

ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-L02-040S-V48-TOP32NM-100W-002	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

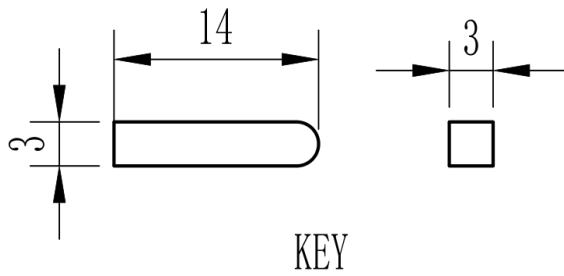
Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

Key Integration Facts

INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	0.32 N·m
Rated Speed	3000 rpm
Rated Voltage	48 VDC
Flange Size	40 mm

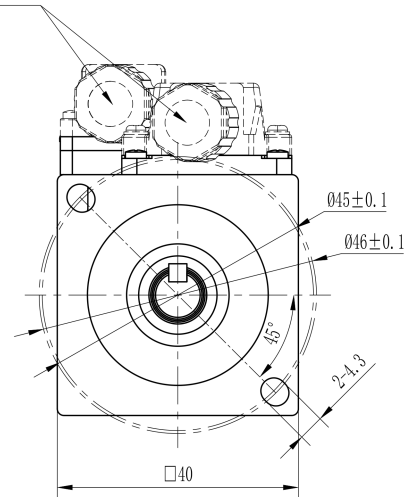
Product Structure & Views

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

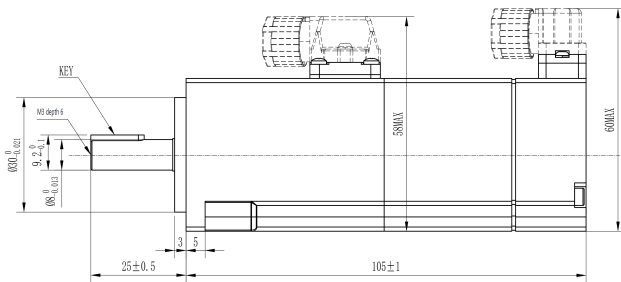


Mechanical View 1

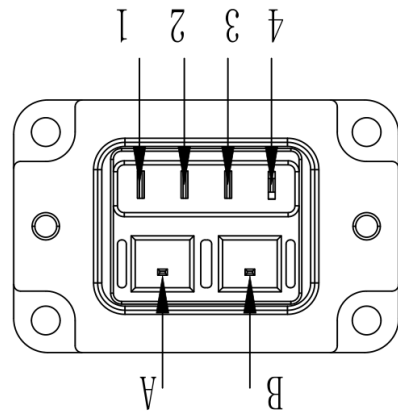
Cables/connectors not included.



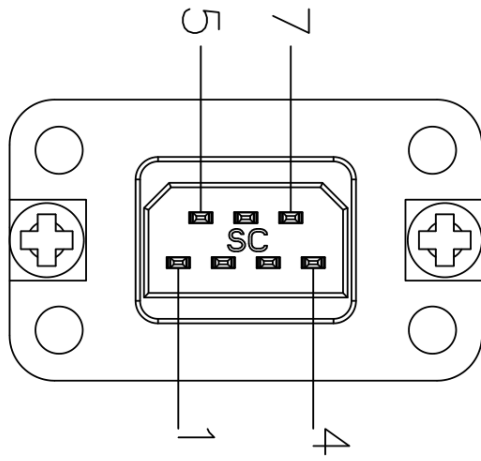
Mechanical View 2



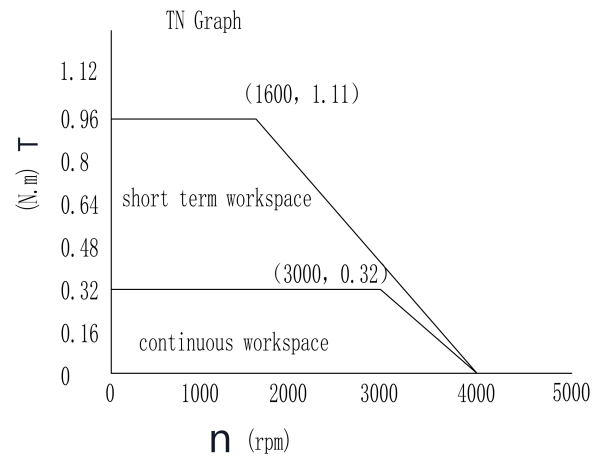
Mechanical View 3



Mechanical View 5



Mechanical View 7



Mechanical View 10

VIEW	FIELD	VALUE
Mechanical View 1	Keyway length	14 mm
	Keyway height/depth	3 mm
	Keyway width	3 mm
	Keyway designation	KEY
Mechanical View 2	Outer diameter 1	Ø45±0.1
	Outer diameter 2	Ø46±0.1
	Square envelope side length	40
	Mounting Holes	2-4.3
	Mounting hole angular position	45 degrees
Mechanical View 3	Keyway identifier	KEY
	Mounting thread depth	M3 thread, 6 mm depth
	Output shaft diameter with tolerance	Ø30 h7 (0/-0.021)
	Keyway depth with tolerance	9.2 (0/-0.1)
	Keyway width with tolerance	8 (0/-0.013)
	Motor body maximum height	58 mm maximum
	Overall maximum height	60 mm maximum
	Shaft extension length segment 1	3
	Shaft extension length segment 2	5
	Total shaft extension length	25±0.5
Mechanical View 5	Overall length	105±1
	Connector pin column identifier - Column 1	Column 1
	Connector pin column identifier - Column 2	Column 2
	Connector pin column identifier - Column 4	Column 4
	Connector pin row identifier - Row A	Row A
	Connector pin row identifier - Row B	Row B
Mechanical View 7	Connector terminal position 3	Terminal position 3
	Connector pin number - upper left	Pin 5
	Connector pin number - upper right	Pin 7
	Connector type identifier	SC
	Connector pin number - lower left	Pin 1
	Connector pin number - lower right	Pin 4
Mechanical View 10	Graph Title	TN Graph (Torque-Speed Characteristic)
	Y-axis Label (Torque)	T (Nm)
	X-axis Label (Speed)	n (rpm)
	Short-term Operating Zone Start Point	1600 rpm at 1.11 Nm
	Continuous Operating Zone Start Point	3000 rpm at 0.32 Nm

VIEW	FIELD	VALUE
Short-term Operating Zone Label	Short-term Operating Zone	
Continuous Operating Zone Label	Continuous Operating Zone	
Y-axis Scale Values	Torque scale: 0 to 1.12 Nm in 0.16 Nm increments	
X-axis Scale Values	Speed scale: 0 to 5000 rpm in 1000 rpm increments	

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	0.044 / 0.046	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	0.32	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	0.32	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-L02-040S-V48-TOP32NM-100W-002 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.