DuraAct and PICA Shear Piezo Driver

Bipolar Operation for Piezoelectric Patch Transducers and Shear Actuators

E-413

- Peak power to 50 W
- OEM module / benchtop device for PICA Shear actuators
- OEM module for piezoelectric DuraAct patch transducers

Amplifier modules for PICA Shear actuators and DuraAct patch transducers
The low-noise E-413.00 (benchtop device) and E-413.OE (OEM module) amplifier modules are designed for operating piezo actuators with bipolar power supply. They can output and absorb peak currents up to 100 mA, which corresponds to the standard range of -250 to +250 V for PICA Shear actuators from PI .
The E-413.D2 version is conceived for the operation of piezoelectric DuraAct transducers and offers a peak power of 50 W in the voltage range of -100 to +400 V.

Analog control
E-413 piezo amplifier modules offer precision control for piezo shear and bending actuators in static and dynamic operation. The output voltage can be either set exactly with an external offset potentiometer (not in the scope of delivery) or controlled via an analog input signal that is amplified by a factor of 50.
A stabilized voltage of 24 V is sufficient to operate the E-413. An integrated DC/DC converter supplies the piezo voltage as well as all other necessary internal voltages. All inputs and outputs are routed via the 32-pin connector strip.

Control via PC
Alternatively, analog control is possible from the PC via D/A converter. For certain National Instruments D/A converter boards, PI offers a complete driver set compatible with the PI General Command Set (GCS) for use with NI LabVIEW software.

Scope of delivery
OEM modules: Connector strip for 32-pin main connector for installing into the customer's housing. Printed documentation.
Benchtop device: Power adapter with power cord and adapter. Connecting cables for the piezo actuator. Adapter cables for control signal input SMB/BNC. Printed documentation.

Specifications

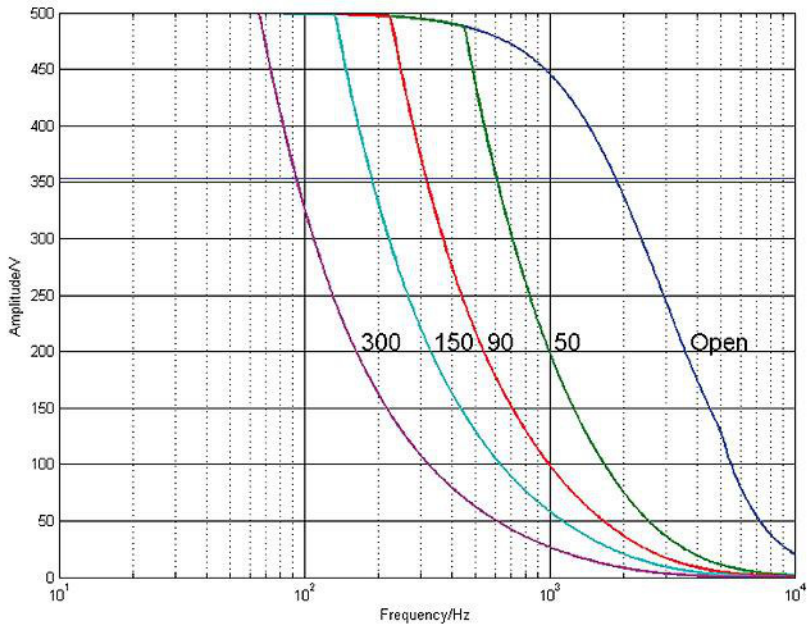
	E-413.00	E-413.OE	E-413.D2
Function	Power amplifier for PICA Shear piezo actuators, benchtop device	Power amplifier for PICA Shear piezo actuators, OEM module	Power amplifier for piezoceramic DuraAct patch transducers, OEM module

Amplifier	E-413.00	E-413.OE	E-413.D2
Input voltage range	-5 to 5 V	-5 to 5 V	-2 to 8 V
Output voltage range	-250 to 250 V	-250 to 250 V	-100 to 400 V
Amplifier channels	1	1	1
Peak output power	50 W (<3 ms)	50 W (<3 ms)	50 W (<5 ms)
Average output power	<12 W (>3 ms)	<12 W (>3 ms)	<6 W (>5 ms)
Peak current	100 mA (<3 ms)	100 mA (<3 ms)	100 mA (<5 ms)
Average output current	24 mA (>3 ms)	24 mA (>3 ms)	12 mA (>5 ms)
Current limitation	Short-circuit proof	Short-circuit proof	Short-circuit proof
Voltage gain	50 ±0.1	50 ±0.1	50 ±0.1
Ripple, noise, <10 kHz	<100 mV_{pp} (100 nF load)	<100 mV_{pp} (100 nF load)	<100 mV_{pp} (100 nF load)
Amplifier resolution	<10 mV	<10 mV	<10 mV
Input impedance	100 kΩ	100 kΩ	100 kΩ

Interfaces and operation	E-413.00	E-413.OE	E-413.D2
Piezo connection	Conec sub-D 5W1 with HV contact (rear)	DIN 41612, 32-pin (rear)	DIN 41612, 32-pin (rear)
Analog input	SMB connector (rear)	DIN 41612, 32-pin (rear)	DIN 41612, 32-pin (rear)

Miscellaneous	E-413.00	E-413.OE	E-413.D2
Operating temperature range	5 to 50 °C (above 40 °C, power derated)	5 to 50 °C (above 40 °C, power derated)	5 to 50 °C (above 40 °C, power derated)
Dimensions	220 mm × 105 mm × 54 mm	14 HP / 3 RU	7 HP / 3 RU
Mass	1.14 kg	0.8 kg	0.4 kg
Operating voltage	24 V / 2 A	24 V / 2 A	24 V / 1 A
Power consumption	48 W	48 W	24 W

Drawings / Images



E-413: Operating limits with various piezo loads, capacitance values in nF

E-413.D2 OEM module

Ordering Information

E-413.00
Piezo amplifier for PICA Shear actuators, -250 to +250 V, benchtop device

E-413.OE
Piezo amplifier for PICA Shear actuators, -250 to +250 V, OEM module

E-413.D2
Piezo amplifier for piezoceramic DuraAct patch transducers, -100 to +400 V, OEM module