

ENGINEERING DOCUMENTATION

Frameless Torque Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-FM-H01-OD060-TOP7NM-001	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

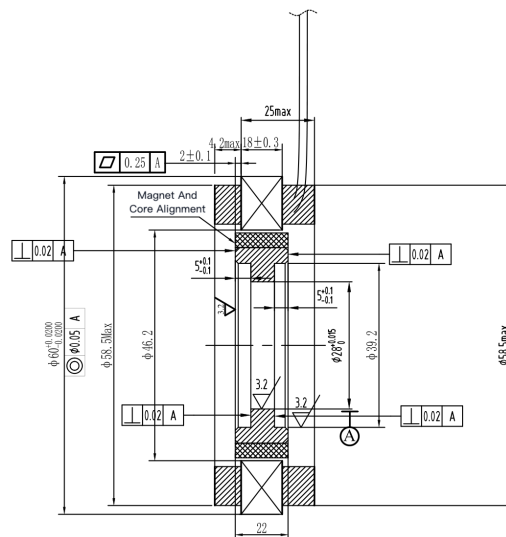
Integration Overview

Frameless torque motor for direct integration into a host rotary assembly. This guide supports rotor-stator alignment, air-gap control, bearing and load-path design, thermal extraction, electrical integration and staged commissioning.

Key Integration Facts

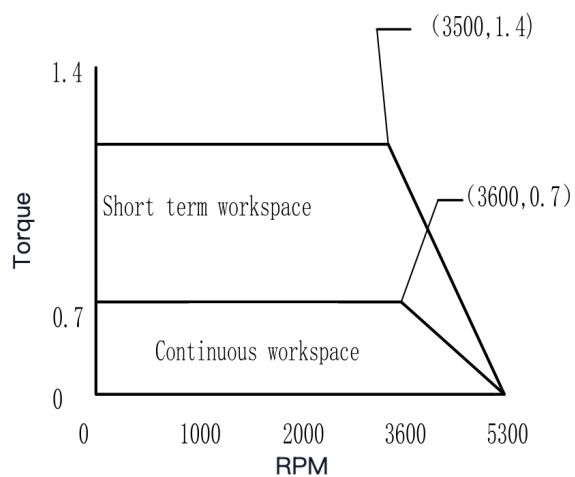
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	0.7 Nm
Rated Speed	3600 $\pm$ 10% rpm
Weight	0.29 kg

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



Mechanical View 1

Mechanical View 2



Mechanical View 6

VIEW	FIELD	VALUE
Mechanical View 1	Power line terminal specification	Power line terminal: E0506
	Terminal part number	Terminal part number 5013340000
	Housing part number and color	Housing 501330 0200, white
	Power lead length range	L=100 to 120 mm
	NTC lead length	NTC lead length L=300 mm
	Red wire phase label	Red wire marked U
	Yellow wire phase label	Yellow wire marked V
	Blue wire phase label	Blue wire marked W
	Wire standard	UL1332 wire specification
Mechanical View 2	Top maximum projection width	25 max
	Upper local width	18 ±0.3
	Upper step offset	2 ±0.1
	Upper geometric tolerance relative to datum A	Geometric tolerance 0.25 relative to datum A
	Magnet and core alignment note	Magnet and core alignment
	Left-side perpendicularity tolerance to datum A	Perpendicularity 0.02 to datum A
	Upper right perpendicularity tolerance to datum A	Perpendicularity 0.02 to datum A
	Local slot width	5 +0.1/-0.1
	Outer diameter	Diameter 60 +0.0200/-0.0200
	Datum A related geometric tolerance	Diameter tolerance zone 0.05 relative to datum A
	Left inner or step diameter	Diameter 46.2
	Maximum outer diameter	Diameter 58.5 max
	Shaft bore or journal diameter	Diameter 28 +0.015/0
	Right step diameter	Diameter 39.2
	Surface roughness	Ra 3.2
	Bottom width	22
	Slot width	5 +0.1/-0.1
	perpendicularity tolerance to datum A	Perpendicularity 0.02 to datum A
	Maximum Outer Diameter	Ø58.5 MAX
	Perpendicularity Tolerance	0.02 A
Mechanical View 6	Short-term workspace peak point	3500 RPM, 1.4 Nm
	Short-term to continuous workspace transition point	3600 RPM, 0.7 Nm
	Y-axis maximum torque value	1.4 Nm
	Y-axis intermediate torque value	0.7 Nm
	Speed scale 1000	1000 RPM
	Speed scale 2000	2000 RPM

VIEW	FIELD	VALUE
Speed scale 3600	3600 RPM	
Speed scale 5300	5300 RPM	
Short-term duty zone	Short-term duty 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

- Confirm the stator, rotor, bore, axial stack, locating and retention geometry against the applicable exact-SKU drawing.
- The host housing and shaft must provide the required datum control without distorting the active motor components.

Rotor, Stator and Air-Gap Alignment

- Control concentricity, axial position, runout and operating air gap through the complete tolerance and temperature range.
- Prevent contact, magnetic debris, impact and assembly forces from damaging the rotor or stator.

Bearing, Load Path and Retention

PARAMETER	PUBLISHED VALUE	UNIT
Rotor Inertia	0.175 ±10%	kg·cm ²
Weight	0.29	kg

- The host bearing system must carry radial, axial and moment loads; do not infer bearing capability from motor torque or diameter.
- Provide positive rotor retention and verify overspeed, imbalance, shock and fault torque cases.

Electrical and Feedback Integration

PARAMETER	PUBLISHED VALUE	UNIT
Torque Constant	0.103	Nm/A

- Match the winding, drive current, voltage, commutation and feedback system to the exact SKU.
- Use current phase, sensor and insulation definitions; do not infer pin or phase identity from this guide.

Thermal Path and Duty Cycle

PARAMETER	PUBLISHED VALUE	UNIT
Rated Torque	0.7	Nm

- Design a verified heat path from the stator into the host structure and validate temperatures under the intended duty cycle.
- Peak torque and current are transient boundaries and require coordinated drive protection.

Assembly and Commissioning Validation

PARAMETER	PUBLISHED VALUE	UNIT
Rated Speed	3600 ±10%	rpm
Rated Torque	0.7	Nm

- Check free rotation, air gap, retention, insulation and sensor alignment before energization.
- Commission at low energy, confirm commutation and direction, then validate the complete joint through intended load and fault cases.

Integration Checklist

- | | |
|----|--|
| 01 | Confirm the exact SKU, 2D package and applicable assembly data. |
| 02 | Verify stator, rotor, bore, stack, datums, retention and operating air gap. |
| 03 | Validate host bearings, shaft, housing stiffness, runout and thermal growth. |
| 04 | Confirm winding, drive, feedback, commutation and insulation compatibility. |
| 05 | Establish and validate the stator-to-housing thermal path. |
| 06 | Check free rotation and insulation before low-energy commissioning. |
| 07 | Validate full load, speed, temperature and credible fault cases. |

[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-FM-H01-OD060-TOP7NM-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.