

P-010.xxH · P-016.xxH · P-025.xxH

PICA™-Thru Piezo Stack Actuators with Aperture (HVPZT)

>> Click <http://www.pi.ws/fwd/Piezo-Actuator> for the Latest Specs on these Products



PICA-Thru piezo stack actuators with clear aperture.

- Clear Aperture for Transmitted-Light Applications
- Large Cross-Sections Available to 56 mm Diameter
- Variety of Shapes and Options
- Extreme Reliability >10⁹ Cycles
- Proven and Flexible Design
- Sub-Nanometer Resolution / Sub-Millisecond Settling-Time
- Vacuum Compatible and Nonmagnetic Versions

PICA™-Thru actuators are hollow piezo stack actuators, offered in a large variety of standard shapes and sizes with additional custom designs to meet all customer requirements. They combine the advantage of a clear aperture with the strength and force generation of stack actuators. These tubular devices are high-resolution linear actuators for static and dynamic applications.

Ultra-High Reliability, High Displacement, Low Power Requirements

PICA™ piezo actuators are specifically designed for high-duty-cycle applications. With our extensive applications knowledge, gained over several decades, we know how to build performance that does not come at the price of reliability. All materials used are specifically matched for robustness and lifetime. Endurance tests on PICA™ actuators prove consistent performance, even after billions (1,000,000,000) of cycles. The combination of high displacement and low electrical capacitance provides for excellent dynamic behavior with reduced driving-power requirements.

Flexibility: PI Ceramic's Strength

All manufacturing processes at PI Ceramic are set up for flexi-

bility. Should our standard actuators not fit your application, let us provide you with a custom design. Our engineers will work with you to find the optimum solution at a very attractive price, even for small quantities. Some of our custom capabilities are listed below:

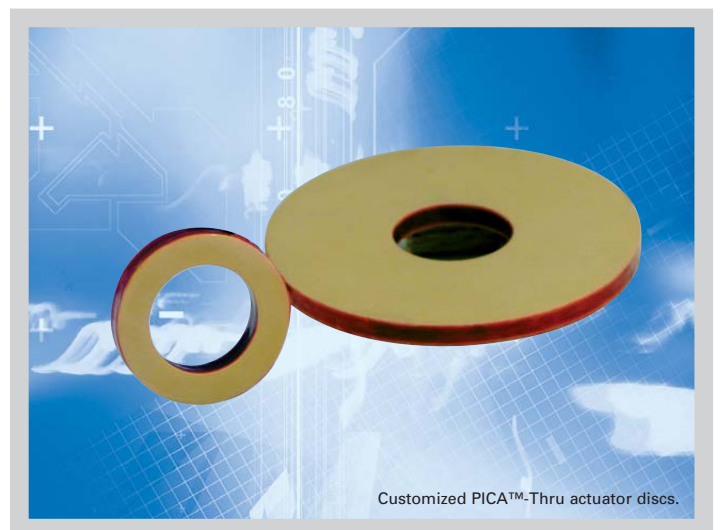
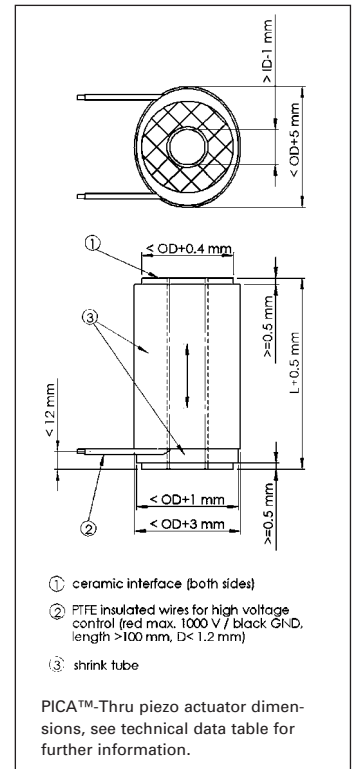
- Custom Materials
- Custom Voltage Ranges
- Custom Geometries
- Custom Displacement
- Custom Load / Force Ranges
- Custom Endplates (Alumina, Glass, Sapphire, ...)
- Extra-Tight Length Tolerances
- Integrated Piezoelectric Sensor Discs
- Low-Temperature Versions
- Vacuum Versions

Short Leadtime for Standard & Custom Designs

Because all piezoelectric materials used in PICA™ actuators are manufactured at PI Ceramic, leadtimes are short and quality is outstanding. All standard and custom PICA™ actuators are delivered with performance test sheets.

Amplifiers, Drivers & Controllers

PI offers a wide range of control electronics for piezo actuators from low-power drivers to multi-channel, closed-loop, digital controllers. Of course, PI also designs custom amplifiers and controllers.



Customized PICA™-Thru actuator discs.

Application Examples

- Optics
- Image stabilization
- Laser tuning
- Laser treatment
- Precision mechanics
- Confocal microscopy
- Micropositioning

Piezo Actuators

Nanopositioning & Scanning Systems

Active Optics / Steering Mirrors

Tutorial: Piezo-electrics in Positioning

Capacitive Position Sensors

Piezo Drivers & Nanopositioning Controllers

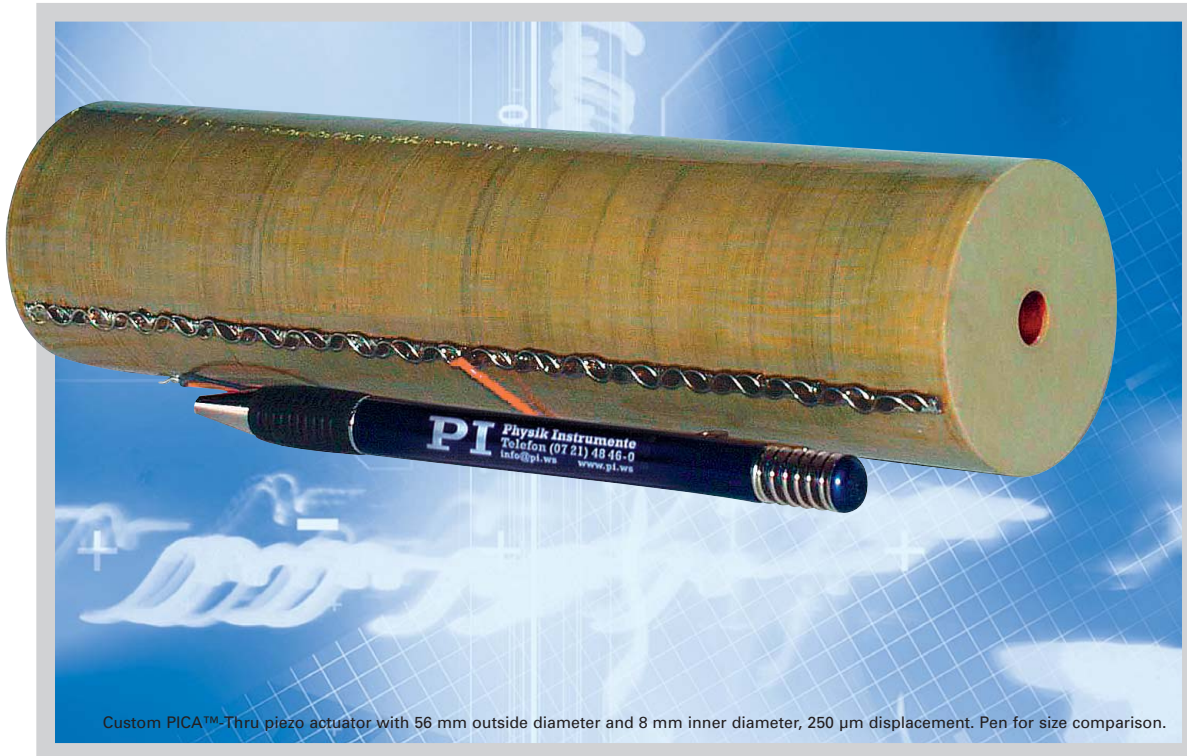
Hexapods / Micropositioning

Photonics Alignment Solutions

Motion Controllers

Ceramic Linear Motors & Stages

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Custom PICA™-Thru piezo actuator with 56 mm outside diameter and 8 mm inner diameter, 250 μm displacement. Pen for size comparison.

Technical Data / Product Order Numbers

Order number	Displacement [μm] -10/+20%	Diameter OD [mm]	Diameter ID [mm]	Length L [mm] ± 0.5	Blocking force [N]	Stiffness [N/ μm]	Capacitance [nF] $\pm 20\%$	Resonant frequency [kHz]
P-010.00H	5	10	5	7	1200	230	15	144
P-010.05H	10	10	5	12	1300	130	29	84
P-010.10H	15	10	5	15	1700	110	40	67
P-010.15H	20	10	5	21	1500	76	59	48
P-010.20H	30	10	5	27	1800	59	82	39
P-010.30H	40	10	5	40	1600	40	120	28
P-010.40H	60	10	5	54	1800	29	180	20
P-016.00H	5	16	8	7	2900	580	42	144
P-016.05H	10	16	8	12	3400	340	83	84
P-016.10H	15	16	8	15	4100	270	120	67
P-016.15H	20	16	8	21	3800	190	170	48
P-016.20H	30	16	8	27	4500	150	230	39
P-016.30H	40	16	8	40	4000	100	340	28
P-016.40H	60	16	8	52	4700	78	490	21
P-025.10H	15	25	16	16	7400	490	220	63
P-025.20H	30	25	16	27	8700	290	430	39
P-025.40H	60	25	16	51	9000	150	920	22
P-025.50H	80	25	16	66	9600	120	1200	17

Recommended preload for dynamic operation
15 to 30 MPa

Unloaded (longitudinal) resonant frequency measured at $1 V_{pp}$; capacitance at $1 V_{pp}$, 1 kHz; blocking force at 1000 V.

Standard PZT ceramic type: PIC 151

Operating voltage range: 0 to 1000 V
Operating temperature range: -20 to +85 °C

Standard mechanical interface (top & bottom): ceramic, 0.5 - 2 mm thick

Standard electrical interface: two PTFE-insulated wires, pigtail length 100 mm

Available options: integrated piezo sensor or strain gauge sensors, vacuum compatible, etc.

Other specifications on request.