CATEGORY SELECTION GUIDE

Coreless Brushed DC Motors Category Selection Guide

Coreless brushed DC motors use an ironless rotor construction to provide compact dimensions, low rotor inertia, fast response and low-noise rotary motion. The catalog covers four diameter-based Product Platforms and five SKUs from 8 mm to 40 mm. Start with the installation envelope, then compare continuous speed and torque, transient demand, voltage and current before confirming the exact SKU and any gearbox or encoder configuration.

CATEGORY SELECTION GUIDE

CATEGORY	CURRENT CATALOG	REVISION / ISSUE
Coreless Brushed DC Motors	4 Product Platforms / 5 SKUs	R01 | 2026-09-04

CONTENTS

01 Category Scope and Objective
02 Product Principle and Typical Applications
03 Selection Inputs
04 Product Platform Architecture
05 Product Platform Catalog
06 Product Platform Selection Path and Comparison
07 SKU Refinement
08 Engineering Information Checklist
09 Engineering Use and Verification Notice

01 Category Scope and Objective

Product catalog and suitable use

Item	Current category
Product catalog	4 Product Platforms / 5 SKUs
Suitable use	Compact rotary motion for medical equipment, robotics, precision automation and advanced measuring equipment where installation envelope, low inertia, response and acoustic behavior are important.

02 Product Principle and Typical Applications

Ironless rotor construction

The ironless rotor construction reduces moving inertia and supports rapid response in a compact cylindrical motor. The brushed commutation arrangement simplifies the motor connection, while brush condition, current, thermal duty and service requirements remain application inputs.

Typical applications

Medical equipment
Compact pumps, instruments and positioning mechanisms that require a small cylindrical envelope and controlled acoustic behavior.

Robotics
Compact rotary joints, end-effector mechanisms and mobile mechanisms where low moving mass and response are important.

Precision automation and measurement
Small rotary drives in automated equipment and advanced measuring devices, selected against speed, torque, duty and integration requirements.

03 Selection Inputs

Application record checklist

01	**Installation envelope**	Record motor diameter, motor length, shaft interface, mounting, cable space and the available thermal path.
02	**Continuous operating point**	Record required speed, continuous torque, duty cycle and the duration of the operating point.
03	**Transient demand**	Record acceleration, load inertia, short-duration torque and current demand, and the repetition rate of transient events.
04	**Electrical and thermal match**	Record supply voltage, continuous and instantaneous current capability, ambient conditions and winding-temperature limits.
05	**Feedback and transmission**	Record whether direct motor output, a reduction stage or encoder feedback is required; confirm these at exact SKU level.

04 Product Platform Architecture

Diameter-based navigation

The four Product Platforms are organized by published motor diameter. Diameter is the first envelope filter, not a performance ranking; retain every size that fits and then compare the exact operating point.

8 mm and 16 mm Product Platforms
The smallest installation envelopes in the category. The 8 mm Product Platform contains both direct-motor and reduction/encoder SKU configurations, so configuration must be resolved at SKU level.

25 mm and 40 mm Product Platforms
Larger motor envelopes with higher published rated and instantaneous torque values in the current SKU set; confirm voltage, current, speed and thermal integration rather than selecting by diameter alone.

05 Product Platform Catalog

Current Product Platforms

8 mm Coreless Brushed Motor Product Platform 2 SKUs	**16 mm Coreless Brushed Motor Product Platform** 1 SKU
25 mm Coreless Brushed Motor Product Platform 1 SKU	**40 mm Coreless Brushed Motor Product Platform** 1 SKU

06 Product Platform Selection Path and Comparison

01 **Filter by installation envelope**
Retain the 8, 16, 25 or 40 mm Product Platforms that fit the motor diameter, length, mounting, shaft and cable space.

02 **Match continuous torque and speed**
Compare Rated Torque with Loaded Speed and the application duty; do not select from diameter or speed alone.

03 **Check transient demand**
Compare Instantaneous Maximum Torque, Instantaneous Maximum Current, Torque Constant and Rotor Inertia where published.

04 **Match voltage and integration**
Confirm Rated Voltage, current capability, thermal path, shaft interface and required brush, reduction or encoder configuration.

05 **Confirm the SKU**
Use the retained Product Platform to enter the SKU matrix, then confirm the exact electrical, mechanical and option configuration.

Product Platform comparison

Values shown for a Product Platform may belong to different SKUs and are not necessarily combinable. Confirm the exact configuration in the SKU matrix.

Standard parameter	8 mm	16 mm	25 mm	40 mm
Motor diameter	8	16	25	40
Motor length	24	40	43	72
Rated Voltage	12	24	24	48
Rated Torque	0.6 / 0.0006 / 0.6 mN·m or 6.7 / 0.0067	10.7 / 0.0107	30 / 0.03	200 / 0.2
Loaded Speed	6300 / 6300 rpm or 430	4600	10000	5500
Instantaneous Maximum Torque	1.17 / 0.00117 / 1.17 mN·m	40 / 0.04	270 / 0.27	1080 / 1.08

07 SKU Refinement

SKU-level differences

SKU	Product Platform	Initial filter	Key difference
ES-CM-BR01-M001	8 mm	12 V; Loaded Speed 6300 / 6300 rpm	Direct-motor parameter set; Rated Torque 0.6 / 0.0006 / 0.6 mN·m; Instantaneous Maximum Torque 1.17 / 0.00117 / 1.17 mN·m.
ES-CM-BR01-M002	8 mm	12 V; Loaded Speed 430	Reduction Ratio 16; Magnetic encoder; 256 encoder pulses per revolution; Rated Torque 6.7 / 0.0067.
ES-CM-BR02-M001	16 mm	24 V; Loaded Speed 4600	Rated Torque 10.7 / 0.0107; Instantaneous Maximum Torque 40 / 0.04; Graphite brush.
ES-CM-BR03-M001	25 mm	24 V; Loaded Speed 10000	Rated Torque 30 / 0.03; Instantaneous Maximum Torque 270 / 0.27; Graphite brush.
ES-CM-BR04-M001	40 mm	48 V; Loaded Speed 5500	Rated Torque 200 / 0.2; Instantaneous Maximum Torque 1080 / 1.08; Graphite brush.

Final SKU checks

01	Confirm the exact motor diameter, motor length, shaft and mounting envelope.
02	Confirm Rated Torque and Loaded Speed at the continuous operating point, then check Instantaneous Maximum Torque and Instantaneous Maximum Current for transients.
03	Confirm Rated Voltage, current capability, Torque Constant, Rotor Inertia and thermal duty with the intended drive and load.
04	For the 8 mm Product Platform, confirm whether the direct-motor SKU or the reduction-and-encoder SKU is required.

08 Engineering Information Checklist

Record before RFQ or engineering evaluation

01	**Motion function**	Required speed range, direction, acceleration, position or velocity behavior and stopping conditions.
02	**Load and duty**	Continuous torque, transient torque, load inertia, duty cycle and thermal period.
03	**Mechanical interface**	Diameter, body length, shaft, mounting, coupling, cable space and permissible moving mass.
04	**Electrical interface**	Supply voltage, continuous and instantaneous current, drive behavior, wiring and feedback requirements.
05	**Environment and options**	Ambient and winding temperatures, acoustic target, brush service, reduction ratio and encoder requirements.
06	**Required documents**	SKU Product Datasheet, Dimensional & Integration Guide, 2D drawing and controlled 3D resources.

09 Engineering Use and Verification Notice

Controlled engineering documents

01	Use the current SKU Product Datasheet for exact SKU parameters and configuration verification.
02	Use the applicable Dimensional & Integration Guide and 2D drawing for envelope, shaft, mounting, wiring and installation details.
03	Request STEP or native CAD for the exact SKU through the controlled engineering-file process.

Final verification statement

This guide supports preliminary Product Platform and SKU selection. Before design freeze, procurement or use, verify the exact SKU, mechanical and electrical interfaces, operating point, transient demand, thermal duty, feedback or reduction configuration, environmental conditions and current controlled engineering documents. Do not derive missing torque, speed, compatibility or performance values from a SKU code, Product Platform name, adjacent size or a single rated value.