Digital Multi- Channel Piezo Controller

FOR NANOPOSITIONING SYSTEMS WITH CAPACITIVE OR STRAIN SENSORS

E-727

- 25 kHz control bandwidth
- Interfaces: Ethernet, USB and RS-232
- Digital inputs and outputs
- Optional analog inputs and outputs
- DSP 32/64- bit floating point, 375 MHz
- 20- bit DAC and ADC resolution
- Auto- loading of calibration data from stage ID chip for interchangeability of controller and mechanics
- 4th order polynomial linearization for mechanics & electronics

Digital motion controller for piezo- based nanopositioning systems

3 channels. Integrated low- noise power amplifiers for PICMA® piezo actuators. Output voltage -30 to +130 V. Supports nanopositioning systems with strain sensors or capacitive sensors. P- I controller with 2 notch filters. Linearization based on 4th order polynomials. Optional Dynamic Digital Linearization (DDL). Delivery includes wide- range power supply, USB and RS-232 cable

Extensive functionality

Data recorder. ID chip for quick start- up and quick exchange of system components. Simultaneous, programmable drift compensation. Extensive software support, e.g. for LabVIEW, shared libraries for Windows and Linux

Interfaces

Ethernet. USB. RS-232. SPI. 4 analog inputs and outputs each (optional) for external sensors, target values or external amplifiers. 4 digital inputs and outputs each

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Specifications

Preliminary Data	E-727.3CD E-727.3CDA	E-727.3SD E-727.3SDA	Unit	Tolerance
Function	Digital controller for multi- axis piezo nanopositioning systems with capacitive sensors .3CDA: Optional analog interfaces	Digital controller for multi- axis piezo nanopositioning systems with strain sensors .3SDA: Optional analog interfaces		
Axes	3	3		
Processor	DSP 32/64- bit, floating point, 375 MHz	DSP 32/64- bit, floating point, 375 MHz		
Sampling rate, servo-control	25	25	kHz	
Sampling rate, sensor	25	25	kHz	
Sensor				
Servo characteristics	P- I, two notch filters Optional: Advanced piezo control	P- I, two notch filters Optional: Advanced piezo control		
Sensor type	Capacitive	Strain gauge, piezoresistive sensors		
Sensor channels	3	3		
Sensor bandwidth (-3 dB)	6	6	kHz	max.
Sensor resolution	20 at 1 kSPS oversampling	20 at 1 kSPS oversampling	bit	
Ext. synchronization	Yes	-		
Amplifier				
Output voltage	-30 to 130	-30 to 130	V	±3 V
Amplifier channels	4	4		
Peak output power per channel, max. 30 ms	28	28	W	max.
Average output power per channel	14	14	W	max. 300 ms
Peak current per channel, max. 30 ms	200	200	mA	max.
Average output current per channel	100	100	mA	max.
Current limitation	Short- circuit- proof	Short- circuit- proof		
Resolution DAC	20	20	bit	
Amplifier bandwidth	6.5	6.5	kHz	
Interface and operation				
Interface / communication	Ethernet, USB, RS-232, serial SPI high- speed interface	Ethernet, USB, RS-232, serial SPI high- speed interface		
Piezo / sensor connection	Sub- D Special	Sub- D Special		
Analog input	Sub- D, 15- pin 4 inputs, 18- bit	Sub- D, 15- pin 4 inputs, 18- bit		±10 V
Analog outputs	Universal output, 20- bit	Universal output, 20- bit		±10 V
Digital input/ output	MDR14; 4 inputs, 4 outputs	MDR14; 4 inputs, 4 outputs		
Command set	PI General Command Set (GCS)	PI General Command Set (GCS)		
User software	PIMikroMove	PIMikroMove		
Software drivers	LabVIEW drivers, DLLs	LabVIEW drivers, DLLs		
Supported functionality	Wave generator, data recorder, drift compensation	Wave generator, data recorder, drift compensation		
Display	LEDs for Power, On Target, Error, Cmd	LEDs for Power, On Target, Error, Cmd		
Linearization	4th order polynomials, DDL (Dynamic Digital Linearization)	4th order polynomials, DDL (Dynamic Digital Linearization)		
Separate protective earth connection	Yes	Yes		
Miscellaneous				
Operating temperature range	5 to 35	5 to 35	°C	
Overtemp protection	Max. 71 °C, deactivation of the piezo voltage output	Max. 71 °C, deactivation of the piezo voltage output		
Mass	3	3	kg	approx.
Dimensions	263 × 89 × 302	263 × 89 × 302	mm	
Power consumption	80	80	W	max.
Operating voltage	24 VDC from external power supply (included)	24 VDC from external power supply (included)		

Order Information

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E-727.3CD
Digital Multi- Channel Piezo Controller, 3 Channels, -30 to 130 V, Sub- D Connector(s), Capacitive Sensors
E-727.3CDA
Digital Multi- Channel Piezo Controller, 3 Channels, -30 to 130 V, Sub- D Connector(s), Capacitive Sensors, Analog Inputs
E-727.3SD
Digital Multi- Channel Piezo Controller, 3 Channels, -30 to 130 V, Sub- D Connector(s), Strain Gauge and Piezoresistive Sensors
E-727.3SDA
Digital Multi- Channel Piezo Controller, 3 Channels, -30 to 130 V, Sub- D Connector(s), Strain Gauge and Piezoresistive Sensors, Analog Inputs
Ask about custom designs!

Accessories

P-895.3LDC Adapter Cable, Sub- D 7W2 (f) to LEMO Connectors (m)

Related Products

E-712 Digital Piezo Controller
E-725 Digital Piezo Controller
P-611.3 NanoCube® XYZ Piezo Stage
P-545.xC7 PInano® Cap XY(Z) Piezo System
P-545.xD7 PInano® Trak Piezo Tracking System
P-545.xR7 PInano® XY(Z) Piezo System
P-561 • P-562 • P-563 PIMars Nanopositioning Stage
P-517 • P-527 Multi- Axis Piezo Scanner
P-518 • P-528 • P-558 Piezo Z / Tip / Tilt Stage
S-330 Piezo Tip / Tilt Platform
S-331 Fast Tip/ Tilt Platform
S-334 Piezo Tip/ Tilt Mirror
S-340 Piezo Tip / Tilt- Platform

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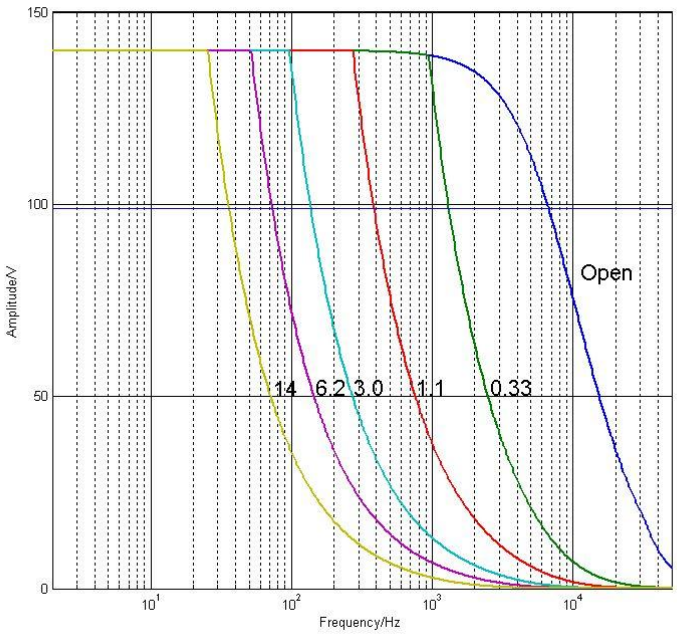
Drawings / Images



E-727: Operating limits with various PZT loads (open- loop), capacitance is measured in µF

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