ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-L01-040S-V48-T0P16NM-50W-002	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

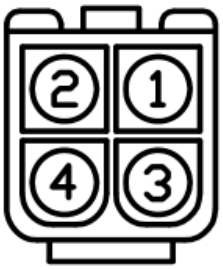
Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

Key Integration Facts

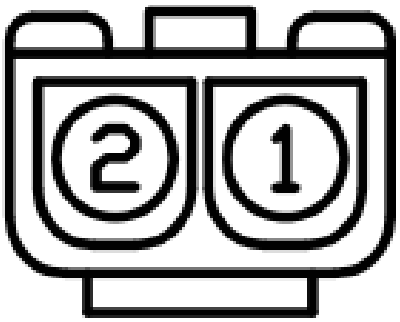
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	0.16 N·m
Rated Speed	3000 rpm
Rated Voltage	48 VDC
Flange Size	40 mm

Product Structure & Views

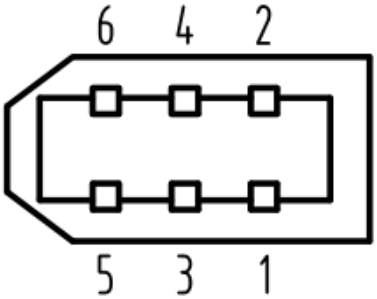
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



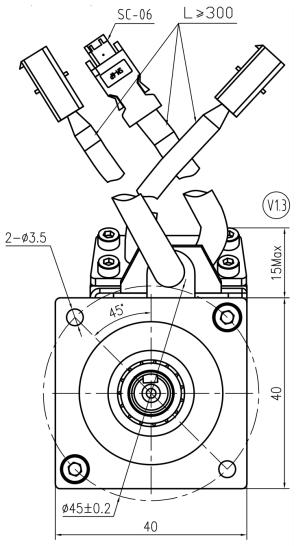
Mechanical View 5



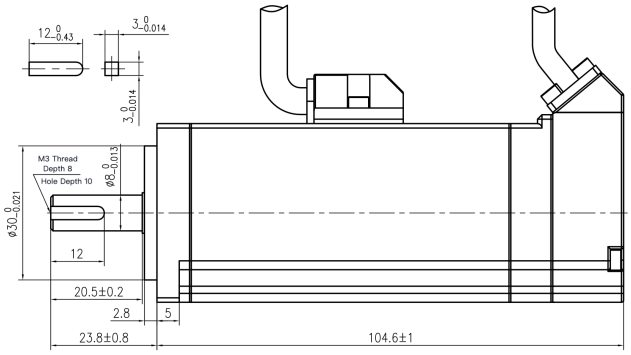
Mechanical View 6



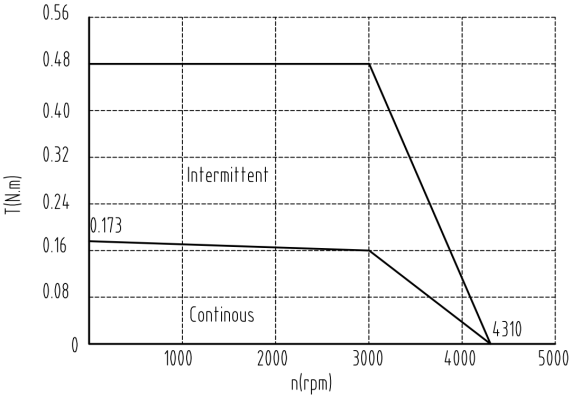
Mechanical View 7



Mechanical View 9



Mechanical View 10



Mechanical View 11

VIEW	FIELD	VALUE
Mechanical View 5	Connector terminal number 2	Terminal/pin label 2
	Connector terminal number 1	Terminal/pin label 1
	Connector terminal number 4	Terminal/pin label 4
	Connector terminal number 3	Terminal/pin label 3
Mechanical View 6	Connector terminal/pin number	Pin 2
	Terminal position number	Position 1
Mechanical View 7	Connector upper-left pin number	Pin 6
	Connector upper-middle pin number	Pin 4
	Connector upper-right pin number	Pin 2
	Connector lower-left pin number	Pin 5
	Connector lower-middle pin number	Pin 3
	Connector lower-right pin number	Pin 1
Mechanical View 9	Cable length	L ≥300
	Revision mark	V1.3
	Mounting hole quantity and diameter	2 × Ø3.5
	Maximum clearance height	15 max
	Mounting hole angular spacing	45°
	Mounting face vertical dimension	40
	Mounting locating circle diameter	Ø45 ±0.2
	Mounting face horizontal dimension	40
Mechanical View 10	Keyway width	3 mm, +0 / -0.014 mm
	Keyway length	12 mm, +0 / -0.43 mm
	Hole diameter	Diameter 8 mm, +0 / -0.013 mm
	Thread specification and thread depth	M3 thread, thread depth 8 mm
	Hole depth	Hole depth 10 mm
	Shaft diameter	Diameter 30 mm, +0 / -0.021 mm
	Slot or shaft-end length	12 mm
	Shaft-end length	20.5 mm ±0.2 mm
	Step offset length	2.8 mm
	Step length	5 mm
	Total shaft extension length	23.8 mm ±0.8 mm
	Main body length	104.6 mm ±1 mm
Mechanical View 11	Torque axis label	Torque T in N.m
	Speed axis label	Rotational speed n in rpm
	Intermittent operation region	Intermittent operating curve/region
	Continuous operation region	Continuous operating curve/region

VIEW	FIELD	VALUE
Torque scale values	Torque axis ticks: 0 to 0.56 N.m	
Speed scale values	Speed axis ticks: 1000 to 5000 rpm	
Continuous torque callout value	Continuous torque callout: 0.173 N.m	
Curve endpoint speed callout	Curve endpoint speed callout: 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	0.018 / 0.021	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	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-T0P16NM-50W-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.