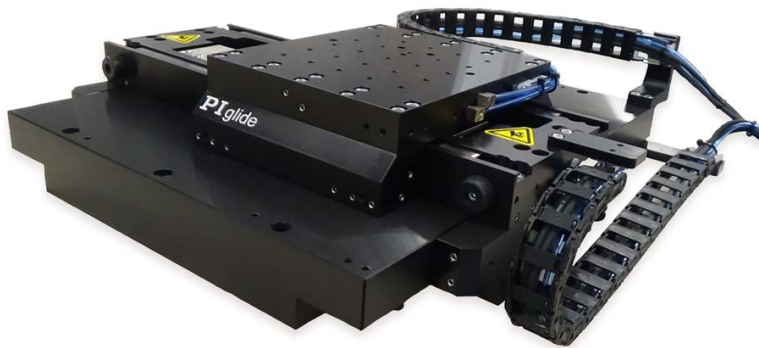


PIglide IS Planar XY Air Bearing Stage

ULTRA PERFORMANCE, COMPACT XY NANOPositionING SYSTEM



A-311 Series

- Ideal for scanning or high-resolution positioning
- Clean room compatible
- Customizable
- Travel lengths to 200mm x 200mm
- Load to 15kg max
- Non-contact fully preloaded air bearings
- Low profile design
- Resolution to 1nm
- Velocity to 2m/sec
- Acceleration to 2.75g

Overview

The PIglide IS planar XY air-bearing stage is a low profile, high precision alternative to stacked XY stages. The fully preloaded air bearing puck floats in both X and Y directions on a common base, providing smooth, frictionless motion. Ideal for inspection, laser marking, microscopy, scanning, and other precision motion applications. The efficient, compact design saves space in tight machine designs. Ironless linear motors provide smooth motion with no cogging or attractive forces. Optical linear encoders provide position feedback information down to 1nm, depending on interpolation.

The PIglide IS can be coupled with a variety of industry-leading digital controls and drives that offer advanced algorithms to improve dynamic performance and error compensation and a wide suite of software development tools.

Accessories and Options

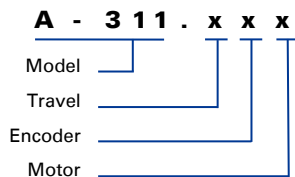
- Multiple encoder options
- Air preparation kits
- Multi-axis motion controller and servo drives
- Granite surface plates
- Machine bases
- Vibration isolation systems
- Additional accessories and customizations available

Model	A-311.Dxx	A-311.Axx	A-311.Bxx	A-311.Cxx
Travel	50 mm x 50 mm	100 mm x 100 mm	150 mm x 150 mm	200 mm x 200 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	12.3 N/A			
Continuous Force	39 N			
Peak Force	85 N			
Motor Back EMF	10.1 V/m/sec			
Motor Resistance (phase-to-phase)	3.6 Ω			
Motor Inductance (phase-to-phase)	1.24 mH			
Maximum Velocity ⁽¹⁾ (Unloaded)	2 m/sec			
Maximum Acceleration ⁽¹⁾ (Unloaded)	Upper (X) Axis	2.75 g		
	Lower (Y) Axis	1.5 g	1.3 g	1.1 g
Maximum Payload ⁽²⁾	15 kg			
Accuracy ⁽³⁾ (Uncompensated)	+/-1.0 μm	+/-1.5 μm	+/-2.0 μm	+/-2.5 μm
Accuracy ⁽³⁾ (with error compensation)	+/-0.5 μm			
Repeatability ⁽⁴⁾	+/-0.05 μm			
Encoder Resolution ⁽⁴⁾	Up to 1 nm (see encoder options table)			
Straightness ⁽⁵⁾	< +/- 10 nm / 10mm			
	< 0.50 μm TIR		< 1.0 μm TIR	
Flatness ⁽⁵⁾	< +/- 10 nm / 10mm			
	< 1.0 μm TIR		< 2.0 μm TIR	
Pitch ⁽⁵⁾	< 4 arc-sec TIR	< 6 arc-sec TIR	< 8 arc-sec TIR	< 10 arc-sec TIR
Yaw ⁽⁵⁾	< 1 arc-sec TIR	< 2 arc-sec TIR	< 3 arc-sec TIR	< 4 arc-sec TIR
XY Orthogonality	< 5 arc-sec			
Stage Mass	14.5 kg	18.5 kg	22.5 kg	27.5 kg
Moving Mass	Upper (X) Axis	3 kg		
	Lower (Y) Axis	5.5 kg	6.5 kg	7.5 kg
Cabling	External e-chain, moving loops			
Operating Pressure ⁽⁶⁾	65 (+/-5) psi			
Air Consumption	< 2.0 SCFM			
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			

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.
7. All specifications are per axis unless noted otherwise.

Model	Travel (X-Axis x Y-Axis)	Encoder (1)	Motor Wiring
A-311	D = 50 mm x 50 mm	A = 20µm grating pitch incremental, sine (1 Vp-p) output	1 = Standard motor option, 48 VDC buss
	A = 100 mm x 100 mm	B = 1nm resolution absolute, high accuracy, BiSS-C serial output	
	B = 150 mm x 150 mm	C = 50nm resolution incremental, A-quad-B (TTL) output	
	C = 200 mm x 200 mm		

1. Alternate TTL encoder resolutions are available on request.



Ordering Example

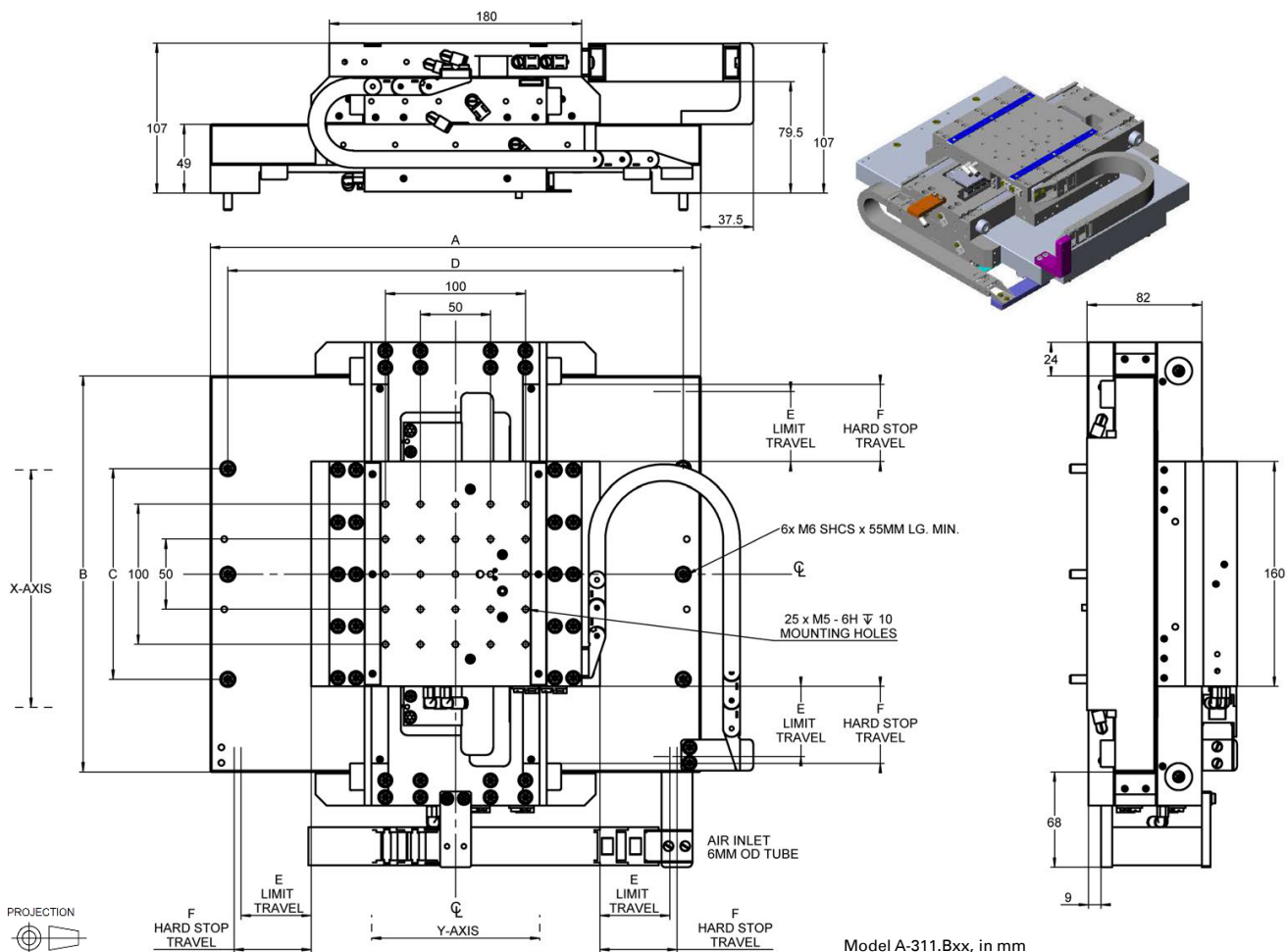
Part# A-311.BB1 is a

Model: A-311 (PIglide IS planar motorized air bearing stage)

Travel: B (150 mm x 150 mm)

Encoder: B (1nm absolute, high-accuracy, BiSS-C output)

Motor Wiring: 1 (48 VDC)



Model	A	B	C	D	E	F
A-311.Dxx	300	232	100	275	25	30
A-311.Axx	350	282	150	325	50	55
A-311.Bxx	400	332	200	375	75	80
A-311.Cxx	450	382	250	425	100	105