Single-Axis Miniature Linear Motor Stage

MPS130LM

The New Standard for Value-Driven Precision

MPS-LM stages define a new benchmark for high-quality linear motion that breaks the traditional tradeoff between precision and price. This makes them the ideal solution for demanding applications that require a careful balance of performance and cost, without forcing you to compromise on core technology. MPS-LM stages feature anti-creep, crossed-roller bearings and ironless linear motors with exceptionally high force density, resulting in smooth, precise motion. Plus, MPS-LM stages are form-factor compatible with our industry-leading ANT-L family of nanopositioning stages—offering OEMs an easy and efficient means to scale.

Key Applications

MPS-LM 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
- Drop-in compatibility with Aerotech ANT130L 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

MPS130LM SPECIFICATIONS

MECHANICAL SPECIFICATIONS	MPS130LM-060	MPS130LM-110	MPS130LM-160
Travel	60 mm	110 mm	160 mm
Accuracy-Standard[1]	± 3 µm	± 4 µm	± 5 µm
Accuracy-Calibrated[1]	± 0.5 µm		
Repeatability (Bidirectional)[1]	± 0.2 µm		
Resolution (Minimum Incremental Motion)	1 nm (-E1) 5 nm (-E2)		
In-Position Stability[2]	< 1 nm (-E1) < 5 nm (-E2)		
Straightness	± 2.5 µm		
Flatness	± 2.5 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]	350 mm/s		
Maximum Acceleration (No Load)[3]	1 g		
Load Capacity-Horizontal[4]	12 kg		
Load Capacity-Side[4]	10 kg		
Moving Mass	1.41 kg	1.90 kg	2.30 kg
Stage Mass	3.01 kg	3.86 kg	4.63 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.
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.

ELECTRICAL SPECIFICATIONS	MPS130LM-060	MPS130LM-110	MPS130LM-160
Drive System	Brushless Linear Servomotor		
Feedback	Noncontact Linear Encoder 1 Vpp with 20 µm signal period (-E1) Digital RS422 (-E2)		
Maximum Bus Voltage	100 VDC		
Limit Switches	5 V, Normally Closed		
Home Switch	Near Center		

MPS130LM SERIES ORDERING OPTIONS

Travel (Required)

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

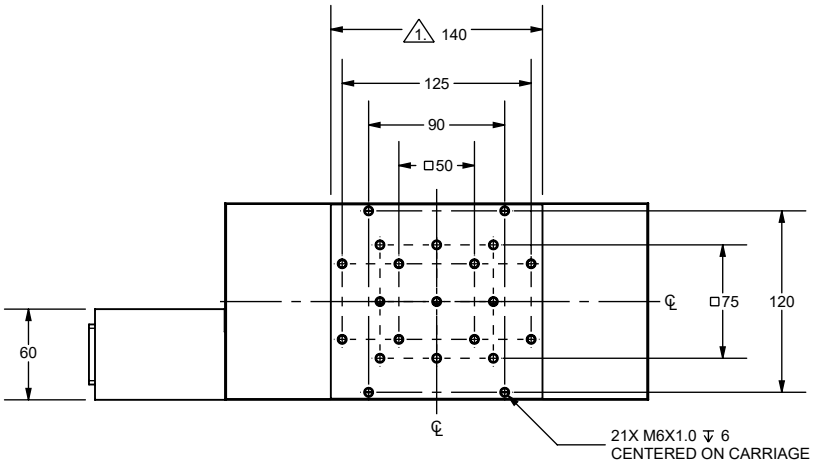
Integration (Required)

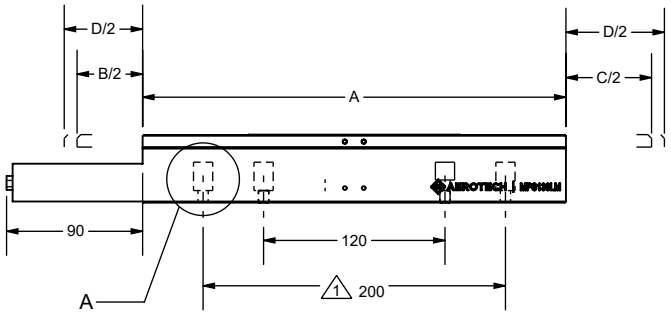
Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required, or if you desire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

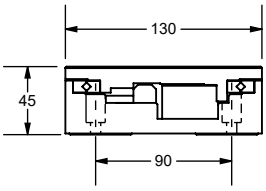
-TAS **Integration - Test as system**
Testing, integration, and documentation of a group of components as a complete system that will be used together (ex: drive, controller and stage). This includes parameter file generation, system tuning and documentation of the system configuration.

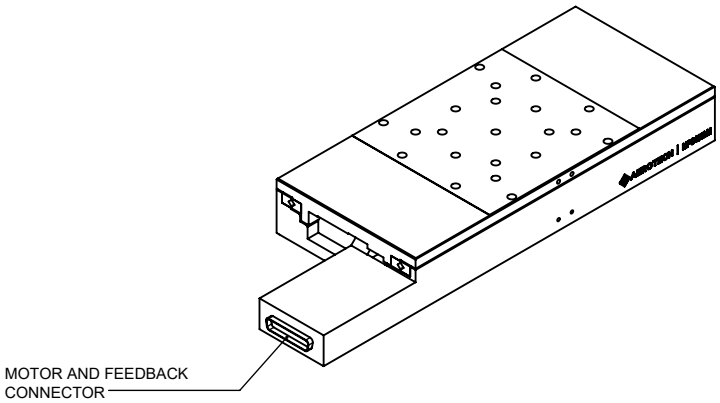
-TAC **Integration - Test as components**
Testing and integration of individual items as discrete components that ship together. This is typically used for spare parts, replacement parts, or items that will not be used together. These components may or may not be part of a larger system.

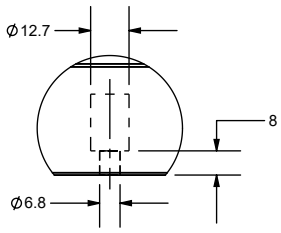
MPS130LM DIMENSIONS











DETAIL A
SCALE 2 : 5
MOUNTING HOLES TYP.

1 MPS130LM-110 AND MPS130LM-160 ONLY

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

DIMENSIONS: MILLIMETERS