E-508 PICA™ Piezo Amplifier Module

High-Power Module with 1100 V Output Voltage, E-500 Piezo Controller System

E-508.00 Piezo amplifier plug-in module

- **Peak Power up to 400 W**
- **Output Voltage Range 3 to ±1100 V or bipolar**
- **Plug-In Module for E-500 System**
- **E-508.OE for Switching Applications**
- **Prepared for Position Servo-Control Upgrade (optional)**
- **Prepared for Interfaces / Display Modules (optional)**

The E-508 plug-in module is a piezo driver / amplifier for the E-500 / E-501 piezo controller systems suitable for PICA™ piezo actuators (HVPZT). Its low-noise, 4-quadrant amplifiers can output and sink peak currents of 50 mA (E-508.OE: up to 400 mA) over an 1100 V range. The units are designed to provide high-resolution operation of piezo actuators and positioning systems in voltage-controlled mode (open-loop) and optionally in position-controlled mode (closed-loop).

Modular Design for Flexibility: Optional Servo Controller Upgrade

Up to three E-500 piezo amplifier modules can be installed in one E-500 chassis. The flexible, modular design of the E-500 piezo controller system allows easy installation of an optional E.509 sensor- / servo-controller module for closed-loop operation. The output voltage is then set by the servo-control loop. Closed-loop piezo mechanics from PI can provide positioning accuracy and repeatability down to the nanometer range and below.

Voltage Controlled Piezo Positioning

In open-loop (voltage-controlled) piezo operation the amplifier output voltage is determined by an analog signal at the Control Input optionally combined with the DC-offset potentiometer. Open-loop operation is ideal for applications where fast response and very high resolution with maximum bandwidth are essential. Here, commanding and reading the target position in absolute values is either not important or carried out by external position sensors (see p. 2-104). The precision 10-turn potentiometer can also be used alone to set the output voltage manually.

OEM Version for Fast Switching Applications

The E-508.OE is the high-current OEM version, especially designed for switching applications. It can output a peak current of 400 mA for 5 ms. The E-508.OE is directly controlled by an analog signal.

For extensions, adapter cables and connectors, see “Accessories” in the piezo electronics chapter (see p. 2-168 *ff*).

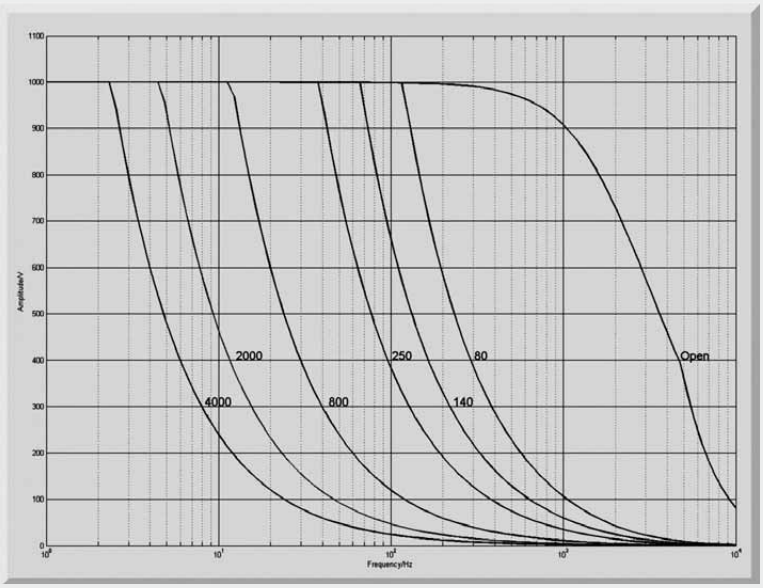
Ordering Information

E-508.00
HVPZT Piezo Amplifier Module, +3 to +1100 V, 1 Channel

E-508.OE
HVPZT Piezo Amplifier Module, OEM Version, 400 mA Peak Current

Ask about custom designs!

The E-508.00 plug-in module (right) and the E-508.OE, OEM module optimized for switching applications



E-508: operating limits with various PZT loads (open-loop), capacitance is measured in nF

Technical Data

Model	E-508.00	E-508.OE	Unit
Function	Power amplifier for PICA™ high-voltage piezos	Power amplifier for PICA™ high-voltage piezos	
Amplifier			
Output voltage	3 to +1100 (Standard) (-260 to +780 -550 to +550 +260 to -780 -3 to -1100) (jumper selectable)	3 to +1100 (Standard) (-260 to +780 -550 to +550 +260 to -780 -3 to-1100) (factory-settable)	V
Amplifier channels	1	1	
Average output power	13	13	W
Peak output power, <5 ms	50	400	W
Average current	12	12	mA
Peak current, <5 ms	50	400	mA
Amplifier bandwidth, small signal	6	10	kHz
Amplifier bandwidth, large signal	50 (200 nF)	50 (200 nF)	Hz
Ripple, noise 0 to 100 kHz	5 50 (100 nF)	20 200 (100 nF)	mV_{RMS} mV_{P-P}
Current limitation	Short-circuit-proof	Short-circuit-proof	
Voltage gain	+100 ±1, -100 ±1 (selectable)	+100 ±1, -100 ±1 (selectable)	
Control input voltage	Servo off: ±1/100 of selected output range Servo on: 0 to 10 V	Servo off: ±1/100 of selected output range Servo on: 0 to 10 V	
Input impedance	100	100	kΩ
Interfaces and operation			
Piezo voltage output	LEMO EGG.0B.701.CJL.1173	LEMO EGG.0B.701.CJL.1173	
Input	BNC	SMB	
DC-Offset	10-turn pot., adds 0 to 10 V to Control In	–	
Miscellaneous			
Operating voltage	E-500 System	E-500 System	
Operating temperature range	+5 to +50 °C (10 % derated over 40 °C)	+5 to +50 °C (10 % derated over 40 °C)	°C
Mass	0.75	0.75	kg
Dimensions	14 HP/3 U	14 HP/3 U	