ENGINEERING DOCUMENTATION

Coreless Brushed DC Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-CM-BR04-M001	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

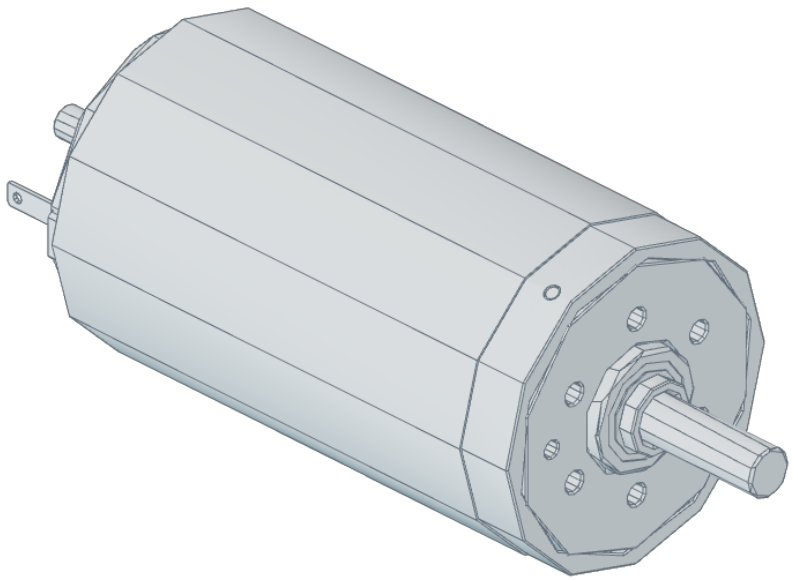
Compact electric motor for specified rotary actuation. This guide supports mounting, shaft, load-path, drive, thermal, cable and commissioning planning for ES-CM-BR04-M001.

Key Integration Facts

INTEGRATION ITEM	VALUE
Rated Torque	200 mN·m
Instantaneous Maximum Torque	1080 mN·m
No-Load Rotational Speed	6600 rpm
Maximum Continuous Current	3.8 A
Torque Constant	65.9 mN·m/A
Instantaneous Maximum Current	16 A
Motor Speed Constant per Volt	143 rpm/V
Continuous Rated Current	3.8 A

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-BR04-M001.



Axonometric Orientation View

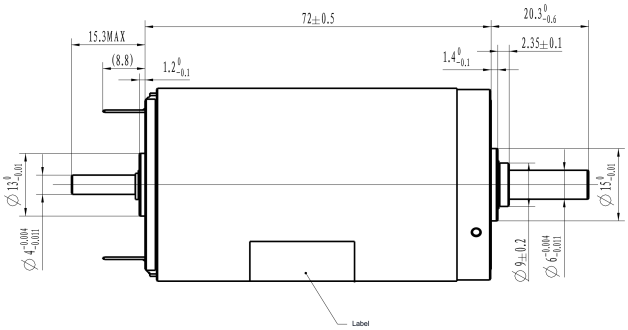
Orientation reference only. Use the exact-SKU parameter table and mechanical drawing for dimensions, hole geometry, fits and machining decisions.

Exact-SKU Interface Cross-Reference

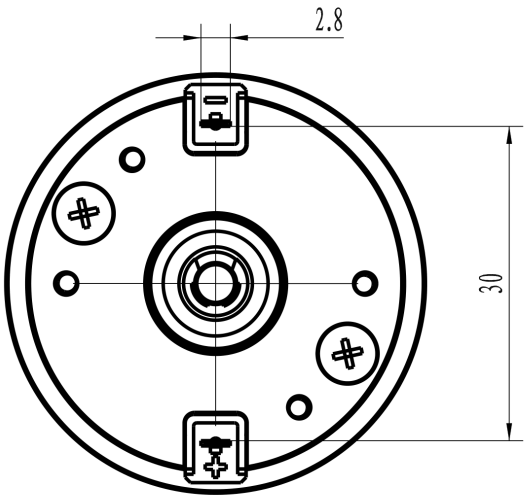
INTEGRATION TOPIC	EXACT-SKU REFERENCE
Motor envelope and output orientation	Confirm this interface or boundary from the exact-SKU parameter table and mechanical drawing.
Drive and motion boundaries	Rated Voltage: 48 V; Continuous Rated Current: 3.8 A; Rated Torque: 200 mN·m. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.
Installed load and thermal reference	Rotor Inertia: 142 g·cm²; Weight: 460 g; Insulation Class: F/155 °C. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.

Product Structure & Views

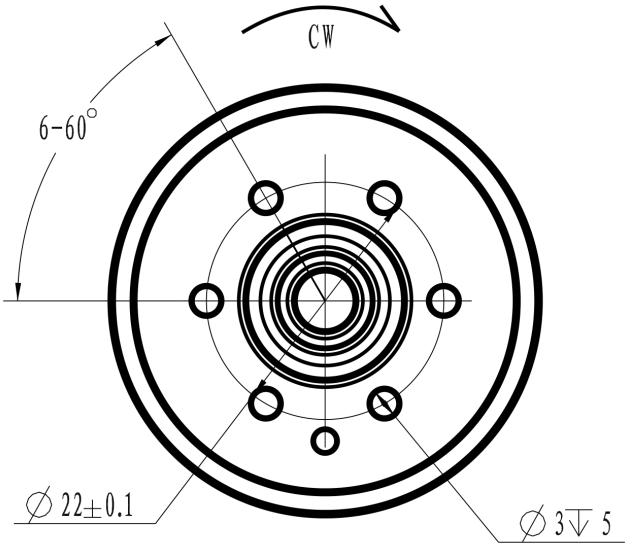
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



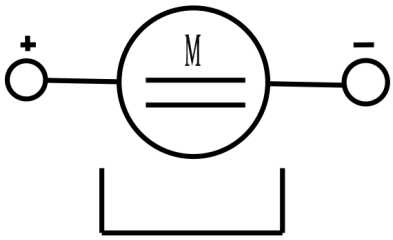
Mechanical View 1



Mechanical View 2



Mechanical View 3



Mechanical View 5

VIEW	FIELD	VALUE
Mechanical View 1	Motor body length	72 ±0.5
	Left shaft extension maximum length	15.3 max
	Left reference length	8.8 reference
	Left shoulder step length	1.2 +0/-0.1
	Left outer shaft diameter	Diameter 13 +0/-0.01
	Left small shaft diameter	Diameter 4 -0.004/-0.011
	Right shaft extension length	20.3 +0/-0.6
	Right shoulder step length	1.4 +0/-0.1
	Right end step length	2.35 ±0.1
	Right outer shaft diameter	Diameter 15 +0/-0.01
	Right intermediate shaft diameter	Diameter 9 ±0.2
	Right small shaft diameter	Diameter 6 -0.004/-0.011
	Label indication	Label
Mechanical View 3	Disk outer diameter	30
Mechanical View 5	Rotation direction	Clockwise rotation
	Equally spaced hole angular pitch	6 positions at 60 degrees spacing
	Bolt circle diameter	Diameter 22 ±0.1

Technical Specifications

PARAMETER	VALUE	UNIT
Rated Torque	200	mN·m
Instantaneous Maximum Torque	1080	
No-Load Rotational Speed	6600	rpm
Maximum Continuous Current	3.8	A
Torque Constant	65.9	mN·m/A
Instantaneous Maximum Current	16	A
Motor Speed Constant per Volt	143	rpm/V
Continuous Rated Current	3.8	A
Insulation Class	F/155 °C	
No-load Current	0.15	A
Rated Voltage	48	V
Weight	460	g
Mechanical Time Constant	9.6	ms
Rotor Inertia	142	g·cm²
Operating Temperature	-20 to 65	°C
Line-to-line inductance	0.98	mH

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Motor length	72	mm
Commutator segment count	13	
Housing-to-Ambient Thermal Resistance	15	K/W
Line-to-line resistance	2.94	Ω
Brush type	Graphite brush	
Maximum Winding Temperature	155	°C
Speed Constant	6.36	rpm/mN·m
Maximum efficiency	85	%
Loaded Speed	5500	rpm
Motor diameter	40	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-BR04-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.