

PSH x/2 Series

2-axes mirror tilting system

Concept:

The PSH x/2 elements are 2-axes tilt systems 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" of up to ± 4 mrad mechanically- up to 16 mrad total optically. 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 the microsecond 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:

There is the option of equipping the PSH x/2 systems with strain gauge feedback sensors which allows the user to define the tilting range and control the element with high accuracy and reproducibility within a few micro radians. The casing material can be changed according to the application. This makes the PSH x/2 series usable in vacuum and temperature sensitive applications. To support their use in dynamic applications, the piezo electric actuators are only isolated by flexible material.

Interfaces:

The size of the moving platform, $22 \times 22 \text{ mm}^2$, allows mirrors or optics with diameters up to 1" 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 that the adapter platform can be quickly exchanged. Please also see our "notes for mounting" on our website. The PSH x/2 series comes with an integrated pre-load which makes the system well suited for highly dynamic applications within the range of its resonant frequency.



Image: PSH 10/2

Product highlights:

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

Applications:

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

PSH x/2 Series

Technical data:

PSH x/2 series	unit	PSH 5/2	PSH 10/2
part no.	-	K-105-00	K-110-00
axes	-		X,Y
max. tilt per axis in open loop ($\pm 10\%$)	mrad	± 2	± 4
capacitance per axis ($\pm 20\%$)*	μF	1.7	3.4
resolution in open loop**	μrad	0.01	0.02
resonant frequency (at 5 g)	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
material	-		stainless steel, aluminum
dimension (l x w x h)	mm	22x22x29.5	22x22x47.5
weight	g	40	52
PSH x/2 series with integrated sensor system	unit	PSH 5/2 SG	PSH 10/2 SG
part no.	-	K-105-01	K-110-01
max. tilt per axis in closed loop ($\pm 0.2\%$)	mrad	± 2	± 4
type of sensor	-		SG
resolution in 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 the piezo actuator is only limited by the noise characteristic of the applied signal

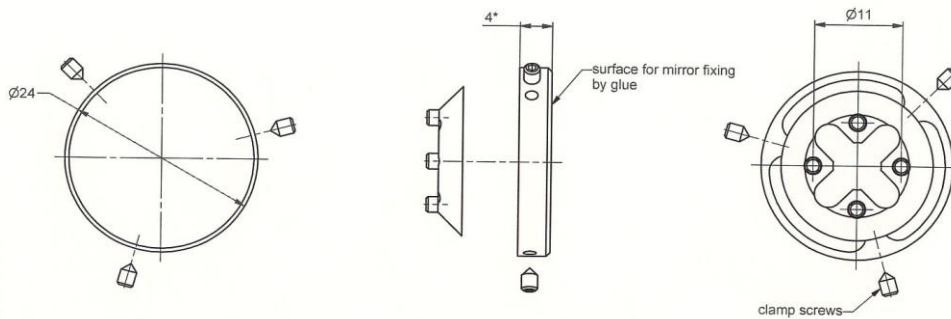
PSH x/2 Series

Recommended controller unit:

	amplifier series	part number	no. of channels required
analog controller OEM-version	30V300 nanoX	E-468-011	2
analog controller 19" casing	ENV nanoX system	configuration available upon request	2
digital controller OEM-version	30DV50	E-754-300	2
digital controller 19" casing	d-Drive system	configuration available upon request	2

Accessories:

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



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