ENGINEERING DOCUMENTATION

Slotted Brushless DC Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-DC-SL05-M002	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

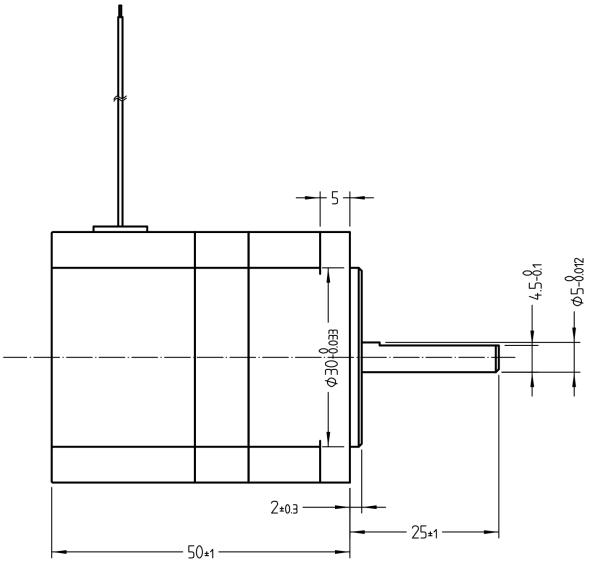
Compact electric motor for specified rotary actuation. This guide supports mounting, shaft, load-path, drive, thermal, cable and commissioning planning for ES-DC-SL05-M002.

Key Integration Facts

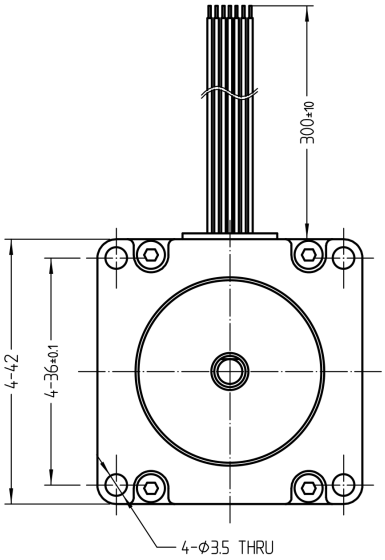
INTEGRATION ITEM	VALUE
Rated Torque	0.0625 N·m
Rated Speed	3000 rpm
Torque Constant	0.052 N·m/A
Continuous Rated Output Power	19.6 W
Instantaneous Maximum Torque	0.1875 N·m
No-Load Rotational Speed	4000 rpm
Pole Pairs	5
Instantaneous Maximum Current	3.6 A

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	Output shaft length	5 mm
	Output shaft diameter	Φ8 0/-0.033 mm
	Shaft shoulder depth	4.5 0/-0.1 mm
	Shaft end hole diameter	Φ5 0/-0.012 mm
	Motor body face boss height	2±0.3 mm
	Distance from shaft end face to motor body face	25±1 mm
	Total motor length	50±1 mm
Mechanical View 2	Motor body length	300±10
	Mounting hole center distance	4-36±0.1
	Motor faceplate dimension	4-42
	Through hole diameter	4-Φ3.5 THRU

Technical Specifications

PARAMETER	VALUE	UNIT
Rated Torque	0.0625	N·m
Rated Speed	3000	rpm
Torque Constant	0.052	N·m/A
Continuous Rated Output Power	19.6	W
Instantaneous Maximum Torque	0.1875	N·m
No-Load Rotational Speed	4000	rpm
Pole Pairs	5	
Instantaneous Maximum Current	3.6	A
Rotational Back-EMF Constant	5.44	V/krpm
Continuous Rated Current	1.2	A
Dielectric strength	500VAC/1KHz/1mA/1s	
Insulation Resistance	100 MOhm 20C	
Position Feedback Device		
No-load Current	0.15	A
Rated Voltage	24	V
Rotor Inertia	0.05	kg·cm²

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Body Length	50	mm
Frame size	42	
Winding connection		
Housing shape	Square	
Noise	≤50	dB
Commutation angle	120°	°
Housing-to-Ambient Thermal Resistance	0.75	K/W
Motor efficiency	72	%
Line resistance	2.482	Ω
Maximum Winding Temperature	68.5	°C
Housing Type	No housing	
Line inductance	1.062	mH
Ambient temperature	31.3	°C
Duty Cycle	S2	
Motor Weight	260	g

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-SL05-M002 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.