

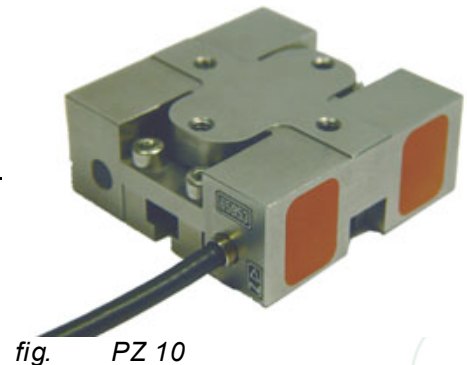
## PZ 10

### z-axis piezo stage

- ◆ *10µm range of motion in Z*
- ◆ *high z-axes stiffness for high load capability*
- ◆ *excellent guidance accuracy*
- ◆ *short settling time*
- ◆ *sub-nm-resolution*

#### applications

- high precision positioning with sub-nm accuracy for application in the field of scanning, microscopy, metrology and alignment



#### CONCEPT

The PZ 10 piezoelectrical geared stage offers a vertical stroke of up to 10µm. As a result of the solid state phenomena, the resolution is practically unlimited down to the sub-nm range and the strain response is nearly at the ceramics sonic speed. The FEA designed actuating system based on flexure hinges guarantees excellent guidance accuracy without parasitic motion. The durability of the PZ 10 stages makes it an excellent choice for permanent use in industrial applications.

#### SPECIALS

Main advantages of the PZ 10 stage are shown in dynamical applications as well in static. The stage is well prepared for high off center loads use.

So the stage features a maximum of stiffness in stroke direction and transverse to the stroke, combined with a high load capacity and robustness against lateral mishandling. Due to the excellent static properties, the dynamical behavior shows a proper frequency spectrum considering resonances in the upper level.

The sophisticated guidance design suppresses almost all lateral motion components with lateral runout of only a few nm. In addition, the superior guidance accuracy shows only a few µrad rotational error for all axes.

All these features exhibit a very cost effective solution for high load applications.

#### MOUNTING / INSTALLATION

Following customer specifications, the PZ 10 is equipped with four 4-40UNC tapped holes arranged within a bore hole circle of 0.875in. So additional parts can easily be mounted to the top plate. The bottom plate raster is the same as the top plate's. Flat head screws for fastening have to be inserted laterally and be fixed thru the tapped holes of the top plate by a wrench. Vacuum and cryogenic designs are available on demand as well, body material variations of Invar, SuperInvar, aluminum or titanium too.



technical data:

part.no.	unit	PZ 10 T-102-70	
active axis	-	z	
stroke ( $\pm 20\%$ )	$\mu\text{m}$	9.0	
hysteresis ( $\pm 20\%$ )	%	18	
resolution <sup>**</sup>	nm	0.02	
electrical capacitance $\pm 20\%$	$\mu\text{F}$	3.6	
voltage range	V	-10..150	
max. load	N	2000	
push/pull force capacity	N	3500/1000	
stiffness	N/ $\mu\text{m}$	350/100	
resonances	0g	kHz	5.0
	50g	kHz	4.5
	100g	kHz	4.0
	300g	kHz	3.0
rotational error	roll (X)	$\mu\text{rad}$	5
	pitch (Y)	$\mu\text{rad}$	5
	yaw (Y)	$\mu\text{rad}$	5
cable length	m	1.0	
connector	-	LEMO	
dimensions	mm	36.5x36.5x15	
self-weight	g	110	
temperature range	operating	$^{\circ}\text{C}$	-20..80
	non-operating	$^{\circ}\text{C}$	-40..120
body material		stainless steel	

\* open loop (open loop resolution is restricted by voltage noise only)

\*\* measured with power amplifier E-248-600