7.5 (0.3)	7.0.0964)	55.25 (2.1	71 (2.8)	0 (5.51)	15 (5.71) 14	160 (6.3)	FR-BAL-1.5K		P	
A       w		5.6 (12)	M3.5	4	B) M4	7.5 (0.3)	5. _{0.0984} )	75.25 (2.9	1 (3.58)	0 (5.51)	15 (5.71) 14	160 (6.3)	FR-BAL-2.2K			
A       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w	Servo amplifier 1-phase 100/230 MR-J2S-40A1/B1/CP1/CL1 or sn		M4	5	9) M5	10 (0.39)			0 (3.54)				FR-BAL-3.7K	<u></u>		
A       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w       w	or MR-J2S-70A/B/CP/CL or sn		M5	-		· · · /							FR-BAL-7.5K	╧│└╁╌┰┶╵		
A       w       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u       u		,		~	., .	- 1	0							_ŧ _₽ ₽_₽₽	<u> </u>	
Introduction to the store is supplied with the unit. Instal the cover is supplied bock (185 119 119 126 166 165 71 156 61 14 106 157 110 166 157 105 22 (AWG4) (165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 10 165 71 156 61 14 166 71 156 71 156 61 14 10 165 71 156 61 1		()		-	-	,				· /	· /	· · · ·	-	D1	w	A
Monthing screw in the period cover for the terminal cover is supplied with the unit. Install the cover installation leg section       Interded cover (Note) installation leg section       Interded cover installation leg section       Interded coverer installation leg section <th< td=""><td></td><td>· · · ·</td><td></td><td>-</td><td>., .</td><td>. ()</td><td> ,</td><td></td><td></td><td>1</td><td>. (/</td><td></td><td></td><td></td><td></td><td></td></th<>		· · · ·		-	., .	. ()	,			1	. (/					
Image: space of the space		· · · ·		-	., .	· · · /	,			· /	. (			ounting screw		
Image: Series size of the terminal cover (Note)       Model       Variable dimensions       Mounting Mass (2,2,7,6,0,mk) (10,0,3) (MS (3,4,0,166) (10,0,3) (MS (MA (4,10)) (10,0,3) (MS (MA	Servo am	· · · ·			,	. ,	0	0				. ,				
W1       The Bal. H11K       20 (13/2)       25 (10/4)       26 (0/4)       20 (1/2)       25 (10/4)       26 (0/4)       27 (0/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       <	MR-J2S-11KA (4), to 22KA (4)				,					<u>`                                    </u>	<u> </u>		-	0.197		
W1       The Bal. H11K       20 (13/2)       25 (10/4)       26 (0/4)       20 (1/2)       25 (10/4)       26 (0/4)       27 (0/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       20 (1/4)       <	- NER MC FR-BAI			-		. ,				<u>`                                    </u>	<u> </u>			) <u>5</u> ±0		
Image: Series supplied by the turn in stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the stall the cover is supplied by the surface in the st	3-phase - 0 0 + 0 0 + 00 + 00 + 0 L1	· · · ·			/	. ,							-	<u> </u>		
Image: Series size C         Model         Variable dimensions         Mounting         Mass (V)         M		. ,		-	., .	- 1						· · · ·			C	
Image: FR-BAL-H30K         200 (11.42)         219 (6.2)         190.5 (7.48±0.1969)         25 (0.98)         MB         MB         43 (95)           Image: FR-BAL-H30K         200 (11.42)         240 (9.45)         200 (11.42)         219 (6.62)         190.5 (7.48±0.1969)         25 (0.98)         MB         MB         43 (95)           Image: FR-BAL-H30K         200 (11.42)         240 (9.45)         200 (11.42)         219 (6.62)         190.5 (7.48±0.1969)         25 (0.98)         MB         MB         43 (95)           Image: FR-BAL-H30K         Screw size         Model         Image: FR-BAL-H30K         Model         Image: FR-BAL-H30K         Model         Image: FR-BAL-H30K         Model         Model         FR-BAL-H30K         Model         FR-BAL-H30K         FR-BAL-		· · · ·		-	-	,										
B         Terminal cover (Note) Screw size G of net final cover (Note) Screw size (Sg (Ub) (mm²) Mass Wire size Screw Screw size (Screw Screw size (Screw Screw size (Screw Screw size (S		· · · ·	-	-	., .	. (	,			· /	<u> </u>					
B         Imma Duber (Nume)         Model         Variable dimensions         Mounting         Mass         Wire size         MR-J2S-11KA (4)/B (4)           B         Orgen size         A         B         C         D         E         F         L         G         H         screw size         Mounting         Mass         Wire size           B         Orgen size         A         B         C         D         E         F         L         G         H         screw size         Mg (b)         Wire size           FR-BEL-15K         (66)         (66)         (66)         (02)         (61)         (0.24)         (0.55)         M8         (2.76)         M6         (5.5)         (2.4)         (4)/B (4)			1110		,	20 (0.00)	20.1000)	10020 (111	10 (0.02)	( ( ) )   L	10 (0.10) 20	1200 (11.12) 1	111 BAE HOOK			
B       Image: Figure 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1	MR-J2S-11KÅ (4)/B (4) to 22KA (4)/B (4)						G						Model		Screw siz	
B       C       Image: Constrained by the system       Image: Constr	FR-BEL   P	2 (AWG4)			M5	56 (2.2)	M8						FR-BEL-15k			
Image: Second		) (AWG2)			M6	(2.76)	M8		6.5) (0.	7) (0.1)	4.69) (7.1		FR-BEL-22			
Image: Note: The terminal cover is supplied with the unit. Install the cover is supplied with the unit. Install the cover is supplied with the unit. Install the cover is installation leg section         FR-BEL-H15K         (6.69)(3.66)(6.3)(0.09)(6.1)(0.24)(0.55)         M6         (2.2)         M5         (8.2)         8 (AWG8)           Note: The terminal cover is supplied with the unit. Install the cover is installation leg section         Image: Cover terminal cover is supplied with the unit. Install the cover is installation leg section         FR-BEL-H22K         (7.28)(4.69)(6.73)(0.1) (6.5)(0.28)(0.59)         M6         (2.76)         M6         (11)         22 (AWG4)         Notes: 1. Always disconnect the shop -P-P1 when using the DC reactor using the wires. Installation leg sector         FR-BEL-H30K         (7.28)(4.69)(7.44) (0.1) (6.5) (0.28)(0.59)         M6         (7.76)         M6         6.7         22 (AWG4)         Notes: 1. Always disconnect the shop -P-P1 when using the DC reactor using the Wire size is m (16.4ft) or shorter electr         Screw is a (K, 0)         Screw is a (K, 0)         Mass         Wire size is mained wire size is mined wire size is more is a (K, 0)         Nodel         Converter unit         MR-HP30KA/MR-HP55K.	P1	(AWG2/0)			M6	(2.76)	M8	.28) (0.59	6.5) (0.	1) (0.1)	4.69) (7.9	K (7.28)	FR-BEL-30H			B
Note: The terminal cover is supplied with the unit. Install the cover after connecting the wires. Installation leg section         Installation leg section         Installation leg section         Note: The H-BEL-H22K (7.28)(4.69)(6.73) (0.1) (6.5) (0.28)(0.59) M6 (2.76) M6 (11) 22 (AWG4)         Notes: 1. Always disconnect the sho P-P1 when using the DC re 2. Connect a DC reactor using 5m (16.4ft) or shorter electric Terminal cover         Notes: 1. Always disconnect the sho P-P1 when using the DC re 2. Connect a DC reactor using 5m (16.4ft) or shorter electric Terminal cover         Notes: 1. Always disconnect the sho P-P1 when using the DC re 2. Connect a DC reactor using 5m (16.4ft) or shorter electric 5m (16.4ft) or sh		(AWG8)	2) 8	(8	M5	(2.2)	) M6	24) (0.55	6.1) (0.	) (0.09)	3.66) (6.3	5K (6.69)	FR-BEL-H1			
with the drift, install the Cover Fill     FR-BEL-H30K     135     119     189     2.6.     165     7     15     M6     7.0     M6     6.7     22 (AWG4)       Terminal block       Terminal block       Converter unit       Converter unit       Terminal sensor       Converter unit       Terminal sensor	Notes: 1. Always disconnect the short bar ad	2 (AWG4)			M6		M6						FR-BEL-H2		Note: The terminal cover is su	
Terminal block Converter unit Covert for thermal sensor screw Model Mass Units (Ib) (mm2)	<ol><li>Connect a DC reactor using the</li></ol>	2 (AWG4)			M6		M6							<u></u>		
Terminal (M3.5 screw) Terminal cover for thermal sensor screw Model Variable dimensions Terminal Mass Wire size MR-HP30KA/MR-HP55K/	· · · ·		.,				4			7 (* 7			ction	nstallation leg se		
cover for thermal sensor screw Model	Converter unit MR-HP30KA/MR-HP55KA4	/ire size	ass W	al Ma	Terminal	,	sions	le dime	Variab				Terminal	M3.5 screw)	Terminal	
		(mm ² )	(lb)	ze kg	screw size	D ^{so}	С	B1	В	А	lodel		r screw	or thermal senso	cover	
MR-DCL30K 255 135 80 215 232 110 9.5 60 (AWG2/0)	MR-DCL P1	(AWG2/0)	5 60	9		232	215	80	135	255	_30K	MR-D0	<u>  十</u>	l E		
C 205 135 00 215 232 M12 9.5 MR-DCL37K (10.04) (5.31) (3.15) (8.46) (9.13) M12 (21) 80 (AWG3/0) (21) 80 (AWG		(AWG3/0)	1)		M12						_37K	MR-D0		thorte		
C D MR-DCL30K-4 205 135 75 200 175 M8 (14) 30 (AWG2) P2	P2	) (AWG2)			M8						_30K-4	MR-D0				C
MR-DCL37K-4 225 135 80 200 197 7 (8.86) (5.31) (3.15) (7.87) (7.76) M8 7 (15) 38 (AWG2)		3 (AWG2)	3)		M8	(7.76)	7.87)	(3.15)	135 (5.31)	(8.86)	_37K-4	MR-DO	(B1)			
A or shorter         B or shorter         MR-DCL45K-4         240         135         80         200         212         7.5         50 (AWG1/0)         Notes: 1. Always disconnect the shorter	Notes: 1. Always disconnect the short bar at P1-P2 when using the DC reactor.	(AWG1/0)	7) 50	(1	M8	(8.35)	7.87)	(3.15)	(5.31)	(9.45)	_45K-4	MR-DC	or shorter	' \ ' <del>''''</del>	· · · · · · · · · · · · · · · · · · ·	
Mounting hole for M8 MB-DCI 55K-4 (260 H) (231) (245) (245) (245) (250 H) (251 H) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (245) (2	<ol> <li>Connect a DC reactor using the 5m (16.4ft) or shorter electrical wire</li> </ol>	(AWG2/0)			M8						_55K-4	MR-DC	le for M8	\Mounting hol		

#### • Optional regeneration unit

	Built-in		Standard acces	sory (external regenerative	e resistor)/tolerable regen <b>G400-</b>	erative power (W)		_
Servo amplifier model	regenerative resistor/			GRZ	G400-	1	1	_
(MR-J2S-)	tolerable regenerative power (W)	2Ω×4	1Ω×5	0.8 <u>0</u> ×5	5Ω×4	2.5Ω×5	2Ω×5	
10A(1)/B(1)/CP(1)/CL(1)	-	_	_	_	_	_	_	
20A(1)/B(1)/CP(1)/CL(1)	10	—	—	—	—	—	—	
40A(1)/B(1)/CP(1)/CL(1)	10	—	—	—	—	—	—	
60A/B/CP/CL	10	—	—	—	—	—	—	
70A/B/CP/CL(-U_)	20	—	—	-	—	-	_	
100A/B/CP/CL	20	—	—	—	—	—	—	
200A/B/CP/CL	100	—	—	-	—	-	—	
350A/B/CP/CL	100	—	—	—	—	—	—	
500A/B/CP/CL	130	—	—	—	—	-	—	
700A/B/CP/CL	170	—	_	-	—	-	_	
11KA/B	—	500 (800)	—	—	—	—	—	
15KA/B	_	—	850 (1300)	-	—	-	_	
22KA/B	—	—	—	850 (1300)	—	—	—	
30KA/B	_	—	—	-	—	-	—	
37KA/B	_	—	_	-	—	-	_	
60A4/B4	30	_	_	_	_	_	_	
100A4/B4	100	—	—	-	—	-	_	
200A4/B4	100	—	—	—	—	—	—	
350A4/B4	100	—	—	-	—	-	_	
500A4/B4	130	_	_	-	—	-	_	
700A4/B4	170	—	_	_	—	_	_	
11KA4/B4	_	—	—	-	500 (800)	-	_	
15KA4/B4	_	_	_	-	_	850 (1300)	_	
22KA4/B4	_	—	_	_	—	_	850 (1300)	
30KA4/B4	_	_	_	_	_	_	_	
37KA4/B4	_	—	_	—	_	_	_	
45KA4/B4	_	_	_	_	_	_	_	
55KA4/B4	_	_	_	_		_	_	

2. For the values given in parentheses, install cooling fans (approx. 1.0m³/min, __92×2 units), and change the parameter No. 0 (for the MR-J2S-A type) or No. 2 (for the MR-J2S-B type).



Notes: 1. The optional regeneration unit will heat up to approx. 100°C (212°F), so do not directly mount it on a wall susceptible to heat. Use nonflammable wires or provide flame resistant treatment (use silicon tubes, etc.), and wire so that the wires do not contact the optional regeneration unit. 2. Always use twisted wires for the optional regeneration unit or for the standard accessory (GRZG400-□Ω), and keep the length as short as possible (5m (16.4ft) or shorter).

								C	Optional	regener	ation uni		e regene	erative p	ower (W	)									Resist-
												MR-RB													ance
032	12	30	31	32	50	51	65	66	67	139	137	1L-4	3M-4	3H-4	3G-4	34-4	5H-4	5G-4	54-4	6B-4	60-4	6K-4	136-4	138-4	value (Ω)
30	×	×	×	×	×	×	×	×	Х	×	×	Х	×	×	×	×	×	×	×	×	×	×	×	Х	40
30	100	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	40
30	100	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	40
30	100	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	40
30	100	×	×	300	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	40
30	100	×	×	300	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	40
×	×	300	×	×	500	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	13
×	×	300	×	×	500	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	13
×	×	300	×	×	500	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	13
×	×	×	300	×	×	500	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	6.7
×	×	×	×	×	×		500 (800)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	8
×	×	×	×	×	×	×		850 (1300)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	5
×	×	×	×	×	×	×	×		850 (1300)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	4
×	×	×	×	×	×	×	×	×	×	1300	3900	×	×	×	×	×	×	×	×	×	×	×	×	×	1.3 (Note 3)
×	×	×	×	×	×	×	×	×	×	1300	3900	×	×	×	×	×	×	×	×	×	×	×	×	Х	1.3 (Note 3)
×	×	×	×	×	×	×	×	×	×	×	×	100	×	×	×	×	×	×	×	×	×	×	×	×	270
×	×	×	×	×	×	×	×	×	×	×	×	×	300	×	×	×	×	×	×	×	×	×	×	×	120
 ×	×	×	×	×	×	×	×	×	×	×	×	×	×	300	×	×	500	×	×	×	×	×	×	Х	80
 Х	×	×	×	×	×	×	×	×	Х	Х	×	Х	×	×	300	×	×	500	Х	×	×	×	×	Х	47
×	×	×	×	×	×	×	×	×	Х	Х	×	×	×	×	300	×	×	500	Х	×	×	×	×	Х	47
 Х	×	×	×	×	×	X	×	×	Х	Х	×	Х	×	×	×	300	×	×	500	×	×	×	×	Х	26
Х	×	×	×	×	×	X	×	×	Х	Х	×	Х	×	×	×	×	×	×	Х	500 (800)	×	×	×	Х	20
 ×	×	×	×	×	×	X	×	×	Х	Х	×	Х	×	Х	×	×	×	×	Х		850 (1300)	×	×	Х	12.5
×	×	×	×	×	×	×	×	×	Х	×	×	Х	×	×	×	×	×	×	Х	×		850 (1300)	×	Х	10
×	×	×	×	×	×	×	×	×	×	×	×	Х	×	×	×	×	×	×	Х	×	×	×	1300	3900	5 (Note 3)
X	X	×	×	Х	×	×	×	×	X	X	×	Х	Х	X	X	X	X	X	Х	×	×	×	1300	3900	5 (Note 3)
Х	×	×	×	×	×	×	×	×	Х	Х	×	×	×	Х	×	×	×	×	×	×	×	×	1300	3900	5 (Note 3)
Х	×	×	×	×	×	×	×	X	Х	Х	×	Х	×	×	×	×	×	X	Х	×	×	×	1300	3900	5 (Note 3)

3. For MR-RB137 or MR-RB138-4, the value applies when 3 regeneration units are connected.



3. The servo amplifier (MR-J2S-CKC-PX) without enclosed regenerative resistors is available for the servo amplifiers MR-J2S-11KA/B to 22KA/B.

A. Always use twisted wires for a thermal sensor, and make sure that the sensor does not fail to work properly due to inducted noise.
5. When increasing the regeneration braking frequency, install cooling fans (approx. 1.0m³/min, __92X2 units) and change the parameter No. 0 (for the MR-J2S-A type) or No. 2 (for the MR-J2S-B type). The cooling fan must be prepared by user.

#### • Optional regeneration unit



Notes:1. The optional regeneration unit will heat up to approx. 100°C (212°F), so do not directly mount it on a wall susceptible to heat. Use nonflammable wires or provide flame resistant treatment (use silicon tubes, etc.), and wire so that the wires do not contact the optional regeneration unit. 2. Always use twisted wires for the optional regeneration unit or for the standard accessory (GRZG400- $\Box$ Q), and keep the length as short as possible (5m (16.4ft) or shorter).

## **Options**



 A Always use twisted wires for a thermal sensor, and make sure that the sensor does not fail to work properly due to inducted noise.
 When increasing the regeneration braking frequency, install cooling fans (approx. 1.0m³/min, _92 x 2 units) and change the parameter No. 0 (for the MR-J2S-A type) or No. 2 (for the MR-J2S-B type). The cooling fan must be prepared by user.

#### • Battery (MR-BAT)

The servo motor's absolute value can be maintained by installing a battery in the servo amplifier. The battery is not required when the servo system is used in an incremental mode. Note: 1 - A GBAT can be also used

- Notes: 1. A6BAT can be also used.
  - 2. The 44th Edition of the IATA (International Air Transportation Association) Dangerous Goods
  - Regulations was effected in January 1st, 2003 and administered immediately.

In this edition, the provisions relating to lithium and lithium ion batteries have been revised to strengthen regulations on the air transportation of batteries.

This battery is not classified as dangerous goods (not class 9). Therefore, transporting 24 units or less is not subject to the regulations.

Туре	MR-BAT
Nominal voltage	3.6V
Nominal capacity	1700mAh
Lithium content	0.48g

However, transporting more than 24 units requires packing based on Packing Instruction 903.

For the self-certification form for the battery safety test or more information, contact Mitsubishi. (as of September, 2006)

#### • Maintenance relay card (MR-J2CN3TM) ... Use with MR-J2S-700A (4)/B (4)/CP/CL or smaller

The maintenance relay card is used when using the personal computer and analog monitor output simultaneously.



### • Manual pulse generator (MR-HDP01) ... Compatible only with MR-J2S-CP type and MR-J2S-CL type. (Note 1)



Notes: 1. Cannot be used with CC-Link compatible product (MR-J2S-CP-S084). 2. Manufacture the manual pulse generator cable with the optional CN1 connector (MR-J2CN1). Refer to "MR-J2S SERVO AMPLIFIER INSTRUCTION MANUAL" for details.

#### • External digital display (MR-DP60) ... Compatible only with MR-J2S-CP type and MR-J2S-CL type.



Notes: 1. When using MR-DP60, change the parameter No. 16. Refer to "MR-J2S SERVO AMPLIFIER INSTRUCTION MANUAL" for details.

2. Manufacture the external digital display cable with the optional CN1 connector (MR-J2CN1). Refer to "MR-J2S SERVO AMPLIFIER INSTRUCTION MANUAL" for details.

#### • Heat sink outside attachment (MR-(J)ACN)

By mounting the heat sink outside attachment on the converter unit or servo amplifier, the heat generating section can be mounted outside the control box. This makes it possible to dissipate the unit's heat to outside the box. Approx. 50% of the heating value can be dissipated with this method, and the control box dimensions can be downsized.



#### • Radio noise filter (FR-BIF, FR-BIF-H)

This filter effectively controls noise emitted from the power supply side of the servo amplifier or converter unit, and is especially effective for radio frequency bands 10MHz or lower. Available only for input.

Model	Applicable servo amplifier
FR-BIF	MR-J2S-22K or smaller, MR-J2S-30K or 37K
FR-BIF-H	MR-J2S-60_4 to MR-J2S-55K_4



#### • Line noise filter (FR-BSF01, FR-BLF)

This filter is effective in suppressing radio noise emitted from the servo amplifier's or converter unit's power supply side or output side, and high-frequency leakage current (zero-phase current). Especially effective in the 0.5 to 5MHz band.



#### • EMC filter

The following filters are recommended as a filter compliant with the EMC directive for the servo amplifier's power supply.

Model	Applicable servo amplifier	Fig.
SE1252	MR-J2S-10A/B/CP/CL to 100A/B/CP/CL	A
3F1202	MR-J2S-10A1/B1/CP1/CL1 to 40A1/B1/CP1/CL1	A
SE1253	MR-J2S-200A/B/CP/CL	в
5F1253	MR-J2S-350A/B/CP/CL	
HF3040A-TM (Note)	MR-J2S-500A/B/CP/CL	
HF3050A-TM (Note)	MR-J2S-700A/B/CP/CL	
HF3060A-TMA (Note)	MR-J2S-11KA/B	С
HF3080A-TMA (Note)	MR-J2S-15KA/B	]
HF3100A-TMA (Note)	MR-J2S-22KA/B	
HF3200A-TMA (Note)	MR-J2S-30KA/B	
HF3200A-TMA (Note)	MR-J2S-37KA/B	

Model	Applicable servo amplifier	Fig.
	MR-J2S-60A4/B4	
TF3005C-TX (Note)	MR-J2S-100A4/B4	
	MR-J2S-200A4/B4	
	MR-J2S-350A4/B4	E
TF3020C-TX (Note)	MR-J2S-500A4/B4	
	MR-J2S-700A4/B4	
TF3030C-TX (Note)	MR-J2S-11KA4/B4	
TF3040C-TX (Note)	MR-J2S-15KA4/B4	F
TF3060C-TX (Note)	MR-J2S-22KA4/B4	г
	MR-J2S-30KA4/B4	
TE2150C TV (Nata)	MR-J2S-37KA4/B4	G
TF3150C-TX (Note)	MR-J2S-45KA4/B4	G
	MR-J2S-55KA4/B4	

Note: Made by SOSHIN ELECTRIC CO.



## Peripheral Equipment



## **Peripheral Equipment**

#### • Electrical wires, circuit breakers, magnetic contactors

					Elect	rical wire size (m	m ² )		
Servo amplifier	Circuit breaker	Magnetic contactor	L1, L2, L3, 🕀	L11, L21, 24V · L11, 0V · L21 (Note 6)	U, V, W, 🕀	P, C (Note 7)	BU, BV, BW	B1, B2	OHS1, OHS2
MR-J2S-10A/A1/B/B1/CP/CP1/CL/CL1 MR-J2S-20A/B/CP/CL	30A frame 5A								
MR-J2S-40A/B/CP/CL MR-J2S-20A1/B1/CP1/CL1	30A frame 10A	0.0140			1.25				
MR-J2S-60A/B/CP/CL MR-J2S-40A1/B1/CP1/CL1 MR-J2S-70A/B/CP/CL (-U_) MR-J2S-100A/B/CP/CL	30A frame 15A	S-N10	2 (AWG14)		(AWG16) 2 (AWG14)	2 (AWG14)	_		
MR-J2S-200A/B/CP/CL	30A frame 20A	S-N18	3.5 (AWG12)	1.25	3.5 (AWG12)			1.25	
MR-J2S-350A/B/CP/CL	30A frame 30A	S-N20	5.5 (AWG10)	(AWG16)	5.5 (AWG10) (Note 2)			(AWG16)	
MR-J2S-500A/B/CP/CL	50A frame 50A	S-N35			5.5 (AWG10)				
MR-J2S-700A/B/CP/CL	100A frame 75A	S-N50	8 (AWG8)		8 (AWG8)	3.5 (AWG12)	(Note 3)		(Note 4)
MR-J2S-11KA/B	100A frame 100A	S-N65	14 (AWG6)	]	22 (AWG4)				
MR-J2S-15KA/B	225A frame 125A	S-N95	22 (AWG4)		30 (AWG2) (Note 5)	5.5	2		1.25
MR-J2S-22KA/B	225A frame 175A	S-N125			60	(AWG10)	(AWG14)		
MR-J2S-30KA/B	400A frame 250A	S-N150	50 (AWG1/0)	2	(AWG2/0)	(Awaro)	(/ (// C(14))		(AWG16)
MR-J2S-37KA/B	400A frame 300A	S-N180	60 (AWG2/0)	(AWG14)	80 (AWG3/0)				
MR-J2S-60A4/B4	30A frame 5A				1.25 (AWG16)				
MR-J2S-100A4/B4	30A frame 10A	S-N10	2 (AWG14)		1.25 (AWG10)				
MR-J2S-200A4/B4	30A frame 15A				2 (AWG14)	2			
MR-J2S-350A4/B4	30A frame 20A	S-N18	3.5 (AWG12)	1.25	3.5 (AWG12)	(AWG14)		1.25	—
MR-J2S-500A4/B4	30A frame 30A	3-1110	5.5 (AWG10)	(AWG16)	5.5 (AWG10)			(AWG16)	
MR-J2S-700A4/B4	50A frame 40A	S-N20	5.5 (AWG10)	(AWG10)	5.5 (AWG10)		(Note 3)	(AWG10)	(Note 4)
MR-J2S-11KA4/B4	60A frame 60A	S-N25	8 (AWG8)	1	8 (AWG8)	3.5 (AWG12)	2	1	
MR-J2S-15KA4/B4	100A frame 75A	S-N35	11(0)000		00 (4)4(0 4)		(AWG14)		
MR-J2S-22KA4/B4	225A frame 125A	S-N65	14 (AWG6)		22 (AWG4)		(AWG14)		1.25
MR-J2S-30KA4/B4	225A frame 150A	S-N95	22 (AWG4)		30 (AWG2)	5.5			(AWG16)
MR-J2S-37KA4/B4	225A frame 175A	S-N125	30 (AWG2)	2	38 (AWG2)	(AWG10)	1.25		(AWG10)
MR-J2S-45KA4/B4	225A frame 225A	S-N150	38 (AWG2)	(AWG14)	50 (AWG1/0)		(AWG16)	_	
MR-J2S-55KA4/B4	400A frame 250A	S-N180	50 (AWG1/0)	1	60 (AWG2/0)		(		

Notes: 1. The wires in the above table are assumed to use a 600V polyvinyl chloride electrical wire having a length of 30m (98.43ft).

The wires in the above table are assumed to use a 600V polyvinyl chloride electrical wire having a length of 30m (98.43ft).
 Use 3,5mm² (AWG12) electrical wire when connecting the servo motor HC-RFS203.
 Use 2.5mm² (AWG14) electrical wire when connecting the servo motor HA-LFS601(4) or HA-LFS701M(4).
 Use 1.25mm² (AWG16) electrical wire when connecting the servo motor HA-LFS601(4) or HA-LFS701M(4).
 Always use the 38-S6 (made by JST Mfg.) or R38-6S (made by NICHIFU) crimping terminal when connecting to U, V and W terminals of MR-J2S-15KA/B.
 The 24V · L11 and 0V · L21 terminals are for the servo amplifier MR-J2S-60A4/B4 to MR-J2S-700A4/B4.
 Connect an optional regeneration unit using 5m (16.4ft) or shorter electrical wire.

#### • Surge suppressor

Attach surge suppressors to the servo amplifier and signal cable's AC relays, AC valves and AC electromagnetic brake. Attach diodes to DC relays and DC valves.

Sample configuration

Surge suppressor: 972A-2003 504 11 (rated 200VAC, made by Matsuo Denki)

Diode : A diode with resisting pressure 4 or more times greater than the relay's drive voltage, and 2 or more times greater than the current.

#### • Data line filter

Attaching a data line filter to the pulse output cable or motor encoder cable of the pulse train output controller (QD75D, etc.) is effective in preventing noise penetration.

Sample configuration

Data line filter: ESD-SR-25 (made by NEC TOKIN), ZCAT3035-1330 (made by TDK)

# **Using a Personal Computer**

#### < MR Configurator (Setup software) > • MRZIW3-SETUP161E

This software makes it easy to perform monitor display, diagnostic, reading and writing of parameters, and test operations from the setup with a personal computer.





#### Features

- (1) This software can easily set up and tune your servo system with a personal computer. Compatible personal computers: Windows® 95, Windows®
- 98, Windows[®] Me, Windows[®] NT[®] Workstation 4.0, Windows[®] 2000 Professional, Windows[®] XP Professional and Windows[®] XP Home Edition (Note 1, 2). (2) Multiple monitor functions
- Graphic display functions are provided to display the servo motor status with the input signal triggers, such as the command pulse, droop pulse and speed. (3) Test operations with a personal computer
  - Test operation of the servo motors can be performed easily with a personal computer.

#### • Operating conditions

Personal computer (Note1, 8)	IBM PC/AT compatible unit running Windows [®] 95, Windows [®] 98, Windows [®] Me, Windows NT [®] Workstation4.0, Windows [®] 2000 Professional, Windows [®] XP Professional and Windows [®] XP Home Edition.         Processor       : Pentium [®] 133MHz or faster (Windows [®] 95, Windows [®] 98, Windows NT [®] Workstation4.0, Windows [®] 2000 Professional) Pentium [®] 150MHz or faster (Windows [®] Me)         Pentium [®] 300MHz (Windows [®] XP Professional/Home Edition)         Memory       : 16MB or more (Windows [®] 95), 24MB or more (Windows [®] 98) 32MB or more (Windows [®] Me, Windows NT [®] Workstation4.0, Windows [®] 2000 Professional) 128MB or more (Windows [®] XP Professional/Home Edition)         Free hard disk space       : 60MB or more         Serial port used       : 60MB or more
OS	Windows® 95, Windows® 98, Windows® Me, Windows NT® Workstation4.0, Windows® 2000 Professional, Windows® XP Professional, Windows® XP Home Edition (Note 2)
Monitor	Capable of resolution 800×600 or more, high color (16-bit display)
Keyboard	Compatible with above personal computers.
Mouse	Compatible with above personal computers. Note that serial mice are incompatible.
Printer	Compatible with above personal computers.
Communication cable	MR-CPCATCBL3M

#### • Specifications (Items in parentheses do not work with the MR-J2S.)

Main-menu	Functions
Monitors	Batch display, high speed monitor, graph display
Alarms	Alarm display, alarm history, display of data that generated alarm
Diagnostics	Digital I/O display, function device display (Note 7), failure to rotate reason display, power ON count display, amplifier version display, motor information display, tuning data display, absolute data display, automatic voltage control offset display (Note 3), axis name setting, (unit composition list display), fully-closed diagnostic (Note 5)
Parameters	Parameter setting, display of change list, tuning display, display of detailed information, device setting (Note 7)
Test operations	JOG operation, positioning operation, operation without motor, forced digital output, program operation using simple language, single-step feed, program test operation (Note 6)
Advanced function	Machine analyzer, gain search, machine simulation
Program data (Note 6)	Program data, indirect addressing
Point data	Point table (Note 4)
File operation	Data reading, saving and printing
Other	Automatic operation, help display

Note

1. Pentium is registered trademark of Intel Corporation. Windows and Windows NT are registered trademarks of Microsoft Corporation in the United States and other countries

2. Windows[®] XP is compatible with MRZJW3-SETUP161E or above

3. The automatic voltage control offset display is compatible only with the MR-J2S-A type. 4. Compatible only with the MR-J2S-CP type.

Compatible only with the full closed control compatible amplifiers.
 Compatible only with the MR-J2S-CL type.
 Compatible with the MR-J2S-CP and MR-J2S-CL types.

This software may not run correctly, depending on the personal computer being used.

9. The screens shown on this page are for reference and may differ from the actual screens.





#### <Capacity selection software>

#### • MRZIW3-MOTSZ111E (Note 4)

A user-friendly design facilitates selecting the optimum servo amplifier, servo motor (including the servo motor with a electromagnetic brake) and optional regeneration unit just by entering constants and an operation pattern into machine-specific windows.



*Cc	mpuls	ory Items	10	ow Respon: 💌	Stop	. Stb. Time	0.043	S	ec
No.	^o roc pee	Feed [mm]	Eith Pos. Time [sec]	er One Feed Rate mm/min ▼	Accel. Time [sec]	Decel. Time [sec]	Pause time [sec]	Load Mass	Ld. Sti
1		800.000	3.500	15000.000	0.257	0.257	1.500	P	Г
2	Г	-800.000	3.500	15000.000	0.257	0.257	1.500	N	Г
3									
4									
5									Г
6									Г
7									Г
8									Г
9									Г
10									
2	d Rati 20000 00000 0	e mm/min	-			Clear		culate p 10W Gi t from I	raph
-1	0000							Canc	el

#### Features

- (1) User defined operation patterns can be set. The operation pattern can be selected from the position control mode operation or speed control mode operation. The selected operation pattern can be also displayed in the graph.
- (2) The feedrate (or motor speed) and torque can be also displayed in the graph during the selection process.
- (3) Compatible with Windows® 95, Windows® 98, Windows® Me, Windows NT® Workstation4.0, Windows® 2000 Professional, Windows® XP Professional and Windows® XP Home Edition (Note 1).

#### Operation conditions

Personal computer (Note1, 2)	IBM PC/AT compatible unit running Windows® 95, Windows® 98, Windows® Me, Windows NT® Workstation4.0, Windows® 2000 Professional, Windows® XP Professional and Windows® XP Home Edition.         Processor       : Pentium® 133MHz or faster (Windows® 95, Windows® 98, Windows NT® Workstation4.0, Windows® 2000 Professional) Pentium® 130MHz or faster (Windows® Me)         Pentium® 300MHz (Windows® XP Professional/Home Edition)       Pentium® 300MHz (Windows® XP Professional/Home Edition)         Memory       : 16MB or more (Windows® 95), 24MB or more (Windows® 98)         32MB or more (Windows® Me, Windows NT® Workstation4.0, Windows® 2000 Professional)         128MB or more (Windows® XP Professional/Home Edition)         Free hard disk space       : 40MB or more
OS	Windows® 95, Windows® 98, Windows® Me, Windows NT® Workstation4.0, Windows® 2000 Professional, Windows® XP Professional, Windows® XP Home Edition
Monitor	Capable of resolution 800×600 or more, high color (16-bit display).
Keyboard	Compatible with above personal computers.
Mouse	Compatible with above personal computers. Note that serial mice are incompatible.
Printer	Compatible with above personal computers.

#### Specifications

Item		Description
Types of machine component		Horizontal ball screws, vertical ball screws, rack and pinions, roll feeds, rotating tables, dollies, elevators, material handling systems, and other (direct inertia input) devices.
Output		Selected servo amplifier model, selected servo motor model, selected regenerative resistor model, load inertia moment, load inertia moment ratio, peak torque, peak torque ratio, effective torque, effective torque ratio, regenerative power (regenerative energy for MR-J2M), and regenerative power ratio.
of results Printing		Prints input specifications, operation pattern, calculation process, graph of selection process feedrate (or motor speed) and torque graphs, and selection results.
	Data storage	Assigns a file name to input specifications, operation patterns and selection results, and saves them on hard disk or floppy disk, etc.
Inertia moment o	calculation function	Cylinder, core alignment column, variable speed, linear movement, suspension, conical and truncated cone

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1. Pentium is registered trademark of Intel Corporation. Windows and Windows NT are registered trademarks of Microsoft Corporation in the United States and other countries.

This software may not run correctly, depending on the personal computer being used.
 The screens shown on this page are for reference and may differ from the actual screens
 This software can be obtained for free. Contact Mitsubishi for the details.

#### The Differences (Comparison with MR-J2 series)

#### • Servo amplifier

#### MR-J2S-A series

	Item	MR-J2SA	MR-J2A
Hardware	External dimensions/Mounting method	Same as MR-J2A/Same as MR-J2A	—
	Rated output	1-phase 100VAC : 0.05 to 0.4kW 3-phase 200VAC : 0.05 to 37kW 3-phase 400VAC : 0.5 to 55kW	1-phase 100VAC : 0.05 to 0.4kW 3-phase 200VAC : 0.05 to 3.5kW 3-phase 400VAC : —
	External wiring	Compatible with MR-J2- RS-422 communication function added	—
	7 segment display panel/ No. of operation buttons	5-digit 12345 /4	4-digit 1234 /4
	Communication interface	Selecting RS-232C or RS-422 possible	RS-232C only
	Pulse train input	500kpps (in differential mode)	400kpps (in differential mode)

#### MR-J2S-B series

	Item	MR-J2S-	MR-J2B
	External dimensions/Mounting method	Same as MR-J2B/Same as MR-J2B	—
lardware	Rated output	1-phase 100VAC : 0.05 to 0.4kW 3-phase 200VAC : 0.05 to 37kW 3-phase 400VAC : 0.5 to 55kW	1-phase 100VAC : — 3-phase 200VAC : 0.05 to 3.5kW 3-phase 400VAC : —
T	External wiring	Compatible with MR-J2- B (including encoder wiring), Encoder pulse output (ABZ) signal added	—

#### MR-J2S-CP series

	Item	MR-J2S-CP	MR-J2C
Hardware	External dimensions/Mounting method	Same as MR-J2C/Same as MR-J2C	—
	Rated output	1-phase 100VAC : 0.05 to 0.4kW 3-phase 200VAC : 0.05 to 7kW	1-phase 100VAC : — 3-phase 200VAC : 0.05 to 3.5kW
	External wiring	Compatible with MR-J2-C (including encoder wiring)	—
	7 segment display panel/ No. of operation buttons	5-digit 12345 /4	4-digit 1234 /4
	Communication interface	Compatible with MR-J2-C	—
	Special compliance	Compatible with CC-Link using special parts	_

#### • Servo motor

Item	HCS, HA-LFS	HC-
Encoder resolution	ABS 17bits (131072 p/rev)	ABS 13bits (8192 p/rev), 14bits (16384 p/rev)
External dimensions/Mounting method	Compatible	—
Power-supply connector	CHC-KFS/HC-MFS/HC-UFS 3000r/min> power-supply connector (made by MOLEX) 5557-04R-210 (receptacle in case without brake) 5557-06R-210 (receptacle in case with brake) 5556PBT (female terminal)	<existing 3000r="" hc-kf="" hc-mf="" hc-uf="" min="" models:=""> insulated tip, round-crimping terminal is attached</existing>
Rated output	3-phase 200VAC: 0.05 to 37kW 3-phase 400VAC: 0.5 to 55kW	3-phase 200VAC: 0.05 to 3.5kW
Brake	Same as existing models	—
Protection level	HC-KFS/HC-MFS: IP55 (IP65) (Note)	HC-KF/HC-MF: IP44 (IP65) (Note)

Note: Protection level with rating of IP65 corresponds to special product. Not compatible with the motor capacity 50W.

#### **Connectivity with Existing Models**

The MR-J2S servo amplifiers can be connected to the existing motors; however, the performance will be same as that of the existing MR-J2 series. Note that the new motors (HC- $\Box$ S series or HA-LFS series) cannot be connected to the MR-J2 series servo amplifiers.

#### To ensure safe use

- To use the products given in this catalog properly, always read the "Installation Guide" and "MR-J2S INSTRUCTION MANUAL" before starting to use them.
- These products have been manufactured as a general-purpose part for general industries, and have not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the products for special purposes such as nuclear power, electric power, aerospace, medicine, passenger movement vehicles or underwater relays, contact Mitsubishi.
- These products have been manufactured under strict quality control. However, when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

#### Cautions concerning use

#### Transport and installation of motor

• Protect the motor or encoder from impact during handling. When installing a pulley or coupling, do not hammer on the shaft. Impact can damage the encoder. In the case of the motor with a key, install a pulley or coupling with the screw of shaftend. Use a pulley extractor when taking off the pulley.



• Do not apply a load exceeding the tolerable load onto the servo motor shaft. The shaft could break.

#### Installation

- Avoid installation in an environment in which oil mist, dust, etc. are in the air. When using in such an environment, enclose the servo amplifier in a sealed panel. Protect the motor by furnishing a cover for it or taking similar measures.
  Mount the amplifier vertically on a wall
- Mount the amplifier vertically on a wall.
- When installing several amplifiers in a row in a sealed panel, leave 10mm (0.39inch) or more open between each amplifier. Note that when using the MR-J2S-30K (4) or larger capacity, leave 20mm (0.79inch) or more open between the amplifiers. Leave 100mm (3.94inch) or more open in the upward direction, and 120mm (4.72inch) or more open in the downward direction.

When using one amplifier, always leave 40mm (1.57inch) or more open in the upward direction and 120mm (4.72inch) or more open in the downward direction.

To ensure the life and reliability, keep space as open as possible toward the top plate so that heat does not build up. Take special care, especially when installing several amplifiers in a row.



• For a single motor, the motor can be mounted horizontally

or vertically. When installing vertically (shaft-up), take measures on the machine side to ensure that oil from the gear box does not get into the motor.

- Do not touch the servo motor during or after operation until it has had sufficient time to cool. The motor could be very hot, and severe burns may result from touching the motor.
- The optional regeneration unit becomes hot (the temperature could be 100°C (212°F) or more) with frequent use. Do not install within flammable objects or objects subject to thermal deformation. Take care to ensure that electrical wires do not come into contact with the main unit.
- Carefully consider the cable clamping method, and make sure that bending stress and the stress of the cable's own weight are not applied on the cable connection section.
- If using in an application where the servo motor moves, select the cable bending radius according to the required bending life and wire type.
- Fix the power supply and encoder cables led out from the servo motor onto the servo motor so that they do not move. Failure to do so could result in disconnections.

Do not modify the connector or terminals, etc., on the end of the cable.

#### Grounding

- Securely ground to prevent electric shocks and to stabilize the potential in the control circuit.
- To ground the servo motor and servo amplifier at one point, connect the grounding terminals of each unit, and ground from the servo amplifier side.
- Faults such as a deviation in position could occur if the grounding is insufficient.

#### Wiring

- When a commercial power supply is applied to the amplifier's output terminals (U, V, W), the amplifier will be damaged. Before switching the power on, perform thorough wiring and sequence checks to ensure that there are no wiring errors, etc.
- When a commercial power supply is applied to the motor's input terminals (U, V, W), the motor will be damaged. Connect the motor to the amplifier's output terminals (U, V, W).
- Match the phase of the motor's input terminals (U, V, W) to the amplifier's output terminals (U, V, W) before connecting. If they are not the same, the motor control cannot be performed.
- In the case of position or speed control mode, connect the stroke end signals (LSP, LSN) to the common terminal (SG). If the signals are invalid, the motor will not rotate.

#### **Factory settings**

- All available motor and amplifier combinations are predetermined. Confirm the models of the motor and amplifier to be used before installation.
- For the MR-J2S-A type, use the parameter No.0 to select the control mode from the position control, speed control or torque control. For the MR-J2S-B type, the control mode is selected by a controller.
- As for 22kW or smaller, when using the optional regeneration units, change the parameter No.0 (MR-J2S-A, MR-J2S-CP or MR-J2S-CL type) or parameter No.2 (MR-J2S-B type). When using the 30kW or larger capacity, change the converter unit parameter No.0. The optional regeneration unit is disabled as the default, so the parameter must be changed to increase the regeneration performance.

#### Operation

- When a magnetic contactor (MC) is installed on the amplifier's primary side, do not perform frequent starts and stops with the MC. Doing so could cause the amplifier to fail.
- As for 7kW or smaller, when a trouble occurs, the amplifier's safety features are activated, halting output, and the dynamic brake instantly stops the motor. If free run is required, contact Mitsubishi about solutions involving servo amplifiers where the dynamic brake is not activated.
- When an error occurs, the 11kW or larger amplifier's protection function will activate and the output will stop. The servo motor will coast to a stop. If the dynamic brake operation is required, use the option DBU-_K(-4).
- When using a motor with an electromagnetic brake, do not apply the brake when the servo is on. Doing so could cause an amplifier overload or shorten brake life. Apply the brake when the servo is off.

#### Warranty

#### 1. Gratis warranty period and coverage

#### [Gratis warranty period]

Note that a period of less than one year after installation in your company or your customer's premises or within 18 months (counted from the date of production) after shipment from our company, whichever is shorter, is selected.

#### [Coverage]

- (1) Diagnosis of failure
  - As a general rule, diagnosis of failure is done on site by the customer.
- (2) Breakdown repairs

There will be a charge for breakdown repairs, exchange replacements and on site visits for the following four conditions.

- Breakdowns due to improper storage or handling; careless accident; software/hardware design by your company and/or your customers.
- 2) Breakdowns due to modifications of the product without the consent of the manufacturer.
- 3) Breakdowns resulting from using the product outside the specified specifications of the product.
- 4) Breakdowns that are outside the terms of warranty.

Since the above services are limited to Japan, diagnosis of failures, etc. are not performed abroad. For details, consult with Mitsubishi in advance.

2. Exclusion of opportunity loss from warranty liability Regardless of the gratis warranty term, compensation for opportunity loss incurred to your company or your customers by failures of Mitsubishi products, for damages to the products other than Mitsubishi's or for other services are not covered under warranty.

#### 3. Repair period after production is discontinued

Mitsubishi shall accept product repairs for seven years from the date of the products discontinuation.

#### 4. Terms of delivery

Mitsubishi shall deliver the product to the customer, and Mitsubishi is not liable for on site adjustment or test run of the product.

#### Cautions concerning model selection

- Select a motor with a rated torque above the continuous effective load torque.
- Design the operation pattern in the command section so that positioning can be completed, taking the stop setting time (ts) into account .



• The load inertia moment should be below the recommended load inertia moment ratio of the motor being used. If it is too large, desired performance may not be attainable.




**Safety Warning** To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.

