

Actuator selection

Harmonic Drive Systems Inc.

Harmonic Drive® AC Servo Actuator

SHA-P Series / FHA-Cmini Series

SHA-P Series : SHA-SG Type

Item		Model	SHA20P					SHA25P					SHA32P					SHA40P				
			51	81	101	121	161	51	81	101	121	161	51	81	101	121	161	51	81	101	121	161
Recommended Amplifier **2*3	A6N series	MBDL ■ 25N □ (All)					MBDL ■ 25N □ (161) MCDL ■ 35N □ (51-121)					MCDL ■ 35N □ (161) MDDL ■ 45N □ (121) MDDL ■ 55N □ (51-101)					MDDL ■ 55N □ (81-161) MEDL ■ 83N □ (51)					
	A6B series	MBDL ■ 25B □ (All)					MBDL ■ 25B □ (161) MCDL ■ 35B □ (51-121)					MCDL ■ 35B □ (161) MDDL ■ 45B □ (121) MDDL ■ 55B □ (51-101)					MDDL ■ 55B □ (81-161) MEDL ■ 83B □ (51)					
	A6S series	MBDL ■ 25S □ (All)					MBDL ■ 25S □ (161) MCDL ■ 35S □ (51-121)					MCDL ■ 35S □ (161) MDDL ■ 45S □ (121) MDDL ■ 55S □ (51-101)					MDDL ■ 55S □ (81-161) MEDL ■ 83S □ (51)					
Maximum Torque	N·m	73	96	107	113	120	127	178	204	217	229	281	395	433	459	484	523	675	738	802	841	
Maximum Speed	r/min	1176	74.1	59.4	49.6	37.3	109.8	69.1	55.4	46.3	34.8	94.1	59.3	47.5	39.7	29.8	78.4	49.4	39.6	33.1	24.8	
Maximum Moment Load	N·m	187					258					580					849					
One-Way Positioning Accuracy	arc sec	60	50	50	50	50	50	40	40	40	40	50	40	40	40	40	50	40	40	40	40	
Mass (without brake)	kg	2.0					2.95					5.9					9.9					

Item		Model	SHA45P					SHA58P				SHA65P			
			51	81	101	121	161	81	101	121	161	81	101	121	161
Recommended Amplifier **2*3	A6N series	MDDL ■ 55N □ (161) MEDL ■ 83N □ (51-121)					MEDL ■ 93N □ (161) MFDL ■ A3N □ (81-121)				MFDL ■ A3N □ (161) MFDL ■ B3N □ (81-121)				
	A6B series	MDDL ■ 55B □ (161) MEDL ■ 83B □ (51-121)					MEDL ■ 93B □ (161) MFDL ■ A3B □ (81-121)				MFDL ■ A3B □ (161) MFDL ■ B3B □ (81-121)				
	A6S series	MDDL ■ 55S □ (161) MEDL ■ 83S □ (51-121)					MEDL ■ 93S □ (161) MFDL ■ A3S □ (81-121)				MFDL ■ A3S □ (161) MFDL ■ B3S □ (81-121)				
Maximum Torque	N·m	650	918	982	1070	1147	1924	2067	2236	2392	2743	2990	3263	3419	
Maximum Speed	r/min	74.5	46.9	37.6	31.4	23.6	37.0	29.7	24.8	18.6	34.6	27.7	23.1	17.4	
Maximum Moment Load	N·m	1127					2180				2740				
One-Way Positioning Accuracy	arc sec	50	40	40	40	40	40	40	40	40	40	40	40	40	
Mass (without brake)	kg	12.4					29.5				37.5				

SHA-P Series : SHA-CG Type

Item		Model	SHA20P					SHA25P					SHA32P					SHA40P				
			50	80	100	120	160	50	80	100	120	160	50	80	100	120	160	50	80	100	120	160
Recommended Amplifier **2*3	A6N series	MBDL ■ 25N □ (All)					MBDL ■ 25N □ (160) MCDL ■ 35N □ (50-120)					MCDL ■ 35N □ (160) MDDL ■ 45N □ (120) MDDL ■ 55N □ (50-100)					MDDL ■ 55N □ (80-160) MEDL ■ 83N □ (50)					
	A6B series	MBDL ■ 25B □ (All)					MBDL ■ 25B □ (160) MCDL ■ 35B □ (50-120)					MCDL ■ 35B □ (160) MDDL ■ 45B □ (120) MDDL ■ 55B □ (50-100)					MDDL ■ 55B □ (80-160) MEDL ■ 83B □ (50)					
	A6S series	MBDL ■ 25S □ (All)					MBDL ■ 25S □ (160) MCDL ■ 35S □ (50-120)					MCDL ■ 35S □ (160) MDDL ■ 45S □ (120) MDDL ■ 55S □ (50-100)					MDDL ■ 55S □ (80-160) MEDL ■ 83S □ (50)					
Maximum Torque	N·m	73	96	107	113	120	127	178	204	217	229	281	395	433	459	484	523	675	738	802	841	
Maximum Speed	r/min	120	75	60	50	37.5	112	70	56	46.7	35	96	60	48	40	30	80	50	40	33.3	25	
Maximum Moment Load	N·m	187					258					580					849					
One-Way Positioning Accuracy	arc sec	60	50	50	50	50	50	40	40	40	40	40	30	30	30	30	40	30	30	30	30	
Repeatability	arc sec	±5					±5					±4					±4					
Bi-directional Repeatability	arc sec	75	30	30	30	30	60	25	25	25	25	60	25	25	25	25	50	20	20	20	20	
Mass (without brake)	kg	2.6					3.95					7.7					13					

FHA-Cmini Series

Item		Model	FHA-8C			FHA-11C			FHA-14C		
			30	50	100	30	50	100	30	50	100
Recommended Amplifier **2*3	A6N series	MADL ■ 05N □ (All)			MADL ■ 05N □ (All)			MADL ■ 05N □ (50,100) MADL ■ 15N □ (30)			
	A6B series	MADL ■ 05B □ (All)			MADL ■ 05B □ (All)			MADL ■ 05B □ (50,100) MADL ■ 15B □ (30)			
	A6S series	MADL ■ 05S □ (All)			MADL ■ 05S □ (All)			MADL ■ 05S □ (50,100) MADL ■ 15S □ (30)			
Maximum Torque	N·m	1.8	3.3	4.8	4.5	8.3	11	9	18	28	
Maximum Speed	r/min	200	120	60	200	120	60	200	120	60	
Maximum Moment Load	N·m	15			40			75			
One-Way Positioning Accuracy	arc sec	150	120	120	120	90	90	120	90	90	
Mass (without brake)	kg	0.50			0.75			1.3			

The table shows typical output values of actuators.

- *1 ■ in the amplifier code indicates the safety function.
T : With safety function
N : Without safety function
- *2 □ in the amplifier code indicates driver specification.
E : Standard type
F : Multi-function type
G : Communication type
- *3 Numbers in () indicates applicable reduction ratio.

Harmonic Drive® AC Servo Motor

PMA Series

Item		Model	PMAC08	PMAB09	PMAB12	PMAB15	PMAA21A				
Recommended Amplifier **2	A6N series	MBDL ■ 25N □		MCDL ■ 35N □		MDDL ■ 55N □		MEDL ■ 83N □		MFDL ■ B3N □	
	A6B series	MBDL ■ 25B □		MCDL ■ 35B □		MDDL ■ 55B □		MEDL ■ 83B □		MFDL ■ B3B □	
	A6S series	MBDL ■ 25S □		MCDL ■ 35S □		MDDL ■ 55S □		MEDL ■ 83S □		MFDL ■ B3S □	
Rated output	W	163		251		406		754		1320	
Maximum Torque	N·m	1.8		3		7		13		45	
Maximum Speed	r/min	6000		5600		4800		4000		3000	
Mass (without brake)	kg	1.4		2.0		3.4		5.5		17.5	