

Multi-Channel Piezo Amplifier

For Piezo Tubes and PICA Shear Actuators



E-413.2 - E-413.6

- Low-noise piezo amplifier
- Peak power up to 50 W
- Bipolar operation
- Output voltage -250 to 250 V
- Ideally adapted for scanner tubes
- Output voltage monitoring

Piezo tube ("scanner tube") control

Depending on the version, the E-413 amplifier can control a piezo tube in two or three directions of motion. The possible directions of motion of a piezo tube depend on the number of its electrode segments.

Control of up to six piezo actuators

The amplifier is also available as a version for controlling up to six individual piezo actuators with bipolar operating voltage such as PICA Shear or Picoactuator®.

Voltage range and control signal

Low noise and precision in static and dynamic operation. Peak currents up to 100 mA per channel at -250 to +250 V. Output voltage control via analog input signal -10 to +10 V with gain value of 25. Control signal generation possible with PC via D/A converter and PI driver set for use with NI LabVIEW software.

Interfaces

Control signals, monitor signals: SMB. Voltage outputs: D-sub 15 (f)

Scope of delivery

Delivery includes 24 V wide input range power supply.

Specifications

	E-413.30 / .20	E-413.61 / .41
Function	Piezo amplifier for scanner tubes	Piezo amplifiers for PICA Shear, Picoactuator®
Channels	3 / 2 There are two outputs for each channel. The second output always outputs the voltage of the first output with reversed sign ("inverted").	6 / 4

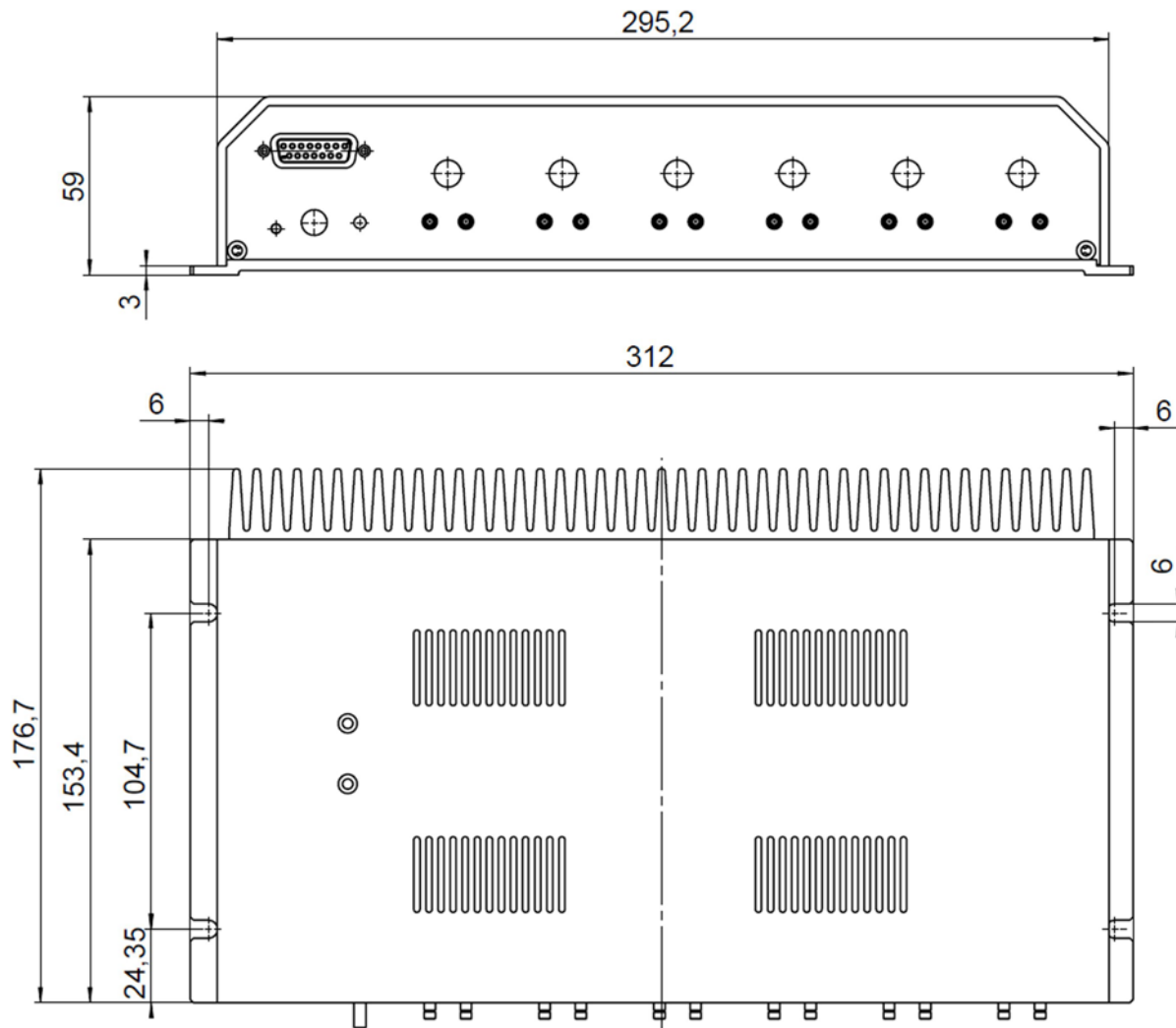
Amplifier	E-413.30 / .20	E-413.61 / .41
Input voltage range	-10 to 10 V	-10 to 10 V
Output voltage	-250 to 250 V Inverted output: 250 to -250 V	-250 to 250 V
Output voltage monitoring	-2.5 to 2.5 V Inverted output: 2.5 to -2.5 V	-2.5 to 2.5 V
Peak output power/output (<1 ms)	50 W	50 W
Average output power/output	>10 W	>10 W
Peak current/output (<1 ms)	100 mA	100 mA
Average output current/output	>20 mA	>20 mA
Current limitation	Short-circuit proof	Short-circuit proof
Voltage gain	25 ±0.1 Inverted output: -25 ±0.1	25 ±0.1
Bandwidth, small signal	≥20 kHz	≥20 kHz
Ripple, noise, 0 to 10 kHz	<1 mV _{rms} 5 mV _{pp} <200 μV _{rms} at <10 kHz bandwidth, 100 nF actuator load at the output	<1 mV _{rms} 5 mV _{pp} <200 μV _{rms} at <10 kHz bandwidth, 100 nF actuator load at the output
Capacitive base load (internal)	2 nF	2 nF
Sensible external actuator capacity	>2 nF	>2 nF
Output impedance	1 kΩ, 2 nF	1 kΩ, 2 nF
Input impedance	100 kΩ	100 kΩ

Interfaces and operation	E-413.20, .30, .41, .61
Piezo connector	D-sub 15 (f)
Analog input	SMB plug connector
Monitor output	SMB plug connector

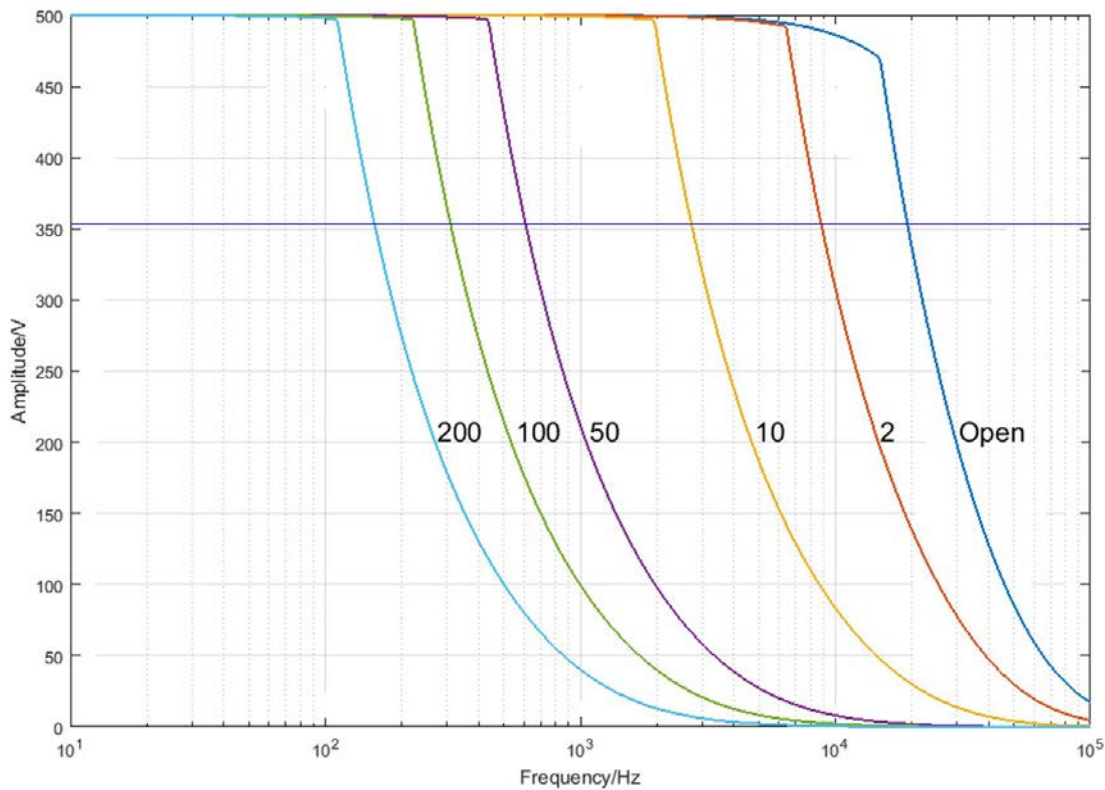
Miscellaneous	E-413.20, .30, .41, .61
Operating temperature range	5 to 40 °C
Dimensions	320 mm × 200 mm × 60 mm
Mass	1.5 kg
Operating voltage	24 V / 4 A ±2 %, in the scope of delivery: External power adapter
Current consumption	Maximum load approx. 3 A No load approx. 750 mA

Ask about customized versions.

Drawings / Images



E-413.20, .30, .41, .61: dimensions in mm



E-413.20, .30, .41, .61: Operating limits (open loop) with various piezo loads, capacitance values in nF

Ordering Information

E-413.20

Piezo amplifier for segmented tubes, 2 channels, -250 to 250 V, D-sub 15 socket

E-413.30

Piezo amplifier for segmented tubes, 3 channels, -250 to 250 V, D-sub 15 socket

E-413.41

Piezo amplifier for PICA Shear actuators, 4 channels, -250 to 250 V, D-sub 15 socket

E-413.61

Piezo amplifier for PICA Shear actuators, 6 channels, -250 to 250 V, D-sub 15 socket

Accessories

E-692.SMB

Adapter cable SMB/BNC, 1.5 m

E-815.AK014

Adapter cable D-sub 15 (m) / open end, 2 m