

ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-L01-040S-V48-TOP16NM-50W-001	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

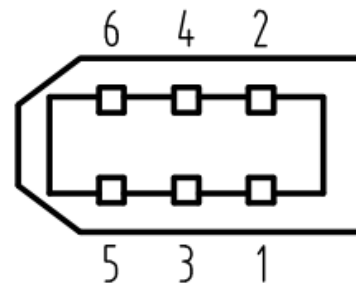
Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

Key Integration Facts

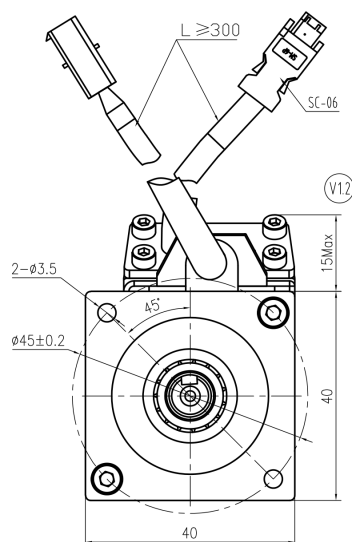
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	0.16 Nm
Rated Speed	3000 rpm
Rated Voltage	48 VDC
Flange Size	40 mm

Product Structure & Views

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

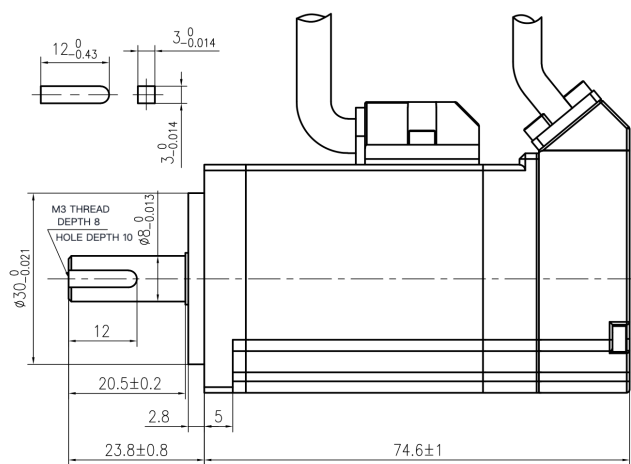


Mechanical View 3

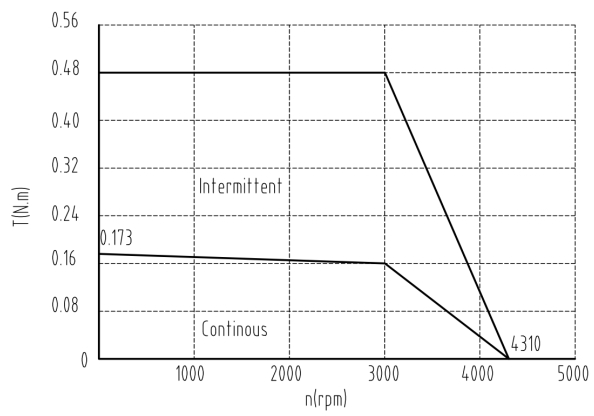


Mechanical View 6

Mechanical View 4



Mechanical View 7



Mechanical View 8

VIEW	FIELD	VALUE
Mechanical View 3	Connector pin number 2	Pin 2
	Connector pin number 1	Pin 1
	Connector pin number 4	Pin 4
	Connector pin number 3	Pin 3
Mechanical View 4	Connector upper row left pin number	Pin 6
	Connector upper row middle pin number	Pin 4
	Connector upper row right pin number	Pin 2
	Connector lower row left pin number	Pin 5
	Connector lower row middle pin number	Pin 3
	Connector lower row right pin number	Pin 1
Mechanical View 6	Cable length	L ≥300 mm
	Connector body marking	SM-6P
	Version label	Version V1.2
	Maximum protrusion height	15 mm max
	Mounting hole quantity and diameter	2 × Ø3.5 mm holes
	Mounting hole angular position	45 degrees
	Mounting circle diameter	Ø45 ±0.2 mm
	Mounting face height	40 mm
	Mounting face width	40 mm
Mechanical View 7	Keyway or flat feature length	12 mm, +0 / -0.43
	Keyway or flat feature width	3 mm, +0 / -0.014
	Keyway or flat feature depth	3 mm, +0 / -0.014
	Shaft diameter	Diameter 8 mm, +0 / -0.013
	Threaded hole size and thread depth	M3 thread, thread depth 8 mm
	Hole depth	Hole depth 10 mm
	Outer diameter	Diameter 30 mm, +0 / -0.021
	Shaft-end slot length	12 mm
	Shaft extension length	20.5 mm ±0.2
	Step or clearance length	2.8 mm
	End step length	5 mm
	Main body length	74.6 mm ±1
	Front extension overall length	23.8 mm ±0.8
Mechanical View 8	Torque axis scale labels	Torque scale values: 0 to 0.56 N.m
	Torque axis title	Torque T in N.m
	Speed axis scale labels	Speed scale values: 1000 to 5000 rpm
	Speed axis title	Rotational speed n in rpm

VIEW	FIELD	VALUE
Intermittent operation curve label	Intermittent operation region/curve	
Continuous operation curve label	Continuous operation region/curve	
Continuous curve starting torque callout	Continuous curve callout value 0.173 N.m	
Curve endpoint speed callout	Curve endpoint speed 4310 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	0.021 / 0.018	Kg·cm ²

- 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	48	VDC

- 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 to 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

- 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-L01-040S-V48-TOP16NM-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.