

ENGINEERING DOCUMENTATION

Iron-Core Brushed DC Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-DC-IC01-M001	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

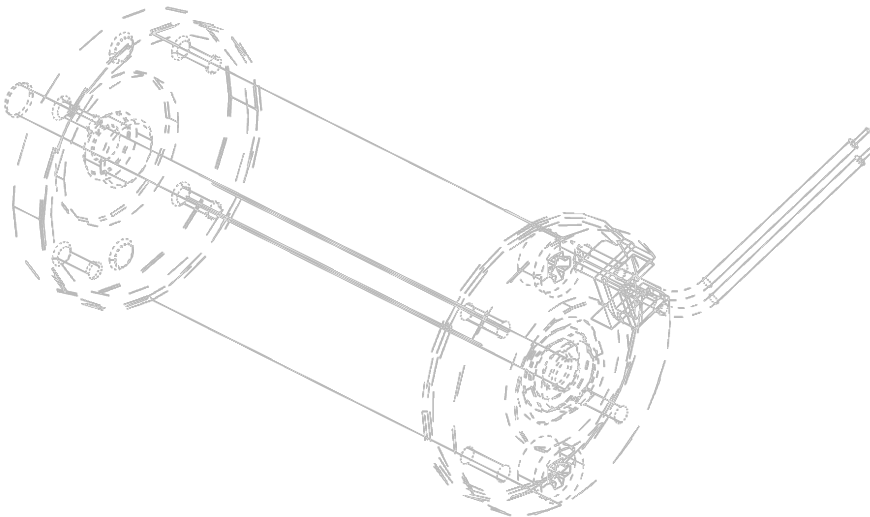
Compact electric motor for specified rotary actuation. This guide supports mounting, shaft, load-path, drive, thermal, cable and commissioning planning for ES-DC-IC01-M001.

Key Integration Facts

INTEGRATION ITEM	VALUE
Rated Torque	0.057 Nm
Rated Speed	3150 RPM
Torque Constant	64.5 mNm/A
Continuous Rated Output Power	19 W
No-Load Rotational Speed	4000 RPM
Rotational Back-EMF Constant	6.7 V/Krpm
Continuous Rated Current	1.45 A
Phase Inductance	3 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-IC01-M001.



Axonometric Orientation View

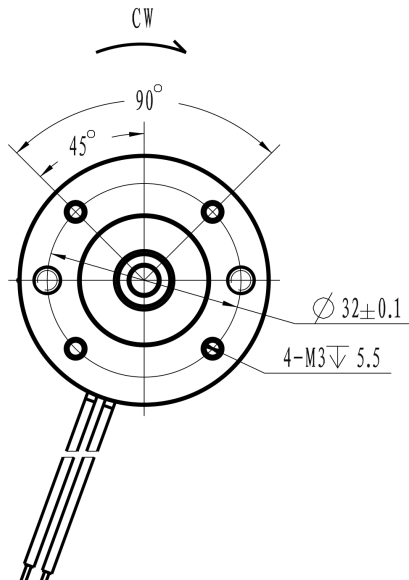
Orientation reference only. Use the exact-SKU parameter table and mechanical drawing for dimensions, hole geometry, fits and machining decisions.

Exact-SKU Interface Cross-Reference

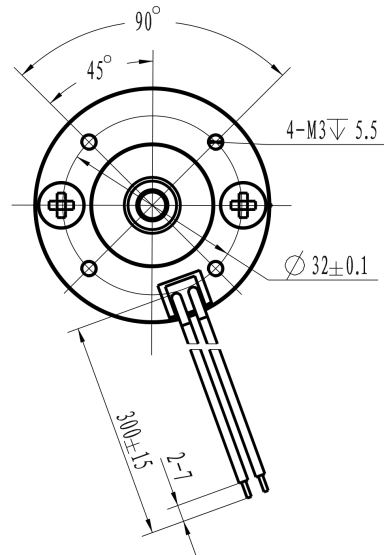
INTEGRATION TOPIC	EXACT-SKU REFERENCE
Motor envelope and output orientation	Frame Size: 42 mm; Body Length: 85 mm; Motor Body Length: 85 mm with ± 1 mm tolerance mm; Motor Body Diameter: Diameter 42 mm with ± 0.3 mm tolerance mm; Output Shaft End Diameter: Diameter 5 mm, upper deviation -0.002 mm, lower deviation -0.008 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: 1.45 A; Rated Torque: 0.057 Nm; Rated Speed: 3150 RPM. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.
Installed load and thermal reference	Rotor Inertia: 0.11 kgcm 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

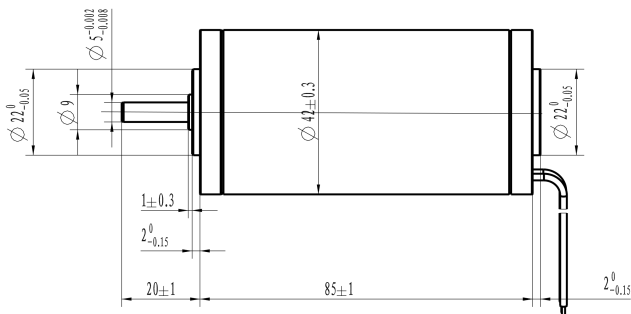
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



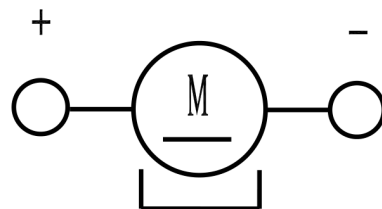
Mechanical View 1



Mechanical View 2



Mechanical View 3



Mechanical View 5

VIEW	FIELD	VALUE
Mechanical View 1	Rotation direction	Clockwise rotation
	Mounting hole angular spacing	90 degrees between adjacent mounting positions
	Mounting hole phase angle	45 degree mounting hole phase offset
	Mounting locating diameter	Diameter 32 ± 0.1
	Threaded mounting holes and depth	4 x M3 threaded holes, depth 5.5

VIEW	FIELD	VALUE
Mechanical View 3	Mounting hole angular spacing	90 degrees
	Threaded mounting holes	4 x M3 threaded holes, depth 5.5
	Mounting hole pitch circle diameter	Diameter 32 ±0.1
Mechanical View 5	Output shaft end diameter	Diameter 5 mm, upper deviation -0.002 mm, lower deviation -0.008 mm
	Left locating shoulder diameter	Diameter 22 mm, upper deviation 0 mm, lower deviation -0.05 mm
	Output shaft diameter	Diameter 9 mm
	Motor body outside diameter	Diameter 42 mm with ±0.3 mm tolerance
	Front step axial length	1 mm with ±0.3 mm tolerance
	Front flange axial thickness	2 mm, upper deviation 0 mm, lower deviation -0.15 mm
	Output shaft extension length	20 mm with ±1 mm tolerance
	Motor body length	85 mm with ±1 mm tolerance

Technical Specifications

PARAMETER	VALUE	UNIT
Rated Torque	0.057	Nm
Rated Speed	3150	RPM
Torque Constant	64.5	mNm/A
Continuous Rated Output Power	19	W
No-Load Rotational Speed	4000	RPM
Rotational Back-EMF Constant	6.7	V/Krpm
Continuous Rated Current	1.45	A
Phase Inductance	3	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	0.3	A
Rated Voltage	24	VDC
Rotor Inertia	0.11	kgcm ²
Body Length	85	mm
Loaded Current	<1.3	A
Frame Size	42	mm

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Loaded Power	20	W
Output Shaft End Diameter	Diameter 5 mm, upper deviation -0.002 mm, lower deviation -0.008	mm
Housing shape	Round	
Output Shaft Extension Length	20 mm with ± 1 mm tolerance	mm
Noise	<50	dB
Lead Wire Length	300 $\pm$ 15	mm
Motor Body Length	85 mm with ± 1 mm tolerance	
Drawing No-load Current	<0.25	A
Line-to-line resistance	4.65	Ω
Mounting Hole Phase Angle	45°	degree
Drawing No-load Speed	3800 $\pm$ 10%	RPM
Motor Body Diameter	Diameter 42 mm with ± 0.3 mm tolerance	mm
Service Life Hours	>2500	h
Motor Construction	Slotted brushed DC motor (ferrite)	
Loaded Torque	0.057	Nm
Mounting Hole Pitch Circle Diameter	Diameter 32 $\pm$ 0.1	mm

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Output Shaft Diameter	Diameter 9	mm
Drawing Insulation Resistance	50/250V	MΩ
Housing Type	Stainless steel / iron housing	
Withstand Voltage	600V AC/50HZ/5mA/1S	
Rotation Direction	Clockwise rotation	
Duty Cycle	S1	
Mounting Threaded Holes	4 x M3 threaded holes, depth 5.5	
Mounting Hole Angular Spacing	90 degrees	degree
Loaded Speed	3100±10%	RPM
Motor Weight	0.43	kg
Stall Current	5.5	A
Starting Torque	0.02	Nm
Customization Number	1	
Stall Torque	0.256	Nm

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-IC01-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.