

B7 Series Preloaded Piezo Actuator



Features

- 1000N thrust
- Piezoelectric ceramics with lifetime of one billion cycles
- Sub-nanometer resolution
- Simple structure, compact size
- Vacuum compatible up to 10^{-5} Pa
- Threaded interface, optional flat and spherical end caps

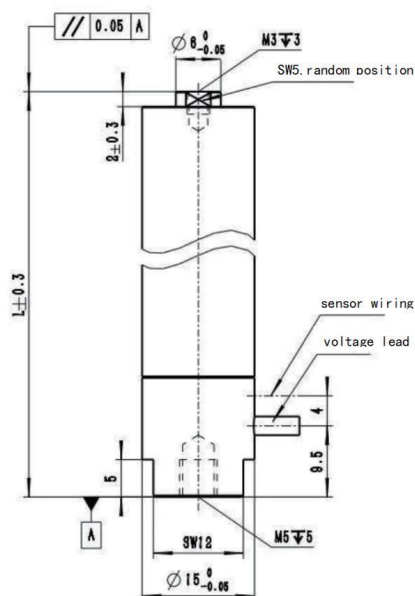
Description

Preloaded Piezo Actuator is an armored device for Piezo Stack Actuator, which plays a role in stack protection and easy installation. At the same time, the actuator applies pre-pressure to the piezoelectric ceramic internally, providing a certain amount of tension and adjustment of displacement output. Preloaded Piezo Actuator can be internally integrated with strain gauges to achieve closed-loop control.

Applications

- Static and dynamic precision positioning
- Laser tuning

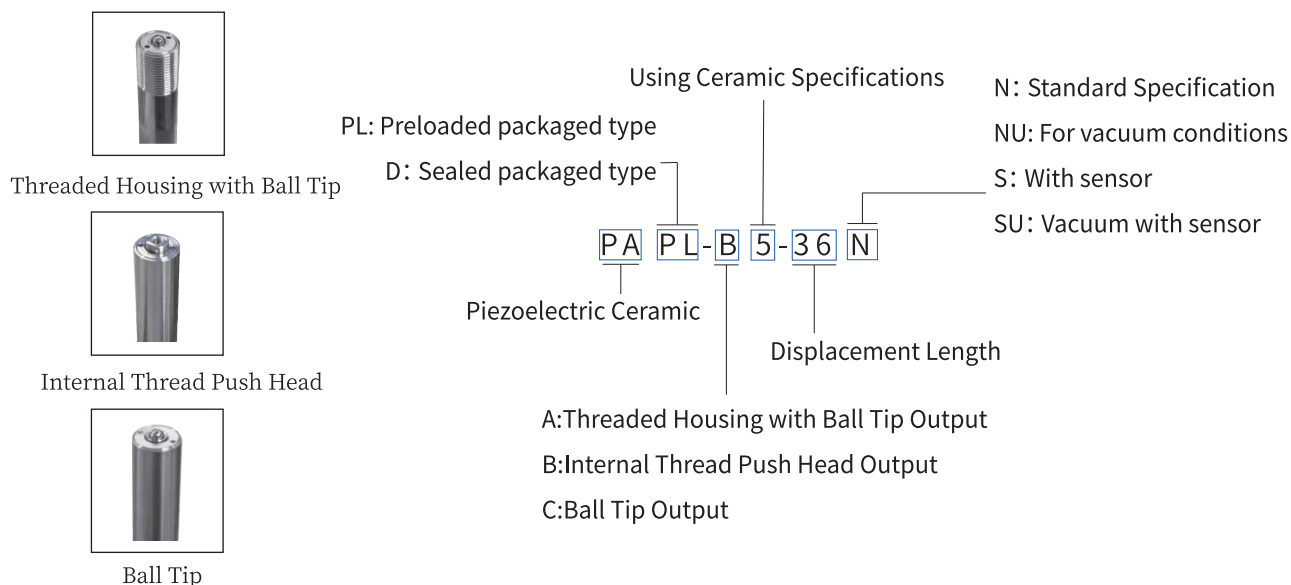
Interface Definition



Option	L
PAPL-B7-18N/S/NU/SU	36
PAPL-B7-36N/S/NU/SU	55
PAPL-B7-54N/S/NU/SU	72
PAPL-B7-72N/S/NU/SU	90
PAPL-B7-90N/S/NU/SU	108
PAPL-B7-108N/S/NU/SU	126

Internal threaded interface, optional flat and spherical end caps.

Model Interpretation



Technical Specifications

	PAPL-B7-18N	PAPL-B7-36N	PAPL-B7-54N	PAPL-B7-60N	PAPL-B7-90N	PAPL-B7-108N	Unit	Tolerance
Travel range at 150V*	18	36	54	60	90	108	μm	±20%
Electrical capacitance**	3	6	9	12	15	18	μF	±20%
Open loop resolution	0.18	0.36	0.54	0.72	0.9	1.08	nm	Typical value
Integrated sensor	SGS							
Closed loop resolution***	0.36	0.72	1.08	1.44	1.8	2.16	nm	Typical value
Resonant frequency	22	17.5	15	13	11	10	kHz	±20%
Stiffness	225	107	75	57	44	38	N/μm	±20%
Push force****	2000	2000	2000	2000	2000	2000	N	Max. value
Pull force	300	300	300	300	300	300	N	Max. value
Operating voltage	-20~150						V	
Operating temperature range	-20~80						°C	
Voltage connection	LEMO FFA.00.250							
Sensor connection	LEMO FFA.0S.304							
Cable length	1.5						m	±0.02 m

* Displacement output under no load

** Capacitance test conditions: ambient temperature environment, 1Vpp, 1kHz

*** Closed-loop parameters applicable only to the closed-loop version of the piezoelectric preload actuator

**** Thrust test: drive voltage range 0 to 150V

Other specifications can be customized on request

Customization Information

B7 series Preloaded Piezo Actuator, open-loop version

Type	Feature
PAPL-B7-18N	B7 series Preloaded Piezo Actuator, effective travel 18μm, open-loop.
PAPL-B7-36N	B7 series Preloaded Piezo Actuator, effective travel 36μm, open-loop.
PAPL-B7-54N	B7 series Preloaded Piezo Actuator, effective travel 54μm, open-loop.
PAPL-B7-60N	B7 series Preloaded Piezo Actuator, effective travel 60μm, open-loop.
PAPL-B7-90N	B7 series Preloaded Piezo Actuator, effective travel 90μm, open-loop.
PAPL-B7-108N	B7 series Preloaded Piezo Actuator, effective travel 108μm, open-loop.

B7 series Preloaded Piezo Actuator, strain gauge closed-loop

Type	Feature
PAPL-B7-18S	B7 series Preloaded Piezo Actuator, effective travel 18μm, strain gauge closed-loop.
PAPL-B7-36S	B7 series Preloaded Piezo Actuator, effective travel 36μm, strain gauge closed-loop.
PAPL-B7-54S	B7 series Preloaded Piezo Actuator, effective travel 54μm, strain gauge closed-loop.
PAPL-B7-60S	B7 series Preloaded Piezo Actuator, effective travel 60μm, strain gauge closed-loop.
PAPL-B7-90S	B7 series Preloaded Piezo Actuator, effective travel 90μm, strain gauge closed-loop.
PAPL-B7-108S	B7 series Preloaded Piezo Actuator, effective travel 108μm, strain gauge closed-loop.

B7 series Preloaded Piezo Actuator, open-loop, vacuum compatible version

Type	Feature
PAPL-B7-18NU	B7 series Preloaded Piezo Actuator, effective travel 18μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-B7-36NU	B7 series Preloaded Piezo Actuator, effective travel 36μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-B7-54NU	B7 series Preloaded Piezo Actuator, effective travel 54μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-B7-60NU	B7 series Preloaded Piezo Actuator, effective travel 60μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-B7-90NU	B7 series Preloaded Piezo Actuator, effective travel 90μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-B7-108NU	B7 series Preloaded Piezo Actuator, effective travel 108μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.

B7 series Preloaded Piezo Actuator, strain gauge closed-loop, vacuum compatible version

Type	Feature
PAPL-B7-18SU	B7 series Preloaded Piezo Actuator, effective travel 18μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-B7-36SU	B7 series Preloaded Piezo Actuator, effective travel 36μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-B7-54SU	B7 series Preloaded Piezo Actuator, effective travel 54μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-B7-60SU	B7 series Preloaded Piezo Actuator, effective travel 60μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-B7-90SU	B7 series Preloaded Piezo Actuator, effective travel 90μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-B7-108SU	B7 series Preloaded Piezo Actuator, effective travel 108μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.