

Planar_{SL} Series

Two Axis, Mechanical Bearing, Ball-Screw Stage

Integrated, low-profile, XY, ball-screw stage

Long-life linear motion guide bearing system

Optional low thermal expansion glass linear encoder

Cost-effective, high-precision planar performance



Aerotech's Planar_{SL} – high-performance in a compact, 2-axis package

Aerotech's Planar_{SL} mechanical bearing, ball-screw-driven XY stages offer exceptional performance in a cost-effective, low-profile package. Combining two axes of motion in a compact package, the Planar_{SL} is the perfect solution for applications ranging from surface metrology to general high-precision automation.

Robust, High-Precision Design

The Planar_{SL} comes standard with a precision-ground and preloaded ball screw. Unlike competitive designs where the ball screw is positioned on the side or off-center, the Planar_{SL} is designed to drive directly through the centers of friction and stiffness resulting in superior geometric performance and accuracy.

High-precision linear motion guide bearings provide excellent straightness and flatness performance while supplying optimal support of the moving carriage over the entire XY travel. Using careful design and years of experience in precision motion systems, the Planar_{SL} structural elements have been optimized for the highest possible planar performance.

Optional Low Thermal-Expansion Linear Encoder

Unlike competitive designs using steel (13 ppm/°C) or glass scales with 8 ppm/°C thermal expansion coefficients, the Planar_{SL} is available with low-thermal expansion (3.3 ppm/°C) precision glass scales on both axes allowing for high-accuracy and repeatable positioning over long periods of time. The linear encoder, available with amplified sine (1 Vpp) or 0.1 μm TTL digital outputs, is mounted near the centers of action, again providing an optimized stage solution for high-accuracy positioning.

Configuration Options

The Planar_{SL} is available standard with a 24 VDC bipolar stepper motor. Aerotech can also provide brushless and brush DC motors with high-resolution rotary encoders preconfigured for use with Aerotech controls.

Wide Variety of Control Options

A wide selection of state-of-the-art motion controllers is available to control the Planar_{SL} series. This suite of software and drive electronics provides various cost and performance levels to meet the needs of any application.

Planar_{SL} SPECIFICATIONS

Mechanical Specifications			Planar _{SL} -100XY
Travel			100 mm x 100 mm
Accuracy	Ball Screw	HALAR ⁽¹⁾	±1.5 µm
		Standard	±4.0 µm
	LT Encoder	HALAR ⁽¹⁾	±1.0 µm
		Standard	±3.0 µm
Resolution (Minimum Incremental Motion)			0.1 µm
Repeatability (Bidirectional)	Ball Screw		±0.75 µm
	LT Encoder		±0.3 µm
Straightness			±2.0 µm
Flatness			±2.0 µm
Pitch			14 arc-sec
Roll			14 arc-sec
Yaw			8 arc-sec
Orthogonality			20 arc-sec
Maximum Speed ⁽²⁾			30 mm/s
Load Capacity ⁽³⁾	Horizontal		20 kg
Stage Mass			16.6 kg
Material			Black Anodized Aluminum
MTBF (Mean Time Between Failure)			20,000 Hours

Notes:

1. Available with Aerotech controllers.
2. With -SM option. Consult Aerotech for other motor options.
3. On-axis loading for orientation listed.
4. Specifications are per axis measured 25 mm above the tabletop.

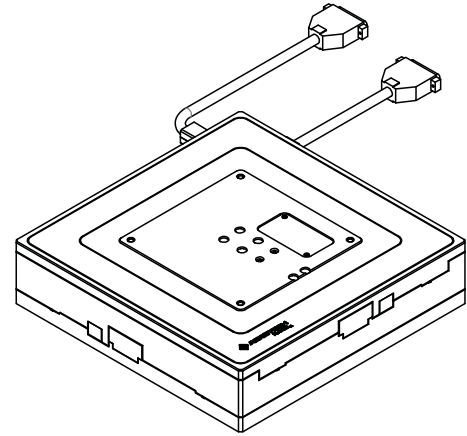
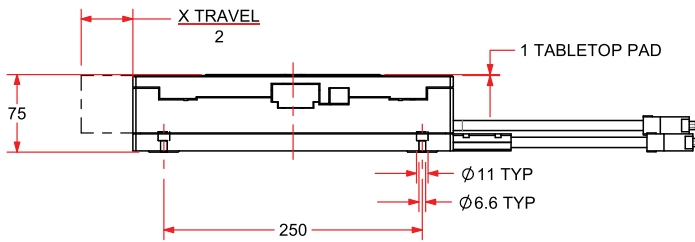
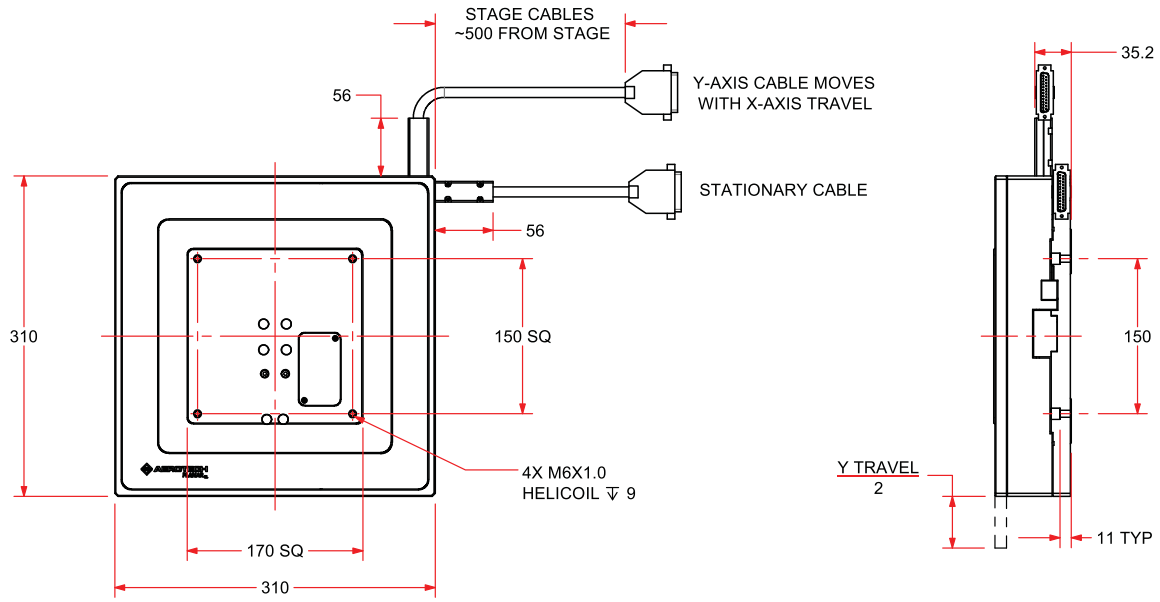
Electrical Specifications	Planar _{SL} -100XY
Drive System	24 VDC Bipolar Stepper Motor Standard; Other Motors Available – Contact Aerotech
Feedback	Noncontact Linear Encoder (LT) Optional; Amplified Sine (-AS) and TTL (0.1 µm) Versions Available
Maximum Bus Voltage	48 VDC ⁽¹⁾
Limit Switches	5V, Normally Closed

Notes:

1. With Aerotech control system.

Recommended Controller		Planar _{SL} -100XY
Multi-Axis	A3200	Ndrive CL/CP, Ndrive MP, Npaq/Npaq MR
	Ensemble	Ensemble LAB, Ensemble CL/CP, Ensemble MP
Single Axis	Soloist	Soloist CL/CP, Soloist MP

Planar_{SL}-100XY



MODEL	XY NOMINAL TRAVEL	XY ELEC LIMIT TRAVEL	XY MECH LIMIT TRAVEL
PLANAR SL-100XY	100	105	110

DIMENSIONS: MILLIMETERS

Planar_{SL} ORDERING INFORMATION

Planar_{SL}-Series XY Stage

Planar_{SL}-100XY Ball-screw-driven XY table, 100 mm x 100 mm travel

Motor Configuration

-SM 24 VDC bipolar stepper motor (standard)

* Other motor options available. Contact Aerotech for more details.

Lower-Axis Linear Encoder (Optional)

-L-LTAS Lower-axis glass scale linear encoder; amplified sine output 1 V_{pp} (20 μm signal period)

-L-LTX50 Lower-axis glass scale linear encoder, 0.1 μm line driver output after quadrature

Upper-Axis Linear Encoder (Optional)

-U-LTAS Upper-axis glass scale linear encoder; amplified sine output 1 V_{pp} (20 μm signal period)

-U-LTX50 Upper-axis glass scale linear encoder; 0.1 μm line driver output after quadrature

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.