

# Cost-Efficient PiezoMove Linear Flexure Actuator

FRICTIONLESS GUIDINGS AND TRAVEL RANGES TO 0.5 MM



## P-603

- Flexure guides for linear motion with minimum tip and tilt
- Travel ranges to 500  $\mu\text{m}$
- Optimized design for manufacturing in large quantities
- Available with integrated position sensor

### Precision-class piezo linear actuator

Frictionless flexure-guided design minimizes unwanted tip and tilt motion. Integrated motion amplifier. Medium stiffness

### PICMA® high-performance piezo drive

Piezoceramic actuators with all-ceramic insulation. Longer lifetime, humidity resistance and operating temperatures to 80°C

### Position sensor option for closed-loop operation

Strain gauge sensor made of metal foil: Compact and with a linearity error to 0.2% for high position stability and repeatability. Indirect position measurement

### Fields of application

Research and industry. Ideal OEM actuators for precision motion control in optics, medical, biotech and microfluidics applications, e.g. for micropumps, valve control, dosing systems

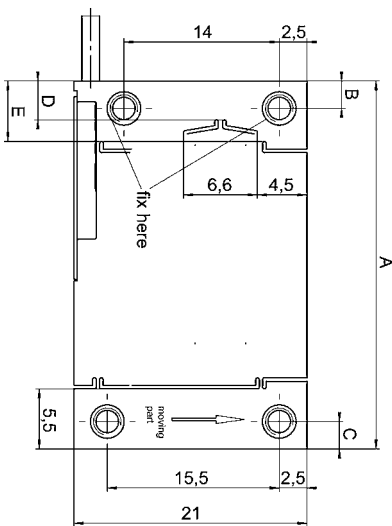


PiezoMove actuators of the P-603 series are available with travel ranges of 100  $\mu\text{m}$ , 300  $\mu\text{m}$  and 500  $\mu\text{m}$

### Related products

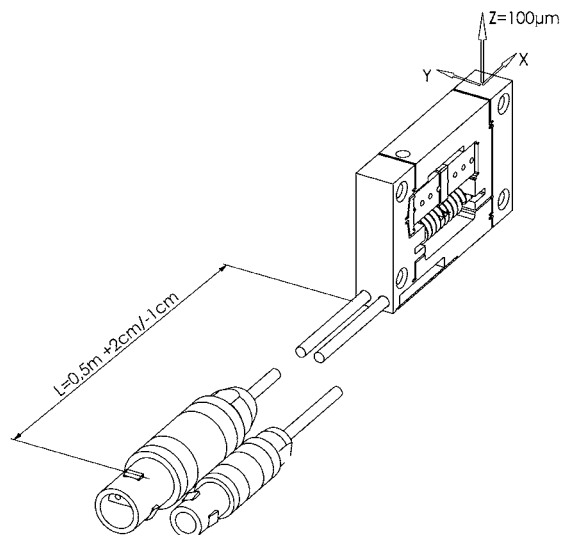
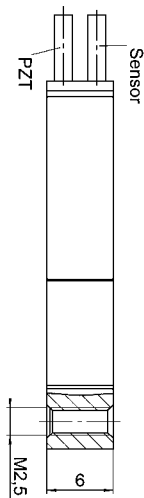
P-601 PiezoMove flexure-guided linear actuator  
P-602 PiezoMove linear actuator with high stiffness  
P-713 XY piezo scanner

	P-603.1S1 P-603.1S2	P-603.3S1 P-603.3S2	P-603.5S1 P-603.5S2	P-603.x01 open-loop versions	Unit
Active axes	Z	Z	Z	Z	
<b>Motion and positioning</b>					
Integrated sensor	SGS	SGS	SGS	–	
Open-loop travel, -20 to 120 V	120	380	550	as P-603.xS1	µm
Closed-loop travel	100	300	500	–	µm
Open-loop resolution, 180g	2	3	5	as P-603.xS1	nm
Closed-loop resolution, 180g	6	8	10	–	nm
Closed-loop non-linearity	0.2	0.2	0.2	–	%
Unidir. Repeatability, 10%, 1 Sigma	7	10	20	–	nm
<b>Mechanical properties</b>					
Stiffness in motion direction	0.3	0.14	0.06	as P-603.xS1	N/µm
Unloaded resonant frequency	900	410	300	as P-603.xS1	Hz
Resonant frequency @ 180 g	160	110	80	as P-603.xS1	Hz
Push / pull force capacity in motion direction	40 / 20	35 / 13	30 / 10	as P-603.xS1	N
<b>Drive properties</b>					
Piezoceramics	PICMA® P-885	PICMA® P-885	PICMA® P-885	as P-603.xS1	
Electrical capacitance	1.5	3.1	3.7	as P-603.xS1	µF
Dynamic operating current coefficient	1.9	1.3	1.6	as P-603.xS1	µA / (Hz x µm)
<b>Miscellaneous</b>					
Operating temperature range	-20 to 80	-20 to 80	-20 to 80	as P-603.xS1	°C
Material	Stainless steel	Stainless steel	Stainless steel	as P-603.xS1	
Dimensions	33.5 mm x 21 mm x 6 mm	52 mm x 21 mm x 6 mm	62 mm x 21 mm x 6 mm	as P-603.xS1	
Mass	S1 version: 0.03 S2 version: 0.04	S1 version: 0.04 S2 version: 0.05	S1 version: 0.05 S2 version: 0.06	as P-603.xS1	kg
Cable length	0.5	0.5	0.5	as P-603.xS1	m
Sensor connection	S1 versions: Wire leads S2 versions: LEMO (strain gauge sensor)			–	
Voltage connection	S1 versions: Wire leads S2 versions: LEMO (low voltage)			as P-603.xS1	
Recommended controller / amplifier	E-610.S0 controller E-625.SR controller, bench-top device E-709.SRG controller, bench-top device with digital linearization			E-610.00 amplifier E-831 OEM amplifier module	



	A	B	C	D	E
P-603.1xx	33,5	2,5	2,5	3,5	5,5
P-603.3xx	52	2,75	2,5	3,5	5,6
P-603.5xx	62	2,5	2,5	4,5	6,2

P-603, dimensions in mm



Direction of motion of the P-603.

The flexure guiding system prevents tip and tilt at the drive head