

## PIglide VC Voice Coil Linear Stage with Air Bearings

### High-Performance Miniature Nanopositioning System



### A-131

- Ideal for scanning applications or high-precision positioning
- Cleanroom compatible
- Travel ranges to 25 mm
- Load capacity to 30 N
- Acceleration to 80 m/s<sup>2</sup>

#### Product overview

The PIglide stage with air bearing and voice coil drive offers high velocity and acceleration in a compact package. The contactless components of the motion platform ensure the highest performance, quality, and lifetime.

#### Voice Coil Drive Technology

Voice coil drives consist of 2 essential components: A permanent magnet and a coil, which is located in the air gap of the magnetic field. When current flows through the coil, it moves in the magnetic field of the permanent magnet. The direction of motion depends on the polarity. Thanks to their low weight and friction-free drive principle, voice coil drives are particularly suitable for applications, which require high dynamics and high velocities at limited travel ranges. High scan frequencies and precision positioning are also possible with these drives, because they are free of the effects of hysteresis.

#### Accessories and options

- PIglide filter and air preparation kits
- Single and multi-axis motion controller

#### Application fields

High-speed scanning, applications in manufacturing.

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

## Specifications

Motion	A-131.025A1	Unit	Tolerance
Active axes	X		
Travel range	25	mm	
Pitch <sup>(1)</sup>	10	μrad	max.
Yaw <sup>(1)</sup>	10	μrad	max.
Straightness / flatness <sup>(1)</sup>	0.5	μm	max.
Velocity, unloaded <sup>(2)</sup>	1	m/s	max.
Acceleration, unloaded <sup>(2)</sup>	80	m/s <sup>2</sup>	max.

Mechanical properties	A-131.025A1	Unit	Tolerance
Load capacity in z <sup>(3)</sup>	30	N	max.
Moved mass	0.85	kg	
Overall mass	3.6	kg	
Guide type	Air bearing		

Drive properties	A-131.025A1	Unit	Tolerance
Drive type	Brushless voice coil drive, ironless, 1 phase		
Intermediate circuit voltage, RMS	48, nominal 80, max.	V DC	
Nominal current, RMS	3	A	max.
Peak current, RMS	10	A	max.
Peak force	70.4	N	typ.
Nominal force	22.3	N	typ.
Force constant, RMS	6.9	N/A	typ.
Resistance	2.7	Ω	typ.
Inductance (at 1000 Hz)	1.4	mH	typ.
Back EMF	6.9	V·s/m	
Nominal power	28	W	max.
Cabling	Internal, no moving cable		

Positioning	A-131.025A1
Integrated sensor	Incremental linear encoder
Sensor signal	Sin/cos, 1 V peak-peak, 20 μm signal period
Sensor resolution	1.2 nm <sup>(4)</sup>
Bidirectional repeatability	±0.1 μm <sup>(4)</sup>
Positioning accuracy, uncalibrated	±2.0 μm
Positioning accuracy, calibrated <sup>(5)</sup>	±0.25 μm
Reference point switch	Home index

Miscellaneous	A-131.025A1
Operating pressure <sup>(6)</sup>	75 to 85 psi (520 to 585 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
Materials	Hardcoat aluminum, stainless steel mounting hardware

(1) Dependent on the flatness of the surface, on which the stage is mounted.

(2) Can be limited by the payload, controller or drive.

(3) Assumes that the center of gravity is centered no more than 50 mm from the motion platform.

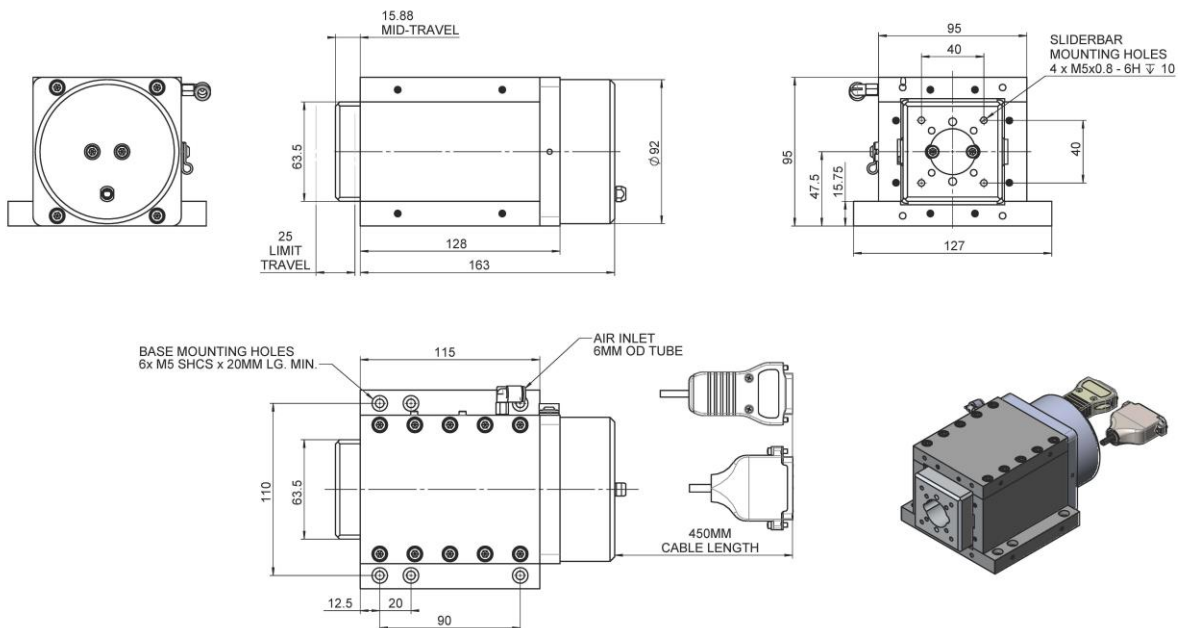
(4) Assumes 16384x interpolation. Contact PI for the use of other factors.

(5) Improved accuracy can be obtained with controller-based error compensation. The stage must be ordered with a controller from PI to reach these values.

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

Ask about customized versions.

## Drawings / Images



A-131.025A1, dimensions in mm

## Ordering Information

### A-131.025A1

PIglide VC linear stage, air bearing, 25 mm travel range, Voice coil, 48 V, linear encoder with sin/cos signal transmission, 20 µm Signal Period