

Safety Precautions AC Servo Motor System

P/N	0601050011
Version	V 1.0
Date	Augus 2020

Warranty

Warranty Period:

The warranty period of products is eighteen (18) months from the manufactured date. But for brake type products, the shaft accelerated or decelerated times should be not over the specified limit times.

Warranty Coverage:

During the warranty period, the repair will be free when using correctly follow the manual instructions. But even during the warranty period, the repair is be charged when products are damaged or failed under below cases:

1. Failed or damaged due to mistake using, repairing or modifying self.
2. Failed or damaged due to falling, damaged during transportation after purchase.
3. Failed or damaged due to neglected the product specification to use.
4. Failed or damaged due to external factors, including but not limit to, fire, earthquake, lightning, storm, flood damage, salt damage, abnormal voltage, or any others natural disasters.
5. Failed or damaged due to invasion of foreign materials such as water, oil, metal chips.

The warranty is not applied to the accessory parts. We are not be liable for any indirect, incidental, or consequential damage caused by products failure or out of working.

Safety Precautions


Thanks for purchase our AC servo motor system products. For use our product correctly, please read through this manual instruction before using it.


Please always keep this manual instruction accessible to the operators, please contact us for the latest version of this manual instruction.

There is some continue changes maybe is no further notice since that we will try to do our best effort to update the latest version of this manual instruction on time.


Please be make sure to pass this manual instruction to the operators who actually operate this product.


The below symbols indicated two serious level injury loss or possible damage that caused by mistake or neglected specification to use this product

 危险 DANGER Identified information of imminent hazards that are possible to cause death or serious injury.







 注意 CAREFUL Identified information of imminent hazards that are possible to cause injury or damage.

The below symbols indicated two precautions which must be followed by users

 Safety precaution-prohibit doing.

 Safety precaution-be enforced.















The below symbols indicated the possible injury or damage
























































































	Danger and Caution: Maybe happens the unexpected or unstable motions, uncontrollable actions, shorten product performance or service life.		Fire Hazard
	Electric shock hazard		Injury Hazard
	Burns Hazard		Failure or hazard damage



Symbols	Precautions(Prohibit or Enforced Doing)	Possible Hazard Symbols
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Install or Wiring

	Never directly connect the motor to the commercial supply.	
	Do not keep the inflammable materials near the motor or amplifier.	
	Must install the protective cover for the product. Keep the safety distance follow manual instruction.	  
	Must install the product in a clean location with few dust, away from water or oil spray.	  
	Do not install the product on the nonflammable surface such as metal surface.	
	Must be sure that any wiring works carried by the qualified electrician.	
	Must be sure that always ground the FG terminals of motor or amplifier.	
	Must be cut off the circuit power, properly and methodically carry the wiring work.	

Handing or Operating			
	Never touch inside of amplifier.	 	
	Not damaged the cables, also do not stressed, loaded, or squeezed on it.	 	
	Never touch the revolving part of motor during it's in motion.		
	Do not use the this product in moisture, oil spray, corrosive atmosphere, flammable atmosphere environment, keep far away from flammable material.		
	Do not use this product in the location with vibrations or impact condition.	  	
	Do not use this product with cables deep into oil, water, any kind liquid.	 	
	Do not carry the wiring or operating work with wet hand.	  	
	Do not touch the key groove part of motor shaft with unprotected hand.		
	Do not touch the motor case or amplifier cooling fin which possible be high temperature.	 	
	Do not drive the motor rotating by external force.		
Other precaution			
	Be sure to safety verify after earthquake.	  	
	Carry out the properly installing and setting up, make sure that no injury or fire during earthquake or other disasters.	  	
	Must install the external circuit for immediately stop and cut off the power under emergency.	  	
Maintenance or Inspections			
	Never disassemble the motor or amplifier by self.	  	
	There is dangerously high voltage part inside amplifier. Must discharge over 5 minutes after power cut off before wiring or checking work for this product.		
注意 CAREFUL			
Symbols	Precautions(Prohibit or Enforced Doing)	Possible Hazard Symbols	
Install or Wiring			
	Do not directly touch the terminal by naked hand.	 	
	Do not cover the vent holes of amplifier. Do not allow the foreign materials into amplifier.	 	
	Must use the properly motor and amplifier combination which with matched specification.	 	
	Must make sure that the action is correct under the condition that motor is fixed and separated with machinery, then install the motor on the machinery.		
	Must make sure that motor is installed with properly fixed method, direction following manual.	 	
	Must properly choice the motor and modifier type by correct output power and weight.	 	
Handing or Operating			
	Do not step on the product, Do not pile up the heavy something on the product.	  	
	Never make the drastic or over spec change which possibility caused the unstable motions.		
	Do not approach your machinery after power restoration possibility there is unexpectedly restart. Your machinery must be designed to keep safety of person even it is unexpectedly restarting.		
	Do not use this product under directly sunlight environment.		
	Do not apply the impact into the product.		
	Never stop the motor with motor electrical brake which just designed for holding stop.		
	Never use the failure or damage product.	 	
		Must be make sure that use properly power.	
		Must install the brake parts for your machinery, Do not stop your machinery by motor brake.	
Must make sure that all error or problem are corrected then restart it after error alarmed.		 	
	Must install the circuit breake in series for emergency stop.	 	
Transporting or Storage			
	Do not storage in the location which subjected to water, moisture, toxic gas or liquids.		
	Do not hold the cables or shaft when handing products.	 	
	Prohibit falling or drop down or incline during transporting or installing.		
	Please contact us to consult the properly method if you want to storage longer time.		
	Must be storage the products in the properly location follow manual instructions.		
Other precaution			
	Must insulate the batteries and follow the local laws, regulations when abandon the products.		
	Must treat as industrial waste when need abandon the products.		
Maintenance or Inspections			
	Do not disassemble the products by self. Please request to our qualified technician.		
	Do not turn off and turn on the power of products frequently.		
	Do not soon touch the product after stop, possible burns your hand by high temperature.	  	
	Must be cut off the main circuit and power supplier when products error alarmed.	  	
	Must be cut off the main circuit and power if not using for a longer time.	 	

1. Product introduction

Servo Motor

Our company has produced magnetic encoder of 17bit resolution with excellent environmental resistance (no matter in dust,oil mist or vibration). We also produce the SE60-2 servo motor of high quality by means of its simple production structure and international brands of raw materials.

2. Product introduction and model selection

Introduction of nameplate and model name

model name

Series No

Aircraft power

Specification of motor

AC SERVO MOTOR

MODEL: SE60-2-013H30-11

Ver.: V1.0

MADE IN CHINA

Model identification

SE60-2-		013H30		B		-11	
Series name	Type	Rated output/Rotor inertia	Type	Holding brake	Type	Encoder	Type
40	40mm	R16M30 50W/Middle inertia	R16M30	N/A	I1	Incremental 17 bit	
60	60mm	003M30 100W/Middle inertia	003M30	B	A1	Absolute 17 bit	
80	80mm	006L30 200W/Low inertia	006L30				
130	130mm	006H30 200W/High inertia	006H30				
		013L30 400W/Low inertia	013L30				
		013H30 400W/High inertia	013H30				
		024L30 750W/Low inertia	024L30				
		024H30 750W/High inertia	024H30				
		050M20 1kW/Middle inertia	050M20				
		050H20 1kW/High inertia	050H20				
		075M20 1.5kW/Middle inertia	075M20				
		075H20 1.5kW/High inertia	075H20				
		100M20 2kW/Middle inertia	100M20				

Parts name of servo motor and drive

4 power cables (3 power cables and 1FG) Drive input U,V,W, electromagnetic brake cables (BRK1+BRK2)

4 encoder cables+shielded cable.Power supply to the encoder, data communication with the drive battery connection when using absolute encoder

Motor model	Diameter	Screws
R16M30	2-Φ4.5	M4X10
003M30	2-Φ4.5	M4X10
006L30 - 006H30	4-Φ5.5	M5X12
013L30 - 013H30	4-Φ5.5	M5X12
024L30 - 024H30	4-Φ6	M6X14
050M20 - 050H20	4-Φ9	M8X18
075M20 - 075H20	4-Φ9	M8X18
100M20	4-Φ9	M8X18

Model name of servo drive and motor

Capacity	Servo motor model (SE60-2 □□□□)		Motor size (Flange installation size)	Driver model	Size
50W	Middle inertia	R16M30	40	SV-E3P005A2	Frame A
100W	Middle inertia	003M30		SV-E3P010A2	
200W	Low inertia	006L30	60	SV-E3P020A2	
	High inertia	006H30			
400W	Low inertia	013L30	80	SV-E3P040A2	
	High inertia	013H30			
750W	Low inertia	024L30	80	SV-E3P075A2	
	High inertia	024H30			
1kW	Middle inertia	050M20	130	SV-E3P100A2	Frame B
	High inertia	050H20			
1.5kW	Middle inertia	075M20		SV-E3P150A2	
	High inertia	075H20			
2kW	Middle inertia	100M20		SV-E3P200A2	

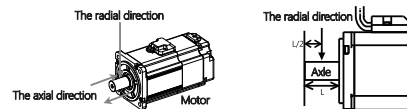
3. Product specification

Motor specification

Items	Unit	AC200V ~ 230V						
		Specification						
Voltage	V	DC280V						
Motor model (SE□□-2-*****-)	—	R16M30 Middle inertia	003M30 Middle inertia	006L30 Low inertia	006H30 High inertia	013L30 Low inertia	013H30 High inertia	
Install flange dimensions	mm	□60						
Mass	No brake	0.4	0.5	0.9	1.0	1.3	1.5	
	Brake	0.6	0.8	1.4	1.5	1.8	2.0	
Common specifications	Rated output	W	50	100	200		400	
	Rated torque	N·m	0.16	0.32	0.64		1.27	
	Max. Instantaneous torque	N·m	0.56	1.12	1.91		3.82	
	Rated current	Arms	0.6	0.9	1.7		2.7	
	Max. Instantaneous current	Arms	2.1	3.2	5.1		8.1	
	Rated speed	r/min	3000			3000		
	Max. speed	r/min	6000			5000		
	Torque constant	N·m/Arms	0.25	0.36	0.417		0.498	
	Induced voltage constant of each phase	mV/(r/min)	8.8	12.5	14.5		17.4	
	Rated power change rate	kW/s	5.6	13.6	23.9	9.3	58.7	23.5
	Mechanical time constant	ms	2.60	1.69	1.12	2.87	0.67	1.66
	Electrical time constant	ms	3.06	1.87	1.37	3.12	0.75	1.75
	Motor rotor inertia	×10kg·m ²	0.64	0.76	1.99		2.47	
	Permissible load	Radial load	0.045	0.074	0.17	0.43	0.28	0.70
	Axial load	0.053	0.082	0.21	0.47	0.31	0.74	
Encoder	17 bit serial communication (EIA422)							
Usage	Holding brake (Note: not for braking)							
Encoder specification	Power supply	SELV power, reinforced insulation should be performed from the dangerous voltage.						
	Rated voltage	V	DC24V±10%					
	Rated current	A	0.25				0.3	
	Static friction torque	N·m	0.16 or more	0.32 or more	1.27 or more			
	Absorption time	ms	35 or less			50 or less		
	Release time	ms	20 or less			15 or less		
	Release voltage	V	DC1V or more					
Ambient conditions	Rated time	Continuous						
	Ambient temperature for use	0°C ~ 40°C (Without condensation)						
	Ambient humidity for use	20 ~ 85%RH (Without condensation)						
	Ambient temperature for storage	-20°C ~ 65°C (Without condensation) Maximum temperature: 80°C for 72 hours						
	Ambient humidity for storage	20 ~ 85%RH (Without condensation)						
	Atmosphere for use	Inside (no direct sunlight), no corrosive gas, no inflammable gas, no oil, no dust						
	Insulation class	Class B						
	Insulation resistance	DC1000V-5MΩ or more						
	Dielectric strength	AC1500V 1 min						
	Altitude	1000m or less above sea level						
	Vibration class	V15 (JEC2121)						
	Vibration resistance	49m/s ² (5G)						
Impact resistance	98m/s ² (10G)							
Protective class	IP65							

Items	Unit	AC200V ~ 230V							
		Specification							
Voltage	V	DC280V							
Motor model (SE□□-2-*****-)	—	024L30 Low inertia	024H30 High inertia	050M20 Middle inertia	050H20 High inertia	075M20 Middle inertia	075H20 High inertia	100M20 Middle inertia	
Install flange dimensions	mm	□80		□130					
Mass	No brake	2.5	2.7	5.6	7.6	7.0	9.0	8.4	
	Brake	3.3	3.5	7.0	9.0	8.4	10.4	9.8	
Common specifications	Rated output	W	750	1000	1500	2000			
	Rated torque	N·m	2.39	4.77	7.16	9.55			
	Max. Instantaneous torque	N·m	7.1	14.3	21.5	28.6			
	Rated current	Arms	4.3	5.6	9.9	12.2			
	Max. Instantaneous current	Arms	12.9	16.8	30	36.6			
	Rated speed	r/min	3000			2000			
	Max. speed	r/min	4500			3000			
	Torque constant	N·m/Arms	0.61	0.88	0.81	0.85			
	Induced voltage constant of each phase	mV/(r/min)	21.33	30.9	28.4		29.6		
	Rated power change rate	kW/s	64.1	35.9	50.0	9.2	76.9	13.8	104.9
	Mechanical time constant	ms	52.8	32.1	36.5	8.6	61.4	13.3	87.9
	Electrical time constant	ms	0.53	0.94	0.76	4.17	0.60	3.32	0.58
	Motor rotor inertia	×10kg·m ²	0.64	1.06	1.05	4.43	0.75	3.46	0.69
	Permissible load	Radial load	0.89	1.62	4.56	24.9	6.67	37.12	8.70
	Axial load	1.08	1.81	6.24	26.4	8.35	38.65	10.38	
Encoder	17 bit serial communication (EIA422)								
Usage	Holding brake (Note: not for braking)								
Encoder specification	Power supply	SELV power, reinforced insulation should be performed from the dangerous voltage.							
	Rated voltage	V	DC24V±10%						
	Rated current	A	0.4			1.0			
	Static friction torque	N·m	2.39 or more			9.55 or more			
	Absorption time	ms	70			120			
	Release time	ms	20			30			
	Release voltage	V	DC1V or more						
Ambient conditions	Rated time	Continuous							
	Ambient temperature for use	0°C ~ 40°C (Without condensation)							
	Ambient humidity for use	20 ~ 85%RH (Without condensation)							
	Ambient temperature for storage	-20°C ~ 65°C (Without condensation) Maximum temperature: 80°C for 72 hours							
	Ambient humidity for storage	20 ~ 85%RH (Without condensation)							
	Atmosphere for use	Inside (no direct sunlight), no corrosive gas, no inflammable gas, no oil, no dust							
	Insulation class	Class B							
	Insulation resistance	DC1000V-5MΩ or more							
	Dielectric strength	AC1500V 1 min							
	Altitude	1000m or less above sea level							
	Vibration class	V15 (JEC2121)							
	Vibration resistance	49m/s ² (5G)							
Impact resistance	98m/s ² (10G)								
Protective class	IP65								

Output shaft permissible load



Permissible load	Unit	50W	100W	200W	400W	750W	1kW	1.5kW	2kW
The radial direction	N	68	68	245	245	392	490	490	490
The axial direction	N	58	58	98	98	147	196	196	196