

MPS50SL

Miniature Mechanical-Bearing Screw-Driven Linear Stage

Compact 50 mm width, with travel to 50 mm

Precision ground ball-screw or lead-screw drive

DC servo or stepper motor

Crossed-roller bearings

High resolution (0.1 μm), repeatability ($\pm 0.75 \mu\text{m}$), and accuracy ($\pm 1.5 \mu\text{m}$)

High vacuum capable

Compact multi-axis configurations



The compact MPS50SL offers travels of 25 mm or 50 mm with $\pm 1.5 \mu\text{m}$ accuracy.

The MPS50SL is a compact, high-performance linear positioning stage that is perfect for the confines of the laboratory while providing the high reliability required in a production environment. It is the ideal choice for measurement, testing, accurate alignment, and component assembly in space-constrained applications.

High Accuracy

The precision ground ball-screw or lead screw provides exceptional accuracy, repeatability, and ultra-fine positioning resolution capability to 0.1 micron. The DC servomotor is equipped with a rotary encoder. The crossed-roller linear bearings provide smooth travel and excellent payload characteristics.

Optional Vacuum Preparation

The MPS50SL is available with optional vacuum preparation to 10^{-6} Torr. It is the perfect compact stage choice for today's demanding vacuum applications in markets such as semiconductor manufacturing and inspection, optics fabrication, and military/aerospace.

Highly Configurable

An optional breadboard mounting plate provides direct mounting to both English and metric breadboards. Any of the models can be mounted in an XY configuration and, with the right-angle L-bracket, in XYZ configurations. It can also be directly mounted to the larger MPS75SL stage.

The MPS50SL is a member of the MPS (Miniature Positioning Stage) family of linear, rotary, goniometer, and vertical lift and Z stages. Two or more stages can easily be mounted together in numerous combinations using standardized mounting patterns and adapter plates.



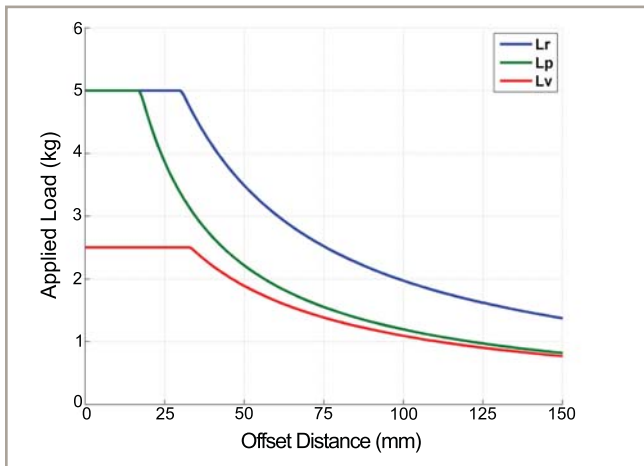
MPS50SL with MPS75SL in a dual-axis XY configuration.

MPS50SL SPECIFICATIONS

Mechanical Specifications			MPS50SL-025	MPS50SL-050
Travel			25 mm	50 mm
Accuracy	1.0 mm/rev Ball Screw	Uncalibrated	±3.0 µm	±4.0 µm
		Calibrated ⁽¹⁾	±1.5 µm	±1.5 µm
	0.5 mm/rev Lead Screw	Uncalibrated	±4.0 µm	±6.0 µm
		Calibrated ⁽¹⁾	±2.0 µm	±2.5 µm
Resolution (Minimum Incremental Motion)	1.0 mm/rev Ball Screw	0.1 µm	0.1 µm	
	0.5 mm/rev Lead Screw	0.1 µm	0.1 µm	
Repeatability (Bi-Directional) ⁽¹⁾	1.0 mm/rev Ball Screw	±0.75µm	±0.75 µm	
	0.5 mm/rev Lead Screw	±1.0 µm	±1.0 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	5 mm/s
		Stepper Motor (-M2)	1 mm/s	1 mm/s
	0.5 mm/rev Lead Screw	DC Motor (-M1)	2.5 mm/s	2.5 mm/s
		Stepper Motor (-M2)	0.5 mm/s	0.5 mm/s
Load Capacity ⁽²⁾	Horizontal		5 kg	5 kg
	Side		5 kg	5 kg
	Vertical		2.5 kg	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 SPECIFICATIONS

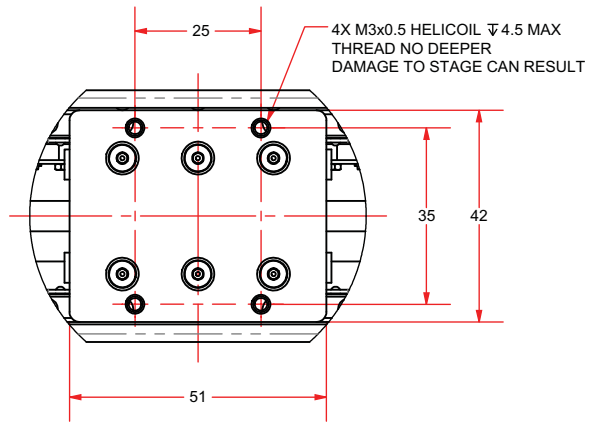
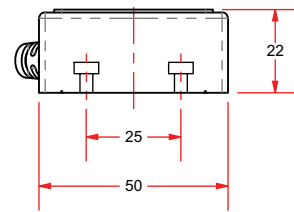
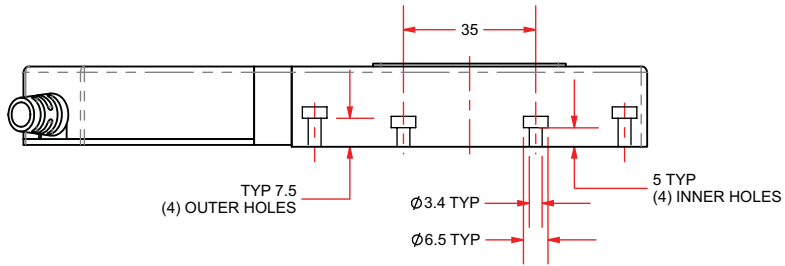
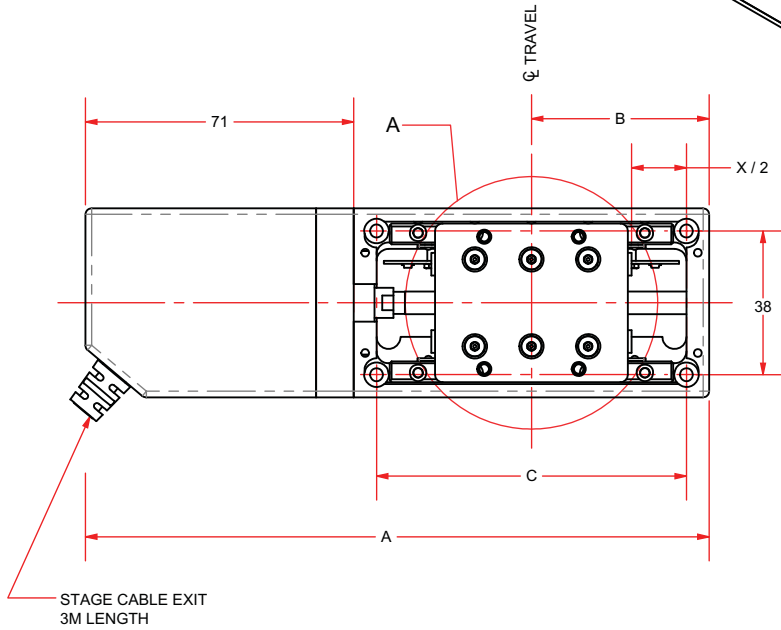
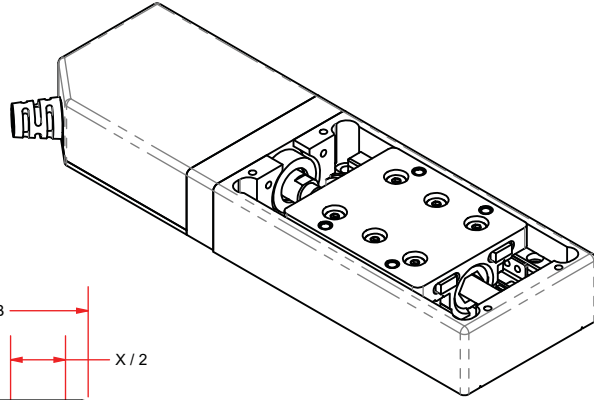
Electrical Specifications		DC Motor (-M1) (Standard and VAC)	Stepper Motor (-M2) (Standard and VAC)
Drive System		DC Brush Servomotor with 14:1 Gearbox	24 VDC Bipolar Stepper Motor with 43:1 Gearbox
Feedback		512 lines/rev Rotary Encoder	N/A
Electronic Resolution	1.0 mm/rev Ball Screw	0.0348 μm	0.0484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

*With Aerotech control System.

Recommended Controller		
Multi-Axis	A3200	Npaq/Npaq MR/Ndrive MP
	Ensemble	Ensemble LAB/Epaq/Epaq MR/Ensemble MP
Single Axis	Soloist	Soloist MP

MPS50SL Series DIMENSIONS

MPS50SL



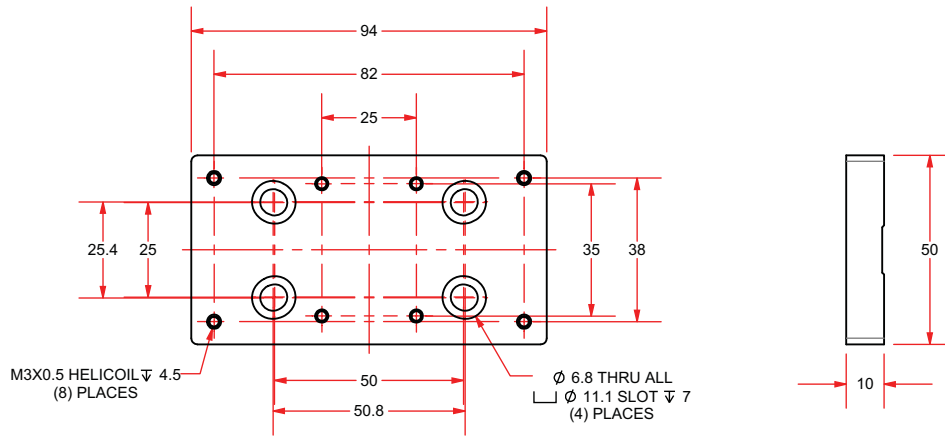
DETAIL A
SCALE 1 : 1.5

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

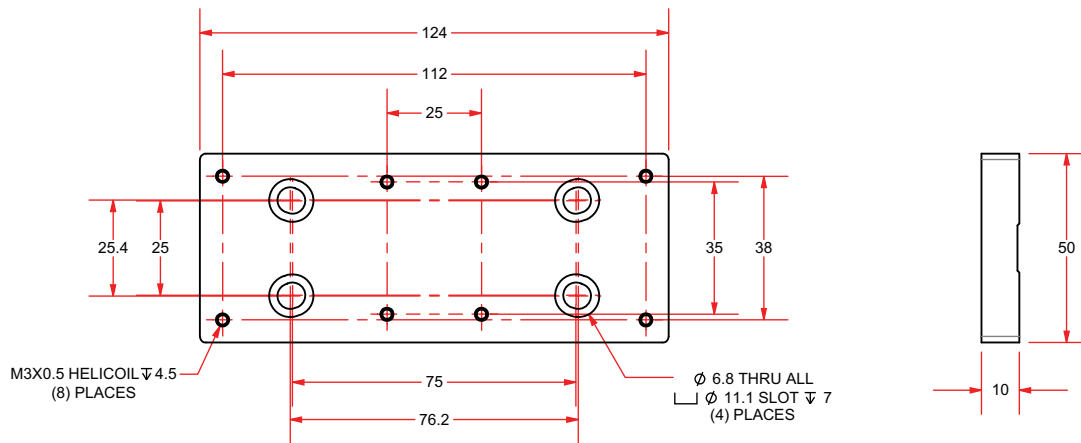
DIMENSIONS: MILLIMETERS

MPS50SL Mounting Plate DIMENSIONS

MPS50SL-025



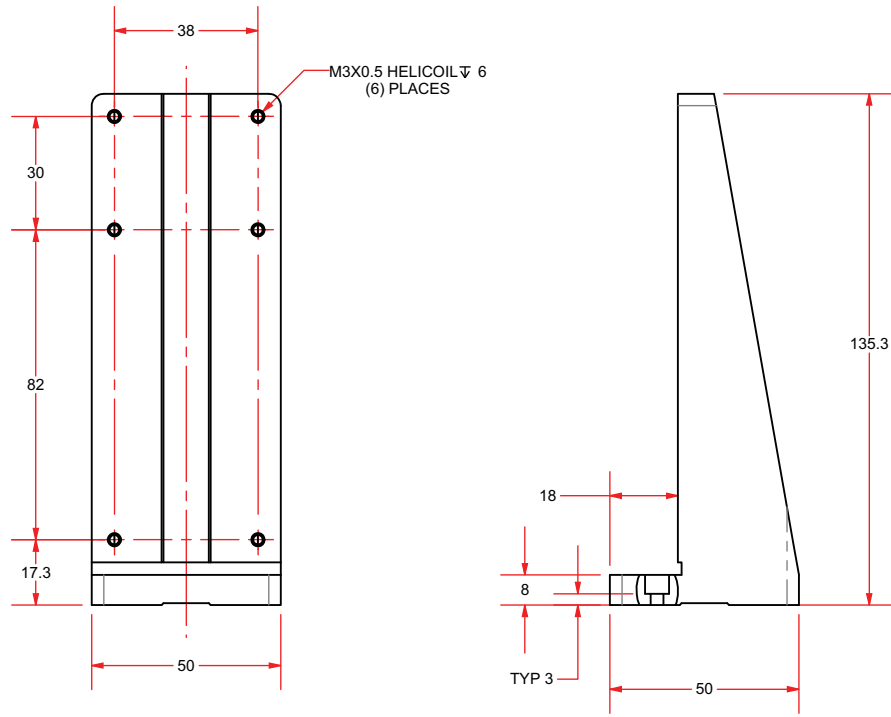
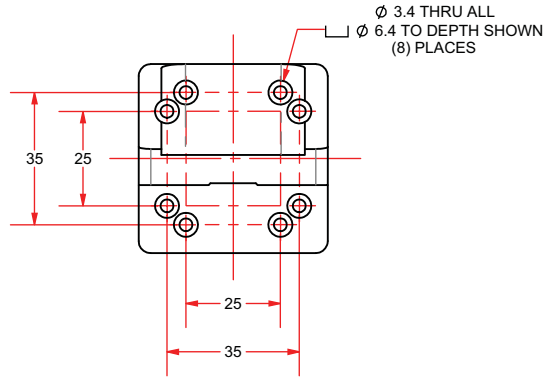
MPS50SL-050



DIMENSIONS: MILLIMETERS

HDZ-MPS50SL L-Bracket DIMENSIONS

HDZ L-Bracket



DIMENSIONS: MILLIMETERS

MPS50SL Series ORDERING INFORMATION

MPS50SL Miniature Mechanical-Bearing Screw-Driven Linear Stage

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. This is typically used for spare parts, replacement parts, or items that will not be used or shipped together (ex: stage only). 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