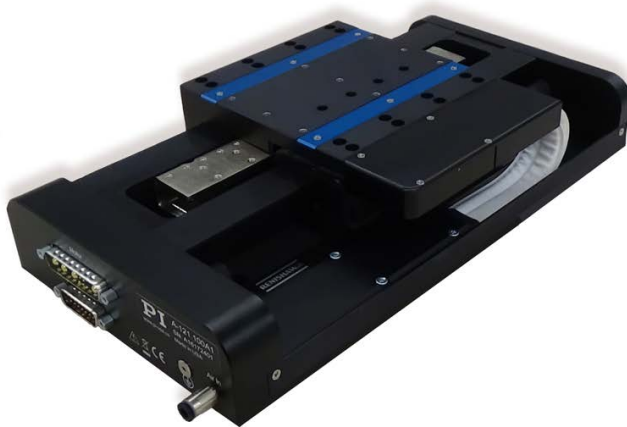


Pliglide AT1: Linear Air Bearing Stage

HIGH PERFORMANCE SMALL FOOTPRINT NANOPositionING STAGE



A-121 Series

- Ideal for scanning or ultra-precise positioning
- Cleanroom compatible
- Customizable
- Table size 115 mm x 115 mm
- Low profile 60 mm height
- Travel lengths to 350mm
- 10 kg max payload
- Non-contact fully preloaded air bearings
- Ironless cog-free linear motor
- Integral optical linear encoder
- Resolutions to 1nm
- Velocity to 1 m/sec
- Acceleration to 2 g
- Maintenance-free

Overview

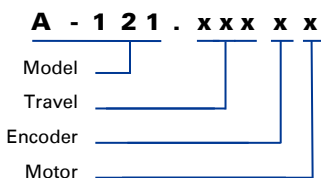
The Pliglide AT1 series of compact stages are linear servo motor driven with fully preloaded air bearings and an integral optical linear encoder. The combination of these non-contact components results in a frictionless motion platform that offers the highest performance, quality and life. These stages are ideally suited for many high precision applications, such as metrology, photonics alignment, semiconductor inspection, flat panel display, laser machining, and precision scanning applications. The non-contact design also makes these stages ideal for cleanroom applications. A high-force linear motor can drive the stage to top speed within a few milliseconds. The dovetail preloaded air bearing design in this model will support normal, vertical, and side-mounted orientations.

Accessories and Options

- Multiple encoder options
- Air preparation kits
- Single or multi-axis motion controllers and servo drives
- XY stacks and custom configurations with precision alignment
- Cable track variations
- Counterbalance options for vertical orientation
- Customizations available
- Granite bases and vibration isolation systems

Model	A-121.050	A-121.100	A-121.150	A-121.200	A-121.250	A-121.350
Travel	50 mm	100 mm	150 mm	200 mm	250 mm	350 mm
Drive System	Brushless ironless linear servo motor, 3-phase					
Feedback System	Non-contact optical linear encoder with travel limits and home index					
Motor Bus Voltage	48 VDC nominal, 80 VDC max					
Motor Force Constant	6.67 N/A					
Continuous Force	11.1 N					
Peak Force	33.2 N					
Motor Back EMF	7.7 V/m/sec					
Motor Resistance (phase-to-phase)	6.3 Ω					
Motor Inductance (phase-to-phase)	1.0 mH					
Maximum Velocity (1)	1 m/sec					
Maximum Acceleration (1) (Unloaded)	2 g					
Maximum Payload (2)	10 kg normal, 4 kg lateral					
Accuracy (3) (Uncompensated)	+/-1.0 μm	+/-1.5 μm	+/-2.0 μm	+/-3.0 μm		
Accuracy (3) (with error compensation)	+/-0.50 μm					+/-1.0 μm
Repeatability (4)	+/-0.25 μm					+/-0.50 μm
Encoder Resolution (4)	up to 1 nm (see encoder options table)					
Straightness & Flatness (5)	< 0.1 μm / 25mm					
	< 1 μm TIR		< 1.5 μm TIR		< 2.5 μm TIR	
Pitch & Yaw TIR (5)	2.5 arc-sec	2.5 arc-sec	3 arc-sec	4 arc-sec	5 arc-sec	7 arc-sec
Stage Mass	3.5 kg	4.2 kg	4.5 kg	5.2 kg	5.7 kg	6.8 kg
Moving Mass	1.2 kg					
Cabling	External, moving loop					
Operating Pressure (6)	70 (+/-5) psi (485 +/-35 kPa)					
Air Consumption	< 1.0 SCFM (28 SLPM)					
Air Quality	Clean (filtered to 1.0 μm or better) - ISO 8573-1 Class 1 Oil-free -ISO 8573-1 Class 1 Dry (-15 °C dew point) - ISO 8573-1 Class 3					
Construction	Hardcoat Aluminum with SS Fasteners					

- Maximum velocity and acceleration based on unloaded stage capability, may be limited by payload, controller, or drive performance.
- Assumes payload CG is centered no more than 50mm above the stage table.
- Improved accuracy can be obtained with controller-based error compensation. Specs listed are for encoder options A & C. Accuracy values assume short-term time duration and do not consider the long-term effects of thermal drift on the stage.
- Encoder resolution depends on encoder option chosen and interpolation used if sine encoders are chosen. Resolution will impact repeatability specification.
- Dependent on the flatness of the surface to which the stage is mounted.
- To protect stage from damage, an under-pressure air sensor tied to the controller E-stop input is recommended.



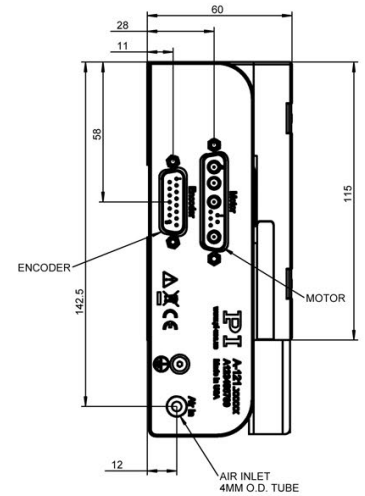
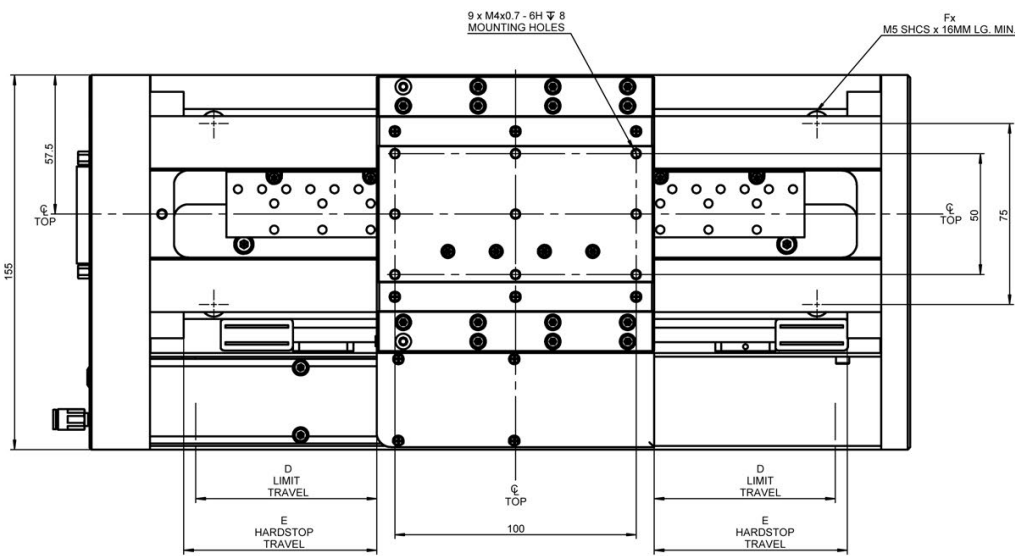
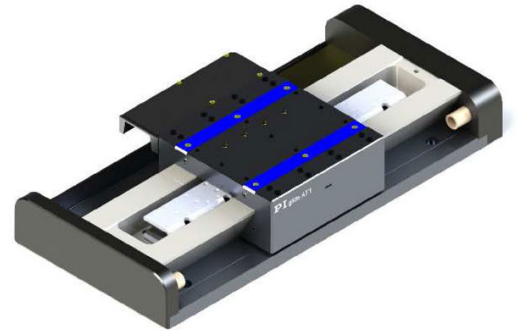
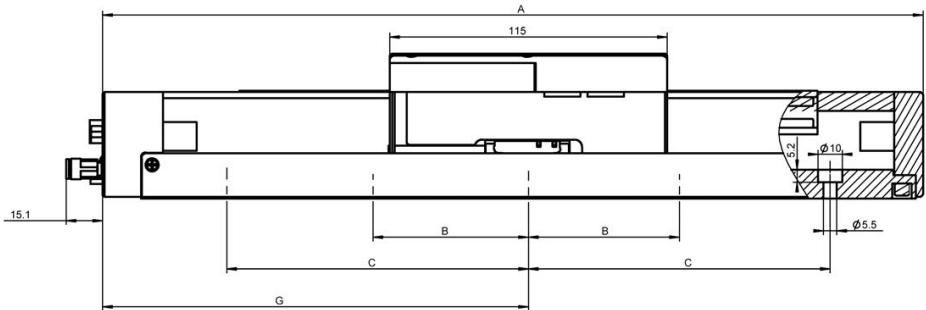
Ordering Example

Part# A-121.150A1 is a

Model: A-121 (PIglide AT1 linear motorized air bearing stage)
Travel: 150 mm
Encoder: A (20 μm/line incremental encoder, sine (1 Vp-p) output)
Motor Wiring: 1 (48 VDC)

Model	Travel	Encoder (1)	Motor Wiring
A-121	050 = 50mm	A = 20μm grating pitch incremental, sine (1 Vp-p) output	1 = Standard motor, 48 VDC buss
	100 = 100mm	B = 1nm resolution absolute, high accuracy, BiSS-C serial output	
	150 = 150mm	C = 50nm resolution incremental, A-quadr-B (TTL) output	
	200 = 200mm		
	250 = 250mm		
	350 = 350mm		

1. Alternate TTL encoder resolutions are available on request.



Model A-121.xxx, in mm

Model	A	B	C	D	E	F	G
A-121.050	240	-	75	25	30	4	126.5
A-121.100	290	-	100	50	55	4	151.5
A-121.150	340	-	125	75	80	6	175.5
A-121.200	390	-	150	100	105	6	201.5
A-121.250	440	-	150	125	130	6	226.5
A-121.350	540	100	200	175	180	10	276.5

