

E-609 OEM Piezo Controller with Digital Servo

Increased Performance for Low-Cost Piezo Systems



E-609 digital servo controller with a PIFOC® objective scanner

- Most Cost-Efficient Digital Piezo Controller
- Servo Tuning and Parameter Setting by Software
- Digital Algorithms Improve Linearity
- Analog Control Input for Target Values

The E-609 opens up the possibilities of digital control for piezo-driven nan positioning systems for the same price as analog controllers. The unit comes with an 0 to 10 V position control input for ease of integration in applications with analog control signals. However, all signal processing in the E-609 is purely digital, and the digital servo can be easily optimized and tuned via the USB interface and the included software. Digital servos provide advantages over analog circuits when high positioning linearity is important or when control parameters need to be modified frequently. This could be the case when load changes occur or to optimize different motion profiles.

Flexibility: Software-Configurable Servo Parameters

All servo controllers require tuning and adjustment of servo parameters for optimum performance (e.g. as a result of changes to the load or the motion profile). With a digital controller, all adjustments are carried out by simple software commands and the resulting motion or transient characteristics can be viewed, analyzed and further optimized immediately with the provided software. It is also possible to switch between previously found sets of parameters when the controller is in operation. Since jumpers and potentiometers no longer have to be set manually, system integration becomes much more straightforward. For this pur-

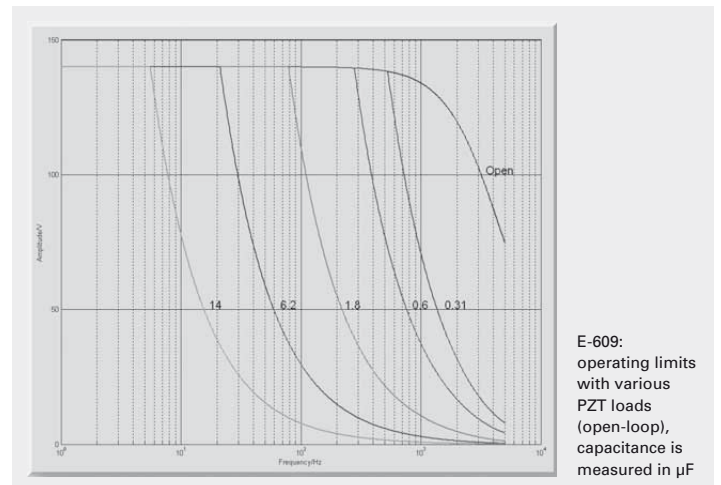
pose, the E-609 offers an USB service interface.

Versions With Additional Functions

The E-709 controller is available as an alternative to the E-609. This controller offers additional high-speed digital interfaces for position control. Furthermore sensor data can be read via the USB or the RS-232 interface. The unit also provides several I/O functions and comes with comprehensive software support with DLLs and LabVIEW drivers for Windows and LINUX operating systems.

Ordering Information

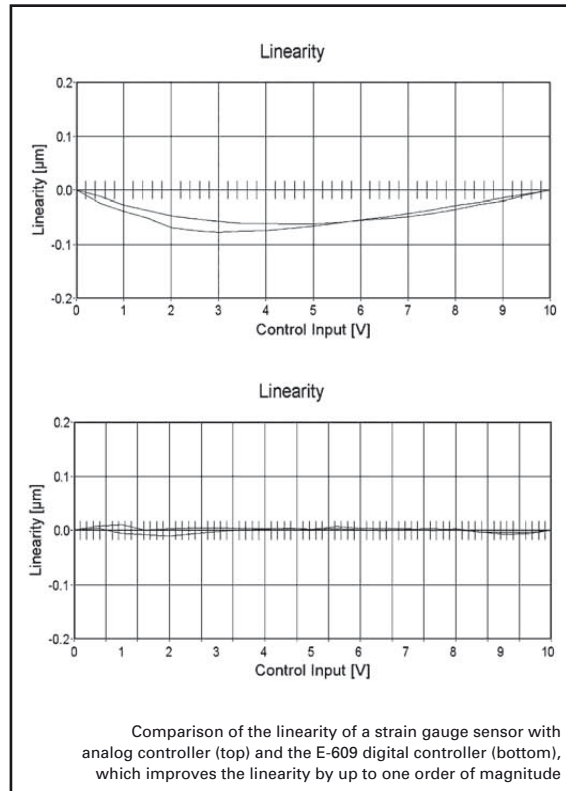
- E-609.C0**
Piezo Driver with Digital Servo, Analog Control Input, 1 Channel, OEM Module, -30 to 130 V, Capacitive Sensor
- E-609.P0**
Piezo Driver with Digital Servo, Analog Control Input, 1 Channel, OEM Module, -30 to 130 V, Piezoresistive Sensor
- E-609.S0**
Piezo Driver with Digital Servo, Analog Control Input, 1 Channel, OEM Module, -30 to 130 V, SGS-Sensor



E-709 digital servo controller (preliminary case design); bench-top with digital interface

Technical Data

Modell	E-609.C0 E-609.P0 E-609.S0
Function	Digital controller for single-axis piezo nanopositioning systems, OEM board
Channels	1
Processor	DSP 32-bit floating point, 150 MHz
Servo characteristics	P-I, two notch filters, sensor linearization
Sampling rate, servo-control	10 kHz
Sampling rate, sensor	10 kHz
Sensor	
Sensor type	Capacitive sensor (.C0) Piezoresistive sensor (.P0) Metal foil strain gauge sensors (.S0)
Linearization	5th order polynomials
Sensor bandwidth	5 kHz
Sensor resolution	16-bit
Ext. synchronization	No
Amplifier	
Output voltage	-30 V to +130 V
Peak output power	10 W (<5 ms)
Average output power	5 W (>5 ms)
Peak current	100 mA (<5 ms)
Average output current	50 mA (>5 ms)
Current limitation	Short-circuit-proof
Resolution DAC	17-bit
Interfaces and operation	
Interface / communication	Analog
Piezo / sensor connector	Sub-D-special connector (.C0) 9-pin sub-D connector (.P0/.S0)
Analog input / control in	SMB, 0 to 10 V
Sensor monitor output	SMB, 0 to 10 V
Digital input	USB interface for parameter input
User software	Configuration tool for input of parameters and display of system behavior
Display	Status LED, overflow LED
Miscellaneous	
Operating temperature range	5 to 50 °C (over 40 °C, max. av. power derated)
Dimensions	160 x 96 x 33 mm
Mass	260 g
Operating voltage	24 VDC
Max. Power consumption	24 W



Linear Actuators & Motors

Nanostelltechnik / Piezoelektronik

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Linear

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2- and 3-Axis

6-Axis

Fast Steering Mirrors / Active Optics

Piezo Drivers / Servo Controllers

Single-Channel

Multi-Channel

Modular

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Index