

ENGINEERING DOCUMENTATION

Iron-Core Brushed DC Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-DC-IC04-M001	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

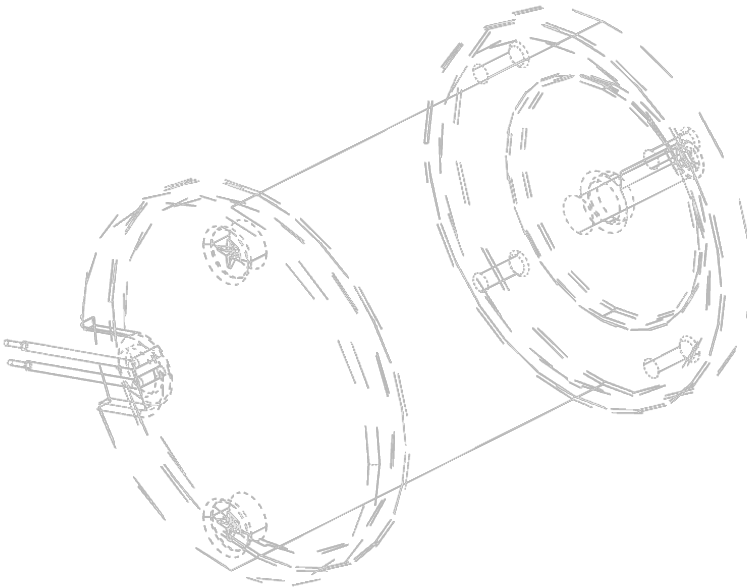
Compact electric motor for specified rotary actuation. This guide supports mounting, shaft, load-path, drive, thermal, cable and commissioning planning for ES-DC-IC04-M001.

Key Integration Facts

INTEGRATION ITEM	VALUE
Rated Torque	0.25 Nm
Rated Speed	2500 RPM
Torque Constant	61 mNm/A
Continuous Rated Output Power	65 W
No-Load Rotational Speed	3200 RPM
Rotational Back-EMF Constant	6.4 V/Krpm
Continuous Rated Current	4.5 A
Phase Inductance	1.8 mH

3D Orientation Reference

This axonometric reference provides a quick orientation check for the motor or actuator body, output interface and mounting relationship of ES-DC-IC04-M001.



Axonometric Orientation View

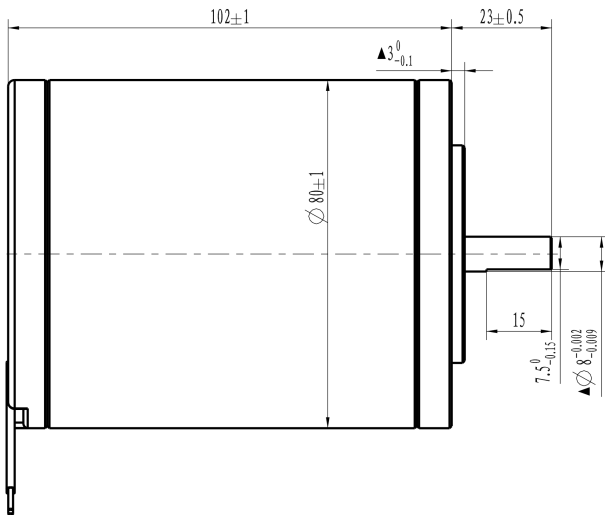
Orientation reference only. Use the exact-SKU parameter table and mechanical drawing for dimensions, hole geometry, fits and machining decisions.

Exact-SKU Interface Cross-Reference

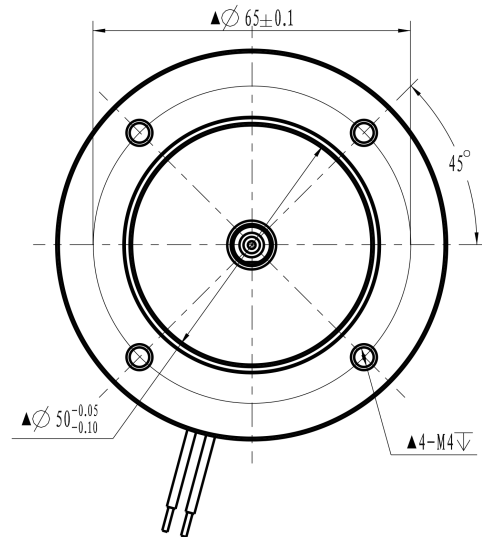
INTEGRATION TOPIC	EXACT-SKU REFERENCE
Motor envelope and output orientation	Frame Size: 80 mm; Body Length: 102 mm; Motor Body Length: 102±1 mm; Shaft Outer Diameter: $\varnothing 10 -0.05/-0.10$ mm. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.
Drive and motion boundaries	Rated Voltage: 24 VDC; Continuous Rated Current: 4.5 A; Rated Torque: 0.25 N·m; Rated Speed: 2500 RPM. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.
Installed load and thermal reference	Rotor Inertia: 1.6 kg·cm ² ; Insulation Class: B/130°C; Duty Cycle: S1. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.

Product Structure & Views

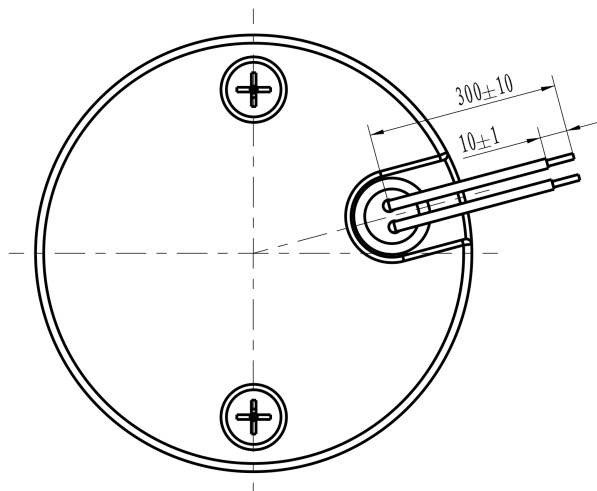
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



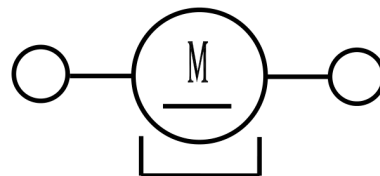
Mechanical View 1



Mechanical View 2



Mechanical View 3



Mechanical View 5

VIEW	FIELD	VALUE
Mechanical View 1	Overall length	102±1 mm
	End section width	23±0.5 mm
	Flatness tolerance	Flatness 3 with deviation 0/-0.1
	Main shaft outer diameter	∅30±1 mm
	Output shaft length	15 mm
	Output shaft diameter	∅18 -0.002/-0.009 mm
	Keyway width	7.5 -0/-0.15 mm
Mechanical View 3	Outer diameter	∅55±0.1
	Mounting hole angular position	45°
	Shaft outer diameter	∅30 -0.05/-0.10
	Mounting threaded holes	4×M4 threaded holes
Mechanical View 5	Angular range	300±10
	Thickness or depth	10±1

Technical Specifications

PARAMETER	VALUE	UNIT
Rated Torque	0.25	Nm
Rated Speed	2500	RPM
Torque Constant	61	mNm/A
Continuous Rated Output Power	65	W
No-Load Rotational Speed	3200	RPM
Rotational Back-EMF Constant	6.4	V/Krpm
Continuous Rated Current	4.5	A
Phase Inductance	1.8	mH

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Insulation Class	B/130°C	
Insulation Resistance		
CONDITION	VALUE	UNIT
Configuration-specific; confirm the selected configuration	100M Ω 250V	M Ω
test_voltage: 250 V		
No-load Current	0.6	A
Rated Voltage	24	VDC
Rotor Inertia	1.6	kgcm ²
Body Length	102	mm
Loaded Current	<4.5	A
Frame Size	80	mm

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Loaded Power	65	W
Housing shape	Round	
Noise	<50	dB
Motor Body Length	102±1	mm
Drawing No-load Current	<0.4	A
Line-to-line resistance	1.3	Ω
Mounting Hole Phase Angle	45°	degree
Drawing No-load Speed	3200±10%	RPM
Shaft Outer Diameter	15.0 -0.05/-0.10	mm
Service Life Hours	>3000	h
Motor Construction	Slotted brushed DC motor (ferrite)	
Loaded Torque	0.25	Nm
Output Shaft Diameter	8 -0.002/-0.009	mm
Drawing Insulation Resistance	50/250V	MΩ
Housing Type	Stainless steel / iron housing	
Withstand Voltage	800V AC/50HZ/2mA/1S	

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Rotation Direction	CCW	
Duty Cycle	S1	
Output Shaft Length	15	mm
Loaded Speed	2500±10%	RPM
Motor Weight	1.7	kg
Stall Current	19	A
Starting Torque	0.052	N·m
Customization Number	1	
Keyway Width	7.5 -0/-0.15	mm
Stall Torque	1.2	N·m

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-DC-IC04-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.