

ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-A03-130G-T5P39NM-850W-003	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

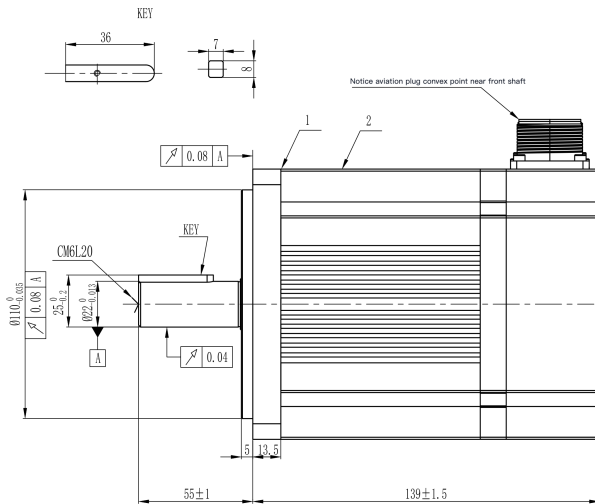
Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

Key Integration Facts

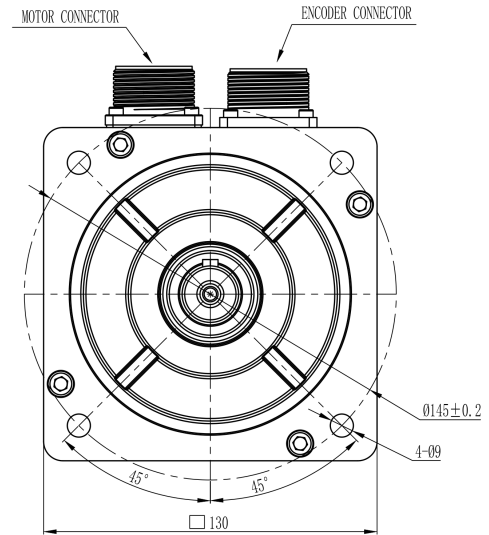
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	5.39 Nm
Rated Speed	1500 rpm
Rated Voltage	220 VAC
Flange Size	130 mm

Product Structure & Views

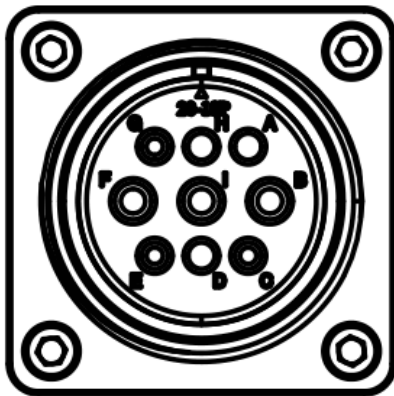
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



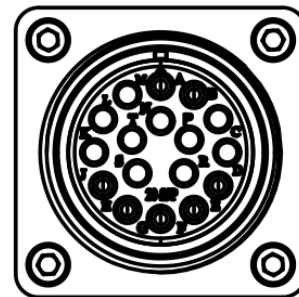
Mechanical View 1



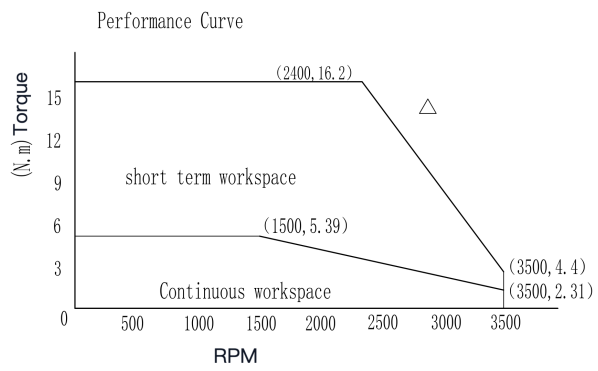
Mechanical View 2



Mechanical View 5



Mechanical View 7



Mechanical View 10

VIEW	FIELD	VALUE
Mechanical View 1	Key slot length	36 mm
	Key width	7 mm
	Key height	8 mm
	Key label	Key feature indicated
	Aviation plug convex point orientation note	Aviation plug convex point near front shaft
	Item callout 1	Item 1 callout
	Item callout 2	Item 2 callout
	Body positional tolerance relative to datum A	Positional tolerance 0.08 mm relative to datum A
	Shaft positional tolerance relative to datum A	Positional tolerance 0.08 mm relative to datum A
	Pilot or body reference diameter	Diameter 110 mm, +0 / -0.035 mm
	Shaft shoulder length	25 mm, +0 / -0.2 mm
	Output shaft diameter	Diameter 22 mm, +0 / -0.013 mm
	Datum A	Datum A
	Local positional tolerance	Positional tolerance 0.04 mm
	End step length	5 mm
	End step or flange thickness	13.5 mm
	Front shaft projection to body face	55 mm ±1 mm
	Motor body length	139 mm ±1.5 mm
Mechanical View 2	Encoder connector label	Encoder connector
	Motor power connector label	Motor connector
	Mounting hole pitch circle diameter	PCD Ø145 ±0.2
	Mounting hole quantity and diameter	4 × Ø9 holes
	Left mounting hole angular offset	45°
	Right mounting hole angular offset	45°
	Square mounting flange size	Square 130
Mechanical View 5	Connector Contact Letter Designation	A, B, C, D, ...
Mechanical View 7	Connector Contact Letter Designation	A, B, C, D, ...
Mechanical View 10	Chart title	Performance curve
	Y-axis parameter	Torque in N·m
	Y-axis tick values	Torque scale ticks: 0, 3, 6, 9, 12, 15
	X-axis tick values	Speed scale ticks: 500, 1000, 1500, 2000, 2500, 3000, 3500
	Short-term operating region	Short-term workspace region
	Continuous operating region	Continuous workspace region
	Short-term curve point	Speed 2400 rpm, torque 16.2 N·m
	Continuous curve point	Speed 1500 rpm, torque 5.39 N·m
	Short-term high-speed endpoint	Speed 3500 rpm, torque 4.4 N·m

VIEW	FIELD	VALUE
Continuous high-speed endpoint	Speed 3500 rpm, torque 2.31 Nm	

Overall Dimensions and Mounting Interface

PARAMETER	PUBLISHED VALUE	UNIT
Flange Size	130	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	12.86 ()	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	5.39	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	1500	rpm
Rated Torque	5.39	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-A03-130G-T5P39NM-850W-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.