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P-820 Preloaded Piezo Actuators

For Light and Medium Loads



P-820.10 and P-820.30 piezo actuators

- **Outstanding Lifetime Due to PICMA® Piezo Ceramic Stacks**
- **Travel Range to 45 µm**
- **Pushing Forces to 50 N**
- **Pulling Forces to 10 N**
- **Sub-Millisecond Response, Sub-Nanometer Resolution**
- **Versions with Ball Tip**

The P-820 series piezo translators are high resolution linear actuators for static and dynamic applications. They provide submillisecond response and subnanometer resolution.

Design

These actuators consist of a friction-free, preloaded monolithic piezo ceramic stack integrated in a stainless steel housing.

Ceramic Insulated Piezo Actuators Provide Long Lifetime

The highest possible reliability is assured by employing the award-winning PICMA® multilayer piezo actuators. PICMA® actuators are the only actuators on the market with a ceramic-only insulation, which makes them resistant to ambient humidity and leakage-current failures. They are thus far superior to conventional actuators in reliability and lifetime.

Mounting

Mounting is at the foot, with push/pull forces of less than 3 N, the actuator can be held by clamping the case. The versions with ball tip decouple torque and off-center forces from the piezo ceramic.
Read details in Mounting and Handling Guidelines (s. p. 1-67).

Accessories

To provide magnetic coupling, the P-176.30 magnetic adapter can be glued on (only for versions without ball tip).
P-176.30 Magnetic Adapter
For extensions, adapter cables and connectors, see "Accessories" in the piezo electronics chapter (s. p. 2-168 *ff*).

Piezo Drivers, Controllers & Amplifiers

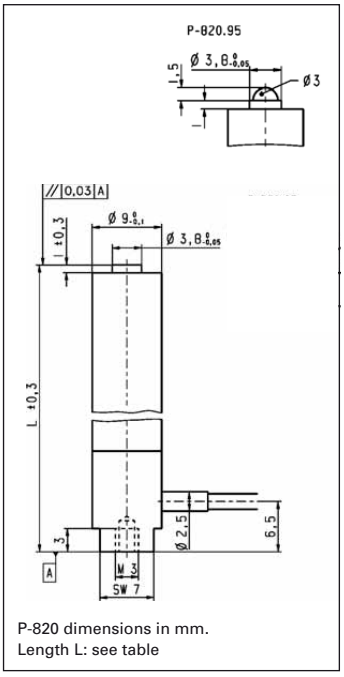
High-resolution amplifiers and servo-control electronics, both digital and analog, are described in the "Piezo Drivers / Servo Controllers" (s. p. 2-99 *ff*) section.

Ordering Information

Preloaded Piezo Actuator, 50/10 N

P-820. ☐☐

- **1** 15 µm Travel Range
- **2** 30 µm Travel Range
- **0** without Ball Tip
- **B** with Ball Tip



P-820 dimensions in mm.
Length L: see table

Application Examples

- Static and dynamic precision positioning
- Fiber positioning
- Laser tuning
- Nanotechnology

Technical Data

Model	P-820.10 P-820.1B	P-820.20 P-820.2B	P-820.30 P-820.3B	Units
Displacement at 0 to 100 V	15	30	45	µm ±20 %
*Resolution	0.15	0.3	0.45	nm
**Static large-signal stiffness	13	7	4	N/µm ±20 %
Push/pull force capacity	50 / 10	50 / 10	50 / 10	N
Max. torque limit (on tip)	0.08	0.08	0.08	Nm
Electrical capacitance	0.3	0.7	1.0	µF ±20 %
Dynamic operating current coefficient (DOCC)	3.0	3.0	3.0	µA / (Hz • µm)
Unloaded resonant frequency f_0	22	15	12	kHz ±20 %
Operating temperature	-20 to +80	-20 to +80	-20 to +80	°C
Mass	8	11	14	g ±5 %
Material: case, end pieces	N-S	N-S	N-S	
Length L	26	44	62	mm ±0.3

*The resolution of piezo actuators is not limited by stiction or friction. Value given is noise equivalent motion with E-503 amplifier (p. 2-146)
**Dynamic small-signal stiffness is ~ 30 % higher
Voltage connection: LEMO FFA.00.250. Coaxial cable, RG 178, 1 m.
Recommended amplifiers / controllers
One channel: E-610 controller / amplifier (p. 2-110)
Modular system E-500 (p. 2-142) with amplifier module E-503 (multi-channel) (p. 2-146)
Multi-channel: E-663 amplifier (p. 2-136)

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