PRODUCT DATASHEET

ES-SM-A03-040-T0P16NM-50W-003

AC Servo Motors

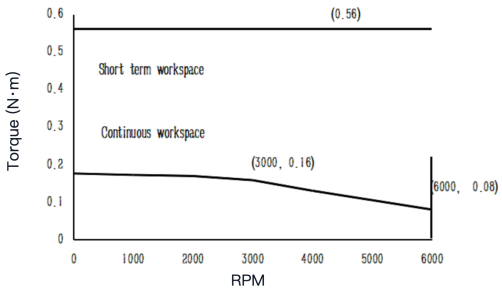
AC Servo Motors | ES-SM-A03-040 Compact 40 mm AC Servo Motor Series

Product Overview

AC Servo Motors with rated Torque 0.16 N·m, instantaneous Maximum Torque 0.56 N·m and rated Speed 3000 rpm.

Key Specifications

PARAMETER	VALUE	UNIT
Rated Torque	0.16	N·m
Instantaneous Maximum Torque	0.56	N·m
Rated Speed	3000	rpm
Continuous Rated Output Power	50	W
Rated Voltage	220	V AC
Instantaneous Maximum Current	3.3	A
Flange Size	40	mm
Torque Constant	0.2	N·m/A
Altitude and Derating Rule	highest altitude2000m,1000mabove,every rise100m,Power drop1.5%	



Torque-Speed Curve

Technical Specifications

PARAMETER	SPECIFICATION	UNIT
PERFORMANCE		
Rated Torque	0.16	N·m
Instantaneous Maximum Torque	0.56	N·m
Rated Speed	3000	rpm
Continuous Rated Output Power	50	W
Torque Constant	0.2	N·m/A
Rated Power	50	W
ELECTRICAL		
Rated Voltage	220	V AC
Instantaneous Maximum Current	3.3	A
Back EMF Constant	12.14	V/krpm
Insulation Class	F	
Motor Outlet Mode	Standard socket	
Pole Pairs	5	
Rated Current	0.88	A
Rotational Back-EMF Constant	12.14	V/krpm
Electrical Time Constant	0.606	ms

Technical Specifications

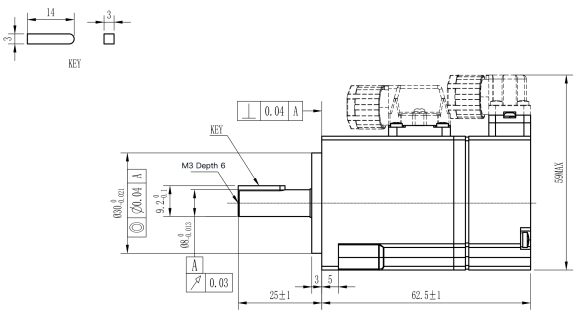
PARAMETER	SPECIFICATION	UNIT	NOTES
ELECTRICAL			
Position Feedback Device	23-bit multi-turn communication optical absolute encoder		
MECHANICAL			
Flange Size	40	mm	
Inertia Level	Low inertia		
Holding Brake Available	Without holding brake		
Mechanical Time Constant	1.308	ms	Brake Configuration: without_brake
Rotor Inertia	0.025 / 0.023	Kg·cm 2	Brake Configuration: without_brake
Bearing Radial Force Capacity	78	N	
Bearing Axial Force Capacity	54	N	
ENVIRONMENTAL			
Altitude and Derating Rule	highest altitude2000m,1000mabove,every rise100m,Power drop1.5%		
Operating Environment	Keep away from corrosive or flammable gases, oil droplets and dust		
Operating Humidity	≤90% RH, non-condensing		
Operating Temperature	-20 to 40°C (no freezing)		
Protection Rating	IP67, shaft end IP54 (Note: with shaft-end oil seal IP54, without oil seal IP50)		
CONFIGURATION			
Output Shaft Type	Keyed shaft		
ADDITIONAL SPECIFICATIONS			
Holding Brake	false		

Dimensional & Integration Overview

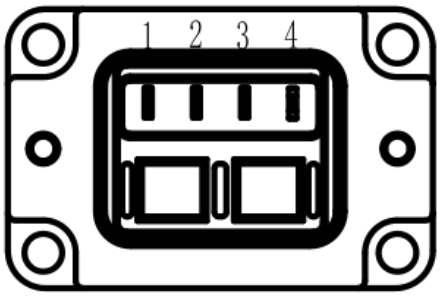
Mechanical Overview

PARAMETER	VALUE	UNIT
Flange Size	40	mm
Inertia Level	Low inertia	
Holding Brake Available	Without holding brake	
Mechanical Time Constant	1.308	ms
Rotor Inertia	0.025 / 0.023	Kg·cm2
Bearing Radial Force Capacity	78	N

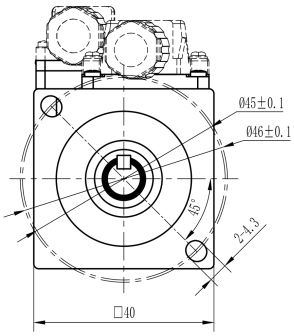
Dimensional Drawings



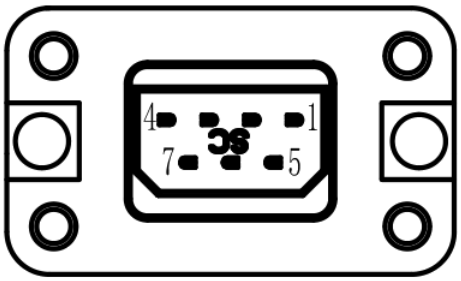
Mechanical View 1



Power Connector Pinout



Mechanical View 3



Feedback Connector Pinout

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 1	Key profile length	14 mm
	Key feature label	Key feature
	0.04 geometric tolerance relative to datum A	Geometric tolerance 0.04 to datum A
	Shaft key feature label	Key feature on shaft
	Threaded hole size and depth	M3 thread, depth 6 mm
	Maximum overall height	59 mm maximum
	Datum A	
	Diameter 0.04 geometric tolerance	Cylindrical tolerance zone diameter 0.04 mm
	Main shaft diameter	Diameter 30 mm, +0 / -0.021 mm
	Keyway related dimension	9.2 mm, +0 / -0.1 mm
	Small shaft diameter	Diameter 8 mm, +0 / -0.013 mm
	Datum A	Datum A on shaft feature
	0.03 geometric tolerance	Geometric tolerance 0.03 mm
	Bottom step width	3 mm
	Main body length	62.5 ± 1 mm
	Shaft extension length	25 ± 1 mm

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 3	Locating diameter	Diameter 45 ±0.1
	Outer locating diameter	Diameter 46 ±0.1
	Mounting hole angular position	45 degrees
	Square mounting face side length	Square 40

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01 Specifications are subject to change without notice. Verify the current product configuration before final design release.

02 2D drawings, CAD files and integration documentation are controlled documents and are supplied separately on request.