

ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-A03-080S-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 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.

The drawing shows a shaft assembly. The main shaft has a diameter of $\varnothing 19_{-0.013}^0$ and a length of 113.7 ± 1.5 . A key is fitted into a keyway with a width of 6 and a height of 6 . The key has a length of 25 and a width of 6 . The shaft is supported by bearings, and the total length of the assembly is 190 ± 0.02 . A detailed view of the shaft end shows a thread of $M6L18$ and a diameter of $\varnothing 19_{-0.013}^0$. The drawing includes various dimension lines and tolerances.

Technical drawing of a circular mechanical component, likely a pump or motor housing, showing a front view. The drawing includes a central hub with a circular feature, surrounded by a ring with eight rectangular slots. The outermost ring has four circular features. Dimensions are indicated: a central hole of diameter 90 ± 0.1 , four holes of diameter 6.5, and an overall square flange width of 80. A dashed circle indicates the outer diameter of the main body.

A diagram of a 4-pin D-sub connector. The connector is rectangular with a central port and four circular pins on the sides. The pins are labeled with numbers: 1, 4, 5, and 7. Pin 1 is on the top right, pin 4 is on the top left, pin 5 is on the bottom right, and pin 7 is on the bottom left. The connector is shown in a perspective view.

The graph plots Torque (N.m) on the y-axis (0 to 9) against RPM on the x-axis (0 to 5000). Two workspaces are defined:

- Short term workspace:** A constant torque of 9.54 N.m from 0 to 2500 RPM, then decreasing linearly to 0 N.m at 5000 RPM. A point is marked at (2500, 9.54).
- Continuous workspace:** A constant torque of 3.18 N.m from 0 to 3000 RPM, then decreasing linearly to 0 N.m at 5000 RPM. A point is marked at (3000, 3.18).

VIEW	FIELD	VALUE
Mechanical View 1	Key length	25 mm
	Key feature label	KEY
	Geometric tolerance related to datum A	Diameter tolerance zone 0.06 relative to datum A
	Perpendicularity tolerance	Perpendicularity 0.06 to datum A
	Shaft diameter	Diameter 19 mm, upper deviation 0, lower deviation -0.013
	Geometric tolerance to datum A	Geometric tolerance 0.04 relative to datum A
	Mounting pilot diameter	Diameter 70 mm, upper deviation 0, lower deviation -0.02
	Shaft shoulder length	21.5 mm, upper deviation 0, lower deviation -0.2
	Reference overall height	Reference dimension 96.5 mm
	Datum A	Datum A
	Threaded hole specification	M6 thread, length/depth 18 mm
	Step offset distance	9 mm
	Body length	113.7 mm ±1.5 mm
	Front section length	35 mm ±1 mm
	Keyway width	6 mm
	Keyway width	6
	Mounting hole radial position	4 mm
Mechanical View 2	Mounting hole pitch circle diameter	Pitch circle diameter Ø90 ±0.1
	Mounting hole quantity and diameter	4 holes, Ø6.5
	Square flange outside dimension	Square flange size 180
Mechanical View 5	Power connector pin position identifiers	Top row connector positions identified as pins 1, 2, 3, and 4.
Mechanical View 8	Feedback connector pin position identifiers	Feedback connector face pin labels visible: 4, 2, 1, 7, central ambiguous 3S, and 5.
Mechanical View 10	Short-term workspace maximum torque point	2500 rpm at 9.54 Nm
	Continuous workspace maximum torque point	3000 rpm at 3.18 Nm
	Maximum speed point	5000 rpm at 0 Nm
	Torque Scale	0–9 Nm
	Motor Speed Scale	0–5000 rpm
	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	1.19 ()	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	17-bit multi-turn communication magnetic 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	17-bit multi-turn communication magnetic 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

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|----|--|
| 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-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.