

ENGINEERING DOCUMENTATION

Coreless Brushless Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-CM-BL10-M001	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

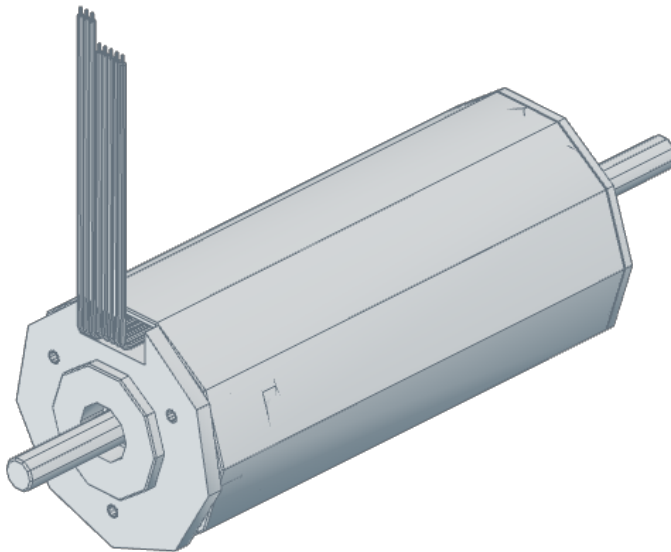
Compact electric motor for specified rotary actuation. This guide supports mounting, shaft, load-path, drive, thermal, cable and commissioning planning for ES-CM-BL10-M001.

Key Integration Facts

INTEGRATION ITEM	VALUE
Rated Torque	90.0 mNm
Rated Speed	6900 rpm
Continuous Rated Output Power	65 W
No-Load Rotational Speed	9200 rpm
Pole Pairs	2
Peak Current	48 A
Torque Constant	23.38 mNm/A
Phase Resistance	0.5 Ω

3D Orientation Reference

This axonometric reference provides a quick orientation check for the motor or actuator body, output interface and mounting relationship of ES-CM-BL10-M001.



Axonometric Orientation View

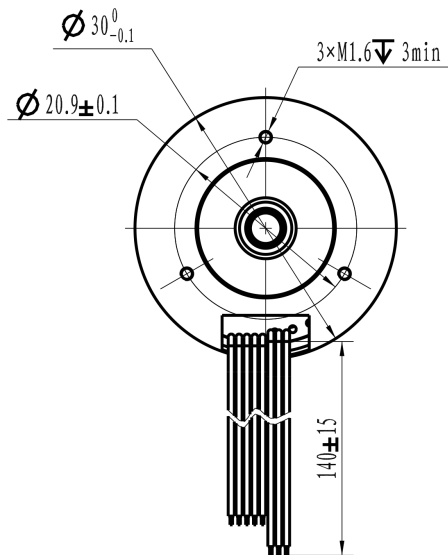
Orientation reference only. Use the exact-SKU parameter table and mechanical drawing for dimensions, hole geometry, fits and machining decisions.

Exact-SKU Interface Cross-Reference

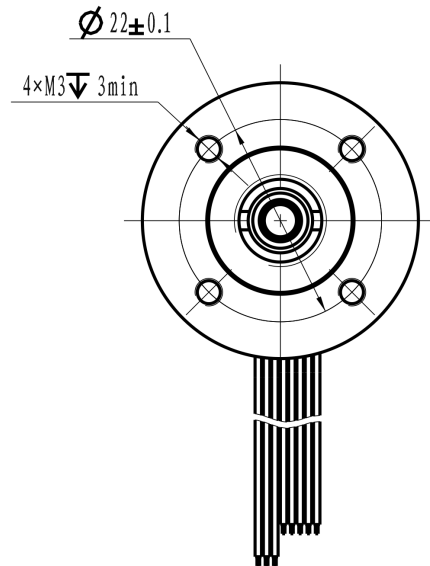
INTEGRATION TOPIC	EXACT-SKU REFERENCE
Motor envelope and output orientation	Motor Body Length: 65 mm. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.
Drive and motion boundaries	Rated Voltage: 24 V; Continuous Rated Current: 3.85 A; Rated Torque: 90.0 mNm; Rated Speed: 6900 rpm. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.
Installed load and thermal reference	Rotor Inertia: 28.0 gcm ² ; Weight: 230.0 g; Insulation Class: B; Duty Cycle: S1. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.

Product Structure & Views

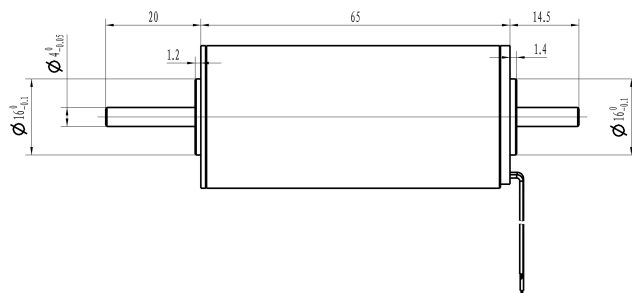
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



Mechanical View 1



Mechanical View 2



Mechanical View 3

VIEW	FIELD	VALUE
Mechanical View 1	Outer diameter (upper shaft section)	$\varnothing 30_{-0.1}^0$
	Outer diameter (lower shaft section)	$\varnothing 20.9 \pm 0.1$
	Threaded hole specification	3×M1.6 depth 3mm min
	Motor body total length	140±15
Mechanical View 2	Outer diameter with tolerance	$\varnothing 22 \pm 0.1$ mm
	Mounting hole specification	4× M3 threaded holes, minimum depth 3 mm

VIEW	FIELD	VALUE
Mechanical View 3	Left section length	20 mm
	Center section length	65 mm
	Right section length	14.5 mm
	Left flange width	1.2 mm
	Right flange width	1.4 mm
	Left shaft diameter with negative tolerance	Ø4 -0.05 mm
	Left large diameter with negative tolerance	Ø16 -0.1 mm
	Right shaft diameter with negative tolerance	Ø16 -0.1 mm

Technical Specifications

PARAMETER	VALUE	UNIT
Rated Torque	90.0	mNm
Rated Speed	6900	rpm
Continuous Rated Output Power	65	W
No-Load Rotational Speed	9200	rpm
Pole Pairs	2	
Peak Current	48	A
Torque Constant	23.38	mNm/A
Phase Resistance	0.5	Ω
Continuous Rated Current	3.85	A
Phase Inductance	0.05	mH
Insulation Class	B	
Dielectric strength	500VAC/1KHz/1mA/1s	VAC
Insulation Resistance	100 M Ω /500VDC	M Ω
No-load Current	0.3	A
Rated Voltage	24	V
Shaft material		

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Weight	230.0	g
End-cap material		
Mechanical Time Constant	2.56	ms
Rotor Inertia	28.0	g·cm ²
Bearing type		
Motor Weight	230	g
Peak torque	1122.08	mN·m
Feedback method		
Winding connection		
Back-EMF Constant (Peak)	3.46	V/Krpm
Magnet material	NdFeB	
Motor Body Length	65	mm
Commutation angle	120	°
Motor efficiency	86	%
Back-EMF constant (RMS)	2.45	V/Krpm
Housing Type	not recorded	

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Ambient temperature	23	°C
Duty Cycle	S1	
Motor diameter	30	mm

Mounting, Shaft and Load Path

- Support the complete mounting face, preserve locating features and verify fastener engagement without distorting the housing.
- Align the shaft and coupling before tightening, and validate radial load, axial load, overhung distance, belt tension, inertia and shock for the installed mechanism.

Drive, Electrical and Motion Integration

- Coordinate supply, drive current limit, speed, torque and fault protection with the actual load and duty cycle.
- Use applicable wiring data for conductor identity, polarity, phase pairing, shielding and grounding; do not infer these from the product view.

Thermal, Cable and Commissioning Conditions

- Validate housing and winding temperature over the intended operating cycle, ambient condition, mounting heat path and enclosure airflow.
- Provide strain relief and service clearance, then commission at reduced energy and verify direction, current limits, motion response, temperature and fault behavior.

Integration Checklist

- | | |
|----|---|
| 01 | Confirm the exact-SKU drawing and parameter set. |
| 02 | Verify mounting geometry, locating features, shaft engagement, coupling alignment and service clearance. |
| 03 | Validate torque, speed, inertia, radial and axial loads, overhung distance and shock. |
| 04 | Set drive, current, motion, wiring, grounding and thermal boundaries from applicable product documentation. |
| 05 | Commission at reduced energy and verify direction, motion response, temperature and fault behavior. |

[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-CM-BL10-M001 and is intended for dimensional evaluation and preliminary integration. It is not a applicable manufacturing drawing, motor or actuator application approval, wiring definition, drive-selection approval, machinery risk assessment, safety validation or production authorization. Before design freeze, installation or energization, verify all dimensions, mounting and locating features, moving envelopes, shaft or output geometry, permissible loads, alignment, supply and current limits, wiring, motion profile, duty cycle, thermal condition, cable routing, environmental boundaries, maintenance and fault response against the applicable EmbodyStack engineering data for this exact SKU. Validate the complete installed system under intended operating and fault conditions.