Low-Profile Z Linear Motor Stages

MPS130LZS

The New Standard for Value-Driven Vertical Motion

MPS-LZS stages define a new benchmark for high-quality vertical motion that breaks the traditional tradeoff between precision and price. For demanding applications that require a careful balance of performance and cost, you no longer have to compromise on core technology. MPS130LZS stages feature anti-creep, crossed-roller bearings; ironless linear motors with exceptionally high force density; and an adjustable pneumatic counterbalance to offset up to 12 kg payload—providing smooth, precise motion. Plus, MPS-LZS stages are form-factor compatible with our industry-leading ANT-LZS vertical nanopositioning stages, giving OEMs an easy and efficient means to scale.

Key Applications

MPS-LZS stages are ideal for cost-sensitive applications that require high precision, including:

- Photonics assembly & inspection
- Fiber alignment & optimization
- Wafer probing
- Optics manufacturing, testing & inspection
- Sensor testing & qualification
- Semiconductor processing & inspection
- Research & laboratory applications

KEY FEATURES:

- Constructed with an ironless **LINEAR MOTOR & CROSSED-ROLLER BEARINGS** for smooth, precise motion
- Includes integrated, **USER-ADJUSTABLE COUNTERBALANCE** to offset up to 12 kg payload for **PRECISE PERFORMANCE IN THE VERTICAL DIRECTION**
- Drop-in compatibility with Aerotech ANT130LZS nanopositioners offers **SEAMLESS SCALABILITY** for OEMs & machine builders
- Guaranteed performance specifications, including **REPEATABILITY DOWN TO ± 0.2 µm**
- **EXCEPTIONAL PRICE-TO-PERFORMANCE RATIO** contributes to low total cost of ownership
- **INTEGRATES EASILY** into multi-axis assemblies & motion systems

MPS130LZS SPECIFICATIONS

MECHANICAL SPECIFICATIONS	MPS130LZS-060	MPS130LZS-110	MPS130LZS-160
Travel	60 mm	110 mm	160 mm
Accuracy-Standard(1)	± 3.5 µm	± 4.5 µm	± 5.5 µm
Accuracy-Calibrated(1)	± 0.6 µm		
Repeatability (Bidirectional)(1)	± 0.2 µm		
Resolution (Minimum Incremental Motion)	2 nm (with -E1 encoder option)		
In-Position Stability(2)	< 2 nm (with -E1 encoder option)		
Straightness	± 3 µm		
Flatness	± 3 µm		
Pitch	24 arc sec	26 arc sec	28 arc sec
Roll	20 arc sec	22 arc sec	24 arc sec
Yaw	20 arc sec	22 arc sec	24 arc sec
Maximum Speed(3)	200 mm/s		
Maximum Acceleration (No Load)(3)	1 g		
Load Capacity-Vertical(4)	12 kg		
Moving Mass	1.55 kg	2.04 kg	2.44 kg
Stage Mass	3.37 kg	4.24 kg	5.02 kg

Notes:
1. Certified with each stage using an Aerotech controller (excluding -PL0 metrology option).
2. In-position stability is reported as 3-sigma value. Specification value depends on the selected encoder option.
3. Requires the selection of an appropriate amplifier with sufficient voltage and current.
4. Payload specifications assume payload is centered on-axis and air supply pressure to the pneumatic counterbalance is 80 psig.
5. Specifications are reported for a single axis measured 25 mm above the tabletop. Performance of multi-axis systems depends on the payload and workpoint. Consult factory for multi-axis or non-standard applications.
6. To ensure the achievement and repeatability of specifications over an extended period of time, environmental temperature must be controlled to within 0.25°C per 24 hours. Consult factory for more information.
7. Air supply for pneumatic counterbalance must be clean, dry to 0°F dewpoint, and filtered to 0.25 µm or better. Aerotech recommends using nitrogen at 99.9% purity. Supply pressure is determined by the amount of payload carried by the stage.

ELECTRICAL SPECIFICATIONS	MPS130LZS-060	MPS130LZS-110	MPS130LZS-160
Drive System	Brushless Linear Servomotor		
Feedback	Noncontact Linear Encoder 1 Vpp with 20 µm signal period (-E1) Digital RS422 with 5 nm electrical resolution (-E2)		
Maximum Bus Voltage	100 VDC		
Limit Switches	5 V, Normally Closed		
Home Switch	Near Center		

MPS130LZS SERIES ORDERING OPTIONS

Travel (Required)

-060 60 mm travel
-110 110 mm travel
-160 110 mm travel

Feedback (Required)

-E1 Incremental linear encoder, 1 Vpp amplified sine output
-E2 Incremental linear encoder, digital RS422 output, 5 nm electrical resolution

Mounting Plate (Optional)

-MP Mounting Plate

Metrology (Required)

-PL0 No metrology performance plots
-PL1 Metrology, uncalibrated with performance plots
-PL2 Metrology, calibrated (HALAR) with performance plots

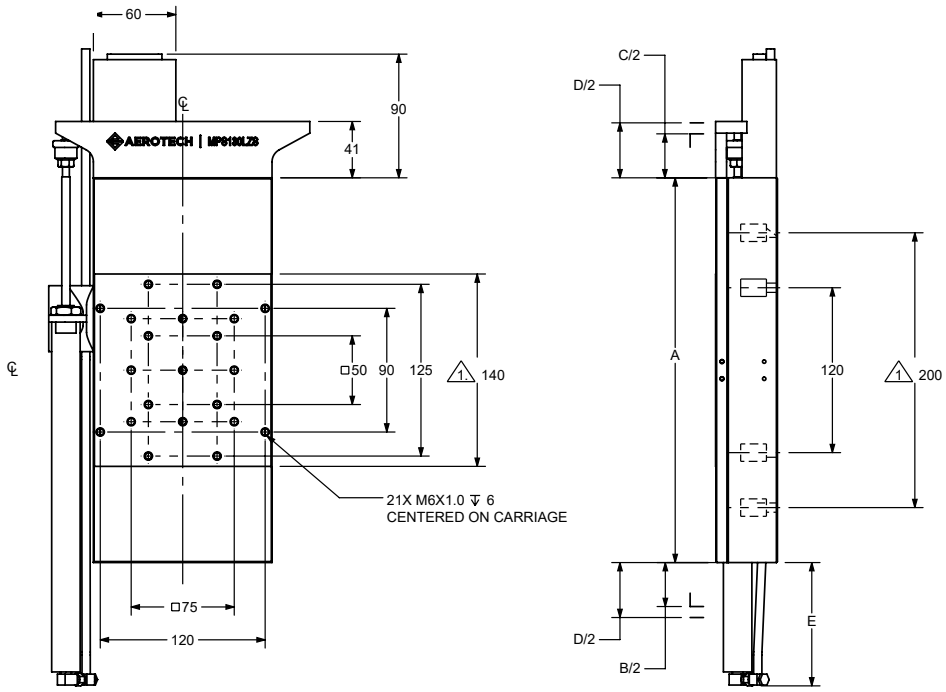
Integration (Required)

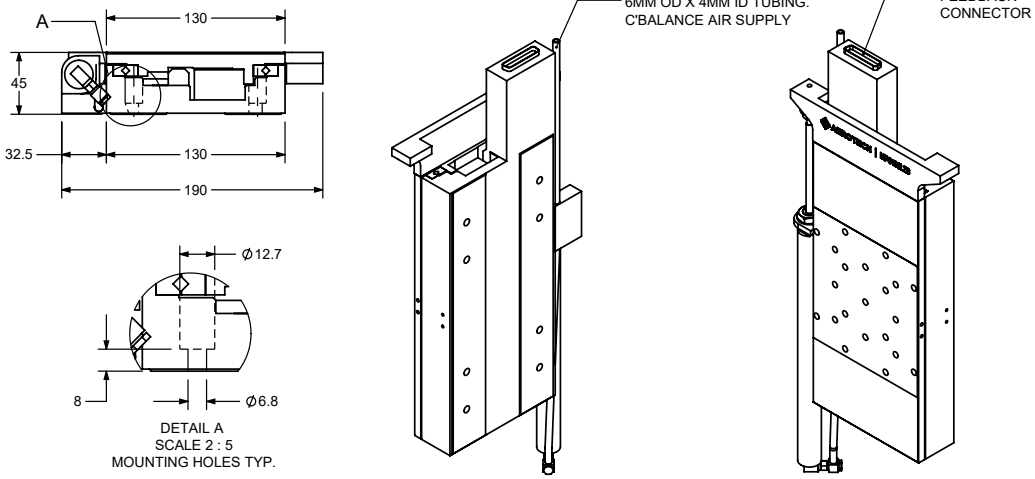
Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required, or if you desire custom integration support with your system.

-TAS **Integration - Test as system**
Testing, integration, and documentation of a group of components as a complete system that will be used together (ex: drive, controller and stage). This includes parameter file generation, system tuning and documentation of the system configuration.

-TAC **Integration - Test as components**
Testing and integration of individual items as discrete components that ship together. This is typically used for spare parts, replacement parts, or items that will not be used together. These components may or may not be part of a larger system.

MPS130LZS DIMENSIONS





1. MPS130LZS-110 AND MPS130LZS-160 ONLY

TRAVEL OPTION	A = STAGE LENGTH	B = NOMINAL TRAVEL	C = LIMIT TRAVEL	D = HARDSTOP TRAVEL	E
-060	180	60	66	75	42
-110	230	110	116	125	78
-160	280	160	166	175	93

DIMENSIONS: MILLIMETERS