

xy - high speed positioner

nanoSXY 400

- 400µm range of motion in xy
- high z-axis stiffness for high load capability
- excellent guidance accuracy
- 12.5mm free clearance aperture
- short settling time

applications:

- high precision positioning
- materials research
- microscopy
- semiconductor test equipment

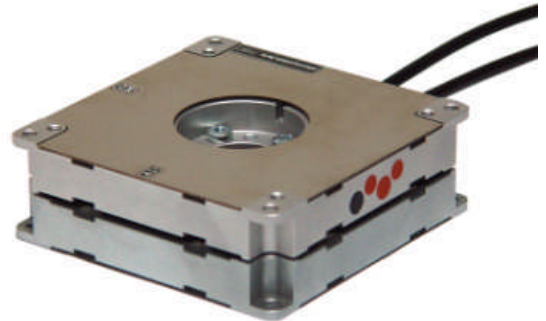


fig.: nanoSXY 400

Concept

The series nanoSXY has been developed for fast and precise positioning of optical and mechanical components. These systems are specially optimized for extreme z-axis stiffness.

The special parallel kinematics of the actuator guarantee guidance accuracy at its best.

The FEA designed actuating system, which is based on a hinge flexure design guarantees motion without mechanical play.

Overshooting is actively minimized with controllable set and reset forces.

While fully loaded, defined positions can be achieved within a few milli-seconds – making this series of stages an excellent choice for high speed scans used in industrial applications.

Specials

The optimized stage design by **piezosystem jena** of the series nanoX®, nanoSX and nanoSXY with bidirectional actuating system is characterized by active set and reset forces. Thus the essential features of these high speed positioners are the very high stiffness and natural resonant frequency. High loads can be easily moved in a highly dynamic manner. Also, the systems are temperature compensated – while changing the environmental temperature the stage keeps its position.

The active positioning in both senses of direction and the active acceleration and deceleration result in the highest stability and robustness against all external forces.

The nanoSXY 400 can be equipped with a high resolution measurement sensor, which realizes precise position control.

As an option, vacuum and cryogenic designs are also available.

Mounting/Installation

For stage mounting there are 4 tapped holes and 4 through holes available on the bottom of the actuator.

On the top side of the stage the tapped holes and through holes can be used to mount components.

Even with these compact dimensions this actuator offers a free central aperture of 12.5mm. Thus making the nanoSXY 400 system ideally suited for beam alignment or fiber feed through applications.

Technical Data:

series nanoSXY		unit	nanoSXY 400	nanoSXY 400 CAP
part no.		-	T-224-00	T-224-06
axes		-	x, y	
motion open loop ($\pm 10\%$)*		x, y	μm 400	
motion closed loop ($\pm 0,2\%$)*		x, y	-	320
capacitance ($\pm 20\%$)**		x, y	μF 3.6	
measurement system		-	-	capacitive
resolution*** open loop		x, y	nm 0.6	
closed loop		x, y	-	1
typ. repeatability		nm	-	± 9
resonant frequency		x, y, z	300 / 450 / 800	280 / 380 / 800
additional load = 50g		x, y	230 / 350	215 / 250
additional load = 100g		x, y	190 / 280	180 / 200
additional load = 300g		x, y	125 / 130	120 / 125
stiffness		x, y, z	N/ μm 0.35 / 0.35 / 2.5	
max. push / pull force open loop		x, y	N 75 / 75	
max. push / pull force closed loop****		x, y	-	13 / 13
blocking force		N	120	
max. load		N	50	50
rotational error		x, y, z	μrad 5 / 5 / 5	
dimensions (l x w x h)		mm	60 x 60 x 20	87 x 60 x 30
central aperture		mm	\varnothing 12.5	
voltage range		V	-20 ... +130	
connector	voltage	-	ODU series L 3pin	
	sensor	-	-	LEMO 0S.650
cable length		m	1	1.6
min. bend radius of cable		mm	>15	
temperature range		$^{\circ}\text{C}$	-20 ... +80	
material		-	stainless steel / aluminum	
weight		g	300	410

* typical value measured with 30V300 nanoX amplifier

** typical value for small electrical field strength

*** The resolution is only limited by the noise of the power amplifier and metrology.

****max. force at which the system operates in closed loop mode within the specification

recommended configurations:

actuator	nanoSXY 400	T-224-00
amplifier/controller	2 x 30V300 nanoX	E-468-011
actuator	nanoSXY 400 CAP	T-224-06
amplifier/controller	2 x ENV 300 nanoX CAP	E-278-600
power supply unit	ENT 400	E-103-33
PC interface	EDA 4	E-202-40
casing for all modules	86 TE	E-103-91
actuator	nanoSXY 400 CAP digital	T-224-06D
amplifier/controller	2 x EVD 50 CL	E-720-300
casing for d-Drive		E-751-000

Please pay attention to our “notes for mounting”, which are available as download on our homepage.