

PZ 250

z-axis piezo stage for microscopes

Concept:

The piezo translation stage series PZ 250 SG are designed for sub-nm precise positioning and scanning movement of probes under a microscope. The footprint of these stages is made for integration into standard microscope stages, e.g. Nikon, Zeiss. With a travel range of up to 350µm in z-axis, the system reaches a superior positioning resolution. The PZ 250 SG series fulfills the highest demand in accuracy and acceleration for scanning application in combination with an integrated closed loop system.

Specials:

The PZ 250 SG series is equipped with a high resolution feedback sensor. The position is permanently controlled during movement. The piezo electric actuator based PZ 250 SG z-axis elevator stage achieves outstanding parameters for positioning accuracy and repeatability also while loaded with a mass.

Interfaces:

The elements of the series PZ 250 SG are made for integration into standard microscope stands. They are available with different footprints according to the used type of microscope.

Components can be mounted on the top plate by threaded holes and can be accurately affixed. This is recommending especially for high speed scanning application with high load masses.

Recommended piezo controller: 30DV50 (digital servo controller part.: E-754-300)



image: PZ 250 SG (part: S-627-31D)

Product highlights:

- accurate parallel z-axis motion
- up to 350µm motion range
- without mechanical play
- easily integration into microscopes because of varying footprints
- threaded holes for easy mounting of probes and components
- high dynamic range

Applications:

- 3D measurement of topology and roughness
- surface inspection
- confocal microscopy
- metrology and semiconductor

PZ 250

Technical data

linear positioning stage	unit	PZ 250 SG	PZ 250 SG
designed for microscope stages****:		NIKON LV Series	Märzhäuser Scan 100
			
		part no.: S-627-31D	part. no.: S-627-41D
stage footprint size (LxWxH)****	mm	122 x 88 x 5	160 x 116 x 3
axes	-	Z	
motion open($\pm 10\%$)/closed loop	μm	350 / 250	
capacitance ($\pm 20\%$)**	μF	14.4	
resolution ***	nm	0.7	
feed back sensor	-	strain gage	
typ. repeatability	nm	$\pm 2\text{nm}$	
typ. non-linearity	%	0.04%	
typ. resonant frequency (unloaded)	Hz	320	
with 100g load	Hz	200	
with 300g load(max. recommended load)	Hz	150	
stiffness	N/ μm	0.3	
voltage range	V	-20...130V	
connector	-	D-Sub15	
cable length	m	2	
bending radius of cable	mm	15	
operating temperature	$^{\circ}\text{C}$	+5 $^{\circ}\text{C}$... +35 $^{\circ}\text{C}$	
material	-	Aluminum/Stainless Steel	
stage outside dimensions (L x W x H)	mm	132 x 98 x 40	170 x 126 x 38

* typical value measured with 30DV50 amplifier

** typical value for small electrical field strength

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

**** the footprint is made for the standard size of these microscope stages. Other footprints available on request.

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