ENGINEERING DOCUMENTATION

Frameless Torque Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-FM-H01-OD085-T1P2NM-001	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

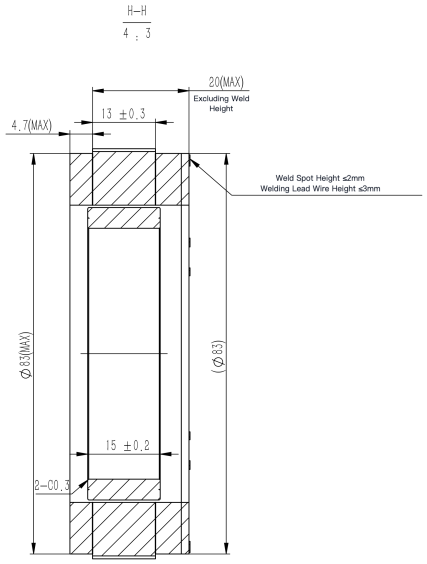
Frameless torque motor for direct integration into a host rotary assembly. This guide supports rotor-stator alignment, air-gap control, bearing and load-path design, thermal extraction, electrical integration and staged commissioning.

Key Integration Facts

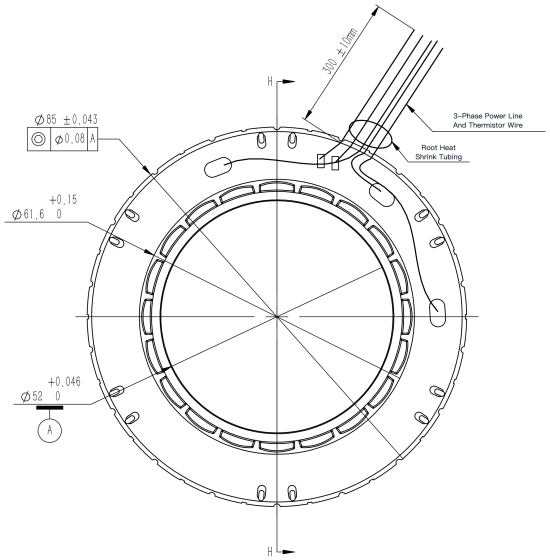
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	1.2 N·m
Rated Speed	2950 rpm
Weight	0.37 kg

Product Structure & Views

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



Mechanical View 1



Mechanical View 2

VIEW	FIELD	VALUE
Mechanical View 1	Section view identifier	Section H-H
	Maximum width excluding weld height	20 max, excluding weld height
	Dimension tolerance	13±0.3
	Weld spot and welding lead wire height limits	Weld spot height ≤2 mm; welding lead wire height ≤3 mm
	Maximum outside diameter	Diameter 83 max
	Reference outside diameter	Reference diameter 83
	Internal width	15 ±0.2
	Chamfer	2 places C0.3 chamfer
	Drawing Scale	4 : 3
	Top Outer Diameter (Max)	4.7 mm (Max)
Mechanical View 2	Outer diameter	Diameter 85 ±0.043
	Geometric tolerance relative to datum A	Geometric tolerance diameter zone 0.08 relative to datum A
	Mounting feature pitch diameter	Diameter 61.6 +0.15/0
	Inner mounting feature diameter	Diameter 52 +0.046/0
	Datum A	Datum A
	Cable length	Length 300 ±10
	Section or direction marker H	Marker H
	3-phase power line and thermistor wire	3-phase power line and thermistor wire
	Root heat shrink tubing	Root heat shrink tubing

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	0.62	kg·cm²
Weight	0.37	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	0.14	N·m/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	1.2	N·m

- 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	2950	rpm
Rated Torque	1.2	N·m

- 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-OD085-T1P2NM-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.