



EtherCAT®

HarmonicDrive®

Compact flat AC servo actuator

FHA-C mini series



Panasonic
Corporation

MINAS

A6N/A6B/A6S

HarmonicDrive®



Panasonic Corporation

MINAS A6N compatible with RTEX (RealtimeExpress)

MINAS A6B compatible with EtherCAT

MINAS A6S compatible with Pulse/Analog/Modbus

Compatible with the latest servo amplifier

Compact flat AC servo actuator FHA-C series has become compatible with the latest servo amplifier MINAS A6 series manufactured by Panasonic.

Compatibility with RTEX, EtherCAT and general communication (serial, analog I/O, Modbus) contributes to integration of the user interface, and the compact size and flat shape contribute to reduction in size of the device configuration.

Contact: AC servo actuator FHA-C mini series (Harmonic Drive Systems Inc.)
AC servo amplifier MINAS A6 series (Panasonic Corporation)

Composition

Compact Flat

This is the AC servo actuator consisting of both a compact HarmonicDrive® and a flat AC servo motor.

The thin and compact shape and structure simplifies the entire device structure.

The size can be selected from three types: 8, 11, and 14.

Speed reducer model

HarmonicDrive® CSF series

Encoder

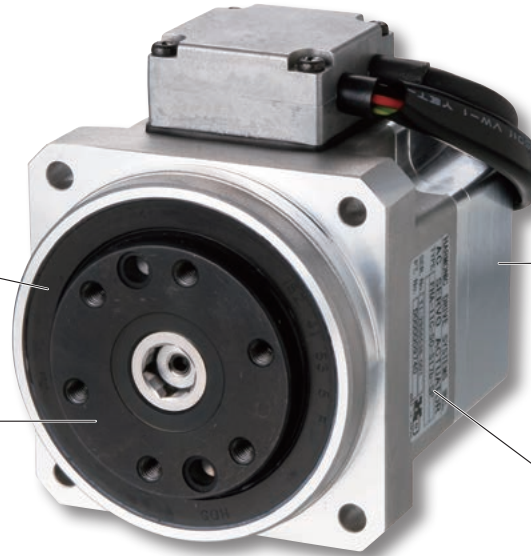
Absolute encoder (17 bits)
Compatible with Panasonic's format

Output bearing

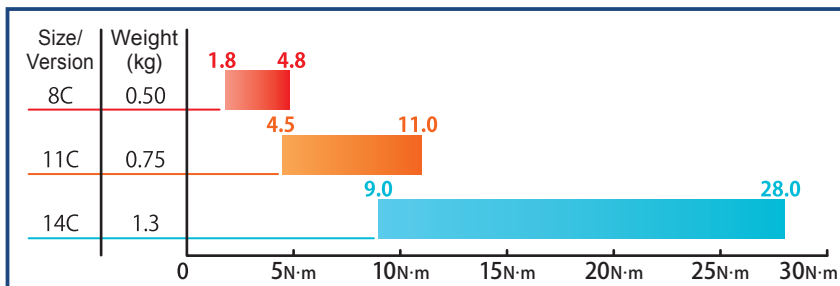
Cross roller bearing

AC servo motor

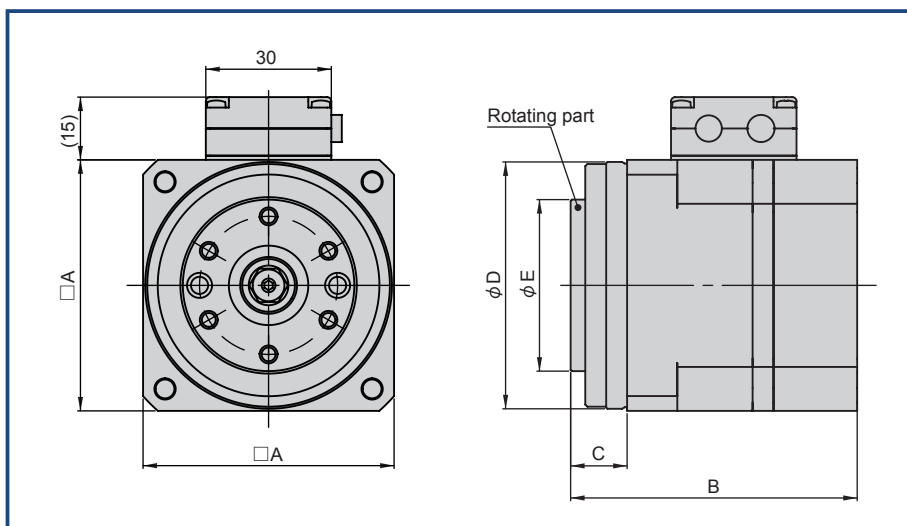
Supported power supply
voltage specifications: 200 VAC



Maximum torque map



External dimensions



[Unit: mm]

Type	FHA-8C	FHA-11C	FHA-14C
Symbol			
□A	50	60	75
B	61.8	68.5	78
C	13	13.5	18.5
φD	49 h7	59 h7	74 h7
φE	33.5 h7	41 h7	52.5 h7

Panasonic AC servo amplifier MINAS A6

The MINAS A6 series is the latest servo amplifier manufactured by Panasonic Corporation, and is compatible with the various types of open network including Realtime Express uniquely developed by Panasonic Corporation.

- High-speed synchronous communication network (100 Mbps)
A6N series: RealtimeExpress (RTEX)
A6B series: EtherCAT
- General communication network (230 kbps)
A6S series: Pulse/Analog/Modbus



Combination of a servo amplifier with a relay cable

SHA Series	Reduction ratio	Servo amplifier model ^{*1,2}			Relay cable model ^{*3}	
		A6N series	A6B series	A6S series	Motor	Encoder ^{*4}
FHA-8C	30	MADL■05N□	MADL■05B□	MADL■05S□	EWD-MB***A06-TN-P	MFECA0**0EAE (Equipped with the battery box)
	50					
	100					
FHA-11C	30					
	50					
	100					
FHA-14C	30	MADL■15N□	MADL■15B□ MADL■05B□	MADL■15S□ MADL■05S□		
	50	MADL■05N□				
	100					

*1: ■ is replaced with the symbol that indicates whether to enable the safety function. T: Compatible with the safety function (Not available in the A6 SE, SG series) N: Without the safety function

*2: □ is replaced with the symbol that indicates the compatible communication. E: Position-control type (combination with the type not equipped with the safety function)

F: Multi-function type (combination with the type equipped with the safety function)

G: Modbus communication type (only for the A6S series) (combination with the type not equipped with the safety function)

*3: "**" in the model code indicates the cable length (03 = 3 m, 05 = 5 m, 10 = 10 m, 20 = 20 m).

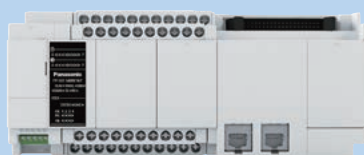
*4: Connect the actuator side of the encoder relay cable to the encoder connector conversion cable that comes with the actuator.

*5: For the servo amplifier and encoder relay cable, contact Panasonic Corporation.

System image

Controller compatible with RTEX and EtherCAT general communication

AC servo amplifier
MINAS A6 series



Servo motor manufactured by Panasonic



Flat hollow-shaft
AC servo actuator



SHA-P series

Flat hollow-shaft
AC servo motor



PMA series

Compact flat
AC servo actuator



FHA-C mini series

Ordering code

FHA	8	C	-	30	-	14	S17b	G	-	C	-	A6	-	SP
(1)	(2)	(3)		(4)		(5)	(6)	(7)		(8)		(9)		(10)

(1)	Model name	AC servo actuator FHA-C mini series
(2)	Size	8, 11, 14
(3)	Version symbol	C
(4)	Reduction ratio (expressed by R of 1/R)	30: 1/30 50: 1/50 100: 1/100
(5)	Encoder format	14: Panasonic's format

(6)	Encoder type/Resolution	S17b: 17-bit absolute encoder 131072 pulse/revolution
(7)	Input power supply voltage	G: 200 VAC
(8)	Connector specification	C: Standard connector attached
(9)	Symbol of the combined amplifier	A6: MINAS A6 series
(10)	Special specifications	Blank: Standard, SP: Special product

Specification

		FHA-8C			FHA-11C			FHA-14C		
Item		30	50	100	30	50	100	30	50	100
Input power supply voltage	V	AC200			AC200			AC200		
Maximum Torque ^{*1}	N·m	1.8	3.3	4.8	4.5	8.3	11	9.0	18	28
Limit for continuous torque ^{**2}	N·m	0.75	1.5	2.0	1.8	2.9	4.2	3.5	4.7	6.8
Maximum speed ^{*1}	r/min	200	120	60	200	120	60	200	120	60
Maximum current ^{*1}	A	0.61	0.64	0.48	1.5	1.6	1.1	2.9	3.2	2.4
Limit for moment load	N·m	15			40			75		
Unidirectional positioning accuracy	Second	150	120	120	120	90	90	120	90	90
Output shaft resolution	Pulse/Revolution	3932160	6553600	13107200	3932160	6553600	13107200	3932160	6553600	13107200
Mass (without brake)	kg	0.50			0.75			1.3		

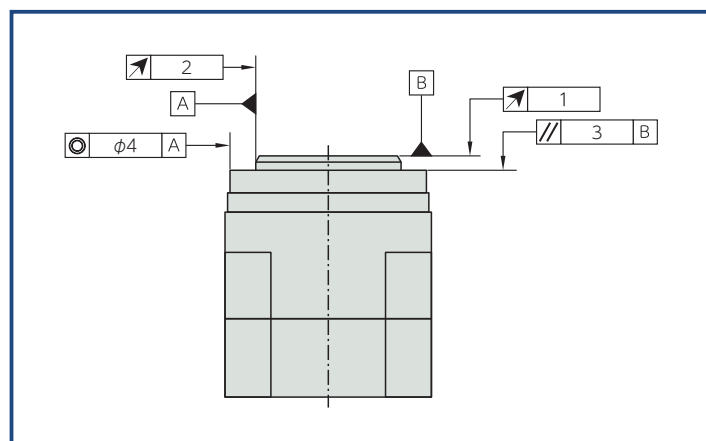
The values in the table above show typical values for the output shaft.

*1: They are typical characteristics in the case of combinations with the standard amplifier (driven with the ideal sine wave).

*2: They are the values produced at the saturation temperature when mounted on the aluminum heat sink.

FHA-8C: 150 x 150 x 6 [mm] FHA-11C: 150 x 150 x 6 [mm] FHA-14C: 200 x 200 x 6 [mm]

Mechanical accuracy



[Unit: mm]

Accuracy Item	8C	11C	14C
1. Output shaft surface runout	0.010	0.010	0.010
2. Output shaft radial runout	0.010	0.010	0.010
3. Parallelism between output shaft and mounted surface	0.040	0.040	0.040
4. Concentricity between output shaft and fitting part	0.040	0.040	0.040

■ Please contact our sales department with any questions.

Head Office

Ichigo Omori Building, 6-25-3 Minami-Oi,
Shinagawa-ku, Tokyo 140-0013 JAPAN
Phone: +81-3-5471-7800 / FAX: +81-3-5471-7811

Tokyo Office

Ichigo Omori Building, 6-25-3 Minami-Oi,
Shinagawa-ku, Tokyo 140-0013 JAPAN
Phone: +81-3-5471-7830 / FAX: +81-3-5471-7836

Tokyo Office, Kitakanto Team

Ichigo Omori Building, 6-25-3 Minami-Oi,
Shinagawa-ku, Tokyo 140-0013 JAPAN
Phone: +81-3-6410-8485 / FAX: +81-3-6410-8486

Koshin Office

5103-1 Hotakaariakae, Azumino-shi, Nagano
399-8301 JAPAN
Phone: +81-263-81-5940 / FAX: +81-263-50-5010

Chubu Office

TM21-2F, 21 Terugaoka, Meito-ku, Nagoya-shi,
Aichi 465-0042 JAPAN
Phone: +81-52-773-7451 / FAX: +81-52-773-7462

Kansai Office

Shin-Osaka Ueno Toyoy Building 3F, 7-4-17 Nishi-nakajima,
Yodogawa-ku, Osaka-shi, Osaka 532-0011 JAPAN
Phone: +81-6-6885-5720 / FAX: +81-6-6885-5725

Kyushu Office

NMF Hakata-ekimae Building 7F, 1-15-20 Hakata-ekimae,
Hakata-ku, Fukuoka-shi, Fukuoka 812-0011 JAPAN
Phone: +81-92-451-7208 / FAX: +81-92-481-2493

Overseas Division

5103-1 Hotakaariakae, Azumino-shi, Nagano
399-8301 JAPAN
Phone: +81-263-81-5950 / FAX: +81-263-50-5010

Hataka Plant

1856-1 Hotakamaki, Azumino-shi, Nagano
399-8305 JAPAN
Phone: +81-263-83-6935 / FAX: +81-263-83-6901



"HarmonicDrive" is a trademark of Harmonic Drive Systems Inc.

The academic or generic term of our "HarmonicDrive" products is "strain wave gearing".