

Signal Conditioner / Piezo Servo Module

Servo Controller Module for up to 3 Axes, E-500 Piezo Controller System



E-509

- Position control for piezo positioning systems with SGS, and capacitive sensors
- Improves linearity error
- Eliminates drift and hysteresis
- Notch filter for higher bandwidth
- Increases piezo stiffness
- ILS circuitry optimizes capacitive sensor linearity

Position control module with sensor evaluation electronics

The E-509 is a position control module with sensor evaluation electronics for nanopositioning systems with integrated position sensors. It automatically eliminates drift or hysteresis occurring during voltage-controlled piezo operation, and compensates changes in the position of the piezo actuator position when the piezo voltage is adjusted immediately after a change of load.

Nanometer-precision piezo positioning

Proportional-integral position control of the E-509 servo controller module is optimized for piezo operation. The proportional and integral term as well as the control bandwidth can be adjusted individually. The integrated notch filters (can be set for each axis) improve the stability and allow wider -bandwidth operation closer to the mechanical resonant frequency of the piezo system. Depending on the piezo mechanics and the sensor type, positioning accuracy and repeatability is therefore possible in the nanometer range.

The E-509.E03 model for signal evaluation and E-509.E3 model as servo controller module are available for the high-resolution capacitive single-plate sensors in the PISeca series.

Specifications

	E-509.C1A / E-509.C2A / E-509.C3A	E-509.S1 / E-509.S3
Function	Sensor evaluation and position servo control electronics for piezo mechanics	Sensor evaluation and position servo control electronics for piezo mechanics
Axes	1 / 2 / 3	1 / 3

Sensor	E-509.C1A / E-509.C2A / E-509.C3A	E-509.S1 / E-509.S3
Controller type	P-I (analog), notch filter	P-I (analog), notch filter
Sensor type	Capacitive	SGS
Sensor channels	1 / 2 / 3	1 / 3
Sensor bandwidth	0.3 to 3 kHz (jumper selectable); to 10 kHz on request	0.3; 1; 3 kHz
Noise factor	0.115 ppm/VHz	-
Thermal drift	<0.3 mV/°C	<3 mV/°C
Linearity error	<0.05 %	<0.2 %

Interfaces and operation	E-509.C1A / E-509.C2A / E-509.C3A	E-509.S1 / E-509.S3
Sensor connection	LEMO EPL.00.250.NTD	LEMO ERA.0S.304.CLL
Sensor monitor output	0 – 10 V	0 – 10 V
Sensor monitor socket	LEMO 6-pin FGG.0B.306.CLAD56	BNC (1-ch.) / 3-pin LEMO (3-ch.)
Supported functions	ILS	ILS
Display and indicators	Overflow LED	Overflow LED

Miscellaneous	E-509.C1A / E-509.C2A / E-509.C3A	E-509.S1 / E-509.S3
Operating temperature range	5 to 50 °C	5 to 50 °C
Dimensions	7 T / 3 H	7 T / 3 H
Mass	0.35 kg	0.35 kg
Operating voltage	E-500 system	E-500 system
Max. power consumption	4 to 8 W	4 to 8 W

Ask about custom designs!

Ordering Information

E-509.C1A

Sensor / servo controller module, capacitive sensor, 1 axis

E-509.C2A

Sensor / servo controller module, capacitive sensors, 2 axes

E-509.C3A

Sensor / servo controller module, capacitive sensors, 3 axes

E-509.S1

Sensor / servo controller module, strain gauge sensor, 1 axis

E-509.S3

Sensor / servo controller module, strain gauge sensors, 3 axes