ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-L02-080D-V48-T3P18NM-1000W-001	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

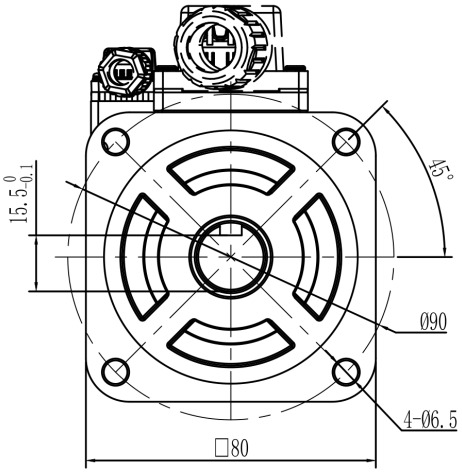
Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

Key Integration Facts

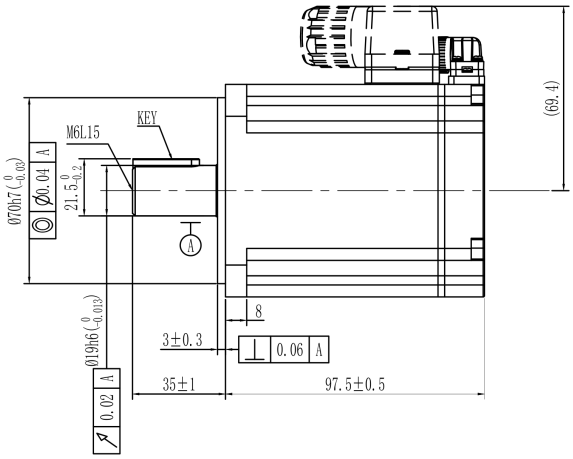
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	3.18 N·m
Rated Speed	3000 rpm
Rated Voltage	48 VDC
Flange Size	80 mm

Product Structure & Views

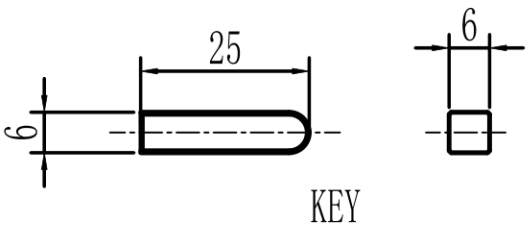
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



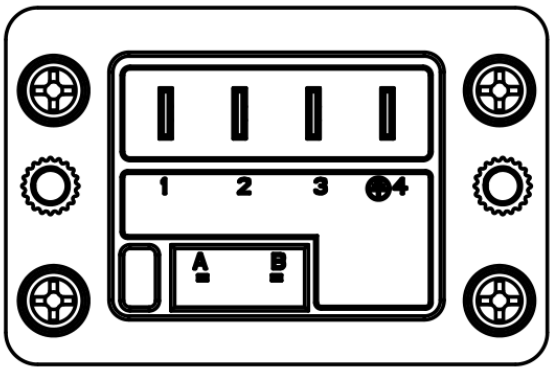
Mechanical View 1



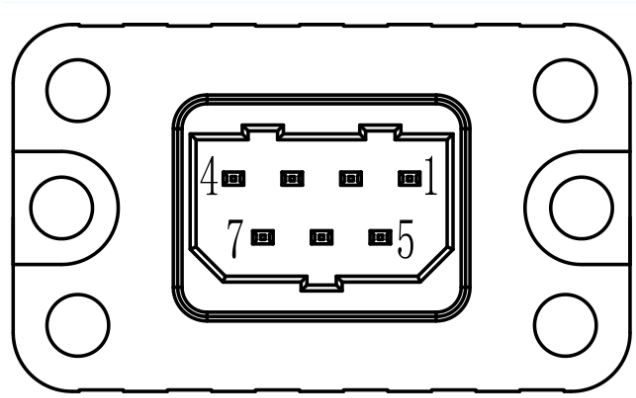
Mechanical View 2



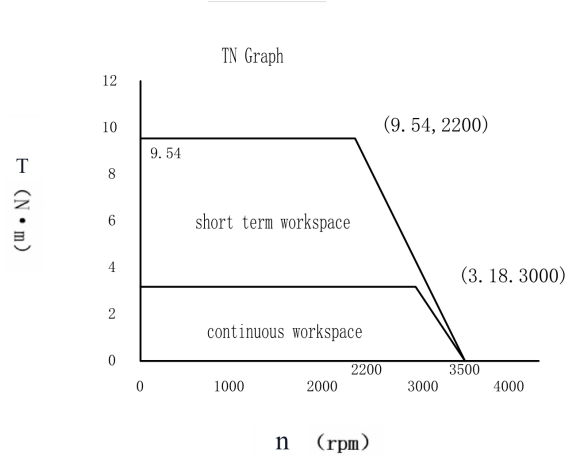
Mechanical View 3



Mechanical View 5



Mechanical View 7



Mechanical View 9

VIEW	FIELD	VALUE
Mechanical View 1	Flange face to shaft end distance	15.5±0.1 mm
	Mounting hole angular position	45°
	Mounting hole pitch circle diameter (PCD)	Ø90 mm
	Number and diameter of mounting holes	4 holes × Ø6.5 mm
	Square flange side length	80 × 80 mm square
Mechanical View 2	Shaft diameter (h7 fit)	Ø70h7 (-0.03)
	Shaft diameter (reference)	Ø69.4 (reference)
	Keyway identifier	Keyway present
	Threaded mounting hole	M6 thread depth 15mm
	Datum A (left face)	Datum A
	Shaft section length	21.5 -0.2
	Position tolerance	Position tolerance 0.04
	Datum A (axis reference)	Datum A
	Depth or length dimension	8
	Bore diameter (h6 fit)	Ø19h6 (-0.013)
	Boss or groove width	3±0.3
	Perpendicularity tolerance to datum A	Perpendicularity 0.06 A
	Axial dimension	35±1
	Total length	97.5±0.5
	Geometric tolerance to datum A	0.02 A
Mechanical View 3	Keyway length	25 mm
	Keyway width	6 mm
	Keyway depth	6 mm
	Feature label	Keyway feature
Mechanical View 5	Power connector pin 1	Pin 1
	Power connector pin 2	Pin 2
	Power connector pin 3	Pin 3
	Power connector pin 4	Pin 4
	Terminal A	Terminal A
	Terminal B	Terminal B
Mechanical View 7	Connector pin number	Pin label: 4
	Connector pin number	Pin label: 1
	Connector pin number	Pin label: 7
	Connector pin number	Pin label: 5
Mechanical View 9	Chart Title	TN Graph (Torque-Speed Curve)
	Y-axis Label (Torque)	T (N·m) - Torque axis

VIEW	FIELD	VALUE
X-axis Label (Speed)	n (rpm) - Speed axis	
Y-axis Tick Values	0, 2, 4, 6 8, 9, 10, 12 N·m	
X-axis Tick Values	0, 1000, 2000, 2200, 3000, 3500, 4000 rpm	
Short-time Duty Zone Label	Short-time Duty Zone	
Continuous Duty Zone Label	Continuous Duty Zone	
Peak Torque Operating Point (Short-time Duty)	Peak torque point: T = 9.54 N·m at n = 2200 rpm	
Short-time Duty Rated Torque (Y-axis callout)	9.54 N·m (short-time duty torque level marked on Y-axis)	
Continuous Duty Zone Torque Corner Point	Continuous duty corner point: T = 3.18 N·m at n = 3000 rpm	

Overall Dimensions and Mounting Interface

PARAMETER	PUBLISHED VALUE	UNIT
Flange Size	80	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	2.2 / 2.04	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	3.18	N·m
Operating Temperature	-5 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	3.18	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-L02-080D-V48-T3P18NM-1000W-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.