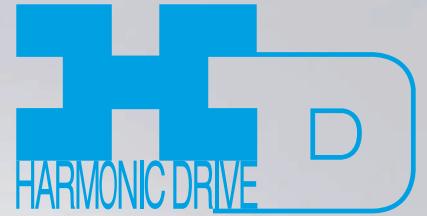


HarmonicDrive® AC Servo Actuator SHA Series

+ J4

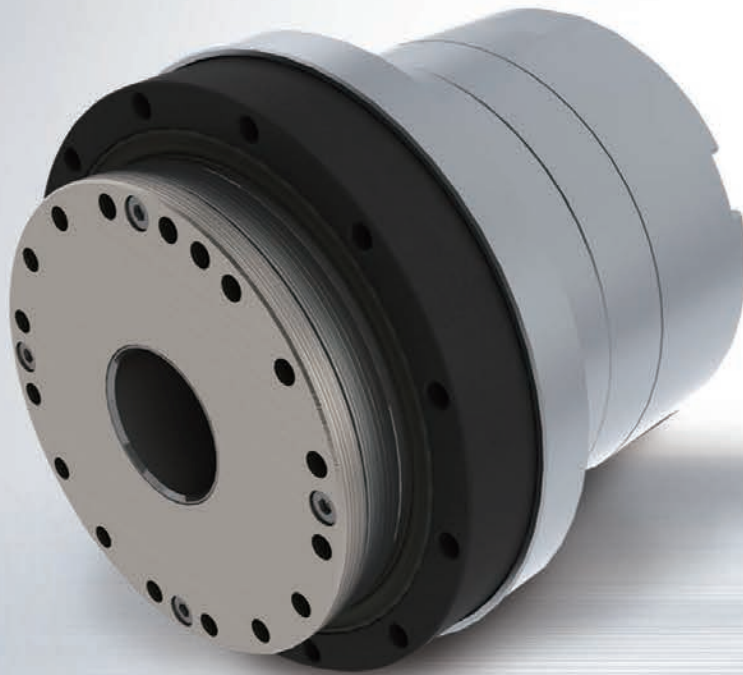
Mitsubishi AC Servo
MITSUBISHI SERVO AMPLIFIERS & MOTORS
MELSERVO



Collaborative Success

HarmonicDrive® SHA Series AC Servo Actuator now connects directly with
Mitsubishi Electric's MELSERVO-J4 SSCNETIII/H
Further expanding the options for network connectivity!

HarmonicDrive®



- The SHA Servo Actuator combines precision Harmonic Drive® gearing with a flat AC servo motor.
- The Hollow Shaft actuator design allows piping or cabling to pass directly through the axis of rotation.
- Flat configuration enables compact machine designs.
- Precise one-way positioning accuracy: Gear ratio 51:1 50 arc-sec (0.014 degree)
 Gear ratio 81:1 and higher 40 arc-sec (0.011 degree)
- Torque to Volume ratio is more than 5 times greater than Direct Drive Motors.
- SHA-M Series is easy to use with MELSERVO-J4 SSCNETIII/H Communication.

Contact: **AC Servo Actuators SHA-M Series (Harmonic Drive LLC)**
 AC Servo Amplifier MELSERVO-J4 (Mitsubishi Electric Corp.)

Ordering Code

SHA	32	M	101	SG	-	B	12	A	200	-	16	S17b	A	-	C	<input type="checkbox"/>	-	SP
①	②	③	④	⑤		⑥	⑦	⑧	⑨		⑩	⑪	⑫		⑬	⑭		⑮

① Model: SHA Series AC Servo Actuator

② Size : 25, 32, 40, 58, 65

③ Design Version

M	Mitsubishi Compatible
---	-----------------------

④ Reduction Ratio (R:1)

11	11:1
51	51:1
81	81:1
101	101:1
121	121:1
161	161:1

⑤ Gear Reducer

SG	SHG Series
HP	HPF Series
CG	CSG Series

⑥ Motor Version

A	Size 58, 65
B	Size 25, 32, 40

⑦ Motor Size

09	Size 25
12	Size 32
15	Size 40
21	Size 58, 65

⑧ Brake

A	Without Brake
B	With Brake

⑨ Voltage Rating

200	200V
-----	------

⑩ Encoder Format

16	Mitsubishi Format
----	-------------------

⑪ Encoder Type / Resolution

S17b	17bit Absolute Encoder 131,072 counts / revolution
------	---

⑫ Encoder Offset Angle:

A	0 Degrees
---	-----------

⑬ Connector Specification

C	With Standard Connector
N	With Pigtails
D	With Special Connector

⑭ Special Options

L	Origin and Limit Sensors
Y	Side Exiting Cables

⑮ SP designates Custom Specification.
Leave blank for standard product

Extension Cables

Proper combination of Actuator, Servo Amplifier and Extension Cables

SHA Series	Servo Amplifier	Extension Cable Model Number	
		Motor Cable	Encoder Cable
25M	MR-J4-60B-S033	EWD-MB**-A06-TMC-M	Note1 MR-EKCBL**M-H H : High Flex Cable L : Standard Cable
32M	MR-J4-100B-S033		
40M	MR-J4-100B-S033		
	MR-J4-200B-S033		
58M	MR-J4-350B-S033	EWD-MB**-D09-TMC-M1	
65M	MR-J4-500B-S033	EWD-MB**-D09-TMC-M2	

** in the model code indicates the cable length in meters. Please select: (02-2m, 05-5m, 10-10m).

Note 1) Please use in combination with SHA-58M and 65M. Please use it in combination with connector conversion cable attached to the actuator.

Rating Table

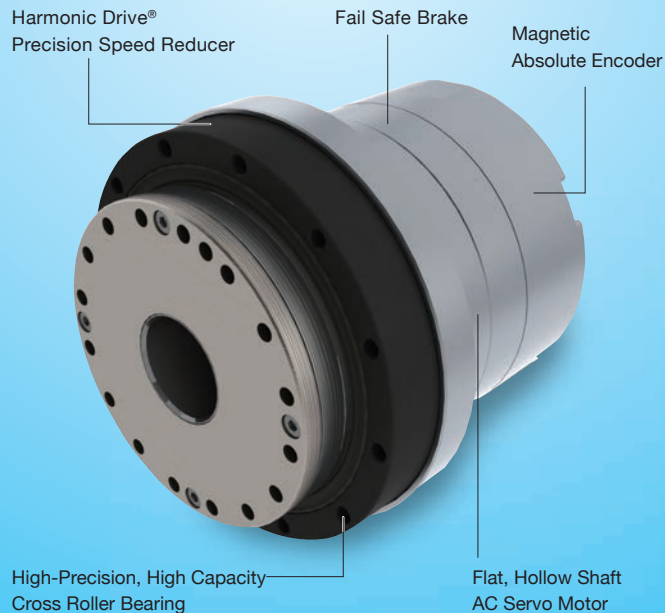
Specification	Size / Ratio	SHA25M						SHA32M						
		11	51	81	101	121	161	11	51	81	101	121	161	
Recommended Driver		MR-J4-60B-S033						MR-J4-100B-S033						
Maximum Torque ¹	Nm	26	127	178	204	217	229	58	281	395	433	459	484	
Continuous Torque ^{1,2}	Nm	9.0	41	67	81	81	81	20	92	153	178	178	178	
Maximum Speed ¹	r/min	509.1	109.8	69.1	55.4	46.3	34.8	436.4	94.1	59.3	47.5	39.7	29.8	
Maximum Current ¹	A	8.9	8.6	7.5	7.0	6.3	5.2	18	17.3	15.2	13.5	12.2	9.9	
Continuous Current ^{1,2}	A	3.0	3.0	3.0	2.9	2.6	2.1	6.0	6.0	6.0	5.7	5.0	4.1	
Moment of Inertia (without Brake)	GD ² /4	kg·m ²	0.029	0.56	1.42	2.2	3.2	5.6	0.091	2.0	5.1	8.0	11	20
Moment of Inertia (with Brake)	GD ² /4	kg·m ²	0.034	0.66	1.66	2.6	3.7	6.6	0.105	2.3	5.9	9.2	13	23
Reduction Ratio		11:1	51:1	81:1	101:1	121:1	161:1	11:1	51:1	81:1	101:1	121:1	161:1	
Max. Moment Load	Nm	410	258					932	580					
Moment Stiffness	Nm/rad	37.9×10 ⁴	39.2×10 ⁴					86.1×10 ⁴	100×10 ⁴					
Positioning Accuracy	arc-sec	120	50	40	40	40	40	120	50	40	40	40	40	
Encoder Type		Magnetic Absolute Encoder (with battery backup)						Magnetic Absolute Encoder (with battery backup)						
Output Encoder Resolution	counts/rev	1,441,792	6,684,672	10,616,832	13,238,272	15,859,712	21,102,592	1,441,792	6,684,672	10,616,832	13,238,272	15,859,712	21,102,592	
Mass (with Brake)	kg	5.0	2.95					9.4	5.9					
Mass (without Brake)	kg	5.1	3.1					9.7	6.2					
Mounting Direction		Can be installed in any direction						Can be installed in any direction						

The table shows typical values for SG type. Ratio 11:1 is HP type. CG type will be available soon.

*1: When used with the recommended sinusoidal amplifier.

*2: Value for saturated temperature when installed on an aluminum heatsink. of the following size: (Size 25: 350 x 350 x 18mm, Size 32: 400 x 400 x 20mm, Size 40: 500 x 500 x 25mm, Size 58 and 65: 650 x 650 x 30mm)

SHA Series



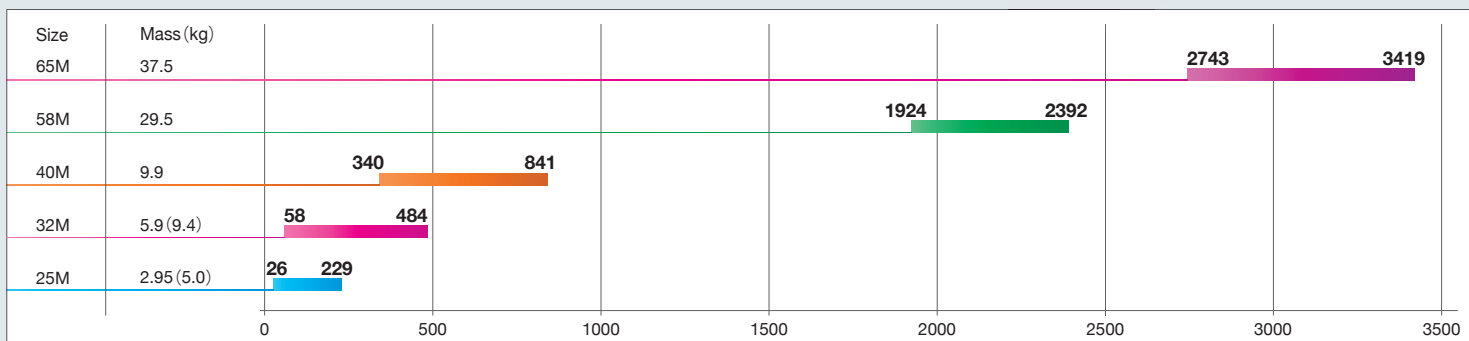
MELSERVO-J4

SSCNETIII/H Servo Amplifier MR-J4-B-S033



Servo Amplifier for SSCNETIII/H Advanced High Speed Motion Network
2.5kHz Velocity Frequency Response
Delivers full performance from the SHA Actuator

Maximum Torque Rating Map

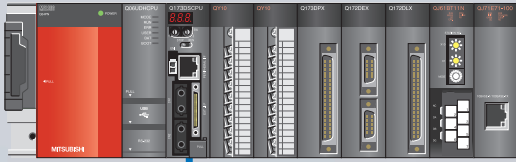


The mass values is without the brake and the value in parentheses is the mass when using gear ratio 11:1 (HPF Series).

Specification	Size / Ratio	SHA40M					SHA58M					SHA65M								
		51	81	101	121	161	51	81	101	121	161	81	101	121	161					
Recommended Driver		MR-J4-100B-S033					MR-J4-200B-S033					MR-J4-350B-S033				MR-J4-500B-S033				
Maximum Torque ¹	Nm	340	560	686	802	841	523	675	738	802	841	1924	2067	2236	2392	2743	2990	3263	3419	
Continuous Torque ¹⁺²	Nm	94	158	198	237	317	160	263	330	382	382	680	850	969	969	921	1149	1236	1236	
Maximum Speed ¹	r/min	78.4	49.4	39.6	33.1	24.8	78.4	49.4	39.6	33.1	24.8	37.0	29.7	24.8	18.6	34.6	27.7	23.1	17.4	
Maximum Current ¹	A	18	18	18	17.9	14.6	26.7	21.8	19.4	17.9	14.6	45	39	36	30	62	55	51	41	
Continuous Current ¹⁺²	A	6.0	6.0	6.0	6.0	6.0	9.0	9.0	9.0	8.8	7.2	17.0	17.0	16.4	13.4	22.0	21.9	20.1	16.3	
Moment of Inertia (without Brake)	GD ² /4	kg · m ²	5.0	13	20	28	50	5.0	13	20	28	50	96	149	214	379	110	171	245	433
Moment of Inertia (with Brake)	GD ² /4	kg · m ²	6.1	15	24	34	61	6.1	15	24	34	61	106	165	237	420	120	187	268	475
Reduction Ratio		51:1	81:1	101:1	121:1	161:1	51:1	81:1	101:1	121:1	161:1	81:1	101:1	121:1	161:1	81:1	101:1	121:1	161:1	
Max. Moment Load	Nm	849					2180					2740								
Moment Stiffness	Nm/rad	179×10 ⁴					531×10 ⁴					741×10 ⁴								
Positioning Accuracy	arc-sec	50	40	40	40	40	50	40	40	40	40	40	40	40	40	40	40	40	40	
Encoder Type		Magnetic Absolute Encoder (with battery backup)										Magnetic Absolute Encoder (with battery backup)								
Output Encoder Resolution	counts/rev	6,684,672	10,616,832	13,238,272	15,859,712	21,102,592	6,684,672	10,616,832	13,238,272	15,859,712	21,102,592	10,616,832	13,238,272	15,859,712	21,102,592	10,616,832	13,238,272	15,859,712	21,102,592	
Mass (with Brake)	kg	9.9					29.5					37.5								
Mass (without Brake)	kg	10.7					32					40								
Mounting Direction		Can be installed in any direction										Can be installed in any direction								

SSCNETIII/H System Overview

SSCNETIII/H Controller

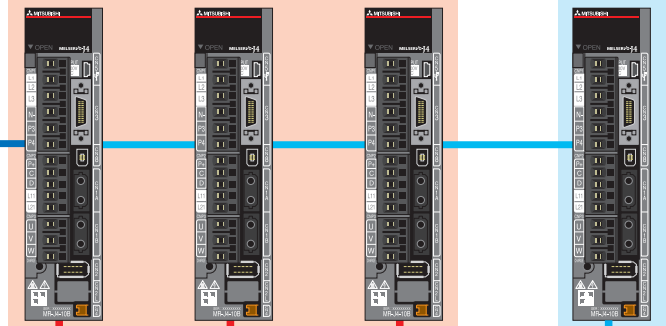


SSCNETIII/H Communication
Simple Selection and Connection!

AC Servo Amplifier

MR-J4-B

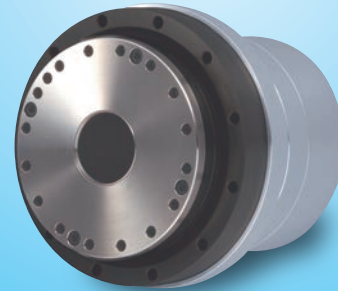
MR-J4-B-S033



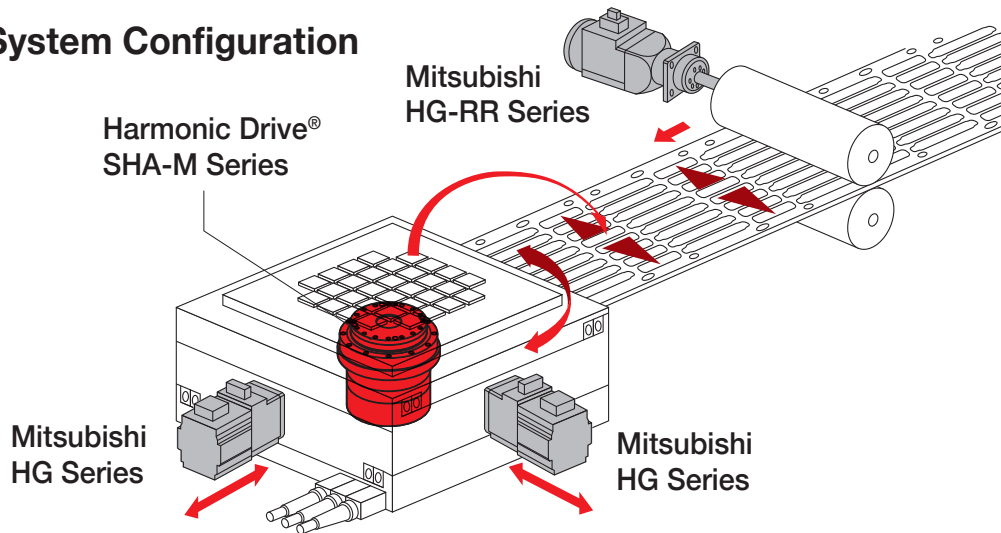
Mitsubishi Electric HG Series



Harmonic Drive® SHA-M Series



Simple System Configuration



Harmonic Drive LLC
Boston US Headquarters
247 Lynnfield Street
Peabody, MA 01960

New York Sales Office
100 Motor Parkway
Suite 116
Hauppauge, NY 11788

San Jose Sales Office
333 W. San Carlos Street
Suite 1070
San Jose, CA 95110

Chicago Sales Office
137 N. Oak Park Avenue
Suite 410
Oak Park, IL 6030

T: 800.921.3332
T: 978.532.1800
F: 978.532.9406
www.HarmonicDrive.net

Group Companies
Harmonic Drive Systems, Inc.
6-25-3 Minami-Ohi, Shinagawa-ku
Tokyo 141-0013, Japan

Harmonic Drive AG
Hoenbergstrasse, 14, D-6555
Limburg/Lahn Germany



Please contact us with any questions.
Harmonic Drive is a registered trademark of Harmonic Drive LLC.