

MIPOS 16

Objective Positioner/Piezo Phase Shifter for Interferometry

Concept:

The MIPOS 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 offer new possibilities, especially for white light interferometers.

Based on its unique design, which includes an aperture up to 104 mm and a stage height of down to 42 mm, the MIPOS 16 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 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 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 (7 lbs). Optical setups and components can be moved either horizontally or vertically without affecting accuracy and speed.

Interfaces:

The MIPOS 16 can be easily controlled by i.e. an analog low voltage signal. Therefore, piezosystem jena provides a variety of compatible controllers.



Image: MIPOS 16-158

Product highlights:

- 16 μm adjustment range (open loop)
- large aperture
- high stiffness for lowest settling times
- typ. step resolution 0.04 nm
- additional load of up to 3 kg
- for 4" and 6" objectives (others upon request)
- horizontal installation recommended

Applications:

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

MIPOS 16

Technical data:

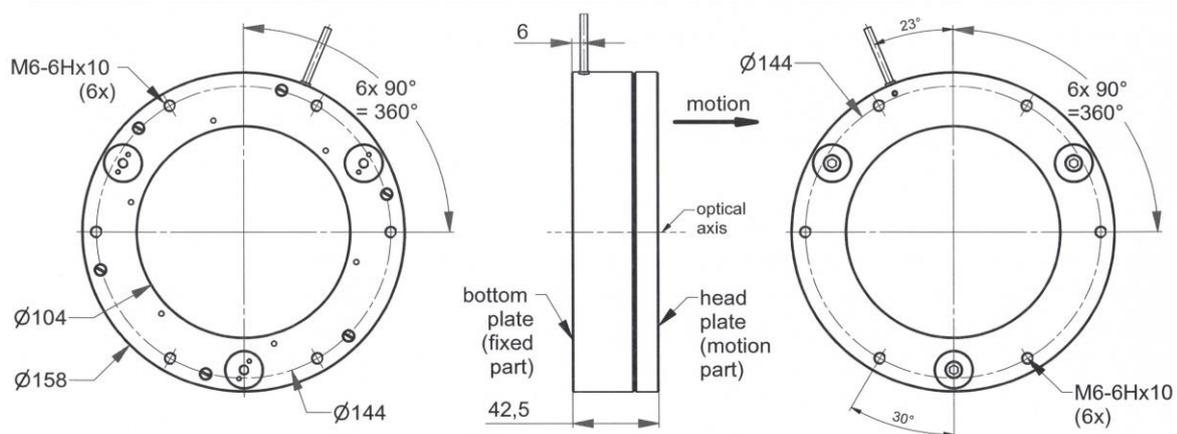
	unit	MIPOS 16-158	MIPOS 16 M85
part no.	-	O-309-50	O-309-10
axis	-	Z	Z
motion in open loop ($\pm 10\%$)*	μm	16	16
capacitance ($\pm 20\%$)**	μF	5.4	5.4
integrated measurement system	-	none	none
resolution open loop***	nm	0.04	0.04
resonant frequency	unloaded	Hz	823
	with load: 3000g	Hz	247
stiffness	N/ μm	8.2	
max. load	kg	3 (horizontal)	
rotational error (full motion) [roll]	μrad	< 8	< 8
voltage range	V		-20...+130
connector (voltage signal)	-		LEMO 0S.302
cable length	m		1.0
material	-		aluminium
dimensions (diameterxheight)	mm	$\text{\O}158 \times 42$	$\text{\O}93 \times 50$
central aperture	mm	$\text{\O}104$	$\text{\O}61$
weight	g	1240	300

* 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

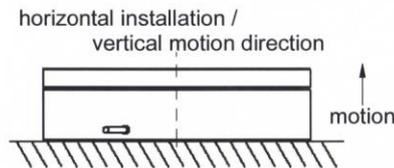
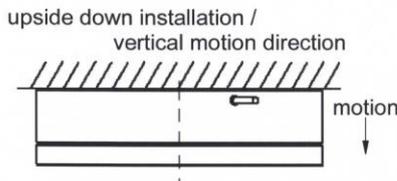
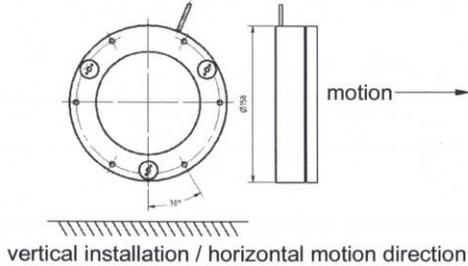
Technical drawing MIPOS 16-158:



MIPOS 16

Technical information for installation and integration:

position of installation / identification motion direction

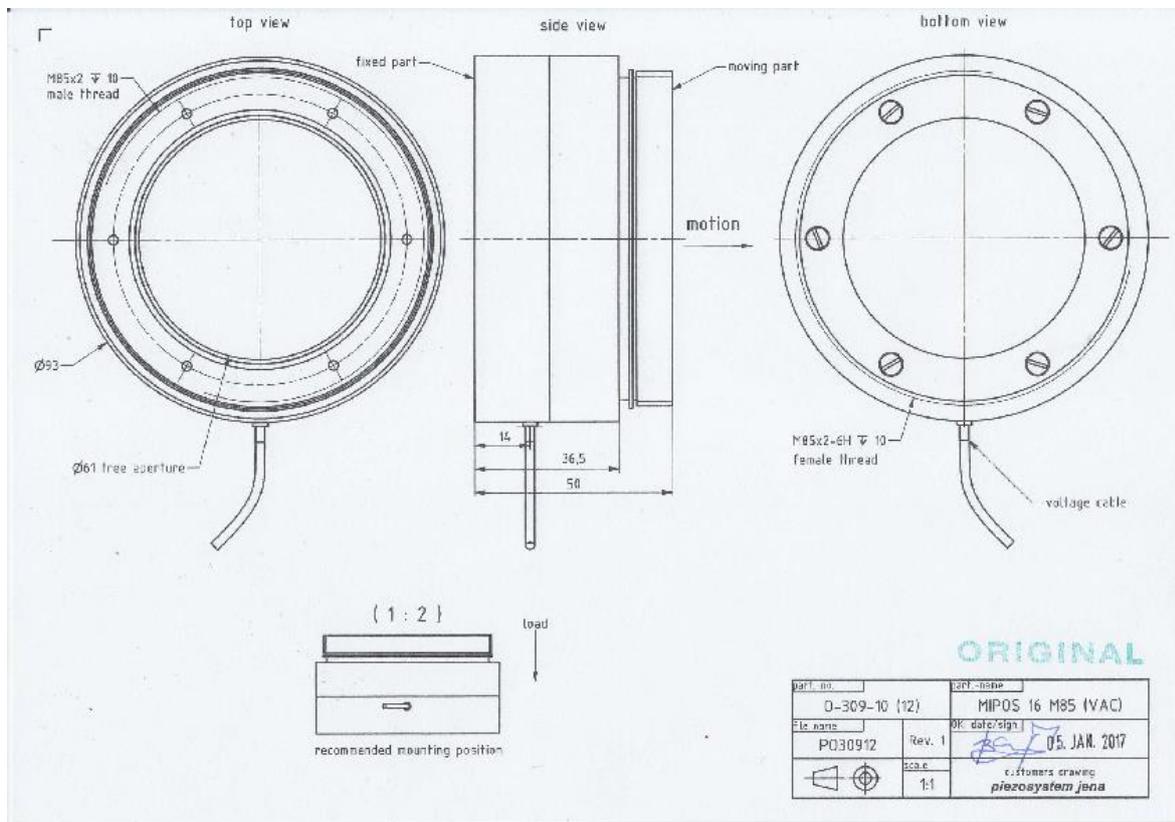


maximum payload for position of installation

- vertical 3kg with 150mm distance to motion plate
4kg mounted directly on motion plate
- horizontal 5kg mounted directly on motion plate
- upside down 2kg mounted directly on motion plate

center of mass must be aligned to the optical axis!

Technical drawing MIPOS 16 M85:



All MIPOS 16 models are available as vacuum versions and with different threading.

Rights reserved to change specifications as progress occurs without notice!

info@piezosystem.com • <http://www.piezosystem.com>