

A-62x

PIglide RM Rotation Stage with Air Bearing

Friction-Free, Ideal for Indexing, Positioning, Scanning, Measuring Technology



- Cleanroom compatible
- Table diameters from 50 mm to 300 mm
- Load capacity up to 4170 N
- Eccentricity and flatness < 200 nm
- Can be mounted vertically or horizontally

PIglide motorized rotation stage

The PIglide RM series of motorized rotation stages are designed for accuracy, precision, high stiffness, and ease of use, and can be mounted in any orientation.

Various options can be combined to create a solution ideal for point-to-point indexing or constant velocity scanning.

The RM stages offer superior runout, flatness, and wobble performance. Because they are friction free and require no maintenance or lubrication, they are ideal for use in cleanrooms.

3-phase torque motor

- Brushless
- Slotless
- Low cogging torque

Absolute encoder (optional)

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.

Accessories and options

- Encoder
- Optional tip/tilt platform
- Custom mounting flanges

- Vacuum feedthrough
- Slip rings
- PIglide filter and air preparation kit
- Single or multi-axis motion controllers and servo drives
- Base plates made of granite and systems for reducing vibration

Application fields

Optical adjustment, metrology, inspection systems, calibration, scanning.

Specifications

	A-621.025	A-623.025	A-623.050	A-624.050	A-627.075	Unit	Tolerance
Motion and positioning							
Travel range	Unlimited, > 360°	Unlimited, > 360°	Unlimited, > 360°	Unlimited, > 360°	Unlimited, > 360°		
Table Diameter	50	100	100	150	300	mm	
Bearing journal length	25	25	50	50	75	mm	
Eccentricity*	300	200	200	100	75	nm	max.
Flatness*	150	100	100	75	50	nm	max.
Wobble*	5	3	3	2	1	μrad	max.
Mechanical properties							
Load capacity, axial	134	536	536	1206	4244	N	max.
Load capacity, radial	57	115	229	344	1203	N	max.
Load torque $M_{x,y}$	0.57	1.7	4.52	22.6	141.3	N·m	max.
Axial stiffness	26	96	96	210	788	N/μm	
Radial stiffness	8	18	35	64	204	N/μm	
Moment of inertia	125	1485	1530	8790	210850	kg·m ²	
Moved mass	0.4	1.2	1.4	3.2	21.5	kg	
Overall mass	1.2	3.1	4.5	8.6	50	kg	
Guide type	Air bearing	Air bearing	Air bearing	Air bearing	Air bearing		
Drive properties							
Drive type	Torque motor, 3-phase, brushless, ironless, slotless	Torque motor, 3-phase, brushless, ironless, slotless	Torque motor, 3-phase, brushless, ironless, slotless	Torque motor, 3-phase, brushless, ironless, slotless	Torque motor, 3-phase, brushless, ironless, slotless		

	A-621.025	A-623.025	A-623.050	A-624.050	A-627.075	Unit	Tolerance
Intermediate circuit voltage, effective	48, nominal 80, max.	48, nominal 80, max.	48, nominal 80, max.	48, nominal 80, max.	48, nominal 80, max.	V DC	
Peak torque	0.21	2.1	2.1	4.71	8.46	N·m	typ.
Nominal torque	0.07	0.7	0.7	1.57	2.82	N·m	typ.
Force constant, effective	0.03	0.26	0.26	0.59	0.61	N·m/ A	typ.
Resistance phase-phase	2.7	4.2	4.2	6.7	4.5	Ω	
Inductivity phase-phase	0.1	0.4	0.4	0.9	0.6	mH	
Back EMF phase-phase	4.1	31.8	31.8	71	74	V/kRPM	max.

	A-62x.xxxAx	A-62x.xxxBx	A-62x.xxxCx
Integrated sensor	Incremental angle measuring system	Absolute-measuring angle measuring system	Incremental angle measuring system
Sensor signal	Sin/cos, 1 V peak-peak	BiSS-C	A/B quadrature, TTL
Lines/revolution	A-621: 8192 A-623: 15744 A-624: 23600 A-627: 47200	—	A-621: 8192 A-623: 15744 A-624: 23600 A-627: 47200
Velocity**	A-621: 2500 rpm max. A-623: 1200 rpm max. A-624: 600 rpm max. A-627: 500 rpm max.	A-621: 2500 rpm max. A-623: 1200 rpm max. A-624: 600 rpm max. A-627: 500 rpm max.	A-621: 550 rpm max.*** A-623: 300 rpm max.*** A-624: 175 rpm max.*** A-627: 75 rpm max.***
Sensor resolution	A-621: 0.19 μrad**** A-623: 0.1 μrad**** A-624: 0.06 μrad**** A-627: 0.03 μrad****	A-621: 0.0015 μrad A-623: 0.0015 μrad A-624: 0.0015 μrad A-627: 0.0015 μrad	A-621: 1.94 μrad [#] A-623: 1.02 μrad [#] A-624: 0.68 μrad [#] A-627: 0.33 μrad [#]
Bidirectional repeatability	± 4 μrad	± 4 μrad	± 4 μrad
Accuracy, with error compensation ^{##}	± 8 μrad	± 8 μrad	± 8 μrad
Reference point switch	1 / revolution, differential pulse over one sensor signal period, 1 V peak-peak	—	1 / revolution, one count over one step of the encoder, synchronized to output signal

	A-62x
Operating pressure ^{###}	75 to 85 psi (515 to 585 kPa)
Air consumption	< 2 SCFM (56 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 fasteners

* Depending on the quality of the underlying surface, the payload, orientation, and forces that act on the stage from the outside. Please contact PI for application-specific parameters. The specified values are static (no rotary motion during measuring) and without load.

** Can be limited by imbalance of the payload or the controller and the drive.

*** Assumes a sampling rate of 50 MHz.

**** Assumes 4096-fold interpolation. Contact PI for the use of other factors.

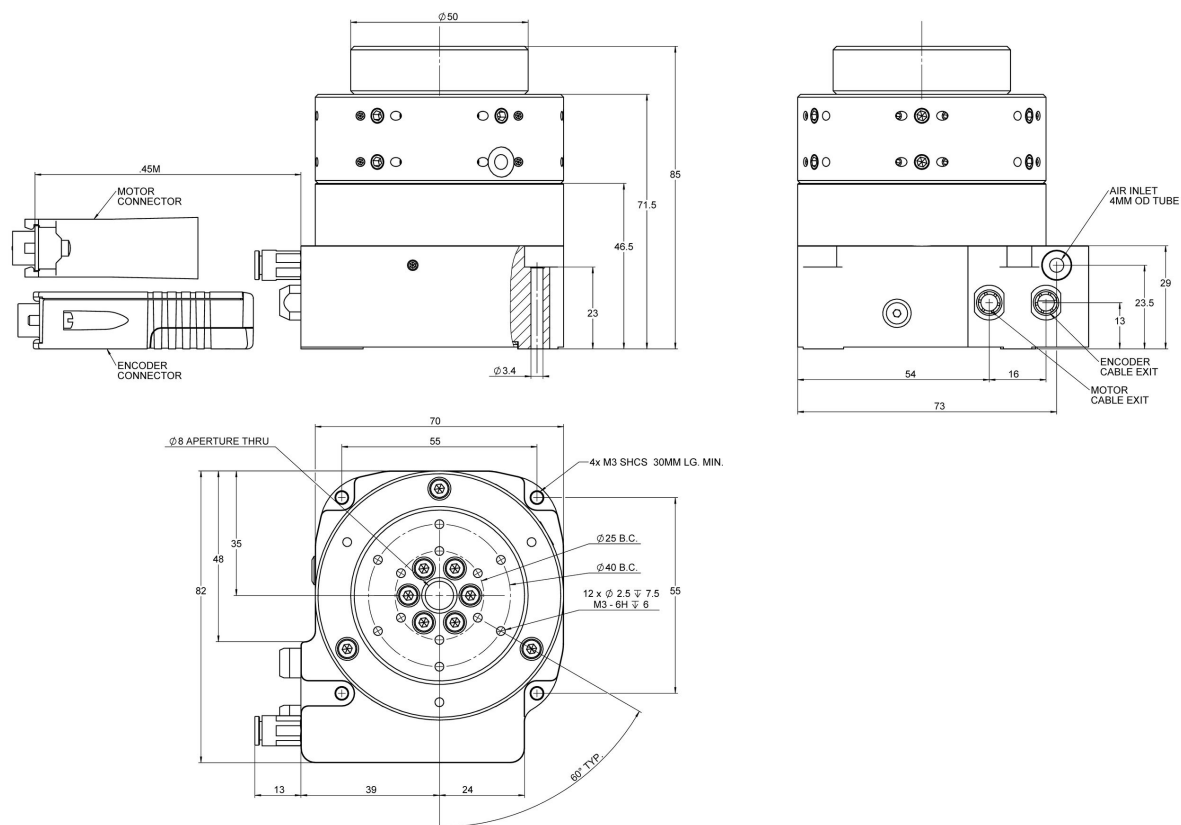
Uses 400-fold interpolation. Alternative digital encoder resolutions on request. Please contact PI for a quote.

The specified values are based on error compensation controlled by the controller. The stage must be ordered with a controller from PI to reach these values. Accuracy values assume short-term time duration and do not consider the long-term effects of thermal drift on the stage.

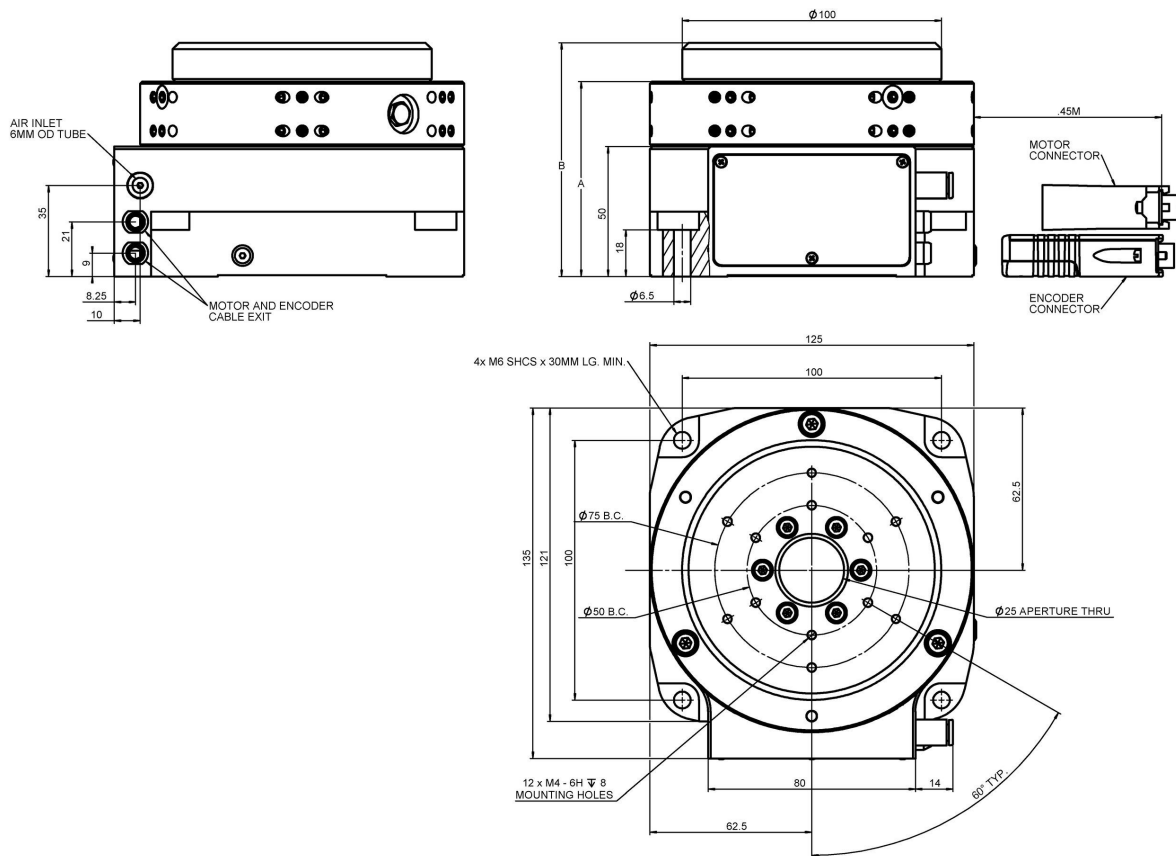
To protect the stage against damage, it is recommended to connect an air pressure sensor to the Motion-Stop input of the controller.

Customer-specific materials such as rust-free steel on request. Please contact PI for a quote.

Drawings and Images



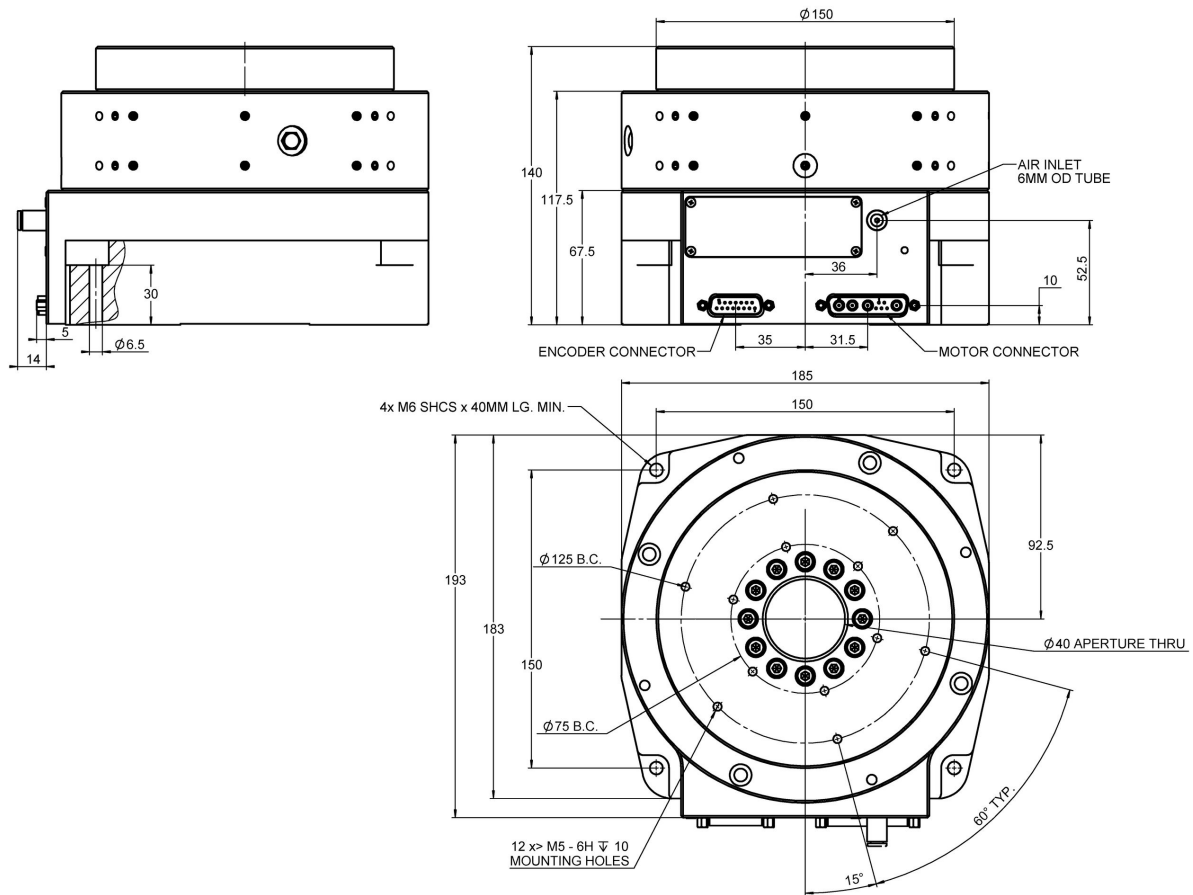
A-621.025xx, dimensions in mm



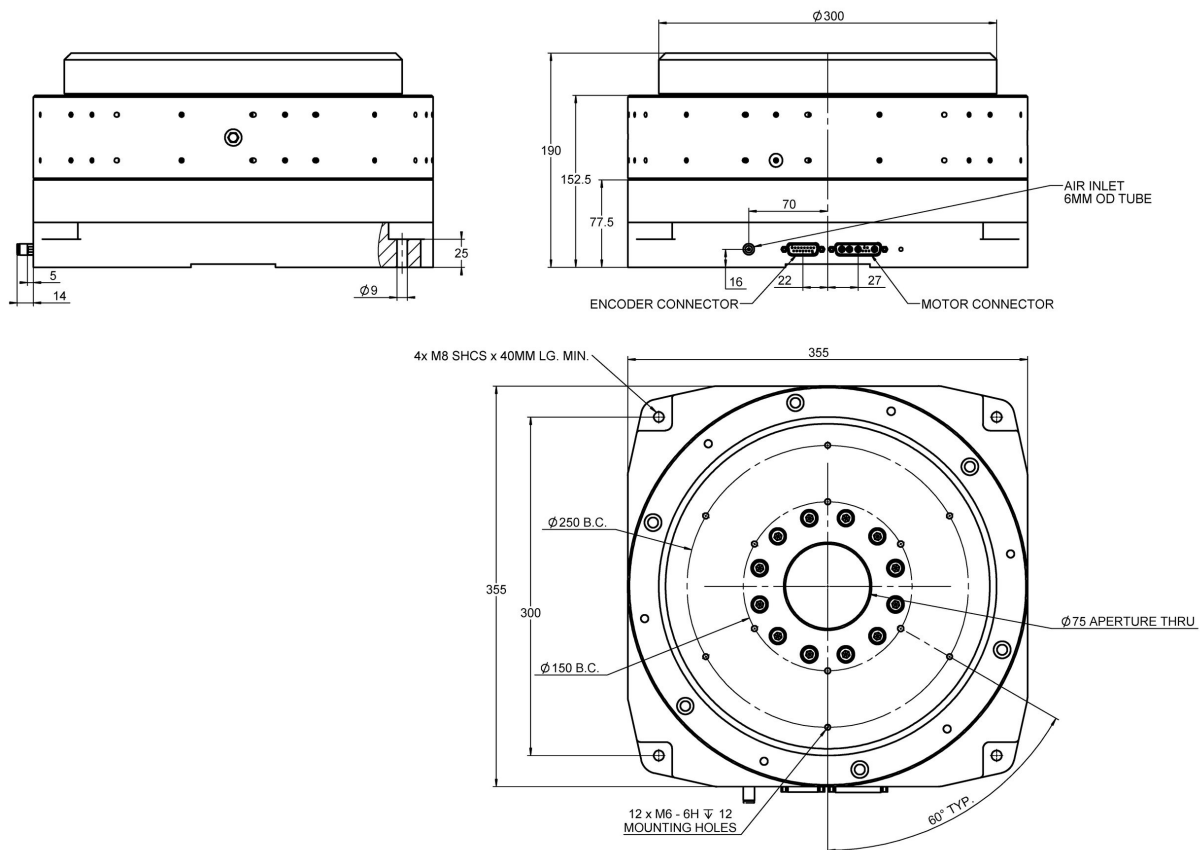
A-623.xxxxx, dimensions in mm

A-623.025xx: A=75 mm; B=90 mm

A-623.050xx: A=100 mm; B=115 mm



A-624.050xx, dimensions in mm



A-627.075xx, dimensions in mm

Ordering Information

50 mm Diameter

A-621.025A1

PIglide RM Rotation Stage, Air Bearing, 50 mm Diameter, 25 mm Bearing Journal Length, Angle Measuring System with Sin/Cos Signal Transmission, 8192 Lines/Revolution, Brushless 3-Phase Torque Motor

A-621.025B1

PIglide RM Rotation Stage, Air Bearing, 50 mm Diameter, 25 mm Bearing Journal Length, Absolute-measuring Angle Measuring System, 0.0015 μ rad Sensor Resolution, Brushless 3-Phase Torque Motor

A-621.025C1

PIglide RM Rotation Stage, Air Bearing, 50 mm Diameter, 25 mm Bearing Journal Length, Angle Measuring System with A/B Quadrature Signal Transmission, 1.94 μ rad Sensor Resolution, Brushless 3-Phase Torque Motor

100 mm Diameter

A-623.025A1

PIglide RM Rotation Stage, Air Bearing, 100 mm Diameter, 25 mm Bearing Journal Length, Angle Measuring System with Sin/Cos Signal Transmission, 15744 Lines/Revolution, Brushless 3-Phase Torque Motor

A-623.025B1

PIglide RM Rotation Stage, Air Bearing, 100 mm Diameter, 25 mm Bearing Journal Length, Absolute-measuring Angle Measuring System, 0.0015 μ rad Sensor Resolution, Brushless 3-Phase Torque Motor

A-623.025C1

PIglide RM Rotation Stage, Air Bearing, 100 mm Diameter, 25 mm Bearing Journal Length, Angle Measuring System with A/B Quadrature Signal Transmission, 1.02 μ rad Sensor Resolution, Brushless 3-Phase Torque Motor

A-623.050A1

PIglide RM Rotation Stage, Air Bearing, 100 mm Diameter, 50 mm Bearing Journal Length, Angle Measuring System with Sin/Cos Signal Transmission, 15744 Lines/Revolution, Brushless 3-Phase Torque Motor

A-623.050B1

PIglide RM Rotation Stage, Air Bearing, 100 mm Diameter, 50 mm Bearing Journal Length, Absolute-measuring Angle Measuring System, 0.0015 μ rad Sensor Resolution, Brushless 3-Phase Torque Motor

A-623.050C1

PIglide RM Rotation Stage, Air Bearing, 100 mm Diameter, 50 mm Bearing Journal Length, Angle Measuring System with A/B Quadrature Signal Transmission, 1.02 μ rad Sensor Resolution, Brushless 3-Phase Torque Motor

150 mm Diameter

A-624.050A1

PIglide RM Rotation Stage, Air Bearing, 150 mm Diameter, 50 mm Bearing Journal Length, Angle Measuring System with Sin/Cos Signal Transmission, 23600 Lines/Revolution, Brushless 3-Phase Torque Motor

A-624.050B1

PIglide RM Rotation Stage, Air Bearing, 150 mm Diameter, 50 mm Bearing Journal Length, Absolute-measuring Angle Measuring System, 0.0015 μ rad Sensor Resolution, Brushless 3-Phase Torque Motor

A-624.050C1

PIglide RM Rotation Stage, Air Bearing, 150 mm Diameter, 50 mm Bearing Journal Length, Angle Measuring System with A/B Quadrature Signal Transmission, 0.68 μ rad Sensor Resolution, Brushless 3-Phase Torque Motor

300 mm Diameter**A-627.075A1**

PIglide RM Rotation Stage, Air Bearing, 300 mm Diameter, 75 mm Bearing Journal Length, Angle Measuring System with Sin/Cos Signal Transmission, 47200 Lines/Revolution, Brushless 3-Phase Torque Motor

A-627.075B1

PIglide RM Rotation Stage, Air Bearing, 300 mm Diameter, 75 mm Bearing Journal Length, Absolute-measuring Angle Measuring System, 0.0015 μ rad Sensor Resolution, Brushless 3-Phase Torque Motor

A-627.075C1

PIglide RM Rotation Stage, Air Bearing, 300 mm Diameter, 75 mm Bearing Journal Length, Angle Measuring System with A/B Quadrature Signal Transmission, 0.33 μ rad Sensor Resolution, Brushless 3-Phase Torque Motor