The information given in this catalog was carefully checked by our team and is constantly updated. Nevertheless it is not possible to fully exclude the presence of errors. In order to always get the latest information, please contact our technical sales team.

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ABOUT ROTARY POSITIONERS

High-Precision Rotary Positioners

SmarAct is offering different piezo-based rotary positioners with unlimited rotation. The motors define the strength and speed, the used sensor the closed-loop resolution, whereas the bearing defines the size and rigidity of the rotary positioner.

Some rotary positioners are based on four-point bearings. For example the SR-1908 rotary positioner is very compact and provides a 7 mm aperture, which makes it suitable for applications with limited space.

The SR-2013-S is an exceptionally compact, closed-loop nano positioner which can be delivered in a non-magnetic version, with an integrated preloaded ceramic bearing.

The SR-4513, SR-5714 and SR-7021 rotary positioners are based on crossed roller bearings. The SR-4011, SR-7012 and SR-12012 are based on deep groove ball bearings. All of these rotary positioners are very rigid and allow high loads to be applied.

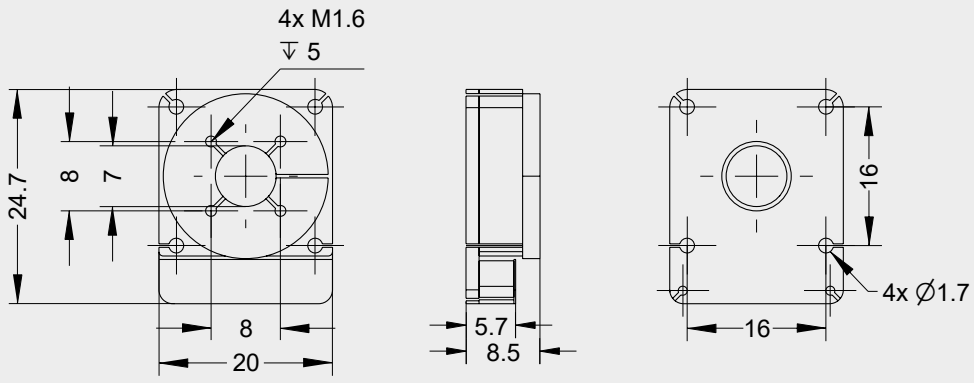
	Product Line			SR								
	Positioner Series			SR-1908	SR-2013	SR-2812	SR-4011	SR-4513	SR-5018	SR-5714	SR-5714C	SR-7012	SR-7021	SR-12012
Mechanical	blocking torque [Ncm]			≥ 0.5	≥ 0.5	≥ 3	≥ 5	≥ 5	≥ 7	≥ 7	≥ 5	≥ 10	≥ 10	≥ 15
	max. normal force [N]			5	3	3	10	20	20	25	25	25	25	20
	dimensions [mm²]			24.7 x 20	25.5 x 20	37.5 x 30	40 x40	45 x 45	50 x 50	57 x 57	57 x 57	70 x 70	90 x 90	120 x 120
	height [mm]			8.5	10.2	12	11	13.5	16.5	14	13.75	12	21	12
	weight [g]			13	11	35	60	89	100	110	105	100	400	320
	aperture [mm]			7		9	9	8	8	25	25	30	25	82
	stage diameter [mm]			19	15	28	31	36	41	57	48	60	70	110
Open-Loop	travel [°]			∞	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
	step width [m°]			0.3 .. 3	0.3 .. 3	0.3 .. 3	0.3 .. 2	0.3 .. 3	0.2 .. 2	0.2 .. 2	0.2 .. 2	0.2 .. 2	0.2 .. 2	0.3 .. 1.5
	scan range [m°]				≥ 8	≥ 4	≥ 4	≥ 4	≥ 3.8	≥ 2.3	≥ 2.3	≥ 2.5	≥ 3.1	≥ 4.0
	scan resolution [µ°]				< 2	< 1	< 1	< 1	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 1
	angular speed [°/s]			≥ 45	≥ 45	≥ 25	≥ 15	≥ 15	≥ 15	≥ 9	≥ 9	≥ 9	≥ 9	≥ 10
	max. frequency [kHz]			18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
Closed-Loop	sensor types				-S	-S	-M, -L, -S	-I, -M, -L, -S	-M, -L, -S	-S	-S	-S	-S	-S
	closed-loop resolution [µ°]	-M	MCS (H)CU				500 1000	500 1000	500 1000					
		-L	MCS (H)CU				60 1000	60 1000	60 1000					
		-S	MCS		25	25	15	15	15	15	15	15	15	5
	vacuum compatibility			HV	HV, UHV	HV, UHV	HV	HV	HV	HV	HV, UHV	HV	HV, UHV	HV

resolution	rotation	normal load	vacuum	size
< 300 µ°	∞	5 N (500 g)	10^{-6} mbar	24.7 x 20 x 8.5 mm³

SR-1908
High-Precision Rotary Positioners

Mechanical Properties	
blocking torque M_B	0.5 Ncm
max. normal force F_N	5 N
positioner dimensions	24.7 x 20 x 8.5 mm³
stage diameter	Ø 19 mm
aperture	Ø 7 mm
weight	13 g
Positioning	
travel	∞
step width	0.3 - 3.0 m°
angular velocity	45 °/s
max. frequency	18.5 kHz
Materials and Vacuum Options*	
steel base (-ST)	
hard end stops, sample stub holder	
-HV (10^{-6} mbar)	

The SR-1908 is SmarAct's smallest standard rotary positioner. The very robust stainless steel bearing together with an aperture of 7 mm enables a broad range of possible applications.



Linear dimensions are given in mm.

* positioner dimensions, mounting holes and travel range may vary and can be customized

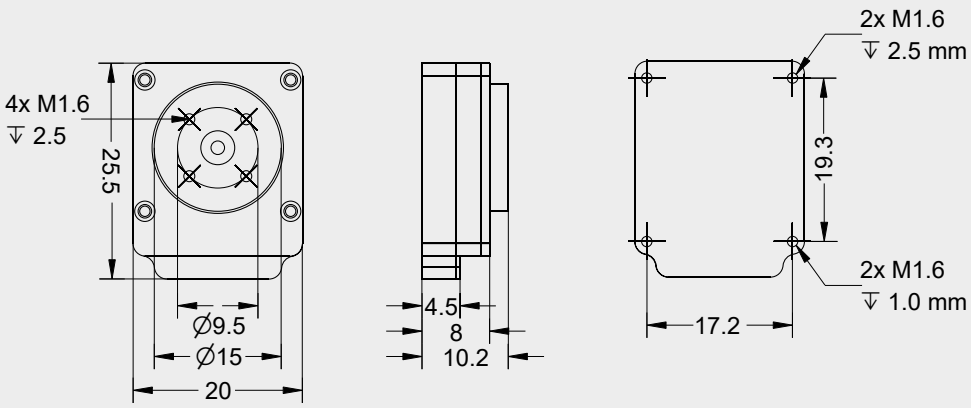
SR-2013
High-Precision Rotary Positioners

resolution	rotation	non magnetic	normal load	vacuum	size
< 2 µ°	∞	available	3 N (300 g)	10^{-11} mbar	25.5 x 20 x 10.2 mm³

Mechanical Properties	
blocking torque M_B	0.5 Ncm
max. normal force F_N	3 N
positioner dimensions	25.5 x 20 x 10.2 mm³
stage diameter	Ø 15 mm
weight	11 g
Positioning	
travel	∞
step width	0.3 - 3.0 m°
scan range	> 8 m°
scan resolution	< 2 µ°
angular velocity	≈ 45 °/s
max. frequency	18.5 kHz
Materials and Vacuum Options	
steel base (-ST), titanium base (-TI)	
non-magnetic materials (-NM)	
-HV (10^{-6} mbar), -UHV / -UHVT (10^{-11} mbar)	

Clodsed-Loop with -S	
sensor resolution	25 µ°
closed-loop resolution	25 µ° MCS/SDC

The SR-2013 is our lightest and smallest closed-loop rotary positioner. An integrated ceramic precision bearing is the reason for the ultra-high accuracy as well as the extremely low radial run-out.



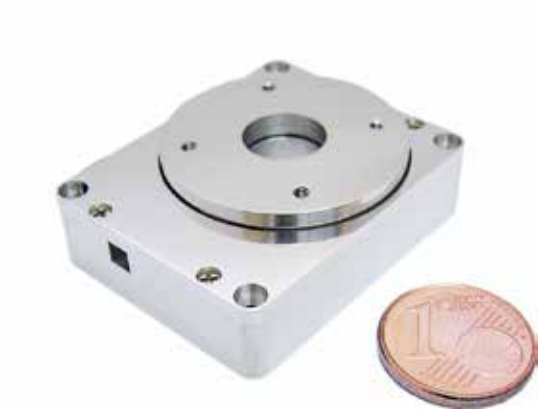
Linear dimensions are given in mm.

* positioner dimensions, mounting holes and travel range may vary and can be customized

SR-2812
High-Precision Rotary Positioners

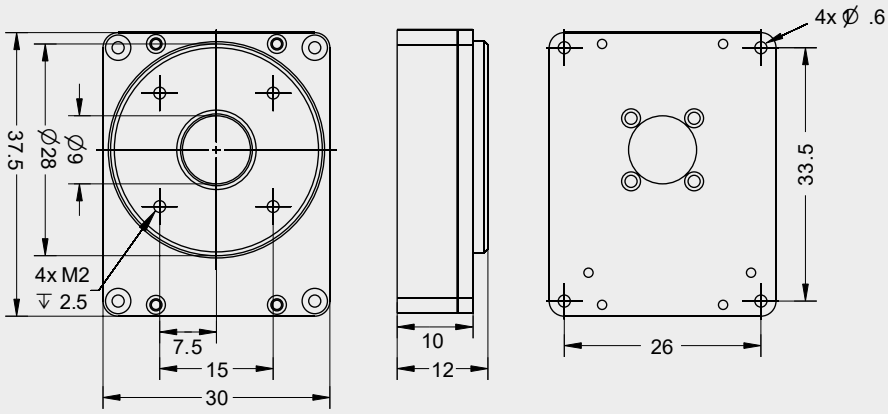
resolution	rotation	non magnetic	normal load	vacuum	size
< 1 µ°	∞	available	3 N (300 g)	10^{-6} mbar	24.7 x 20 x 8.5 mm³

Mechanical Properties	
blocking torque M_B	3 N cm
max. normal force F_N	3 N
positioner dimensions	37.5 x 30 x 12 mm³
stage diameter	Ø 28 mm
aperture	Ø 9 mm
weight	35 g
Positioning	
travel	∞
step width	0.3 - 3.0 m°
scan range	> 4 m°
scan resolution	< 1 µ°
angular velocity	≈ 5 °/s
max. frequency	18.5 k Hz
Materials and Vacuum Options*	
steel base (-ST), titanium base (-TI)	
non-magnetic materials (-NM)	
-HV (10^{-6} mbar), -UHV / -UHVT (10^{-11} mbar)	



Clodsed-Loop with -S	
sensor resolution	25 µ°
closed-loop resolution	25 µ° MCS/SDC

The SR-2812 is the smallest closed-loop rotary positioner with an aperture of 9 mm. An integrated ceramic precision bearing is the reason for the ultra-high accuracy as well as the extremely low radial run-out.



Aperture: 9 mm
Linear dimensions are given in mm.

* positioner dimensions, mounting holes and travel range may vary and can be customized

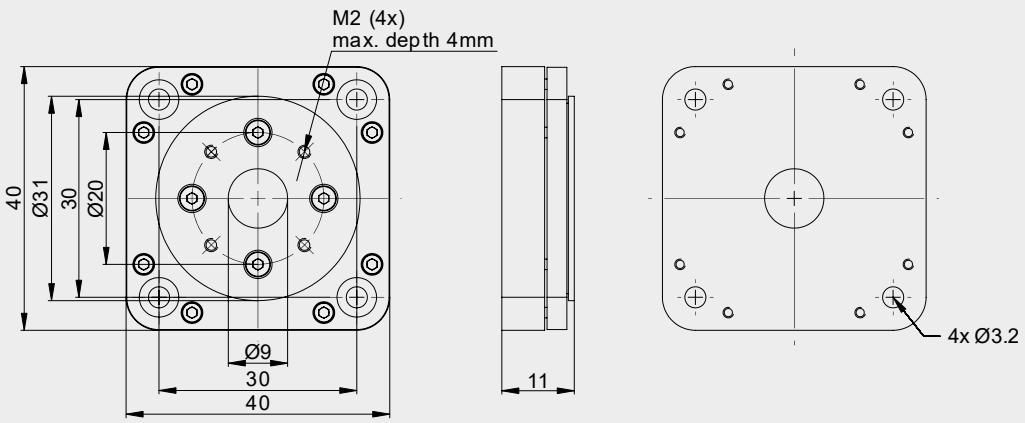
ROTARY *POSITIONERS*

SR-4011
High-Precision Rotary Positioners

resolution	rotation	normal load	vacuum	size
< 1 µ°	∞	10 N (1 kg)	down to 10^{-6} mbar	40 x 40 x 11 mm³

Mechanical Properties	
blocking torque M_B	5 Ncm
max. normal force F_N	10 N
positioner dimensions	40 x 40 x 11 mm³
stage diameter	Ø 31 mm
aperture	Ø 9 mm
weight	60 g
Positioning	
travel	∞
step width	0.3 - 2.0 m°
scan range	> 4 m°
scan resolution	< 1 µ°
angular velocity	≈ 15 °/s
max. frequency	18.5 kHz
Materials and Vacuum Options*	
steel base (-ST), titanium base (-TI)	
hard end stops (-E)	
higher blocking force (-D)	
-HV (10^{-6} mbar)	

Clodsed-Loop with -S	
sensor resolution	15 µ°
closed-loop resolution	15 µ° MCS/SDC
Clodsed-Loop with -L	
sensor resolution	60 µ°
closed-loop resolution	60 µ° MCS/SDC 1 m° (H)CU
Clodsed-Loop with -M	
sensor resolution	500 µ°
closed-loop resolution	500 µ° MCS/SDC 1 m° (H)CU



Aperture: 7 mm
Linear dimensions are given in mm.

* positioner dimensions, mounting holes and travel range may vary and can be customized

resolution	rotation	normal load	vacuum	size
< 1 µ°	∞	20 N (2 kg)	10^{-6} mbar	45 x 45 x 13.5 mm³

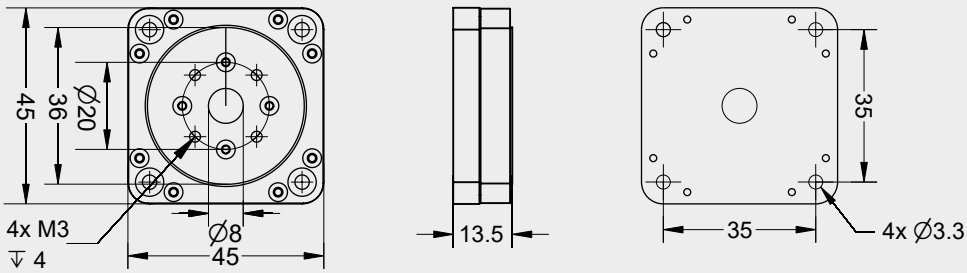
SR-4513

High-Precision Rotary Positioners

Mechanical Properties	
blocking torque M_B	5 Ncm
max. normal force F_N	20 N
positioner dimensions	45 x 45 x 13.5 mm³
stage diameter	Ø 36 mm
aperture	Ø 8 mm
weight	89 g
Positioning	
travel	∞
step width	0.3 - 3.0 m°
scan range	> 4 m°
scan resolution	< 1 µ°
angular velocity	≈ 15 °/s
max. frequency	18.5 kHz
Materials and Vacuum Options*	
steel base (-ST), titanium base (-TI)	
hard end stops (-E)	
higher blocking force (-D)	
-HV (10^{-6} mbar)	

Clodsed-Loop with -S	
sensor resolution	15 µ°
closed-loop resolution	15 µ° MCS/SDC
Clodsed-Loop with -L	
sensor resolution	60 µ°
closed-loop resolution	60 µ° MCS/SDC 1 m° (H)CU
Clodsed-Loop with -L	
sensor resolution	500 µ°
closed-loop resolution	500 µ° MCS/SDC 1 m° (H)CU

Due to the high-load stainless steel bearing, the SR-4513 is very robust. Compared to the footprint, the height is relatively low, making this positioner an excellent choice for integration into flat positioning systems.



Aperture: 9 mm
Linear dimensions are given in mm.

* positioner dimensions, mounting holes and travel range may vary and can be customized

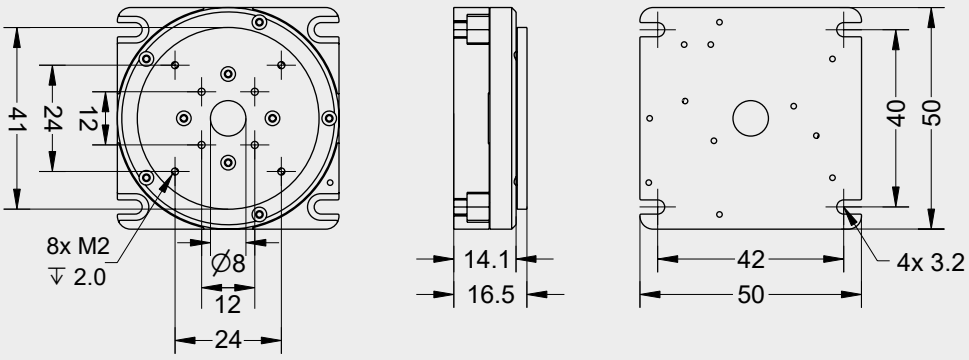
ROTARY *POSITIONERS*

SR-5018
High-Precision Rotary Positioners

resolution	rotation	normal load	vacuum	size
< 1 µ°	∞	20 N (2 kg)	down to 10^{-6} mbar	50 x 50 x 16.5 mm³

Mechanical Properties	
blocking torque M_B	7 Ncm
max. normal force F_N	20 N
positioner dimensions	50 x 50 x 16.5 mm³
stage diameter	Ø 41 mm
aperture	Ø 8 mm
weight	≈ 100 g
Positioning	
travel	∞
step width	0.2 - 2.0 m°
scan range	> 3.8 m°
scan resolution	< 1 µ°
angular velocity	≈ 15 °/s
max. frequency	18.5 kHz
Materials and Vacuum Options*	
steel base (-ST), titanium base (-TI)	
hard end stops (-E)	
higher blocking force (-D)	
-HV (10^{-6} mbar)	

Clodsed-Loop with -S	
sensor resolution	15 µ°
closed-loop resolution	15 µ° MCS/SDC
Clodsed-Loop with -L	
sensor resolution	60 µ°
closed-loop resolution	60 µ° MCS/SDC 1 m° (H)CU
Clodsed-Loop with -M	
sensor resolution	500 µ°
closed-loop resolution	500 µ° MCS/SDC 1 m° (H)CU



Aperture: 8 mm
Linear dimensions are given in mm.

* positioner dimensions, mounting holes and travel range may vary and can be customized

resolution	rotation	normal load	vacuum	size
< 0.5 µ°	∞	25 N (2.5 kg)	down to 10^{-6} mbar	57 x 57 x 14 mm³

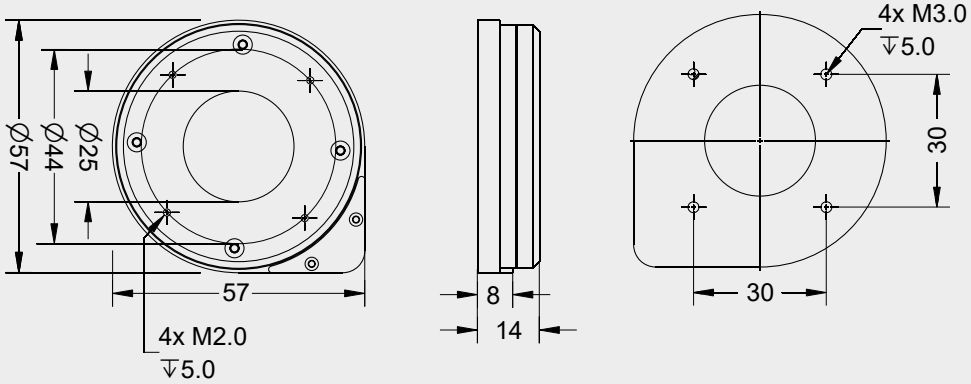
SR-5714

High-Precision Rotary Positioners

Mechanical Properties	
blocking torque M_B	5 N cm
max. normal force F_N	25 N
positioner dimensions	57 x 57 x 14 mm³
stage diameter	Ø 57 mm
aperture	Ø 25 mm
weight	110 g
Positioning	
travel	∞
step width	0.2 - 2.0 m°
scan range	> 2.3 m°
scan resolution	< 0.5 µ°
angular velocity	≈ 9 °/s
max. frequency	18.5 kHz
Materials and Vacuum Options*	
steel base (-ST), titanium base (-TI)	
higher blocking force (-D)	
-HV (10^{-6} mbar)	

Clodsed-Loop with -S	
sensor resolution	15 µ°
closed-loop resolution	15 µ° MCS/SDC

Designed with an aperture of 25 mm, the robust SR-5714 can be used for a broad range of applications.



Aperture: 25 mm
Linear dimensions are given in mm.

* positioner dimensions, mounting holes and travel range may vary and can be customized

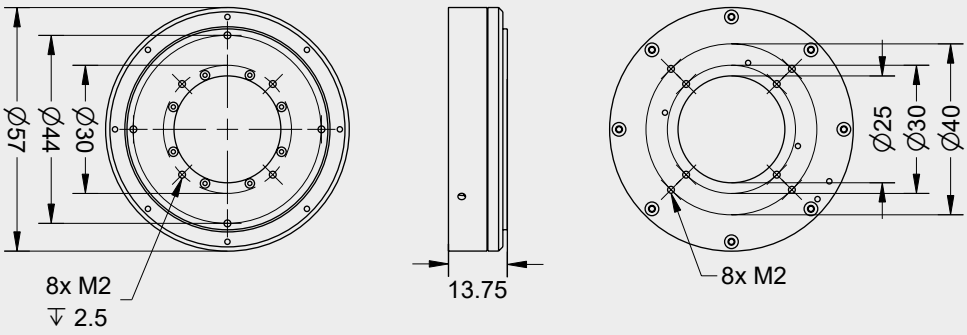
SR-5714C
High-Precision Rotary Positioners

resolution	rotation	normal load	non magnetic	vacuum	size
< 0.5 µ°	∞	25 N (2.5 kg)	available	down to 10^{-11} mbar	57 x 57 x 13.75 mm³

Mechanical Properties	
blocking torque M_B	5 N cm
max. normal force F_N	25 N
positioner dimensions	57 x 57 x 13.75 mm³
stage diameter	Ø 48 mm
aperture	Ø 25 mm
weight	105 g
Positioning	
travel	∞
step width	0.2 - 2.0 m°
scan range	> 2.3 m°
scan resolution	< 0.5 µ°
angular velocity	≈ 9 °/s
max. frequency	18.5 kHz
Materials and Vacuum Options*	
steel base (-ST), titanium base (-TI)	
non-magnetic materials (-NM)	
higher blocking force (-D)	
-HV (10^{-6} mbar), -UHV / -UHVT (10^{-11} m bar)	

Clodsed-Loop with -S	
sensor resolution	15 µ°
closed-loop resolution	15 µ° MCS/SDC

This robust positioner can be used also for applications in harsh environments, down to ultra-high vacuum environments.



Aperture: 25 mm
Linear dimensions are given in mm.

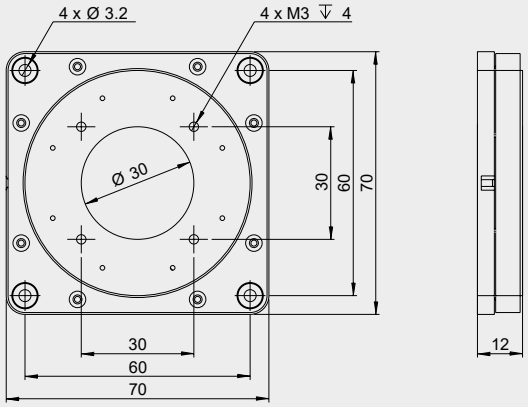
* positioner dimensions, mounting holes and travel range may vary and can be customized

SR-7012
High-Precision Rotary Positioners

resolution	rotation	normal load	vacuum	size
< 0.5 µ°	∞	25 N (2.5 kg)	down to 10^{-6} mbar	70 x 70 x 12 mm³

Mechanical Properties	
blocking torque M_B	10 Ncm
max. normal force F_N	25 N
positioner dimensions	70 x 70 x 12 mm³
stage diameter	Ø 60 mm
aperture	Ø 30 mm
weight	100 g
Positioning	
travel	∞
step width	0.2 - 2.0 m°
scan range	> 2.5 m°
scan resolution	< 0.5 µ°
angular velocity	≈ 9 °/s
max. frequency	18.5 kHz
Materials and Vacuum Options*	
steel base (-ST), titanium base (-TI)	
higher blocking force (-D)	
-HV (10^{-6} mbar)	

Clodsed-Loop with -S	
sensor resolution	15 µ°
closed-loop resolution	15 µ° MCS/SDC



Linear dimensions are given in mm.

* positioner dimensions, mounting holes and travel range may vary and can be customized

ROTARY *POSITIONERS*

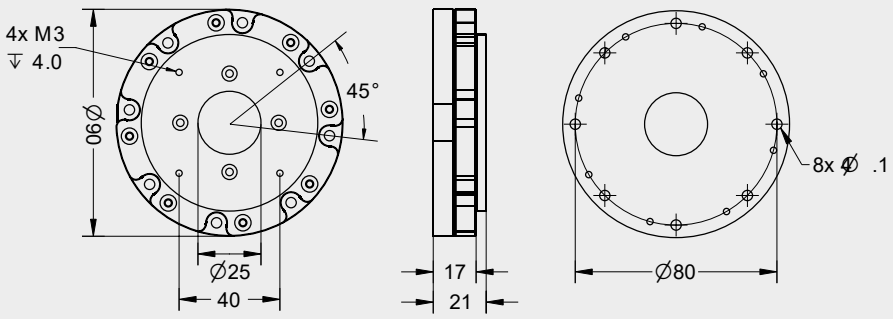
SR-7021
High-Precision Rotary Positioners

resolution	rotation	normal load	non magnetic	vacuum	size
< 0.5 µ°	∞	25 N (2.5 kg)	available	down to 10^{-11} mbar	90 x 90 x 21 mm³

Mechanical Properties	
blocking torque M_B	10 Ncm
max. normal force F_N	25 N
positioner dimensions	90 x 90 x 21 mm³
stage diameter	Ø 70 mm
aperture	Ø 25 mm
weight	400 g
Positioning	
travel	∞
step width	0.2 - 2.0 m°
scan range	> 3.1 m°
scan resolution	< 0.5 µ°
angular velocity	≈ 9 °/s
max. frequency	18.5 kHz
Materials and Vacuum Options*	
steel base (-ST), titanium base (-TI)	
non-magnetic materials (-NM)	
higher blocking force (-D)	
-HV (10^{-6} mbar), -UHV / -UHVT (10^{-11} m bar)	

Clodsed-Loop with -S	
sensor resolution	15 µ°
closed-loop resolution	15 µ° MCS/SDC

Currently, the SR-7021 is our strongest rotary positioner and frequently chosen for heavy duty applications.



Aperture: 82 mm
Linear dimensions are given in mm.

* positioner dimensions, mounting holes and travel range may vary and can be customized

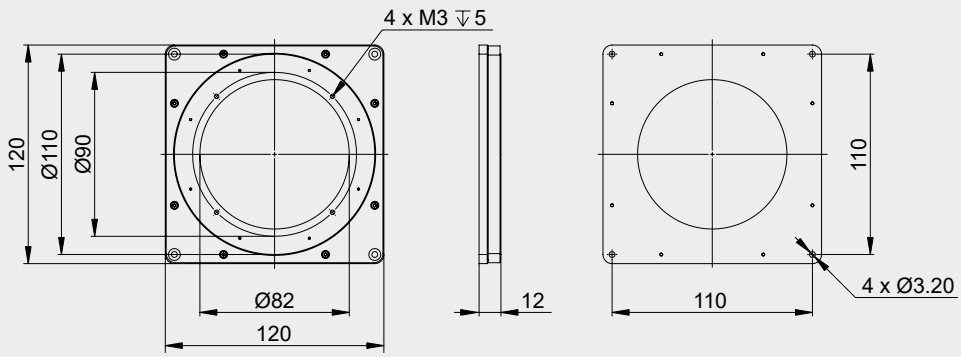
SR-12012
High-Precision Rotary Positioners

resolution	rotation	normal load	vacuum	size
< 1 µ°	∞	20 N (2 kg)	down to 10^{-6} mbar	120 x 120 x 12 mm³

Mechanical Properties	
blocking torque M_B	15 Ncm
max. normal force F_N	20 N
positioner dimensions	120 x 120 x 12 mm³
stage diameter	Ø 110 mm
aperture	Ø 82 mm
weight	320 g
Positioning	
travel	∞
step width	0.3 - 1.5 m°
scan range	> 4.0 m°
scan resolution	< 1 µ°
angular velocity	≈ 10 °/s
max. frequency	18.5 kHz
Materials and Vacuum Options*	
steel base (-ST), titanium base (-TI)	
higher blocking force (-D)	
-HV (10^{-6} mbar)	

Clodsed-Loop with -S	
sensor resolution	5 µ°
closed-loop resolution	5 µ° MCS/SDC

At the moment, the SR-12012 is our biggest rotary positioner and mostly chosen for special applications where a big aperture and highest precision is absolutely essential.



Aperture: 82 mm
Linear dimensions are given in mm.

* positioner dimensions, mounting holes and travel range may vary and can be customized