nanoMIPOS 400

Microscope objective/ lens positioning system

Concept:

The nanoMIPOS offers a nanopositioning and scanning range up to 400 µm in open loop operation, as well as 320 µm in closed loop. The system can be assembled with objectives of up to 39 mm in diameter. The sophisticated monolithic guidance design, consisting of solid flexure hinges, means the trajectory is free of mechanical play and friction – a feature offered by all **piezosystem jena** stages. The advanced nanoMIPOS 400 design is FEA optimized to show an outstanding minimum of lateral and rotational offset, as well as excellent guidance accuracy, while offering robustness against off center and lateral loads.
To avoid drift and hysteresis, the nanoMIPOS 400 can be equipped with a capacitive measurement system. In combination with the **piezosystem jena** controller, this system offers high stability, linearity, repeatability, and accuracy in closed loop operation.

Image: nanoMIPOS 400 CAP

Specials:

The nanoMIPOS 400 design is temperature compensated and will keep its position while the environmental temperature changes. Because of the bidirectional gear design, guidance and preload are separated, which allows the nanoMIPOS 400 design to offer equal and highest set and reset forces. This is an essential feature for nanoscan applications that require short settling times and minimized overshooting. The nanoMIPOS 400 is suited for upside down use in inverted microscopes. Parfocal tube extensions for each threading type are available as an accessory. Vacuum, cryogenic, or nonmagnetic versions are available on demand.

Interfaces:

1. Screw the objective into the MIPOS

2. Screw the Flex-Adapter into the microscope

3. Clamp the MIPOS on the Flex-Adapter using the attachment screw

Spacer rings to compensate for the extended optical path and flex adapters for all common threads are available

Product highlights:

- 400 µm focusing range and sub-nm step width
- max. lens diameter of 39 mm
- temperature compensated
- shortest settling times due to high stiffness
- universal use by thread adapter
- optional integrated capacitive feedback sensor
- applicable for standard and inverse microscopy

Applications:

- surface scanning and analysis
- AFM microscopy
- biotechnology (e.g. cell scanning)
- beam focusing for printing processes
- semiconductor test equipment

Tel: +49 (3641) 66880 • Fax: +49 (3641) 668866
info@piezojena.com • http://www.piezosystem.com

piezosystemjena
incredibly precise

nanoMIPOS 400

Technical data:

nanoMIPOS series		unit	nanoMIPOS 400	nanoMIPOS CAP
part no. for thread	**M25x0.75**	-	O-543-00	O-543-06
	W0.8x1/36" (RMS)	-	O-544-00	O-544-06
	M26x0.75	-	O-545-00	O-545-06
	M27x0.75	-	O-546-00	O-546-06
	M32x0.75	-	O-547-00	O-547-06
axis		-	Z	
motion in open loop (±10%)*		µm	400	
motion in closed loop (±0,2%)*		µm	-	320
capacitance (±20%)**		µF	6	
integrated measurement system		-	-	capacitive
resolution open loop***		nm	0.8	
resolution closed loop***		nm	-	1
typ. repeatability		nm	-	10
resonant frequency		Hz	300	
additional load = 80 g		Hz	250	
additional load = 100 g		Hz	220	
additional load = 300 g		Hz	140	
stiffness		N/µm	0.3	
blocking force		N	120	
max. load		N	10	
rotational error		µrad	< 5	
voltage range		V	-20 ... +130	
connector**	**voltage**	-	ODU series L 3pin	
	sensor	-	-	LEMO 0S.650
cable length		m	1	1.6
material		-	stainless steel/aluminum	
dimensions (L x W x H)		mm	65 x 45 x 40	
weight		g	300	315
max. lens diameter		mm	39	
max. lens weight		kg	1	
option for standard microscopes		-	yes	
option for inverse microscopes		-	yes	

* typical value measured with 30DV50 nanoX amplifier
** typical value for small electrical field strength
*** The resolution is only limited by the noise of the power amplifier and metrology.
**** In combination with a digital controller unit, the system comes with a Sub-D connector. The part number is extended by the suffix "D".

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Recommended Configuration:

	Product name	Part. No Suffix.
Actuator	nanoMIPOS 400 CAP digital	O-543-06D
Amplifier/ Controller	30DV50	E-754-000

The MIPOS series of micro lens and objective positioning systems offers a travel range from 20 µm up to 500 µm in z-axis. Available for standard and inverted microscopes.

Additional microscopy stages for XY axes available under "series-PXY-AP"

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