ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-L02-080D-V48-T4P77NM-1500W-001	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

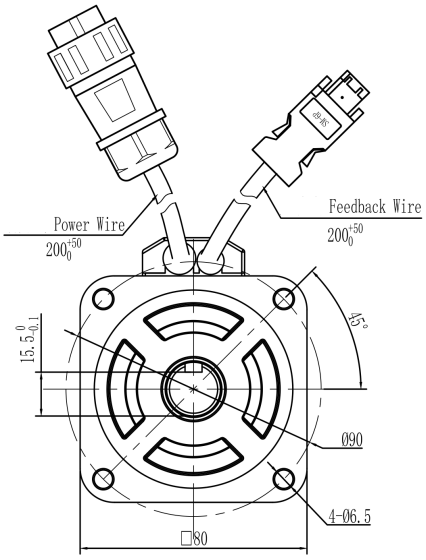
Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

Key Integration Facts

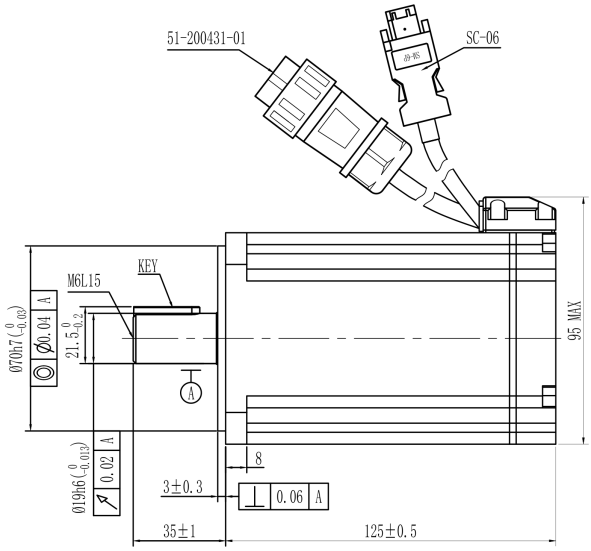
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	4.77 N·m
Rated Speed	3000 rpm
Rated Voltage	48 VDC
Flange Size	80 mm

Product Structure & Views

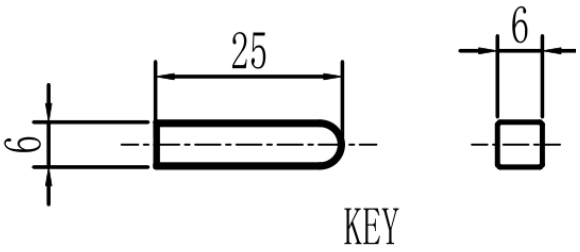
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



Mechanical View 1

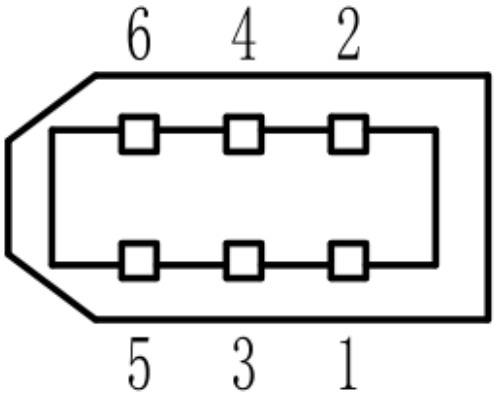


Mechanical View 2

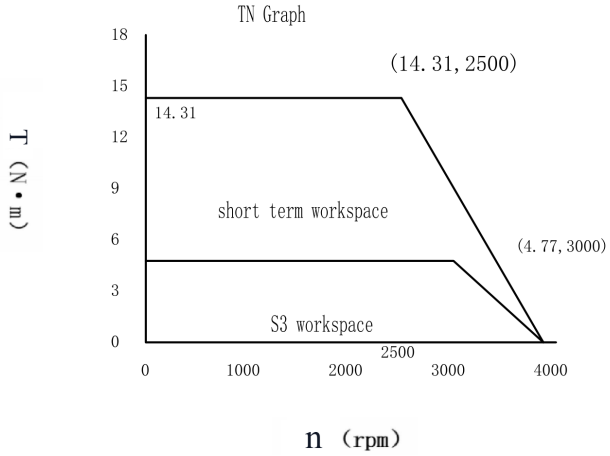


Mechanical View 3

Mechanical View 5



Mechanical View 7



Mechanical View 9

VIEW	FIELD	VALUE
Mechanical View 1	Feedback connector type	SM-6P connector
	Feedback wire label	Feedback Wire
	Power wire label	Power Wire
	Feedback wire cable length	200mm nominal, +50mm tolerance
	Power wire cable length	200mm nominal, +50mm tolerance
	Mounting dimension with tolerance	15.5 +0/-0.1 mm
	Circular feature diameter	⌀90mm
	Mounting hole pattern	4 holes, ⌀6.5mm each
	Square flange side length	□80mm
	Angular reference	45°
Mechanical View 2	Connector part number	51-200431-01
	Connector type	SM-6P
	Keyway designation	Keyway present
	Mounting threaded hole	M6×15 depth
	Datum A	Datum A
	Shaft outer diameter with tolerance	Ø70h7 (0/-0.03)
	Position tolerance	Position Ø0.04
	Shaft segment length	21.5 +0.2/0
	Shaft end diameter with tolerance	Ø19h6 (0/-0.013)
	Perpendicularity tolerance	Perpendicularity 0.02 to A
	Shaft segment length	8
	Keyway depth	3±0.3
	Parallelism tolerance	Parallelism 0.06 to A
	Keyway position dimension	35±1
	Overall length	125±0.5
	Maximum outer diameter	Ø95 maximum
Mechanical View 3	Keyway length	25 mm
	Keyway width	6 mm
	Keyway depth	6 mm
	Feature label	KEY
Mechanical View 5	Power connector pin layout	Four-pin configuration, numbered 1-4 in cross pattern
Mechanical View 7	Pin number 6	Pin 6
	Pin number 4	Pin 4
	Pin number 2	Pin 2
	Pin number 5	Pin 5
	Pin number 3	Pin 3

VIEW	FIELD	VALUE
Pin number 1	Pin 1	
Mechanical View 9	Rated Torque	14.31 N·m
	Rated Operating Point	14.31 N·m @ 2500 rpm
	Maximum Speed Operating Point	4.77 N·m @ 3000 rpm
	Short Term Workspace	Short term duty zone above rated torque
	S3 Workspace	S3 intermittent duty zone
	Speed Range	0 to 4000 rpm
	Torque range	0 - 18 Nm
	Torque (Y-axis)	T(N.m)
	Speed (X-axis)	n(rpm)
	Graph title	TN Graph

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	3.27 / 3.1	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	4.77	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	4.77	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-T4P77NM-1500W-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.