

CATEGORY SELECTION GUIDE

Hybrid Stepper Motors Category Selection Guide

Hybrid stepper motors combine discrete rotary motion with selectable frame sizes, winding and interface options for positioning axes. The catalog covers eight Product Platforms and 47 SKUs; use frame envelope and published standard parameter values to retain candidates, then confirm current, inertia, phase, options and the exact SKU for the application.

CATEGORY SELECTION GUIDE

CATEGORY	CURRENT CATALOG	REVISION / ISSUE
Hybrid Stepper Motors	8 Product Platforms / 47 SKUs	R01 2026-09-04

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01 | Category Scope and Objective

Product catalog and suitable use

Item	Current category
Product catalog	8 Product Platforms / 47 SKUs
Suitable use	Rotary positioning and motion functions in medical, laboratory, industrial automation, robotics, 3D printing and fluid-control equipment.

02 | Typical Applications and Selection Inputs

Typical applications

Medical and life-science equipment Use the rotary stepper motor Product Platforms as a candidate for compact positioning functions in medical and life-science equipment when the recorded frame, current and motion requirements match.	Laboratory automation For laboratory automation axes, record the required frame envelope, step angle, holding torque, current and duty before retaining a Product Platform.
Industrial automation and robotics For packaging, factory-automation and robot peripheral axes, use frame size and operating-point parameters for the first shortlist, then confirm the exact SKU and drive interface.	3D printing and fluid control For 3D-printing and fluid-control mechanisms, compare step angle, body length, current and inertia with the controller and mechanical transmission.

Inputs to record before shortlisting

01	Installation envelope	Record frame size, body length, mounting pattern, shaft interface and cable space.
02	Motion and load	Record required speed, acceleration, holding condition, transmission and reflected inertia.
03	Drive and electrical context	Record phase count, rated current, winding values, controller and wiring requirements.
04	Options and environment	Record encoder, brake, gearbox, shaft treatment, cable, protection and cooling requirements where applicable.

03 | Product Platform Architecture

Frame-size navigation groups

The eight Product Platform groups are organized by the frame sizes published for this category. Frame size is a catalog navigation axis; operating point, drive matching and options must still be checked at SKU level.

14 mm frame group The 14 mm Product Platform group contains 1 SKU and is navigated by frame envelope. Its available standard values span the recorded body length, holding torque, rated current, rotor inertia and step angle for this group; use those values to retain candidates, then refine to one SKU.	20 mm frame group The 20 mm Product Platform group contains 4 SKUs and is navigated by frame envelope. Its available standard values span the recorded body length, holding torque, rated current, rotor inertia and step angle for this group; use those values to retain candidates, then refine to one SKU.
28 mm frame group The 28 mm Product Platform group contains 6 SKUs and is navigated by frame envelope. Its available standard values span the recorded body length, holding torque, rated current, rotor inertia and step angle for this group; use those values to retain candidates, then refine to one SKU.	35 mm frame group The 35 mm Product Platform group contains 6 SKUs and is navigated by frame envelope. Its available standard values span the recorded body length, holding torque, rated current, rotor inertia and step angle for this group; use those values to retain candidates, then refine to one SKU.
42 mm frame group The 42 mm Product Platform group contains 8 SKUs and is navigated by frame envelope. Its available standard values span the recorded body length, holding torque, rated current, rotor inertia and step angle for this group; use those values to retain candidates, then refine to one SKU.	57 mm frame group The 57 mm Product Platform group contains 8 SKUs and is navigated by frame envelope. Its available standard values span the recorded body length, holding torque, rated current, rotor inertia and step angle for this group; use those values to retain candidates, then refine to one SKU.

60 mm frame group

The 60 mm Product Platform group contains 8 SKUs and is navigated by frame envelope. Its available standard values span the recorded body length, holding torque, rated current, rotor inertia and step angle for this group; use those values to retain candidates, then refine to one SKU.

86 mm frame group

The 86 mm Product Platform group contains 6 SKUs and is navigated by frame envelope. Its available standard values span the recorded body length, holding torque, rated current, rotor inertia and step angle for this group; use those values to retain candidates, then refine to one SKU.

04 | Product Platform Directory

Current Product Platforms

	14 mm Hybrid Stepper Motor Product Platform · ES-ST-HY01 This Product Platform covers 1 SKU in a 14 mm frame size. Body Length: 32 mm; Holding Torque: 0.005; Rated Current: 0.3; Rotor Inertia: 1.5 / 0.0015; Step Angle: 1.8° / 1.8. Confirm shaft configuration, phase and wiring options, drive matching and any accessory requirements against the exact SKU before release.	1 SKU
	20 mm Hybrid Stepper Motor Product Platform · ES-ST-HY02 This Product Platform covers 4 SKUs in a 20 mm frame size. Body Length: 28 mm / 38 mm; Holding Torque: 0.012 / 0.02; Rated Current: 0.5; Rotor Inertia: 2.7 / 0.0027 / 3.3 / 0.0033; Step Angle: 1.8° / 1.8. Confirm shaft configuration, phase and wiring options, drive matching and any accessory requirements against the exact SKU before release.	4 SKUs
	28 mm Hybrid Stepper Motor Product Platform · ES-ST-HY03 This Product Platform covers 6 SKUs in a 28 mm frame size. Body Length: 33.35 mm / 45 mm / 52 mm; Holding Torque: 0.06 / 0.1 / 0.14; Rated Current: 1; Rotor Inertia: 9 / 0.009 / 13 / 0.013 / 18 / 0.018; Step Angle: 1.8° / 1.8. Confirm shaft configuration, phase and wiring options, drive matching and any accessory requirements against the exact SKU before release.	6 SKUs
	35 mm Hybrid Stepper Motor Product Platform · ES-ST-HY04 This Product Platform covers 6 SKUs in a 35 mm frame size. Body Length: 28 mm / 37 mm / 52 mm; Holding Torque: 0.15 / 0.2 / 0.4; Rated Current: 0.5 / 1.5; Rotor Inertia: 10 / 0.01 / 28 / 0.028 / 30 / 0.03; Step Angle: 1.8° / 1.8. Confirm shaft configuration, phase and wiring options, drive matching and any accessory requirements against the exact SKU before release.	6 SKUs
	42 mm Hybrid Stepper Motor Product Platform · ES-ST-HY05 This Product Platform covers 8 SKUs in a 42 mm frame size. Body Length: 35 mm / 41 mm / 49 mm / 61 mm; Holding Torque: 0.25 / 0.4 / 0.48 / 0.72; Rated Current: 0.5 / 1 / 2; Rotor Inertia: 25 / 0.025 / 54 / 0.054 / 77 / 0.077 / 110 / 0.11; Step Angle: 1.8° / 1.8. Confirm shaft configuration, phase and wiring options, drive matching and any accessory requirements against the exact SKU before release.	8 SKUs
	57 mm Hybrid Stepper Motor Product Platform · ES-ST-HY06 This Product Platform covers 8 SKUs in a 57 mm frame size. Body Length: 42 mm / 51 mm / 65 mm / 76 mm; Holding Torque: 0.6 / 1 / 1.6 / 2; Rated Current: 1 / 2 / 3 / 4; Rotor Inertia: 140 / 0.14 / 240 / 0.24 / 350 / 0.35 / 480 / 0.48; Step Angle: 1.8° / 1.8. Confirm shaft configuration, phase and wiring options, drive matching and any accessory requirements against the exact SKU before release.	8 SKUs
	60 mm Hybrid Stepper Motor Product Platform · ES-ST-HY07 This Product Platform covers 8 SKUs in a 60 mm frame size. Body Length: 47 mm / 56 mm / 68 mm / 85 mm; Holding Torque: 1 / 1.5 / 2.1 / 3; Rated Current: 2 / 3 / 4 / 5; Rotor Inertia: 340 / 0.34 / 490 / 0.49 / 690 / 0.69; Step Angle: 1.8° / 1.8. Confirm shaft configuration, phase and wiring options, drive matching and any accessory requirements against the exact SKU before release.	8 SKUs
	86 mm Hybrid Stepper Motor Product Platform · ES-ST-HY08 This Product Platform covers 6 SKUs in a 86 mm frame size. Body Length: 60.5 mm / 75 mm / 96.5 mm; Holding Torque: 3 / 4.5 / 7; Rated Current: 3 / 4.5 / 6; Rotor Inertia: 1100 / 1.1 / 1800 / 1.8 / 2800 / 2.8; Step Angle: 1.8° / 1.8. Confirm shaft configuration, phase and wiring options, drive matching and any accessory requirements against the exact SKU before release.	6 SKUs

05 | Product Platform Selection Matrix

Published standard values by Product Platform

Product Platform	SKU count	Body Length	Holding Torque	Rated Current	Rotor Inertia	Step Angle
14 mm Hybrid Stepper Motor Product Platform · ES-ST-HY01	1	32 mm	0.005	0.3	1.5 / 0.0015	1.8° / 1.8
20 mm Hybrid Stepper Motor Product Platform · ES-ST-HY02	4	28 mm / 38 mm	0.012 / 0.02	0.5	2.7 / 0.0027 / 3.3 / 0.0033	1.8° / 1.8
28 mm Hybrid Stepper Motor Product Platform · ES-ST-HY03	6	33.35 mm / 45 mm / 52 mm	0.06 / 0.1 / 0.14	1	9 / 0.009 / 13 / 0.013 / 18 / 0.018	1.8° / 1.8
35 mm Hybrid Stepper Motor Product Platform · ES-ST-HY04	6	28 mm / 37 mm / 52 mm	0.15 / 0.2 / 0.4	0.5 / 1.5	10 / 0.01 / 28 / 0.028 / 30 / 0.03	1.8° / 1.8
42 mm Hybrid Stepper Motor Product Platform · ES-ST-HY05	8	35 mm / 41 mm / 49 mm / 61 mm	0.25 / 0.4 / 0.48 / 0.72	0.5 / 1 / 2	25 / 0.025 / 54 / 0.054 / 77 / 0.077 / 110 / 0.11	1.8° / 1.8
57 mm Hybrid Stepper Motor Product Platform · ES-ST-HY06	8	42 mm / 51 mm / 65 mm / 76 mm	0.6 / 1 / 1.6 / 2	1 / 2 / 3 / 4	140 / 0.14 / 240 / 0.24 / 350 / 0.35 / 480 / 0.48	1.8° / 1.8
60 mm Hybrid Stepper Motor Product Platform · ES-ST-HY07	8	47 mm / 56 mm / 68 mm / 85 mm	1 / 1.5 / 2.1 / 3	2 / 3 / 4 / 5	340 / 0.34 / 490 / 0.49 / 690 / 0.69	1.8° / 1.8
86 mm Hybrid Stepper Motor Product Platform · ES-ST-HY08	6	60.5 mm / 75 mm / 96.5 mm	3 / 4.5 / 7	3 / 4.5 / 6	1100 / 1.1 / 1800 / 1.8 / 2800 / 2.8	1.8° / 1.8

06 | Selection Sequence

From application inputs to SKU

01	Retain by installation envelope Use frame size and body length to retain Product Platforms that fit the mechanical envelope.
02	Check operating point Compare Holding Torque, Rated Current, Rotor Inertia and the required motion profile.
03	Match controller and wiring Confirm Number of Phases, Phase Inductance, Phase Resistance, Step Angle and the intended drive.
04	Select options Confirm shaft form, encoder, brake, gearbox, cable and protection requirements from the applicable Product Platform and SKU records.
05	Confirm the SKU Confirm the remaining SKU against its complete parameter set and controlled engineering documents.

07 | SKU Refinement

Parameters used to move from Product Platform to SKU

Standard parameter	Refinement role
Body Length	Use the available axial envelope and mounting stack to retain compatible candidates.
Holding Torque	Compare the recorded holding torque with the required static load; do not infer dynamic torque from it.
Rated Current	Match the motor current requirement to the selected drive and thermal operating condition.
Rotor Inertia	Use the exact SKU value when checking load-to-motor inertia and motion response.
Step Angle	Confirm the step-angle requirement with the controller and microstepping strategy.
Number of Phases	Confirm phase count before selecting the drive and wiring scheme.
Phase Inductance	Use the exact phase-inductance value for drive tuning and current-loop matching.
Phase Resistance	Use the exact phase-resistance value for current and thermal checks.
Insulation Class	Confirm insulation requirements against the application environment and drive conditions.
Insulation Resistance	Use the stated insulation-resistance value for electrical verification.
Temperature Rise	Check the stated temperature-rise value with the duty cycle and cooling path.
Weight	Include the exact SKU weight in moving-mass and mounting calculations.

Lightweight SKU confirmation sequence

01	Retain by installation envelope Use frame size and body length to retain Product Platforms that fit the mechanical envelope.
02	Check operating point Compare Holding Torque, Rated Current, Rotor Inertia and the required motion profile.
03	Match controller and wiring Confirm Number of Phases, Phase Inductance, Phase Resistance, Step Angle and the intended drive.
04	Select options Confirm shaft form, encoder, brake, gearbox, cable and protection requirements from the applicable Product Platform and SKU records.
05	Confirm the SKU Confirm the remaining SKU against its complete parameter set and controlled engineering documents.

08 | Engineering Information Checklist

Record before RFQ or engineering evaluation

01	Motion function	Axis function, direction, transmission, position requirement and motion profile.
02	Load and duty	Holding condition, load inertia, acceleration, duty cycle and thermal period.
03	Mechanical interface	Frame envelope, mounting pattern, shaft interface, coupling and orientation.
04	Electrical interface	Controller, current, phase, winding, step angle and cable definition.
05	Options and environment	Encoder, brake, gearbox, protection, temperature, contamination and cooling path.
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, mounting, shaft, connector 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, application loads, environmental conditions and current controlled engineering documents. Do not derive missing torque, compatibility or performance values from a SKU code, Product Platform name, adjacent SKU or a single rated value.