

C7 Series Preloaded Piezo Actuator



Features

- 2000N thrust
- Piezoelectric ceramics with lifetime of one billion cycles
- Sub-nanometer resolution
- Simple structure, compact size
- Vacuum compatible up to 10^{-5} Pa
- Integrated spherical end cap

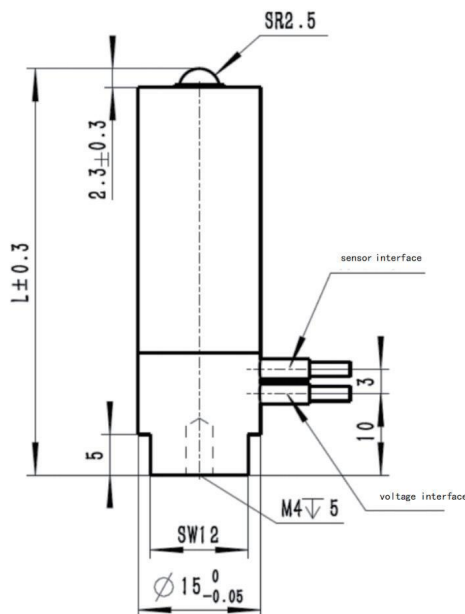
Description

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
- Optical fibre positioning adjustment
- Micro-nano technology

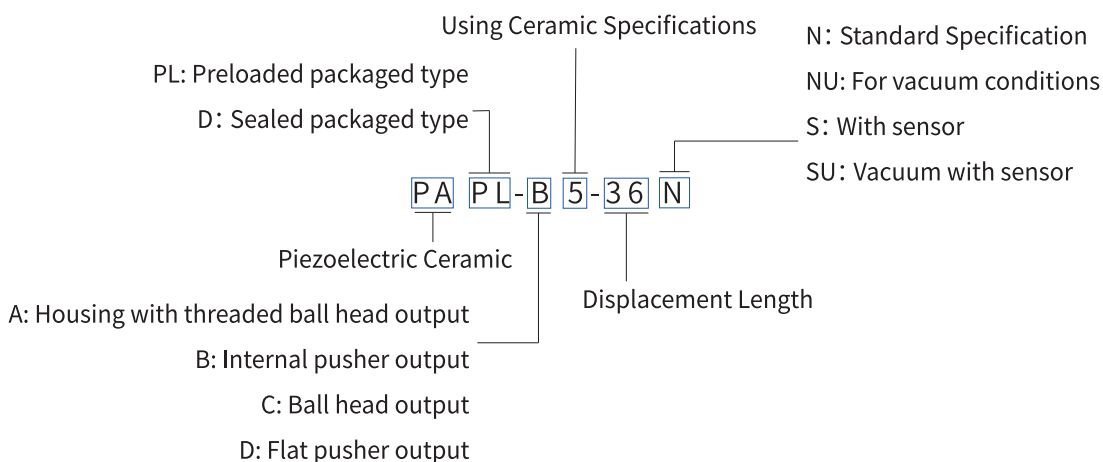
Interface Definition



Option	L
PAPL-C7-18N/S/NU/SU	32
PAPL-C7-36N/S/NU/SU	50
PAPL-C7-54N/S/NU/SU	68
PAPL-C7-72N/S/NU/SU	86
PAPL-C7-90N/S/NU/SU	104
PAPL-C7-108N/S/NU/SU	122
PAPL-C7-180N/S/NU/SU	195

Default spherical end caps, other end caps can be customized.

Model Interpretation



Technical Specifications

	PAPL-C7-18N	PAPL-C7-36N	PAPL-C7-54N	PAPL-C7-72N	PAPL-C7-90N	PAPL-C7-108N	PAPL-C7-180N	Unit	Tolerance
Travel range at 150V*	18	36	54	72	90	108	180	μm	±20%
Electrical capacitance**	3	6	9	12	15	18	30	μF	±20%
Open loop resolution	0.18	0.36	0.54	0.72	0.9	1.08	1.8	nm	Typical value
Integrated sensor***	SGS								
Closed loop resolution***	0.36	0.72	1.08	1.44	1.8	2.16	3.6	nm	Typical value
Resonant frequency	22	17.5	15	13	11	10	4.5	kHz	±20%
Stiffness	225	107	75	57	44	38	10	N/μm	±20%
Push force****	2000	2000	2000	2000	2000	2000	2000	N	Max. value
Pull force	150	150	150	150	150	150	150	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

C7 series Preloaded Piezo Actuator, open-loop version

Type	Feature
PAPL-C7-18N	C7 series Preloaded Piezo Actuator, effective travel 18μm, open-loop.
PAPL-C7-36N	C7 series Preloaded Piezo Actuator, effective travel 36μm, open-loop.
PAPL-C7-54N	C7 series Preloaded Piezo Actuator, effective travel 54μm, open-loop.
PAPL-C7-60N	C7 series Preloaded Piezo Actuator, effective travel 60μm, open-loop.
PAPL-C7-90N	C7 series Preloaded Piezo Actuator, effective travel 90μm, open-loop.
PAPL-C7-108N	C7 series Preloaded Piezo Actuator, effective travel 108μm, open-loop.
PAPL-C7-180N	C7 series Preloaded Piezo Actuator, effective travel 180μm, open-loop.

C7 series Preloaded Piezo Actuator, strain gauge closed-loop

Type	Feature
PAPL-C7-18S	C7 series Preloaded Piezo Actuator, effective travel 18μm, strain gauge closed-loop.
PAPL-C7-36S	C7 series Preloaded Piezo Actuator, effective travel 36μm, strain gauge closed-loop.
PAPL-C7-54S	C7 series Preloaded Piezo Actuator, effective travel 54μm, strain gauge closed-loop.
PAPL-C7-60S	C7 series Preloaded Piezo Actuator, effective travel 60μm, strain gauge closed-loop.
PAPL-C7-90S	C7 series Preloaded Piezo Actuator, effective travel 90μm, strain gauge closed-loop.
PAPL-C7-108S	C7 series Preloaded Piezo Actuator, effective travel 108μm, strain gauge closed-loop.
PAPL-C7-180S	C7 series Preloaded Piezo Actuator, effective travel 180μm, strain gauge closed-loop.

C7 series Preloaded Piezo Actuator, open-loop, vacuum compatible version

Type	Feature
PAPL-C7-18NU	C7 series Preloaded Piezo Actuator, effective travel 18μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-36NU	C7 series Preloaded Piezo Actuator, effective travel 36μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-54NU	C7 series Preloaded Piezo Actuator, effective travel 54μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-60NU	C7 series Preloaded Piezo Actuator, effective travel 72μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-90NU	C7 series Preloaded Piezo Actuator, effective travel 90μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-108NU	C7 series Preloaded Piezo Actuator, effective travel 108μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-180NU	C7 series Preloaded Piezo Actuator, effective travel 180μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.

C7 series Preloaded Piezo Actuator, strain gauge closed-loop, vacuum compatible version

Type	Feature
PAPL-C7-18SU	C7 series Preloaded Piezo Actuator, effective travel 18μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-36SU	C7 series Preloaded Piezo Actuator, effective travel 36μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-54SU	C7 series Preloaded Piezo Actuator, effective travel 54μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-60SU	C7 series Preloaded Piezo Actuator, effective travel 72μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-90SU	C7 series Preloaded Piezo Actuator, effective travel 90μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-108SU	C7 series Preloaded Piezo Actuator, effective travel 108μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-C7-180SU	C7 series Preloaded Piezo Actuator, effective travel 180μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.