

FiberGlide 3D Series

Three Axis, Linear Air-Bearing Stage

Designed for high-performance photonics alignment and assembly

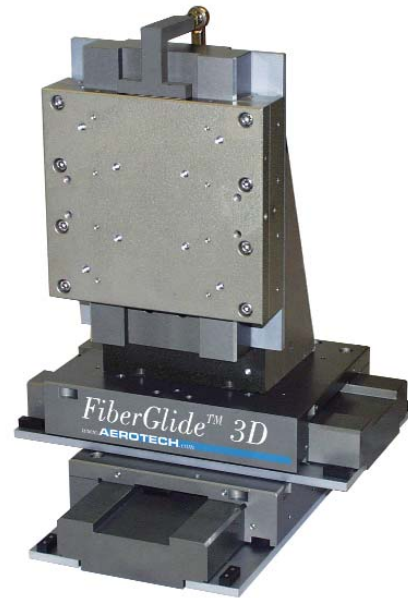
Linear encoder feedback provides up to 2 nm resolution

62 picometer resolution available with the Automation 3200

Fully-preloaded air bearing

Complete noncontact design

Ultra-smooth velocity control



The FiberGlide 3D series represents the highest performance miniature three axis air-bearing stages available. Aerotech has combined over 30 years of precision motion control and positioning system experience with the latest technologies to produce a truly outstanding miniature, linear air-bearing stage.

Linear Stage

The linear positioner is a fully preloaded, noncontact design. Inherently frictionless, air bearings have proven to be the standard in precision applications, and Aerotech has now produced a miniature version that is well-suited for the photonics industry. Driven by a noncontact linear brushless servomotor, this stage proves the ultimate solution whether the application requires small, accurate steps or constant smooth velocity. Years of research have resulted in a robust and perturbation-free cable management system.

Feedback and Control System

Directly coupled, noncontact linear encoder position feedback is available with different options. A wide selection of state-of-the-art controllers is available, featuring the Automation 3200 software controller with digital drives.

Options

Convenient rack or panel-mount amplifiers are included with all systems. Aerotech's expert technical staff is experienced in custom system designs and will work with you to generate a system to meet the unique needs of your application.

Clean Room Compatibility

The air-bearing design is inherently clean room compatible. A high quality cable management system, together with low particulate generation materials, provides compliance to Class 1 with proper integration.

FiberGlide 3D Series SPECIFICATIONS

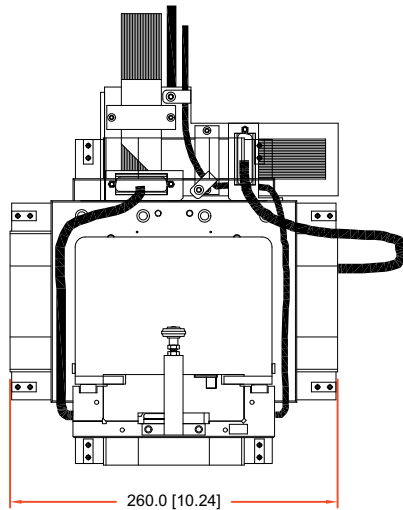
Basic Model		FiberGlide 3D			
Total Travel		25 mm	50 mm	100 mm	150 mm
Drive System		Linear Brushless Servomotor			
Bus Voltage		up to 160 VDC			
Continuous Current	A _{pk}	up to 2.9 A			
	A _{rms}	up to 2.1 A			
BEMF, line-line, max.	V/m/sec	3.77952			
	V/in/sec	0.096			
Force Constant, Sinusoidal Drive	N/A(lb/A), pk	3.29 (0.739)			
	N/A(lb/A), rms	4.65 (1.04)			
Resistance, 25°C, line-line	Ohms	5.2			
Resistance, 125°C, line-line	Ohms	7.28			
Inductance, line-line	mH	0.7			
Magnetic Pole Pitch	mm (inch)	16 (0.63)			
Feedback		Noncontact Linear Encoder			
Resolution	LN	1 nm			
	LT	5 nm			
Maximum Travel Speed ⁽¹⁾		300 mm/s			
Maximum Linear Acceleration		1 g - 10 m/s ² (no load)			
Maximum Load ⁽²⁾	Horizontal	15.0 kg			
Accuracy	LN	±0.2 μm ⁽³⁾ ±1 μm	±0.2 μm ⁽³⁾ ±1 μm	±0.2 μm ⁽³⁾ ±2 μm	±0.5 μm ⁽³⁾ ±5 μm
	LT	±0.3 μm ⁽³⁾ ±2 μm	±0.3 μm ⁽³⁾ ±2 μm	±0.3 μm ⁽³⁾ ±5 μm	±0.5 μm ⁽³⁾ ±5 μm
Repeatability	LN ⁽³⁾	±50 nm			
	LT	±50 nm ⁽³⁾ ; ±100 nm			
Straightness and Flatness ⁽⁴⁾	Differential	0.25 μm/25 mm			
	Max Deviation	±0.25 μm	±0.25 μm	±0.4 μm	±0.4 μm
Pitch and Yaw		±0.25 arc sec/25 mm	±0.25 arc sec/25 mm	±0.25 arc sec/25 mm	±1.5 arc sec/25 mm
Nominal Stage Weight		4.5 kg	5.5 kg	6.4 kg	12.7 kg
Moving Mass		1.9 kg			4.8 kg
Operating Pressure ⁽⁵⁾		80 psi ±5 psi			
Air Consumption ⁽⁶⁾		<0.3 cfm @ 80 psi			
Construction		Aluminum Body/Hardcoat			

Notes:

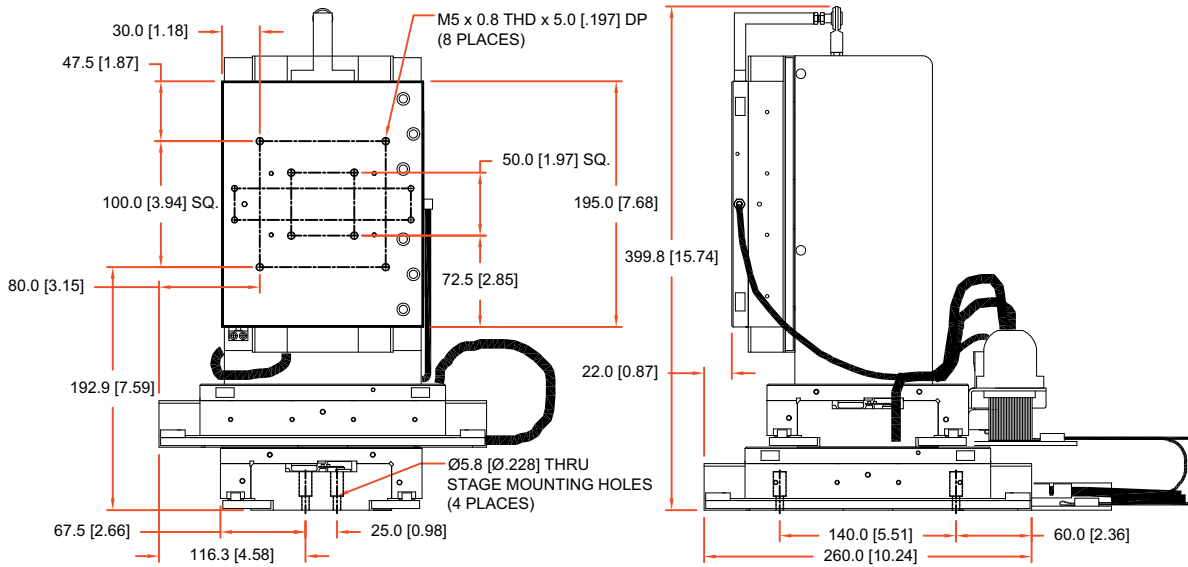
- Maximum speed based on stage capability; maximum application velocity may be limited by system data rate and system resolution.
- Max load for XY configuration is 10.0 kg.
- Values with Aerotech controls and HAL option.
- Dependent on flatness of stage mounting surface.
- To protect air bearing against under-pressure, an in-line pressure switch is required and tied to the controller E-stop input.
- Air supply must be clean, dry to 0° F dew point, and filtered to 0.25 μm or better; recommend nitrogen at 99.99% purity.

FiberGlide 3D Series DIMENSIONS

All stages shown at center of travel.
 Mounting surface quality:
 Flatness 0.0002 in.
 Parallelism 0.0002 in.



DIMENSIONS - MILLIMETERS [INCHES]



FiberGlide 3D Series ORDERING INFORMATION

Ordering Example

FG1000-3D	-100	-LT
Series	Travel (mm)	Feedback
	-25	-LT
	-50	-LN
	-100	-LT/lower
	-150	-LN/lower
		-LT/upper
		-LN/upper
		-LT/vertical
		-LN/vertical

FiberGlide 1000 Series Photonics Alignment and Assembly System

FG1000-3D Linear air bearing positioner

Linear Stage Travel (Z, X, Y)

-25*	25 mm (1 in) travel stage with linear motor
-50	50 mm (2 in) travel stage with linear motor
-100	100 mm (4 in) travel stage with linear motor
-150**	150 mm (6 in) travel stage with linear motor

*-25 can only be used in an XY configuration with the -150 as the lower axis

** -150 can only be used as the upper XY axis with a -150 lower axis

***Z axis can only be -25

Feedback

-LT	Linear encoder feedback (10 nm resolution), amplified sine output
-LN	High-accuracy linear encoder feedback (2 nm resolution), amplified sine output
-LT/lower	LT option with lower axis cable management
-LN/lower	LN option with lower axis cable management
-LT/upper	LT option with upper axis cable management
-LN/upper	LN option with upper axis cable management
-LT/vertical	LT option with vertical axis cable management
-LN/vertical	LN option with vertical axis cable management