

MIPOS 16-158

Z-axis high resolution positioner for interferometric applications

Concept:

The MIPOS 16–158 is specifically designed for high precision positioning of optical systems with accuracy in the sub-nanometer range. The high resolution and fast response time of the MIPOS 16-158 offer new possibilities, especially for white light interferometers.

Based on its unique design, which includes a 104 mm aperture and a stage height of 42 mm, the MIPOS 16-158 offers technical specifications that match the requirements for white light interferometry. White light interferometry has become one of the most effective 3D surface measurement methods. Piezoelectric actuators are able to significantly improve accuracy and speed due to their virtually unlimited resolution and fast response time. The MIPOS 16-158 can achieve a focus range of up to 16 μm and a single step resolution of less than 0.1 nm, while operating in a voltage range between – 20 and 130 V.

The MIPOS 16-158 is made for integration into metrology set-ups and devices. The robust drive is equipped with a high resolution piezo based actuating system. The internal mechanical pre-load design enables the MIPOS to operate in highly dynamic environments while reducing the settling time down to microseconds.

Specials:

A key feature is the high load capability of 3 kg (6 lbs). Optical setups and components can be moved either horizontally or vertically without affecting accuracy and speed.

Interfaces:

The MIPOS 16-158 can be easily controlled by an analog low voltage signal. Therefore, piezosystem jena provides the nano Box USB – an ultra-compact single channel controller with USB 2.0 interface.



Image: MIPOS 16-158

Product highlights:

- 16 μm adjustment range (open loop)
- large inside space available
- high stiffness for lowest settling times
- typ. step resolution 0.04 nm
- additional load of up to 3 kg
- mounting orientation either horizontal or vertical

Applications:

- metrology
- white light interferometry
- probe alignment
- surface scanning processes

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Technical data:

MIPOS 16-158	unit	MIPOS 16-158	
part no.	-	O-309-50	
axis	-	Z	
motion in open loop ($\pm 10\%$)*	μm	16	
capacitance ($\pm 20\%$**)	μF	5.4	
integrated measurement system	-	none	
resolution open loop***	nm	0.04	
resonant frequency	unloaded	Hz	823
	with load: 3000g	Hz	247
stiffness	N/ μm	8.2	
max. load	N	5kg (horizontal)	
rotational error (full motion) [roll]	μrad	< 8	
voltage range	V	-20...+130	
connector (voltage signal)	-	LEMO 0S.302	
cable length	m	1.0	
min. bend radius of cable	mm	>15	
material	-	aluminium	
dimensions (diameterxheight)	mm	$\varnothing 158 \times 42$	
central aperture	mm	$\varnothing 104$	
weight	g	1240	
max. lens weight	g	3000	

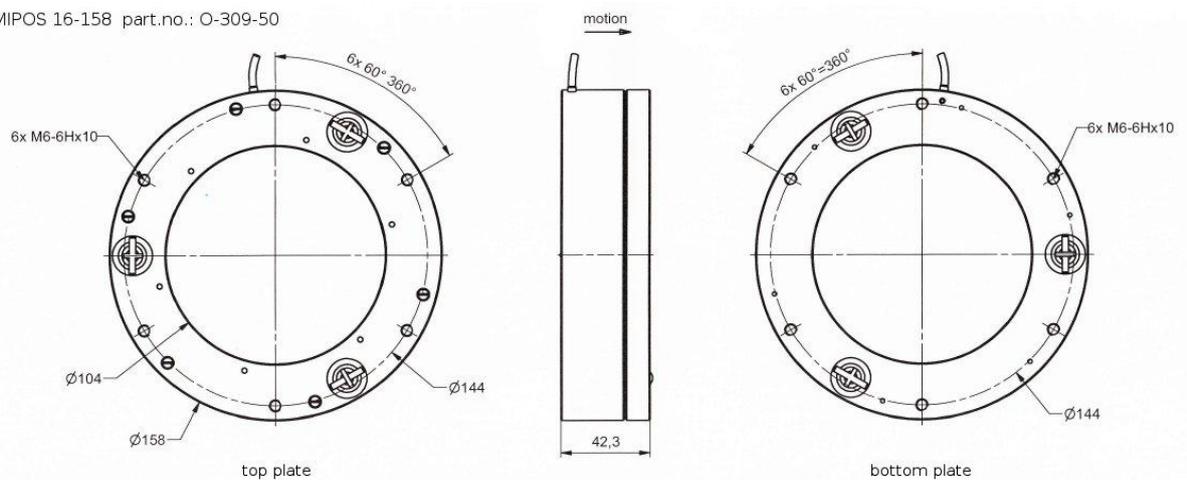
* typical value measured with NV40/3 amplifier

** typical value for small electric field strength

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

Technical drawing:

MIPOS 16-158 part.no.: O-309-50



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