



COMPANY PROFILE



CHANGZHOU HETAI ELECTRIC MOTORS&APPLIANCE CO., LTD.

» ChangZhou Hetai (Stock code:834300) is a leading manufacturer with advanced technology and innovative management mode. Hetai specializes in producing servo motors, DC Motors, hybrid stepping motors, drivers and so on.

Hetai dedicates to professional electrical integration and automation strategies for customers. The products are almost applied in robots, packing machinery, textile machinery, medical instruments, printing machinery, intelligent logistics equipment... Hetai also sends its products to USA, Europe, Southeast Asia and all-around China.

Hetai is located in ChangZhou, JiangSu province and its workshop area is over 35,000. Since Hetai reformed in 1998, the specialization, scale of production has ensured to manufacture 3,000,000 motors every year.

» In the year 2003, Hetai was qualified by ISO9001/TS 16949 Certificate, and passed supervision successfully. The company also attained import and export right of external trade of self-management.

» In 2005, Hetai has qualified by EU Type Examination Certificate and get four Invention Patent, seven Utility Patent, and one Appearance Design Patent.

» Hetai was quoted on the stock market in 2015.

Hetai was authenticated by safety standardization management system in next year.

The company was qualified as high-tech enterprise in 2018.

Unit Conversion

Length

A \ B	mm	cm	m	Inch	Feet
mm	1	0.1	0.001	0.03937	0.003281
cm	10	1	0.01	0.3937	0.03281
m	1000	100	1	39.37	3.281
Inch	25.4	2.54	0.0254	1	0.08333
Feet	304.8	30.48	0.3048	12	1

Force

A \ B	g	kgf	oz	lb	Newton
g	1	0.001	0.03527	0.002205	0.0098
kgf	1000	1	35.27	2.205	9.807
oz	28.35	0.02835	1	39.37	0.278
lb	453.6	0.4536	16	1	4.448
Newton	102	0.102	3.597	0.2248	1

Torque

A \ B	Nm	Ncm	mNm	kgm*	kgcm*	gcm*	oz-in	lb-ft	lb-in
Nm	1	100	1000	0.102	10.2	10200	141.6	0.7376	8.851
Ncm	0.01	1	10	0.00102	0.102	102	1.416	0.007376	0.08851
mNm	0.001	0.1	1	0.000102	0.0102	10.2	0.1416	0.000738	0.008851
kgm*	9.807	980.7	9807	1	100	100000	1389	7.233	86.8
kgcm*	0.09807	9.807	98.07	0.01	1	1000	13.89	0.07233	0.868
gcm*	0.0009807	0.009807	0.009807	0.00001	0.001	1	0.01389	7.23E-05	0.000868
oz-in	0.007062	0.7062	7.062	0.0007201	0.07201	72.01	1	0.00521	0.0625
lb-ft	1.356	135.6	1356	0.1383	13.83	13830	192	1	12
lb-in	0.113	11.3	113	0.01152	1.152	1152	16	0.0833	1

Inertia

A \ B	kgm ²	kgcm ²	gcm ²	oz-in ²	oz-in-sec ²	lb-in ²	lb-in-sec ²	lb-ft ²	"lb-ft-sec ² (slug ft ²)"
kgm ²	1	10000	10000000	54,700	142	3420	8.85	23.7	0.738
kgcm ²	0.0001	1	1,000	5.47	0.0142	0.342	0.000885	0.00237	7.38E-05
gcm ²	0.0000001	0.001	1	0.00547	1.42E-05	0.000342	8.85E-07	2.37E-06	7.38E-08
oz-in ²	0.00001829	0.1829	183	1	0.00259	0.0625	0.000162	0.000434	1.35E-05
oz-in-sec ²	0.00706	70.62	70,600	386	1	24.1	0.0625	0.168	0.00521
lb-in ²	0.0002926	2.926	2,930	16	0.0414	1	0.00259	0.00694	0.000216
lb-in-sec ²	0.113	1,130	1130000	6,180	16	386	1	2.68	0.0833
lb-ft ²	0.0421	421.4	421,000	2,300	5.97	144	0.373	1	0.0318
"lb-ft-sec ² (slug	1.36	13,600	13600000	74,100	192	4,630	12	32.2	1

Servo Motor Series

Model Naming Rules

ES Series	60 Seat NO.	05 Polar logarithm	A Voltage	-100 Power	D Inertia	30 Speed	A Encoder	I Structure	-001 Derivation of the same
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For example: ES6005A-100D30A1

Series	Code	Meaning
Series	ES	High efficiency servo motor

Series	Code	Meaning
Series	40	40*40mm
	60	60*60mm
	80	80*80mm
	110	110*110mm
	130	130*130mm

Polar logarithm	Code	Meaning
Polar logarithm	04	4对极
	05	5对极
	08	8对极

Voltage	Code	Meaning
Voltage	A	310VDC(220VAC)
	B	380VAC
	C	155VDC(110VAC)
	D	110VDC
	E	80VDC
	F	60VDC
	G	48VDC
H	36VDC	
K	24VDC	

Power	Code	Meaning
Power	10	100W
	20	200W
	40	400W
	75	750W
	95	950W
	100	1KW
	120	1.2KW
	135	1.35KW
	150	1.5KW
	180	1.8KW
	200	2KW
	240	2.4KW
	300	3KW
	330	3.3KW
	400	4KW
420	4.2KW	
500	5KW	
510	5.1KW	

Inertia	Code	Meaning
Inertia	S	Small inertia
	D	Medium inertia
	E	Large inertia
	H	Increase of inertia

Speed	Code	Meaning
Speed	6	600rpm
	10	1000rpm
	15	1500rpm
	20	2000rpm
	30	3000rpm
	Other	code*100

Encoder	Code	Meaning
Encoder	A	Tamagawa single ring absolute value 17 bit (When the incremental 17 bit is used)
	B	Incremental 2500ppr (Optical encoder)
	L	Tamagawa single ring absolute value 17bit
	M	Rotary transformer
	Y	Yuheng multi ring absolute value 17bit
	No letter or K	No encoders
	P	Tamagawa single ring absolute value 23bit
	N	Nikon multi ring absolute value 24bit

Structure	Code	Meaning
Structure	1	Key shaft, Oil seal, No brake
	2	Key shaft, Oil seal, Brake
	3	Key shaft, NO oil seal, No brake
	4	Key shaft, NO oil seal, Brake
	5	Optic axis, Oil seal, No brake
	6	Optic axis, Oil seal, Brake
	7	Optic axis, NO oil seal, No brake
	8	Optic axis, NO oil seal, Brake

Connection Details

1.1 40;60;80 Series

Motor Wire: 4 PIN

PIN	FUNCTION	COLOUR
1	U	Red
2	V	White
3	W	Black
4	GND	Yellow/Green



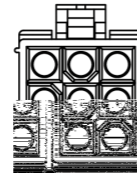
4 PIN



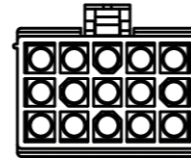
6 PIN

Motor Wire with Brake: 6 PIN

PIN	FUNCTION	COLOUR
1	U	Red
2	V	White
3	W	Black
4	GND	Yellow/Green
5	Brake	Yellow
6	Brake	Blue

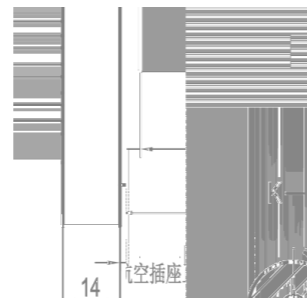


9 PIN



15 PIN

4 PIN (Resolver)



1.2 130 Series

Motor Wire: 4 PIN

PIN	FUNCTION	COLOUR
A	U	Red
B	V	White
C	W	Black
⏏	Motor PE	Yellow/Green

Motor Wire + Brake : 9 PIN

PIN	FUNCTION	COLOUR
F	U	Red
I	V	White
B	W	Black
H	Brake	Black
G	Brake	Black
E	Motor PE	Yellow/Green
D	Motor PE	Yellow/Green

17 PIN (Encoder)



9 PIN (Resolver)



2. Encoder Connection

Encoder Type A: 6 PIN

PIN	FUNCTION	COLOUR
1	NC	
2	SD	Blue
3	SD-	Purple
4	Vcc	White
5	GND	Black
6	Shield	/

Encoder Type B: 15 PIN

PIN	FUNCTION	COLOUR
1	Shield	NC
2	DC+5V	Red
3	GND	Black
4	B	Green
5	Z-	Yellow/White
6	U	Brown
7	Z	Yellow
8	U-	Brown/White
9	A	Grey
10	W	Orange
11	V	Blue
12	W-	Orange/White
13	A-	Grey/White
14	B-	Green/White
15	V-	Blue/White

Encoder Type L: 9 PIN

PIN	FUNCTION	COLOUR
1	0V	Black
2	/	/
3		Blue
4	+5V	Red
5	BAT-	Brown/Black
6	BAT+	Brown
7	SD-	Blue/Black
8	/	/
9	GND	Grey (Shield)

Encoder Type L: 17 PIN

PIN	FUNCTION	COLOUR
H	+5V	Red
G	0V	Black
T	BAT+	Brown
S	BAT-	Brown/Black
K	SD+	Blue
L	SD-	Blue/Black
J	GND	Grey

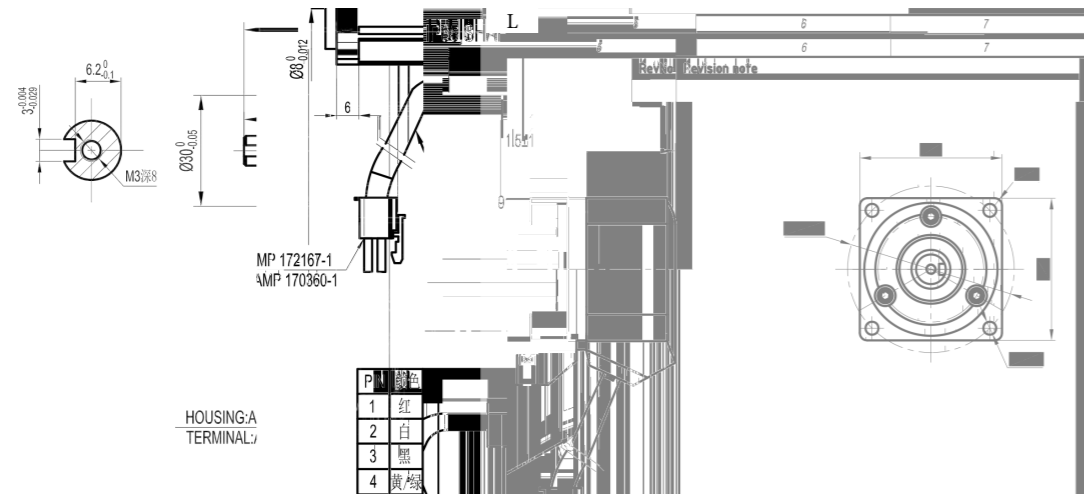
Encoder Type N: 9 PIN

PIN	FUNCTION	COLOUR
1	SD+	Blue
2	SD-	Purple
3	BAT+	Orange
4	/	/
5	/	/
6	+5V	White
7	0V	Black
8	BAT-	Brown
9	Shield	Shield

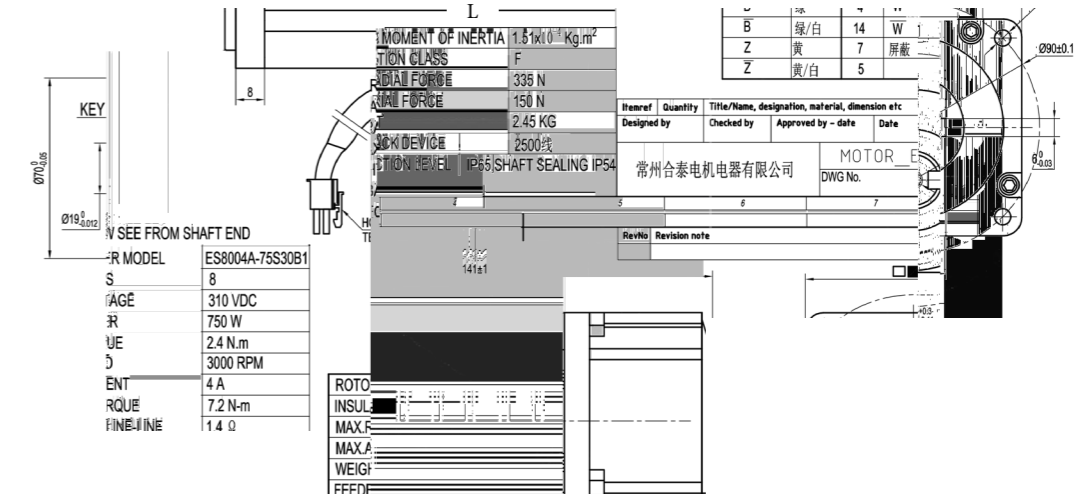
Mechanical Dimension

1. Without Brake Series

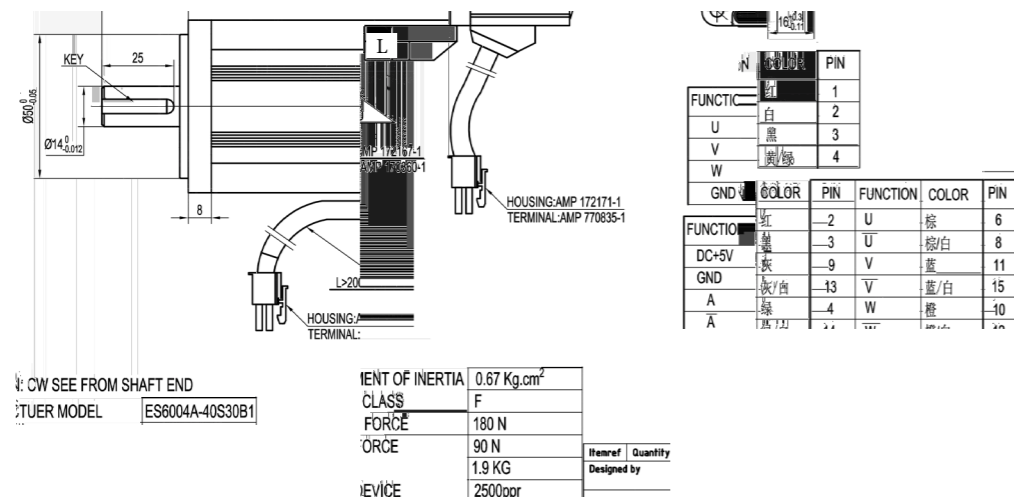
40 Series



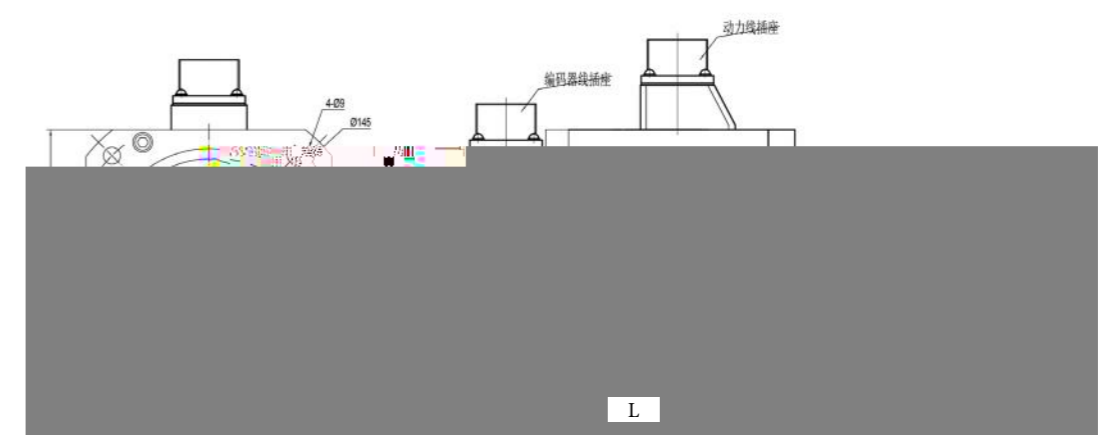
80 Series



60 Series



130 Series



Type	40	60
Encoder Power	50W, 100W	200W, 400W
Motor Length L (mm)	A	91.5, 101, 121
	B	136
	L	97, 116, 136
	N	65, 85, 81

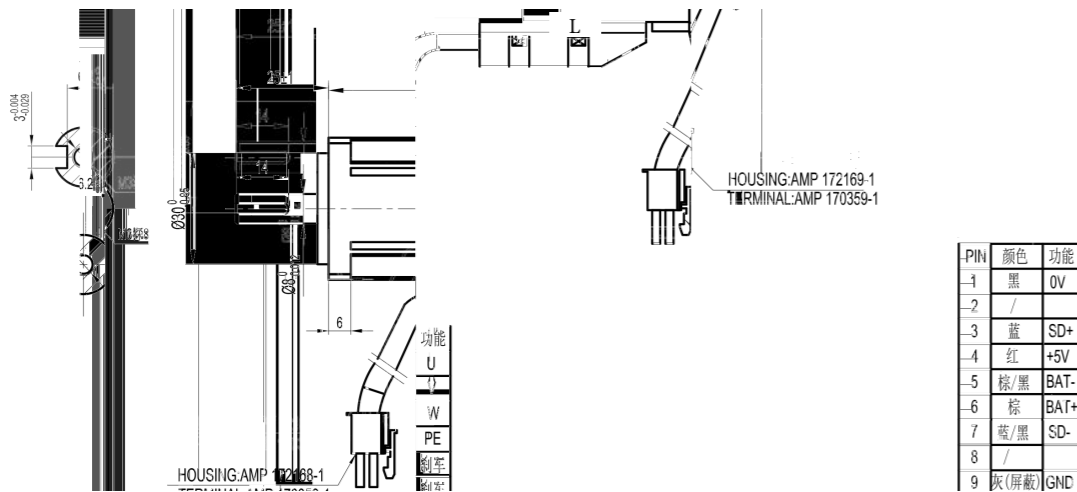
Type	40	60
Encoder Power	50W, 100W	200W, 400W
Motor Weight (Kg)	A	0.48, 0.98, 1.28
	B	1.35
	L	0.52, 1.05, 1.42
	N	0.34, 0.45, 0.86

Type	80	130
Encoder Power	750W	1kW, 1.5kW, 2kW, 4kW
机身高度 L (mm)	A	125
	B	141
	L	141, 143.5, 157, 171, 226
	N	

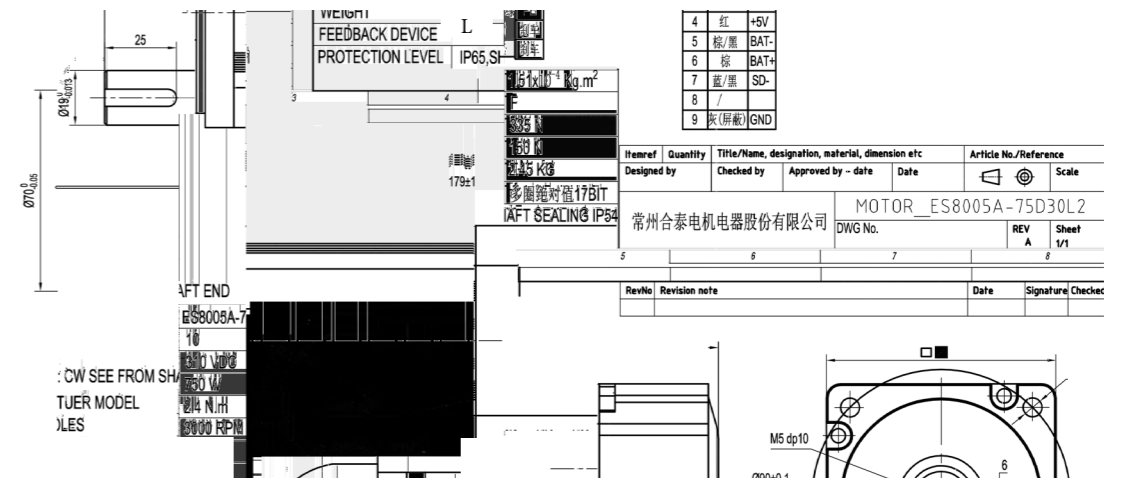
Type	80	130
Encoder Power	750W	1kW, 1.5kW, 2kW, 4kW
Motor Weight (Kg)	A	2.42
	B	2.43
	L	2.43, 5, 6.09, 7.2, 11.4
	N	

2. With Brake Series

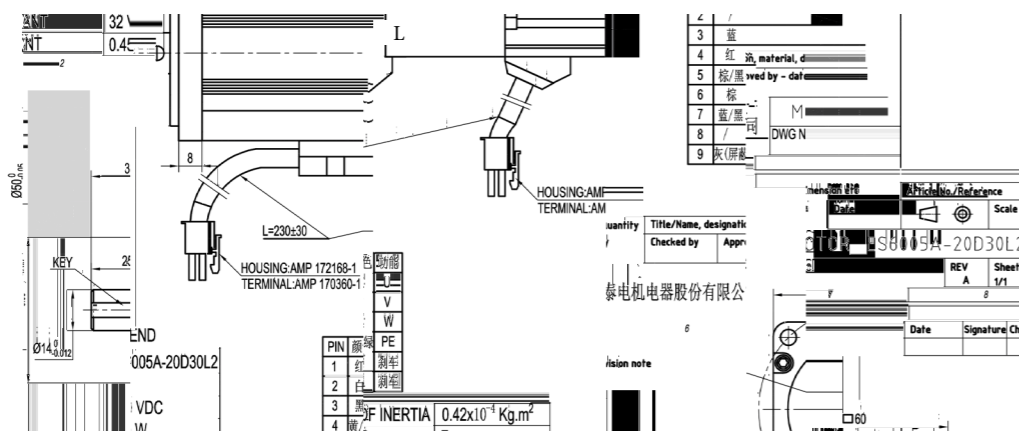
40 Series



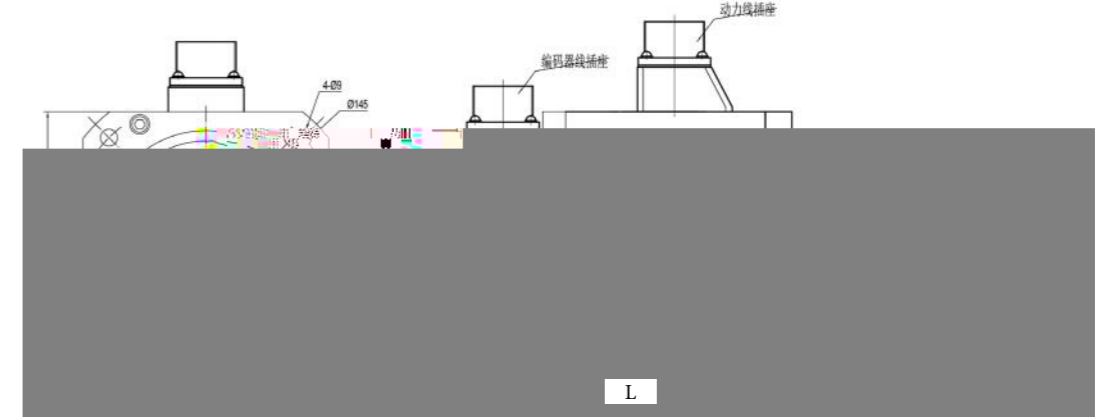
80 Series



60 Series



130 Series



Type	40	60
Encoder	50W	100W
Power	100W	200W
Motor Length L (mm)	127	135
	155	169
	127	150
	170	170
	95	115
	113	

Type	40	60
Encoder	50W	100W
Power	100W	200W
Motor Weight (Kg)	0.72	1.46
	1.85	1.80
	0.72	1.47
	1.86	
	0.58	1.23

Type	80	130
Encoder	750W	1kW
Power	1.5kW	2kW
Motor Length L (mm)	125.5	172
	179	182.5
	196	210
	262	

Type	80	130
Encoder	750W	1kW
Power	1.5kW	2kW
Motor Weight (Kg)	3.47	2.45
	2.45	3.49
	7.26	8.34
	9.47	13.6

40 Series



» SERVO MOTOR

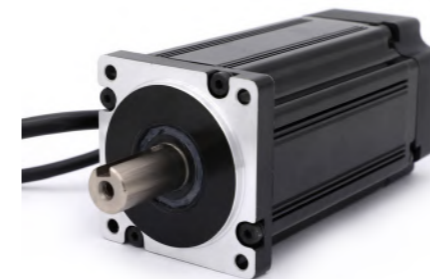
General Specifications

Insulation Class	F
Protection Level	IP65
Environment Requirement	Work: 0°C~+55°C Preserve: 20°C~80°C Work or Preserve: 90%RH (No Condensation) Above Sea Level 1000m Vibration: 5.88/S 2.10-60Hz

Technical Specifications

Model	ES4004A-10D30A1 ES4004A-10D30N1 ES4004A-10D30A2	ES4004A-10D30N2-001 ES4004A-10D30L1 ES4004A-10D30L2	ES4005A-05S30N1-001 ES4005A-05S30N2-001
Rated Power (Watts)	100		50
Rated Voltage (VDC)	310		310
Rated Current (Amps)	1.2		0.56
Rated Speed (RPM)	3000		3000
Rated Torque (N.m)	0.32		0.16
Peak Torque (N.m)	0.96		0.48
Back EMF Constant (V/kRPM)	16		16
Torque Coefficient (N.M/Amps)	0.265		0.265
Rotor Inertia (Kg.cm ²)	0.045		0.03
Line-line Resistance (Ω)	11		23
Line-line Inductance (mH)	8		16
Mechanical time-constant (Ms)	0.86		0.86

60 Series



» SERVO MOTOR

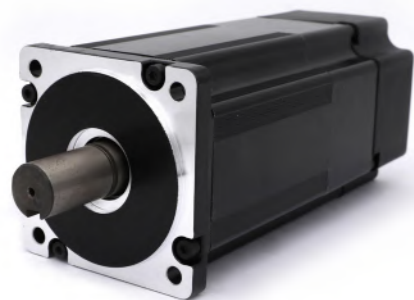
General Specifications

Insulation Class	F
Protection Level	IP65
Environment Requirement	Work: 0°C~+55°C Preserve: 20°C~80°C Work or Preserve: 90%RH (No Condensation) Above Sea Level 1000m Vibration: 5.88/S 2.10-60Hz

Technical Specifications

Model	ES6004A-40S30B1 ES6004A-40S30B2	ES6005A-40D30A2 ES6005A-40D30L1	ES6005A-40D30L2 ES6005A-40D30A1	ES6005A-20S30N1-T ES6005A-20S30N2-T ES6005A-20D30L1	ES6005A-20D30L2 ES6005A-20D30A1 ES6005A-20D30A2
Rated Power (Watts)	400			200	
Rated Voltage (VDC)	310				
Rated Current (Amps)	2.65			1.6	
Rated Speed (RPM)	3000				
Rated Torque (N.m)	1.27			0.64	
Peak Torque (N.m)	3.81			1.91	
Back EMF Constant (V/kRPM)	32				
Torque Coefficient (N.M/Amps)	0.48			0.45	
Rotor Inertia (Kg.cm ²)	0.67			0.42	
Line-line Resistance (Ω)	3.5	3.7		8.8	
Line-line Inductance (mH)	8.0	12.0		24.0	
Mechanical time-constant (Ms)	1.3				

80 Series



» SERVO MOTOR

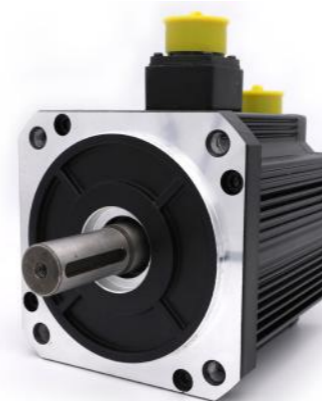
General Specifications

Insulation Class	F
Protection Level	IP65
Environment Requirement	Work: 0°C~+55°C Preserve: 20°C~80°C Work or Preserve: 90%RH (No Condensation) Above Sea Level 1000m Vibration: 5.88/S 2.10-60Hz

Technical Specifications

Model	ES8004A-75S30B1	ES8005A-75D30A1	ES8005A-75D30A2	ES8005A-75D30B2	ES8005A-75D30L1	ES8005A-75D30L2
Rated Power (Watts)				750		
Rated Voltage (VDC)				310		
Rated Current (Amps)				4.0		
Rated Speed (RPM)				3000		
Rated Torque (N.m)				2.4		
Peak Torque (N.m)				7.2		
Back EMF Constant (V/kRPM)				39		
Torque Coefficient (N.M/Amps)				0.6		
Rotor Inertia (Kg.cm ²)				1.51		
Line-line Resistance (Ω)	1.4			1.5		
Line-line Inductance (mH)	9.0			11.0		

130 Series



» SERVO MOTOR

General Specifications

Insulation Class	F
Protection Level	IP65
Environment Requirement	Work: 0°C~+55°C Preserve: 20°C~80°C Work or Preserve: 90%RH (No Condensation) Above Sea Level 1000m Vibration: 5.88/S 2.10-60Hz

Technical Specifications

Model	ES13005A-100D20L1	ES13005A-100D20L2	ES13005A-150D20L1	ES13005A-150D20L2	ES13005A-200D20L1	ES13005A-200D20L2	ES13005A-400D10L1	ES13005A-400D10L2
Rated Power (Watts)	1000		1500		2000		2000	
Rated Voltage (VDC)	310							
Rated Current (Amps)	5.5		8.8		12.0		9.5	
Rated Speed (RPM)	2000						1000	
Rated Torque (N.m)	4.70		8.80		9.55		20.00	
Peak Torque (N.m)	14.70		21.60		28.65		40.00	
Back EMF Constant (V/kRPM)	55		62		80	55	153	
Torque Coefficient (N.M/Amps)	0.6				0.79	0.6	1.5	
Rotor Inertia (Kg.cm ²)	4.5		6.7		8.9			17.8
Line-line Resistance (Ω)	1.20		0.80		0.50	0.46	1.10	
Line-line Inductance (mH)	12.0		8.4		5.4	6.5	13.7	