

P-612.2

Compact XY PiezoStage Linear Slide with Aperture



P-612.2SL (CD for size comparison).

- Small Footprint: 60 x 60 mm
- 100 x 100 μm Travel Range
- Resolution to 0.8 nm
- For Cost-Sensitive Applications
- Clear Aperture: 20 x 20 mm
- PICMA® High-Performance Piezo Actuators
- Z-Stage also Available

The P-612.2SL is a piezo-based nanostage featuring a compact footprint of only 60 x 60 mm and a height of 18 mm. Due to the 20 x 20 mm large aperture, the system is excellently suited for sample positioning in microscopy or scanning applications. Equipped with piezo drives and zero-stiction, zero-friction flexure guiding system, the series provides nanometer-range resolution and millisecond response time. A Z-stage with the same form factor is available for vertical positioning applications (see P-612.ZSL).

Open- and Closed-Loop Models

Open- and closed-loop versions are available to suit your application. The open-loop models are ideal for applications where fast response and very high resolution are essential, but absolute positioning is

not important. They can also be used when the position is controlled by an external linear position sensor such as an interferometer, a PSD (position sensitive diode), CCD chip / image processing system, or the eyes and hands of an operator.

The closed-loop versions are equipped with high-resolution strain gauge sensors mounted on the flexure guiding system—for optimum position stability and responsiveness. The sensors are operated in a full bridge circuit and provide position information with nanometer resolution to the servo-controller.

Superior Lifetime

Reliability is assured by the use of award-winning PICMA® multilayer actuators, which are integrated into a sophisticated, single-module, flexure guiding

Ordering Information

P-612.2SL

XY Nanopositioning System,
Aperture 20 x 20 mm,
100 x 100 μm , SGS Sensors

P-612.20L

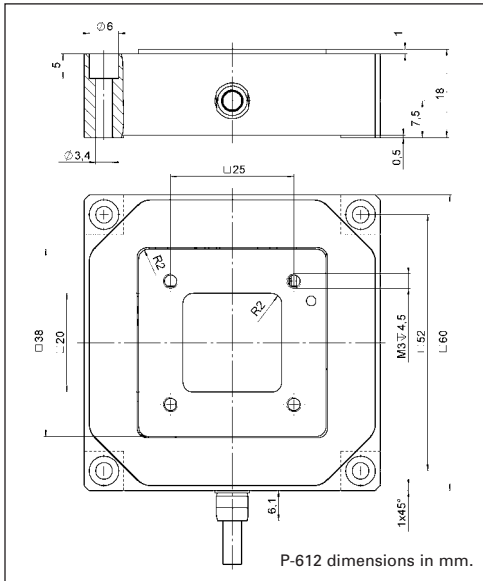
XY Nanopositioning System,
Aperture 20 x 20 mm,
100 x 100 μm , Open-Loop

system. The PICMA® actuators feature cofired ceramic encapsulation and thus offer better performance and reliability than conventional piezo actuators. The wire-EDM-cut flexures are FEA modeled to make them extremely precise. In addition they are maintenance-free and not subject to wear.

Notes

See the “Piezo Drivers & Nanopositioning Controllers” section, p. 6-8 *ff.* for our comprehensive line of low-noise modular and OEM control electronics for computer and manual control.

See the “Selection Guide” on p. 2-14 *ff.* for comparison with other nanopositioning systems.



Technical Data

Models	P-612.2SL	P-612.20L	Units	Notes see p. 2-84
Active axis	X, Y	X, Y		
Min. Open-loop travel @ -20 to 120 V	120 / Axis	120 / Axis	μm	A2
Closed-loop travel	100 / Axis	-	μm	A5
Integrated feedback sensor	SGS	-		B
* Closed- / open-loop resolution	2 / 0.8	- / 0.8	nm	C1
Closed-loop linearity (typ.)	<0.5	-	%	
Repeatability	<25	-	nm	
Stiffness	0.3	0.3	N/ μm $\pm 20\%$	D1
Max. normal load	+1.5 / -0.5	+1.5 / -0.5	kg	D4
Electrical capacitance	1.5 / Axis	1.5 / Axis	μF $\pm 20\%$	F1
** Dynamic operating current coefficient (DOCC)	1.7 / Axis	1.7 / Axis		F2
Unloaded resonant frequency (X/Z)	500 / 400	500 / 400	Hz $\pm 20\%$	G2
Resonant frequency @ 100 g load	170 / 200	170 / 200	Hz $\pm 20\%$	G2
Operating temperature range	-20 to 80	-20 to 80	$^{\circ}\text{C}$	H2
Voltage connection	VL	VL		J1
Sensor connection	L	-		J2
Weight (with cable)	200	195	g $\pm 5\%$	
Body material	S / Al	S / Al		L
Recommended amplifier/controller (codes explained p. 2-17)	D, H	A, G		

* For calibration information see p. 2-8. Resolution of PI piezo nanopositioners is not limited by friction or stiction. 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 0.8 mA drive current.

Piezo Actuators

Nanopositioning & Scanning Systems

Active Optics / Steering Mirrors

Tutorial: Piezo-electrics in Positioning

Capacitive Position Sensors

Piezo Drivers & Nanopositioning Controllers

Hexapods / Micropositioning

Photonics Alignment Solutions

Motion Controllers

Ceramic Linear Motors & Stages

Index