

CATEGORY SELECTION GUIDE

Micro Servo Electric Cylinder Category Selection Guide

Micro servo electric cylinders combine motor, precision transmission, position sensing and closed-loop control in a compact linear actuator for robotics, medical and laboratory equipment, precision automation and research mechanisms. The selection path narrows 18 Product Platforms and 49 SKUs by stroke, push/pull force, loaded speed, positioning accuracy, mechanical interface, electrical architecture and force-sensing requirements.

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CATEGORY	CURRENT CATALOG	REVISION / ISSUE
Micro Servo Electric Cylinder	18 Product Platforms / 49 SKUs	R01 2026-09-04

CONTENTS

01	Category Scope and Objective
02	Product Principle and Typical Applications
03	Selection Inputs
04	Product Platform Catalog
05	Product Platform Selection Path
06	Product Platform Selection Matrix
07	Motion, Force and Interface Trade-offs
08	SKU Refinement and Integration Checklist
09	Engineering Use and Verification Notice

01 | Category Scope and Objective

Product catalog and suitable use

Item	Category scope
Product catalog	18 Product Platforms / 49 SKUs
Suitable use	Compact closed-loop linear motion for robotics, precision instruments, medical equipment and industrial automation where stroke, push/pull force, loaded speed, positioning accuracy and interface constraints must be considered together.

02 | Product Principle and Typical Applications

Integrated linear servo actuation

A micro servo electric cylinder integrates a motor, precision reduction stage, screw transmission, position sensing and closed-loop control into a compact linear actuator. The collected product overview describes commanded positioning across the available stroke and retained position information after power loss; confirm the exact control implementation in the current SKU documentation.

Typical applications

Robotics and dexterous mechanisms Compact linear motion for humanoid and biomimetic robots, dexterous hands, teleoperation mechanisms and other space-constrained robot functions.	Medical and laboratory equipment Linear actuation for minimally invasive instruments, rehabilitation equipment, exoskeletons, in-vitro diagnostic equipment and laboratory automation.
Precision industrial automation Motion functions in 3C, semiconductor, optical, new-energy and automotive equipment, 3D printing and precision instruments.	Research and aerospace mechanisms Compact actuator studies and mechanisms for education, research and aerospace equipment where the complete application load and safety context is assessed separately.

03 | Selection Inputs

Application record checklist

01	Stroke and envelope	Record required travel, retracted and extended envelope, moving clearances and allowable actuator mass.
02	Push/pull load	Record continuous and peak push/pull load, load direction, side loading and the required holding behavior.
03	Motion profile	Record loaded speed, acceleration, cycle time, duty pattern and required positioning repeatability.
04	Mechanical interface	Record the mounting arrangement, rod-end connection, alignment method and any joint-bearing, flange, threaded, standard, ear-mount or octagonal interface requirement.
05	Electrical and communication context	Record available operating voltage, controller interface, cabling constraints and communication requirement.
06	Force sensing and control	Record whether force feedback is required, the working force range, resolution and how it will be used in the control loop.
07	Environment and verification files	Record operating temperature, ingress requirement, lifecycle context and the dimensional, wiring and controlled CAD information needed before design freeze.

04 | Product Platform Catalog

Current Product Platforms

The complete 18-platform catalog is shown as a compact directory. Use the selection matrix for parameter comparison and the SKU section only after retaining a candidate Product Platform.

PRODUCT PLATFORM	5 mm Flange Precision Electric Actuator · ES-LA-C00-S001 1 SKU	PRODUCT PLATFORM	30 mm Octagonal Electric Actuator · ES-LA-C00-S002 1 SKU	PRODUCT PLATFORM	30 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S003 1 SKU
PRODUCT PLATFORM	10 mm Threaded Electric Actuator · ES-LA-C00-S004 1 SKU	PRODUCT PLATFORM	10 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S005 1 SKU	PRODUCT PLATFORM	10 mm Multi-interface Electric Actuator · ES-LA-C00-S006 6 SKUs
PRODUCT PLATFORM	16 mm Multi-interface Electric Actuator · ES-LA-C00-S007 6 SKUs	PRODUCT PLATFORM	30 mm Multi-interface Electric Actuator · ES-LA-C00-S008 3 SKUs	PRODUCT PLATFORM	50 mm Multi-interface Electric Actuator · ES-LA-C00-S009 3 SKUs
PRODUCT PLATFORM	10 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S010 4 SKUs	PRODUCT PLATFORM	16 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S011 4 SKUs	PRODUCT PLATFORM	30 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S012 1 SKU
PRODUCT PLATFORM	50 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S013 1 SKU	PRODUCT PLATFORM	10 mm Octagonal Multi-speed Electric Actuator · ES-LA-C00-S014 3 SKUs	PRODUCT PLATFORM	30 mm Multi-interface Electric Actuator · ES-LA-C00-S015 2 SKUs
PRODUCT PLATFORM	10 mm Joint-bearing Multi-speed Electric Actuator · ES-LA-C00-S016 5 SKUs	PRODUCT PLATFORM	16 mm Joint-bearing Multi-speed Electric Actuator · ES-LA-C00-S017 5 SKUs	PRODUCT PLATFORM	30 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S018 1 SKU

05 | Product Platform Selection Path

01	Set the installation envelope and stroke Retain Product Platforms whose recorded Stroke and physical integration approach can meet the required travel and packaging space.
02	Match required push/pull force Compare the required load and holding condition with the recorded Maximum Push/Pull Force and Maximum Self-locking Force. Keep margin and duty assumptions in the project calculation.
03	Check the loaded motion point Use Full-load Speed for the loaded shortlist and compare No-load Speed only as supporting motion information; do not select from no-load speed alone.
04	Check positioning repeatability Match the recorded Repeat Positioning Accuracy to the application tolerance and complete mechanism error budget.
05	Resolve the mechanical interface Retain the Product Platforms whose recorded Mechanical Interface matches the mounting and rod-end load path.
06	Resolve voltage and controller interface Confirm Operating Voltage, then distinguish the recorded electrical or communication interface before choosing controller hardware and cabling.
07	Decide whether force sensing is required Where force feedback is required, retain Product Platforms with recorded force-sensor range or resolution and verify the exact sensing implementation at SKU level.
08	Keep one or more candidate Product Platforms Use the matrix to retain all Product Platforms that satisfy the application inputs; overlapping values are expected and are not a reason to force an early single choice.
09	Refine to one SKU Within each retained Product Platform, use its recorded speed grade, force/speed combination, interface and sensing options to confirm the SKU.
Selection outcome The technical shortlist should produce one or more candidate Product Platforms. Continue to the SKU refinement table and confirm one SKU only after mechanical, electrical, sensing and controlled-document requirements remain compatible.	

06 | Product Platform Selection Matrix

Recorded shortlist parameters

Each cell lists values recorded for SKUs within that Product Platform. Multiple values identify available SKU-level choices and are not necessarily mutually combinable; use the SKU refinement section to confirm an exact combination.

Product Platform	SKUs	Stroke	Maximum Push/Pull Force	Full-load Speed	Repeat Positioning Accuracy	Mechanical Interface	Operating Voltage	Force sensing
5 mm Flange Precision Electric Actuator · ES-LA-C00-S001	1	5 mm	250N / 250 N	2mm/s / 2 mm/s	±0.002mm / ±0.002 mm	Flange interface	DC12V±10%	Not stated
30 mm Octagonal Electric Actuator · ES-LA-C00-S002	1	30 mm	120N / 120 N	16mm/s / 16 mm/s	±0.01mm / ±0.01 mm	Octagonal interface	DC12V±10%	Not stated
30 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S003	1	30 mm	120N / 120 N	16mm/s / 16 mm/s	±0.01mm / ±0.01 mm	Joint bearing	DC12V±10%	-200N ~ +200N; 1N / 1 N
10 mm Threaded Electric Actuator · ES-LA-C00-S004	1	10 mm	150N / 150 N	5mm/s / 5 mm/s	±0.01mm / ±0.01 mm	Threaded interface	DC12V±10%	Not stated
10 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S005	1	10 mm	150N / 150 N	5mm/s / 5 mm/s	±0.01mm / ±0.01 mm	Joint bearing	DC12V±10%	-200N ~ +200N; 1N / 1 N
10 mm Multi-interface Electric Actuator · ES-LA-C00-S006	6	10 mm	70N / 70 N 42N / 42 N	8mm/s / 8 mm/s 21mm/s / 21 mm/s	±0.02 mm	Standard interface Ear-mount interface Octagonal interface	DC8V±10%	Not stated
16 mm Multi-interface Electric Actuator · ES-LA-C00-S007	6	16 mm	70N / 70 N 42N / 42 N	8mm/s / 8 mm/s 21mm/s / 21 mm/s	±0.03 mm	Standard interface Ear-mount interface Octagonal interface	DC8V±10%	Not stated
30 mm Multi-interface Electric Actuator · ES-LA-C00-S008	3	30 mm	50N / 50 N	8mm/s / 8 mm/s	±0.06 mm	Standard interface Ear-mount interface Octagonal interface	DC8V±10%	Not stated
50 mm Multi-interface Electric Actuator · ES-LA-C00-S009	3	50 mm	50N / 50 N	8mm/s / 8 mm/s	±0.1 mm	Standard interface Ear-mount interface Octagonal interface	DC8V±10%	Not stated
10 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S010	4	10 mm	70N / 70 N 56N / 56 N 42N / 42 N 21N / 21 N	8mm/s / 8 mm/s 16mm/s / 16 mm/s 21mm/s / 21 mm/s 36mm/s / 36 mm/s	±0.02 mm	Joint bearing	DC8V±10%	1N
16 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S011	4	16 mm	70N / 70 N 56N / 56 N 42N / 42 N 21N / 21 N	8mm/s / 8 mm/s 16mm/s / 16 mm/s 21mm/s / 21 mm/s 36mm/s / 36 mm/s	±0.03 mm	Joint bearing	DC8V±10%	1N
30 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S012	1	30 mm	50N / 50 N	8mm/s / 8 mm/s	±0.06mm / ±0.06 mm	Joint bearing	DC8V±10%	-100N~+100N; 1N / 1 N
50 mm Joint-bearing Force-sensing Electric Actuator · ES-LA-C00-S013	1	50 mm	50N / 50 N	8mm/s / 8 mm/s	±0.1mm / ±0.1 mm	Joint bearing	DC8V±10%	-100N~+100N; 1N / 1 N
10 mm Octagonal Multi-speed Electric Actuator · ES-LA-C00-S014	3	10 mm	105N / 105 N 49N / 49 N 31.5N / 31.5 N	4mm/s / 4 mm/s 18mm/s / 18 mm/s 39mm/s / 39 mm/s	±0.02 mm	Octagonal interface	DC8V±10%	Not stated
30 mm Multi-interface Electric Actuator · ES-LA-C00-S015	2	30 mm	80N / 80 N	6mm/s / 6 mm/s	±0.06 mm	Standard interface Octagonal interface	DC8V±10%	Not stated
10 mm Joint-bearing Multi-speed Electric Actuator · ES-LA-C00-S016	5	10 mm	105N / 105 N 56N / 56 N 49N / 49 N 35N / 35 N 31.5N / 31.5 N	4mm/s / 4 mm/s 12mm/s / 12 mm/s 18mm/s / 18 mm/s 27mm/s / 27 mm/s 39mm/s / 39 mm/s	±0.02 mm	Joint bearing	DC8V±10%	1N
16 mm Joint-bearing Multi-speed Electric Actuator · ES-LA-C00-S017	5	16 mm	105N / 105 N 56N / 56 N 49N / 49 N 35N / 35 N 31.5N / 31.5 N	4mm/s / 4 mm/s 12mm/s / 12 mm/s 18mm/s / 18 mm/s 27mm/s / 27 mm/s 39mm/s / 39 mm/s	±0.03 mm	Joint bearing	DC8V±10%	1N

Product Platform	SKUs	Stroke	Maximum Push/Pull Force	Full-load Speed	Repeat Positioning Accuracy	Mechanical Interface	Operating Voltage	Force sensing
30 mm Joint-bearing Force-sensing Electric Actuator ES-LA-C00-S018	1	30 mm	80N / 80 N	6mm/s / 6 mm/s	±0.06mm / ±0.06 mm	Joint bearing	DC8V±10%	-100N~+100N; 1N / 1N

07 | Motion, Force and Interface Trade-offs

Stroke and packaging Recorded strokes span compact short-travel and longer-travel choices. Longer travel changes the mechanism envelope, so retain installation clearance and moving-cable space in the shortlist.	Push/pull force and loaded speed Compare Maximum Push/Pull Force and Full-load Speed as a paired SKU operating-point screen. A higher recorded force or no-load speed does not by itself establish the required loaded motion result.	Holding and backdrive behavior Use Maximum Self-locking Force only where it is recorded, then verify orientation, external load, power-off behavior and the complete mechanism safety strategy.
Mechanical load path Flange, threaded, standard, ear-mount, octagonal and joint-bearing interfaces address different mounting and alignment conditions. Confirm side-load and misalignment control in the final assembly.	Electrical architecture The recorded category data includes DC 8 V Product Platforms with an LVTTTL serial interface and DC 12 V Product Platforms with RS485 communication. Treat voltage and interface as paired controller-architecture constraints.	Force-sensing variants Force-sensing Product Platforms add recorded sensing range or resolution information. Confirm the required measurement range, resolution, update behavior and control-loop use for the exact SKU.

08 | SKU Refinement and Integration Checklist

Five-step SKU refinement

Use these five dimensions after the Product Platform shortlist. Parameter values remain SKU-specific and must not be recombined across rows.

Refinement step	Initial filter	Confirm at SKU	Selection purpose
Motion envelope	Stroke	Maximum Push/Pull Force / Full-load Speed	Retain SKUs that satisfy the required travel, load direction and working speed together.
Mechanical fit	Mechanical Interface	Mounting orientation and end connection	Resolve flange, threaded, joint-bearing, standard, ear-mount or octagonal fit before fixing the SKU.
Positioning performance	Repeat Positioning Accuracy	Required positioning behavior at the application load	Use the recorded repeatability to remove unsuitable candidates, then confirm it for the selected SKU and duty.
Platform-internal speed choice	Speed Grade	Maximum Push/Pull Force / Full-load Speed combination	Where several speed grades exist, select the force-speed combination as one SKU configuration rather than mixing values.
Force sensing	Force Sensor Detection Range	Force Sensor Resolution	For force-sensing Product Platforms, confirm sensing range and resolution together with the mechanical interface.

Integration checklist

01	Confirm the exact SKU against continuous and peak push/pull load, loaded speed, duty pattern, orientation and holding requirement.
02	Confirm stroke, mounting interface, rod-end load path, alignment, clearances and the complete moving mass.
03	Confirm operating voltage, controller interface, peak current, connectors, cable length and routing for the selected SKU.
04	If force sensing is required, confirm sensing range, resolution and controller behavior for the selected SKU.
05	Obtain the current SKU Product Datasheet, Dimensional & Integration Guide, 2D drawing and controlled 3D resources required for the project.

09 | Engineering Use and Verification Notice

Controlled engineering documents

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|----|---|
| 01 | Use the current SKU Product Datasheet for SKU-specific parameter and configuration verification. |
| 02 | Use the applicable Dimensional & Integration Guide and 2D drawing for mechanical interfaces, dimensions, connectors and installation details. |
| 03 | Request STEP or native CAD through the controlled engineering-file process for the exact SKU and revision. |
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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, control and sensing configuration, application loads, environmental conditions and current controlled engineering documents. Do not derive missing parameters, compatibility or performance from the SKU code, Product Platform name, adjacent SKUs or a single rated value. When information differs, the current controlled SKU documentation governs the engineering decision.