

CATEGORY SELECTION GUIDE

Coreless Brushless Motors Category Selection Guide

Coreless brushless motors use an ironless stator structure to support low inertia, fast response and smooth high-speed rotary motion in compact equipment. The catalog covers 12 diameter-based Product Platforms and 12 SKUs from 6 mm to 42 mm. Start with the installation envelope, then compare the required speed, torque, voltage, current and dynamic response before confirming the corresponding SKU and integration options.

CATEGORY SELECTION GUIDE

CATEGORY	CURRENT CATALOG	REVISION / ISSUE
Coreless Brushless Miniature and Standard Motors	12 Product Platforms / 12 SKUs	R01 2026-09-04

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01 | Category Scope and Objective

Product catalog and suitable use

Item	Current category
Product catalog	12 Product Platforms / 12 SKUs
Suitable use	Compact high-speed rotary motion for robot hands, medical pumps and instruments, inspection equipment, semiconductor equipment, precision automation and other space-constrained axes.

02 | Typical Applications and Selection Inputs

Typical applications

Robot hands and compact robotics Use the smaller diameter Product Platforms as candidates where low moving mass and a constrained cylindrical envelope are important; confirm torque, speed and feedback at SKU level.	Medical pumps and instruments For pump, dosing and surgical mechanisms, record the speed profile, continuous duty, thermal path, noise target and required feedback before selecting a diameter.	Inspection, semiconductor and precision automation For compact rotary positioning, match inertia and response requirements with the drive, load and any encoder or gearbox integration.
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Inputs to record before shortlisting

01	Installation envelope	Record motor diameter, motor body length, shaft interface, mounting, cable space and surrounding thermal path.
02	Operating point	Record rated speed, continuous torque, peak torque, output power, duty cycle and acceleration profile.
03	Electrical match	Record available voltage, continuous and peak current, winding connection, drive type and commutation/feedback requirements.
04	Dynamic and environmental conditions	Record load inertia, response target, ambient temperature, insulation requirement, noise target and any encoder or gearbox option.

03 | Product Platform Architecture

Diameter-based navigation groups

Product Platforms are organized by published motor diameter. The 6–16 mm group emphasizes the smallest installation envelopes; the 22–42 mm group extends the available envelope and performance range. Diameter is a navigation axis, not a performance guarantee, so the exact operating point must be checked at SKU level.

6–16 mm compact group Seven Product Platforms cover 6, 8, 10, 12, 13, 14 and 16 mm diameters for tightly constrained rotary motion.	22–42 mm standard group Five Product Platforms cover 22, 28, 30, 36 and 42 mm diameters for applications that can accept a larger motor envelope.
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04 | Product Platform Directory

Current Product Platforms

The complete 12-platform catalog is shown as a compact directory. Use the comparison and selection sections for engineering screening before confirming the one SKU assigned to the retained Product Platform.

 6 mm Coreless Brushless Motor Product Platform · ES-CM-BL01 1 SKU	 8 mm Coreless Brushless Motor Product Platform · ES-CM-BL02 1 SKU
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 10 mm Coreless Brushless Motor Product Platform · ES-CM-BL03 1 SKU	 12 mm Coreless Brushless Motor Product Platform · ES-CM-BL04 1 SKU
 13 mm Coreless Brushless Motor Product Platform · ES-CM-BL05 1 SKU	 14 mm Coreless Brushless Motor Product Platform · ES-CM-BL06 1 SKU
 16 mm Coreless Brushless Motor Product Platform · ES-CM-BL07 1 SKU	 22 mm Coreless Brushless Motor Product Platform · ES-CM-BL08 1 SKU
 28 mm Coreless Brushless Motor Product Platform · ES-CM-BL09 1 SKU	 30 mm Coreless Brushless Motor Product Platform · ES-CM-BL10 1 SKU
 36 mm Coreless Brushless Motor Product Platform · ES-CM-BL11 1 SKU	 42 mm Coreless Brushless Motor Product Platform · ES-CM-BL12 1 SKU

05 | Platform Comparison and Trade-offs

Diameter and operating-point comparison

Product Platform	SKU	Envelope	Operating point
6 mm Coreless Brushless Motor Product Platform · ES-CM-BL01	ES-CM-BL01-M001	Motor diameter: 6 / Motor Body Length: 20	Rated Speed: 32000 / Rated Torque: 0.3 / 0.0003
8 mm Coreless Brushless Motor Product Platform · ES-CM-BL02	ES-CM-BL02-M001	Motor diameter: 8 / Motor Body Length: 25	Rated Speed: 38200 / Rated Torque: 0.8 / 0.0008
10 mm Coreless Brushless Motor Product Platform · ES-CM-BL03	ES-CM-BL03-M001	Motor diameter: 10 / Motor Body Length: 26	Rated Speed: 28500 / Rated Torque: 1.5 / 0.0015
12 mm Coreless Brushless Motor Product Platform · ES-CM-BL04	ES-CM-BL04-M001	Motor diameter: 12 / Motor Body Length: 29	Rated Speed: 12000 / Rated Torque: 4.0 / 0.004
13 mm Coreless Brushless Motor Product Platform · ES-CM-BL05	ES-CM-BL05-M001	Motor diameter: 13 / Motor Body Length: 37	Rated Speed: 43500 / Rated Torque: 2.7 / 0.0027
14 mm Coreless Brushless Motor Product Platform · ES-CM-BL06	ES-CM-BL06-M001	Motor diameter: 14 / Motor Body Length: 36	Rated Speed: 12000 / Rated Torque: 4.0 / 0.004
16 mm Coreless Brushless Motor Product Platform · ES-CM-BL07	ES-CM-BL07-M001	Motor diameter: 16 / Motor Body Length: 40	Rated Speed: 51000 / 51000 rpm / Rated Torque: 7.4 / 0.0074 / 7.4 mNm
22 mm Coreless Brushless Motor Product Platform · ES-CM-BL08	ES-CM-BL08-M001	Motor diameter: 22 / Motor Body Length: 48	Rated Speed: 49000 / 49000 rpm / Rated Torque: 20 / 0.02 / 20 mNm
28 mm Coreless Brushless Motor Product Platform · ES-CM-BL09	ES-CM-BL09-M001	Motor diameter: 28 / Motor Body Length: 52	Rated Speed: 9400 / 9400 rpm / Rated Torque: 32 / 0.032 / 32 mNm
30 mm Coreless Brushless Motor Product Platform · ES-CM-BL10	ES-CM-BL10-M001	Motor diameter: 30 / Motor Body Length: 65	Rated Speed: 6900 / Rated Torque: 90.0 / 0.09
36 mm Coreless Brushless Motor Product Platform · ES-CM-BL11	ES-CM-BL11-M001	Motor diameter: 36 / Motor Body Length: 60	Rated Speed: 9345 / 9345 rpm / Rated Torque: 70 / 0.07 / 70 mNm
42 mm Coreless Brushless Motor Product Platform · ES-CM-BL12	ES-CM-BL12-M001	Motor diameter: 42 / Motor Body Length: 80	Rated Speed: 8346 / 8346 rpm / Rated Torque: 90 / 0.09 / 90 mNm

06 | Selection Path

From application inputs to SKU

01 Retain by installation envelope

Use Motor diameter and Motor Body Length to retain Product Platforms that fit the mechanical space.

02 Check speed and torque duty

Compare Rated Speed, Rated Torque, Peak torque and Continuous Rated Output Power with the required duty.

03 Match voltage, current and drive

Confirm Rated Voltage, Rated Current, Peak Current, winding and commutation requirements.

04 Check dynamic response and feedback

Use Rotor Inertia, Torque Constant and Feedback method with the load and controller.

05 Confirm the SKU

Each current Product Platform maps to one SKU; confirm that SKU, its options and controlled engineering documents.

07 | SKU Confirmation

Parameters used to confirm the SKU

Standard parameter	Confirmation role	Available values
Motor diameter	Use the published diameter as the first mechanical-envelope constraint.	6 / 8 / 10 / 12 / 13 / 14 / 16 / 22 / 28 / 30 / 36 / 42
Motor Body Length	Confirm axial space, shaft stack and cable clearance.	20 / 25 / 26 / 29 / 37 / 36 / 40 / 48 / 52 / 65 / 60 / 80
Rated Voltage	Match the SKU to the available bus and drive voltage.	6 / 12 / 24 / 24 / 24 V
Rated Speed	Compare the rated speed with the continuous operating point.	32000 / 38200 / 28500 / 12000 / 43500 / 51000 / 51000 rpm / 49000 / 49000 rpm / 9400 / 9400 rpm / 6900 / 9345 / 9345 rpm / 8346 / 8346 rpm
Rated Torque	Compare the published rated torque with the continuous load requirement.	0.3 / 0.0003 / 0.8 / 0.0008 / 1.5 / 0.0015 / 4.0 / 0.004 / 2.7 / 0.0027 / 7.4 / 0.0074 / 7.4 mNm / 20 / 0.02 / 20 mNm / 32 / 0.032 / 32 mNm / 90.0 / 0.09 / 70 / 0.07 / 70 mNm / 90 / 0.09 / 90 mNm
Peak torque	Check acceleration and short transient loads against peak torque where published.	0.66 / 3.49 / 7.15 / 19.76 / 26.73 / 22.07 / 1122.08
Continuous Rated Output Power	Use the published continuous output power together with speed and torque; do not use it alone.	1 / 3.25 / 5 / 11 / 40 / 100 / 31.5 / 65 / 69 / 80
Rated Current	Match continuous current to the drive and thermal conditions.	0.46 / 0.45 / 0.56 / 1.21 / 0.66 / 1.25 / 2.2 / <2.2 A / 4.68 A / 4.68 / 1.64 A / 1.64 / 3.85 / 3.78 A / 3.78 / 4.17 A / 4.17
Peak Current	Check the drive and transient duty against the published peak current where available.	1 / 2 / 3 / 6 / 7 / 48
Torque Constant	Use the torque constant for current-to-torque and drive sizing checks.	0.65 / 0.00065 / 1.77 / 0.00177 / 2.68 / 0.00268 / 3.29 / 0.00329 / 4.06 / 0.00406 / 3.2 / 0.0032 / 3.4 / 0.0034 / 3.4 mNm/A / 4.27 / 0.00427 / 4.27 mNm/A / 19.51 / 0.01951 / 19.51 mNm/A / 23.38 / 0.02338 / 18.5 / 0.0185 / 18.5 mNm/A / 21.6 / 0.0216 / 21.6 mNm/A
Rotor Inertia	Use the exact SKU value when checking load-to-motor inertia and response.	0.005 / 5.0E-6 / 0.016 / 1.6E-5 / 0.026 / 2.6E-5 / 0.3 / 0.0003 / 0.14 / 0.00014 / 0.583 / 0.000583 / 0.583 gcm ² / 1.15 / 0.00115 / 1.15 gcm ² / 10.2 / 0.0102 / 10.2 gcm ² / 28.0 / 0.028 / 39 / 0.039 / 39 gcm ² / 96.3 / 0.0963 / 96.3 gcm ²
Feedback method	Confirm feedback compatibility with the controller where a method is stated.	Hall sensors
Duty Cycle	Confirm that the stated duty is compatible with the application cycle.	S2 / S1

Lightweight SKU confirmation sequence

01 Confirm diameter and body length

Retain the one-SKU Product Platform that fits the cylindrical envelope.

02 Confirm continuous operating point

Check rated speed, rated torque, output power and rated current together.

03 Confirm transient response

Check peak torque, peak current, rotor inertia and torque constant where published.

04 Confirm electrical and integration details

Check voltage, feedback, winding, shaft, cable and any encoder or gearbox option before confirming the SKU.

08 | Engineering Information Checklist

Record before RFQ or engineering evaluation

01	Motion function	Required speed range, direction, acceleration, position or velocity control and stopping behavior.
02	Load and duty	Continuous torque, transient torque, load inertia, duty cycle and thermal period.
03	Mechanical interface	Diameter, body length, mounting, shaft/coupling, cable space and permissible moving mass.
04	Electrical interface	Bus voltage, continuous and peak current, drive type, commutation, wiring and feedback.
05	Environment and options	Ambient temperature, insulation, contamination, noise target, encoder and gearbox 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	SKU Product Datasheet	Use the current document for exact SKU parameters and configuration verification.
02	Dimensional & Integration Guide	Use the applicable guide and 2D drawing for envelope, shaft, mounting, wiring and installation details.
03	Controlled 3D resources	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, thermal duty, feedback, 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.