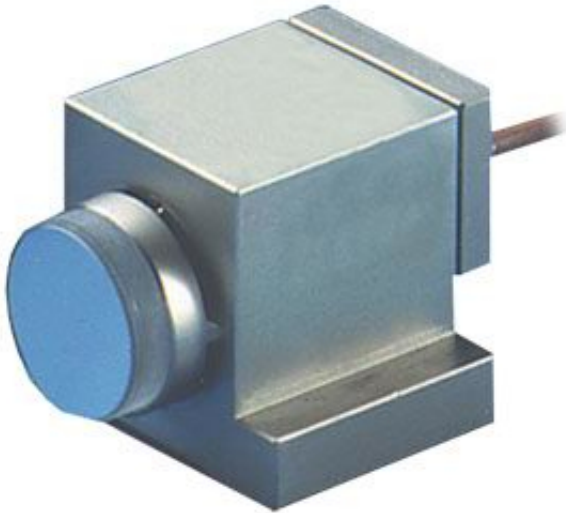


## Piezo Tip/Tilt Mirror

High Dynamics and Compact



### S-224 • S-226

- Optical beam deflection to 4.4 mrad
- Sub-mrad resolution
- Sub-ms response time
- Includes BK7 mirror
- Version available with position sensor

#### Outstanding lifetime thanks to PICMA® piezo actuators

The patented PICMA® piezo actuators are all-ceramic insulated. This protects them against humidity and failure resulting from an increase in leakage current. PICMA® actuators offer an up to ten times longer lifetime than conventional polymer-insulated actuators. 100 billion cycles without a single failure are proven.

#### High guiding accuracy due to zero-play flexure guides

Flexure guides are free of maintenance, friction, and wear, and do not require lubrication. Their stiffness allows high load capacity and they are insensitive to shock and vibration. They are 100 % vacuum compatible and work in a wide temperature range.

## Specifications

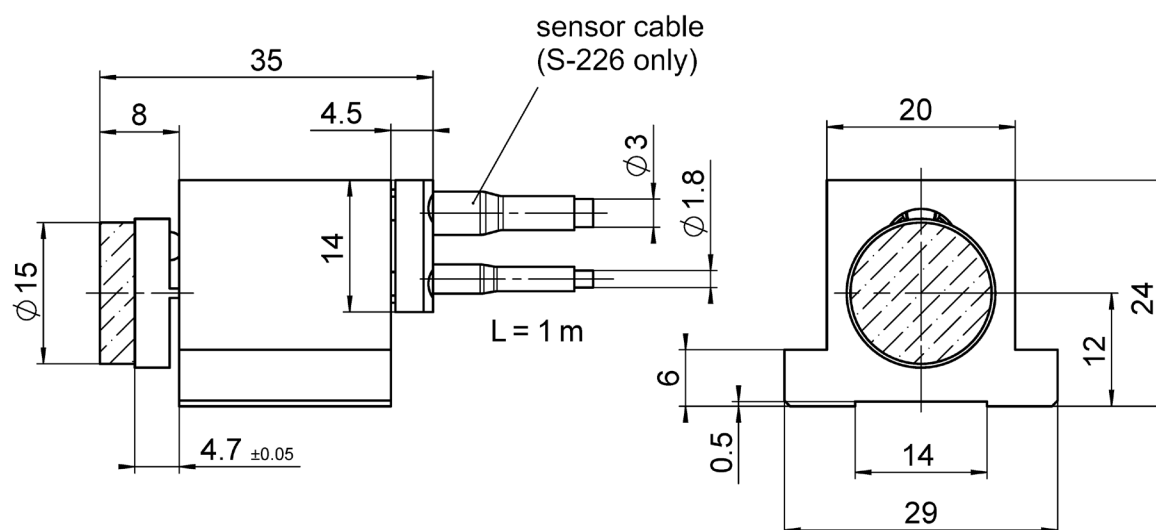
	S-224.00	S-226.00	Unit	Tolerance
Active axis	$\theta_x$	$\theta_x$		
<b>Motion and positioning</b>				
Integrated sensor	–	SGS		
Tip/tilt angle, open loop, at 0 to 100 V	2.2*	2.2*	mrad	±20 %
Tip/tilt angle, closed loop	–	2.0*	mrad	
Resolution, closed loop / open loop	– / 0.05	0.1 / 0.05	μrad	
Linearity error, closed loop	–	0.2	%	typ.
Repeatability, full travel range	–	±3	μrad	typ.
<b>Mechanical properties</b>				
Resonant frequency, unloaded	9.0	9.0	kHz	±20 %
Resonant frequency, under load, with Ø 15 mm × 4 mm glass mirror	7.5	7.5	kHz	±20 %
Resonant frequency, under load, with Ø 15 mm × 4 mm copper mirror	5.7	5.7	kHz	±20 %
Distance from pivot point to platform surface	4	4	mm	
Platform moment of inertia	215	215	$\text{g} \times \text{mm}^2$	
<b>Drive properties</b>				
Ceramic type	PICMA® P-885	PICMA® P-885		
Electrical capacitance	1.5	1.5	μF	±20 %
<b>Miscellaneous</b>				
Operating temperature range	-20 to 80	-20 to 80	°C	
Housing material	Nonmagnetic stainless steel	Nonmagnetic stainless steel		
Platform material	Nonmagnetic stainless steel	Nonmagnetic stainless steel		
Mass without cable	98	98	g	±5 %
Cable length	1	1	m	+10 mm
Voltage connector	LEMO FFA.00.250	LEMO FFA.00.250		
Sensor connector	–	LEMO FFA.OS.304		
Recommended electronics	E-663, E-610.00, E-836.1G	E-665.SR, E-610.S0, E-621.SR, E-625.SR, E-709.SRG		

\* Mechanical tilt, optical beam deflection is twice as large.

The resolution of the system is limited only by the noise of the amplifier and the measuring technology because PI piezo nanopositioning systems are free of friction.

Ask about customized versions.

## Drawings / Images



S-224.00 / S-226.00, dimensions in mm

## Ordering Information

### S-224.00

Compact piezo tip/tilt mirror, 4.4 mrad optical deflection angle, with BK7 mirror  $\varnothing$  15 mm  $\times$  4 mm

### S-226.00

Compact piezo tip/tilt mirror, 4.4 mrad optical deflection angle, with BK7 mirror  $\varnothing$  15 mm  $\times$  4 mm, strain gauge sensor