

Piezo Z Stage

Compact Nanopositioner



P-611.Z

- Compact: Surface only 44 mm × 44 mm
- Travel range 100 μm
- Resolution to 0.2 nm
- Particularly inexpensive systems (mechanics and controller)
- Zero-play, high-precision flexure guide system
- Outstanding lifetime due to PICMA® piezo actuators
- X, XY, XZ and XYZ versions

Fields of application

- Micromachining
- Photonics
- Fiber positioning
- Test procedures and quality assurance

Outstanding lifetime thanks to PICMA® piezo actuators

The patented PICMA® piezo actuators are all-ceramic insulated. This protects them against humidity and failure resulting from an increase in leakage current. PICMA® actuators offer an up to ten times longer lifetime than conventional polymer-insulated actuators. 100 billion cycles without a single failure are proven.

High guiding accuracy due to zero-play flexure guides

Flexure guides are free of maintenance, friction, and wear, and do not require lubrication. Their stiffness allows high load capacity and they are insensitive to shock and vibration. They are 100 % vacuum compatible and work in a wide temperature range.

Specifications

	P-611.ZS	P-611.Z0	Unit	Tolerance
Active axes	Z	Z		
Motion and positioning				
Integrated sensor	SGS	-		
Travel range at -20 to +120 V, open loop	120	120	µm	+20 % / -0 %
Travel range, closed loop	100	-	µm	
Resolution, open loop	0.2	0.2	nm	typ.
Resolution, closed loop	2	-	nm	typ.
Linearity error	0.1	-	%	typ.
Repeatability	<10	-	nm	typ.
Tilt θ_z (motion in Z)	±5	±5	µrad	typ.
Tilt θ_x (motion in Z)	±20	±20	µrad	typ.
Tilt θ_y (motion in Z)	±5	±5	µrad	typ.
Mechanical properties				
Stiffness	0.45	0.45	N/µm	±20 %
Resonant frequency, no load	460	460	Hz	±20 %
Resonant frequency under load, 30 g	375	375	Hz	±20 %
Resonant frequency under load, 100 g	265	265	Hz	±20 %
Push/pull force capacity	15 / 10	15 / 10	N	max.
Drive properties				
Ceramic type	PICMA® P-885	PICMA® P-885		
Electrical capacitance	1.5	1.5	µF	±20 %
Miscellaneous				
Operating temperature range	-20 to 80	-20 to 80	°C	
Material	Aluminum, steel	Aluminum, steel		
Dimensions	44 mm × 44 mm × 27 mm	44 mm × 44 mm × 27 mm		
Mass	176	176	g	±5 %
Cable length	1.5	1.5	m	±10 mm
Sensor connection	LEMO	-		
Voltage connection	LEMO	LEMO		
Recommended electronics	E-610, E-625, E-665, E-836	E-610, E-625, E-665, E-836		

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

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

System properties

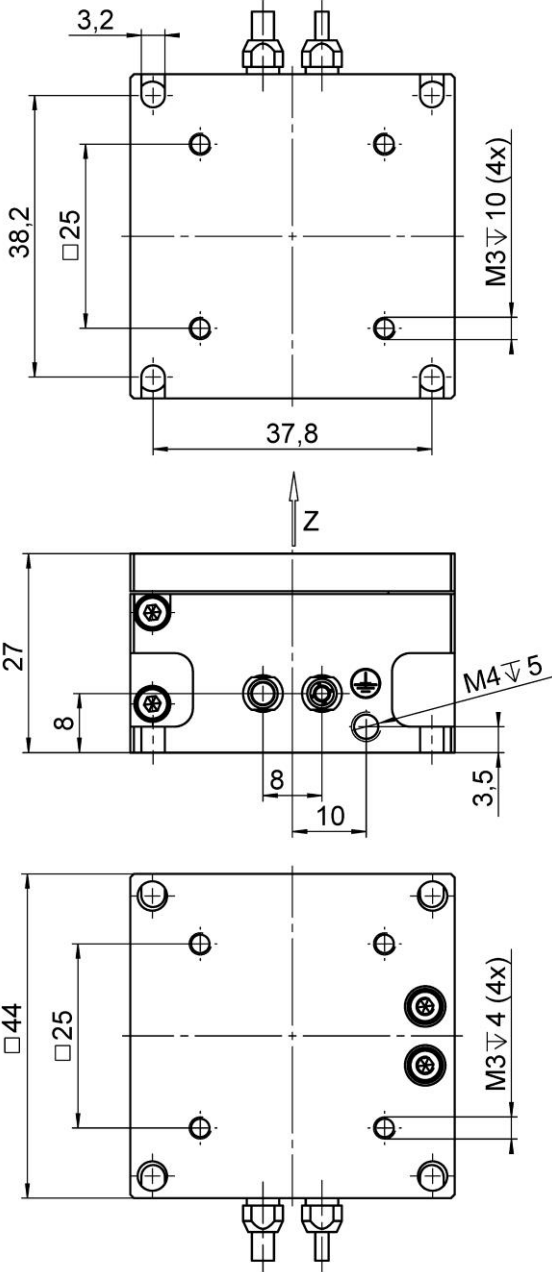
System configuration: P-611.ZS and E-665.SR controller with 30 g load

Small signal bandwidth: 40 Hz

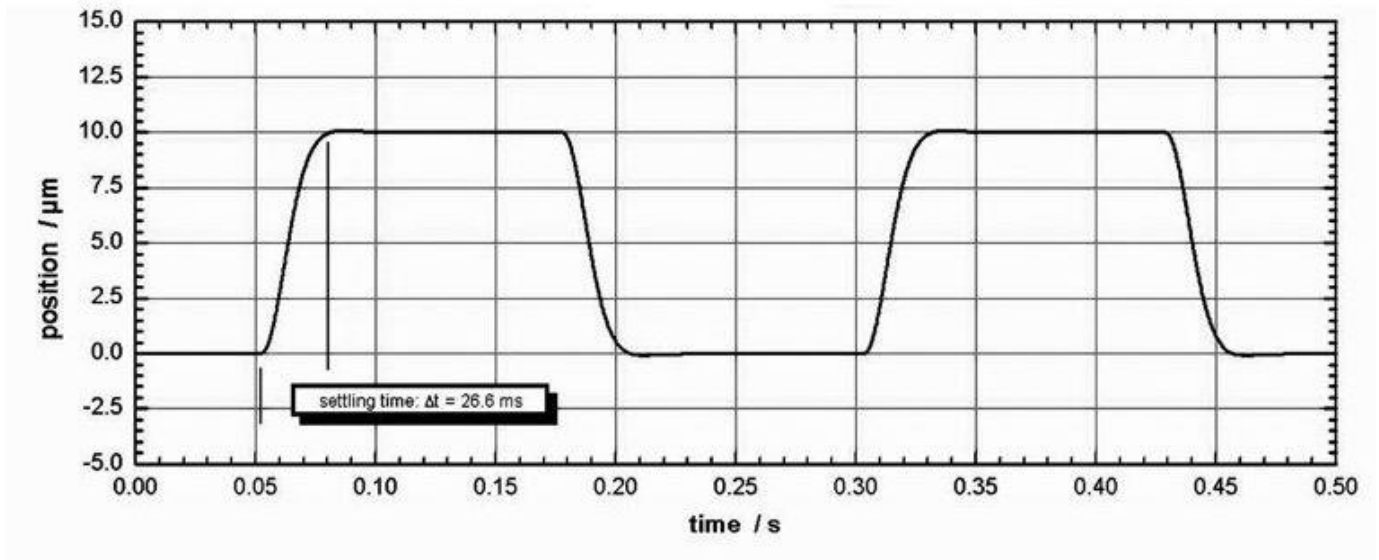
Settling time (10 % step width): 25 ms

Ask about customized versions.

Drawings / Images



P-611.ZS, dimensions in mm



The P-611.ZS needs a settling time of 26 ms for one 10- μm step with a load of 30 g.

Ordering Information

P-611.Z0

Vertical nanopositioning stage, 120 μm , without sensor

P-611.ZS

Vertical nanopositioning stage, 100 μm , strain gauge sensor