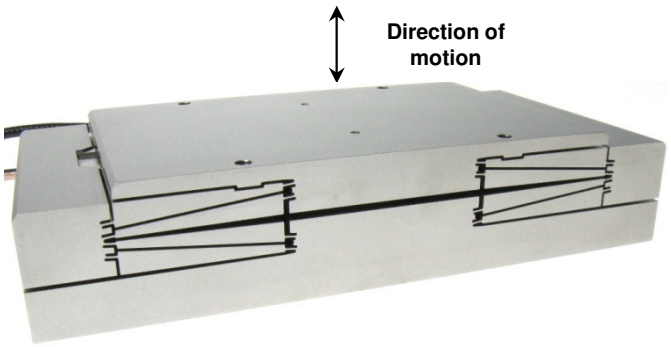
ZSA-1000C 1mm Nanopositioning Piezoelectric Stage

Description

DSM's nanopositioning piezoelectric ZSA-1000C stage features flexure-guided motion over a 1mm vertical travel range for scanning, metrology, and inspection processes. The stable and stiff kinematic design promotes parallelism in the output motion with minimal roll and tilt as well as dynamic responsiveness for excellent position stability and control. The stage can be paired with DSM's SA-500 for closed-loop control with a high-resolution capacitive probe to provide 20nm position stability and very stable velocity profiles over specified scan regions.



Specifications

- Open-Loop Travel: 1050 micron ± 10%
- Closed-Loop Travel: 1000 micron ± 10%
- Closed-Loop Resolution: 20 nanometers typical
- Stiffness: 0.4 N/micron ± 10%
- Linearity: 0.12% typical
- Runout (Θx, Θy): <100 micro radians typical
- Unloaded Resonant Freq: 200 Hz ± 10%
- Resonant Freq @100g: 150 Hz ± 10%
- Push/pull force capacity: 75/150 N Max
- Load capacity: 75 N Max
- Lateral Force: 10 N Max
- Electrical Capacitance: 30 micro Farads ± 10%
- Width x Length: 62.5 x 125 mm
- Height: 25.1 ± 0.1 mm
- Mass: 1 kilogram ± 10%
- Material: Stainless steel
- Cable Length: 1.5 meters

System Configuration:

- Integrated Sensor: Capacitive
- Servo Amplifier: DSM SA-500
- Amplifier bandwidth: >4 kHz

Highlights of the Z-Stage Design

- Flexure-guided for smooth, parallel motion
- 25 mm height, 62.5 x 125 mm footprint
- Integrated capacitive probe
- Stiff construction for responsive dynamic behavior
- Vertical displacement range of 1 mm
- Customizable mounting configurations

Operation / Performance

The ZSA-1000C's structure easily accommodates the use of a variety of displacement sensors including capacitive probes (standard) for true nanopositioning motion control capability.

DSM's SA-500 servo amplifier provides stand alone closed-loop control with serial communication, analog or digital feedback, and digital I/O for additional control and communication capabilities.