

# PICA Power Piezo Actuators

FOR HIGH- DYNAMICS APPLICATIONS



## P-010.xxP – P-056.xxP

- + Operating temperature up to 150 °C
- + High operating frequencies
- + High load capacity
- + Force generation up to 70 kN

### Stacked piezo linear actuator

Operating voltage 0 to 1000 V. Long lifetime without derating. Large displacement, low electrical capacitance. Sub- nanometer resolution,  $\mu$ s response. Integrated temperature sensor to prevent damage from overheating. Extreme reliability:  $>10^9$  cycles

### Available options

- Bipolar control
- SGS sensors for positional stability
- PZT ceramic material
- Operating voltage range, displacement, layer thickness
- Load capacity, force generation
- Geometric shapes: rectangular, inner hole
- Mechanical interfaces: flat, metal, ceramic, glass, sapphire, etc.
- Integrated piezoelectric detector layers
- Operating temperature of up to 200 °C
- UHV- compatible to  $10^{-9}$  hPa
- Non- magnetic versions
- Extra- tight length tolerances

### Fields of application

Research and industry. For active damping of oscillations, precision mechanics and machining, active structures (adaptive systems technology)

### Specifications

	Displacement	Diameter OD	Length L	Blocking force	Stiffness	Electrical capacitance	Resonant frequency
	$\mu$ m	mm	mm	N	N/ $\mu$ m	nF	kHz
P-010.00P	5	10	9	1200	240	17	129
P-010.10P	15	10	18	1800	120	46	64
P-010.20P	30	10	31	2100	68	90	37
P-010.40P	60	10	58	2200	37	180	20
P-010.80P	120	10	111	2300	19	370	10

P-016.10P	15	16	18	4500	300	130	64
P-016.20P	30	16	31	5400	180	250	37
P-016.40P	60	16	58	5600	94	510	20
P-016.80P	120	16	111	5900	49	1000	10
P-016.90P	180	16	163	6000	33	1600	7
P-025.10P	15	25	20	9900	660	320	58
P-025.20P	30	25	33	12000	400	630	35
P-025.40P	60	25	60	13000	220	1300	19
P-025.80P	120	25	113	14000	120	2600	10
P-025.90P	180	25	165	14000	80	4000	7
P-035.10P	15	35	21	18000	1200	530	55
P-035.20P	30	35	34	23000	760	1200	34
P-035.40P	60	35	61	26000	430	2500	19
P-035.80P	120	35	114	28000	230	5200	10
P-035.90P	180	35	166	29000	160	7800	7
P-045.20P	30	45	36	36000	1200	2100	32
P-045.40P	60	45	63	41000	680	4300	18
P-045.80P	120	45	116	44000	370	8800	10
P-045.90P	180	45	169	45000	250	13000	7
P-056.20P	30	56	36	54000	1800	3300	32
P-056.40P	60	56	63	66000	1100	6700	18
P-056.80P	120	56	116	68000	570	14000	10
P-056.90P	180	56	169	70000	390	21000	7

Travel range: at 0 to 1000 V, tolerance -10 / 20 %.

Length L: Tolerance  $\pm 0.5$  mm.

Blocking force: at 0 to 1000 V.

Electrical capacitance: Tolerance  $\pm 20$  %, measured at  $1 V_{pp}$ , 1 kHz, RT.

Resonant frequency at  $1 V_{pp}$  unloaded, unclamped. The value is halved for unilateral clamping.

Piezo ceramic type: PIC255.

Standard connections: FEP- insulated wire leads, 100 mm, AWG 24,  $\varnothing$  1.15 mm.

Operating voltage: 0 to 1000 V.

Operating temperature range: -20 to 150 °C.

Standard mechanical interfaces: steel plates, 0,5 to 2 mm thick (depends on model)

Outer surface: FEP, transparent shrink sleeving

Recommended preload for dynamic operation: 15 MPa.

Maximum preload for constant force: 30 MPa.

Temperature sensor: PT 1000.

Custom designs or different specifications on request.

## Order Information

### P-010.00P

PICA Power Piezo Actuator, 5  $\mu$ m Travel Range, OD 10 mm  $\times$  L 9 mm

### P-010.10P

PICA Power Piezo Actuator, 15  $\mu$ m Travel Range, OD 10 mm  $\times$  L 18 mm

### P-010.20P

PICA Power Piezo Actuator, 30  $\mu$ m Travel Range, OD 10 mm  $\times$  L 31 mm

### P-010.40P

PICA Power Piezo Actuator, 60  $\mu$ m Travel Range, OD 10 mm  $\times$  L 58 mm

### P-010.80P

PICA Power Piezo Actuator, 120  $\mu$ m Travel Range, OD 10 mm  $\times$  L 111 mm

### P-016.10P

PICA Power Piezo Actuator, 15  $\mu$ m Travel Range, OD 16 mm  $\times$  L 18 mm

### P-016.20P

PICA Power Piezo Actuator, 30  $\mu$ m Travel Range, OD 16 mm  $\times$  L 31 mm

### P-016.40P

PICA Power Piezo Actuator, 60  $\mu$ m Travel Range, OD 16 mm  $\times$  L 58 mm

### P-016.80P

PICA Power Piezo Actuator, 120  $\mu$ m Travel Range, OD 16 mm  $\times$  L 111 mm

### P-016.90P

PICA Power Piezo Actuator, 180  $\mu$ m Travel Range, OD 16 mm  $\times$  L 163 mm

### P-025.10P

PICA Power Piezo Actuator, 15  $\mu$ m Travel Range, OD 25 mm  $\times$  L 20 mm

### P-025.20P

PICA Power Piezo Actuator, 30  $\mu$ m Travel Range, OD 25 mm  $\times$  L 33 mm

### P-025.40P

PICA Power Piezo Actuator, 60  $\mu$ m Travel Range, OD 25 mm  $\times$  L 60 mm

### P-025.80P

PICA Power Piezo Actuator, 120  $\mu$ m Travel Range, OD 25 mm  $\times$  L 113 mm

### P-025.90P

PICA Power Piezo Actuator, 180  $\mu$ m Travel Range, OD 25 mm  $\times$  L 165 mm

**P-035.10P**

PICA Power Piezo Actuator, 15 µm Travel Range, OD 35 mm × L 21 mm

**P-035.20P**

PICA Power Piezo Actuator, 30 µm Travel Range, OD 35 mm × L 34 mm

**P-035.40P**

PICA Power Piezo Actuator, 60 µm Travel Range, OD 35 mm × L 61 mm

**P-035.80P**

PICA Power Piezo Actuator, 120 µm Travel Range, OD 35 mm × L 114 mm

**P-035.90P**

PICA Power Piezo Actuator, 180 µm Travel Range, OD 35 mm × L 166 mm

**P-045.20P**

PICA Power Piezo Actuator, 30 µm Travel Range, OD 45 mm × L 36 mm

**P-045.40P**

PICA Power Piezo Actuator, 60 µm Travel Range, OD 45 mm × L 63 mm

**P-045.80P**

PICA Power Piezo Actuator, 120 µm Travel Range, OD 45 mm × L 116 mm

**P-045.90P**

PICA Power Piezo Actuator, 180 µm Travel Range, OD 45 mm × L 169 mm

**P-056.20P**

PICA Power Piezo Actuator, 30 µm Travel Range, OD 56 mm × L 36 mm

**P-056.40P**

PICA Power Piezo Actuator, 60 µm Travel Range, OD 56 mm × L 63 mm

**P-056.80P**

PICA Power Piezo Actuator, 120 µm Travel Range, OD 56 mm × L 116 mm

**P-056.90P**

PICA Power Piezo Actuator, 180 µm Travel Range, OD 56 mm × L 169 mm

Custom designs or different specifications on request.

## Controllers / Drivers / Amplifiers

[E-481 PICA Piezo High- Power Amplifier / Controller](#)

[E-482 PICA High- Power Piezo Driver / Servo Controller](#)

[E-470 • E-472 • E-421 PICA Piezo Controller](#)

[E-464 PICA Piezo Driver / Amplifier](#)

[E-508 PICA Piezo Amplifier Module](#)

[E-462 PICA Piezo Driver](#)

## Related Products

[P-007 – P-056 PICA Stack Piezo Actuators](#)

[P-010.xxH – P-025.xxH PICA Thru Ring Actuators](#)

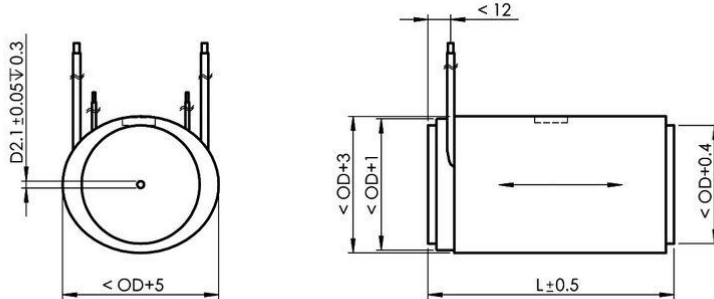
[P-212 PICA Power Piezo Actuator](#)

[P-225 PICA Power Piezo Actuators](#)

## Technology

[Piezo Elements Made by Pressing Technology | For stacked piezo actuators, the piezo ceramic powder is pressed into compacts and then glued together as piezo stacks. Read more on the production process using pressing technology. Learn more ...](#)

## Drawings / Images



PICA Power,  
dimensions in mm. L,  
OD see data table



Examples of longitudinal stack actuators are the multilayer piezo actuators PICMA® Stack, Encapsulated PICMA®, PICMA® Chip, as well as the stack actuators PICA Stack, PICA Power, PICA Thru that are glued together from individual plates, and the crystalline Picoactuator®