

## PICA Power Piezo Actuators

### Preloaded High-Load Piezo Actuators (HVPZT) with Sensor Option



### P-225

- Extremely high stiffness
- Push force capacity to 12500 N
- Pull force capacity to 2000 N
- Travel range to 120 µm
- Options: Vacuum, high-temperature versions, waterproof housing

#### Fields of application

- Active vibration absorber
- Adaptive mechanics
- Precision mechanics / micromechanics
- Optics
- Measuring technology / interferometry
- Adaptive systems technology
- Switching
- Laser tuning
- Force generation / materials testing
- Nanotechnology

#### PICA Power piezo actuators for high loads

PICA Power high-load stack actuators are reliable and offer long travel ranges with large loads. The actuators are suitable for demanding loads with high temperatures.

#### Suitable for sophisticated vacuum applications

Piezo actuators do not require lubrication and do not cause abrasion. Versions are available for vacuum to  $10^{-9}$  hPa and for particularly high or low operating temperatures.

## Specifications

	P-225.10	P-225.20	P-225.40	P-225.80	Unit	Tolerance
Operating voltage range	0 to 1000	0 to 1000	0 to 1000	0 to 1000	V	
<b>Motion and positioning</b>						
Travel range, closed loop*	15	30	60	120	μm	
Resolution, closed loop*	0.3	0.6	1.2	2.4	nm	typ.
Resolution, open loop**	0.15	0.3	0.6	1.2	nm	typ.
Linearity error*	0.2	0.2	0.2	0.2	%	typ.
<b>Mechanical properties</b>						
Static large-signal stiffness in motion direction***	480	330	200	110	N/μm	±20 %
Resonant frequency, no load	14	10	7	4	kHz	±20 %
Push/pull force capacity in motion direction	12500 / 2000	12500 / 2000	12500 / 2000	12500 / 2000	N	max.
Shear load	255	152	84	73	N	max.
Torque on tip	1.5	1.5	1.5	1.5	Nm	max.
<b>Drive properties</b>						
Piezo ceramic	PICA Power	PICA Power	PICA Power	PICA Power		
Electrical capacitance	320	630	1300	2600	nF	±20 %
<b>Miscellaneous</b>						
Operating temperature range	-40 to 80	-40 to 80	-40 to 80	-40 to 80	°C	
Mass	410	470	610	900	g	±5 %
Recommended electronics	E-462, E-464, E-470 • E-472 • E-421, E-481, E-482, E-508	E-462, E-464, E-470 • E-472 • E-421, E-481, E-482, E-508	E-462, E-464, E-470 • E-472 • E-421, E-481, E-482, E-508	E-462, E-464, E-470 • E-472 • E-421, E-481, E-482, E-508		

\* Requires integrated strain gauge sensor. These versions are shipped with a performance report.

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

\*\*\* Dynamic small-signal stiffness is approx. 50 % higher.

The operating voltage should not exceed 750 V in continuous operation.

All specifications based on room temperature (22 °C ±3 °C).

Specifications for vacuum versions can differ.

Ask about customized versions.



## Ordering Information

### Actuators without sensor

#### **P-225.10**

Preloaded high-load piezo actuator, 15 µm, 1000 V, 12500 N

#### **P-225.20**

Preloaded high-load piezo actuator, 30 µm, 1000 V, 12500 N

#### **P-225.40**

Preloaded high-load piezo actuator, 60 µm, 1000 V, 12500 N

#### **P-225.80**

Preloaded high-load piezo actuator, 120 µm, 1000 V, 12500 N

### Actuators without sensor, vacuum compatible

#### **P-225.10V**

Preloaded high-load piezo actuator, 15 µm, 1000 V, 12500 N, high temperature / vacuum

#### **P-225.20V**

Preloaded high-load piezo actuator, 30 µm, 1000 V, 12500 N, high temperature / vacuum

#### **P-225.40V**

Preloaded high-load piezo actuator, 60 µm, 1000 V, 12500 N, high temperature / vacuum

#### **P-225.80V**

Preloaded high-load piezo actuator, 120 µm, 1000 V, 12500 N, high temperature / vacuum

### Actuators with sensor

#### **P-225.1S**

Preloaded high-load piezo actuator, 15 µm, 1000 V, 12500 N, SGS

#### **P-225.2S**

Preloaded high-load piezo actuator, 30 µm, 1000 V, 12500 N, SGS

#### **P-225.4S**

Preloaded high-load piezo actuator, 60 µm, 1000 V, 12500 N, SGS

#### **P-225.8S**

Preloaded high-load piezo actuator, 120 µm, 1000 V, 12500 N, SGS

### Actuators with sensor, vacuum compatible

#### **P-225.1SV**

Preloaded high-load piezo actuator, 15 µm, 1000 V, 12500 N, SGS, high temperature / vacuum

#### **P-225.2SV**

Preloaded high-load piezo actuator, 30 µm, 1000 V, 12500 N, SGS, high temperature / vacuum

#### **P-225.4SV**

Preloaded high-load piezo actuator, 60 µm, 1000 V, 12500 N, SGS, high temperature / vacuum

#### **P-225.8SV**

Preloaded high-load piezo actuator, 120 µm, 1000 V, 12500 N, SGS, high temperature / vacuum