

ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-A03-080D-T3P18NM-1000W-003	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

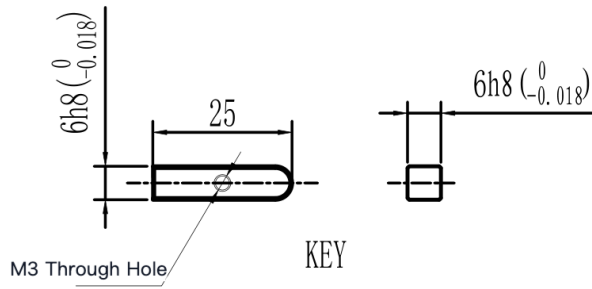
Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

Key Integration Facts

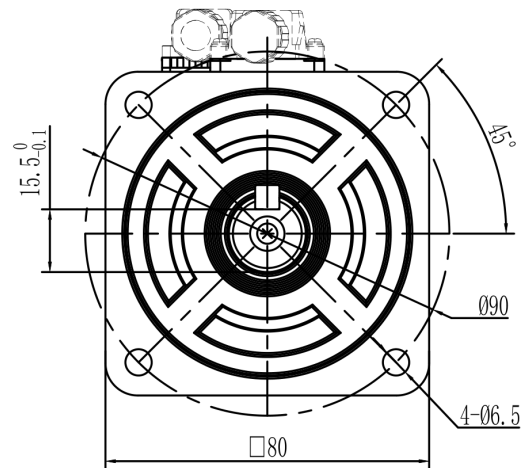
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	3.18 Nm
Rated Speed	3000 rpm
Rated Voltage	220 VAC
Flange Size	80 mm

Product Structure & Views

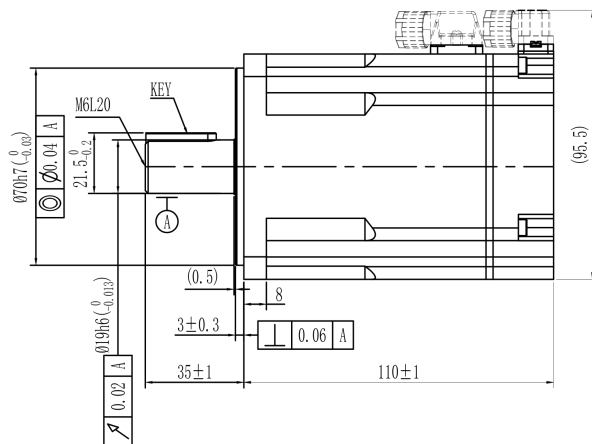
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



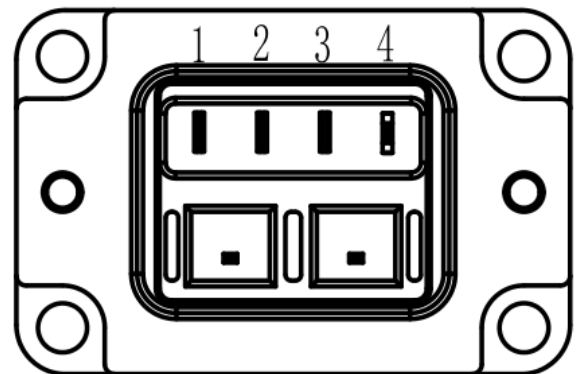
Mechanical View 1



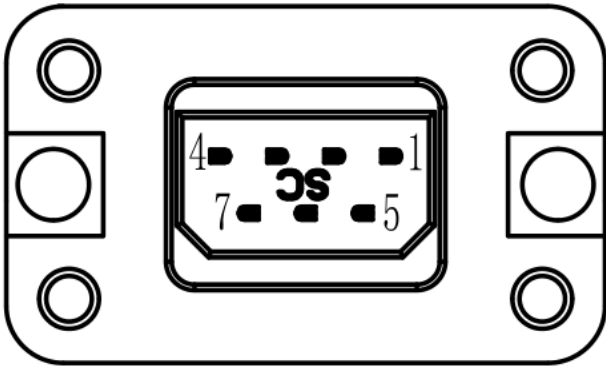
Mechanical View 2



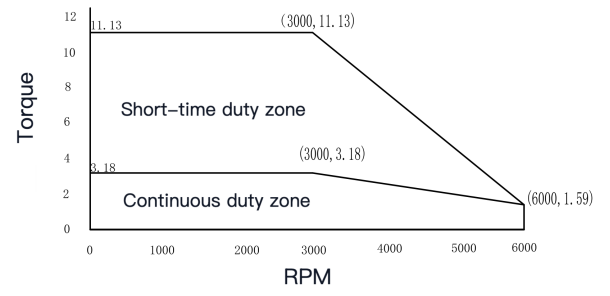
Mechanical View 3



Mechanical View 5



Mechanical View 7



Mechanical View 9

VIEW	FIELD	VALUE
Mechanical View 1	Keyway width tolerance	6 h8, upper deviation 0, lower deviation -0.018
	Keyway length	25
	Key feature label	KEY
	M3 through hole	M3 through hole
Mechanical View 2	Mounting locating dimension tolerance	15.5 with upper deviation 0 and lower deviation -0.1
	Mounting hole pitch circle diameter	Diameter 90
	Square flange outside size	Square 80 x 80
	Mounting holes	4-Ø6.5
	Mounting hole angular position	45 degrees
Mechanical View 3	Keyway label	Keyway indicated
	Shaft end threaded hole	M6 thread, 20 mm depth/length
	Reference overall height	95.5 reference
	Mounting pilot diameter	Diameter 70 h7, +0/-0.03
	Mounting pilot geometric tolerance	Geometric tolerance diameter 0.04 relative to datum A
	Shaft projection length	21.5 +0/-0.2
	Reference clearance or offset dimension	0.5 reference
	Step or flange offset	8
	Shaft diameter	Diameter 19 h6, +0/-0.013
	Shaft end offset length	3 ±0.3
	Perpendicularity tolerance	Perpendicularity tolerance 0.06 relative to datum A
	Shaft extension length	35 ±1
	Motor body length	110 ±1
	Face geometric tolerance	Geometric tolerance value 0.02 relative to datum A, symbol not OCR sourced
Mechanical View 5	Power connector pin numbering	Power connector face shows four numbered positions: 1, 2, 3, and 4.
Mechanical View 7	Feedback connector pin labels	Visible connector-face pin labels are 1, 4, 5, and 7.
	Connector center marking	Connector marking: CS
Mechanical View 9	Maximum short-time torque point	At 3000 RPM, torque is 11.13 Nm
	Short-time torque transition point	At 3000 RPM, torque is 3.18 Nm
	Maximum continuous torque point	At 6000 RPM, torque is 1.59 Nm
	Torque axis scale values	Y-axis torque scale from 0 to 12 Nm
	RPM axis scale values	X-axis speed scale from 0 to 6000 RPM
	Torque axis label	Y-axis represents Torque
	Speed axis label	X-axis represents RPM (rotational speed)
	Short-time duty zone	Upper region of TN curve representing short-time operation
	Continuous duty zone	Lower region of TN curve representing continuous operation

VIEW	FIELD	VALUE
Short-Time Torque	11.13 Nm	
Continuous Torque	3.18 Nm	

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	2.42 ()	Kg·cm ²

- 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	3.18	Nm
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	3.18	Nm

- 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-A03-080D-T3P18NM-1000W-003 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.