

# PIglide LC Linear Air Bearing Stage

HIGH PERFORMANCE AFFORDABLE NANOPositionING SYSTEM



## A-110 Series

- Ideal for scanning or high-resolution positioning
- Cleanroom compatible
- Customizable
- Table size 160mm x 200mm
- Travel lengths to 400mm
- 10kg max payload
- Non-contact fully preloaded air bearings
- Ironless cog-free linear motor
- Integral optical linear encoder
- Resolutions to 1nm
- Velocity to 1m/sec
- Acceleration to 3g

### Overview

The PIglide LC series of stages are linear servo motor driven with magnetically 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, flat panel display and precision scanning applications. The non-contact design also makes these stages perfect for cleanroom applications.

### Accessories and Options

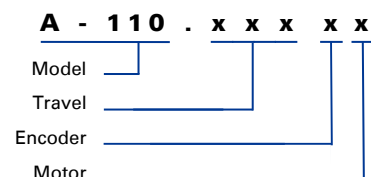
- Multiple encoder options
- Air preparation kits
- Single or multi-axis motion controllers and servo drives
- XY stacks and custom configurations
- Granite bases and vibration isolation systems

Model	A-110.050	A-110.100	A-110.200	A-110.300	A-110.400
Travel	50 mm	100 mm	200 mm	300 mm	400 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, 60 VDC max				
Motor Force Constant	4.2 N/A		12.3 N/A		
Continuous Force	9.2 N		39 N		
Peak Force	25 N		85 N		
Motor Back EMF (phase-to-phase)	4.2 V/m/sec		10.1 V/m/sec		
Motor Resistance (phase-to-phase)	8.2 ohms		3.6 ohms		
Motor Inductance (phase-to-phase)	2.7 mH		1.24 mH		
Maximum Velocity (1)	0.5 m/sec		1 m/sec		
Maximum Acceleration (1) (Unloaded)	1 g		3 g		
Maximum Payload (2)	10 kg				
Accuracy (3) (uncompensated)	+/-1.0 µm	+/-1.5 µm	+/-2.0 µm	+/-3.0 µm	+/-4.0 µm
Accuracy (3) (with error compensation)	+/-1.0 µm			+/-1.5 µm	
Repeatability (4)	+/-0.5 µm				
Encoder Resolution (4)	up to 1 nm				
Straightness & Flatness (5)	< +/- 10 nm / 10mm				
	< 2 µm TIR		< 3 µm TIR	< 4 µm TIR	< 5 µm TIR
Pitch & Yaw TIR (5)	< 2 arc-sec	< 4 arc-sec	< 6 arc-sec	< 8 arc-sec	< 10 arc-sec
Stage Mass	6.3 g	7.5 kg	11 kg	12 kg	14 kg
Moving Mass	2.5 kg		2.6 kg		
Cabling	Internal, non-moving		External, moving loop		
Operating Pressure (6)	65 (+/-5) psi (450 +/-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 SS Fasteners				

1. Maximum velocity and acceleration based on unloaded stage capability, may be limited by payload, controller, or drive performance.
2. Assumes payload CG is centered no more than 50mm above the stage table. Stage is only designed for horizontal operation.
3. 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.
4. Encoder resolution depends on encoder option chosen and interpolation used if sine encoders are chosen. Resolution will impact repeatability specification.
5. Dependent on the flatness of the surface to which the stage is mounted.
6. To protect stage from damage, an under-pressure air sensor tied to the controller E-stop input is recommended.

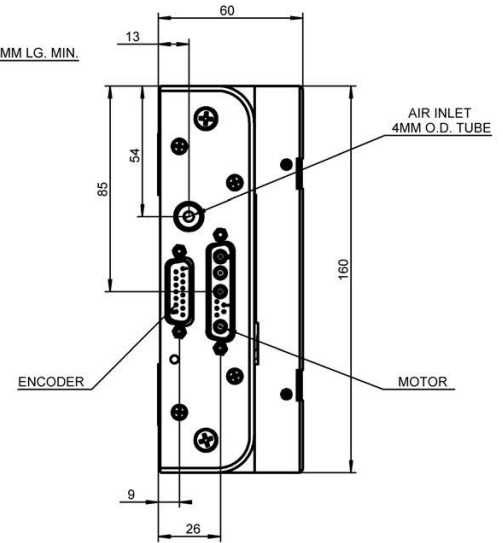
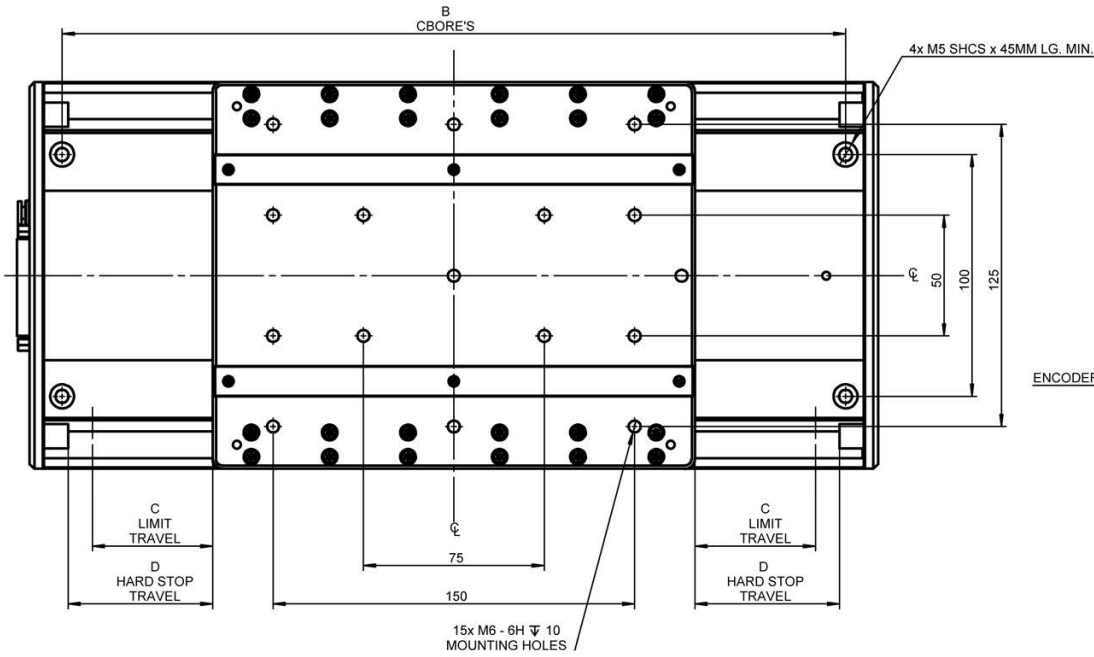
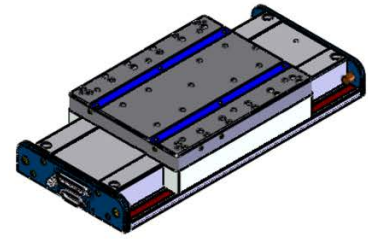
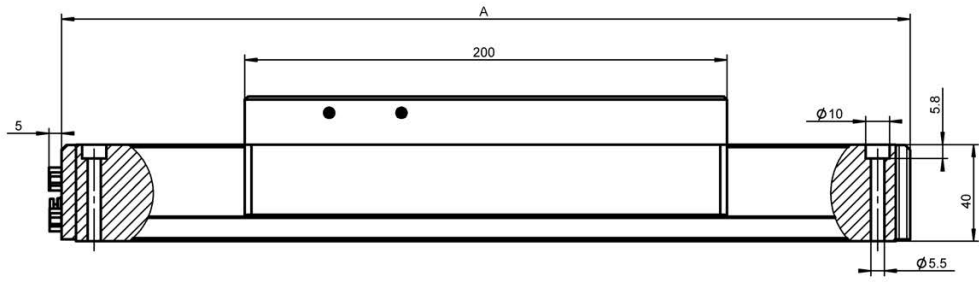
Model	Travel	Encoder (1)	Motor Wiring
A-110	050 = 50mm	A = 20µm grating pitch incremental, sine (1 Vp-p) output	1 = Standard motor, 48 VDC buss
	100 = 100mm	B = 1nm resolution absolute, BiSS-C serial output	
	200 = 200mm	C = 50nm resolution incremental, A-quad-B (TTL) output	
	300 = 300mm		
	400 = 400mm		

1. Alternate TTL encoder resolutions are available on request.



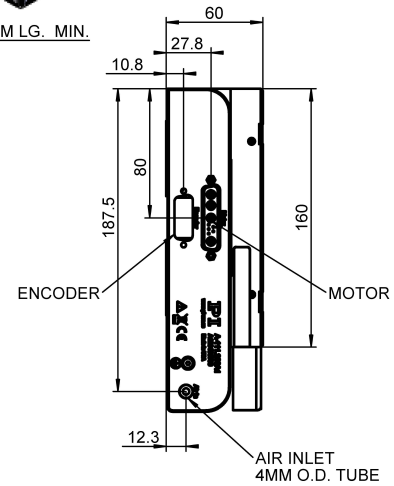
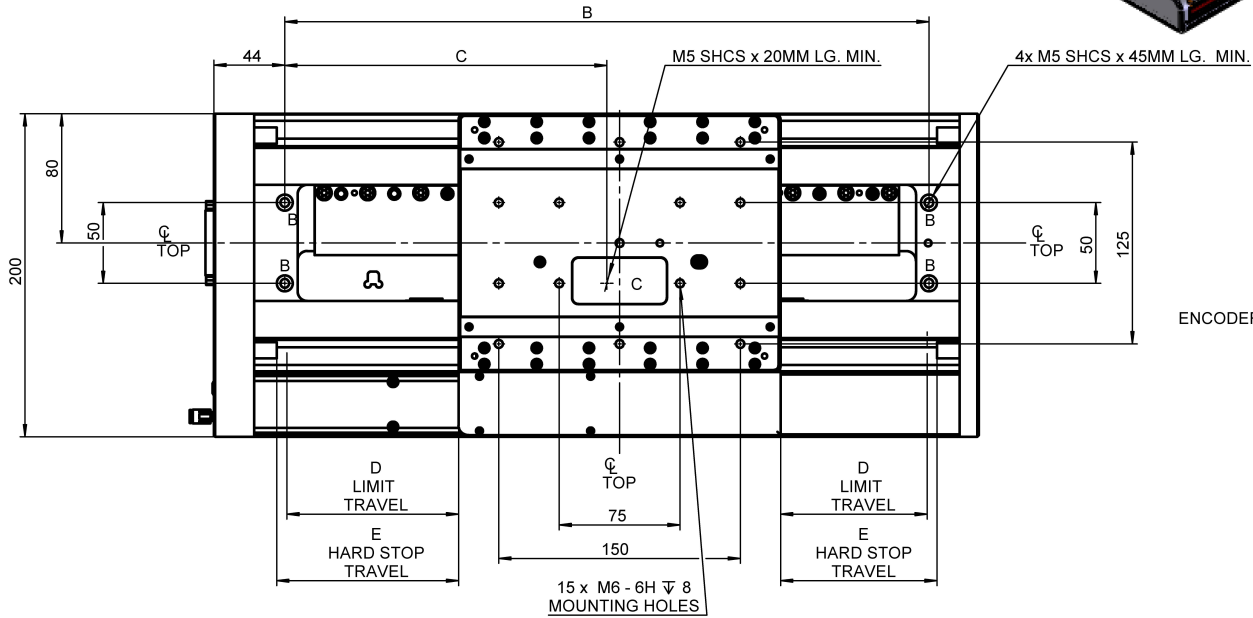
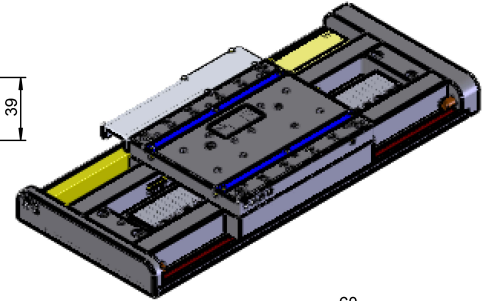
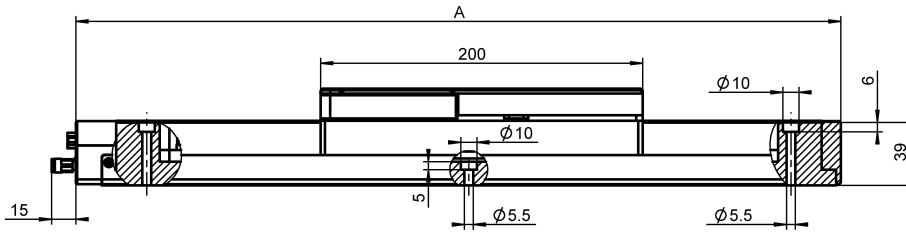
### Ordering Example

Part# A-110.300A1 is a  
**Model:** A-110 (PIglide LC linear motorized air bearing stage)  
**Travel:** 300 mm  
**Encoder:** A (20 µm/line sine output, 1 Vp-p)  
**Motor Wiring:** 1 (48 VDC)



Model A-110.50, .100, in mm

Model	A	B	C	D
A-110.050	302	275	25	35
A-110.100	352	325	50	60



Model A-110.200, .300, .400, in mm

Model	A	B	C	D	E
A-110.200	475	400	200	102	105
A-110.300	575	500	250	152	155
A-110.400	675	600	300	202	205