

## 1-axis mirror tilting systems

### series PSH 35

- tilt angle 35mrad (2°)
- high dynamics due to high resonant frequency
- sub- $\mu$ rad resolution
- compact size

#### applications:

- laser alignment
- laser beam stabilization
- scanning systems
- laser beam metrology
- medical engineering



fig.: PSH 35

Concept	Specials	Mounting / Instructions
<p>The PSH 35 mirror tilting systems were developed for the dynamic motion of small mirrors. A new construction principle makes it possible to reach a tilting angle of 35 mrad. The element is driven with a maximum voltage of 130 V. Based on the technical design, the system can reach an outstanding performance for position resolution. In fact the resolution is only limited by the signal noise of the control piezo amplifier. With the <b>piezosystem jena</b> amplifier a typical resolution of 0.07<math>\mu</math>rad can be reached. The PSH 35 can easily be integrated into more complex stages because of its compact size.</p>	<p>The PSH 35 SG tilting system comes with an integrated feedback sensor for closed loop control. A certain position can be adjusted precisely and a previously measured tilting value or deflecting angle can be adjusted again. In combination with the digital piezo controller series <b>d-Drive</b><sup>®</sup> the closed loop settings can be adjusted to the application needs. Also an integrated Notch-Filter is available to overcome unwished resonant frequencies. The PSH 35 tilting mirror systems are available in vacuum compatible version too.</p>	<p>The elements are normally delivered without a mirror. A mirror can be attached by gluing. The weight of the mirror should be in the range of few grams to keep the dynamic performance of the PSH system in a reasonable range. Please note that the used Glue for mounting of the mirror can't enter the flexure hinges inside. This could be lead to a damage of the actuating system. The PSH casing is provided with four trough holes to combine the tilting system easily with other devices. Don't hesitate to contact us for further information.</p>

**technical datas:**

serie PSH 35		unti	PSH 35	PSH 35 SG
part. no.:		-	K-232-00	K-232-01
axes		-	1	1
tilting range	open loop* ( $\pm 10\%$ )	mrad (degree)	35 ( $2^\circ$ )	35 ( $2^\circ$ )
	closed loop* ( $\pm 0.2\%$ )		-	26 ( $1.5^\circ$ )
capacitance per axis ( $\pm 20\%$ )**		$\mu\text{F}$	3.8	
resolution***	open loop	$\mu\text{rad}$	0.07	0.07
	closed loop		-	0.7
typ. repeatability		$\mu\text{rad}$	-	3.2
resonant frequency ( $\pm 20\%$ ) (without pre-load)		Hz	1200	
voltage range		V	-20...+130	-20...+130
connector****	voltage	-	LEMO 05.302	LEMO 05.302
	sensor		-	LEMO 05.304
cable length		m	1	1.2
min. bend radius of cable		mm	>15	
material		-	stainless steel /aluminium	
dimensions (l x w x h)		mm	60x14x27	60x20x27
weight		g	50	65

\* typical value measured with NV 40/3 controller (closed loop: NV 40/3 CLE)

\*\* typical value for small electrical field strength

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

**\*\*\*\* additional variations**

Product name	Description	Specials	Part. No.
PSH 35 SG <b>D</b> igital	Version for digital controller series d-Drive and the series NV120/1 and NV40/3 controller in combination with additional functionalities: Interchange ability, ASI	Connector Sub-D 15	K-232-01 <b>D</b>
PSH 35 SG <b>E</b> xtern	Version with sensor pre-amplifier for the use of additional functionalities: Interchange ability, ASI	Connector sensor ODU 4pin	K-232-01 <b>E</b>
PSH 35 Vacuum	Compatible for vacuum application down to $10^{-7}$ hPa	60cm cable length vacuum side; 2m cable length air side	K-232-02

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