

A5 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

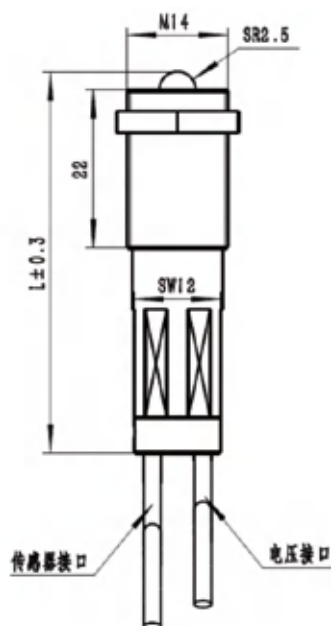
Description

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
- Optical fibre positioning adjustment
- Laser tuning
- Micro-nano technology

Interface Definition



Option	L
PAPL-A5-36N/S/NU/SU	53
PAPL-A5-45N/S/NU/SU	62
PAPL-A5-60N/S/NU/SU	77
PAPL-A5-90N/S/NU/SU	107

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

Technical Specifications

	PAPL-A5-36N	PAPL-A5-45N	PAPL-A5-60N	PAPL-A5-90N	Unit	Tolerance
Travel range at 150V*	40	50	65	100	μm	±20%
Electrical capacitance**	3	3.8	5	7.5	μF	±20%
Open loop resolution	0.36	0.45	0.6	0.9	nm	Typical value
Integrated sensor	SGS					/
Closed loop resolution***	0.72	0.9	1.2	1.8	nm	Typical value
Resonant frequency	12	10	7	4	kHz	±20%
Stiffness	20	17	12	8	N/μm	±20%
Push force****	850	850	850	850	N	Max. value
Pull force	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	0.50%

* 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

A5 series Preloaded Piezo Actuator, open-loop version

Option	Description
PAPL-A5-36N	A5 series Preloaded Piezo Actuator, effective travel 40μm, open-loop.
PAPL-A5-45N	A5 series Preloaded Piezo Actuator, effective travel 50μm, open-loop.
PAPL-A5-60N	A5 series Preloaded Piezo Actuator, effective travel 65μm, open-loop.
PAPL-A5-90N	A5 series Preloaded Piezo Actuator, effective travel 100μm, open-loop.

A5 series Preloaded Piezo Actuator, strain gauge closed-loop

Option	Description
PAPL-A5-36S	A5 series Preloaded Piezo Actuator, effective travel 40μm, strain gauge closed-loop.
PAPL-A5-45S	A5 series Preloaded Piezo Actuator, effective travel 50μm, strain gauge closed-loop.
PAPL-A5-60S	A5 series Preloaded Piezo Actuator, effective travel 65μm, strain gauge closed-loop.
PAPL-A5-90S	A5 series Preloaded Piezo Actuator, effective travel 100μm, strain gauge closed-loop.

A5 series Preloaded Piezo Actuator, open-loop, vacuum compatible version

Option	Description
PAPL-A5-36NU	A5 series Preloaded Piezo Actuator, effective travel 40μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-A5-45NU	A5 series Preloaded Piezo Actuator, effective travel 50μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-A5-60NU	A5 series Preloaded Piezo Actuator, effective travel 65μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-A5-90NU	A5 series Preloaded Piezo Actuator, effective travel 100μm, open-loop, vacuum compatible up to 10 ⁻⁵ Pa.

A5 series Preloaded Piezo Actuator, strain gauge closed-loop, vacuum compatible version

Option	Description
PAPL-A5-36SU	A5 series Preloaded Piezo Actuator, effective travel 40μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-A5-45SU	A5 series Preloaded Piezo Actuator, effective travel 50μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-A5-60SU	A5 series Preloaded Piezo Actuator, effective travel 65μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.
PAPL-A5-90SU	A5 series Preloaded Piezo Actuator, effective travel 100μm, strain gauge closed-loop, vacuum compatible up to 10 ⁻⁵ Pa.