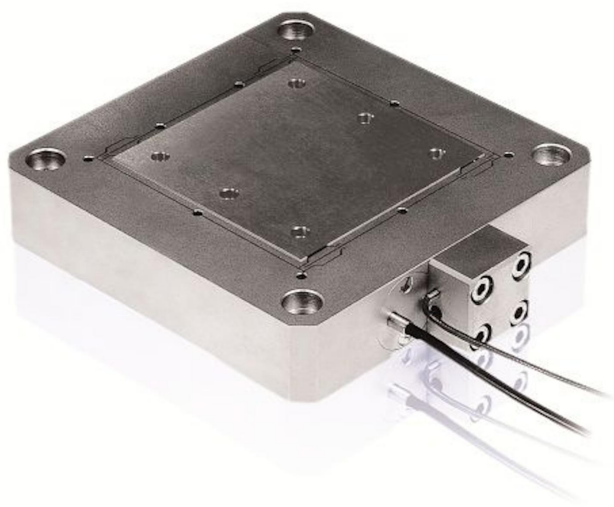


Piezo Nanopositioner

High-Load Piezo-Driven Nanopositioner with Direct Position Measuring



P-750

- Backlash-free, high-precision flexure guides
- Load capacity 5 to 10 kg (depending on mounting orientation)
- Resolution <1 nm
- Direct metrology with capacitive sensors for highest precision
- Direct drive for fast response
- Travel range 75 μm
- Outstanding lifetime due to PICMA® piezo actuators

Outstanding lifetime due to PICMA® piezo actuators

The 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.

Subnanometer resolution with capacitive sensors

Capacitive sensors measure with subnanometer resolution without contacting. They guarantee excellent linearity of motion, long-term stability, and a bandwidth in the kHz range.

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 work in a wide temperature range.

Maximum accuracy due to direct position measuring

Motion is measured directly at the motion platform without any influence from the drive or guide elements. This allows optimal repeatability, outstanding stability, and stiff, fast-responding control.

Motion	Unit	Tolerance	P-750.20
Active axes			X
Travel range in X	μm		75
Travel range in X, open loop, at -20 to 120 V	μm	+20 % / -0 %	75
Angular error around X (roll)	μrad	Typ.	± 10
Angular error around Y (pitch)	μrad	Typ.	± 10

Positioning	Unit	Tolerance	P-750.20
Resolution in X, open loop	nm	Typ.	0.4
Integrated sensor			Capacitive, direct position measuring
System resolution in X	nm		1

Drive properties	Unit	Tolerance	P-750.20
Drive type			PICMA®
Electrical capacitance in X	μF	$\pm 20\%$	7.7

Mechanical properties	Unit	Tolerance	P-750.20
Resonant frequency in X, unloaded	Hz	±20 %	600
Resonant frequency in X, under load with 10 kg	Hz	±20 %	120
Permissible push force in X	N	Max.	100
Permissible push force in Z	N	Max.	100
Permissible pull force in X	N	Max.	50
Permissible pull force in Z	N	Max.	100
Guide			Flexure guide with lever amplification
Overall mass	kg		2.55

Miscellaneous	Unit		P-750.20
Operating temperature range	°C		-20 to 80
Connector			LEMO FFS.00.250.CTCE24
Sensor connector			LEMO FFA.00.250.CTLC31
Cable length	m		1
Recommended controllers/drivers			E-500 • E-501, E-610, E-621, E-625, E-665, E-709, E-754

Resonant frequency in X, under load with 10 kg: With horizontally aligned motion platform.

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.

At PI, technical data is specified at 22 ±3 °C. Unless otherwise stated, the values are for unloaded conditions. Some properties are interdependent. The designation "typ." indicates a statistical average for a property; it does not indicate a guaranteed value for every product supplied. During the final inspection of a product, only selected properties are analyzed, not all. Please note that some product characteristics may deteriorate with increasing operating time.

