CATEGORY SELECTION GUIDE

Low-Voltage Servo Motors Category Selection Guide

Low-voltage servo motors form closed-loop rotary axes with position feedback and a compatible drive in battery-powered and DC-bus motion systems. The current category spans 40–180 mm flange records, 48 V and 96 V voltage records, and multiple continuous-output, rated-torque, peak-torque, feedback and brake combinations for mobile robots, material-handling axes, compact automation equipment and other DC-powered mechanisms.

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CATEGORY	CURRENT CATALOG	REVISION / ISSUE
Low-Voltage Servo Motors	11 Product Platforms / 97 SKUs	R01	2026-09-04

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01 Category Scope and Objective

Product catalog and application scope

Low-voltage servo motors form closed-loop rotary axes with position feedback and a compatible drive in battery-powered and DC-bus motion systems. The current category spans 40–180 mm flange records, 48 V and 96 V voltage records, and multiple continuous-output, rated-torque, peak-torque, feedback and brake combinations for mobile robots, material-handling axes, compact automation equipment and other DC-powered mechanisms.

Product catalog

Item	Content
Terminal category	Low-Voltage Servo Motors
Product Platforms	11
SKU	97
Primary catalog dimensions	Flange size, voltage, continuous output, rated torque, rated speed, feedback and brake

02 Typical Applications and Selection Inputs

Typical applications

Mobile robots and material handling
For battery-powered mobile bases, unmanned forklifts, shuttles and handling mechanisms; confirm DC-bus voltage, continuous torque, peak duty, brake need and installation space.

Compact automation axes
For space-constrained conveying, steering, lifting or positioning mechanisms; confirm flange, axial length, cable direction, load inertia and thermal conditions first.

DC-powered rotary mechanisms
For closed-loop rotary axes using 48 V or 96 V architectures; confirm motor, feedback, drive and control interface as one system.

Selection inputs

01	**Installation envelope**	Record flange size, axial length, shaft end, mounting orientation, cable outlet and surrounding clearance.
02	**Continuous operating point**	Record continuous torque, operating speed, duty cycle, ambient temperature and cooling conditions.
03	**Peak duty**	Record acceleration and deceleration time, peak torque, duration, cycle frequency and regenerative-energy conditions.
04	**Electrical and feedback**	Record DC bus, compatible drive, feedback interface, brake control and cable requirements.
05	**Load and transmission**	Record load inertia, external radial or axial load, reduction stage, coupling and mechanical efficiency.

03 Product Platform Catalog Logic

Catalog navigation groups

Catalog group	Recorded basis	How to use it
48 V Product Platforms	L01: 40, 60, 80 and 130 mm flanges with published 48 V records	Use for voltage and envelope navigation, not as the first exclusion gate
Compact Product Platforms	L02: 40, 60 and 80 mm flanges; catalog titles identify a compact construction, and some 80 mm SKUs record 96 V	Continue here when axial packaging or installation space is constrained
96 V Product Platforms	L03: 130 and 180 mm flanges with published 96 V records	Use to navigate higher continuous-output and torque ranges

04 Product Platform Directory

Low-Voltage Servo Motor Product Platforms

48 V / 40 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 8 SKUs. Published standard-parameter records show 48 / 48 VDC·48 VDC / 48 rated voltage, 50 W·100 W continuous rated output, 0.16 N·m / 0.16·0.32 N·m / 0.32 rated torque and 3000 / 3000 rpm rated speed.
ES-SM-L01-040S

48 V / 60 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 15 SKUs. Published standard-parameter records show 48 / 48 VDC·48 VDC / 48 rated voltage, 200 W·400 W·600 W continuous rated output, 0.64 N·m / 0.64·1.27 N·m / 1.27·1.91 N·m / 1.91 rated torque and 3000 / 3000 rpm rated speed.
ES-SM-L01-060S

48 V / 80 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 14 SKUs. Published standard-parameter records show 48 / 48 VDC·48 VDC / 48 rated voltage, 750 W·1000 W·1200 W continuous rated output, 2.39 N·m / 2.39·3.18 N·m / 3.18·3.82 N·m / 3.82·3.18·2.39 rated torque and 3000 / 3000 rpm rated speed.
ES-SM-L01-080S

48 V / 130 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 8 SKUs. Published standard-parameter records show 48 / 48 VDC·48 VDC / 48 rated voltage, 1500 W·2500 W·3000 W continuous rated output, 5·7.96·14.33·9.55 rated torque and 3000 rpm / 3000 rated speed.
ES-SM-L01-130D

Compact 48 V / 40 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 2 SKUs. Published standard-parameter records show 48 VDC / 48·48 / 48 VDC rated voltage, 100 W continuous rated output, 0.32 N·m / 0.32·0.32 / 0.32 N·m rated torque and 3000 rpm / 3000 rated speed.
ES-SM-L02-040S

Compact 48 V / 60 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 6 SKUs. Published standard-parameter records show 48 / 48 VDC·48 VDC / 48 rated voltage, 200 W·400 W continuous rated output, 0.64 N·m / 0.64·1.27 N·m / 1.27 rated torque and 3000 / 3000 rpm rated speed.
ES-SM-L02-060D

Compact 48 V / 60 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 8 SKUs. Published standard-parameter records show 48 / 48 VDC·48 VDC / 48 rated voltage, 200 W·400 W continuous rated output, 0.64 N·m / 0.64·1.27 N·m / 1.27 rated torque and 3000 / 3000 rpm rated speed.
ES-SM-L02-060S

Compact 48–96 V / 80 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 18 SKUs. Published standard-parameter records show 48 VDC·96 VDC rated voltage, 400 W·750 W·1000 W·1200 W·1500 W continuous rated output, 1.27 N·m / 1.27·2.39 N·m / 2.39·3.18 N·m / 3.18·3.82 N·m / 3.82·4.77 N·m / 4.77 rated torque and 3000 rpm / 3000 rated speed.
ES-SM-L02-080D

Compact 48 V / 80 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 8 SKUs. Published standard-parameter records show 48 / 48 VDC·48 VDC / 48 rated voltage, 750 W·1000 W continuous rated output, 2.39 N·m / 2.39·3.18 N·m / 3.18 rated torque and 3000 / 3000 rpm rated speed.
ES-SM-L02-080S

96 V / 130 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 4 SKUs. Published standard-parameter records show 96 / 96 VDC·96 VDC / 96 rated voltage, 1500 W·3000 W continuous rated output, 4.775 N·m / 4.775·9.55 N·m / 9.55 rated torque and 3000 / 3000 rpm rated speed.
ES-SM-L03-130G

96 V / 180 mm Low-Voltage Servo Motor Product Platform
This Product Platform covers 6 SKUs. Published standard-parameter records show 96 VDC / 96·96 / 96 VDC rated voltage, 3000 W·4000 W·5000 W continuous rated output, 14.33 N·m / 14.33·19.1 N·m / 19.1·23.88 N·m / 23.88 rated torque and 2000 rpm / 2000 rated speed.
ES-SM-L03-180G

05 | Layered Selection Path

Recommended selection sequence

01	**1** Confirm installation envelope and flange size
02	**2** Establish the continuous torque and operating-speed point
03	**3** Check peak torque, acceleration, deceleration and cyclic duty
04	**4** Confirm DC bus, compatible drive and thermal conditions
05	**5** Confirm feedback, brake, shaft end and cable interfaces
06	**6** Open the matching Product Platform
07	**7** Confirm the SKU from the differentiating parameters

06 Product Platform Parameter Comparison

Initial screening matrix

Product Platform	Flange Size	Rated Voltage	Continuous Rated Output Power	Rated Torque	Rated Speed	Instantaneous Maximum Torque	Position Feedback Device	Holding Brake Available	Protection Rating
ES-SM-L01-040S	40 / 40 mm	48 / 48 VDC · 48 VDC / 48	50 W · 100 W	0.16 N·m / 0.16 · 0.32 N·m / 0.32	3000 / 3000 rpm	0.48 · 0.96	ME16MHM-04 · SRMA35-M16S17Bit	Without holding brake · With holding brake	Body IP65; shaft end IP54 without oil seal, IP65 with oil seal
ES-SM-L01-060S	60 / 60 mm	48 / 48 VDC · 48 VDC / 48	200 W · 400 W · 600 W	0.64 N·m / 0.64 · 1.27 N·m / 1.27 · 1.91 N·m / 1.91	3000 / 3000 rpm	1.92 · 1.28 · 3.81 · 2.54 · 5.73	ME16MHM-04 · SRMA34-M16S17Bit-SY-C-5	Without holding brake · With holding brake	Body IP65; shaft end IP54 without oil seal, IP65 with oil seal
ES-SM-L01-080S	80 / 80 mm	48 / 48 VDC · 48 VDC / 48	750 W · 1000 W · 1200 W	2.39 N·m / 2.39 · 3.18 N·m / 3.18 · 3.82 N·m / 3.82 · 3.18 · 2.39	3000 / 3000 rpm	7.17 · 9.57 · 11.5 · 9.54	ME16MHM-04 · SRMA46-M16S17Bit-SY-C-5V	Without holding brake · With holding brake	Body IP65; shaft end IP54 without oil seal, IP65 with oil seal · IP54
ES-SM-L01-130D	130 / 130 mm	48 / 48 VDC · 48 VDC / 48	1500 W · 2500 W · 3000 W	5 · 7.96 · 14.33 · 9.55	3000 rpm / 3000	15 · 23.89 · 43 · 28.66	Incremental 2500pprMagnetic Encoder	Without holding brake · With holding brake	IP65, shaft sealing IP54
ES-SM-L02-040S	40 mm / 40	48 VDC / 48 · 48 / 48 VDC	100 W	0.32 N·m / 0.32 · 0.32 / 0.32 N·m	3000 rpm / 3000	1.11	—	Without holding brake · With holding brake	IP65
ES-SM-L02-060D	60 / 60 mm	48 / 48 VDC · 48 VDC / 48	200 W · 400 W	0.64 N·m / 0.64 · 1.27 N·m / 1.27	3000 / 3000 rpm	1.92 · 3.81	—	Without holding brake · With holding brake	IP54 · IP65
ES-SM-L02-060S	60 / 60 mm	48 / 48 VDC · 48 VDC / 48	200 W · 400 W	0.64 N·m / 0.64 · 1.27 N·m / 1.27	3000 / 3000 rpm	1.92 · 3.81	AM-M16/S17Bit · AM-S17Bit	Without holding brake · With holding brake	IP65
ES-SM-L02-080D	80 mm / 80	48 VDC · 96 VDC	400 W · 750 W · 1000 W · 1200 W · 1500 W	1.27 N·m / 1.27 · 2.39 N·m / 2.39 · 3.18 N·m / 3.18 · 3.82 N·m / 3.82 · 4.77 N·m / 4.77	3000 rpm / 3000	3.81 · 7.17 · 9.54 · 11.46 · 14.31 · 7.95	—	Without holding brake · With holding brake	IP54 · IP65
ES-SM-L02-080S	80 / 80 mm	48 / 48 VDC · 48 VDC / 48	750 W · 1000 W	2.39 N·m / 2.39 · 3.18 N·m / 3.18	3000 / 3000 rpm	7.17 · 9.54	AM-M16/S17Bit · AM-S17Bit	Without holding brake · With holding brake	IP65
ES-SM-L03-130G	130 / 130 mm	96 / 96 VDC · 96 VDC / 96	1500 W · 3000 W	4.775 N·m / 4.775 · 9.55 N·m / 9.55	3000 / 3000 rpm	14.325 · 28.65	—	Without holding brake · With holding brake	IP54
ES-SM-L03-180G	180 mm / 180	96 VDC / 96 · 96 / 96 VDC	3000 W · 4000 W · 5000 W	14.33 N·m / 14.33 · 19.1 N·m / 19.1 · 23.88 N·m / 23.88	2000 rpm / 2000	43 · 57.3 · 59.7	—	Without holding brake · With holding brake	IP54

07 | Product Platform Differences and Engineering Trade-offs

Difference checks

Prioritize flange and axial package

Several Product Platforms can share a flange size. Where axial length and cable space are constrained, continue with the compact Product Platforms, but do not use the compact label to bypass torque, inertia or thermal checks.

48 V versus 96 V

Confirm each voltage record with the battery, DC bus and compatible drive. ES-SM-L02-080D contains both 48 V and 96 V SKUs, so voltage must be reconfirmed during SKU refinement.

Continuous versus peak capability

Use continuous rated output and rated torque for steady-state screening. Use instantaneous maximum torque for acceleration and short overload checks; do not derive an unrecorded torque from rated power alone.

Feedback and brake

Feedback and brake options directly affect drive compatibility, cabling, control logic and holding strategy; freeze them before confirming the SKU.

08 SKU Refinement

Key parameters after entering a Product Platform

01	**Continuous rated output and rated torque**	Narrow the SKUs by the continuous operating point while retaining ambient temperature, cooling and duty-cycle conditions.
02	**Rated speed and instantaneous maximum torque**	Check operating speed, acceleration and deceleration requirements, and peak-torque duration.
03	**Rated voltage and compatible drive**	Confirm the 48 V or 96 V record, drive current capacity, feedback compatibility and control interface.
04	**Position feedback device**	Use the recorded standard parameter, then confirm resolution, protocol, connector and cable.
05	**Brake and shaft end**	Confirm whether a holding brake is required, then close the mechanical selection with shaft end, oil seal, protection rating and mounting orientation.
06	**Inertia and weight**	Compare rotor inertia and weight to check load-inertia ratio, structural stiffness and dynamic response.
07	**SKU record**	Carry the final SKU, operating point, drive, feedback, brake and controlled-document requirements into the RFQ or project record.

09 Application Record Checklist

Design-input record

01	**Mechanical**	Flange, shaft end, orientation, axial length, cable outlet, external radial and axial load, coupling and reduction stage.
02	**Load**	Continuous torque, operating speed, peak torque, acceleration and deceleration time, cycle frequency, load inertia and safety factor.
03	**Electrical**	Battery or DC-bus voltage, drive, maximum current, regenerative-energy handling, grounding and cable length.
04	**Feedback and braking**	Feedback device, control interface, brake supply, release logic and power-off holding requirement.
05	**Environment**	Temperature, humidity, altitude, contamination, vibration, shock, protection and cooling conditions.
06	**Documents**	Record the required Datasheet, 2D drawing, STEP/STP and Dimensional & Integration Guide.

10 Engineering Use and Verification Notice

Engineering use and controlled documents

This guide supports terminal-category screening and Product Platform navigation. Parameter names use the English standard names from product_param_dict_std, and values use published standard_display_value_en records from product_parameter_std. Before design freeze, verify mechanical, electrical, feedback, brake, environmental and compatible-drive details for the final SKU and obtain the current Datasheet, 2D drawing, STEP/STP and Dimensional & Integration Guide. Do not infer an unrecorded torque, speed, interface or dimension from a SKU code, Product Platform title or a single rated-power value.