

# E-625 Piezo Servo-Controller & Driver

## Compact Bench-Top Device with High-Speed Interface



E-625.CR compact piezo servo-controller

- **Integrated 24-Bit USB Interface**
- **Network Capability with up to 12 Channels**
- **120 mA Peak Current**
- **Position Control with Strain Gauge or Capacitive Sensor**
- **Notch Filter for Higher Bandwidth**
- **Table for User-Defined Curves**
- **Additional Analog Interface**

The single-channel E-625 piezo controller is equipped with a RS-232 and USB interface and precision 24-bit A/D converters for exceptional positional stability and resolution. It integrates a low-noise integrated piezo amplifier which can output and sink peak currents of 120 mA for low-voltage piezoelectric actuators. Servo-controller versions for position sensing with capacitive or SGS sensors are available.

PI employs proprietary position sensors for fast response and optimum positioning resolution and stability in the nanometer range and below. For high-end applications, capacitance sensors provide direct and non-contact position feedback (direct metrology). Strain gauge sensors (SGS) are available for cost-effective applications. The integrated notch filters (adjustable

for each axis) improve the stability and allow high-bandwidth operation closer to the resonant frequency of the mechanics.

### Multi-Axis Network for up to 12 Channels

Up to twelve E-625 for capacitive or SGS sensors can be networked and controlled over a single PC interface. The different units are connected in parallel (not daisy-chained) over the link providing higher data rates than possible with serial links. Between the individual E-625s, parallel networking is realized via optional E-625.CN cables.

### High-Resolution Digital Interface

The digital interface includes high-precision 24-bit A/D converters for optimum position stability and resolution and supports fast communication with the host-computer.

### Waveform Memory

The built-in wave table can store user-defined data points internally. These values can then be output automatically (or under the control of an external signal) and programmed for point-by-point or full-scan triggering. Thus, trajectory profiles can be repeated reliably and commanded easily.

### Extensive Software Support

The controllers are delivered with Windows operating software. Comprehensive DLLs and LabVIEW drivers are available for automated control.

The extensive command set is based on the hardware-independent General Command Set (GCS), which is common to all current PI controllers for both nano- and micropositioning systems. GCS reduces the pro-

### Ordering Information

**E-625.CR**  
Piezo Amplifier / Servo-Controller, 1 Channel, -30 to 130 V, Capacitive Sensor, USB, RS-232

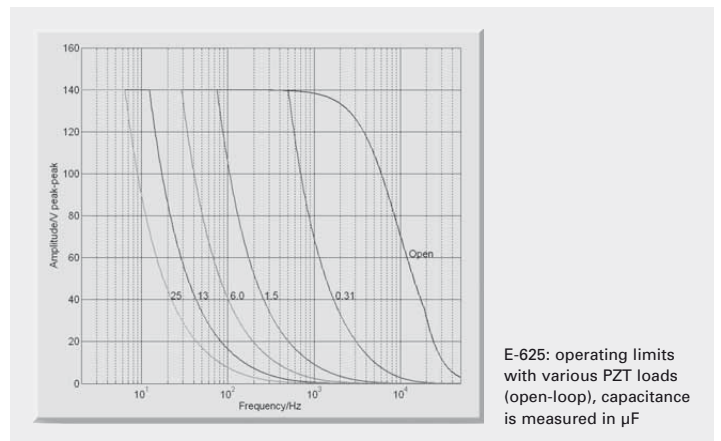
**E-625.SR**  
Piezo Amplifier / Servo-Controller, 1 Channel, -30 to 130 V, SGS-Sensor, USB, RS-232

**E-625.CN**  
Network Cable for Networking of Two E-625

**E-625.CO**  
PIFOC® Piezo Amplifier / Servo-Controller, 1 Channel, -30 to 130 V, Capacitive Sensor

**E-625.S0**  
PIFOC® Piezo Amplifier / Servo-Controller, 1 Channel, -30 to 130 V, SGS-Sensor

gramming effort in the face of complex multi-axis positioning tasks or when upgrading a system with a different PI controller.



E-625: operating limits with various PZT loads (open-loop), capacitance is measured in  $\mu\text{F}$



Ideal system configuration: E-625.CR with P-725 PIFOC® microscope objective positioner



### Technical Data

<b>Model</b>	<b>E-625.SR / E-625.CR</b>
Function	Piezo Amplifier / Servo-Controller
Axes	1
<b>Sensor</b>	
Servo characteristics	P-I (analog), notch filter
Sensor type	SGS (.S) / capacitive (.C)
<b>Amplifier</b>	
Control input voltage range	-2 to 12 V
Min. output voltage	-30 to 130 V
Peak current, < 5 ms	120 mA
Average current	60 mA
Current limitation	Short-circuit-proof
Noise, 0 to 100 kHz	0.8 mVrms
Voltage gain	10 ±0.1
Input impedance	100 kΩ
<b>Interfaces and operation</b>	
Interface / communication*	USB, RS-232 (9-pin Sub-D connector, 9.6–115.2 kBaud), 24-bit A/D and 20-bit D/A
Piezo connector	LEMO ERA.00.250.CTL (.SR) / Sub-D Special (.CR)
Sensor connection	LEMO EPL.0S.304.HLN (.SR) / Sub-D Special (.CR)
Control input sockets	SMB
Sensor monitor socket	SMB
Controller network	up to 12 channels, parallel
Command set*	PI General Command Set (GCS)
User software*	PIMikroMove
Software drivers*	LabVIEW drivers, DLL's
Supported functionality*	Wave table, 256 data points, external trigger, 16 macros
<b>Miscellaneous</b>	
Operating temperature range	+5 to +50 °C
Overheat protection	Deactivation at 75°C
Dimensions	205 x 105 x 60 mm
Mass	1.05 kg
Operating voltage	12 to 30 V DC, stabilized (power supply included)
Current consumption	2 A

\* E-625.S0 and E-625.C0 without interface

### Linear Actuators & Motors

### Nanopositioning / Piezoelectrics

Piezo Flexure Stages / High-Speed Scanning Systems

Linear

Vertical & Tip/Tilt

2- and 3-Axis

6-Axis

Fast Steering Mirrors / Active Optics

### Piezo Drivers / Servo Controllers

Single-Channel

Multi-Channel

Modular

Accessories

Piezoelectrics in Positioning

### Nanometrology

### Micropositioning

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