

Description

DSM's Nanopress Material Stress Testing Tool was developed to create a 3- and 4-point bend test system intended for nan positioning motion control in mechanical break junction circuit development. A subsequent revision incorporated a high-resolution load cell for testing of thin films under stressed conditions.

The hardware design includes a coarse 1.5 mm adjustment capability for specimen load/unload and a piezoelectric actuator for 40 microns of precision motion. A capacitive probe provides the analog displacement feedback signal that is routed into the SA piezo servo amplifier and used to establish position servo control.

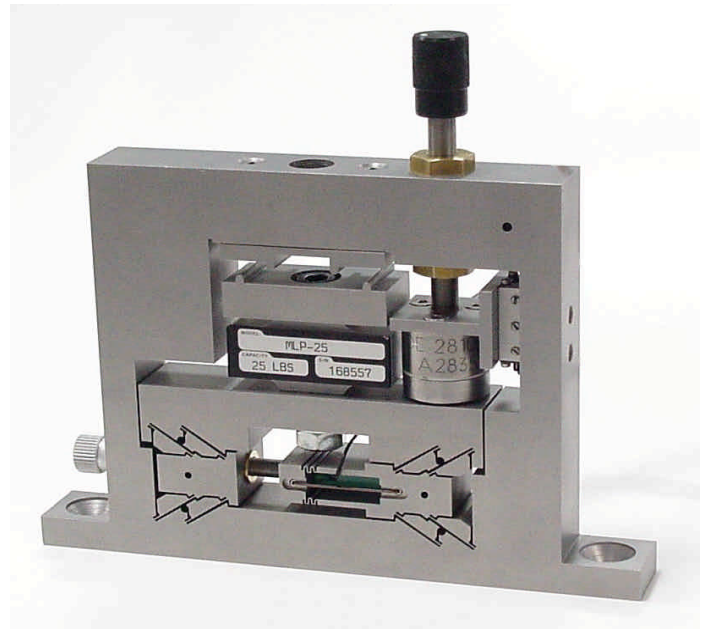
Operation/Performance

For true servo control of the stage's motion, DSM recommends closing the loop with a feedback device. The stage's structure easily accommodates the use of a variety of displacement sensors. DSM will gladly discuss the incorporation of other feedback devices per a customer's request.

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



DSM's Benchtop SA Servo Amplifier



Highlights

- 1.5 mm coarse manual adjustment
- 40 microns PZT actuator displacement with 50N force capability
- Closed-loop nan positioning via capacitive probe displacement feedback sensor
- Reconfigurable for 3- or 4-point bend testing
- Vacuum compatible construction
- Scalable technology for larger motion ranges

Scalability

The Nanopress technology can be readily adapted for longer displacement and higher maximum load specifications:

DSM's piezoelectric motion platforms are designed for bi-directional operation, and DSM can readily configure mechanism designs specifically intended to push or to pull on specimens.

Custom Actuators

DSM has extensive experience in custom actuator design for specialized force or stroke requirements. Customers are encouraged to contact DSM regarding specific actuator and application requirements.