

# P-820

## Small-Load Open-Loop Piezo Translators (LVPZT)

>> Click <http://www.pi.ws/fwd/Piezo-Actuator> for the Latest Specs on these Products



P-820.10 and P-820.30 piezo translators

- Displacement to 45  $\mu\text{m}$
- Pushing Forces to 50 N
- Pulling Forces to 10 N
- Sub-msec Response
- Sub-nm Resolution
- Options: Ball Tip

P-820 Small-load piezo translators are high-resolution linear actuators for static and low-frequency dynamic applications. They provide sub-millisecond response and sub-nanometer resolution.

### Design

The translators are equipped with highly reliable multilayer PZT ceramic stacks protected by a non-magnetic stainless steel case with internal spring preload. The standard translator tip is a stainless steel flat. Select the P-820.95 ball tip option to help decouple off-

axis and torque loads from the translator.

### Mounting

For push/pull forces up to 3 N the translator can be mounted

by clamping around the case. For larger forces the translator must be mounted by the base. For positioning of magnetic parts the P-176.30 magnetic adapter can be glued onto the translator tip.

### Factory Installed Options

#### P-820.95

Ball Tip (see page 1-44)

### Accessories

#### P-176.30

Magnetic Adapter, see page 1-45

Extension cables & connectors: see page 6-45 in the "Piezo Drivers & Nanopositioning Controllers" section.

### Notes

See the "Piezo Drivers & Nanopositioning Controllers" section for our comprehensive line of low-noise modular and OEM control electronics for computer and manual control.

For mounting guidelines see page 1-48.

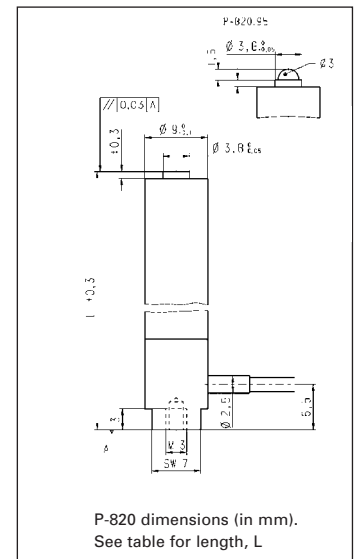
### Ordering Information

**P-820.10**  
Open-Loop LVPZT Translator, 15  $\mu\text{m}$

**P-820.20**  
Open-Loop LVPZT Translator, 30  $\mu\text{m}$

**P-820.30**  
Open-Loop LVPZT Translator, 45  $\mu\text{m}$

**Ask about custom designs!**



P-820 dimensions (in mm). See table for length, L

### Technical Data

Models	P-820.10	P-820.20	P-820.30	Units	Notes see page 1-46
Open-loop travel @ 0 to 100 V	15	30	45	$\mu\text{m} \pm 20\%$	A2
* Open-loop resolution	0.15	0.3	0.45	nm	C1
**Static large-signal stiffness	13	7	4	N/ $\mu\text{m} \pm 20\%$	D1
Push/pull force capacity	50 / 10	50 / 10	50 / 10	N	D3
Torque limit (at tip)	0.08	0.08	0.08	Nm	D6
Electrical capacitance	0.3	0.7	1.0	$\mu\text{F} \pm 20\%$	F1
Dynamic operating current coefficient (DOCC)	3.0	3.0	3.0	$\mu\text{A}/(\text{Hz} \times \mu\text{m})$	F2
Unloaded resonant frequency ( $f_0$ )	22	15	12	$\text{kHz} \pm 20\%$	G2
Standard operating temperature range	-20 to +80	-20 to +80	-20 to +80	$^{\circ}\text{C}$	
Voltage connection	VL	VL	VL		J1
Weight	8	11	14	g $\pm 5\%$	K
Material case, end pieces	N-S	N-S	N-S		L
Length L	26	44	62	mm $\pm 0.3$	
Recommended amplifier/controller (codes explained p. 1-3)	A, C, G	A, C, G	A, C, G		

\* Resolution of piezo actuators is not limited by friction or stiction. Noise equivalent motion with E-503 amplifier  
 \*\* Dynamic small-signal stiffness ~30% higher

## P-250

## Micrometer-Mountable Open-Loop Piezo Translator (HVPZT)



- Displacement 20  $\mu\text{m}$
- Mounts Inside Micrometer Tip
- Sub-msec Response
- Sub-nm Resolution
- Option: Positive Polarity

P-250 piezo translators are high-resolution linear actuators specially designed for integration in micrometer tips. They fit the M-227 DC-Mike motorized actuators, the M-168 Stepper Mike actuators and the M-631 to M-633 manual micrometers (see p. 7-76, 7-84, 7-88). They provide sub-millisecond response and sub-nanometer resolution.

## Accessories

Extension cables & connectors: see page 6-56 in the "Piezo Drivers & Nanopositioning Controllers" section.

## Application Examples

- Laser tuning
- Static and dynamic positioning of small parts
- Fiber alignment

For more examples see page 1-5

## Ordering Information

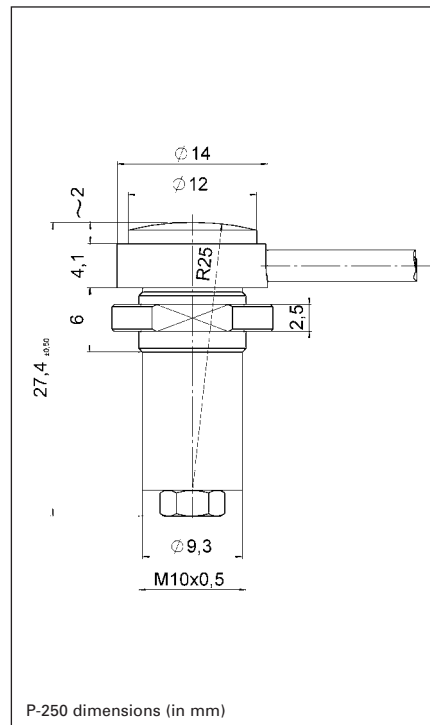
## P-250.10

Micrometer-Mountable Open-Loop HVPZT Translator, 20  $\mu\text{m}$ , BNC Connector

## P-250.20

Micrometer-Mountable Open-Loop HVPZT Translator, 20  $\mu\text{m}$ , Lemo Connector

Ask about custom designs!



P-250 dimensions (in mm)

## Notes

See the "Piezo Drivers & Nanopositioning Controllers" section for our comprehensive line of low-noise modular and OEM control electronics for computer and manual control.

## Technical Data

Models	P-250.10 P-250.20	Units	Notes see page 1-46
Open-loop travel @ 0 to -1000 V	20	$\mu\text{m} \pm 20\%$	A4
* Open-loop resolution	0.2	nm	C2
Static large-signal stiffness ***	20	$\text{N}/\mu\text{m} \pm 20\%$	D1
Push/pull force capacity	100 / 5	N	D3
Max. operating voltage range	0 to -1000	V	A7
Electrical capacitance	22	$\text{nF} \pm 20\%$	F1
Dynamic operating current coefficient (DOCC)	1.4	$\mu\text{A}/(\text{Hz} \times \mu\text{m})$	F2
Unloaded resonant frequency ( $f_0$ )	11	$\text{kHz} \pm 20\%$	G2
Standard operating temperature range	-40 to +80	$^{\circ}\text{C}$	
** Voltage connection	VH		J1
Weight	28	$\text{g} \pm 5\%$	K
Recommended amplifier (codes explained p. 1-3)	B, I		

\* Resolution of piezo actuators is not limited by friction or stiction. Noise equivalent motion with E-507 amplifier;  
 \*\* Model P-250.10 with BNC connector;  
 \*\*\* Dynamic small-signal stiffness ~50% higher

## 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

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