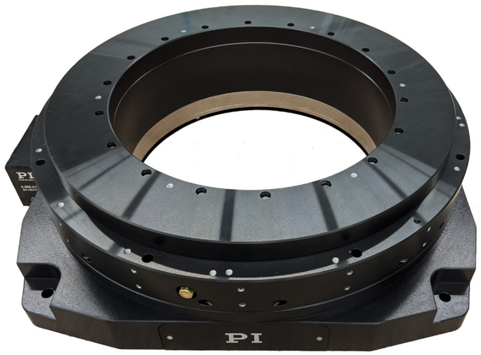
AIR Ultra Precision Rotation Stages



Rotation Stage with Air Bearing

UPR-270 AIR

UPR-160 AIR

UPR-120 AIR

UPR-100 AIR

PIglide RM Rotation Stage with Air Bearings

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

A-62x

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

Product overview

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 travel accuracy, 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. Therefore, no re-ferencing is necessary when switching on and this 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 kits
- Single or multi-axis motion controllers and servo drives
- Base plates made of granite and systems for reducing vibration

Application fields

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

Motion	Unit	Toleran-ce	A-621. 025A1	A-621. 025B1	A-623. 025A1	A-623. 025B1	A-623. 050A1	A-623. 050B1	A-624. 050A1	A-624. 050B1
Active axes			θZ	θZ	θZ	θZ	θZ	θZ	θZ	θZ
Rotation range in θZ	°		360	360	360	360	360	360	360	360
Maximum angular velocity in θZ, unloaded	1/min		1500	1500	7200	7200	7200	7200	3600	3600
Linear crosstalk in X with motion in θZ	µm	max.	± 0.15	± 0.15	± 0.087	± 0.087	± 0.087	± 0.087	± 0.05	± 0.05
Linear crosstalk in Y with motion in θZ	µm	max.	± 0.15	± 0.15	± 0.087	± 0.087	± 0.087	± 0.087	± 0.05	± 0.05
Linear crosstalk in Z with motion in θZ	µm	max.	± 0.05	± 0.05	± 0.037	± 0.037	± 0.037	± 0.037	± 0.025	± 0.025
Rotational crosstalk in θX with motion in θZ	µrad	max.	± 2.5	± 2.5	± 1.5	± 1.5	± 1.5	± 1.5	± 1	± 1
Rotational crosstalk in θY with motion in θZ	µrad	max.	± 2.5	± 2.5	± 1.5	± 1.5	± 1.5	± 1.5	± 1	± 1

Positioning	Unit	Tolerance	A-621.025A1	A-621.025B1	A-623.025A1	A-623.025B1	A-623.050A1	A-623.050B1	A-624.050A1	A-624.050B1
Bidirectional repeatability in θZ	µrad	typ.	± 4	± 4	± 4	± 4	± 4	± 4	± 4	± 4
Positioning accuracy in θZ, calibrated	µrad	typ.	± 8	± 8	± 8	± 8	± 8	± 8	± 8	± 8
Integrated sensor			Incremental angle-measuring system	Absolute angle-measuring system	Incremental angle-measuring system	Absolute angle-measuring system	Incremental angle-measuring system	Absolute angle-measuring system	Incremental angle-measuring system	Absolute angle-measuring system
Sensor signal			Sin/cos, 1 V peak-peak	BiSS-C	Sin/cos, 1 V peak-peak	BiSS-C	Sin/cos, 1 V peak-peak	BiSS-C	Sin/cos, 1 V peak-peak	BiSS-C
Sensor resolution	nm		0.047	0.015	0.024	0.015	0.024	0.015	0.016	0.015
Sensor signal periods / U			8192		15744		15744		23600	
Sensor resolution, rotational	µrad		0.047	0.0015	0.024	0.0015	0.016	0.0015	0.016	0.0015
Reference switch			1 / revolution, differential pulse over one sensor signal period, 1 V peak-peak		1 / revolution, differential pulse over one sensor signal period, 1 V peak-peak		1 / revolution, differential pulse over one sensor signal period, 1 V peak-peak		1 / revolution, differential pulse over one sensor signal period, 1 V peak-peak	

Drive Properties	Unit	Tolerance	A-621.025A1	A-621.025B1	A-623.025A1	A-623.025B1	A-623.050A1	A-623.050B1	A-624.050A1	A-624.050B1
Drive type			Electric motor/Magnetic direct drive/Ironless 3-phase torque motor	Electric motor/Magnetic direct drive/Ironless 3-phase torque motor	Electric motor/Magnetic direct drive/Ironless 3-phase torque motor	Electric motor/Magnetic direct drive/Ironless 3-phase torque motor	Electric motor/Magnetic direct drive/Ironless 3-phase torque motor	Electric motor/Magnetic direct drive/Ironless 3-phase torque motor	Electric motor/Magnetic direct drive/Ironless 3-phase torque motor	Electric motor/Magnetic direct drive/Ironless 3-phase torque motor
Nominal voltage	V		48	48	48	48	48	48	48	48
Peak voltage	V		80	80	80	80	80	80	80	80
Nominal current, RMS	A	typ.	3.3	3.3	3.1	3.1	3.1	3.1	2.3	2.3
Peak current, RMS	A	typ.	9.9	9.9	9.3	9.3	9.3	9.3	6.9	6.9
Drive torque counter-clockwise in θZ	N·m	max.	0.07	0.07	0.7	0.7	0.7	0.7	1.57	1.57
Drive torque clockwise in θZ	N·m	max.	0.07	0.07	0.7	0.7	0.7	0.7	1.57	1.57
Peak torque counterclockwise in θZ	N·m	max.	0.21	0.21	2.1	2.1	2.1	2.1	4.71	4.71
Peak torque clockwise in θZ	N·m	max.	0.21	0.21	2.1	2.1	2.1	2.1	4.71	4.71
Torque constant	N·m/A	typ.	0.03	0.03	0.26	0.26	0.26	0.26	0.59	0.59
Resistance phase-phase	Ω	typ.	2.7	2.7	4.2	4.2	4.2	4.2	6.7	6.7
Inductance phase-phase	mH		0.1	0.1	0.4	0.4	0.4	0.4	0.9	0.9
Back EMF, phase-phase, rotational	V/kRPM	max.	4.1	4.1	31.8	31.8	31.8	31.8	71	71
Number of pole pairs			6	6	14	14	14	14	24	24

Mechanical Properties	Unit	Tolerance	A-621.025A1	A-621.025B1	A-623.025A1	A-623.025B1	A-623.050A1	A-623.050B1	A-624.050A1	A-624.050B1
Bearing type			Air bearings/Air bearings with air preload	Air bearings/Air bearings with air preload	Air bearings/Air bearings with air preload	Air bearings/Air bearings with air preload	Air bearings/Air bearings with air preload	Air bearings/Air bearings with air preload	Air bearings/Air bearings with air preload	Air bearings/Air bearings with air preload
Journal length	mm		25	25	25	25	50	50	50	50
Stiffness in X	N/µm		8	8	18	18	35	35	64	64
Stiffness in Y	N/µm		8	8	18	18	35	35	64	64
Stiffness in Z	N/µm		26	26	96	96	96	96	210	210
Bewegte Masse in θZ, unbelastet	g		400	400	1200	1200	1400	1400	3200	3200
Moment of inertia in θZ, unloaded	kg·mm²	±20%	117	117	1740	1740	1780	1780	9930	9930
Permissible push force in X	N	max.	57	57	115	115	229	229	344	344
Permissible push force in Y	N	max.	57	57	115	115	229	229	344	344
Permissible push force in Z	N	max.	134	134	536	536	536	536	1206	1206
Permissible pull force in X	N	max.	57	57	115	115	229	229	344	344
Permissible pull force in Y	N	max.	57	57	115	115	229	229	344	344
Permissible pull force in Z	N	max.	134	134	536	536	536	536	1206	1206
Permissible torque in θx	N·m	max.	0.57	0.57	1.7	1.7	4.52	4.52	22.6	22.6
Permissible torque in θY	N·m	max.	0.57	0.57	1.7	1.7	4.52	4.52	22.6	22.6
Overall mass	g		1200	1200	3100	3100	4500	4500	8600	8600
Material			Aluminum, stainless steel	Aluminum, stainless steel	Aluminum, stainless steel	Aluminum, stainless steel	Aluminum, stainless steel	Aluminum, stainless steel	Aluminum, stainless steel	Aluminum, stainless steel

Miscellaneous	Unit	Tolerance	A-621.025A1	A-621.025B1	A-623.025A1	A-623.025B1	A-623.050A1	A-623.050B1	A-624.050A1	A-624.050B1
Connector			D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)
Sensor connector			D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)
Operating pressure	kPa		515 to 585	515 to 585	515 to 585	515 to 585	515 to 585	515 to 585	515 to 585	515 to 585
Air consumption	L/min	max.	56	56	56	56	56	56	56	56
Air quality			Clean (filtered up 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	Clean (filtered up 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	Clean (filtered up 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	Clean (filtered up 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	Clean (filtered up 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	Clean (filtered up 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	Clean (filtered up 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	Clean (filtered up 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
Recommended controllers / drivers			A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x
Operating temperature range	°C		15 to 25	15 to 25	15 to 25	15 to 25	15 to 25	15 to 25	15 to 25	15 to 25

Motion	Unit	Toleran-ce	A-625.065A1	A-625.065B1	A-627.075A1	A-627.075B1
Active axes			θZ	θZ	θZ	θZ
Rotation range in θZ	°		360	360	360	360
Maximum angular velocity in θZ, unloaded	1/min		3000	3000	3000	3000
Linear crosstalk in X with motion in θZ	µm	max.	± 0.05	± 0.05	± 0.037	± 0.037
Linear crosstalk in Y with motion in θZ	µm	max.	± 0.05	± 0.05	± 0.037	± 0.037
Linear crosstalk in Z with motion in θZ	µm	max.	± 0.025	± 0.025	± 0.02	± 0.02
Rotational crosstalk in θX with motion in θZ	µrad	max.	± 1	± 1	± 0.5	± 0.5
Rotational crosstalk in θY with motion in θZ	µrad	max.	± 1	± 1	± 0.5	± 0.5

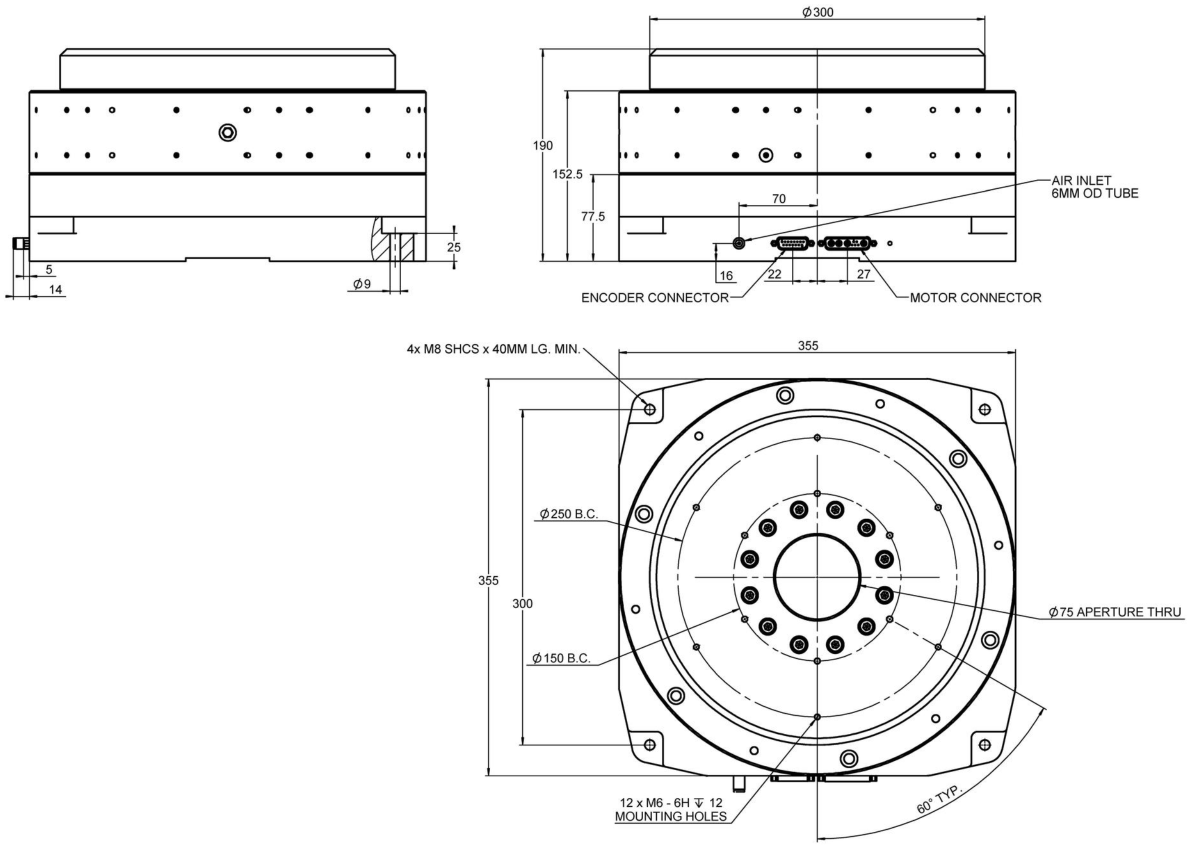
Positioning	Unit	Toleran-ce	A-625.065A1	A-625.065B1	A-627.075A1	A-627.075B1
Bidirectional repeatability in θZ	µrad	typ.	± 4	± 4	± 4	± 4
Positioning accuracy in θZ, calibrated	µrad	typ.	± 8	± 8	± 8	± 8
Integrated sensor			Incremental angle-measuring system	Absolute angle-measuring system	Incremental angle-measuring system	Absolute angle-measuring system
Sensor signal			Sin/cos, 1 V peak-peak	BiSS-C	Sin/cos, 1 V peak-peak	BiSS-C
Sensor resolution	nm		0.012	0.015	0.008	0.015
Sensor signal periods / U			31488		47200	
Sensor resolution, rotational	µrad		0.012	0.0015	0.008	0.0015
Reference switch			1 / revolution, one count over one step of the encoder, synchronized to output signal	1 / revolution, one count over one step of the encoder, synchronized to output signal	1 / revolution, differential pulse over one sensor signal period, 1 V peak-peak	

Drive Properties	Unit	Toleran-ce	A-625.065A1	A-625.065B1	A-627.075A1	A-627.075B1
Drive type			Electric motor/Magnetic direct drive/Ironless 3-phase torque motor	Electric motor/Magnetic direct drive/Ironless 3-phase torque motor	Electric motor/Magnetic direct drive/Ironless 3-phase torque motor	Electric motor/Magnetic direct drive/Ironless 3-phase torque motor
Nominal voltage	V		48	48	48	48
Peak voltage	V		80	80	80	80
Nominal current, RMS	A	typ.	2.3	2.3	4.5	4.5
Peak current, RMS	A	typ.	6.9	6.9	13.9	13.9
Drive torque counter-clockwise in θZ	N·m	max.	1.57	1.57	2.82	2.82
Drive torque clockwise in θZ	N·m	max.	1.57	1.57	2.82	2.82
Peak torque counterclockwise in θZ	N·m	max.	4.71	4.71	8.46	8.46
Peak torque clockwise in θZ	N·m	max.	4.71	4.71	8.46	8.46
Torque constant	N·m/A	typ.	0.59	0.59	0.61	0.61
Resistance phase-phase	Ω	typ.	6.7	6.7	4.5	4.5
Inductance phase-phase	mH		0.9	0.9	0.6	0.6
Back EMF, phase-phase, rotational	V/kRPM	max.	71	71	74	74
Number of pole pairs			24	24	32	32

Mechanical Properties	Unit	Toleran-ce	A-625.065A1	A-625.065B1	A-627.075A1	A-627.075B1
Bearing type			Air bearings/Air bearings with air preload	Air bearings/Air bearings with air preload	Air bearings/Air bearings with air preload	Air bearings/Air bearings with air preload
Journal length	mm		65	65	75	75
Stiffness in X	N/µm		110	110	204	204
Stiffness in Y	N/µm		110	110	204	204
Stiffness in Z	N/µm		385	385	788	788
Bewegte Masse in θZ, un-belastet	g		6900	6900	21500	21500
Moment of inertia in θZ, unloaded	kg·mm²	±20%	31730	31730	195200	195200
Permissible push force in X	N	max.	577	577	1203	1203
Permissible push force in Y	N	max.	577	577	1203	1203
Permissible push force in Z	N	max.	2144	2144	4244	4244
Permissible pull force in X	N	max.	577	577	1203	1203
Permissible pull force in Y	N	max.	577	577	1203	1203
Permissible pull force in Z	N	max.	2144	2144	4244	4244
Permissible torque in θx	N·m	max.	39.6	39.6	141.3	141.3
Permissible torque in θY	N·m	max.	39.6	39.6	141.3	141.3
Overall mass	g		14000	14000	50000	50000
Material			Aluminum, stainless steel	Aluminum, stainless steel	Aluminum, stainless steel	Aluminum, stainless steel

Miscellaneous	Unit	Toleran-ce	A-625.065A1	A-625.065B1	A-627.075A1	A-627.075B1
Connector			D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)
Sensor connector			D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)
Operating pressure	kPa		515 to 585	515 to 585	515 to 585	515 to 585
Air consumption	L/min	max.	56	56	56	56
Air quality			Clean (filtered up 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	Clean (filtered up 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	Clean (filtered up 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	Clean (filtered up 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
Recommended controllers / drivers			A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x
Operating temperature range	°C		15 to 25	15 to 25	15 to 25	15 to 25

Drawings / Images



A-627.075xx, dimensions in mm

Order Information

A-621.025A1
PIglide RM rotation stage, air bearing, 50 mm motion platform diameter, 25 mm journal length, incremental angle measuring system with sin/cos signal transmission, 8192 lines/revolution, slotless, brushless 3-phase torque motor

A-621.025B1
PIglide RM rotation stage, air bearing, 50 mm motion platform diameter, 25 mm journal length, absolute angle-measuring system with BiSS-C signal transmission, 0.0015 µrad sensor resolution, slotless, brushless 3-phase torque motor

A-623.025A1
PIglide RM rotation stage, air bearing, 100 mm motion platform diameter, 25 mm journal length, incremental angle measuring system with sin/cos signal transmission, 15744 lines/revolution, slotless, brushless 3-phase torque motor

A-623.025B1
PIglide RM rotation stage, air bearing, 100 mm motion platform diameter, 25 mm journal length, absolute angle-measuring system with BiSS-C signal transmission, 0.0015 µrad sensor resolution, slotless, brushless 3-phase torque motor

A-623.050A1
PIglide RM rotation stage, air bearing, 100 mm motion platform diameter, 50 mm journal length, incremental angle measuring system with sin/cos signal transmission, 15744 lines/revolution, slotless, brushless 3-phase torque motor

A-623.050B1
PIglide RM rotation stage, air bearing, 100 mm motion platform diameter, 50 mm journal length, absolute angle-measuring system with BiSS-C signal transmission, 0.0015 µrad sensor resolution, slotless, brushless 3-phase torque motor

A-624.050A1
PIglide RM rotation stage, air bearing, 150 mm motion platform diameter, 50 mm journal length, incremental angle measuring system with sin/cos signal transmission, 23600 lines/revolution, slotless, brushless 3-phase torque motor

A-624.050B1
PIglide RM rotation stage, air bearing, 150 mm motion platform diameter, 50 mm journal length, absolute angle-measuring system with BiSS-C signal transmission, 0.0015 µrad sensor resolution, slotless, brushless 3-phase torque motor

A-625.065A1
PIglide RM rotation stage, air bearing, 200 mm motion platform diameter, 65 mm journal length, incremental angle measuring system with sin/cos signal transmission, 31488 lines/revolution, slotless, brushless 3-phase torque motor

A-625.065B1
PIglide RM rotation stage, air bearing, 200 mm motion platform diameter, 65 mm journal length, absolute angle-measuring system with BiSS-C signal transmission, 0.0015 µrad sensor resolution, slotless, brushless 3-phase torque motor

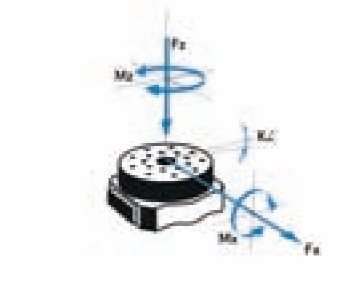
A-627.075A1
PIglide RM rotation stage, air bearing, 300 mm motion platform diameter, 75 mm journal length, incremental angle measuring system with sin/cos signal transmission, 47200 lines/revolution, slotless, brushless 3-phase torque motor

A-627.075B1
PIglide RM rotation stage, air bearing, 300 mm motion platform diameter, 75 mm journal length, absolute angle-measuring system with BiSS-C signal transmission, 0.0015 µrad sensor resolution, slotless, brushless 3-phase torque motor

5.164 Ultra Precision Rotation Stage UPR-100 AIR

FACTS

Load characteristics	Fx(N)	Fz(N)	Mx(Nm)	Mz(Nm)	Mz Peak(Nm)
TM-030	7.5	15	0.05	0.25	0.5



The UPR-100 AIR ultra-precision rotation stages are developed for maximum precision dynamic positioning applications. Due to the high precision air-bearing the stage can achieve excellent values for flatness, wobble and accuracy. All UPR-100 AIR rotation stages are directly driven by a torque motor. The UPR-100 AIR is equipped with an angular scale system and reference switches. The standard resolution is 0.00004°.

KEY FEATURES

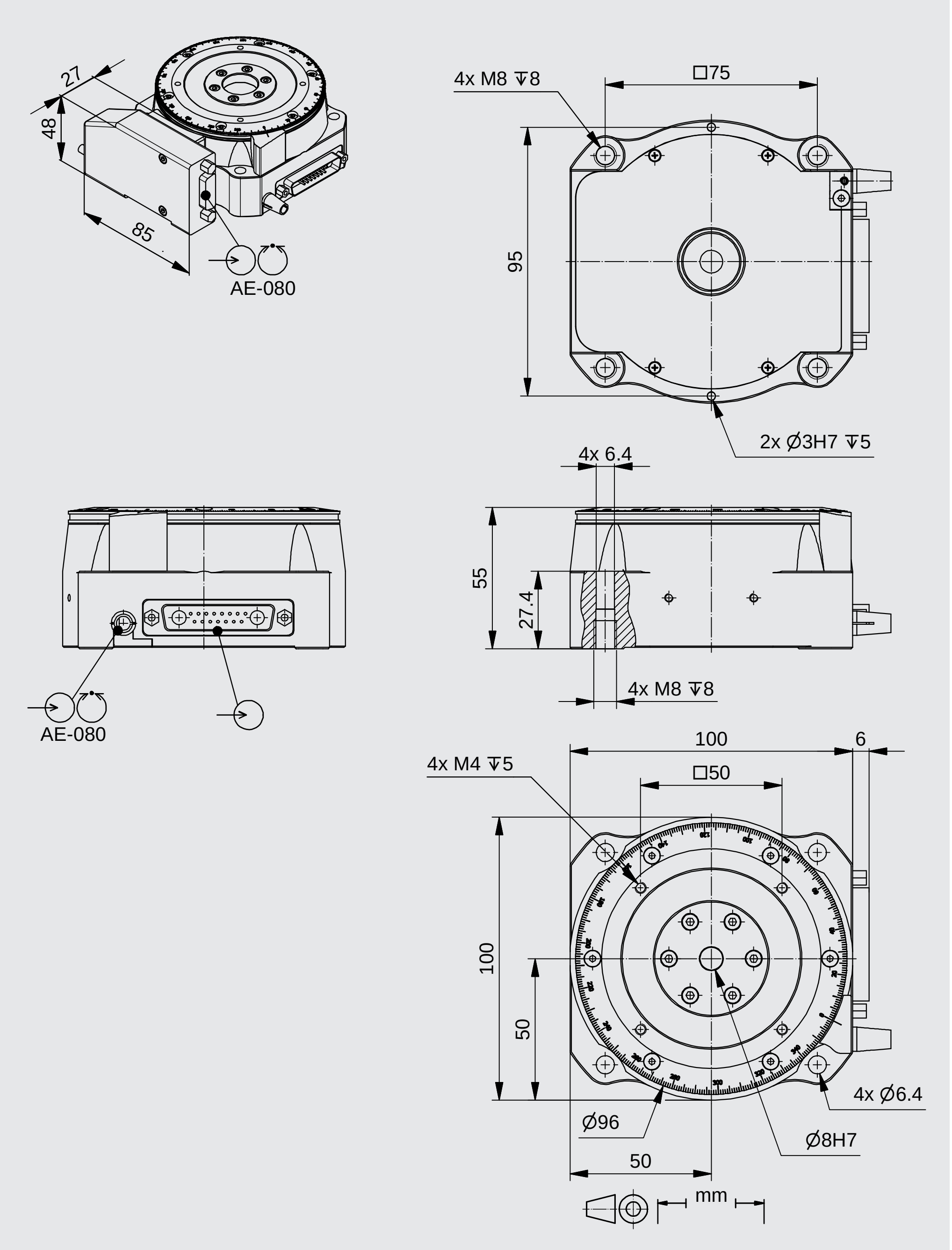
- High-precision air bearings
- Torque motor
- Uni-directional repeatability down to 0.00005 °
- Flatness and eccentricity ± 0.2 µm
- Wobble ± 5 µrad
- Maximum speed 360 °/sec
- Load capacity up to 1.5 kg (center mounted, on top of the platform)
- Integrated reference mark (encoder index)
- Free center hole 8 mm diameter
- Integrated angular scale

TECHNICAL DATA

Travel range (°)	360, endless	
Flatness (Bearings) (µm)	± 0.1	
Eccentricity (Bearings) (µm)	± 0.2	
Wobble (Bearings) (µrad)	± 5	
Weight (kg)	1.2	
Motor	TM-030	
Linear scale		AE-080
Speed max. (°/sec)	360	
Resolution calculated (°)		0.00002
Resolution typical (°)		0.00004
Bi-directional Repeatability (°)		± 0.00008
Uni-directional Repeatability (°)		0.00005
Nominal Current (A)	1.2	
Accuracy	on request	
Velocity range (°/sec)	0.0005 ... 360	
Material	Aluminum, black anodized	

Note: FS = full step, RE = rotary encoder
More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change



Order No.	6823-9-		1		
TM-030	1				
AE-080, Angular scale	1				
HLS-010, Hall switches	1				

PIglide RL Flat Rotation Stage with Air Bearing

Friction-free, Motorized

A-63x

- 150 mm, 200 mm, 300 mm or 350 mm motion platform diameter
- Low profile
- Eccentricity and flatness < 100 nm
- Option for self-locking at rest by magnetic preload

Product overview

The directly driven low-profile rotation stages of the PIglide RL series are designed for the highest precision with low-profile design. Various options can be combined to create a solution ideal for point-to-point indexing or constant velocity scanning. The RL stages offer superior travel accuracy, flatness, and wobble performance.

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

- Incremental or absolute encoder
- Vacuum feedthrough
- Self-locking at rest by magnetic preload
- Clear aperture on request
- PIglide filter and air preparation kit
- Single or multi-axis motion controllers and servo drives
- Multi-axis/customized setups
- Base plates made of granite and systems for reducing vibration

Application fields

Optical alignment, wafer inspection, wafer alignment, measuring technology, inspection systems, calibration, scanning.

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

Specifications

Motion	A-634	A-635	A-637	A-638	Unit	Tole-rance
Travel range	unlimited, > 360°	unlimited, > 360°	unlimited, > 360°	unlimited, > 360°		
Motion platform diameter	150	200	300	350	mm	
Eccentricity (1)	200	150	100	100	nm	Max.
Flatness (1)	75	75	50	50	nm	Max.
Wobble (1)	2	2	1	1	µrad	Max.

Mechanical properties	A-634	A-635	A-637	A-638	Unit	Tole-rance
Load capacity, axial (2)	190	320	600	1200	N	Max.
Load capacity, radial (2)	40	80	150	200	N	Max.
Load torque, $M_{X,Y}$ (2)	4.5	12	50	130	Nm	Max.
Moment of inertia	6640	23400	119610	152080	kg·mm²	
Moved mass	1.9	3.6	7.6	10.4	kg	
Overall mass	4.6	7.5	17	23	kg	
Guide type	Air bearing, magnetic preload	Air bearing, magnetic preload	Air bearing, magnetic preload	Air bearing, magnetic preload		

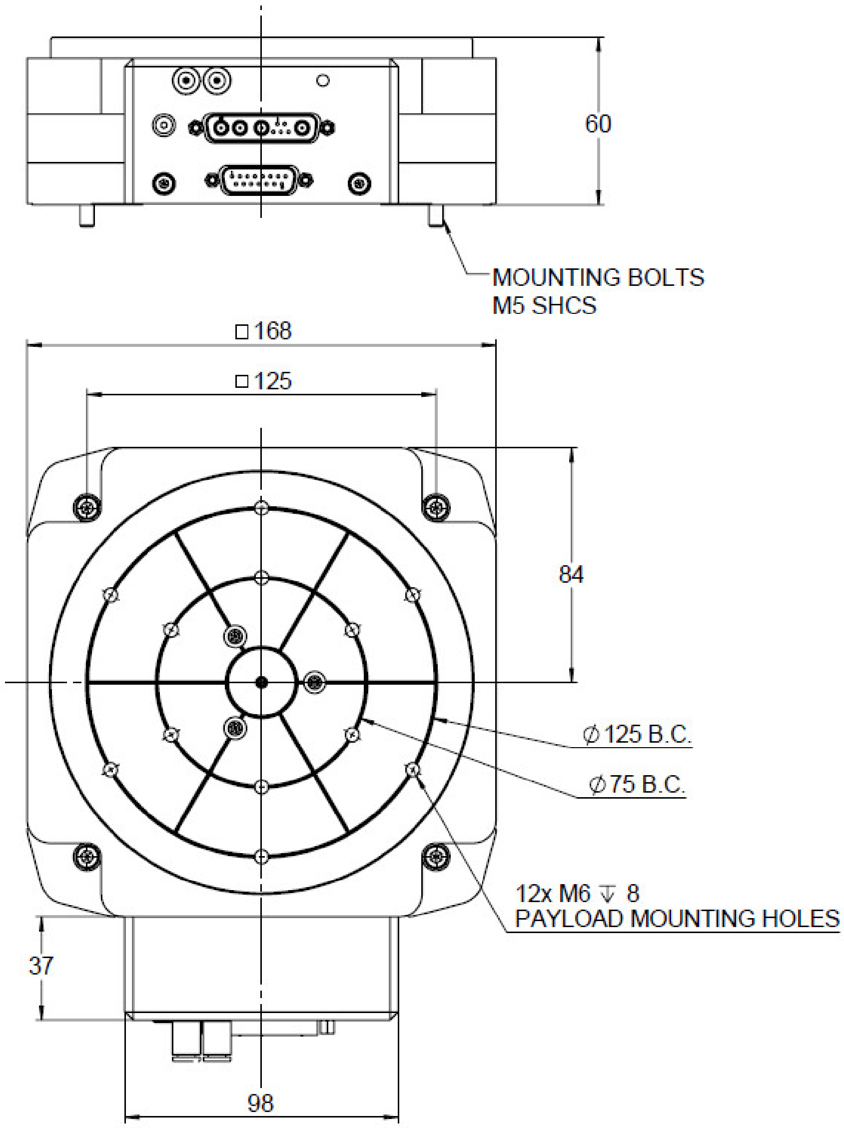
Drive properties	A-634	A-635, A-637, A-638	Unit	Tole-rance
Drive type	Torque motor, 3-phase, brushless, ironless, slotless	Torque motor, 3-phase, brushless, ironless, slotless		
Intermediate circuit voltage	48, nominal 80, max.	48, nominal 80, max.	V DC	
Peak current	6.9	13.9	A	Max.
Nominal current	2.3	4.5	A	Max.
Peak torque	4.7	8.5	Nm	Max.
Nominal torque	1.6	2.8	Nm	Max.
Torque constant	0.59	0.66	Nm/A	Typ.
Resistance phase-phase	6.7	4.5	Ω	Typ.
Inductance phase-phase	0.9	0.6	mH	Typ.
Back EMF phase-phase	71	80	V/kRPM	Typ.

Positioning	A-63x.A100	A-63x.B100
Integrated sensor	Incremental angle-measuring system	Absolute angle-measuring system
Sensor signal	Sin/cos, 1 V peak-peak	BiSS-C
Lines/revolution	A-634: 23600 A-635: 31488 A-637: 55040 A-638: 31488	–
Velocity (3)	500 rpm max.	500 rpm max.
Sensor resolution	A-634: 0.06 µrad (4) A-635: 0.05 µrad (4) A-637: 0.03 µrad (4) A-638: 0.05 µrad (4)	0.0015 µrad
Bidirectional repeatability	± 4 µrad	± 4 µrad
Accuracy, with error compensation (5)	± 8 µrad	± 8 µrad
Reference switch	1 / revolution, differential pulse over one sensor signal period, 1 V peak-peak	–

Miscellaneous	A-63x
Operating pressure (6)	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 mounting hardware

(1) Dependent 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.
(2) The loads listed assume a supply pressure of 550 kPa (80 psi). Please contact PI if other pressures are required.
(3) May be limited by the payload, payload imbalance, controller or drive.
(4) Assumes 4096x interpolation. Contact PI for the use of other factors.
(5) The specified values are based on error compensation controlled by the controller. The stage must be ordered with an A-8xx series controller from PI to reach these values. Accuracy values assume short-term duration and do not consider the long-term effects of thermal drift on the stage.
(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.

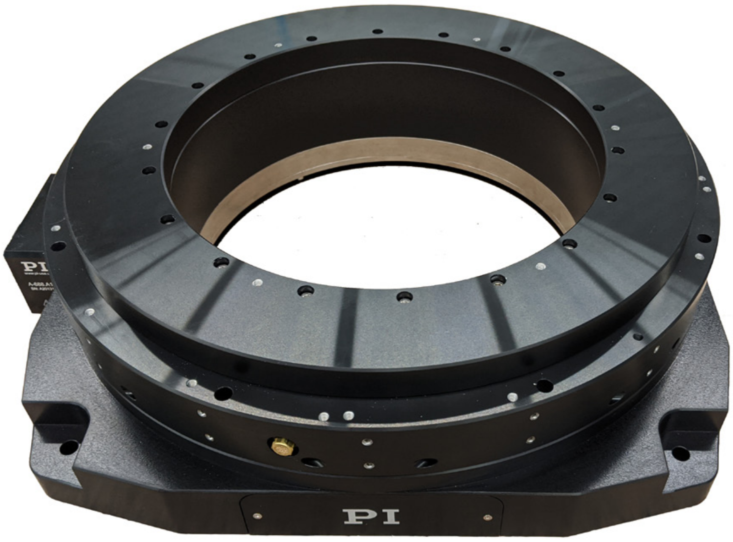
Drawings / Images



A-634.x100, dimensions in mm

PIglide RLA Rotation Stage with Air Bearings, Large Aperture

Friction-free, Motorized



A-68x

- 365 mm diameter motion platform, 260 mm diameter aperture
- Low profile
- Eccentricity and flatness < 300 nm

Product overview

The directly driven flat rotation stages of the PIglide RLA series are designed for the highest precision. They have a low profile and a large clear aperture. The RLA stages offer a superior travel accuracy, flatness, and wobble performance.

3-Phase torque motor

- Brushless
- 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

- Incremental or absolute encoder
- PIglide filter and air preparation kit
- Single or multi-axis motion controllers and servo drives
- Multi-axis/customized setups
- Base plates made of granite and systems for reducing vibration

Application fields

Tomography, beamline systems, wafer metrology, wafer inspection, measuring technology, inspection systems, calibration, scanning.

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

Ordering Information

A-688.A100

PIglide RLA rotation stage, air bearing, 365 mm motion platform diameter, 260 mm diameter aperture, low profile, incremental angle measuring system with sin/cos signal transmission, brushless 3-phase torque motor

A-688.B100

PIglide RLA rotation stage, air bearing, 365 mm motion platform diameter, 260 mm diameter aperture, low profile, absolute angle-measuring system with BiSS-C signal transmission, brushless 3-phase torque motor

08.04.2020

Specifications

Motion	A-688	Unit	Tolerance
Travel range	Unlimited, > 360°		
Motion platform diameter	365	mm	
Eccentricity (1)	300	nm	Max.
Flatness (1)	175	nm	Max.
Wobble (1)	1	µrad	Max.

Mechanical properties	A-688	Unit	Tolerance
Load capacity, axial (2)	770	N	Max.
Load capacity, radial (2)	190	N	Max.
Load torque, $M_{X,Y}$ (2)	36	Nm	Max.
Moment of inertia	284710	kg·mm²	Typ.
Moved mass	12	kg	Typ.
Overall mass	24	kg	Typ.
Guide type	Air Bearing		

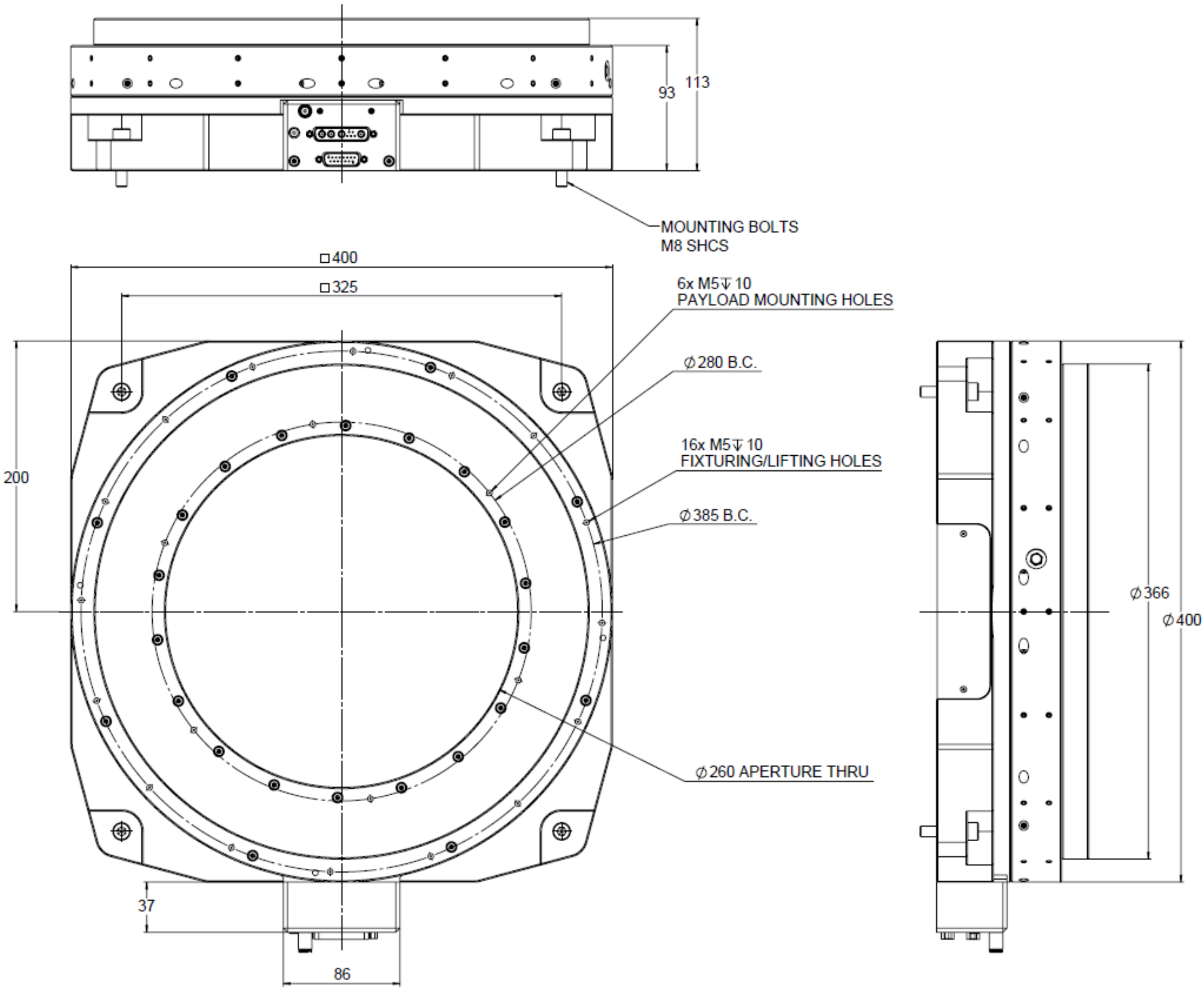
Drive properties	A-688	Unit	Tolerance
Drive type	Torque motor, 3-phase, brushless		
Intermediate circuit voltage	48, nominal 80, max.	V DC	
Peak current	6.9	A	Max.
Nominal current	3.2	A	Max.
Peak torque	85	Nm	Max.
Nominal torque	39	Nm	Max.
Torque constant	12.3	Nm/A	Typ.
Resistance phase-phase	3.6	Ω	Typ.
Inductance phase-phase	1.24	mH	Typ.
Back EMF phase-phase	10.1	V/kRPM	Typ.

Positioning	A-688.A100	A-688.B100
Integrated sensor	Incremental angle-measuring system	Absolute angle-measuring system
Sensor signal	Sin/cos, 1 V peak-peak	BiSS-C
Lines/revolution	55040	–
Velocity (3)	500 rpm max.	500 rpm max.
Sensor resolution	0.03 µrad (4)	0.0015 µrad
Bidirectional repeatability	± 4 µrad	± 4 µrad
Accuracy, with error compensation (5)	± 8 µrad	± 8 µrad
Reference switch	1 / revolution, differential pulse over one sensor signal period, 1 V peak-peak	–

Miscellaneous	A-688
Operating pressure [(6)]	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 mounting hardware

(1) Dependent 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.
(2) The loads listed assume a supply pressure of 550 kPa (80 psi). Please contact PI if other pressures are required.
(3) May be limited by the payload, payload imbalance, controller or drive.
(4) Assumes 4096x interpolation. Contact PI for the use of other factors.
(5) The specified values are based on error compensation controlled by the controller. The stage must be ordered with an A-8xx series controller from PI to reach these values. Accuracy values assume short duration and do not consider the long-term effects of thermal drift on the stage.
(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



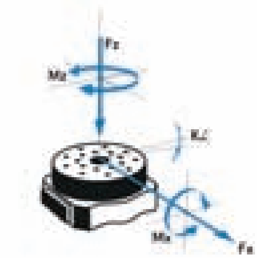
A-688, dimensions in mm

08.04.2020

Ultra Precision Rotation Stage UPR-120

FACTS

Load characteristics	$F_{x(N)}$	$F_{z(N)}$	$M_{z(Nm)}$	Mz Peak$_{(Nm)}$	k÷x$_{(\mu rad/Nm)}$
TM-012	100	200	0.5	2	16



The UPR-120 ultra-precision rotation stage was developed for fast and accurate positioning applications. This stage is mainly used in the field of semiconductor technology, for positioning of laser treatment systems, robotics and synchrotron applications. All rotation stages from the UPR series are directly driven by a torque motor, eliminating the need for mechanical transmissions. This results in better positioning accuracy, higher acceleration and speed. Calibrated cross roller bearings guarantee a high central load capacity without breakdown torque. The UPR-120 rotation stages are equipped with a high resolution angular scale and with a contactless limit switch.

KEY FEATURES

- High-precision bearings
- Torque motor
- Uni-directional repeatability down to 0.00008 °
- Flatness and eccentricity ± 3 µm
- Wobble ± 25 µrad
- Maximum speed 360 °/sec
- Load capacity up to 20 kg (center mounted, on top of the platform)
- Integrated optical reference switch
- Free center hole 35 mm diameter
- Integrated angular scale
- Optionally double head system for higher accuracy

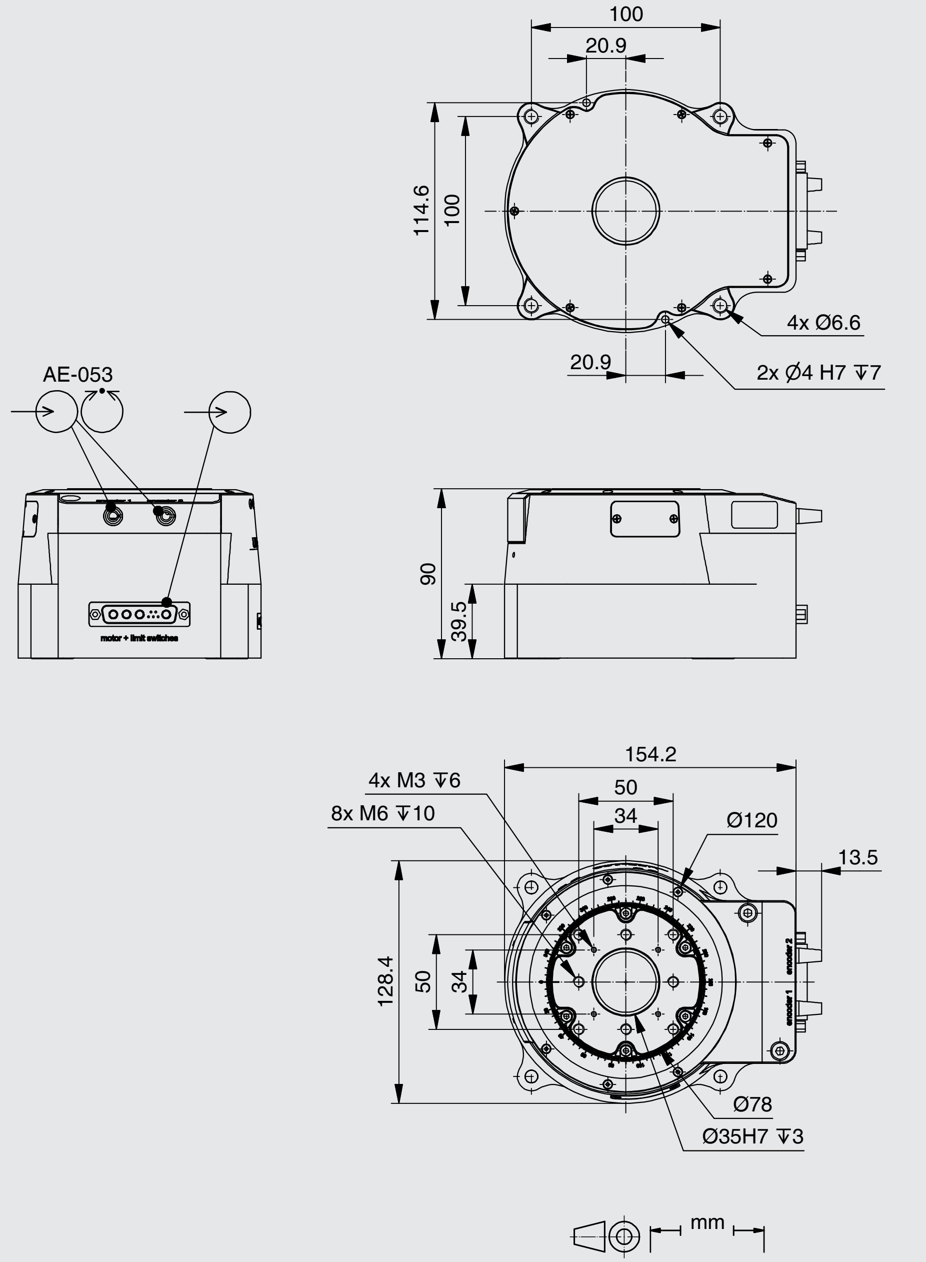
TECHNICAL DATA

Travel range (°)	360, endless	
Flatness (Bearings) (µm)	± 1	
Eccentricity (Bearings) (µm)	± 3	
Wobble (Bearings) (µrad)	± 25	
Weight (kg)	6	
Motor	TM-012	
Linear scale		AE-053
Speed max. (°/sec)	360	
Resolution calculated (°)	0.00002	0.00002
Resolution typical (°)	0.00008	0.00008
Bi-directional Repeatability (°)	± 0.0001	± 0.0001
Uni-directional Repeatability (°)	0.00008	0.00008
Nominal Current (A)	2.4	
Accuracy	on request	
Velocity range (°/sec)	0.001 ... 360	
Material	Aluminum, black anodized / stainless steel (rotary platform)	

Note: FS = full step, RE = rotary encoder
More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

PI micos

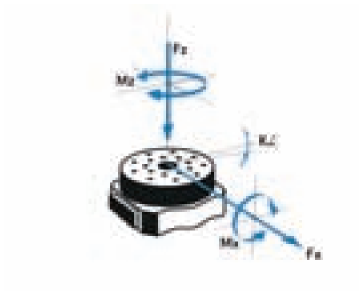


Order No.	6808-9-		1			0
TM-012	1					
AE-053, Angular scale	1					
OLS-012, Optical switches	3					

5.156 Ultra Precision Rotation Stage UPR-160 AIR

FACTS

Load characteristics	$Fx_{(N)}$	$Fz_{(N)}$	$Mz_{(Nm)}$	Mz Peak$_{(Nm)}$	$k_{\theta x}$ (µrad/Nm)
TM-010	40	200	0.7	2	40



The UPR-160 AIR ultra-precision rotation stage was developed for maximum precision dynamic positioning applications. The high precision air-bearing insure excellent flatness, wobble and accuracy values. All UPR-160 AIR rotation stages are directly driven by a torque motor. The UPR-160 AIR is equipped with an angular scale system and reference switches. Standard resolutions of up to 0.00004° can be achieved.

KEY FEATURES

- High precision air bearings
- Torque motor
- Uni-directional repeatability down to 0.00005 °
- Flatness and eccentricity ± 0.1 µm
- Wobble ± 1.25 µrad
- Maximum speed 360 °/sec
- Load capacity up to 20 kg (center mounted, on top of the platform)
- Integrated inductive reference switch
- Free center hole 35 mm diameter
- Integrated angular scale

TECHNICAL DATA

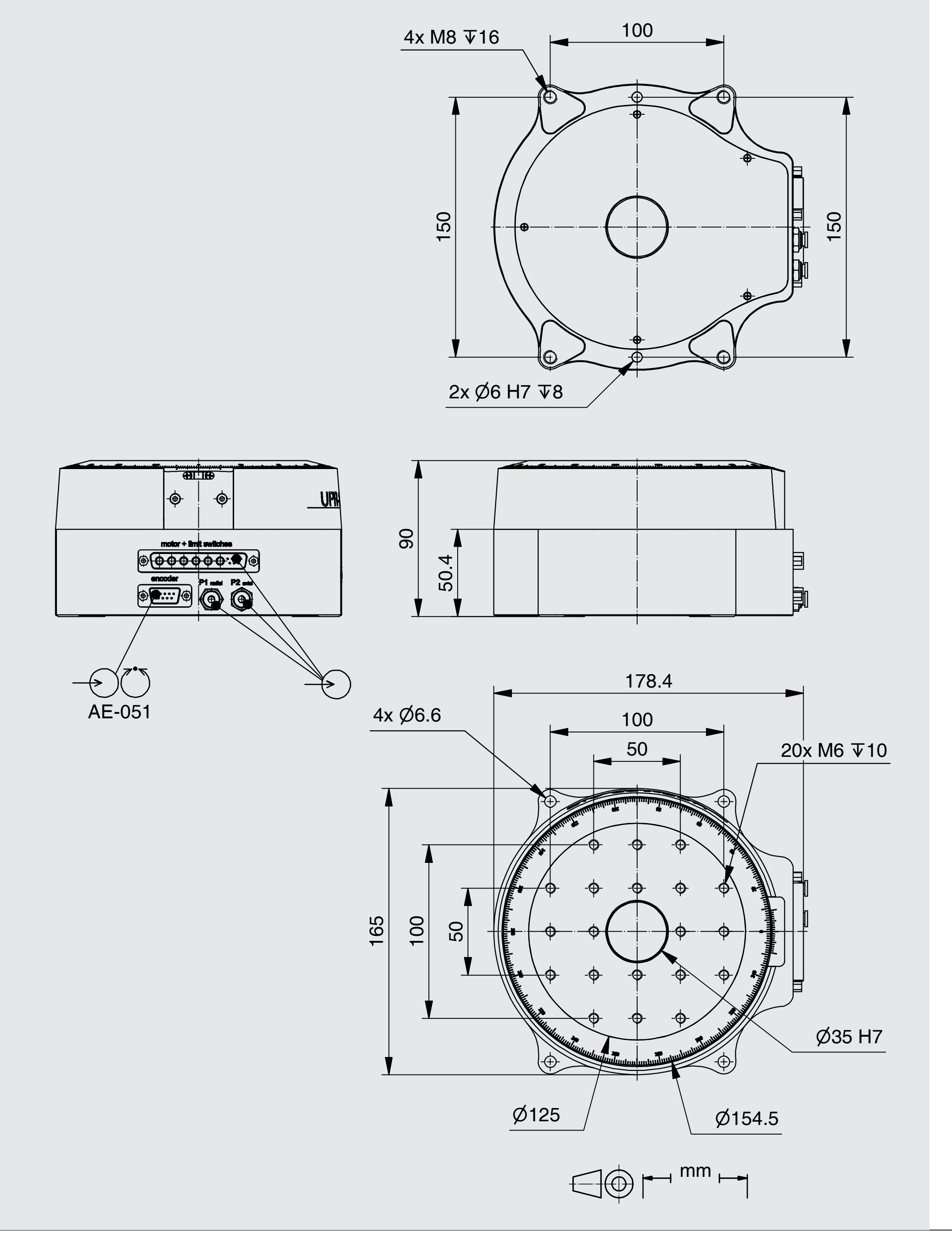
Travel range (°)	360, endless
Flatness (Bearings) (µm)	± 0.05
Eccentricity (Bearings) (µm)	± 0.1
Wobble (Bearings) (µrad)	± 1.25
Weight (kg)	7.5

Motor	TM-010	
Linear scale		AE-051
Speed max. (°/sec)	360	
Resolution calculated (°)		0.00002
Resolution typical (°)		0.00004
Bi-directional Repeatability (°)		± 0.00008
Uni-directional Repeatability (°)		0.00005
Nominal Current (A)	2.4	

Accuracy	on request
Velocity range (°/sec)	0.0005 ... 360
Material	Aluminum, black anodized / stainless steel (rotary platform)

Note: FS = full step, RE = rotary encoder
More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

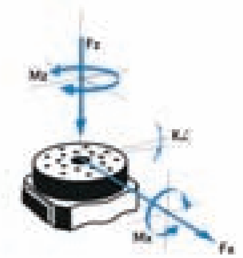


Order No.	6826-9-		0	
TM-010	1			
AE-051, Angular Scale	0			

Ultra Precision Rotation Stage UPR-270 AIR

FACTS

Load characteristics	$Fx_{(N)}$	$Fz_{(N)}$	$Mz_{(Nm)}$	Mz Peak$_{(Nm)}$	$k\div x_{(\mu rad/Nm)}$
TM-050	100	400	4.8	10	30



The UPR-270 AIR ultra-precision rotation stage was developed for dynamic positioning with a maximum of precision. The high precision air-bearing insure excellent flatness, wobble and accuracy values. All UPR-270 AIR rotation stages are directly driven by a torque motor. The UPR-270 AIR is equipped with an angular scale system and a reference switch. Standard resolutions of up to 0.00002° can be achieved.

KEY FEATURES

- High-precision air bearings
- Torque motor
- Uni-directional repeatability down to 0.00003 °
- Flatness and eccentricity ± 0.07 µm
- Wobble ± 1.25 µrad
- Maximum speed 360 °/sec
- Load capacity up to 40 kg (center mounted on top of the platform)
- Integrated inductive reference switch
- Integrated angular scale
- Free center hole 35 mm diameter
- Optionally double head system for higher accuracy

TECHNICAL DATA

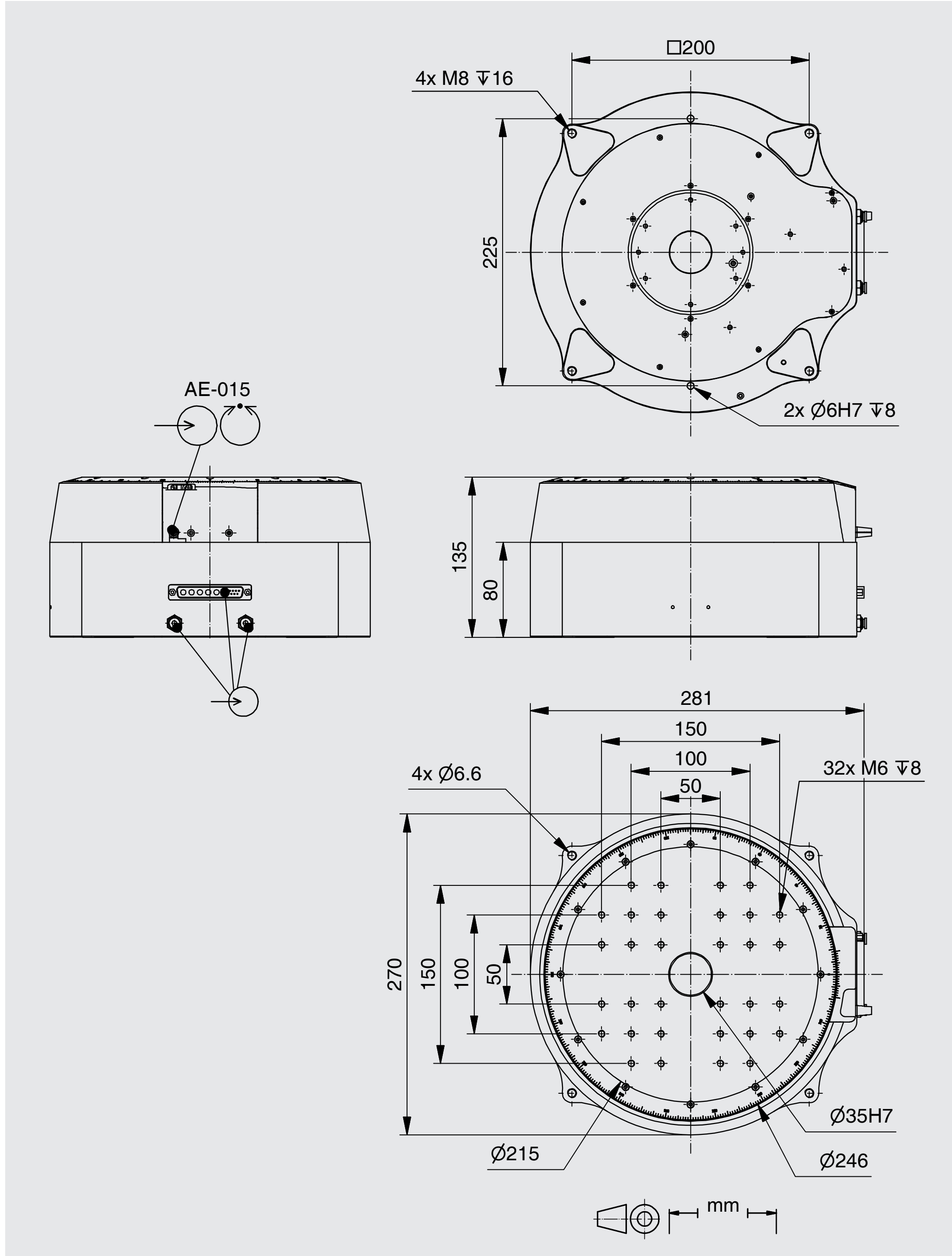
Travel range (°)	360, endless
Flatness (Bearings) (µm)	± 0.05
Eccentricity (Bearings) (µm)	± 0.07
Wobble (Bearings) (µrad)	± 1.25
Weight (kg)	33

Motor	TM-050	
Linear scale		AE-015
Speed max. (°/sec)	360	
Resolution calculated (°)		0.00001
Resolution typical (°)		0.00002
Bi-directional Repeatability (°)		± 0.00005
Uni-directional Repeatability (°)		0.00003
Nominal Current (A)	2	

Accuracy	on request
Velocity range (°/sec)	0.0005 ... 360
Material	Aluminum, black anodized / stainless steel (rotary platform)

Note: FS = full step, RE = rotary encoder
More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change



Order No.	6829-9-		0	
TM-050	1			
AE-015, Angular scale			0	

Rotary Air Bearing Module

Frictionless, Nonmotorized

A-60x

- Motion platform diameter from 50 mm to 300 mm
- Load capacity to 425 kg
- Eccentricity / flatness <200 nm
- Can be mounted vertically or horizontally

Product overview

The PIglide RT series of nonmotorized passive rotary air bearings are designed for accuracy, precision, high stiffness, and ease of use. They can be used in any orientation and are easy to integrate with motors and encoders for complete positioning solutions.
The bearings of the RT series offer superior eccentricity, flatness, and wobble performance. Because they are completely friction-free, they exhibit no breakaway torque and no frictional resistance during operation. They are ideal for use in cleanrooms, require no maintenance or lubrication, and have unlimited lifetime.

Accessories and options

- Encoder for precise acquisition of stage angle during manual operation
- Mounting base for horizontal mounting onto optical table and flat surfaces
- PIglide filter and air preparation kits
- Customized mounting flanges and square housings

Application fields

Optical alignment, metrology, parts inspection, calibration, scanning, torque measurement.
Thanks to the friction-free motion, no particles are formed, which makes PIglide stages ideal for cleanroom applications.

Specifications

Size and loads	Motion platform diameter /mm	Journal length / mm	Load capacity [1] axial / radial /N	Permissible tip/tilt torque [1] / N·m	Stiffness axial / radial / N/µm
A-601.025	50	25	134 / 57	0.57	26 / 8
A-602.038	75	38	299 / 132	1.13	57 / 22
A-603.025	100	25	536 / 115	1.70	96 / 18
A-603.050	100	50	536 / 229	4.52	96 / 35
A-604.050	150	50	1206 / 344	22.6	210 / 64
A-604.090	150	90	1206 / 605	36.7	210 / 113
A-605.065	200	65	2144 / 577	39.6	385 / 110
A-605.100	200	100	2144 / 917	67.8	385 / 175
A-607.075	300	75	4244 / 1203	141.3	788 / 204
A-607.175	300	175	4244 / 2789	282.5	788 / 475

(1) Capacities listed assume supply pressure of 80 psi. Please contact PI if other pressures are required.

Performance specifications	Eccentricity [2] / nm	Flatness [2] / nm	Wobble [2] / µrad	Max. velocity [3] / rpm	Moment of inertia / kg·mm²	Rotating mass / kg	Overall mass / kg
A-601.025	300	100	5	3000	35	0.15	0.4
A-602.038	250	75	4	3000	231	0.4	1.2
A-603.025	175	75	2.5	3000	705	0.7	1.5
A-603.050	175	75	2.5	3000	750	0.8	2.5
A-604.050	100	50	2	3000	4715	2.1	5.4
A-604.090	100	50	2	3000	5050	2.6	8.2
A-605.065	100	50	1.5	2000	17900	4.6	11.6
A-605.100	100	50	1.5	2000	18800	5.3	16.3
A-607.075	75	40	1	1000	181900	19.4	38.1
A-607.175	75	40	1	1000	206700	26.0	59.0

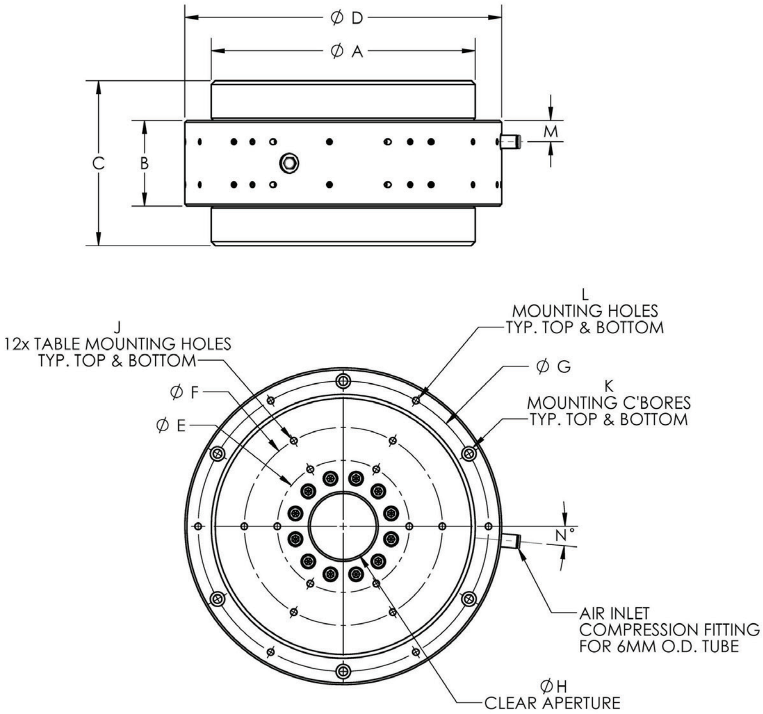
(2) Precision specifications are dependent on quality of mounting base, payload, orientation, and external forces on the bearing. For application-specific parameters, please contact PI. Values shown are static (no rotational velocity during measurement).
(3) Velocity may be limited by the encoder option or payload imbalance. Please contact PI for further details.

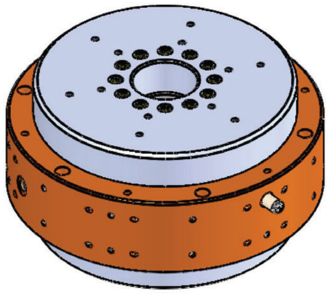
Optional encoders	Sensor signal	Sensor resolution / µrad	Max. velocity / rpm	Reference switch
A-601.xxxH	A/B quadrature, differential, RS-422, 4 MHz	192	2500	1 / revolution, one count over one step of the encoder, synchronized to output signal
A-602.xxxH	A/B quadrature, differential, RS-422, 4 MHz	133	2000	1 / revolution, one count over one step of the encoder, synchronized to output signal
A-603.xxxH	A/B quadrature, differential, RS-422, 4 MHz	100	1500	1 / revolution, one count over one step of the encoder, synchronized to output signal
A-604xxxH	A/B quadrature, differential, RS-422, 4 MHz	66.4	1000	1 / revolution, one count over one step of the encoder, synchronized to output signal
A-605.xxxH	A/B quadrature, differential, RS-422, 4 MHz	50	800	1 / revolution, one count over one step of the encoder, synchronized to output signal
A-607.xxxH	A/B quadrature, differential, RS-422, 4 MHz	33.5	500	1 / revolution, one count over one step of the encoder, synchronized to output signal
A-601.xxxB	Absolute, BiSS-C 32-bit	0.0015	3500	–
A-602.xxxB	Absolute, BiSS-C 32-bit	0.0015	3000	–
A-603.xxxB	Absolute, BiSS-C 32-bit	0.0015	2000	–
A-604.xxxB	Absolute, BiSS-C 32-bit	0.0015	1500	–
A-605.xxxB	Absolute, BiSS-C 32-bit	0.0015	1000	–
A-607.xxxB	Absolute, BiSS-C 32-bit	0.0015	500	–

Miscellaneous	A-60x
Operating pressure	75 to 85 psi (515 to 585 kPa)
Air consumption	< 2.0 SCFM (57 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 [4]	Hardcoat aluminum, stainless steel mounting hardware

[4] Alternative stage surface materials, such as stainless steel, are available. Please contact PI for a quote.

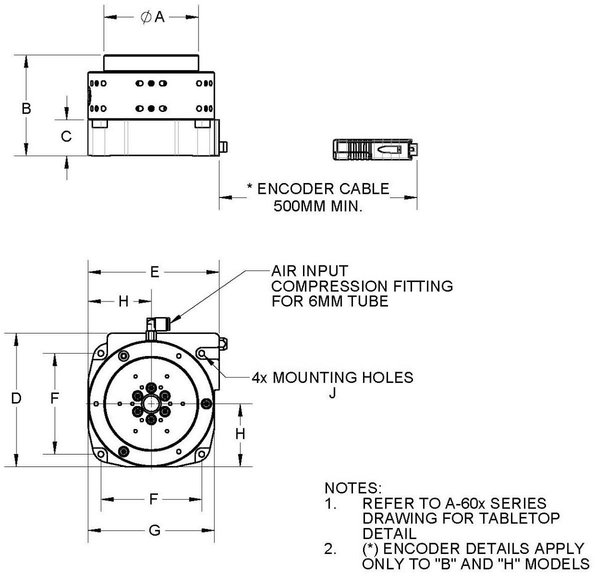
Drawings / Images



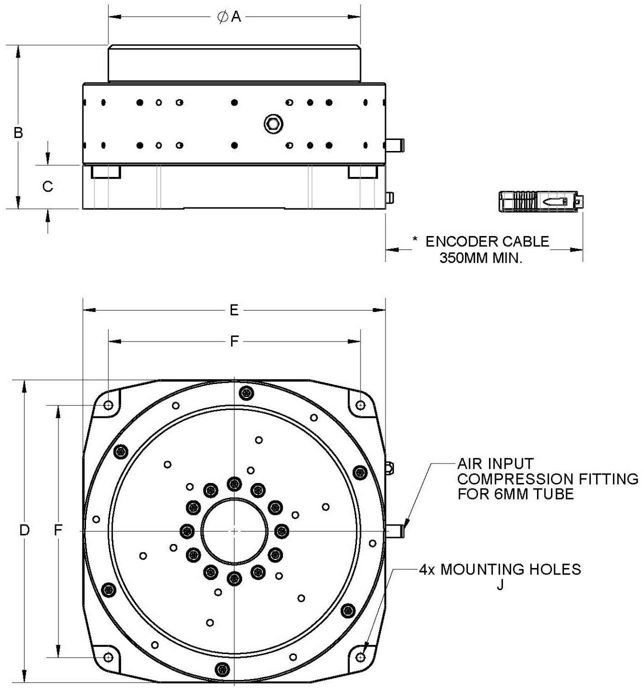


Model	A	B	C	D	E	F	G	H	J	K	L	M	N
A-601.025	50	25	50	70	25	40	60	8	M3x0.5, 6 DEEP	3x M3 SHCS, 30 LG. MIN	3x M3x0.5, 6 DEEP	6	30
A-602.038	75	38	65	100	30	50	87.5	12.5	M3x0.5, 6 DEEP	3x M4 SHCS, 40 LG. MIN	3x M4x0.7, 8 DEEP	9.5	30
A-603.025	100	25	55	125	50	75	112.5	25	M4x0.7, 8 DEEP	3x M5 SHCS, 30 LG. MIN	3x M5x0.8, 10 DEEP	6	30
A-603.050	100	50	80	125	50	75	112.5	25	M4x0.7, 8 DEEP	3x M5 SHCS, 50 LG. MIN	3x M5x0.8, 10 DEEP	12.5	30
A-604.050	150	50	95	185	75	125	170	40	M5x0.8, 10 DEEP	4x M6 SHCS, 50 LG. MIN	4x M6x1.0, 12 DEEP	12.5	68
A-604.090	150	90	135	185	75	125	170	40	M5x0.8, 10 DEEP	4x M6 SHCS, 90 LG. MIN	4x M6x1.0, 12 DEEP	22.5	68
A-605.065	200	65	125	240	100	150	220	50	M6x1.0, 12 DEEP	6x M6 SHCS, 70 LG. MIN	6x M6x1.0, 12 DEEP	16	5
A-605.100	200	100	160	240	100	150	220	50	M6x1.0, 12 DEEP	6x M6 SHCS, 100 LG. MIN	6x M6x1.0, 12 DEEP	23.5	5
A-607.075	300	75	150	355	150	250	330	75	M6x1.0, 12 DEEP	6x M8 SHCS, 80 LG. MIN	6x M8x1.25, 16 DEEP	17.3	5
A-607.175	300	175	250	355	150	250	330	75	M6x1.0, 12 DEEP	6x M8 SHCS, 150 LG. MIN	6x M8x1.25, 16 DEEP	58.5	5

A-60x.xxx, dimensions in mm. Note that a comma is used in the drawings instead of a decimal point.



SIZES A-601 & A-602



SIZES A-603 THRU A-607

MODEL	A	B	C	D	E	F	G	H	J
A-601.025B/H/M	50	65	26.5	82	74	55	70	35	M3 SHCS x 25MM LG. MIN.
A-602.038B/H/M	75	80	28.5	106	104	80	100	50	M4 SHCS x 30MM LG. MIN.
A-603.025B/H/M	100	65	25.0	135	125	100	-	-	M5 SHCS x 25MM LG. MIN.
A-603.050B/H/M	100	90	25.0	135	125	100	-	-	M5 SHCS x 25MM LG. MIN.
A-604.050B/H/M	150	100	27.5	185	185	150	-	-	M6 SHCS x 30MM LG. MIN.
A-604.090B/H/M	150	140	27.5	185	185	150	-	-	M6 SHCS x 30MM LG. MIN.
A-605.065B/H/M	200	130	35.0	240	240	200	-	-	M6 SHCS x 35MM LG. MIN.
A-605.100B/H/M	200	165	35.0	240	240	200	-	-	M6 SHCS x 35MM LG. MIN.
A-607.075B/H/M	300	155	42.5	355	355	300	-	-	M8 SHCS x 40MM LG. MIN.
A-607.175B/H/M	300	255	42.5	355	355	300	-	-	M8 SHCS x 40MM LG. MIN.

A-60x.xxxX, dimensions in mm. Note that a comma is used in the drawings instead of a decimal point.

Ordering Information

A-601.025
PIglide RT rotary air bearing module, 50 mm motion platform diameter, 25 mm bearing journal length

A-601.025B
PIglide RT rotary air bearing module, 50 mm motion platform diameter, 25 mm bearing journal length, mounting base, absolute rotary encoder with BiSS-C signal transmission

A-601.025H
PIglide RT rotary air bearing module, 50 mm motion platform diameter, 25 mm bearing journal length, mounting base, incremental rotary encoder with A/B quadrature signal transmission

A-601.025M
PIglide RT rotary air bearing module, 50 mm motion platform diameter, 25 mm bearing journal length, mounting base

A-602.038
PIglide RT rotary air bearing module, 75 mm motion platform diameter, 38 mm bearing journal length

A-602.038B
PIglide RT rotary air bearing module, 75 mm motion platform diameter, 38 mm bearing journal length, mounting base, absolute rotary encoder with BiSS-C signal transmission

A-602.038H
PIglide RT rotary air bearing module, 75 mm motion platform diameter, 38 mm bearing journal length, mounting base, incremental rotary encoder with A/B quadrature signal transmission

A-602.038M
PIglide RT rotary air bearing module, 75 mm motion platform diameter, 38 mm bearing journal length, mounting base

A-603.025
PIglide RT rotary air bearing module, 100 mm motion platform diameter, 25 mm bearing journal length

A-603.025B
PIglide RT rotary air bearing module, 100 mm motion platform diameter, 25 mm bearing journal length, mounting base, absolute rotary encoder with BiSS-C signal transmission

A-603.025H
PIglide RT rotary air bearing module, 100 mm motion platform diameter, 25 mm bearing journal length, mounting base, incremental rotary encoder with A/B quadrature signal transmission

A-603.025M
PIglide RT rotary air bearing module, 100 mm motion platform diameter, 25 mm bearing journal length, mounting base

A-603.050
PIglide RT rotary air bearing module, 100 mm motion platform diameter, 50 mm bearing journal length

A-603.050B
PIglide RT rotary air bearing module, 100 mm motion platform diameter, 50 mm bearing journal length, mounting base, absolute rotary encoder with BiSS-C signal transmission

A-603.050H
PIglide RT rotary air bearing module, 100 mm motion platform diameter, 50 mm bearing journal length, mounting base, incremental rotary encoder with A/B quadrature signal transmission

A-603.050M
PIglide RT rotary air bearing module, 100 mm motion platform diameter, 50 mm bearing journal length, mounting base

A-604.050
PIglide RT rotary air bearing module, 150 mm motion platform diameter, 50 mm bearing journal length

A-604.050B
PIglide RT rotary air bearing module, 150 mm motion platform diameter, 50 mm bearing journal length, mounting base, absolute rotary encoder with BiSS-C signal transmission

A-604.050H
PIglide RT rotary air bearing module, 150 mm motion platform diameter, 50 mm bearing journal length, mounting base, incremental rotary encoder with A/B quadrature signal transmission

A-604.050M
PIglide RT rotary air bearing module, 150 mm motion platform diameter, 50 mm bearing journal length, mounting base

A-604.090
PIglide RT rotary air bearing module, 150 mm motion platform diameter, 90 mm bearing journal length

A-604.090B
PIglide RT rotary air bearing module, 150 mm motion platform diameter, 90 mm bearing journal length, mounting base, absolute rotary encoder with BiSS-C signal transmission

A-604.090H
PIglide RT rotary air bearing module, 150 mm motion platform diameter, 90 mm bearing journal length, mounting base, incremental rotary encoder with A/B quadrature signal transmission

A-604.090M
PIglide RT rotary air bearing module, 150 mm motion platform diameter, 90 mm bearing journal length, mounting base

A-605.065
PIglide RT rotary air bearing module, 200 mm motion platform diameter, 65 mm bearing journal length

A-605.065B
PIglide RT rotary air bearing module, 200 mm motion platform diameter, 65 mm bearing journal length, mounting base, absolute rotary encoder with BiSS-C signal transmission

A-605.065H
PIglide RT rotary air bearing module, 200 mm motion platform diameter, 65 mm bearing journal length, mounting base, incremental rotary encoder with A/B quadrature signal transmission

A-605.065M
PIglide RT rotary air bearing module, 200 mm motion platform diameter, 65 mm bearing journal length, mounting base

A-605.100
PIglide RT rotary air bearing module, 200 mm motion platform diameter, 100 mm bearing journal length

A-605.100B
PIglide RT rotary air bearing module, 200 mm motion platform diameter, 100 mm bearing journal length, mounting base, absolute rotary encoder with BiSS-C signal transmission

A-605.100H
PIglide RT rotary air bearing module, 200 mm motion platform diameter, 100 mm bearing journal length, mounting base, incremental rotary encoder with A/B quadrature signal transmission

A-605.100M
PIglide RT rotary air bearing module, 200 mm motion platform diameter, 100 mm bearing journal length, mounting base

A-607.075
PIglide RT rotary air bearing module, 300 mm motion platform diameter, 75 mm bearing journal length

A-607.075B
PIglide RT rotary air bearing module, 300 mm motion platform diameter, 75 mm bearing journal length, mounting base, absolute rotary encoder with BiSS-C signal transmission

A-607.075H
PIglide RT rotary air bearing module, 300 mm motion platform diameter, 75 mm bearing journal length, mounting base, incremental rotary encoder with A/B quadrature signal transmission

A-607.075M
PIglide RT rotary air bearing module, 300 mm motion platform diameter, 75 mm bearing journal length, mounting base

A-607.175
PIglide RT rotary air bearing module, 300 mm motion platform diameter, 175 mm bearing journal length

A-607.175B
PIglide RT rotary air bearing module, 300 mm motion platform diameter, 175 mm bearing journal length, mounting base, absolute rotary encoder with BiSS-C signal transmission

A-607.175H
PIglide RT rotary air bearing module, 300 mm motion platform diameter, 175 mm bearing journal length, mounting base, incremental rotary encoder with A/B quadrature signal transmission

A-607.175M
PIglide RT rotary air bearing module, 300 mm motion platform diameter, 175 mm bearing journal length, mounting base

USA (East) & CANADA

PI (Physik Instrumente) L.P.
16 Albert St.
Auburn, MA 01501
Tel: +1 (508) 832 3456
Fax: +1 (508) 832 0506
Email: info@pi-usa.us
www.pi-usa.us

USA (West) & MEXICO

PI (Physik Instrumente) L.P.
5420 Trabuco Rd., Suite 100
Irvine, CA 92620
Tel: +1 (949) 679 9191
Fax: +1 (949) 679 9292
Email: info@pi-usa.us
www.pi-usa.us

GERMANY

Headquarters:
PI miCos GmbH
Freiburger Strasse 30
D-79427 Eschbach
GERMANY

Phone: +49 7634 50 57 0
Fax: +49 7634 50 57 393
e-mail: info@pimicos.com
home: www.pimicos.com

Physik Instrumente (PI)
GmbH & Co. KG
Auf der Römerstraße 1
76228 Karlsruhe/Palmbach
Tel: +49 (721) 4846-0
Fax: +49 (721) 4846-1019
Email: info@pi.ws
www.pi.ws

Call Us Today

508.832.3456 (East)

949.679.9191 (West)

PI | micos