ENGINEERING DOCUMENTATION

# Ball Screw Linear Module Engineering Configuration

Dimensional & Integration Guide

| DOCUMENT | REVISION / ISSUE | STATUS |
|---|---|---|
| DIG-ES-LM-C04-S009-V034 | DRAFT-08 / 29 Aug 2026 | Engineering Integration Reference |

## Integration Overview

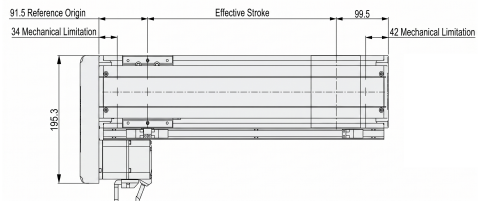
Exact ball-screw linear-module configuration for guided linear motion in automation equipment. This guide supports dimensional layout, mounting, load-path , motor and coupling integration, cable and sensor clearance, maintenance and commissioning for ES-LM-C04-S009-V034.

## Key Integration Facts

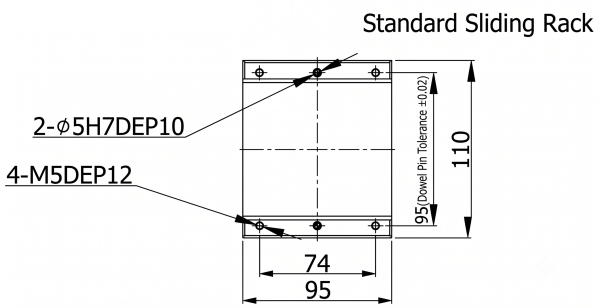
| INTEGRATION ITEM | VALUE |
|---|---|
| Working Stroke | 840 mm |
| Overall Length | 1031 mm |
| Module Mass | 8.3 kg |
| Mounting Hole Count | 17 |
| Motor Mounting Style | Left Side Motor |
| Configured Motor Power | 400 W |

# Product Structure & Views

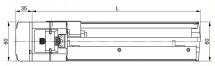
These views present the selected product structure, mounting interfaces and relevant integration geometry for this configuration.



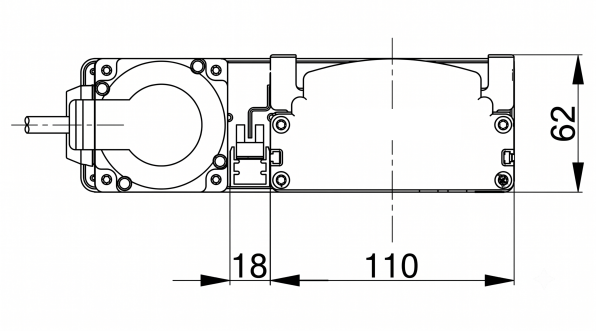

Mechanical View 1



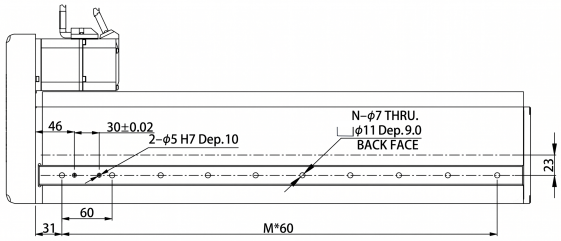

Mechanical View 2



Mechanical View 3




Mechanical View 4




Mechanical View 5

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 1 | Effective Stroke | Not specified |
| | Reference Origin Position | 91.5 mm |
| | Right Side Distance | 99.5 mm |
| | Left Mechanical Limitation | 34 mm |
| | Right Mechanical Limitation | 42 mm |
| | Overall Height | 195.3 mm |
| Mechanical View 2 | Dowel pin holes | 2× ϕ5H7 depth 10mm |
| | Threaded mounting holes | 4× M5 threaded holes depth 12mm |
| | Dowel pin hole center distance with tolerance | 95 ±0.02mm |
| | Overall height of sliding rack | 110mm |
| | Mounting plate width (inner) | 74mm |
| | Mounting plate width (outer) | 95mm |
| Mechanical View 3 | Left end face width | 35 |
| | Overall length (variable) | L (variable) |
| | Left side height | 60 |
| | Right side height | 60 |
| Mechanical View 4 | Overall Height | 62 mm |
| | Front Section Width | 18 mm |
| | Main Body Length | 110 mm |
| Mechanical View 5 | Through hole diameter | N holes ϕ7 through |
| | Mounting offset distance | 46 |
| | Mounting hole spacing | 30±0.02 |
| | Counterbore specification | ϕ11 Depth 9.0 |
| | Precision hole specification | 2 holes ϕ5 H7 Depth 10 |
| | Position label | Back face |
| | Vertical height | 23 |
| | Horizontal offset | 60 |
| | Left edge distance | 31 |
| | Total Pitch | M*60 |

## Overall Dimensions and Mounting Interface

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Working Stroke | 840 | mm |
| Overall Length | 1031 | |
| Module Mass | 8.3 | kg |
| Mounting Hole Count | 17 | |

- Confirm this exact SKU, the selected motor-mounting configuration and the applicable mechanical views before using dimensions or interface geometry.
- Keep mounting faces flat, clean and free of burrs, raised holes, debris and coating buildup.
- Reserve assembly, inspection, cable, lubrication and removal access around the module and motor interface.

## Load Path and Installation Orientation

- Route axial force through the carriage, supported mounting structure and host guide; include offset, side load, acceleration, shock and emergency-stop cases.
- Validate horizontal, wall and vertical installation loads with the actual payload center, guide spacing, host stiffness and duty cycle.
- Control payload center of gravity and overhung moment; verify the complete installed load path rather than inferring capacity from module mass or size.

## Motion and Duty-Cycle Validation

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Working Stroke | 840 | mm |
| Module Mass | 8.3 | kg |

- Validate the complete acceleration, travel, dwell, reversal and stop cycle using the stroke and selected motor configuration.
- Establish speed, acceleration, payload and moment limits from the complete selected module, motor, guide and host calculation.
- Verify temperature and resonance behavior using the installed motor, stroke, load, mounting heat path and operating cycle.

## Motor, Coupling and Sensor Integration

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Motor Mounting Style | Left Side Motor | |
| Configured Motor Power | 400 | W |

- Match the motor mounting style, adapter, configured motor power and interface dimensions before assembly.
- Verify coupling bore, engagement, concentricity, axial position and tightening controls, then check smooth travel at zero energy.
- Provide cable slack, bend radius, strain relief and sensor clearance across the complete motion envelope.

## Maintenance, Contamination and Service Envelope

- Prevent chips, fibers, cleaning residue and moisture from entering the ball screw, guide, sensor and coupling interfaces.
- Provide access for lubrication, inspection, sensor adjustment, fastener verification and specified removal.
- Stop and inspect after binding, impact, abnormal noise, rising temperature, unexpected friction or protection damage.

## Commissioning and Safety

- Commission in stages with the host guide, limits, guards and cable routing installed; verify each boundary before increasing speed or load.
- At low energy verify travel direction, home and limit behavior, command polarity, stroke and sensor state.
- Verify emergency stop, fault response, recovery behavior and safe holding requirements for the installed orientation.

# Integration Checklist

| | |
|---|---|
| 01 | Confirm the exact SKU, parameters and selected mechanical-view configuration. |
| 02 | Verify working stroke, overall length, module mass, mounting-hole count and service clearance. |
| 03 | Establish the complete axial, side-load and moment load path for the host structure. |
| 04 | Validate horizontal, wall and vertical installation cases using the actual payload center and duty cycle. |
| 05 | Match motor mounting style, configured motor power, adapter and coupling dimensions. |
| 06 | Verify coupling alignment, engagement, tightening and smooth travel before applying drive power. |
| 07 | Provide cable slack, bend radius, strain relief and sensor clearance across the full motion envelope. |
| 08 | Protect the ball screw, guide, sensors and coupling from contamination and moisture. |
| 09 | At low energy verify direction, home, limits, stroke, speed and fault-stop behavior. |
| 10 | Request current 2D, STEP, motor-interface, wiring, lubrication and maintenance data before final integration. |

**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-LM-C04-S009-V034 and is intended for dimensional evaluation and preliminary integration. It is not a applicable manufacturing drawing, module or motor selection approval, payload or safety approval, wiring final integration, machinery risk assessment or integration planning document and must not be used as the sole basis for machining, host-structure design, coupling manufacture, fastener selection, cable assembly or final integration. Before design freeze, assembly or commissioning, verify dimensions, interface geometry, mounting holes, travel and collision envelope, load path, orientation, payload center, speed, acceleration, motor, adapter, coupling, sensors, cable routing, limits, thermal behavior, contamination control and maintenance requirements against the applicable EmbodyStack engineering data for this exact SKU and selected configuration. Where this guide and applicable product documentation differ, the applicable product documentation governs. Validate the complete module, motor, guide, host structure, motion cycle, guarding, fault cases and applicable regulatory requirements under intended operating conditions.