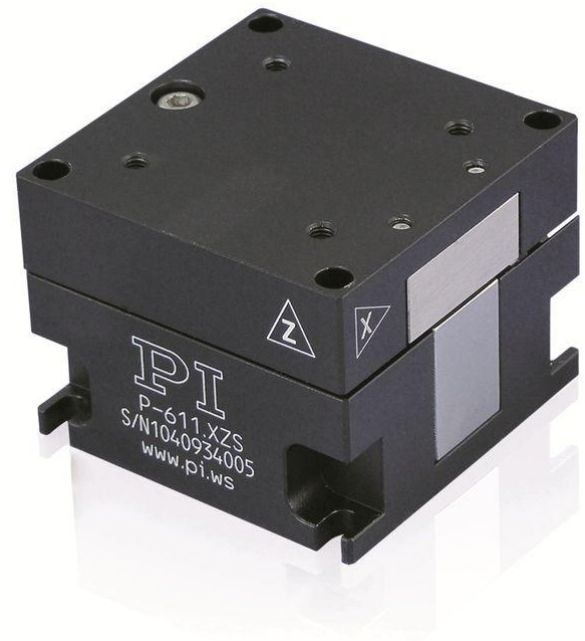
XZ & XY Nanopositioner

COMPACT 2- AXIS PIEZO SYSTEM FOR NANOPOSITIONING TASKS



P-611.XZ • P-611.2

- Compact: Footprint 44 mm × 44 mm
- Travel range to 120 µm × 120 µm
- Resolution to 0.2 nm
- Cost- effective mechanics / electronics system configurations
- Frictionless, high- precision flexure guiding system
- Outstanding lifetime due to PICMA® piezo actuators
- X, Z and XYZ version available

Specifications

	P-611.2S	P-611.20	P-611.XZS	P-611.XZ0	Unit	Tolerance
Active axes	X, Y	X, Y	X, Z	X, Z		
Motion and positioning						
Integrated sensor	SGS	–	SGS	–		
Open- loop travel, -20 to 120 V	120	120	120	120	µm	min. (20 % / -0 %)
Closed- loop travel	100	–	100	–	µm	
Open- loop resolution	0.2	0.2	0.2	0.2	nm	typ.
Closed- loop resolution	2	–	2	–	nm	typ.
Linearity error	0.1	–	0.1	–	%	typ.
Repeatability	<10	–	<10	–	nm	typ.
Pitch in X, Y	±5	±5	±5	±5	µrad	typ.
Runout θ_X (motion in Z)	–	–	±10	±10	µrad	typ.
Yaw in X	±20	±20	±20	±20	µrad	typ.
Yaw in Y	±10	±10	–	–	µrad	typ.
Runout θ_Y (motion in Z)	–	–	±10	±10	µrad	typ.
Mechanical properties						
Stiffness	0.2	0.2	0.2Z: 0.35	0.2Z: 0.35	N/ µm	±20 %
Resonant frequency, no load	X: 345; Y: 270	X: 345; Y: 270	X: 365; Z: 340	X: 365; Z: 340	Hz	±20 %
Resonant frequency, under load, at 30 g	X: 270; Y: 225	X: 270; Y: 225	X: 280; Z: 295	X: 280; Z: 295	Hz	±20 %
Resonant frequency, under load, at 100 g	X: 180; Y: 165	X: 180; Y: 165	X: 185; Z: 230	X: 185; Z: 230	Hz	±20 %
Push / pull force capacity in motion direction	15 / 10	15 / 10	15 / 10	15 / 10	N	max.
Load capacity	15	15	15	15	N	max.
Drive properties						
Ceramic type	PICMA® P-885	PICMA® P-885	PICMA® P-885	PICMA® P-885		

Electrical capacitance	1.5	1.5	1.5	1.5	µF	±20 %
Dynamic operating current coefficient	1.9	1.9	1.9	1.9	µA / (Hz × µm)	±20 %
Miscellaneous						
Operating temperature range	-20 to 80	-20 to 80	-20 to 80	-20 to 80	°C	
Material	Aluminum, steel	Aluminum, steel	Aluminum, steel	Aluminum, steel		
Dimensions	44 mm × 44 mm × 25 mm	44 mm × 44 mm × 25 mm	44 mm × 44 mm × 34 mm	44 mm × 44 mm × 34 mm		
Mass	0.235	0.235	0.27	0.27	kg	±5 %
Cable length	1.5	1.5	1.5	1.5	m	±10 mm
Sensor connection	LEMO	–	LEMO	–		
Voltage connection	LEMO	LEMO	LEMO	LEMO		

The resolution of PI piezo nanopositioners is not limited by friction or stiction. Value is given noise equivalent motion with E-503 amplifier.
Dynamic Operating Current Coefficient in µA per Hz and µm. Example: Sinusoidal scan of 50 µm at 10 Hz requires approximately 0.9 mA drive current.

Recommended controller / amplifier

Single- channel (1 per axis): E-610 servo- controller / amplifier, E-625 servo- controller, bench- top, E-621 controller module
Multi- channel: modular piezo controller system E-500 with amplifier module E-503 (three channels) or E-505 (1 per axis, high- power) and E-509 controller

Order Information

P-611.2S
XY Nanopositioning System, 100 µm × 100 µm, SGS Sensor
P-611.20
XY Nanopositioning System, 100 µm × 100 µm, Open- Loop
P-611.XZS
XZ Nanopositioning System, 100 µm ×100 µm, SGS Sensor
P-611.XZ0
XZ Nanopositioning System, 100 µm ×100 µm, Open- Loop

Controllers / Drivers / Amplifiers

E-610 Piezo Amplifier / Controller
E-625 Piezo Servo- Controller & Driver
E-621 Piezo Servo- Controller & Driver
E-500 • E-501 Modular Piezo Controller
E-505 Piezo Amplifier Module
E-509 Signal Conditioner / Piezo Servo Module

Drawings / Images