

2-axis mirror tilting system

series PSH x/2

- high dynamic tilting systems
- tilting axes in perpendicular orientation
- +/- tilting – up to 16mrad optical
- high resonant frequency due to high stiffness
- sub- μ rad resolution
- micro second rise time

application:

- beam steering
- scanning processes
- precise adjustment of optical components
- beam stabilization



fig.: PSH10/2

Concept

The series PSH x /2 are 2-axis tilt systems are designed for highly dynamic applications. This is due to a direct drive principle without flexure hinges. The two tilting axes are perpendicular to each other. The tilting stage is designed for “plus-minus tilting” up to ± 4 mrad mechanical – optical up to 16mrad total. Because the mirror is being pushed up on one side and pulled down on the other during tilting, forces are generated; this makes the system very well suited for dynamic applications. The direct drive principle guarantees a rise time in micro second range. The changing input signal causes a change in the electrical field of the actuator, which produces near real-time motion. This makes the systems ideal for laser beam stabilization applications.

Specials

If the PSH x/2 is equipped with strain gage feedback sensors, available as an option, the tilting range can be defined and controlled with an accuracy and reproducibility that is within a few micro-radians. The casing material can be changed according to the application. This makes the series PSH x/2 useable for vacuum and temperature sensitive applications. To support use in dynamical applications, the piezo electrical actuators are isolated only by flexible material.

Notes for mounting

The size of the moving platform, 22x22mm, allows mirrors or optics up to 1” in diameter to be mounted. There are 4 threaded holes located in the top plate to easily mount other components such as mirrors or prisms. A mirror mount adapter is available as an accessory. The part number for ordering is K-110-90. The mirror mount adapter must be affixed with screws on the moving platform so the adapter platform can be quickly exchanged. Please see also our “notes for mounting”, on our website. The series PSH x/2 comes with an integrated pre-load which makes the system well suited for high dynamical applications within the range of its resonant frequency.

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technical datas:

series PSH x/2	dimension	PSH 5/2	PSH 10/2	
part. no.	-	K-105-00	K-110-00	
axes	-	x y		
max. tilt per axis – open loop ($\pm 10\%$)	mrad	± 2	± 4	
capacitance per axes ($\pm 20\%$)*	μF	1.7	3.4	
resolution open loop**	μrad	0.01	0.02	
resonant frequency (@5g)	Hz	3600	3500	
stiffness in z-axis	Nm/mrad	0.5	0.5	
output voltage	V	-20 ... +130		
connector	voltage	- ODU 3pin		
cable length	m	1		
min. bending radius of cable	mm	>15		
material	-	stainless steel, aluminium		
dimension (l x w x h)	mm	22x22x29.5	22x22x47.5	
weight	g	40	52	
series PSH x/2 with integrated sensor system	dimension	PSH 5/2SG	PSH 10/2SG	
part. no.	-	K-105-01	K-110-01	
max. tilt per axis – closed loop ($\pm 0.2\%$)	mrad	± 2	± 4	
typ of sensor	-	DMS		
resolution**	closed loop	μrad	0.1	0.2
typ. repeatability		μrad	0.4	0.4
connector	sensor	-	LEMO 0S 304	
cable length	m	1.2		
dimension (l x w x h)	mm	22x22x35	22x22x53	
weight	g	85	95	

* typical value for small electrical field strength

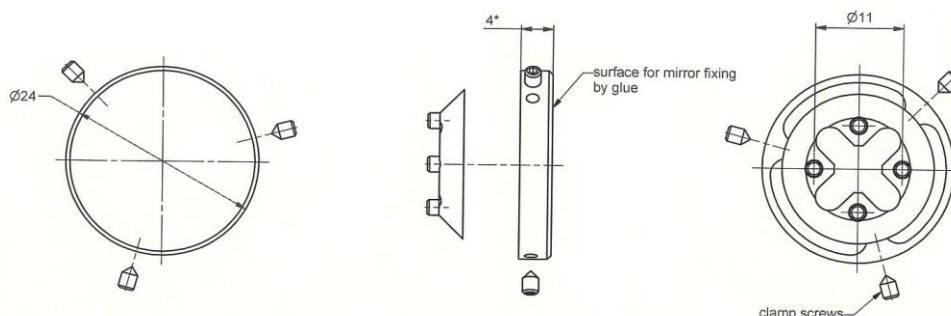
** the resolution of piezo electrical actuator is limited by the noise characteristic of the applied signal only

recommended controller unit

	series of amplifier	part number	number of channels required
analog controller OEM-version	30V300 nanoX	E-468-011	2
analog controller 19" casing	system ENV nanoX	configuration available after request	2
digital controller OEM-version	30DV50	E-754-300	2
digital controller 19" casing	system d-Drive	configuration available after request	2

accessories

Mirror mount adapter for series PSH x/2, part number: K-110-90



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