

ENGINEERING DOCUMENTATION

# Micro Servo Electric Cylinder

## Dimensional & Integration Guide

| DOCUMENT                | REVISION / ISSUE       | STATUS                            |
|-------------------------|------------------------|-----------------------------------|
| DIG-ES-LA-C00-S016-V005 | DRAFT-08 / 25 Aug 2026 | Engineering Integration Reference |

### Integration Overview

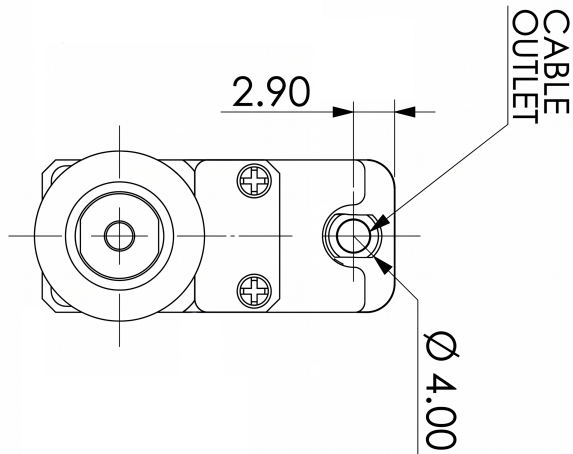
Compact electric actuator for robotic, medical and precision automation mechanisms. This guide supports mechanical-interface design, force and speed boundary , electrical and communication integration, cable routing, thermal and ingress and commissioning for ES-LA-C00-S016-V005.

### Key Integration Facts

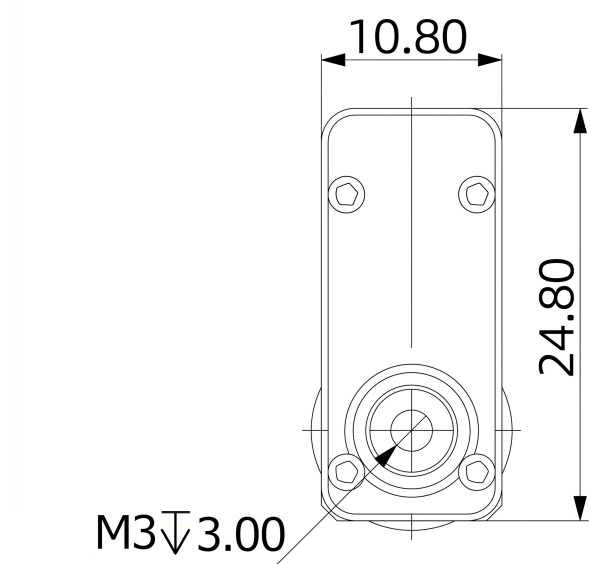
| INTEGRATION ITEM        | PUBLISHED VALUE         |
|-------------------------|-------------------------|
| Maximum Push/Pull Force | 31.5 N                  |
| Full-load Speed         | 39 mm/s                 |
| Electrical Interface    | LVTTTL serial interface |
| Mechanical Interface    | Joint bearing           |
| Speed Grade             | 10                      |

## Product Structure & Views

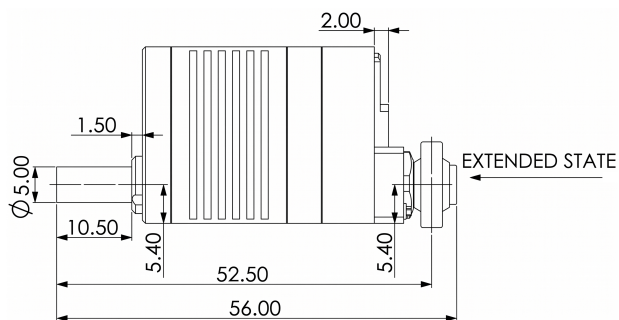
These views present the selected product structure, mounting interfaces and relevant integration geometry for this configuration.



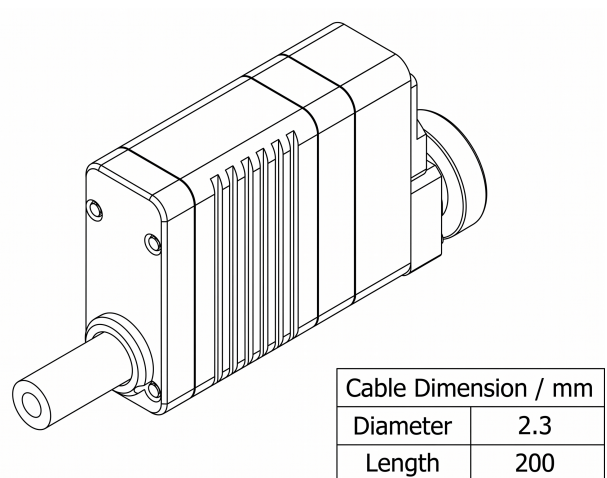
Mechanical View 1



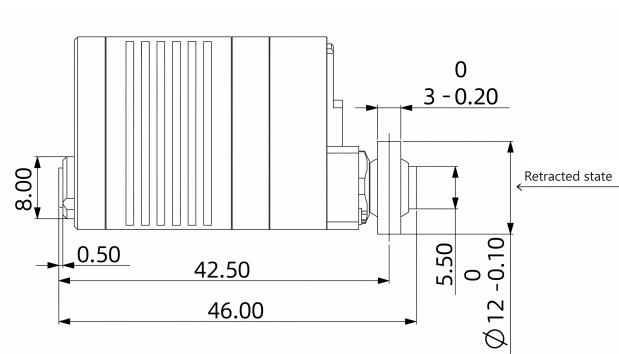
Mechanical View 2



Mechanical View 3



Mechanical View 4



Mechanical View 5

| VIEW              | FIELD                                  | VALUE                                                            |
|-------------------|----------------------------------------|------------------------------------------------------------------|
| Mechanical View 2 | Mounting face width                    | Width 10.80 mm                                                   |
|                   | Mounting face height                   | Height 24.80 mm                                                  |
|                   | Mounting threaded hole size and depth  | M3 threaded hole, depth 3.00 mm                                  |
| Mechanical View 3 | Right end clearance or step length     | 2.00 mm                                                          |
|                   | Left end shoulder length               | 1.50 mm                                                          |
|                   | Extended state label                   | Extended state                                                   |
|                   | Shaft diameter                         | Diameter 5.00 mm                                                 |
|                   | Left shaft protrusion length           | 10.50 mm                                                         |
|                   | Left interface vertical height         | 5.40 mm                                                          |
|                   | Right interface vertical height        | 5.40 mm                                                          |
|                   | Main body length                       | 52.50 mm                                                         |
|                   | Overall length                         | 56.00 mm                                                         |
|                   |                                        |                                                                  |
| Mechanical View 5 | Retracted-state end axial dimension    | 3 mm with upper tolerance +0 and lower tolerance -0.20           |
|                   | State label                            | Retracted state                                                  |
|                   | Left-end mounting height               | 8.00 mm                                                          |
|                   | Left-end step offset dimension         | 0.50 mm                                                          |
|                   | Right-end shaft shoulder height        | 5.50 mm                                                          |
|                   | Right-end shaft diameter and tolerance | Diameter 12 mm with upper tolerance +0 and lower tolerance -0.10 |
|                   | Body length                            | 42.50 mm                                                         |
|                   | Overall length                         | 46.00 mm                                                         |

## Overall Dimensions and Mounting Interface

| PARAMETER            | PUBLISHED VALUE | UNIT |
|----------------------|-----------------|------|
| Mechanical Interface | Joint bearing   |      |

- Confirm the selected series configuration and exact SKU before using dimensions or interface geometry.
- Keep mounting faces flat, clean and free of burrs, raised holes, debris and coating buildup.
- Reserve assembly, cable, inspection and removal access around the actuator and linkage interface.

## Mechanical Load Path and Joint Interface

| PARAMETER            | PUBLISHED VALUE | UNIT |
|----------------------|-----------------|------|
| Mechanical Interface | Joint bearing   |      |

- Route axial force through the specified joint interface, adapter and host structure; include offset, side load, acceleration, shock and emergency-stop cases.
- Validate axial, radial and moment loads with the linkage, guide and host stiffness; do not infer system capacity from the actuator envelope alone.
- Protect the joint interface from binding, impact, uncontrolled bending and misalignment throughout the stroke.

## Power, Communication and Cable Integration

| PARAMETER            | PUBLISHED VALUE         | UNIT |
|----------------------|-------------------------|------|
| Electrical Interface | LVTTTL serial interface |      |

- Use the published supply range and current boundary for this SKU, with suitable protection for normal, peak and fault conditions.
- Verify the selected communication interface, electrical levels, address or protocol settings and control-cycle compatibility before motion.
- Provide cable slack, bend radius and strain relief across the complete actuator and host motion envelope.
- Separate power, communication and low-level sensing paths according to the system EMC and grounding architecture.

## Force, Position and Motion Validation

| PARAMETER               | PUBLISHED VALUE | UNIT |
|-------------------------|-----------------|------|
| Maximum Push/Pull Force | 31.5            | N    |
| Full-load Speed         | 39              | mm/s |
| Speed Grade             | 10              |      |

- Treat the published force-sensor detection range as a measurement boundary, not as complete actuator thrust or machine safety approval.
- Commission in stages with linkage, limits, guards and cable routing installed; verify each boundary before increasing speed or load.
- At low energy, verify position direction, command polarity, travel limits, communication status and force-signal mapping.

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## Thermal, Ingress and Maintenance Conditions

- Validate temperature using the installed voltage, peak current, load cycle, mounting heat path, ambient condition and enclosure.
- Treat IP40 as a product-boundary condition; validate connectors, cable entry, linkage and complete host protection separately.
- Prevent chips, fibers, cleaning residue and moisture from entering interfaces, cable exits and moving joints.
- Stop and inspect after binding, impact, abnormal noise, rising temperature, unexpected friction, communication loss or protection damage.

## Commissioning and Safety

- Commission in stages with linkage, limits, guards and cable routing installed; verify each boundary before increasing speed or load.
- Before full-power operation, verify polarity, end limits, emergency stop, fault response and safe recovery behavior.
- Stop and inspect after binding, impact, abnormal noise, rising temperature, unexpected friction, communication loss or protection damage.

## Integration Checklist

- 01 Confirm the drawing, published parameters and applicable wiring data identify this SKU.
- 02 Verify mechanical interface, joint bearing, adapter, orientation and service clearance.
- 03 Establish and validate the complete axial, side-load and moment load path.
- 04 Confirm supply range, peak current, communication interface, polarity and controller compatibility.
- 05 Provide cable slack, bend radius and strain relief across the full motion envelope.
- 06 Separate power, communication and low-level sensor paths according to the EMC architecture.
- 07 Treat force-sensor range as a measurement boundary and complete system-level load validation.
- 08 At low speed and low load verify position, direction, limits, communication and force-signal mapping.
- 09 Validate temperature, friction, noise, protection boundary and abnormal-stop behavior over the duty cycle.
- 10 Include specified 2D, STEP, wiring, commissioning and maintenance data in integration planning.

[View SKU Product Datasheet](#) [Request controlled 2D drawing](#) [Request controlled STEP review](#) [Request a Quote](#)

## Engineering Use and Verification Notice

01. This Dimensional & Integration Guide applies only to EmbodyStack SKU ES-LA-C00-S016-V005 and is intended for dimensional evaluation and preliminary integration. It is not a applicable manufacturing drawing, actuator selection approval, force or safety approval, wiring final integration, machinery risk assessment, safety validation or integration planning document and must not be used as the sole basis for machining, linkage design, fastener selection, cable assembly, drive configuration or final integration. Before design freeze, assembly or commissioning, verify dimensions, interface geometry, load path, power, communication, polarity, cable routing, force and speed boundaries, temperature, ingress, limits, thermal behavior, maintenance and fault handling against the applicable EmbodyStack engineering data for this exact SKU. Where this guide and applicable product documentation differ, the applicable product documentation governs. Validate the complete actuator, linkage, drive, host structure, motion cycle, guarding, fault cases and applicable regulatory requirements under intended operating conditions.