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The 17 MPZ 001 modular piezoelectric controller is a single-channel closed-loop controller for use with the ultraprecision range of active feedback actuators incorporated in various Melles Griot nanopositioners. Because these actuators are fitted with zero-temperature-coefficient transducers, use of the controller enables active position feedback control.

In the closed-loop mode, there is automatic compensation for any small positional perturbations. Well-behaved positional control is provided in a monotonic manner down to nanometric levels. The controller utilizes an ultrasensitive position transducer to monitor the exact extension of the piezoactuator and then generates an error signal to close the position loop.

Piezoelectric hysteresis and creep are eliminated, and position on demand is available at a low nanometric level, with the piezoelectrics fulfilling their potential as the ultimate positioning actuators.

The feedback system from the transducer attached to the appropriate piezo is connected via a self-latching connector to the front panel of the controller. When the position control switch is switched on, the transducer control loop is closed, the position control LED illuminates, and the voltage to the piezo will automatically adjust to maintain the chosen extension. Alternatively, the system will automatically track any changes in the applied external or manual controls, ensuring that the piezo extension changes linearly with the control voltages. Each axis can be zeroed by the controller to align the zero of each transducer to the zero output voltage setting.

DYNAMIC RESPONSE AND CONTROL

The amplifiers combine exceptionally high frequency response with the ultralow noise characteristics essential for obtaining the lowest possible noise-equivalent motion. Careful design of the feedback loop makes it possible to drive a piezo actuator in closed-loop operation at frequencies up to 300 Hz with a step response of from 2 to 3 msec.

Available in:
✓ Production Quantities

Piezoelectric Control Module with Feedback

SPECIFICATIONS: **PIEZOELECTRIC CONTROL MODULE WITH FEEDBACK**

Output Voltage: 0 – 75 Vdc, SMC screw connectors

Input Drive Source:
BNC 0 –10 Vdc inputs, SUMmed or DIFFerenced with output from a 10-turn manual offsetting potentiometer

Output Protection: Thermal trip

Voltage Stability: 100 ppm over 24 hours

Noise: < 3 mV rms

Output Current: 0 – 500 mA per channel

Bandwidth:
Open loop: dc – 8.5 kHz
Closed loop: dc – 1 kHz

Modes: Voltage and Position in μm
< 5-nm accuracy
< 5-nm repeatability

Feedback Socket: Lemo miniature 7-pin female

Dimensions (W × H × D):
12 HP (61 mm) × 3 U (134 mm) × 220 mm

Piezoelectric Control Module with Feedback

	PRODUCT NUMBER
Piezoelectric Control Module with Feedback	17 MPZ 001

Nanopositioning Technology

Nanopositioning Stages

Mechanical Accessories

Piezoelectric and Stepper-Motor Controllers

Autoalignment

Modular System Controllers

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MELLES GRIOT 35.5



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