ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-A03-080S-T2P39NM-750W-004	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

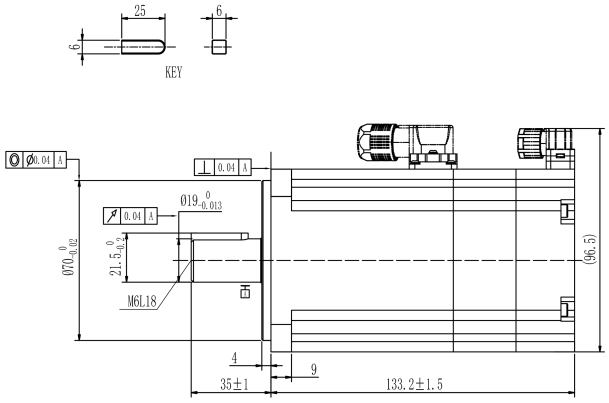
Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

Key Integration Facts

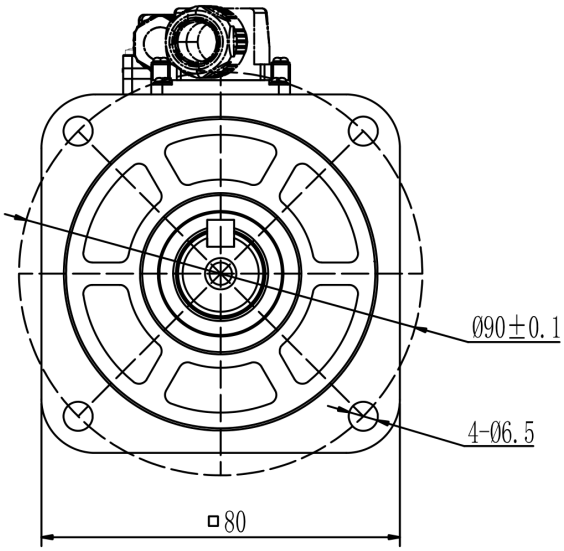
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	2.39 N·m
Rated Speed	3000 rpm
Rated Voltage	220 VAC
Flange Size	80 mm

Product Structure & Views

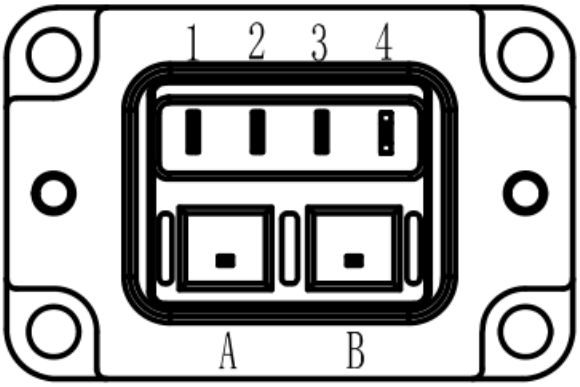
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



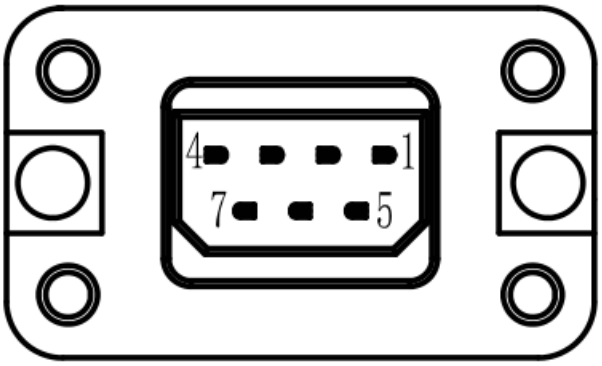
Mechanical View 1



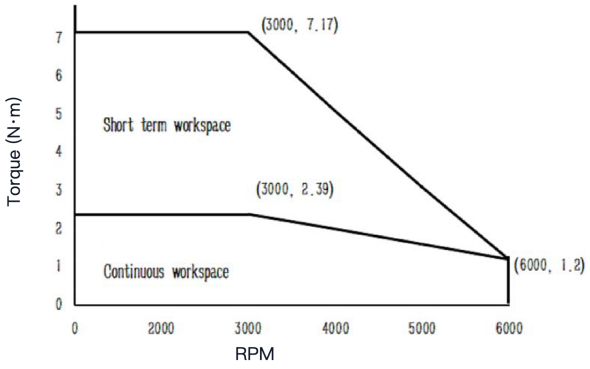
Mechanical View 2



Mechanical View 5



Mechanical View 9



Mechanical View 11

VIEW	FIELD	VALUE
Mechanical View 1	Key length	25 mm
	Key width or height	6 mm
	Key feature label	KEY
	Position tolerance relative to datum A	Position tolerance Ø0.04 relative to datum A
	Perpendicularity tolerance relative to datum A	Perpendicularity tolerance 0.04 relative to datum A
	Shaft diameter	Ø19 mm, upper deviation 0, lower deviation -0.013
	Geometric tolerance relative to datum A	Geometric tolerance 0.04 relative to datum A
	Step height or mounting face dimension	21.5 mm, upper deviation 0, lower deviation -0.2
	Mounting locating diameter	Ø70 mm, upper deviation 0, lower deviation -0.02
	Reference envelope height	96.5 mm reference
	Threaded hole specification and depth	M6 thread, depth/length 18 mm
	Datum A	Datum A
	Local axial dimension	4 mm
	Local axial dimension	9 mm
	Front axial length	35 mm ±1
	Main body axial length	133.2 mm ±1.5
	Keyway width	6 mm
Mechanical View 2	Mounting hole pitch circle diameter	Pitch circle diameter Ø90 ±0.1
	Mounting hole quantity and diameter	4 holes, diameter Ø6.5
	Square mounting flange outside dimension	Square flange size □80
Mechanical View 5	Connector pin position 2	Pin position label: 2
	Connector terminal label B	Terminal label: B
	Connector terminal label A	Terminal label: A
	Connector Pin 1	Pin 1
	Connector terminal position 3	Terminal position 3
	Connector Pin 4	Pin 4
Mechanical View 9	Connector pin number	Pin label: 1
	Connector pin number	Pin label: 5
	Connector pin number	Pin label: 4
	Connector pin number	Pin label: 7
Mechanical View 11	Short-term duty upper limit point	At 3000 RPM, torque is 7.17 N·m
	Boundary point between short-term and continuous duty zones	At 3000 RPM, torque is 2.39 N·m
	Continuous duty zone endpoint	At 6000 RPM, torque is 1.2 N·m
	Torque Scale	0–7 N·m
	Motor Speed Scale	0–6000 rpm

VIEW	FIELD	VALUE
Short-term operating zone label	Short-term operating zone	
Continuous operating zone label	Continuous operating zone	
Y-axis label: Torque	Torque in Newton-meters	
X-axis label	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	0.95 ( )	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	220	VAC
Position Feedback Device	23-bit multi-turn communication optical absolute encoder	

- 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	2.39	N·m
Operating Temperature	-20 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

PARAMETER	PUBLISHED VALUE	UNIT
Position Feedback Device	23-bit multi-turn communication optical absolute encoder	

- 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	2.39	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-A03-080S-T2P39NM-750W-004 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.