ENGINEERING DOCUMENTATION

# Rotary Servo Motor

Dimensional & Integration Guide

| DOCUMENT | REVISION / ISSUE | STATUS |
| --- | --- | --- |
| DIG-ES-SM-L01-040S-V48-T0P32NM-100W-002 | DRAFT-08 / 27 Aug 2026 | Engineering Integration Reference |

## Integration Overview

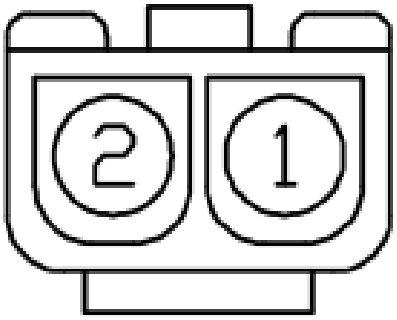
Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

## Key Integration Facts

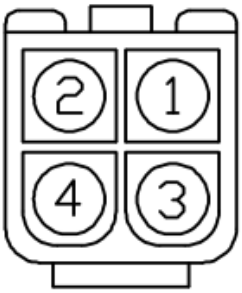
| INTEGRATION ITEM | PUBLISHED VALUE |
| --- | --- |
| Rated Torque | 0.32 N·m |
| Rated Speed | 3000 rpm |
| Rated Voltage | 48 VDC |
| Flange Size | 40 mm |

# Product Structure & Views

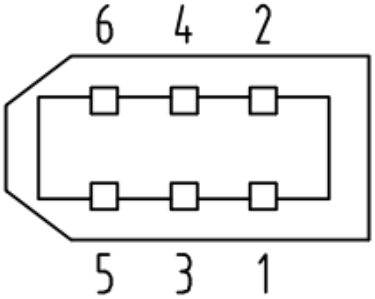
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



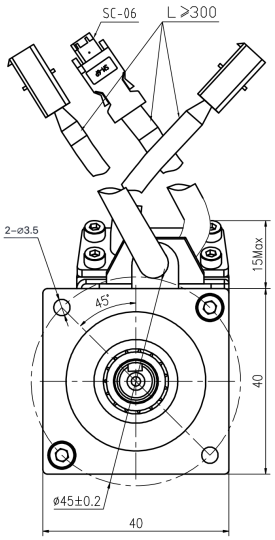

Mechanical View 5



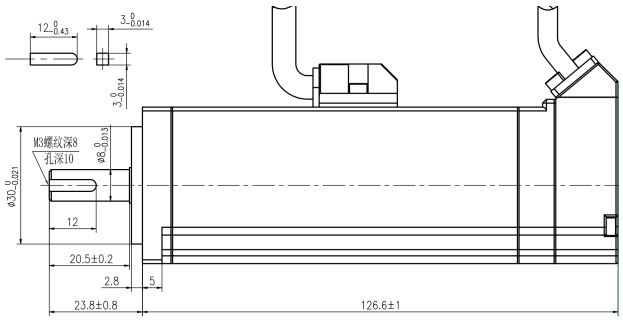

Mechanical View 6



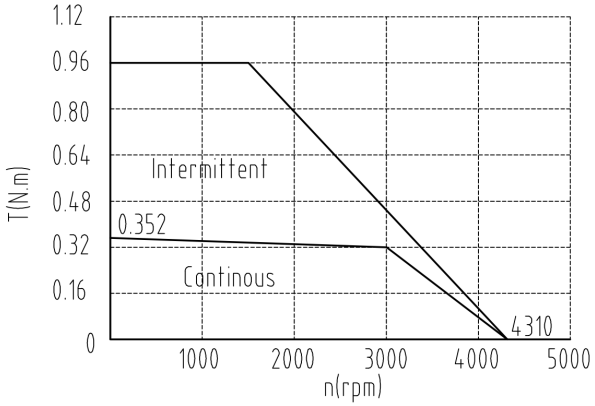

Mechanical View 7




Mechanical View 9




Mechanical View 10




Mechanical View 11

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 5 | Connector terminal/cavity number 2 | Connector cavity label 2 |
| | Connector terminal/cavity number 1 | Connector cavity label 1 |
| Mechanical View 6 | 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 7 | Connector pin numbering layout | Connector pin labels: top row 6, 4, 2; bottom row 5, 3, 1 |
| Mechanical View 9 | Cable length requirement | L > 300 |
| | Connector or cable identifier | SC-06 |
| | Mounting hole quantity and diameter | 2 holes, diameter 3.5 |
| | Maximum height or clearance | 15 max |
| | Mounting angle | 45 degrees |
| | Vertical mounting face size | 40 |
| | Locating circle diameter and tolerance | Diameter 45 ±0.2 |
| | Horizontal mounting face size | 40 |
| Mechanical View 10 | Keyway width | Width 3 mm, upper deviation 0, lower deviation -0.014 |
| | End flat or slot length | Length 12 mm, upper deviation 0, lower deviation -0.43 |
| | Keyway height or depth | Height/depth 3 mm, upper deviation 0, lower deviation -0.014 |
| | Threaded hole specification and depth | M3 threaded hole, thread depth 8 mm, hole depth 10 mm |
| | Shaft end diameter | Diameter 8 mm, upper deviation 0, lower deviation -0.013 |
| | Main shaft shoulder diameter | Diameter 30 mm, upper deviation 0, lower deviation -0.021 |
| | Shaft end slot length | Length 12 mm |
| | Shaft end protrusion length | Length 20.5 mm ±0.2 |
| | Step clearance length | Length 2.8 mm |
| | Shaft shoulder step length | Length 5 mm |
| | Front mounting reference length | Length 23.8 mm ±0.8 |
| | Motor body overall length | Length 126.6 mm ±1 |
| Mechanical View 11 | Torque axis label | Torque T in N.m |
| | Speed axis label | Rotational speed n in rpm |
| | Torque scale values | Torque scale values: 0 to 1.12 N.m |
| | Speed scale values | Speed scale values: 1000 to 5000 rpm |
| | Intermittent operation curve | Intermittent torque-speed curve |
| | Continuous operation curve | Continuous torque-speed curve |
| | Continuous curve starting torque callout | Continuous curve callout: 0.352 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 | 0.033 / 0.036 | 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 | 0.32 | 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-L01-040S-V48-T0P32NM-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.