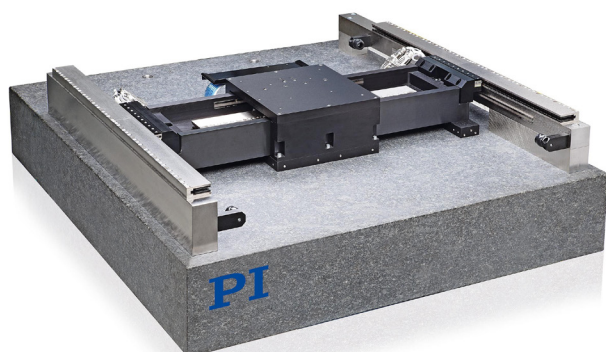


A-322

PIglide HS Planar Scanner with Air Bearing

XY Positioning System with 1 nm Resolution



- Ideal for scanning applications or high-precision positioning
- Clean room compatible
- Travel ranges to 500 mm × 1000 mm
- Load capacity to 245 N
- Resolution to 1 nm
- Velocity up to 2 m/s

PIglide® reference-class XY positioning system

The PIglide® HS planar scanner has magnetic linear motors, vacuum preload and absolute encoders: Contact- and friction-free motion for the highest accuracy and reliability.

Absolute encoder

Absolute encoders supply explicit position information that enables immediate determination of the position. This means that referencing is not required during switch-on, which increases efficiency and safety during operation.

PIMag® magnetic direct drive

The stage has an ironless magnetic direct drive, which makes high velocities and acceleration possible. At the same time, sine-commutated control makes high positioning resolution possible because the drive is friction free. The drive force can be set freely.

The positioning system was designed to both maximize the throughput and ensure the highest precision. The flexible coupling of the bridge axis to the gantry axis allows lateral decoupling without sacrificing the stiffness of the system.

Operation with digital controllers from leading manufacturers offers advanced control algorithms for improving the dynamics and error compensation.

Accessories and options

- PIglide® filter and air preparation kits
- Additional axes
- Machine bases
- Base plates made of granite and systems for reducing vibration

Fields of application

PIglide® positioning systems are ideally suited for many high-precision applications, such as metrology, photonics, and precision scanning as well as in semiconductor or flat panel display manufacturing.

Thanks to the friction-free motion, no particles are formed, which makes PIglide® stages ideal for cleanroom applications.

Specifications

	A-322.Axx	A-322.Bxx	A-322.Cxx	A-322.Dxx	Unit	Tolerance
Motion and positioning						
Active axes	X, Y	X, Y	X, Y	X, Y		
Travel range (bridge axis × gantry axis)	350 × 350	350 × 500	500 × 500	500 × 1000	mm	
Integrated sensors	Absolute Encoders	Absolute Encoders	Absolute Encoders	Absolute Encoders		
Sensor resolution	1	1	1	1	nm	
Bidirectional repeatability	±0.08	±0.08	±0.08	±0.08	µm	max.
Accuracy*	±0.5	±0.5	±0.5	±0.5	µm	max.
Pitch	15	20	30	40	µrad	max.
Yaw*	5	5	7	7	µrad	max.
Straightness*	±0.5	±0.5	±1	±1	µm	max.
Straightness per 10 mm travel range*	±10	±10	±10	±10	nm	max.
Flatness	±0.5	±1	±1.5	±2.5	µm	max.
Flatness per 10 mm travel range	±10	±10	±10	±10	nm	max.
XY orthogonality	25	25	25	25	µrad	max.
Velocity, unloaded**	2	2	2	2	m/s	max.
Acceleration, bridge axis, unloaded**	20	20	20	20	m/s ²	max.
Acceleration, gantry axis, unloaded**	15	15	12	12	m/s ²	max.
Load capacity in z***	245	245	245	245	N	max.
Moved mass, bridge axis	14	14	14	14	kg	

Moved mass, gantry axis	40	40	43	43	kg	
Overall mass	610	700	1075	1525	kg	
Guide type	Air bearings	Air bearings	Air bearings	Air bearings		
Drive properties						
Drive type	Linear motor, ironless, 3-phase, 1 × to bridge axis, 2 × to gantry axis	Linear motor, ironless, 3-phase, 1 × to bridge axis, 2 × to gantry axis	Linear motor, ironless, 3-phase, 1 × to bridge axis, 2 × to gantry axis	Linear motor, ironless, 3-phase, 1 × to bridge axis, 2 × to gantry axis		
Intermediate circuit voltage, effective	48, nominal 80, max.	48, nominal 80, max.	48, nominal 80, max.	48, nominal 80, max.	VDC	
Peak force #	298	298	298	298	N	typ.
Nominal force #	87	87	87	87	N	typ.
Force constant, effective #	19.9	19.9	19.9	19.9	N/A	typ.
Resistance phase-phase #	3.6	3.6	3.6	3.6	Ω	
Inductivity phase-phase #	1.2	1.2	1.2	1.2	mH	
Back EMF phase-phase #	16	16	16	16	V·s/m	max.
Cabling	moved ribbon cable, cleanroom compatible	moved ribbon cable, cleanroom compatible	moved ribbon cable, cleanroom compatible	moved ribbon cable, cleanroom compatible		

	A-322
Operating pressure ###	80 psi (552 kPa)
Air consumption with external vacuum supply	< 2 SCFM (56 SLPM)
Air consumption with internal vacuum supply	< 3.2 SCFM (100 SLPM)
Vacuum	10.8 psi (74.7 kPa), < 0.5 SCFM (14 SLPM)
Air quality	Clean (filtered to 1.0 μm or better) - ISO 8573-1 Class 1 Oilfree - ISO 8573-1 Class 1 Dry (-15 °C dew point) - ISO 8573-1 Class 3
Materials	Hardcoat aluminum and nickel-plated steel with stainless steel mounting material, granite base

* Improved accuracy can be obtained with controller-based error compensation. Stage must be ordered with controller. Accuracy values assume short-term time duration and do not consider the long-term effects of thermal drift on the stage.

** Can be limited by the insulating system payload, controller or drive.

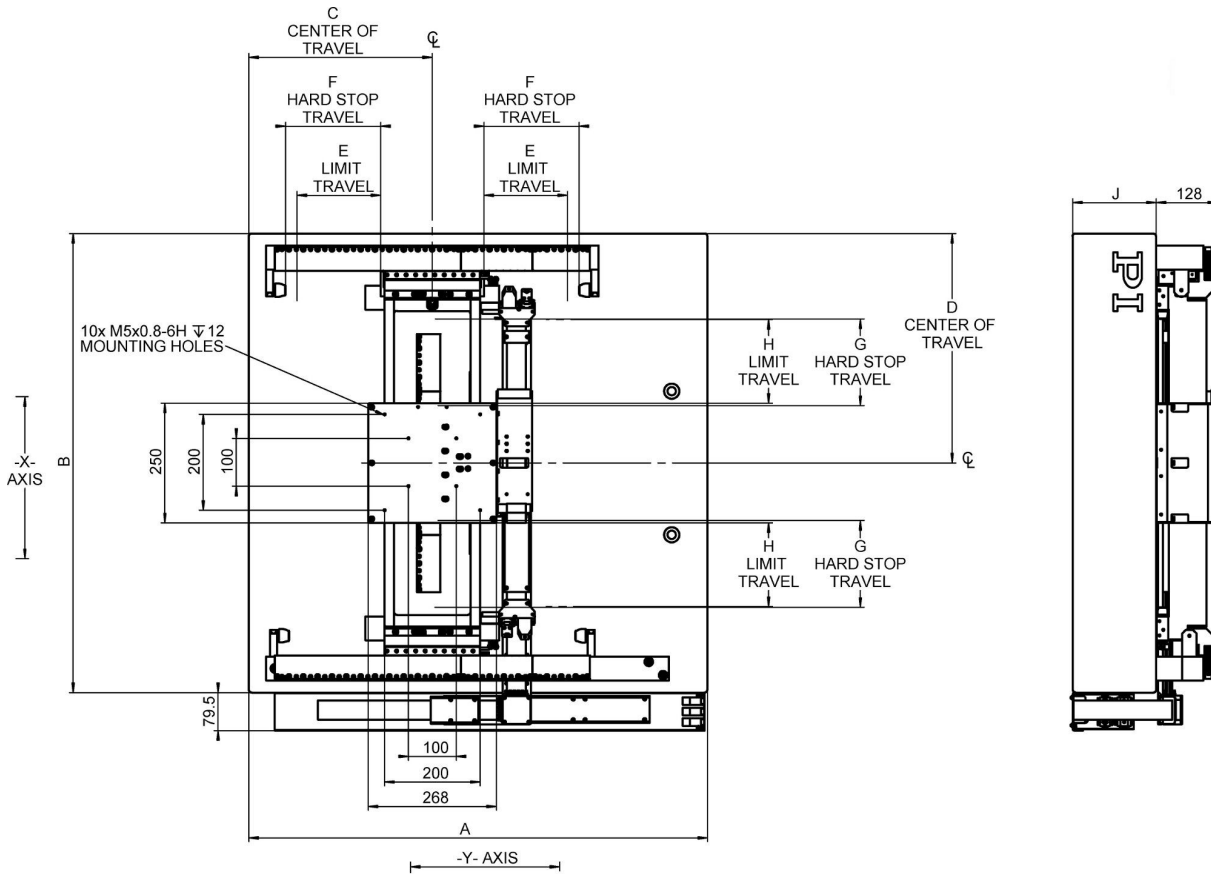
*** Assumes payload CG is centered no more than 50 mm above the stage table.

Specifications for the drive apply per motor. Two motors are located at the gantry axis.

To protect the stage against damage, it is recommended to connect an air pressure sensor to the Motion-Stop input of the controller.

All specifications apply per axis, if not otherwise described.

Drawings and Images



	A	B	C	D	E	F	G	H	J
A-322.Axx	960	960	348	480	175	200	182	175	175
A-322.Bxx	1110	960	459	480	250	275	182	175	175
A-322.Cxx	1110	1110	459	555	250	275	257	250	250
A-322.Dxx	1610	1110	709	555	500	525	257	250	250

A-322.xxx, dimensions in mm

Ordering Information

A-322.AB1

PIglide HS Planar Scanner, Air Bearings, 350 × 350 mm Travel Range, Absolute Encoder, 1 nm Sensor Resolution, 3-Phase Linear Motors, 48 V

A-322.BB1

PIglide HS Planar Scanner, Air Bearings, 350 × 500 mm Travel Range, Absolute Encoder, 1 nm Sensor Resolution, 3-Phase Linear Motors, 48 V

A-322.CB1

PIglide HS Planar Scanner, Air Bearings, 500 × 500 mm Travel Range, Absolute Encoder, 1 nm Sensor Resolution, 3-Phase Linear Motors, 48 V

A-322.DB1

PIglide HS Planar Scanner, Air Bearings, 500 × 1000 mm Travel Range, Absolute Encoder, 1 nm Sensor Resolution, 3-Phase Linear Motors, 48 V