Fenghua Technology Servo Precision Reducer Products



Fenghua Transmission is committed to offering you quality products
Specializing in R & D and production of various precision
planetary gear transmission products
Free service hotline: 400-8040-668

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For servo motor / precision gearbox linear driving

SERVO.STEPPER. BRUSHLESS MOTOR

Taiwan technology/precision transmission solutions expert



Fenghua Transmission Technology (Jiangsu) Co., Ltd.



Fenghua Transmission Technology Co.,Ltd. is developed from a factory which professionally manufactures the gears. All staffs of factory and R & D team have more than 20 years' gear manufacturing and designing experience. The factory cooperated with professional planetary gearbox technology team in the early period, and then established business department of the planetary gearbox , and developed the design and manufacturing process of product line of planetary gearbox series. The servo exclusive-used precision gearbox series the company produced are with three features of low backlash (5~8 arcmin), low noise (60dAB) and high efficiency (≥95%). Products can be compatible with servo motors and stepper motors produced by any servo factory. High precision planetary reducers features of reducing rotating speed, increasing torque greatly, increasing inertia of the motor rotor, improving rigidity, shortening the locating time of start and stop, miniaturizing the motor power and improving the stability of the inertia load and reducing the vibration at the same time.

In order to upgrade products, and adapt to the applicable range of high precision grade products, the factory launched the whole series of high precision helical planetary gearbox in late stage. With ultra-low backlash (1-3 arcmin) precision grade, the newly developed products can directly replace the sizes of the products produced by Germany and Japan. All product series are completed, and sizes and precision can perfectly match with that of Japanese and Germany. While upgrading planetary reducer products, the factory insists on the concept of R&D as the development direction of the company. Then the factory successively developed and launched 90 degree precision right angle gearboxes which are suitable for automation with different installation and output requirements . multi-joint robot industry reducers (RV high precision pin-wheel reducers), and harmonic reducers making use of the principle of the wave gear device invented by American genius inventor C. W. Musser, and precision gear & rack products. The factory can also customize the reducer. The products are widely used in tool machines (Planning Machine Tools), laser cutting machines, woodworking engraving machines, 3C automation, photovoltaic equipment, lithium battery and other fields of new energy equipment. And Fenghua gearboxes can also be found in fully servo paper towel machines, precision concave-convex printing machines, precision coating machines, servo pipe benders, CNC spring machines and other highly automated equipment.

The company matches a large stocks of products to coordinate with servo motor manufacturers and system integration traders, rooting in the domestic market, and determined to serve the domestic automatic industry and robotic field by excellent products and serve for the Chinese robot cause and Industrial 4.0 direction.



Production workshop







Product Contents

AC permanent magnet servo motor





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Description of Product Type Selection

Permanent magnet AC servo motor



- 1) Flange size:60mm, 80mm, 90mm, 110mm, 130mm, 180mm
- 2 AC synchronization servo motor
- 3 Feedback element:M: Optical-electricity encoder X:Rotary encoder
- 4 Rated torque:(x0.1NM)
- 5 Rated speed: (x 100RPM)
- 6 Driver matched voltage: L:AC220V H:AC380V

- (6) Driver matched voltage: L:AC220V H:AC380V
 ⑦ Encoder type:
 F:Combined incremental encoder(2500PPR)
 F1:Saving line incremental encoder(25000PPR)
 F2:Combined incremental encoder(5000PPR)
 E:TAMAGAWA single circle (17bit) bus encoder
 En:NIKON single circle(22bit) bus encoder
 M:TAMAGAWA multi—circle(1733bit) bus encoder
 M1: TAMAGAWA multi—circle(23/39bit) bus encoder
 Mn1:NIKON multi—circle(22/38bit) bus encoder
 Mn1:NIKON multi—circle(24/44bit) bus encoder
- Mn1:NIKON multi-circle(24/40bit) bus encoder
- Motor basic type
 Z: Brake
- 10 Inner winding type: No:Distributed winding S:Centralization winding

Servo driver specification



SG - 30A	No.	Output power(KW)
T	15A	0.2-1.0
	20A	0.4-1.5
	30A	0.8-2.4
Product line	50A	2.0-3.5

- AC servo drive products range
 Input voltage: A:AC220V B:AC380V
- 3 Driver axis: S:Single axis D: Double axis
- 4 Power module current: 10:10A 15:15A 30:30A 50:50A 75:75A
- ⑤ Input signal type: A:Pulse B:Analog C:Canopen bus M2:m2 BUS M3:M3 bus
- 6 Matched encoder type: F: Incremental optical-electricity encoder

Spindle servo motor



- 1 Flange size:204mm, 250mm
- 2 AC asynchronous spindle servo motor
- 3 Matched voltage: 2:AC220V 4:AC380V
- 4 Rated power: 2P2: 2.2KW 3P7: 3.7KW 5P5: 5.5KW 7P5: 7.5KW 9P5: 9.5KW 11P: 11KW 15P: 15KW
- 5 Encoder type: B:No encoder G:1024 PPR optical-electricity encoder G1:2500 PPR optical-electricity encoder
- 6 Basic speed: 07:750RPM 10:1000RPM 15:1500RPM
- 7 Max.Speed: L:3000RPM M:6000RPM H:8000RPM
- Installation method: 3:Horizontal installation
 5:Flange installation 35: Horizontal/Flange installation
- 9 Z: Brake

Hybrid stepper motor



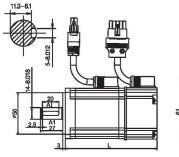
- 1 Flange size:86mm、110mm、130mm、150mm
- 2 Hybrid stepper motor
- 3 Matched voltage: L:Low voltage type H: High voltage type
- 4 Motor phase: 2: two-phase stepping 3: three-phase stepping
- 5 Number of rotor gear : 50: The number of rotor teeth is 50
- 6 Same flange no. Different torque: A,B,C,D,E
- 7 Motor structure: No:General type motor X:Aluminum case motor S: S1:
- 8 Z: Brake

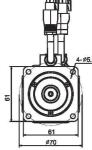
60 SF-S1 Series AC servo motor

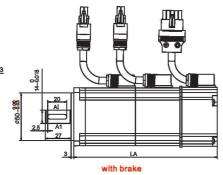


Temperature	0℃ -55℃		
Number of pole pairs	5		
Incremental encoder line	2500PPR		
Absolute encoder	17/33bit、22/38bit、23/39bit		
Humidity is less than	90%		
Insulation class	В		
Safety Class	IP65		
Insulation and voltage resistance	AC 1500V, 1 /Minute		
Insulation resistance	DC500V, 10Ω以上/ above		
Vibration	2.5G 以下/ Under		
Altitude	(1000m) 以下/ Under		
Work system	Continuous		
Installation Method	Flange installation		

■ Installation Dimension unit:mm







Model	L(mm) Incremental encoder	LA(mm) with brake
60SF-M00630S1	97.5	137.5
60SF-M01330S1	113.5	153.5
60SF-M01930S1	127.5	167.5

- * All above is the standard installation dimension,can be changed according to the customers'requirments
- * Not hit the shaft ,or the encoder in the other end

Specifications

Motor Model	60SF-M00630S1	60SF-M01330S1	60SF-M01930S1
Rated Power(w)	200	400	600
Rated Current(A)	1.3	2.7	3.7
Rated Torque(N.m)	0.637	1.27	1.91
Max Torque(N.m)	1.91	3.81	5.4
Rated Speed(rpm)	3000	3000	3000
Max Speed(rpm)	5000	5000	5000
Rotor Inertia(Kg.m) ²	0.245X10 ⁻⁴	0.418X10-4	0.65X10-4
Input Voltage(V)		(AC 220)	
Motor Weight (Kg)	1.00	1.50	1.90

■ Winding connection table

Winding wire	U	٧	W	PE
(Aerial plug)Socket Number	2	3	4	1
(Lead type)Socket Number	1	2	3	4

Brake Wiring	Brake	Brake
Socket number	1	2
Brake voltage	DC2	4V

Note: Brake voltage is DC 24V (Non polar requirement)

■ The encoder connection table

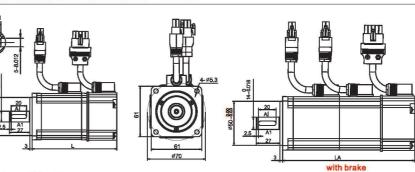
Signal Definitions	5V	OV	A+	B+	Z+	A-	B-	Z-	U+	V+	W+	U-	V-	W-	PE
(Aerial plug)Socket Number	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
(Lead type)Socket Number	2	3	9	4	7	13	14	5	6	10	11	8	12	15	1
Absolute signal definitions	1	PE	(GND		VB		SD-		GND 0	V	SD		Vcc	5V
Socket Number		1		2		3		4		5		6		7	

60 SF Series AC servo motor



Temperature	0℃ -55℃
Number of pole pairs	4
Incremental encoder line	2500/5000PPR
Absolute encoder	17/33bit、22/38bit、23/39bit
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1 Minute
Insulation resistance	DC500V, 10Ω above
Structure	Plastic packaging,Self-cooling
Vibration	2.5G 以下/ Under
Altitude	(1000m) 以下/ Under
Work system	Continuous
Installation Method	Flange installation

Installation Dimension unit:mm



Model	L(mm) Incremental encoder	LA(mm) with brake	L(mm) Absolute encoder
60SF-M00630	110	148	115
60SF-M01330	133	171	138
60SF-M01930	154	192	159

- All above is the standard installation dimension, can be changed according to the customers'requirments
- Not hit the shaft ,or the encoder in the other end would be damaged.

Specifications

Motor Model	60SF-M00630S	60SF-M01330S	60SF-M01930S
Rated Power(w)	200	400	600
Rated Current(A)	1.3	2.7	3.7
Rated Torque(N.m)	0.637	1.27	1.91
Max Torque(N.m)	1.91	3.81	5.4
Rated Speed(rpm)	3000	3000	3000
Max Speed(rpm)	3600	3600	3600
Rotor Inertia(Kg.m) ²	0.264X10 ⁻⁴	0.407X10-4	0.526X10-4
Input Voltage(V)		(AC 220)	
Motor Weight (Kg)	1.18	1.70	2.10

■ Winding connection table

Winding wire	U	٧	W	PE
(Aerial plug)Socket Number	2	3	4	1
(Lead type)Socket Number	1	2	3	4

Brake Wiring	Brake	Brake		
Socket number	1	2		
Brake voltage	DC24V			

Note: Brake voltage is DC 24V (Non polar requirement)

■ The encoder connection table

Signal Definitions	5V	OV	A+	B+	Z+	A-	B-	Z-	U+	V+	W+	U-	V-	W-	PE
(Aerial plug)Socket Number	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
(Lead type)Socket Number	2	3	9	4	7	13	14	5	6	10	11	8	12	15	1
Absolute signal definitions	ı	PE	(GND		VB		SD-		GND 0	V	SD		Vcc	5V
Socket Number		1		2		3		4		5		6		7	,

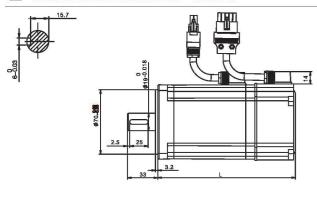
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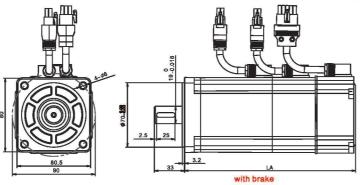
80 SF-S1 Series AC servo motor (Plastic plug)



Temperature	0℃ -55℃
Number of pole pairs	5
Incremental encoder line	2500PPR
Absolute encoder	17/33bit、22/38bit、23/39bit
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1 Minute
Insulation resistance	DC500V, 10Ω以上/ above
Vibration	2.5G Under
Altitude	(1000m) Under
Work system	Continuous
Installation Method	Flange installation

Installation Dimension unit:mm





	L(mm)	LA(mm)
Model	Incremental encoder	with brake
80SF-M01630S1	121	165
80SF-M02430S1	134	178
80SF-M04025S1	154	198

- All above is the standard installation dimension, can be changed according to the customers'requirments
 Not hit the shaft, or the encoder in the other end would be damaged.

Specifications

Motor Model	80SF-M01630S1	80SF-M02430S1	80SF-M04025S1
Rated Power(w)	500	750	1000
Rated voltage(V)	220	220	220
Rated Current(A)	2.7	4.8	4.2
Rated Speed(rpm)	3000	3000	2500
Max Speed(rpm)	5000	5000	5000
Rated Torque(N.m)	1.59	2.39	3.82
Max Torque(N.m)	4.77	7.17	11.46
Max current(A) ²	8.1	14.4	12.6
Rotor Inertia(Kg.m) ²	0.8*10-4	1.5*10-4	2.2*10-4
Motor Weight (Kg)	1.9	2.55	3.4

■ Winding connection table

Winding wire	U	V	W	PE
(Aerial plug)Socket Number	2	3	4	1
(Lead type)Socket Number	1	2	3	4

Note: Brake voltage is DC 24V (Non polar requirement)

■ The encoder connection table

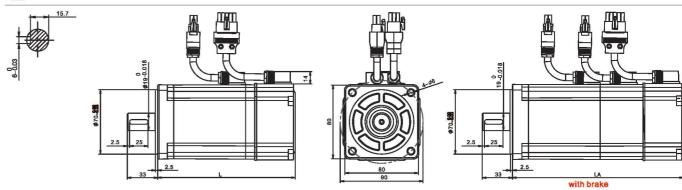
Signal Definitions	5V	OV	A+	B+	Z+	A-	B-	Z-	U+	V+	W+	U-	V-	W-	PE
(Aerial plug)Socket Number	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
(Lead type)Socket Number	2	3	9	4	7	13	14	5	6	10	11	8	12	15	1
Absolute signal definitions	1	PE		GND		VB		SD-		GND 0V		SD		Vcc	5V
Socket Number		1		2		3		4		5		6		7	

80 SF Series AC servo motor (Plastic plug)



Temperature	0℃-55℃
Number of pole pairs	4
Incremental encoder line	2500/5000PPR
Absolute encoder	17/33bit、22/38bit、23/39bit
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1 Minute
Insulation resistance	DC500V, 10Ω above
Structure	Plastic packaging, Self-cooling
Vibration	2.5G 以下/ Under
Altitude	(1000m) Under
Work system	Continuous
Installation Method	Flange installation

Installation Dimension unit:mm



Model	L(mm) Incremental encoder	LA(mm) with brake
80SF-M01630S	132	168
80SF-M02430S	150	186
80SF-M04025S	178	214

All above is the standard installation dimension, can be changed according to the customers requirments
 Not hit the shaft, or the encoder in the other end would be damaged.

Specifications

Motor Model	80SF-M01630S	80SF-M02430S	80SF-M04025S
Rated Power(w)	500	750	1000
Rated voltage(V)	220	220	220
Rated Current(A)	2.7	3.8	4.2
Rated Speed(rpm)	3000	3000	2500
Rated Torque(N.m)	1.59	2.39	3.82
Max Torque(N.m)	4.77	7.17	11.46
Max current(A) ²	8.1	11.4	12.6
Rotor Inertia(Kg.m) ²	0.61*10-4	0.86*10-4	1.26*10⁻⁴
Motor Weight (Kg)	2.2	3	4

■ Winding connection table

Winding wire	U	V	W	PE
(Aerial plug)Socket Number	2	3	4	1
(Lead type)Socket Number	1	2	3	4

Brake Wiring	Brake	Brake
Socket number	1	2
Brake voltage	DC	24V

■ The encoder connection table

Note: Brake voltage is DC 24V (Non polar requirement)

Signal Definitions	5V	OV	A+	B+	Z+	A-	B-	Z-	U+	V+	W+	U-	V-	W-	PE
(Aerial plug)Socket Number	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
(Lead type)Socket Number	2	3	9	4	7	13	14	5	6	10	11	8	12	15	1
Absolute signal definitions	I	PE	1	GND		VB		SD-		GND 0	V	SD		Vcc	5V
Socket Number		1		2		3		4		5		6		7	,

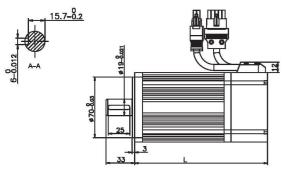
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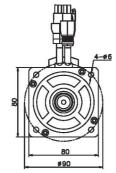
80 SF Series AC servo motor (Aerial plug)

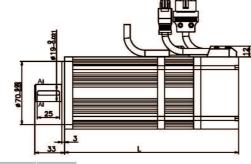


Temperature	0℃ -55℃
Number of pole pairs	5
Incremental encoder line	2500PPR
Absolute encoder	17/33bit、22/38bit、23/39bit
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1Minute
Insulation resistance	DC500V, 10Ω above
Vibration	2.5G 以下/ Under
Altitude	(1000m) Under
Work system	Continuous
Installation Method	Flange installation

Installation Dimension unit:mm







Model	L(mm) Ingremental encoder	LA(mm) with brake			
80SF-M01330	123	163			
80SF-M02430	158	198			
80SF-M04025	197	237			

All above is the standard installation dimension, on the changed according to the customers' requirme
 Not hit the shaft, or the encoder in the other end would be damaged.

Specifications

Motor Model	80SF-M01330	80SF-M02430	80SF-M04025
Rated Power(w)	400	750	1000
Rated Torque(N.m)	1.3	2.4	4
Max Torque(N.m)	4.8	7.2	10
Rated Current(A)	2.2	3.5	4.2
Rated voltage(V)	220	220	220
Rated Speed(rpm)	3000	3000	2500
Max Speed(rpm)	3600	3600	3000
Rotor Inertia(Kg.m) ²	1.22X10 ⁻⁴	1.96X10⁻⁴	2.8X10 ⁻⁴
Motor Weight (Kg)	2	2.85	3.8

■ Winding connection table

Winding wire	U	٧	W	PE
(Aerial plug)Socket Number	2	3	4	1
(Lead type)Socket Number	1	2	3	4

Brake Wiring	Brake	Brake
Socket number	1	2
Brake voltage	DC	24V

■ The encoder connection table

Note: Brake voltage is DC 24V (Non polar requirement)

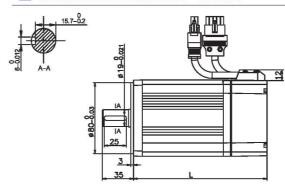
Signal Definitions	5V	OV	A+	B+	Z+	A-	B-	Z-	U+	V+	W+	U-	V-	W-	PE
(Aerial plug)Socket Number	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
(Lead type)Socket Number	2	3	9	4	7	13	14	5	6	10	11	8	12	15	1
Absolute signal definitions	ı	PE		GND		VB		SD-		GND 0	V	SD		Vcc	5V
Socket Number		1		2		3		Λ		5		6		7	,

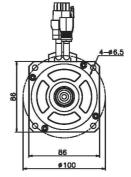
90 SF Series AC servo motor

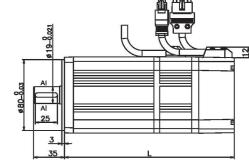


Temperature	0℃ -55℃
Number of pole pairs	4
Incremental encoder line	2500PPR
Absolute encoder	17/33bit、22/38bit、23/39bi
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1 Minute
Insulation resistance	DC500V, 10Ω以上/ above
Vibration	2.5G 以下/ Under
Altitude	(1000m) 以下/ Under
Work system	Continuous
Installation Method	Flange installation

Installation Dimension unit:mm







Model	L(mm) Incremental encoder	LA(mm) with brake
90SF-M02430	149	190
90SF-M03520	171	212
90SF-M04025	181	222

All above is the standard installation dimension,co be changed according to the customers'requirment
 Not hit the shaft, or the encoder in the other end would be damaged.

Specifications

Motor Model	90SF-M02430	90SF-M04025
Rated Power(w)	750	1000
Rated Torque(N.m)	2.4	4
Max Torque(N.m)	7.1	12
Rated Current(A)	3	4
Rated voltage(V)	220	220
Rated Speed(rpm)	3000	2500
Max Speed(rpm)	3600	3000
Rotor Inertia(Kg.m) ²	2.45x10 ⁻⁴	3.7x10⁴
Motor Weight (Kg)	3.1	4.13

■ Winding connection table

Winding wire	U	٧	W	PE
(Aerial plug)Socket Number	2	3	4	1
(Lead type)Socket Number	1	2	3	4
Note: Brake voltage is DC 24V (Non polar requireme	ent)			

Brake Wiring	Brake	Brake
Socket number	1	2
Brake voltage	DC2	24V

■ The encoder connection table

Signal Definitions	5V	OV	A+	B+	Z+	A-	B-	Z-	U+	V+	W+	U-	V-	W-	PE
(Aerial plug)Socket Number	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
(Lead type)Socket Number	2	3	9	4	7	13	14	5	6	10	11	8	12	15	1
Absolute signal definitions	ı	PE		GND		VB		SD-		GND 0	V	SD		Vcc	5V
Socket Number		1		2		3		4		4 5		6		7	,

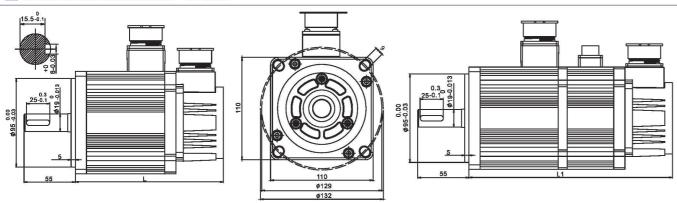
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110 SF Series AC servo motor



Temperature	0℃ -55℃
Number of pole pairs	4
Incremental encoder line	2500/5000PPR
Absolute encoder	17/33bit、22/38bit、23/39bit
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1 Minute
Insulation resistance	DC500V, 10Ω above
Vibration	2.5G Under
Altitude	(1000m) Under
Work system	Continuous
Installation Method	Flange installation

Installation Dimension Unit:mm



Specs	2N.m	4N.m	5N.m	6N.m
L	160	190	205	220
L1	220	250	265	280

- All above is the standard installation dimension, can be changed according to the customers'requirments
 Not hit the shaft, or the encoder in the other end would be damaged.

Specifications

MatanMadal	44005 1400000	440051404000	44005140400	44005 1405000	44005 1405000	4400=140000		
Motor Model	110SF-M02030	110SF-M04020	110SF-M04030	110SF-M05020	110SF-M05030	110SF-M06020	110SF-M06030	110SF-M08025
Rated Power(w)	0.6	8.0	1.2	1.0	1.5	1.2	1.8	2.0
Rated Current(A)	4	3.2	5	4	5	4.5	6.0	7.0
Rated Torque(N.m)	2	4	4	5	5	6	6	8
Max Torque(N.m)	6	12	12	15	15	18	18	24
Rated Speed(rpm)	3000	2000	3000	2000	3000	2000	3000	2500
Max Speed(rpm)	3300	2500	3300	2500	3300	2500	3300	3000
Rotor Inertia(Kg.m) ²	0.33X10 ⁻³	0.65X10 ⁻³	0.65X10 ⁻³	0.82X10 ⁻³	0.82X10 ⁻³	1.0X10 ⁻³	1.0X10 ⁻³	1.28X10 ⁻³
Motor Weight (Kg)	5	6.2	6.2	6.9	6.9	7.8	7.8	9.5

power line

110SF-M series motor's winding by the 4-core connector, for the corresponding please check the following form

■ Winding connection table

Winding wire	U	V	W	PE
Socket Number	2	3	4	1
Note: Brake voltage is DC 24V (Non p	olar requireme	ent)		3

■ The encoder connection table

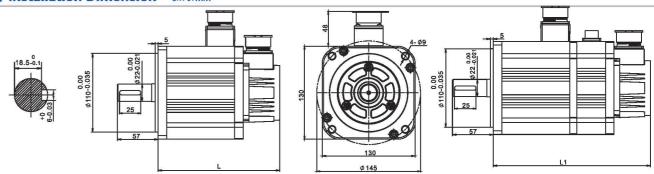
* GHA 120 C. CO CONT. CO CO CONT. CO															
Signal Definitions	5V	OV	A+	B+	Z+	A-	B-	Z-	U+	V+	W+	U-	V-	W-	PE
Socket Number	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
Absolute signal definitions	F	PE		GND		VB		SD-		GND 0	V	SD		Vcc	5V
Socket Number		1		2		3		4		5		6		7	7

130 SF Series AC servo motor



Temperature	0℃ -55℃
Number of pole pairs	4
Incremental encoder line	2500/5000PPR
Absolute encoder	17/33bit、22/38bit、23/39bit
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1 Minute
Insulation resistance	DC500V, 10Ω above
Vibration	2.5G Under
Altitude	(1000m) Under
Work system	Continuous
Installation Method	Flange installation

■ Installation Dimension Unit:mm



Specs	4N.m	5N.m	6N.m	7. 7N.m	10N.m	15N.m	20N.m
Ĺ,	169	175	182	195	212	234	269
L1	219	225	232	245	262	299	334

- All above is the standard installation dimension, can be changed according to the customers'requirments
 Not hit the shaft ,or the encoder in the other end

Specifications

Motor Model	130SF-M 04025	130SF-M 05025	130SF-M 06025	130SF-M 07720	130SF-M 07725	130SF-M 10010	130SF-M 10015	130SF-M 10025	130SF-M 15015	130SF-M 15025	130SF-M 20015
Rated Power(w)	1.0	1.3	1.5	1.6	2.0	1.0	1.5	2.6	2.3	3.8	3
Rated Current(A)	4.0	5.0	6.0	5.5	7.5	4.5	6	10	9.5	17	15
Rated Torque(N.m)	4	5	6	7.7	7.7	10	10	10	15	15	20
Max Torque(N.m)	12	15	18	22	22	25	25	25	30	30	40
Rated Speed(rpm)	2500	2500	2500	2000	2500	1000	1500	2500	1500	2500	1500
Max Speed(rpm)	2800	2800	2800	2500	2800	1500	1800	2800	1800	2800	1800
Rotor Inertia(Kg.m) ²	0.82x10 ⁻³	1.20x10 ⁻³	1.26x10 ⁻³	1.53x10 ⁻³	1.53x10 ⁻³	1.94x10 ⁻³	1.94x10 ⁻³	1.94x10 ⁻³	2.77x10 ^{-s}	2.77x10 ⁻³	3.67x10 ⁻³
Motor Weight (Kg)	6.5	7.0	7.5	8.5	8.5	10	10	10	12	12	15

power line

130SF-M series motor's winding by the 4-core connector, for the corresponding please check the following form

■ Winding connection table

Winding wire	U	V	W	PE
Socket Number	2	3	4	1
Note: Preke veltege is DC 24V (Non n.	alar raqui	romont)		

Brake Wiring	Brake	Brake
Socket number	1	2
Brake voltage	DC2	4V

■ The encoder connection table

The state of the s															
Signal Definitions	5V	OV	A+	B+	Z+	A-	B-	Z-	U+	V+	W+	U-	V-	W-	PE
Socket Number	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
Absolute signal definitions	I	PE		GND		VB		SD-		GND 0	V	SD		Vcc	5V
Socket Number		1		2		3		4		5		6		7	7

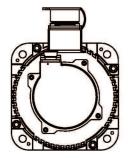
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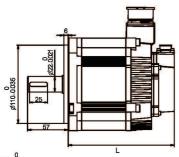
130 SF-S Series AC servo motor

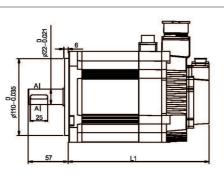


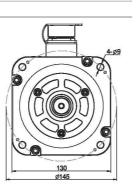
Temperature	0℃ -55℃
Number of pole pairs	4
Incremental encoder line	2500PPR
Absolute encoder	17/33bit、22/38bit、23/39bit
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1 Minute
Insulation resistance	DC500V, 10Ω above
Vibration	2.5G Under
Altitude	(1000m) Under
Work system	Continuous
Installation Method	Flange installation

Installation Dimension Unit:mm











Specs	1KW	1. 5KW	2KW
L	149	174	199
L1(Built-in With brake)	180. 5	205. 5	230. 5
L1(External With brake)	201.5	226.5	251.5

 All above is the standard installation dimension,can be changed according to the customers'requirments
 Not hit the shaft,or the encoder in the other end would be damaged.

Specifications

Motor Model	130SF-M05020-S	130SF-M07220-S	130SF-M10020-S
Rated Power(w)	1.0	1.5	2
Rated voltage(V)	220	220	220
Rated Current(A)	5	7.5	10
Peak current(A)	15.0	22.5	30.0
Rated Torque(N.m)	4.77	7.16	9.55
Max Torque(N.m)	14.31	21.48	28.65
Rated Speed(rpm)	2000	2000	2000
Max Speed(rpm)	4500	4500	4500
Rotor Inertia(Kg.m) ²	1.08x10 ⁻³	1.54x10 ⁻³	1.98x10 ⁻³
Motor Weight (Kg)	7.8	8.9	10.2
A STATE OF THE PARTY OF THE PAR			

power line

130SF-M series motor's winding by the 4-core connector, for the corresponding please check the following form

■ Winding connection table

	rake
Number 2 3 4 1 External brake socket number	1
: Brake voltage is DC 24V (Non polar requirement) The built-in brake socket number	

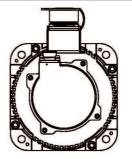
I ne encoder	connectio	n table							
Signal Definitions	5V	0V	A+	B+	Z+	A-	B-	Z-	PE
Socket Number	2	3	4	5	6	7	8	9	1
Absolute signal definitions	PE	GN	D	VB	SD-	GND 0\	/	SD	Vcc 5V
Socket Number	1	2		3	4	5		6	7

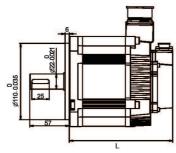
130 SF-S1 Series AC servo motor

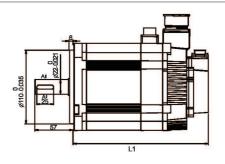


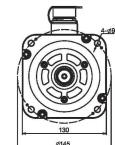
Temperature	0℃ -55℃
Number of pole pairs	5
Incremental encoder line	2500/5000PPR
Absolute encoder	17/33bit、22/38bit、23/39bit
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1 Minute
Insulation resistance	DC500V, 10Ω above
Vibration	2.5G Under
Altitude	(1000m) Under
Work system	Continuous
Installation Method	Flange installation

Installation Dimension Unit:mm



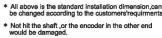






1	8.5-0.	.1	
-			
	4	80.08	

Specs	0.85KW	1.3KW	1.8KW	2.4KW
L	138	154	174	199
L1(Built-in With brake)	169.5	185.5	205.5	230.5
L1(External With brake)	190.5	206.5	226.5	251.5



Specifications

0.85 5.4 13.8 1500	8 23	.3 .4 .3.3		.5	2 15 38	5.2	1.2 11.5 28.7	1.6 15.2
13.8	23	3.3						
			28	3.7	38	2	28.7	07.7
1500	15			28.7		2.2	20.7	37.7
	1500		1500		1500		1500 1000	
3000	3000		3000		3000		2300	1800
0 380	220	380	220	380	220	380	220	220
3.75	9.5	5.5	13	7.5	20	9.7	9.6	14.5
9.5	24.9	14.2	33.8	18	52	24	25	37.1
1.92x10 ⁻³	2.68x10 ⁻³		3.53x10 ⁻³		4.46x10 ⁻³		3.35x10 ⁻³	4.46x10 ⁻³
5.86	7.	32	9.0	02	11.06		9.02	11.06
	3.75 9.5 1.92x10 ⁻³	3.75 9.5 9.5 24.9 1.92×10 ⁻³ 2.68	3.75 9.5 5.5 9.5 24.9 14.2 1.92×10 ⁻³ 2.68×10 ⁻³	3.75 9.5 5.5 13 9.5 24.9 14.2 33.8 1.92x10 ⁻³ 2.68x10 ⁻³ 3.53	3.75 9.5 5.5 13 7.5 9.5 24.9 14.2 33.8 18 1.92x10 ⁻³ 2.68x10 ⁻³ 3.53x10 ⁻³	3.75 9.5 5.5 13 7.5 20 9.5 24.9 14.2 33.8 18 52 1.92x10 ⁻³ 2.68x10 ⁻³ 3.53x10 ⁻³ 4.46	3.75 9.5 5.5 13 7.5 20 9.7 9.5 24.9 14.2 33.8 18 52 24 1.92×10 ⁻³ 2.68×10 ⁻³ 3.53×10 ⁻³ 4.46×10 ⁻³	3.75 9.5 5.5 13 7.5 20 9.7 9.6 9.5 24.9 14.2 33.8 18 52 24 25 1.92×10 ⁻³ 2.68×10 ⁻³ 3.53×10 ⁻³ 4.46×10 ⁻³ 3.35×10 ⁻³

power line

130SY-M series motor's winding by the 4-core connector, for the corresponding please check the following form

■ Winding connection table

Socket Number 2 3 4 1 External brake socket num Note: Brake voltage is DC 24V (Non polar requirement)	Winding wire	U	V	W	PE	
Note: Brake voltage is DC 24V (Non polar requirement)	Socket Number	2	3	4	1	
THE BUILTING ACCRETION OF	Brake voltage is DC 24V (Non polar requirement)					

The encode	COIII	CULIVI	Labie												
Signal Definitions	5V	OV	A+	B+	Z+	A-	B-	Z-	U+	V+	W+	U-	V-	W-	PE
Socket Number	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
Absolute signal definitions	1	PE		GND		VB		SD-		GND 0	V	SD		Vcc	5V
Socket Number		1		2		3		4		5		6		7	,

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180 SF Series AC servo motor



Temperature	0℃ -55℃
Number of pole pairs	4
Incremental encoder line	2500/5000PPR
Absolute encoder	17/33bit、22/38bit、23/39bit
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1 Minute
Insulation resistance	DC500V, 10Ω above
Vibration	2.5G Under
Altitude	(1000m) Under
Work system	Continuous
Installation Method	Flange installation

■ Specifications

Motor Model	180SF-M17015	180SF-M17015-H	180SF-M19015	180SF-M19015-H	180SF-M27015	180SF-W27015-H	180SF-M35015	180SF-M35015
Rated Power(w)	2.7	2.7	3.0	3.0	4.3	4.3	5.5	5.5
Rated Current(A)	10.5	6.5	12	7.5	16	10	19	12
Rated voltage(V)	220	380	220	380	220	380	220	380
Rated Torque(N.m)	17	17	19	19	27	27	35	35
Max Torque(N.m)	34	34	47	47	54	54	70	70
Rated Speed(rpm)	1500	1500	1500	1500	1500	1500	1500	1500
Max Speed(rpm)	1800	1800	1800	1800	1800	1800	1800	1800
Rotor Inertia(Kg.m) ²	3.4x10 ⁻³	3.4x10 ⁻³	3.8x10 ⁻³	3.8x10 ⁻³	6.1x10 ⁻³	6.1x10 ⁻³	8.6x10 ⁻³	8.6x10 ⁻³
Motor Weight (Kg)	19.5	19.5	20.5	20.5	25.5	25.5	30.5	30.5

■ Winding connection table

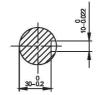
Winding wire	U	V	W	PE
Socket Number	2	3	4	1
Note: Brake voltage is DC 24V (Non pol	ar require	ment)		

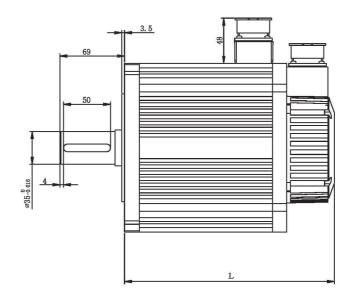
Brake Wiring	Brake	Brake
Socket number	1	2
Brake voltage	DC2	24V

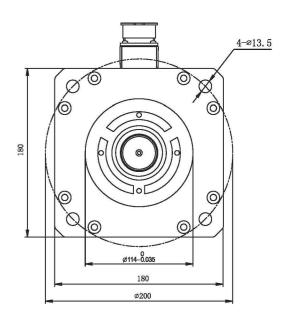
■ The encoder connection table

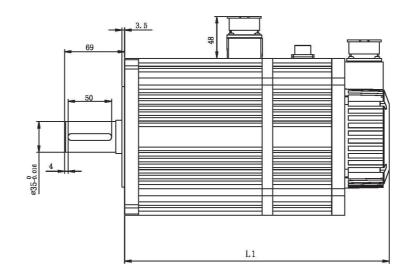
Signal Definitions	5V	ov	A+	B+	Z+	A-	B-	Z-	U+	V+	W+	U-	V-	W-	PE
Socket Number	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
Absolute signal definitions	F	PE		GND		VB		SD-		GND 0	V	SD		Vcc	5V
Socket Number		1		2		3		4		5		6		7	

Installation size chart Unit:mm









Specs	17N.m	19N.m	27N.m	35N.m
L	226	232	262	292
L1	306	312	342	372

- All above is the standard installation dimension, can be changed according to the customers'requirments
- * Not hit the shaft ,or the encoder in the other end would be damaged.

SG-AS Series Servo motor driver







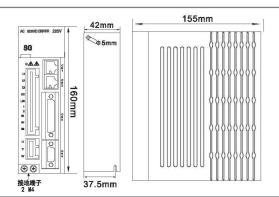


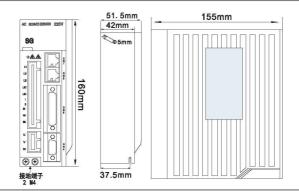
SG-AS30**

SG-AS50**/SG-AS75**

■ Dimension drawing (pedestal type)

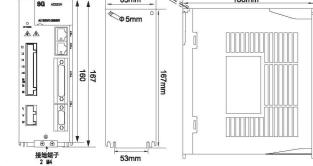
Three-phase AC 220V SG-AS15** output power: 200W-400W Three-phase AC 220V SG-AS15** output power: 400W-1000W

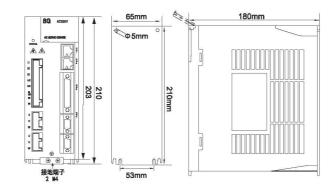




Three-phase AC 220V SG-AS30** output power: 1KW-2.6KW

Three-phase AC 380V SG-BS30** output power 1KW-2.6KW

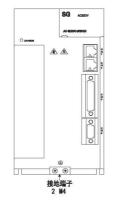


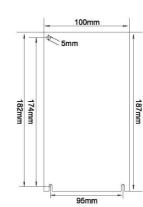


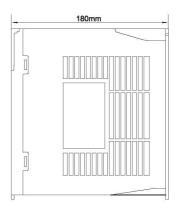
	Model	SG-AS15**(400W)	SG-AS15**(750W)	SG-AS30**	SG-AS50**	SG-AS75**					
	Output Power	200-400W	400-1000W	1.0-2.6KW	2.0-5KW	2.0-5.5KW					
	Control Model	Position Analog control, JOG operation, speed contacts, etc.									
E	Encoder feedback	Ordinary incremental encoder: 2500 lines incremental standard type 2500 line incremental province-wire serial encoder: 17/23 bit absolute encoder									
	Ambient temperature / storage temperature	Ambient temperature	: 0 ~ + 50 °C , Storage tem	perature: -20 ~ + 85 ℃	1						
Conditions of Use	Humidity / storage humidity	90% RH or less (no fr	eezing or condensation)								
oi ose	Resistance to vibration / Impact resistance										
	Structure	Base mount									
	Speed control range	1:10000(Lower limit of)								
	Speed response	1KHz									
Performance	Rate volatility (load variation)	0 to 100% load; 0% (rated speed)									
	Rate volatility (voltage variation)	Rated voltage ± 10%: 0% (rated speed)									
	Rate volatility (temperature variation)	$25 \pm 25 \text{C}$: $\pm 0.1\%$ or less (rated speed)									
Analog speed	Command voltage	DC±10V									
command input	Input impedance	Approximately 20KΩ									
A14	Circuit time parameter	47µs									
Analog torque	Command voltage	DC±10V									
command in input	Input impedance	Approximately 20KΩ									
minput	Circuit time parameter Count	47µs									
Sequence input signal	Function (distribution)	8 Point Servo ON (/ S-ON), P action (/ P-CON), prohibits Story side driving (P-OT), prohibiting reverse side driving (N-OT), alarm reset (/) / ALM-RST, positive Zhuance torque limit (/ P-CL), reverse the measured torque limit (/ N-CL), the position deviation is cleared (/ CLR), the internal set speed switching can be allocated and the signal of the positive / negative logic change.									
	Count	6 Point									
Sequence output signal	Function (distribution)	Servo alarm () ALM positioning completion (/ COIN) consistent speed detection (/ V-COMP) servo motor rotation detection (/ TGON) Servo ready (/ S-RDY), torque limit detection (/ CLT) Brakes (/ BK) encoder zero output (PGC) can be assigned as well as the positive / negative logic of the signal change									
Encoder I	Dividing pulse output	A phase, B phase, C: I	inear drive output; divider	pulses: can be arbitra	arily set						
RS-485	Protocol	MODBUS									
Commun-	1: N Communication	Can be up to N = 127 s	tation								
ications	Axis address setting	By parameter setting									
CAN	CANCommunications	CAN Open (DS301 + DS402 profile)									
Commun-	1: NCommunication	Can be up to N = 127 s	tation								
ications	Axis address setting	By parameter setting									
Yaskawa M2	Communication protocol	MECHATROLINK-II									
Communication	1: N Communication	MAX TO Sation N=30									
	Station number agreement	SET by parameter									
Yaskawa M3	Communication protocol	MECHATROLINK-III									
Communication	1: N Communication	MAX TO Sation N=62									
Disable E	Station number agreement	SET by parameter									
Display Functi		CHARGE LED, 7-segment 5									
Regeneration		Built-in regenerative resistor or external regenerative resistor (optional) P-OT、N-OT Enter the action of dynamic brake (DB) stop, deceleration stop or free-run stop									
Protection	Γ) prevention function										
Monitoring fun	ections	Overcurrent, overvoltage, undervoltage, overload, speeding, regeneration fault, encoder feedback error, etc. Speed, current position, command pulse accumulation, position deviation, motor current, operating status, input and output signals									
Accessibility F						a output digitals					
Smart features		Gain adjustment, alarm recording, JOG operation, origin search, inertia testing Built-in automatic gain tuning function									
Use load inerti		Less than 5 times of mot	5295556 1000950200000								
	Feedforward compensation	0~100%(Setting unit 1%									
	Input pulse types		CCW pulse train, 90 ° phase	difference between the	two-phase pulse (A phas	e + B phase)					
	Input pulse form										
Position control	Maximum input pulse frequency	Supports linear drive, open collector Linear drive Sign + pulse train, CW + CCW pulse sequence: 500K pps 90° phase difference between the two-phase pulse (A phase + B-phase): 500K pps Open Collector Sign + pulse train, CW + CCW pulse sequence: 200K pps 90° phase difference between the two-phase pulse (A phase + B-phase): 200K pps									

■ Dimension drawing (pedestal type)

Three-phase AC 220V SG-AS50**/AS75** output power: 2.0KW-5.5KW Three-phase AC 380V SG-BS50**/BS75** output power: 2.0KW-5.5KW







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SG Series Servo Motor Driver

Operating temperature:-10℃ -55℃ Humidity:<90%(no condensation)
Vibration:<0.5g(4.8m/s²)
Working systen:continuous work



Product brief

Ac servo technology has devoloped from the early 80s, application technology become more mature and the proporty improved every year. It is widely used in the cnc turning machine, packaging machine, printer, textile machine, and other auto-mated equipment. SG series ac servo drive, a new generation product, use the latest 32-bit DSP unit As the center core work unit, which we research and devolop independently. Adopt the complex programmable device EPLD and Mitsubishi inte-Illgent power module. This ac servo drive has the advantages of high integration, small volume, fast response speed, perfect protection, high reliability etc.

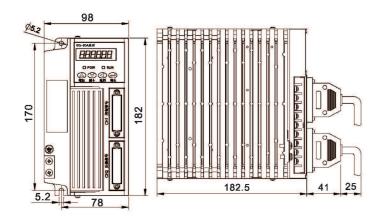
Specifications

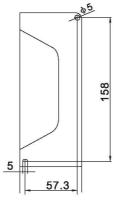
N	lodel	SG15A	SG20A	SG30A				
Output p	ower(Kw)	0.2-1.0	0.4-1.5	0.8-2.6				
Motor rate	ed torque(N.m)	0.6-4.0	2.4-6.0	4.0-15.0				
Input pov	ver supply	3-phase AC22	0 -15%~ +10%	50/60Hz				
Control v	vay	SG series po	sition control.	speed control				
	Speed frequency response	≥250Hz						
Control	Rate volatility	<±0.03 (load 0~10 value correspondi						
feature	Speed ratio	1:5000	1:5000					
	Pulse frequency	≤500kHz						
Input	control	3.ccw drive prohibit 5.deviation/counter	1.servo enable 2. alarm clearance Input control 3.ccw drive prohibition 4.cw drive prohibition 5.deviation/counter reset/ speed selectionl 6.command pulse prohibition/speed selection2					
Outpu	t control		servo ready to output 2.servo alarm output spositioning to complete the output/ Speed reach to the output mechanical					
Positio	n control	3.2 phase A/B ortho The electronic gear:	input way: 1. pulse+ symbols 2.ccw pulse/cw pulse 3.2 phase A/B orthogonal pulse The electronic gear: 1-32767/ 1-32767 Feeback pulse :2500 ppr					
Mouitorin	g functions	deviation, motor torqu	rotate speed, current position, command pulse accumulation, position deviation, motor torque, motor current, Linear speed, The absolute rotor position, command pulse frequency, Running state, input/output terminal signal, etc.					
Accelerat decelerat	ion ion function	parameters set 1~10	000ms/1000r/mir	1				
Protection	on function		mal braking the en	and under-voltage, over coder abnormal, control				

■ Installation size chart

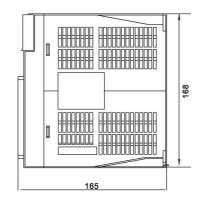
unit: mm

Installation size chart





unit: mm



SD-A Series Spindle Servo Motor Driver

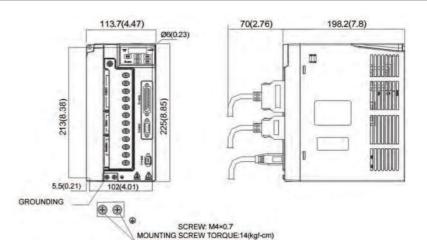
Specifications

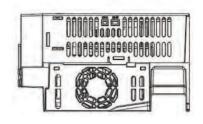
	Item		Specification						
	Control method	Open-loop vector	V/Fcontrol	Closed loop vector					
_	Starting torque	0.5Hz 15%	0.5Hz 100%	0.0Hz 180 %					
Control feature	Speed range	1:200	1: 100	1: 1000					
ol fe	Steady speed accuracy	± 0.2%		± 0.02%					
ature	Torque response	10ms		5ms					
	Positioning accuracy	-		+-1 line pulse					
	Motor type	AC asynchronous mo	otor, AC permanent n	nagnet synchronous mol					
	Pulse form	Direction pulse							
	Spindle stop	Built-in 8 divisions and 4 zero positions							
	Speed / position control	Support external terminal switching							
	Electronic gear	Built-in 4 groups of	f electronic gears f	or terminal switching					
	Encoder form	Collector differential encoder, resolver, etc.							
	Digital input and output	8-way optocoupler isolation input, NPN, PNP optional 2-way optocoupler isolation out;							
	Analog input	3 inputs 10V~+10V, 0~10V/0~20mA							
	Maximum frequency	630Hz							
	Frequency resolution	Digital setting:0.01Hz Simulation settings:Maximum frequency x0.025							
	Carrier frequency	0.5K~16KHz,Carrier frequency can be adjusted automatical according to the operating temperature							
	Frequency setting method	Operation panel, Al2, Al2, Al3, terminal UP / DN control, communication control, PLS pulse frequency							
Fee	DC braking capacity	DC braking frequence	:y:0.0~300Hz DC br	aking current:0.0%~100					
Feature design	Specified energy consumption unit	4T15G and below 9 4T18. 5G ~ 75G br 4T93G and above	aking unit is option	al internal,					
g	PLC multistage speed	Up to 16 sections of realized through but							
	Common DC bus	Multiple drivers sha and the energy is a		nced					
	Automatic voltage regulation(AVR)	When the grid volta keep the output vo	age changes, it car Itage stable	automatically					
	Overload capacity	•							
	Over-voltage and Automatically limit current and voltage during of over-current stall control prevent frequent over-current and over-voltage								
	Fast current limit function	Minimize over-curr damaged as much operation of the dr	as possible, and	that the module is no protect the normal					
	Torque limitation and control	The "excavator" feature automatically limits the torque during operation to prevent frequent overcurrent and overvoltage trips the closed-loop vector control mode enables torque control.							



	Item	Specification
	Friendly interface	Power-on display friendly dialogue "HELLO"
	Multifunctional JOG key	Original multi-function keys can be set for frequently used operations: forward, reverse, forward and reverse switching, command switching
	Timing control function	Set the single timing time and the accumulated running time of the whole machine.
,	Two sets of motor parameters	It can realize the switching control of two groups of motors, and the control mode is optional.
	Terminal function	The control terminal adopts plug-in installation to facilitate user wiring and maintenance.
	Command source	The operation panel, control terminal, and serial communication are given, and can be switched between each other.
	Frequency source	Digital setting, analog voltage, analog current, pulse setting, serial communication, addition or subtraction of auxiliary frequency sources, mutual switching can be realized.
	Protective function	Power on motor short circuit detection, input and output phase loss protection, overcurrent protection, overvoltage hoop, undervoltage protection, overheat protection, overload protection.
	Use place	Indoor, free from direct sunlight, no dust, no corrosive gas, no flammable gas, oil mist, no water vapor, no drip or salt
)	Altitude	Below 1000m
•	Ambient temperature	Derating between -10 °C \sim +40 °C and 40 °C \sim 50 °C. For each 1 °C increase, the rated output current is reduced by 1%.
	Humidity	Less than 95% RH, no condensation
	Storage	-40~+70°C

■ Flange installationDimension Unit:mm





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204ZJY Series Ac Asynchronous Spindle Servo Motor



Temperature	0℃ -55℃
Number of pole pairs	4
Incremental encoder line	1024/2500PPR
Humidity is less than	90%
Insulation class	В
Safety Class	IP65
Insulation and voltage resistance	AC 1500V, 1 Minute
Insulation resistance	DC500V, 10Ω above
Vibration	2.5G 以下/ Under
Altitude	(1000m) Under
Work system	Continuous
Installation Method	Flange installation

■ Performance introduction

204ZJY series AC asynchronous spindle servo motor is a new AC induction servo motor, it is independent research and development, design, and produced by Wenling yuhai electromechanical CO.,LTD.The product has the advantages of compact structure, beautiful appearance. It adopts optimum electromagnetic design, high speed photoelectric encoder, high precision bearings and F level insulation. It is in stable operation, high control precision, low electromagnetic noise, high efficiency, long service life and high performance price ratio. It is particularly suitable for the spindle control of CNC machine tool and the speed control of high performance automation.

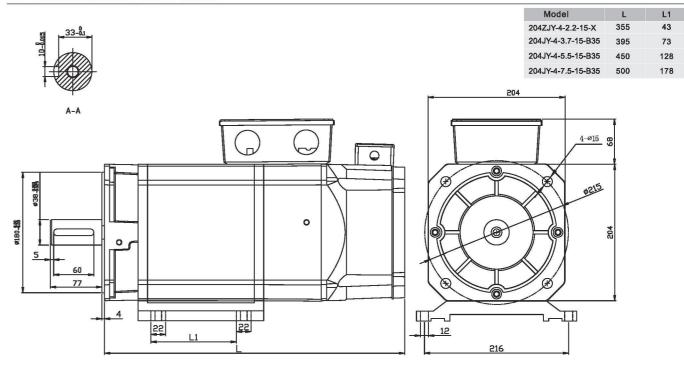
Notice

- 1. Motor U, V, W wiring must keep corresponding relation with the drive U, V,
- Prohibit to hit the end of axis or let the motor axial force, To avoid damaging the encoder and motor bearing.
- 3. Ensure the terminal in the motor's junction box grounded effectively.
- 4. Ensure that the cooling fan is in the normal work when the motor adjust speed.
- The motor's surface temperature is higher during operation, avoid touching by hand to prevent burns.
- 6.Fan wind direction must be consistent with the signage when wiring.

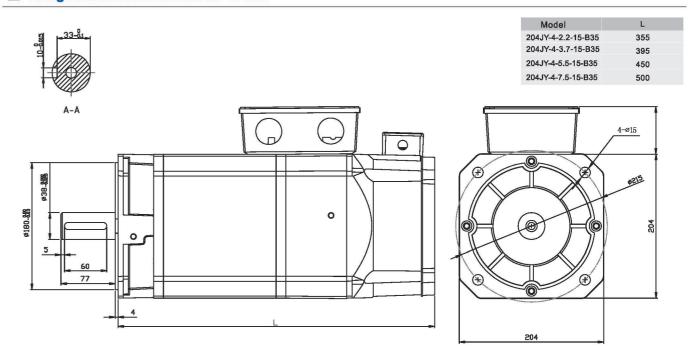
Specifications

Motor Model	204ZJY-4-2.2-15-X	204ZJY-4-3.7-15-X	204ZJY-4-5.5-15-X	204ZJY-4-7.5-15-X
Rated Power(w)	2.2	3.7	5.5	7.5
Rated voltage(V)	380	380	380	380
Rated Current(A)	5.1	8	11.5	16
Rated Torque(N.m)	14	24	35	50
Rated frequency(Hz)	50	50	50	50
Rated Speed(rpm)	1450	1460	1460	1460
Max Speed(rpm)	6000	6000	6000	6000
Rotor Inertia(Kg.m) ²	0.01	0.014	0.018	0.025
Fan power(w)	75	75	75	75
Fan voltage(V)	380	380	380	380
Vertical weight (Kg)	33	43	57	66.5
Horizontal weight (Kg)	35.6	46	61	71.5

■ Installation size chart Unit:mm



■ Flange installationDimension Unit:mm



■ The encoder connection table

Serial Number	1	2	3	4	5	6	7	8	9	10
Signal	Shield	Z+	B+	A+	+5V		Z-	B-	A-	0

Note: T is motor heat protection switch

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250ZJY Series Ac Asynchronous Spindle Servo Motor

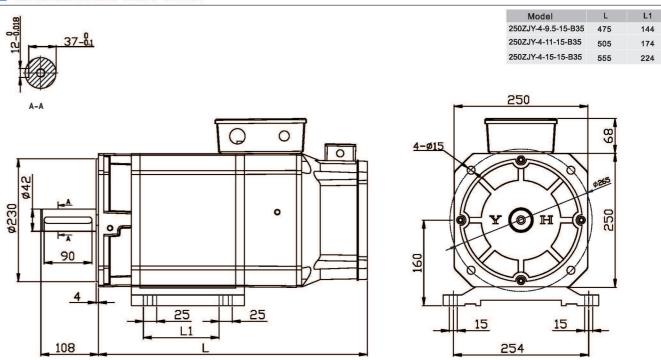


0℃-55℃ Temperature Number of pole pairs Incremental encoder line 1024/2500PPR Humidity is less than 90% Insulation class В Safety Class IP65 Insulation and voltage resistance AC 1500V, 1 Minute Insulation resistance DC500V, 10Ω above 2.5G Under Altitude (1000m) Under Work system Continuous Installation Method Flange installation

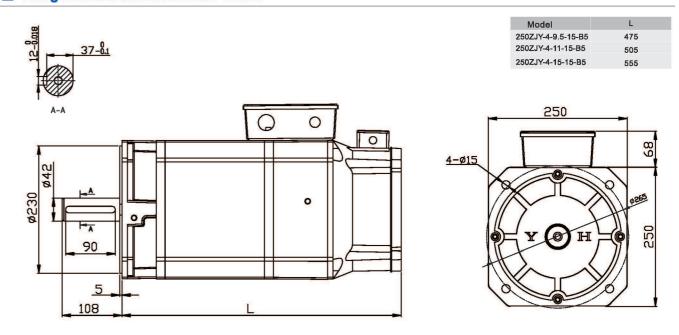
Specifications

Motor Model	250ZJY-4-9.5-15	250ZJY-4-11-15	250ZJY-4-15-15
Rated Power(w)	9.5	11	15
Rated voltage(V)	380	380	380
Rated Current(A)	19	22	30
Rated Torque(N.m)	60	70	95
Rated frequency(Hz)	50	50	50
Rated Speed(rpm)	1500	1500	1500
Max Speed(rpm)	6000	6000	6000
Rotor Inertia(Kg.m) ²	0.01	0.014	0.018
Fan power(w)	75	75	75
Fan voltage(V)	380	380	380
Vertical weight (Kg)	80	89	119
Horizontal weight (Kg)	92	101	131

■ Installation size chart Unit:mm



■ Flange installationDimension Unit:mm



■ The encoder connection table

Serial Number	1	2	3	4	5	6	7	8	9	10
Signal	Shield	Z+	B+	A+	+5V		Z-	B-	A-	0

Note: T is motor heat protection switch

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86BYG Series Two Phase Stepper Motor



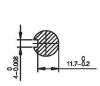
Temperature Rise:80°CMax (Rated current) Step Angle Accuracy:5%

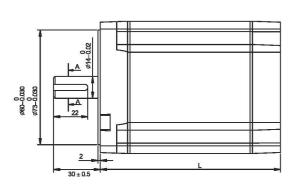
Ambient temperature: -20°C +50°C Insulation Resistance:100M Ω 500V DC Dielectric Strength:500V AC 1min

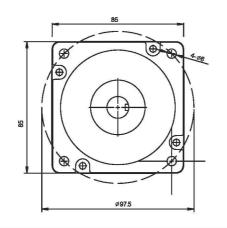
Insulation class: B

Installation Dimension Unit:mm

Note: φ12 and φ14 of shaft diameter for choice,1mm flat-square and 4mm/5mm keyway on shaft for choice



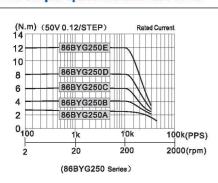




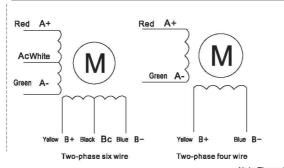
Specifications

Model	Step Angle	Holding torque (N.m)	(Drive)Operating Voltage (V)	Rated Current (A)	Phase Inductance (mH)	Phase Resistance (Ω)	Rotor inertia (Kg.cm²)	Weight (Kg)	Motor Lengt (mm)
86BYG250A	1.8	2.4	60	4.3	3.1	0.5	1.92	2.2	78
86BYG250B	1.8	4	60	4.5	7.0	1.0	2.55	2.95	99
86BYG250C	1.8	6	60	5	7.1	0.8	3.57	3.7	115
86BYG250D	1.8	8	60	6	7.3	0.95	3.96	4.3	145
86BYG250E	1.8	12	60	7.5	7.8	1.0	4.57	5.2	155

■ The torque-speed characteristic curve



■ Wiring Diagram



Note:The motor wiring method can be changed according to the customers' requirments.

86BYG Series Three Phase Stepper Motor



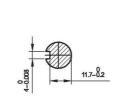
Temperature Rise:80°CMax (Rated current) Step Angle Accuracy:5%

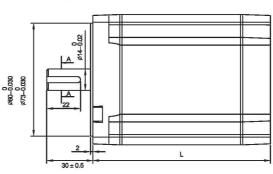
Ambient temperature: -20°C +50°C Insulation Resistance:100MΩ 500V DC Dielectric Strength: 500V AC 1min

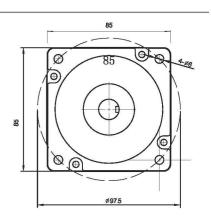
Insulation class: B

Installation Dimension Unit:mm

Note: φ12 and φ14 of shaft diameter for choice,1mm flat-square and 4mm/5mm keyway on shaft for choice



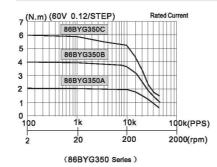


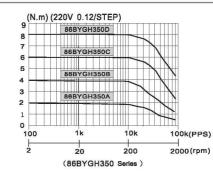


Specifications

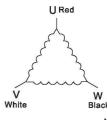
Model	Step Angle	Holding torque (N.m)	(Drive)Operating Voltage	Rated Current	Phase Inductance (mH)	Phase Resistance (Ω)	Rotor inertia (Kg.cm²)	Weight (Kg)	Motor Lengt (mm)
86BYG350A	1.2	2	60	5.2	2.4	0.5	1.49	1.84	78
86BYG350B	1.2	4	60	5.6	4.5	0.7	2.55	2.95	99
86BYG350C	1.2	6	60	5.8	6.5	0.95	3.99	3.9	125
86BYGH350A	1.2	2	220	1.75	4.0	1.1	1.49	1.98	78
86BYGH350B	1.2	4	220	2.1	7.4	1.4	2.55	3.0	99
86BYGH350C	1.2	6	220	3.2	12.8	1.87	3.96	4.4	135
86BYGH350D	1.2	8	220	4.0	16.2	2.0	4.95	5.9	145
86BYGH350E	1.2	12	220	4.5	18.4	2.2	5.3	6.5	158

■ The torque-speed characteristic curve





■ Wiring Diagram



Three-phase three wire

Note: The motor wiring method can be changed according to the customers'

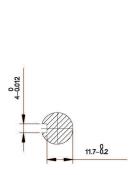
86BYG-S1 Series Three Phase Stepper Motor

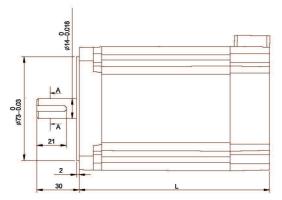


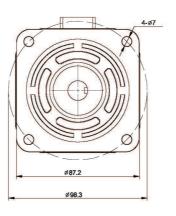
Temperature Rise:80°CMax (Rated current) Step Angle Accuracy:5% Ambient temperature:-20°C +50°C Insulation Resistance:100MΩ 500V DC Dielectric Strength:500V AC 1min Insulation class: B

Installation Dimension Unit:mm

Note: $\phi 12$ and $\phi 14$ of shaft diameter for choice,1mm flat-square and 4mm/5mm keyway on shaft for choice



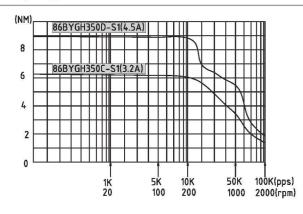




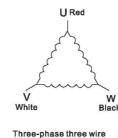
Specifications

Model	Step Angle	Holding torque (N.m)	(Drive)Operating Voltage	Rated Current (A)	Phase Inductance (mH)	Phase Resistance	Rotor inertia (Kg.cm²)	Weight (Kg)	Motor Lengt (mm)
86BYG350C-S1	1.2	6	220	3.2	12.5	1.8	3.96		135
86BYG350D-S1	1.2	9	220	4.5	16	2.1	5.3		162

■ The torque-speed characteristic curve



■ Wiring Diagram

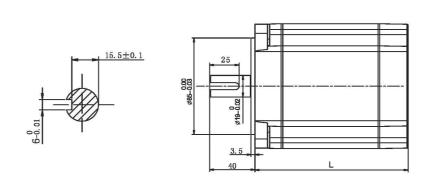


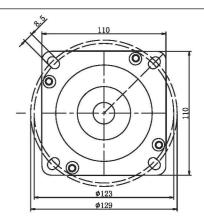
110BYG Series Two Phase Stepper Motor



Temperature Rise:80°CMax (Rated current) Step Angle Accuracy:5% Ambient temperature: -20°C +50°C Insulation Resistance:100MΩ 500V DC Dielectric Strength: 500V AC 1min Insulation class: B

Installation Dimension 単位/unit:mm



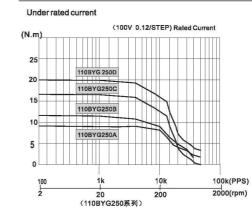


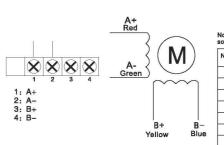
Specifications

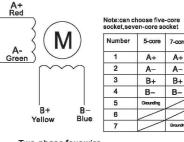
Model	Step Angle	Holding torque (N.m)	(Drive)Operating Voltage (V)	Rated Current (A)	Phase Inductance (mH)	Phase Resistance	Rotor inertia (Kg.cm²)	Weight (Kg)	Motor Lengt (mm)
110BYG 250A	1.8°	8	110	5	17.3	1.3		4.8	109
110BYG 250B	1.8°	12	110	6	12.7	0.78	10	6.4	134
110BYG 250C	1.8°	18	110	6.5	15.5	0.87	12.35	8.1	159
110BYG 250D	1.8°	20	110	6.8	17.5	0.97	13.8	9.2	193

■ The torque-speed characteristic curve

■ Wiring Diagram









Two-phase four wire

seven-core socket

110BYG Series Three Phase Stepper Motor

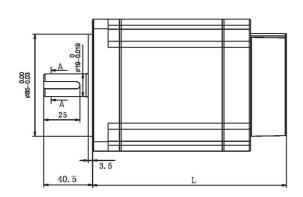


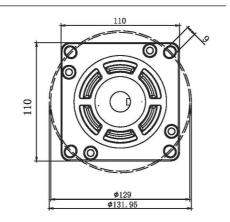
Temperature Rise:80°CMax (Rated current) Step Angle Accuracy:5%

Ambient temperature: -20°C +50°C Insulation Resistance:100M Ω 500V DC Dielectric Strength:500V AC 1min

Insulation class: B

Installation Dimension unit:mm



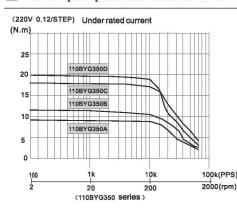


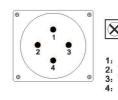
Specifications

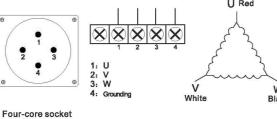
Model	Step Angle	Holding torque (N.m)	(Drive)Operating Voltage (V)	Rated Current (A)	Phase Inductance (mH)	Phase Resistance (Ω)	Rotor inertia (Kg.cm²)	Weight (Kg)	Motor Lengt (mm)
110BYG 350A	1.2°	8	220	3.7	11.9	1	8.6	5.5	139
110BYG 350B	1.2°	12	220	4.5	11.5	0.76	11.9	7.1	162
110BYG 350C	1.2°	16	220	6.0	19	1.28	14.8	8.8	187
110BYG 350D	1.2°	20	220	6.8	22	1.24	19.8	11	221

■ The torque-speed characteristic curve

■ Wiring Diagram







U	Red	Not
کم	L	N
کم	2	-
Lu		F
Ý	W Black	
White	Black	-

Three-phase three wire

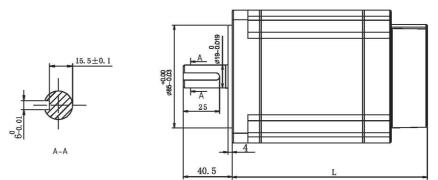
110BYG Series Three-phase high-speed hybrid stepping motor

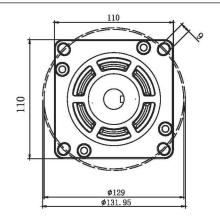


Temperature Rise:80°CMax (Rated current) Step Angle Accuracy:5%

Ambient temperature:-20°C +50°C Insulation Resistance:100M Ω 500V DC Dielectric Strength:500V AC 1min Insulation class: B

Installation Dimension unit:mm



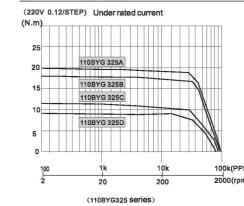


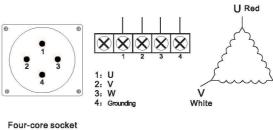
Specifications

Model	Step Angle	Holding torque (N.m)	(Drive)Operating Voltage (V)	Rated Current (A)	Rotor inertia (Kg.cm²)	Weight (Kg)	Motor Lengt (mm)
110BYG 325A	2.4°	8	220	7. 0	8.6	5.5	139
110BYG 325B	2.4°	12	220	8. 5	11.9	7.1	162
110BYG 325C	2.4°	16	220	9. 5	14.8	8.8	187
110BYG 325D	2.4°	20	220	10	19.8	11	221

■ The torque-speed characteristic curve

■ Wiring Diagram





Three-phase three wire

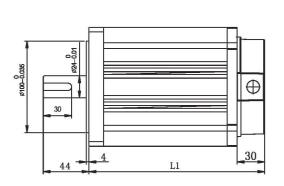
130BYG Series Two Phase Stepper Motor

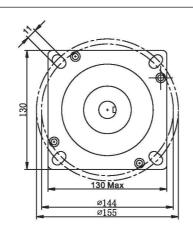


Temperature Rise:80°CMax (Rated current) Step Angle Accuracy:5%

Ambient temperature: -20°C +50°C Insulation Resistance:100MΩ 500V DC Dielectric Strength:500V AC 1min Insulation class: B

Installation Dimension unit:mm



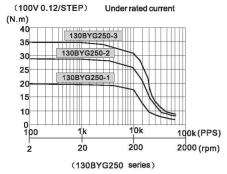


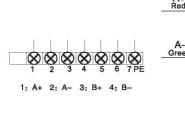
Specifications

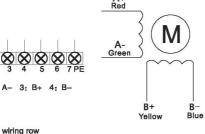
Model	Step Angle	Holding torque (N.m)	(Drive)Operating Voltage (V)	Rated Current (A)	Phase Inductance (mH)	Phase Resistance (Ω)	Rotor inertia (Kg.cm²)	Weight (Kg)	Motor Lengt (mm)
130BYG250A-X	1.8	20	110~20	6.8	8.2	0.89	26.8	12.5	189
130BYG250B-X	1.8	28	110~20	7.5	12	1.1	33.5	15.1	236
130BYG250C-X	18	35	110~20	8	15	1.3	40	17.2	256

■ The torque-speed characteristic curve

■ Wiring Diagram











seven-core socket

130BYG Series Three Phase Stepper Motor

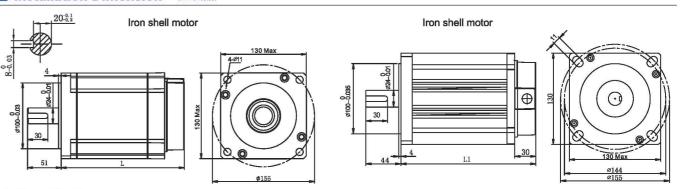


Temperature Rise:80°CMax (Rated current) Step Angle Accuracy:5%

Ambient temperature: -20°C +50°C Insulation Resistance:100MΩ 500V DC Dielectric Strength: 500V AC 1min

Insulation class: B

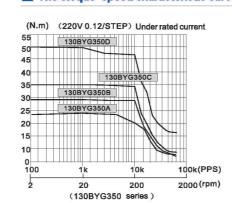
Installation Dimension unit:mm



Specifications

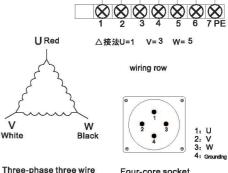
Model	Step Angle	Holding torque (N.m)	(Drive)Operating Voltage (V)	Rated Current (A)	Phase Inductance (mH)	Phase Resistance (Ω)	Rotor inertia (Kg.cm²)	Weight (Kg)	Motor Lengt (mm)
130BYG350A	1.2	24	220	6.8	16.2	0.96	26.87	10	188
130BYG350B	1.2	28	220	6.8	19	1.17	33.97	15	220
130BYG350C	1.2	35	220	6.8	24	1.39	41.4	20	252
130BYG350D	1.2	50	220	6.8	18.3	1.02	47.3	20.5	280
130BYG350A-X	1.2	24	220	6.8	9.9	0.89	26.8	9.7	189
130BYG350B-X	1.2	28	220	6.8	11.3	0.80	34.9	13	236
130BYG350C-X	1.2	35	220	6.8	13.8	0.92	39.2	15	256
130BYG350D-X	1.2	50	220	6.8	18.3	0.99	42.5	16	271
130BYG350E-X	1.2	60	220	6.8	20.0	1. 2	45. 0	17	296

■ The torque-speed characteristic curve



■ Wiring Diagram

Note:X representative Aluminum Materia



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Three-phase three wire

Four-core socket

150BYG Series Three Phase Stepper Motor

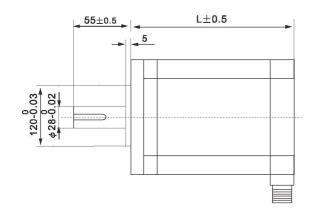


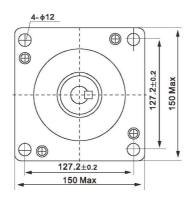
Temperature Rise:80°CMax (Rated current) Step Angle Accuracy:5%

Ambient temperature: -20°C +50°C Insulation Resistance:100MΩ 500V DC Dielectric Strength:500V AC 1min

Insulation class: B

Installation Dimension unit:mm





Specifications

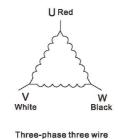
Model	Step Angle	Holding torque (N.m)	(Drive)Operating Voltage	Rated Current (A)	Phase Inductance (mH)	Phase Resistance	Rotor inertia (Kg.cm²)	Weight (Kg)	Motor Lengt (mm)
150BYG350A	1.2	40	220	8.5	12	0.5	65	22.5	191
150BYG350B	1.2	50	220	8.5	19.2	0.79	83	25.7	230
150BYG350C	1.2	60	220	8.5	22.8	0.86	100	29.6	255

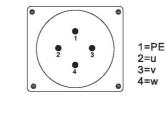
■ The torque-speed characteristic curve

(N.m) (220V 0.12/STEP) Under rated current 150BYG350C 150BYG350A 10k 100k (PPS)

2000(rpm)

■ Wiring Diagram





Four-core socket

Series Three-Phase Stepper Driver



FH-3722 SD305C **Propertries**

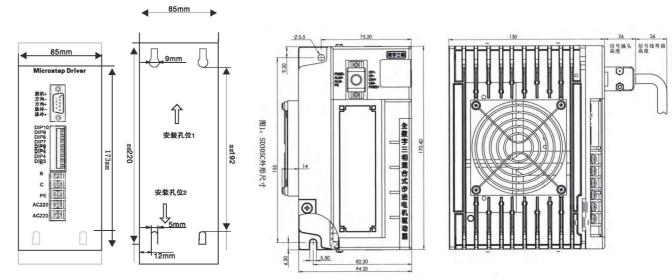
1.Added full digital loop control in the mode by AC servo control principle,three-phase sine wave current driver' output can make three-phase hybrid motor low speed, no creep, no vibration area and minimal noise.

- 2.When voltage amplifier stage reaches DC325V, stepper motor of high speed still can output a high torque.
- 3. With perfect protection function of short circuit voltage and under voltage over heating, high reliabilyty.
- 4.With subdivision and semi flow function, variety of subdivision chioces' minimum step angle can be set to 0.036°

Specifications

Input power	Single-phase AC220V-15 -+ 10% 50/60Hz
Output phase current	1.5A-7.0A(Up to 8A for customization)
Adaptation of motor	Three phase hybrid stepping motor
Operate environment	0 °C ∽ 55 °C 1585%RH No frost,non corrosive 、 lamability 、explosive 、conductive gas 、 liquid and dust
environment Storage	-25 °C ∽ 70 °C 1585%RH No frost
Driving mode	pwm
Step angle	400/480/500/600/800/1000/2000/3000/ 4000/4800/5000/6000/8000/10000/12000
Step angle setting	DIP switch setting
Input signal	CP+/CP-;CW+/CW-;FREE+/FREE-;
Input level	5V,5 \sim 10MA;Connet 510 Ω \sim 1K resistance when input 12v voltage;Connet 1.2K- \sim 2K resistance when input 12v voltage
Out signal	ALM+/ALM-
Position pulse input mode	ingle pulse mode:CP(pulse)+CW(direction), pulse width ≥ 1us,pulse frequency ≤ 300khz (10000P/r); Double pulse mode:CW(positive pulse)+CCW(reverse pulse)
Status indication	Green LED power indication; driving power, normal state indication Green LED pulse indication, pulse status indication Green LED fault indication; drive fault indication
Size and shape	170.4x94.2x127mm
Weight	1.3kg

■ FH-3722/SD305C Installation Dimension unit:mm



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FH-2M982 Series Two phase stepping motor driver



Key Features

2DM860 is a uniform angle and constant torque subdivide type stepper driver, voltage of driver is DC24 -110V, available for 2 phase hybrid stepper motor of current is under 6A,flange size 57mm and 86mm series. This driver adopt the advanced technology of servo driver, this circuit available to make motor run at low speed stably with even no noisy and shake. Motor has good acceleration and small heating, stepper pulse stop for over 100m/s,driver current automatically in half. Positioning accuracy is up to more than 12800step/revolution(The high speed performance will be influenced when matching 86BYG series high torque motor)

■ 点 Main features

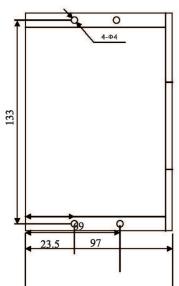
24-80V DC power supply, adapted to the worst grid environment H-bridge bipolar constant phase flow subdivision drive original speed adaptive circuit, the automatic optimization subdivision current setting is convenient for 1-64 subdivision of 16 operation modes of over-current, over-voltage, under-voltage, short-circuit protection offline (ENA) protection functions.

■ Performance indicators unit=mm

Instructions	Min values	Typical values	Max values
Supply voltage(VDC)	24	48V	80V
Normal work output curren(A)t	1.3	-	7.8
Logic input current(mA)		10	
Step pulse corespond frequency(KHZ)	-	-	200
Pulse low level time(US)	2.5	-	-

Cooling mode	Natural cooling or forced coolin							
Using environment	Occasion	Avoid oil mist,dust,Corrosive gas						
	Storage temperature	-10°C~80°C						
January State of the State of t	Max environment temperature	<65°C						
	Environment humidity	<80%RH,非冷凝无结霜						
Vibration		5.9m/s²Max						
Weight		0.6kg						

■ Shape Dimension unit=mm





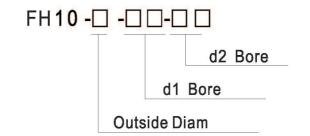
⚠ Notice

Ensure well ventilated when install the drive, regularly check the cooling fan in normal operation. Ensure that the distance betweenis not less than 5cm; when multiple drivers areparallel used in the cabinet, ground terminalsmust be connected well between driver and equipment, in order to ensure the safety ofusage.

FH10 Series Plum Flexible Spring Coupling

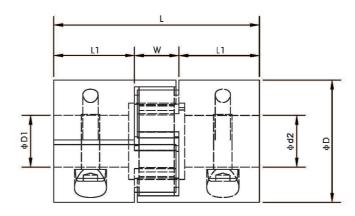


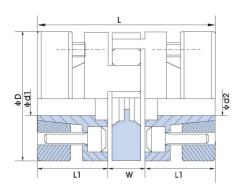
YH 10 series plum flexible spring coupling ,which adopt the expansion sleeve connection, is of zero backlash and high scnsity. It can transfer big torque.furthermore, the characteristics arc quite same when it run in a clock-wise or enti clock-wise rotation.so it can absorb the vibration compensate for radial, angle and axial deviation, it usually used in the connection of servo motor, stepper motor, etc.



For example:YH10-55x19x24x78

FH10: series No. Aluminum material d1 Bore: ød1=19mm d2 Bore: ød2=24mm Length: 78mm





Specifications

Model	Rated Torque (N.m)	Max Torque (N.m)	Max Speed (rpm)	Inertia torque (Kg.m²)	Static torquerig -idity (N.m/red)	Radial deviation (mm)	Angular deviation	Axial deviation (mm)	Weight (G)
FH10-20	7.4	14.8	20000	8.7X10 ⁴	510	0.02	1	±0.06	50
FH10-30	7.4	14.8	20000	8.7X10 ⁴	510	0.02	1	±0.06	50
FH10-40	9.5	19.0	15000	1.12X10 ⁻³	550	0.02	1	±0.08	120
FH10-46	20	40	14000	3.2X10 ⁻³	1510	0.02	1	±0.08	280
FH10-55	34	68	13000	4.5X10°	1510	0.02	1	±0.08	280
FH10-65	95	190	10500	9.1X10°	2800	0.02	1	±0.08	450
FH10-80	135	270	8600	1.9X10 ²	3600	0.02	1	±0.08	960
FH10-95	230	460	7500	2.2X10 ⁻²	4700	0.02	1	±1.00	2310
FH10-95	380	760	6000	3.3X10 ⁻²	5800	0.02	1	±1.00	3090

Note: The calculation of Inertia torque and weight is based on the max bore

Size of coulping

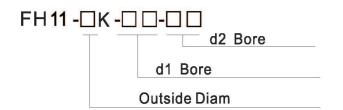
		-					
Model	od1 od2 Bore	φD	L	L1	w	М	Tighten torque (N.m)
FH10-20000	4 5 6 8 9 10	20	30	10	10	МЗ	1.1
FH10-30	8 10 12 14	30	50	18. 5	13	M4	1. 3
FH10-40000	11 12 14 16 19 20	40	66	25	16	M5	2. 7
FH10-46	16 18 20 22 24 25	46	70	28	17	M6	4.5
FH10-55000	14 16 19 24 25 28	55	78	30	18	M8	6. 0
FH10-65	19 20 24 28 30 35 38	65	90	35	20	M8	6. 0
FH10-800000	24 28 30 35 38 40 45	80	114	45	24	M8	10. 0
FH10-950000	30 35 38 40 45 50	95	126	50	26	M8	35
FH10-105	35 40 45 50 55 60	105	140	56	28	M8	35

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Series Keyway Connect Diaphragm Coupling



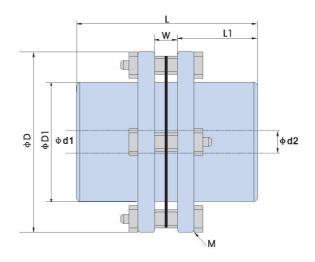
Diaphragm coupling, which adopt the expansion sleeve connection's of zero backlashand high sensity. It can transfer big torque. furthermore, the characteristics are quite same when it run in a clock-wise and enti clock-wise rotation . so it can absorbthe vibration compensate for radial, angle and axial deviation, it usually used in the connection of servo motor, stepper motor, ctc.



For example:FH11-56Kx14x10x45

FH11: series No. Aluminum material 56K: Outside Diam: $\phi D = 56mm$

d1 Bore: ød1=14mm d2 Bore: ϕ d2=10mm Length: 45mm



Specifications

Model	Rated Torque (N.m)	Max Torque (N.m)	Max Speed (rpm)	Inertia torque (Kg. m²)	Static torquerig -idity (N.m/rad)	Radial deviation (mm)	Angular deviation	Axial deviation (mm)	Weight (G)
FH11-46K-	25	50	20000	0.1X10°	15X10*	0.02	1	±0.5	300
FH11-56K-□□□□	25	50	20000	0.1X10 ³	15X10 ⁻⁴	0.02	1	±0.5	300
FH11-68K-□□□□	55	110	15000	0.28X10 ³	28X10 ³	0.02	:1:	±0.8	500
FH11-82K-□□□□	80	160	14000	0.85X10 ⁻³	81X10*	0.02	1	±1.0	1000
FH11-94K-□□□□	170	340	11000	1.5X10 ⁻³	185X10 ⁻³	0.02	1	±1.0	1400
FH11-104K-□□□□	240	480	9800	2.4X10ª	240X10°	0.02	1	±1.0	2100
FH11-126K-□□□□	420	840	8000	6.3X10 ⁻²	410X10*	0.02	1	±1.0	3410
FH11-144K-□□□□	700	1400	6800	9.2X10 ⁻²	760X10°	0.02	1	±1.0	4900

Note: The calculation of Inertia torque and weight is based on the max bore

■ Size of coulping

Model	¢d1 фd2 Воге	φD	φ D ₁	L	L1	w	М
FH11-46K-□□□□	10 11 12 14 16 1 9 20	46	32	45	20	5	M5
FH11-56K-□□□□	8 10 11 12 14 16 18 19 20	56	32	45	20	5	M5
FH11-68K-□□□□	11 14 16 18 19 20 22 24 25	68	40	56	25	6	МВ
FH11-82K-□□□□	14 16 18 19 20 24 25 28 30 35	82	54	66	30	6	МВ
FH11-94K-□□□□	19 20 24 28 30 35 38	94	58	68	30	8	M8
FH11-104K-	24 28 30 35 38 40 45	104	68	80	35	10	M8
FH11-126K-□□□□	30 35 38 40 45 50	126	78	91	40	11	M10
FH11-144K-□□□□	35 40 45 50 55 60	144	88	102	45	12	M12

重量轻,超低惯性和灵敏度,铝合金和不锈钢材料,夹紧螺丝固定。





For example: FH8x25x8x10

FH9: series No.Aluminum material d1 Bore: ød1=8mm d2 Bore: ¢d2=10mm

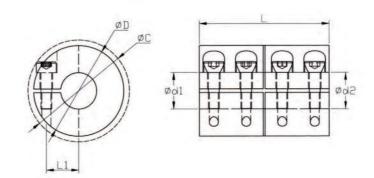
Specifications

Model	Rated Torque (N.m)	Rated Torque (r/min)	Angular deviation (*)	Weight (G)
FH8-16□□□	1	9300	2.9x10-7	8.2
FH8-20□□□	1	7400	8.6x10-7	14.5
FH8-25□□□	1.5	6000	2.6x10-6	28
FH8-32□□□	2.5	4600	7.0x10-6	50

Note: The calculation of Inertia torque and weight is based on the max bore

Size of coulping

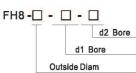
Model	od1 od2 Bore	φD	L	L1	М	Rated Torque (N.m)	Max Torque (N.m)
FH8-16□□□	3 4 5 6	16	24	6	M2.5	0.3	0.6
FH8-20□□□	5 6 8 10	20	30	7	M2.5	0.5	1
FH8-25□□□	8 10 11 12	25	36	9	M4	1	2
FH8-32□□□	12 14 15 16	32	41	10	M4	2	4



FH8 Series Clamping rigid coupling FH9 Series Clamped bellows coupling

高扭矩刚性和灵敏度,零回转间隙。波纹管结构补偿径向。度向和轴 向偏差,顺时针与逆时针弹性完全相同。夹紧式螺丝固定。





For example: FH9x32x12x14

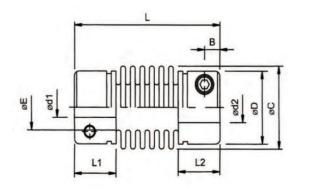
FH9 : series No.Aluminum material d1 Bore: ød1=12mm d2 Bore: ød2=14mm

Specifications

(N.m)	(N.m)	Max Speed (r/ min)	(Kg. m²)	Static torquerig-idity (N.m/rad)	Radial deviation (mm)	Angular deviation (°)	Axial deviation (mm)	Weight (G)
0.8	1.6	18000	3.4x10 ⁻⁷	100	0.1	1.5	±0.5	8
1.5	3	13000	8.9x10 ⁻⁷	160	0.1	1.5	±0.5	14
2	4	11000	2.8x10 ⁻⁷	220	0.15	2	±0.5	32
2.5	5	10000	8.8x10 ⁻⁷	310	0.2	2	±0.5	52
2.5	5	10000	8.9x10 ⁻⁷	310	0.2	2	±0.5	58
10	20	8000	1.5x10 ⁻⁷	520	0.2	2	±0.5	98
25	50	6000	2.3x10 ⁻⁷	850	0.2	2	±0.5	200
60	120	4500	2.8x10 ⁻⁷	960	0.2	2	±0.5	350
80	160	4500	6.0x10 ⁻⁷	1290	0.2	2	±0.5	710
	1.5 2 2.5 2.5 10 25 60 80	1.5 3 2 4 2.5 5 2.5 5 10 20 25 50 60 120 80 160	1.5 3 13000 2 4 11000 2.5 5 10000 2.5 5 10000 10 20 8000 25 50 6000 60 120 4500 80 160 4500	1.5 3 13000 8.9x10 ⁻⁷ 2 4 11000 2.8x10 ⁻⁷ 2.5 5 10000 8.9x10 ⁻⁷ 10 20 8000 1.5x10 ⁻⁷ 25 50 6000 2.3x10 ⁻⁷ 60 120 4500 2.8x10 ⁻⁷ 80 160 4500 6.0x10 ⁻⁷	1.5 3 13000 8.9x10 ⁻⁷ 160 2 4 11000 2.8x10 ⁻⁷ 220 2.5 5 10000 8.8x10 ⁻⁷ 310 2.5 5 10000 8.9x10 ⁻⁷ 310 10 20 8000 1.5x10 ⁻⁷ 520 25 50 6000 2.3x10 ⁻⁷ 850 60 120 4500 6.0x10 ⁻⁷ 960 80 160 4500 6.0x10 ⁻⁷ 1290	1.5 3 13000 8.9x10 ⁻⁷ 160 0.1 2 4 11000 2.8x10 ⁻⁷ 220 0.15 2.5 5 10000 8.8x10 ⁻⁷ 310 0.2 2.5 5 10000 8.9x10 ⁻⁷ 310 0.2 10 20 8000 1.5x10 ⁻⁷ 520 0.2 25 50 6000 2.3x10 ⁻⁷ 850 0.2 60 120 4500 6.0x10 ⁻⁷ 1290 0.2	1.5 3 13000 8.9x10 ⁻⁷ 160 0.1 1.5 2 4 11000 2.8x10 ⁻⁷ 220 0.15 2 2.5 5 10000 8.8x10 ⁻⁷ 310 0.2 2 2.5 5 10000 8.9x10 ⁻⁷ 310 0.2 2 10 20 8000 1.5x10 ⁻⁷ 520 0.2 2 25 50 6000 2.3x10 ⁻⁷ 850 0.2 2 60 120 4500 6.0x10 ⁻⁷ 1290 0.2 2 80 160 4500 6.0x10 ⁻⁷ 1290 0.2 2	1.5 3 13000 $8.9x10^{-7}$ 160 0.1 1.5 ± 0.5 2 4 11000 $2.8x10^{-7}$ 220 0.15 2 ± 0.5 2.5 5 10000 $8.8x10^{-7}$ 310 0.2 2 ± 0.5 2.5 5 10000 $8.9x10^{-7}$ 310 0.2 2 ± 0.5 10 20 8000 $1.5x10^{-7}$ 520 0.2 2 ± 0.5 25 50 6000 $2.3x10^{-7}$ 850 0.2 2 ± 0.5 60 120 4500 4500^{-7} 60 0.2 2 ± 0.5

■ Size of coulping

Model	od1 od2 Bore	φD	L	L1	М	Tighten torque (N.m)
FH9-16□□□	3 4 5 6	16	30	10.5	МЗ	0.7
FH9-20□□□	3 4 5 6 8 10 12	20	33	10.5	МЗ	0.7
FH9-25□□□	5 6.35 8 10 12	25	38	12.5	M4	1.7
FH9-32□□□	8 9.525 10 10 12 14	32	43	14	M4	1.7
FH9-32L□□□	8 10 12 14	32	54	14	M4	1.7
FH9-40□□□	10 11 12 14 16	40	62	21.5	M5	4
FH9-55□□□	12 14 15 18 19	55	72	23	M6	8
FH9-65□□□	19 20 22 24 25 38	65	81	25.5	М8	15
FH9-82□□□	22 24 25 28 30 42	82	103	34.5	M10	28



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