ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-A03-040-T0P16NM-50W-001	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

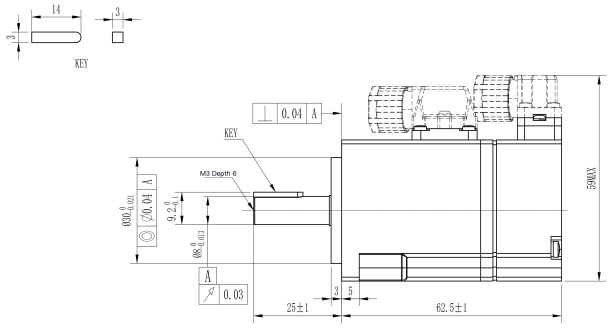
Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

Key Integration Facts

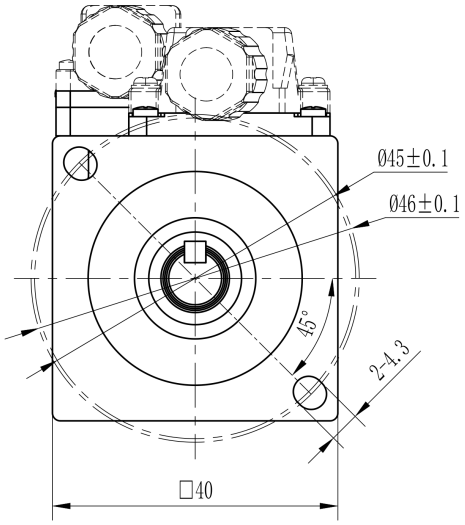
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	0.16 N·m
Rated Speed	3000 rpm
Rated Voltage	220 VAC
Flange Size	40 mm

Product Structure & Views

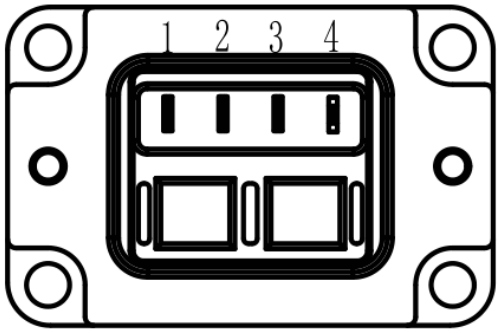
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



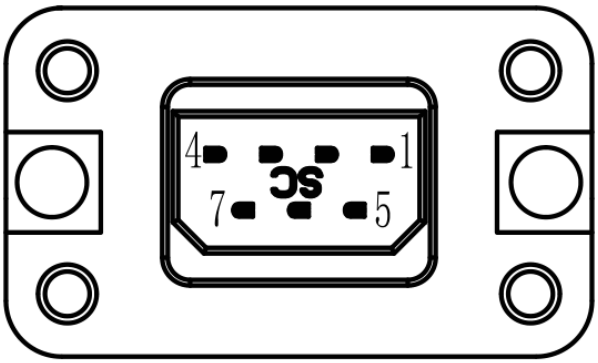
Mechanical View 1



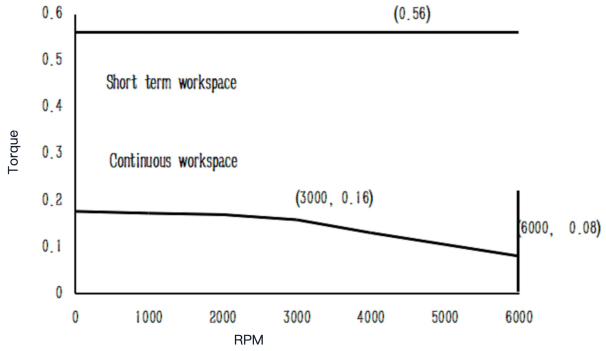
Mechanical View 2



Mechanical View 5



Mechanical View 8



Mechanical View 10

VIEW	FIELD	VALUE
Mechanical View 1	Key length	14 mm
	Key feature label	Key feature
	Perpendicularity tolerance	Perpendicularity 0.04 relative to datum A
	Key feature label	Key feature on shaft
	M3 threaded hole depth	M3 thread depth 6 mm
	Maximum overall height	Maximum 59 mm
	Position tolerance	Position tolerance diameter 0.04 relative to datum A
	Mounting pilot diameter	Diameter 30 mm, +0/-0.021 mm
	Keyway slot dimension	9.2 mm, +0/-0.1 mm
	Output shaft diameter	Diameter 8 mm, +0/-0.013 mm
	Datum A	Datum A
	Step spacing	3 mm
	Step spacing	5 mm
	Geometric tolerance	Geometric tolerance 0.03
	Body length	62.5 mm ±1 mm
	Shaft extension length	25 mm ±1 mm
	Key Height	3 mm
	Key Width	3 mm
Mechanical View 2	Pilot diameter	Diameter 45 ±0.1
	Pilot step diameter	Diameter 46 ±0.1
	Mounting hole angular position	45 degrees
	Square flange side length	Square 40
	Mounting Holes	2-4.3
Mechanical View 5	Connector terminal number	Terminal 2
	Power connector pin position 1	Pin position 1
	Connector pin position 3	Pin position 3
	Connector pin position 4	Pin position 4
Mechanical View 8	Feedback connector label	SC
	Feedback connector terminal number	Pin 1
	Connector pin number	Pin label: 5
	Connector pin number	Pin label: 4
	Connector pin number	Pin label: 7
Mechanical View 10	Torque axis tick 0.6	Torque tick = 0.6
	Short-term workspace maximum torque callout	Short-term torque limit = 0.56
	Torque axis tick 0.5	Torque tick = 0.5
	Short-term workspace label	Short-term operating region

VIEW	FIELD	VALUE
Torque axis tick 0.4	Torque tick = 0.4	
Torque axis tick 0.3	Torque tick = 0.3	
Y-axis parameter	Y-axis = Torque	
Continuous workspace label	Continuous operating region	
Continuous torque curve point	Speed = 3000 rpm, torque = 0.16	
Torque axis tick 0.2	Torque tick = 0.2	
High-speed continuous torque curve point	Speed = 6000 rpm, torque = 0.08	
Torque axis tick 0.1	Torque tick = 0.1	
Torque axis zero tick	Torque tick = 0	
Speed axis tick 0	Speed tick = 0 rpm	
Speed axis tick 1000	Speed tick = 1000 rpm	
Speed axis tick 2000	Speed tick = 2000 rpm	
Speed axis tick 3000	Speed tick = 3000 rpm	
Speed axis tick 4000	Speed tick = 4000 rpm	
Speed axis tick 5000	Speed tick = 5000 rpm	
Speed axis tick 6000	Speed tick = 6000 rpm	
X-axis unit	X-axis unit = rpm	

Overall Dimensions and Mounting Interface

PARAMETER	PUBLISHED VALUE	UNIT
Flange Size	40	mm

- Confirm the mounting face, locating feature, shaft geometry, fastener engagement and removal clearance against the applicable exact-SKU drawing.
- Mount the motor on a flat, rigid interface and avoid using fasteners to pull a misaligned assembly into position.

Shaft, Coupling and Load Path

PARAMETER	PUBLISHED VALUE	UNIT
Rotor Inertia	0.025 ( )	Kg·cm2

- Align the driven shaft and coupling before tightening; validate radial, axial and moment loads against applicable bearing-load data.
- Do not hammer, uncontrolled press-fit or transmit installation force through the motor bearings.

Electrical, Feedback and Brake Integration

PARAMETER	PUBLISHED VALUE	UNIT
Rated Voltage	220	VAC
Position Feedback Device	17-bit multi-turn communication magnetic absolute encoder	

- Use only the current winding, feedback, brake and connector definitions for this exact SKU.
- Verify drive compatibility, polarity, current limits, feedback direction and brake sequencing before enabling torque.

Thermal, Duty and Environmental Conditions

PARAMETER	PUBLISHED VALUE	UNIT
Rated Torque	0.16	N·m
Operating Temperature	-20 40	°C

- Validate winding and housing temperature under the installed duty cycle, ambient condition, mounting heat path and enclosure airflow.
- Published peak values are transient boundaries and must not be treated as continuous operating ratings.

Cable Routing, Grounding and EMC

PARAMETER	PUBLISHED VALUE	UNIT
Position Feedback Device	17-bit multi-turn communication magnetic absolute encoder	

- Provide strain relief and bend radius through the full machine motion envelope.
- Separate motor power, brake and feedback wiring and terminate shields according to the specified system grounding architecture.

Commissioning and Motion Validation

PARAMETER	PUBLISHED VALUE	UNIT
Rated Speed	3000	rpm
Rated Torque	0.16	N·m

- Commission at low energy with the transmission unloaded or safely restrained, then confirm direction, feedback polarity, brake final integration, current limit and fault response.
- Validate the complete axis through intended acceleration, speed, load, stop and fault cycles during integration planning.

Integration Checklist

01	Confirm the exact SKU, 2D drawing and applicable wiring data.
02	Verify mounting, shaft, coupling, alignment, fasteners and removal clearance.
03	Validate radial and axial loads, inertia, acceleration and credible shock cases.
04	Confirm drive, winding, feedback, brake and connector compatibility.
05	Set current, speed, acceleration and thermal limits from the installed duty cycle.
06	Verify cable routing, shielding, grounding, strain relief and bend radius.
07	Commission at low energy before validating the full machine cycle.

View SKU Product Datasheet Request controlled 2D drawing Request controlled STEP review Request a Quote

Engineering Use and Verification Notice

01. This Dimensional & Integration Guide applies only to EmbodyStack SKU ES-SM-A03-040-T0P16NM-50W-001 and is intended for dimensional evaluation and preliminary integration. It is not a applicable manufacturing drawing, wiring definition, application approval, machinery risk assessment, safety validation or integration planning document. Before design freeze, machining, wiring or energization, verify all dimensions, tolerances, mounting and locating features, load boundaries, electrical interfaces, thermal conditions, cabling, grounding, protection, commissioning and applicable regulatory requirements against the applicable EmbodyStack engineering data for this exact SKU. Where this guide and applicable product documentation differ, the applicable product documentation governs. Validate the complete installed system under intended duty cycles, loads, accelerations, environmental conditions and credible fault cases.