



Miniature Mechanical-Bearing,
Screw-Driven Linear Stage

MPS50SL



Compact, Precise Linear Motion

The MPS50SL combines high-precision motion performance with a small, efficient form factor that is equally well-suited for industrial and laboratory use. It provides easy, straightforward integration, whether into multi-axis production machines or beamline hutches, virtually eliminating the tradeoff between size and performance. Available with a variety of configurable options including a precision-ground ballscrew or leadscrew, a DC or stepper motor, and vacuum preparation, MPS50SL can be configured to satisfy your application requirements.

Key Applications

MPS50SL stages are ideal for a variety of applications in laboratory, research and production environments, including:

- ◆ Measurement & inspection
- ◆ Precision component alignment
- ◆ Spectroscopy
- ◆ Biomedical research
- ◆ Sample manipulation in vacuum

KEY FEATURES:

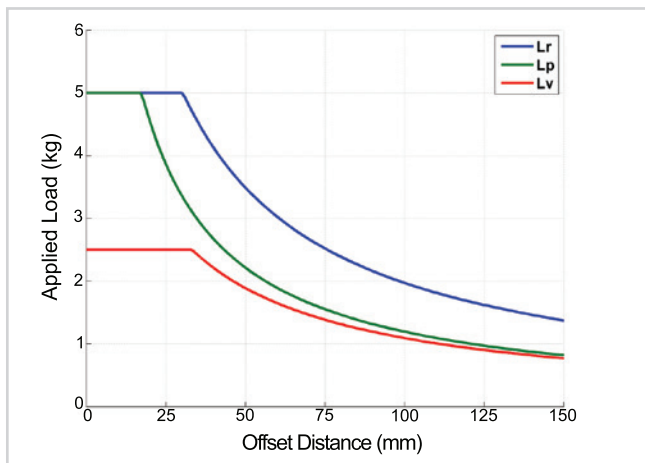
- ◆ Delivers **OUTSTANDING POSITIONING PERFORMANCE** with high-reliability operation
- ◆ Provides **EXCELLENT TRAJECTORY CHARACTERISTICS** with anti-creep crossed-roller bearings
- ◆ Integrates easily in both production & lab environments thanks to **ULTRA-COMPACT FORM FACTOR**
- ◆ Achieves **EFFORTLESS MULTI-AXIS MOTION** when combined with other linear, rotary & vertical-lift MPS series stages
- ◆ Available in **VACUUM-COMPATIBLE CONFIGURATIONS**

MPS50SL SERIES SPECIFICATIONS

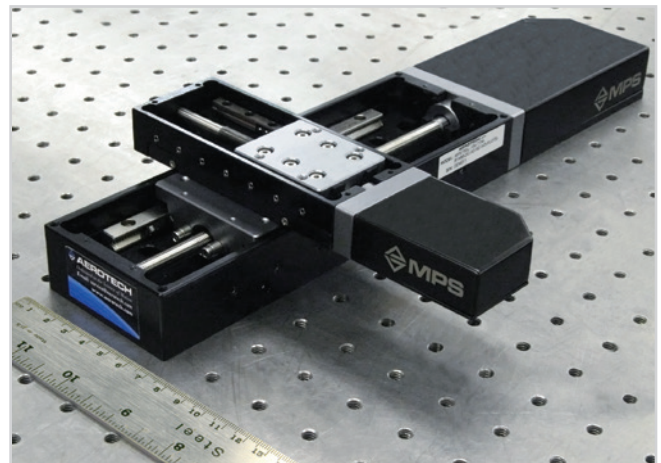
Mechanical Specifications			MPS50SL-025	MPS50SL-050
Travel			25 mm	50 mm
Accuracy	1.0 mm/rev Ball Screw	Uncalibrated	±6 µm	±8 µm
		Calibrated ⁽¹⁾	±1.5 µm	
	0.5 mm/rev Lead Screw	Uncalibrated	±10 µm	±12 µm
		Calibrated ⁽¹⁾	±2.0 µm	±2.5 µm
Resolution (Minimum Incremental Motion)	1.0 mm/rev Ball Screw		0.1 µm	
	0.5 mm/rev Lead Screw		0.1 µm	
Repeatability (Bi-Directional) ⁽¹⁾	1.0 mm/rev Ball Screw		±0.75µm	
	0.5 mm/rev Lead Screw		±1.5 µm	
Straightness			±2.0 µm	±3.0 µm
Flatness			±2.0 µm	±3.0 µm
Maximum Speed	1.0 mm/rev Ball Screw	DC Motor (-M1)	5 mm/s	
		Stepper Motor (-M2)	1 mm/s	
	0.5 mm/rev Lead Screw	DC Motor (-M1)	2.5 mm/s	
		Stepper Motor (-M2)	0.5 mm/s	
Load Capacity ⁽²⁾	Horizontal		5 kg	
	Side		5 kg	
	Vertical		2.5 kg	
Stage Mass			0.85 kg	0.9 kg
Material			Anodized Aluminum Body	

Notes:

1. With Aerotech controllers.
2. Payload specifications are single-axis system.
3. Excessive duty cycle may impact stage accuracy.
4. Specifications are for single-axis systems, measured 25 mm above the tabletop.



MPS50SL load curves.



MPS50SL with MPS75SL in a dual-axis XY configuration.

MPS50SL SERIES SPECIFICATIONS

Electrical Specifications		MPS50SL-025	MPS50SL-050
Drive System		DC Motor (-M1): DC Brush Servomotor with 14:1 - Gearbox Stepper Motor (-M2): 24 VDC Bipolar Stepper Motor with 43:1 - Gearbox	
Feedback		DC Motor (-M1): 512 lines/rev Rotary Encoder Stepper Motor (-M2): N/A	
Electronic Resolution	1.0 mm/rev Ball Screw	DC Motor (-M1): 0.0348 μm Stepper Motor (-M2): 0.0484 μm @ 480 steps/rev Motor Resolution	
	0.5 mm/rev Lead Screw	DC Motor (-M1): 0.0174 μm Stepper Motor (-M2): 0.0242 μm @ 480 steps/rev Motor Resolution	
Maximum Bus Voltage		DC Motor (-M1): 48 VDC Stepper Motor (-M2): 48 VDC*	
Limit Switches		DC Motor (-M1): 5 V, Normally Closed Stepper Motor (-M2): 5 V, Normally Closed	

*With Aerotech control System.



MPS50SL SERIES ORDERING INFORMATION

Travel (Required)

-025	25 mm travel stage
-050	50 mm travel stage

Drive Screw (Required)

-BS	Precision-ground ball screw, 1 mm/rev
-LS	Precision-ground lead screw, 0.5 mm/rev

Vacuum Preparation (Optional)

-HV	High vacuum preparation to 10 ⁻⁶ Torr
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Motor (Required)

-M1	DC servomotor
-M2	Stepper motor

Mounting Plate (Optional)

-MP	Optical table mounting plate
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Metrology (Required)

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

Integration (Required)

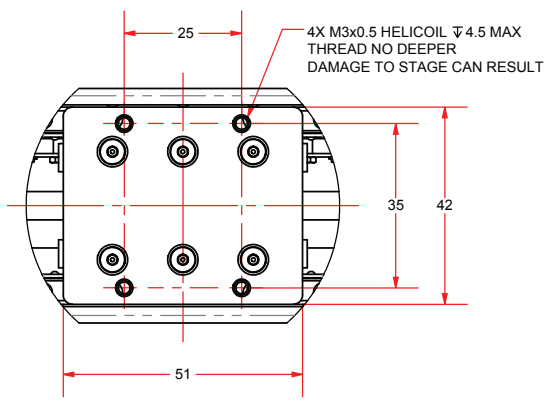
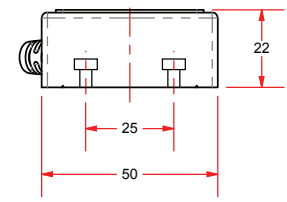
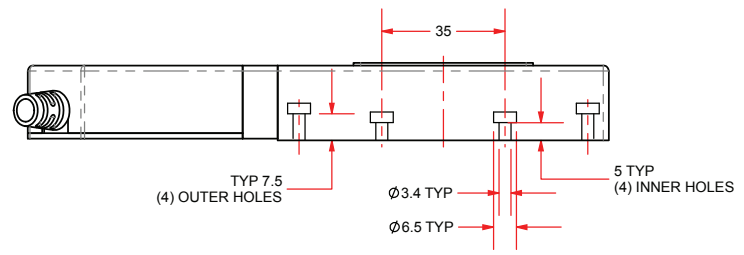
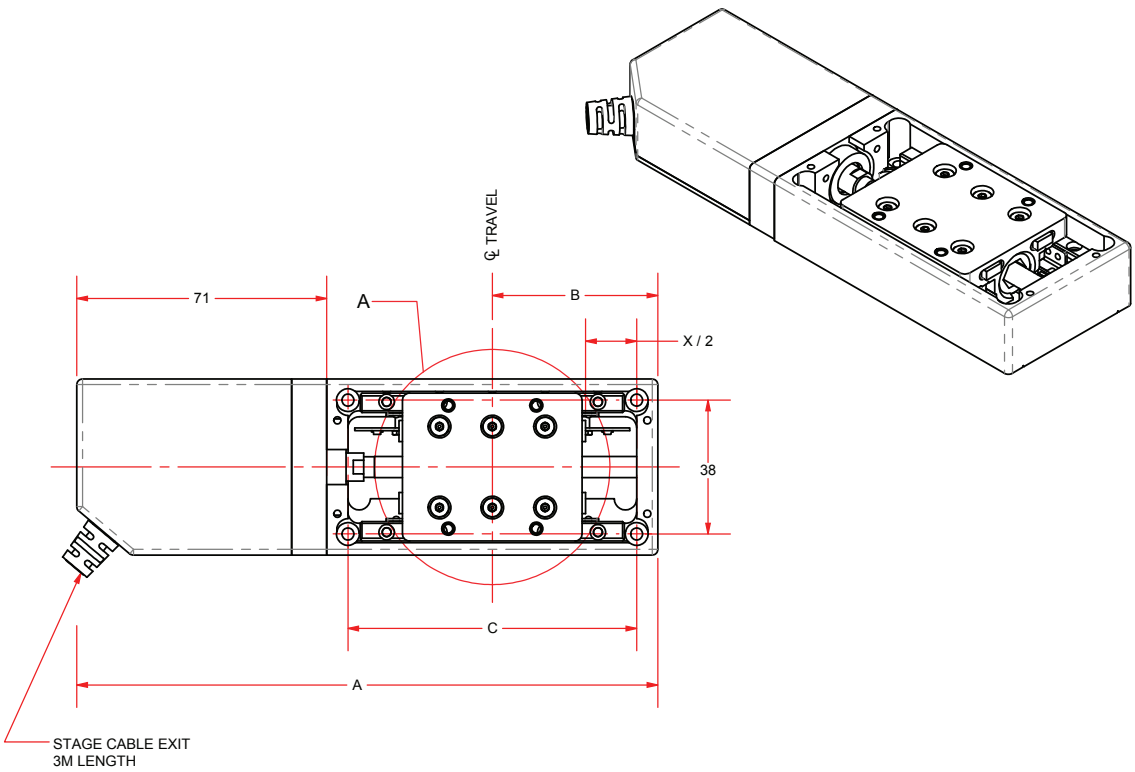
Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required, or if you desire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

Accessories (to be ordered as separate line item)

HDZ-MPS50SL	Right angle bracket, MPS50SL
HDZ-MPS50SL-HV	Right angle bracket, MPS50SL, high vacuum preparation to 10 ⁻⁶ Torr

MPS50SL SERIES DIMENSIONS



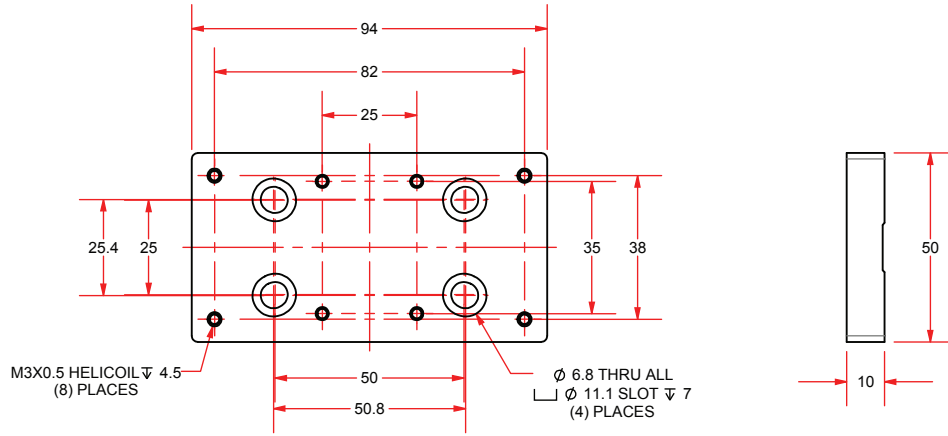
DETAIL A
SCALE 1 : 1.5

BASIC MODEL	A	B	C	X NOMINAL TRAVEL	X ELECTRICAL LIMIT TRAVEL	X MECHANICAL LIMIT TRAVEL
MPS50SL-025	165	47	82	25	27	29
MPS50SL-050	195	62	112	50	52	59

DIMENSIONS: MILLIMETERS

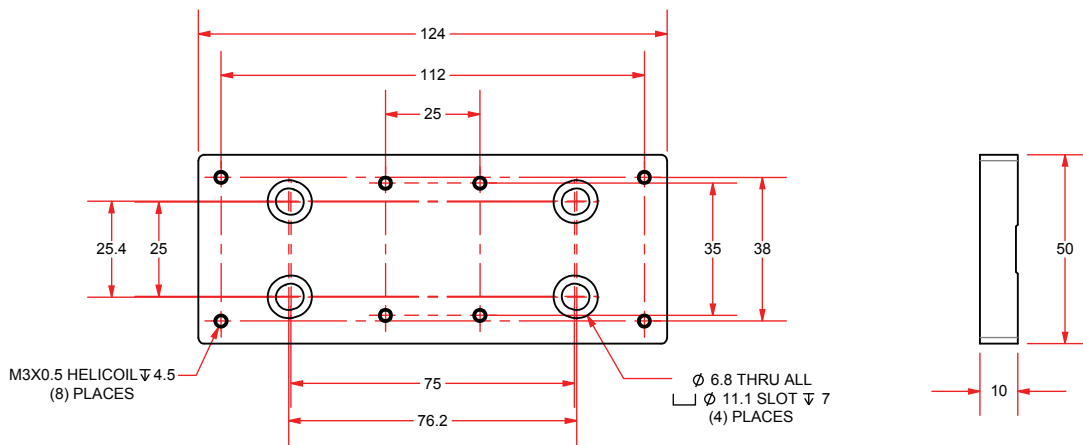
MPS50SL SERIES DIMENSIONS

MPS50SL-025



DIMENSIONS: MILLIMETERS

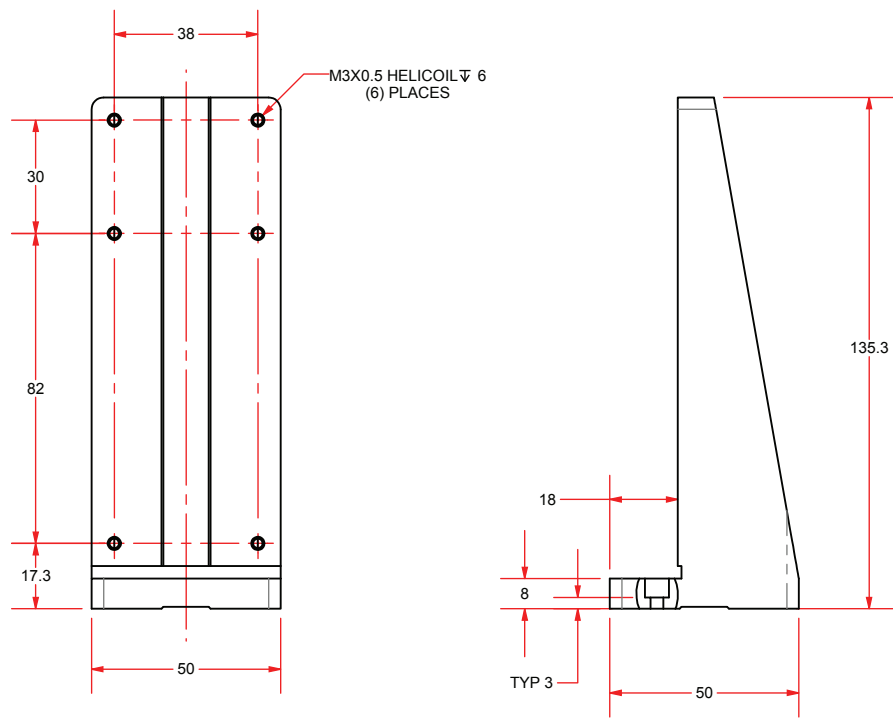
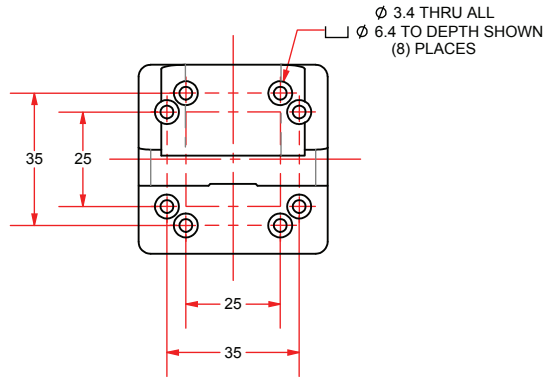
MPS50SL-050



DIMENSIONS: MILLIMETERS

MPS50SL SERIES DIMENSIONS

HDZ L-Bracket



DIMENSIONS: MILLIMETERS