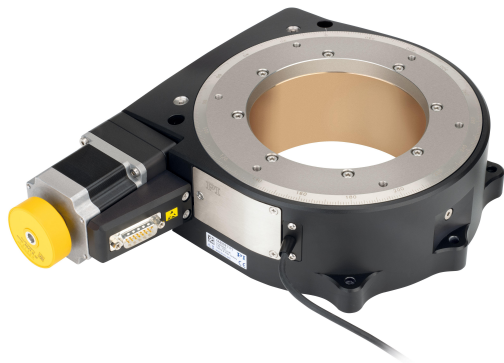


Precision Rotation Stage

Large Aperture, High Run-Out Accuracy



PRS-200

- Unlimited travel range
- Repeatability to 5 μrad
- Load capacity to 50 kg
- Option: Direct position measurement with angle measuring system

Reference-class rotation stage

Worm drive with high gear ratio for precision positioning. Excellent flatness and concentricity due to preloaded crossed roller bearings. Large aperture with 120 mm \varnothing . Two adjustable limit switches.

Versions

- DC servo motor with rotary encoder on the motor shaft
- Stepper motor
- Option: High-resolution optical angle measuring system for direct position measuring

Option: Measurement of the run-out accuracy and positioning accuracy

Individual measurement logs available on request for wobble, axial, and radial creep. Please specify when ordering.

Application fields

Medical industry. Sample inspection. Precision microassembly. Measuring technology. Photonics.

Motion	Unit	Tolerance	6449911011	6449911111	6449921011	6449921111
Active axes			$\varnothing Z$	$\varnothing Z$	$\varnothing Z$	$\varnothing Z$
Rotation range in $\varnothing Z$	$^{\circ}$		360	360	360	360
Maximum angular velocity in $\varnothing Z$, unloaded	$^{\circ}/s$		75	75	35	35
Radial error in X	μm	Typ.	± 2.5	± 2.5	± 2.5	± 2.5
Axial error	μm	Typ.	± 1	± 1	± 1	± 1
Tilt error around X (wobble)	μrad	Typ.	± 17.5	± 17.5	± 17.5	± 17.5

Positioning	Unit	Tolerance	6449911011	6449911111	6449921011	6449921111
Minimum incremental motion in $\varnothing Z$	μrad	Typ.	8.72	0.5	8.72	0.5
Unidirectional repeatability in $\varnothing Z$	μrad	Typ.	± 17.5	± 2.5	± 17.5	± 2.5
Bidirectional repeatability in $\varnothing Z$	μrad	Typ.	349	17.4	349	17.4
Limit switches			Hall effect, N/C contact, 3.8 V to 24 V, NPN	Hall effect, N/C contact, 3.8 V to 24 V, NPN	Hall effect, N/C contact, 3.8 V to 24 V, NPN	Hall effect, N/C contact, 3.8 V to 24 V, NPN
Integrated sensor			—	Incremental angle-measuring system	—	Incremental angle-measuring system
Sensor signal			—	Sin/cos, 1 V peak-to-peak	—	Sin/cos, 1 V peak-to-peak
Sensor signal periods/U			—	23600	—	23600
Motor encoder			Incremental rotary encoder	Incremental rotary encoder	—	—
Motor encoder: Sensor signal			A/B quadrature, RS-422	A/B quadrature, RS-422	—	—
Resolution, motor encoder	Cts./rev.		20000	20000	—	—

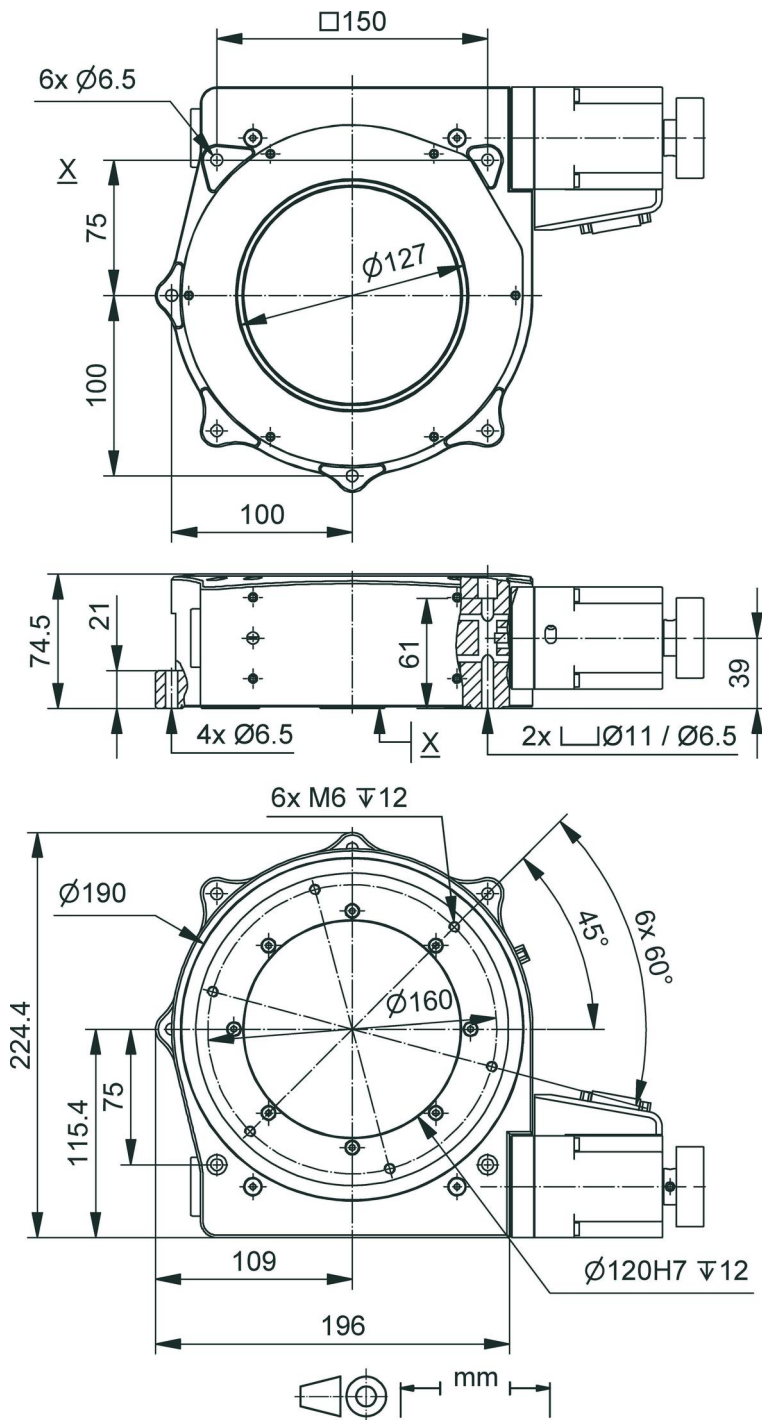
Drive properties	Unit	Tolerance	6449911011	6449911111	6449921011	6449921111
Drive type			DC motor	DC motor	2-phase stepper motor	2-phase stepper motor
Nominal voltage	V		24	24	48	48
Nominal current, RMS	A	Typ.	4.35	4.35	1.2	1.2
Motor resolution	Full steps/ rev.		—	—	200	200
Drive torque clockwise in θZ	N·m	Max.	4	4	4	4
Drive torque counterclockwise in θZ	N·m	Max.	4	4	4	4
Torque constant	N·m/A	Typ.	0.127	0.127	—	—
Resistance phase-phase	Ω	Typ.	1.5	1.5	1.8	1.8
Inductance phase-phase	mH		2.2	2.2	2.5	2.5

Mechanical properties	Unit	Tolerance	6449911011	6449911111	6449921011	6449921111
Permissible push force in X	N	Max.	200	200	200	200
Permissible push force in Y	N	Max.	200	200	200	200
Permissible push force in Z	N	Max.	500	500	500	500
Permissible torque in θX	N·m	Max.	60	60	60	60
Permissible torque in θY	N·m	Max.	60	60	60	60
Permissible torque in θZ	N·m	Max.	4	4	4	4
Holding torque in θZ , passive	N·m		—	—	1170	1170
Moved mass in Z, unloaded	g		4300	4700	4300	4700
Worm gear reduction			180 : 1	180 : 1	180 : 1	180 : 1
Bearing type			Crossed roller bearings	Crossed roller bearings	Crossed roller bearings	Crossed roller bearings
Overall mass	g		8000	8700	8000	8700
Material			Aluminum, black anodized; stainless steel; red bronze	Aluminum, black anodized; stainless steel; red bronze	Aluminum, black anodized; stainless steel; red bronze	Aluminum, black anodized; stainless steel; red bronze

Miscellaneous	Unit		6449911011	6449911111	6449921011	6449921111
Operating temperature range	$^{\circ}\text{C}$		5 to 40	5 to 40	5 to 40	5 to 40
Connector			D-sub 7W2 (m)	D-sub 7W2 (m)	D-sub 15 (m)	D-sub 15 (m)
Sensor connector			—	—	—	HD D-sub 26 (f)
Connector for motor encoder			M23 12-pole (m)	M23 12-pole (m)	—	—
Recommended controllers/ drivers			G-901 G-910 ACS modular controller C-863 with C-863.AD12 power driver C-884 with C-863.AD12 power driver C-885 with C-863.20C885 with C-863.AD12 power driver	G-901 G-910 ACS modular controller C-863 with C-863.AD12 power driver C-884 with C-863.AD12 power driver C-885 with C-863.20C885 with C-863.AD12 power driver	G-901 G-910 ACS modular controller C-663.12 C-885 with C-663.12C885	G-901 G-910 ACS modular controller C-663.12 C-885 with C-663.12C885

At PI, technical data is specified at $22 \pm 3 \text{ }^{\circ}\text{C}$. Unless otherwise stated, the values are for unloaded conditions. Some properties are interdependent. The designation "typ." indicates a statistical average for a property; it does not indicate a guaranteed value for every product supplied. During the final inspection of a product, only selected properties are analyzed, not all. Please note that some product characteristics may deteriorate with increasing operating time.

Drawings / Images



PRS-200, dimensions in mm

Order Information

6449911011

Precision rotation stage; DC motor; 360° rotational angle; 500 N load capacity; 75 °/s maximum angular velocity; incremental rotary encoder, 20000 cts./rev. resolution, A/B quadrature, RS-422

6449911111

Precision rotation stage; DC motor; 360° rotational angle; 500 N load capacity; 75 °/s maximum angular velocity; incremental rotary encoder, 20000 cts./rev. resolution, A/B quadrature, RS-422; incremental angle measuring system, sin/cos, 1 V peak-peak

6449921011

Precision rotation stage; 2-phase stepper motor; 360° rotational angle; 500 N load capacity; 35 °/s maximum angular velocity

6449921111

Precision rotation stage; 2-phase stepper motor; 360° rotational angle; 500 N load capacity; 35 °/s maximum angular velocity; incremental angle measuring system, sin/cos, 1 V peak-peak