PICA Stack Piezo Actuators

HIGH FORCES, HIGH DISPLACEMENT, FLEXIBLE PRODUCTION

P-007 – P-056

- Travel ranges to 300 µm
- High load capacity
- Force generation up to 80 kN
- Extreme reliability: >10^9 cycles

Stacked piezo linear actuator

Operating voltage 0 to 1000 V. Long lifetime without derating. High specific displacement. High forces. Sub-nanometer resolution, µs response. Operating temperature range -20 to 85 °C

Available options

- SGS sensors for positional stability
- PZT ceramic material
- Operating voltage range, displacement, layer thickness
- Load capacity, force generation
- Geometric shapes: round, rectangular
- Mechanical interfaces: flat, spherical, metal, ceramic, glass, sapphire, etc.
- Integrated piezoelectric detector layers
- Special high / low temperature versions, temperature sensor
- Vacuum- compatible and non- magnetic versions
- Extra- tight length tolerances

Fields of application

Research and industry. For high- load positioning, precision mechanics / - machining, switches

Specifications

	Displacement	Diameter OD	Length L	Blocking force	Stiffness	Electrical capacitance	Resonant frequency
	µm	*mm*	*mm*	*N*	*N/ µm*	*nF*	*kHz*
P-007.00	5	7	8	650	130	11	126
P-007.10	15	7	17	850	59	33	59
P-007.20	30	7	29	1000	35	64	36
P-007.40	60	7	54	1150	19	130	20
P-010.00	5	10	8	1400	270	21	126
P-010.10	15	10	17	1800	120	64	59
P-010.20	30	10	30	2100	71	130	35
P-010.40	60	10	56	2200	38	260	20
P-010.80	120	10	107	2400	20	510	10
P-016.10	15	16	17	4600	320	180	59
P-016.20	30	16	29	5500	190	340	36

P-016.40	60	16	54	6000	100	680	20
P-016.80	120	16	101	6500	54	1300	11
P-016.90	180	16	150	6500	36	2000	7
P-025.10	15	25	18	11000	740	400	56
P-025.20	30	25	30	13000	440	820	35
P-025.40	60	25	53	15000	250	1700	21
P-025.80	120	25	101	16000	130	3400	11
P-025.90	180	25	149	16000	89	5100	7
P-025.150	250	25	204	16000	65	7100	5
P-025.200	300	25	244	16000	54	8500	5
P-035.10	15	35	20	20000	1300	700	51
P-035.20	30	35	32	24000	810	1600	33
P-035.40	60	35	57	28000	460	3300	19
P-035.80	120	35	104	30000	250	6700	11
P-035.90	180	35	153	31000	170	10000	7
P-045.20	30	45	33	39000	1300	2800	32
P-045.40	60	45	58	44000	740	5700	19
P-045.80	120	45	105	49000	410	11000	10
P-045.90	180	45	154	50000	280	17000	7
P-050.20	30	50	33	48000	1600	3400	32
P-050.40	60	50	58	55000	910	7000	19
P-050.80	120	50	105	60000	500	14000	10
P-050.90	180	50	154	61000	340	22000	7
P-056.20	30	56	33	60000	2000	4300	32
P-056.40	60	56	58	66000	1100	8900	19
P-056.80	120	56	105	76000	630	18000	10
P-056.90	180	56	154	78000	430	27000	7

Travel range: at 0 to 1000 V, tolerance -10 / 20 %.
Length L: Tolerance ±0.5 mm.
Blocking force. at 0 to 1000 V.
Electrical capacitance: Tolerance ±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: PIC151.
Standard connections: FEP- insulated wire leads, 100 mm, AWG 24, Ø 1.15 mm.
Operating voltage: 0 to 1000 V.
Operating temperature range: -20 to 85 °C.
Standard mechanical interfaces: steel plates, 0.5 to 2 mm thick (depends on model)
Outer surface: polyolefin shrink sleeving, black.
Recommended preload for dynamic operation: 15 MPa.
Maximum preload for constant force: 30 MPa.

Custom designs or different specifications on request.

Order Information

P-007.00
PICA Stack Piezo Actuator, 5 µm Travel Range, OD 7 mm × L 8 mm
P-007.10
PICA Stack Piezo Actuator, 15 µm Travel Range, OD 7 mm × L 17 mm
P-007.20
PICA Stack Piezo Actuator, 30 µm Travel Range, OD 7 mm × L 29 mm
P-007.40
PICA Stack Piezo Actuator, 60 µm Travel Range, OD 7 mm × L 54 mm
P-010.00
PICA Stack Piezo Actuator, 5 µm Travel Range, OD 10 mm × L 8 mm
P-010.10
PICA Stack Piezo Actuator, 15 µm Travel Range, OD 10 mm × L 17 mm
P-010.20
PICA Stack Piezo Actuator, 30 µm Travel Range, OD 10 mm × L 30 mm
P-010.40
PICA Stack Piezo Actuator, 60 µm Travel Range, OD 10 mm × L 56 mm
P-010.80
PICA Stack Piezo Actuator, 120 µm Travel Range, OD 10 mm × L 107 mm
P-016.10
PICA Stack Piezo Actuator, 15 µm Travel Range, OD 16 mm × L 17 mm
P-016.20
PICA Stack Piezo Actuator, 30 µm Travel Range, OD 16 mm × L 29 mm
P-016.40
PICA Stack Piezo Actuator, 60 µm Travel Range, OD 16 mm × L 54 mm
P-016.80

PICA Stack Piezo Actuator, 120 µm Travel Range, OD 16 mm × L 101 mm
P-016.90
PICA Stack Piezo Actuator, 180 µm Travel Range, OD 16 mm × L 150 mm
P-025.10
PICA Stack Piezo Actuator, 15 µm Travel Range, OD 25 mm × L 18 mm
P-025.20
PICA Stack Piezo Actuator, 30 µm Travel Range, OD 25 mm × L 30 mm
P-025.40
PICA Stack Piezo Actuator, 60 µm Travel Range, OD 25 mm × L 53 mm
P-025.80
PICA Stack Piezo Actuator, 120 µm Travel Range, OD 25 mm × L 101 mm
P-025.90
PICA Stack Piezo Actuator, 180 µm Travel Range, OD 25 mm × L 149 mm
P-025.150
PICA Stack Piezo Actuator, 250 µm Travel Range, OD 25 mm × L 204 mm
P-025.200
PICA Stack Piezo Actuator, 300 µm Travel Range, OD 25 mm × L 244 mm
P-035.10
PICA Stack Piezo Actuator, 15 µm Travel Range, OD 35 mm × L 20 mm
P-035.20
PICA Stack Piezo Actuator, 30 µm Travel Range, OD 35 mm × L 32 mm
P-035.40
PICA Stack Piezo Actuator, 60 µm Travel Range, OD 35 mm × L 57 mm
P-035.80
PICA Stack Piezo Actuator, 120 µm Travel Range, OD 35 mm × L 104 mm
P-035.90
PICA Stack Piezo Actuator, 180 µm Travel Range, OD 35 mm × L 153 mm
P-045.20
PICA Stack Piezo Actuator, 30 µm Travel Range, OD 45 mm × L 33 mm
P-045.40
PICA Stack Piezo Actuator, 60 µm Travel Range, OD 45 mm × L 58 mm
P-045.80
PICA Stack Piezo Actuator, 120 µm Travel Range, OD 45 mm × L 105 mm
P-045.90
PICA Stack Piezo Actuator, 180 µm Travel Range, OD 45 mm × L 154 mm
P-050.20
PICA Stack Piezo Actuator, 30 µm Travel Range, OD 50 mm × L 33 mm
P-050.40
PICA Stack Piezo Actuator, 60 µm Travel Range, OD 50 mm × L 58 mm
P-050.80
PICA Stack Piezo Actuator, 120 µm Travel Range, OD 50 mm × L 105 mm
P-050.90
PICA Stack Piezo Actuator, 180 µm Travel Range, OD 50 mm × L 154 mm
P-056.20
PICA Stack Piezo Actuator, 30 µm Travel Range, OD 56 mm × L 33 mm
P-056.40
PICA Stack Piezo Actuator, 60 µm Travel Range, OD 56 mm × L 58 mm
P-056.80
PICA Stack Piezo Actuator, 120 µm Travel Range, OD 56 mm × L 105 mm
P-056.90
PICA Stack Piezo Actuator, 180 µm Travel Range, OD 56 mm × L 154 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-508 PICA Piezo Amplifier Module
E-464 PICA Piezo Driver / Amplifier
E-462 PICA Piezo Driver

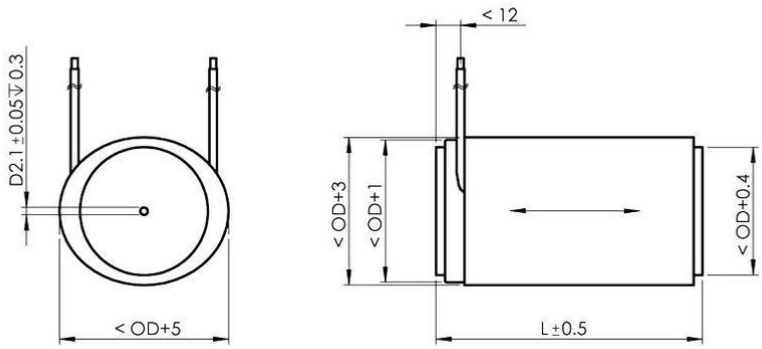
Related Products

P-212 PICA Power Piezo Actuator
P-225 PICA Power Piezo Actuators
P-010.xxH – P-025.xxH PICA Thru Ring Actuators
P-010.xxP – P-056.xxP 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 Stack, dimensions in mm. L, OD see data table

Custom actuator with special tip and applied SGS sensors. The protective polymer layer can be dyed in different colors. Standard versions are delivered with stranded wires and are covered in black