E-506 Linearized Piezo Amplifier

Charge Control for High Dynamics

E-506.10 charge-controlled Piezo driver module

- **Highly Linear Amplifier Module**
- **280 W Peak Power**
- **Output Voltage Range -30 to 130 V**
- **Module for E-500 Piezo Controller Rack**
- **Prepared for Position Servo-Control Upgrade (optional)**
- **Prepared for Interfaces / Display Modules (optional)**

The E-506.10 piezo amplifier module uses a charge control principle. Here, the input signal controls the amount of electrical charge which is transferred to the piezo actuator. The result is a highly precise, linear displacement of the piezo actuator in high-dynamics operation.
The typical hysteresis which piezo actuators show when operated with a voltage-controlled piezo amplifier can such be reduced to 2% only. An additional position feedback is not required.
The E-506.10 piezo amplifier module is designed to work in the E-500 Controller system (s. p. 2-142). It features a low-noise high-power amplifier for low-voltage piezo actuators and positioners, that can output and sink a peak current of up to 2A in the -30 to 130 V voltage range.

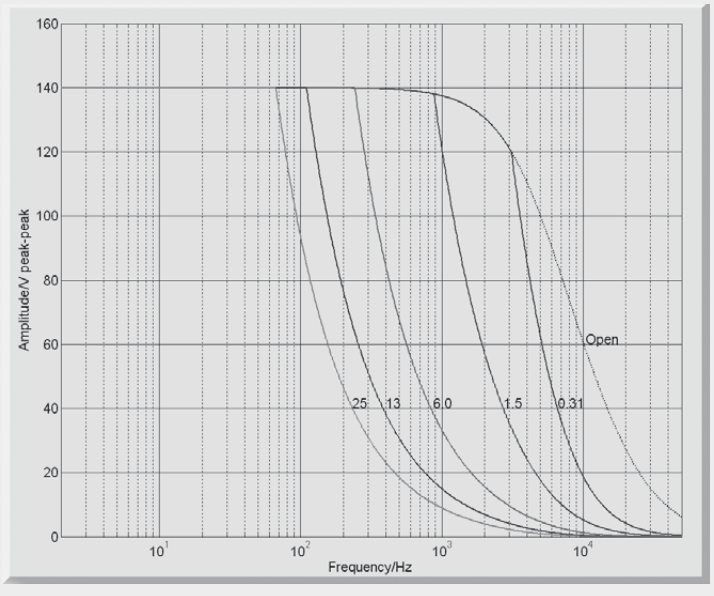
Ordering Information

E-506.10
High Linearity Piezo Amplifier Module, 30 W Average Output Power, -30 to 130 V, 1 Channel

Ask about custom designs!

Piezo Over Temperature Protection

The E-506 can evaluate a temperature sensor on the piezo actuator in order to protect the actuators, especially when used in dynamic applications. Automatic switch-off then reliably prevents the pre-set temperature threshold from being exceeded.
For frequency response with selected capacitive loads, see graph below.



E-506.10: operating limits with various PZT loads (open-loop), capacitance is measured in µF. The minimum capacitive load is 0.3 µF

Technical Data

Model	E-506.10	
Function	Linearised amplifier module, charge-controlled	
Channels	1	
Amplifier		
Input voltage	-2 to +12 V	
Output voltage*	-30 to 130 V	
Peak output power, < 2.5 ms	280 W	max.
Average output power	30 W	max.
Peak current, < 2.5 ms	2 A	
Average current	215 mA	
Current limitation	Short-circuit-proof	
Ripple, noise	<0.6 mV_{rms}	
Reference capacitance (adjustable)	1 to 280 µF	
Input impedance	1 MΩ / 1 nF	
Interfaces and operation		
Piezo connector (voltage output)	LEMO 2-pin EGG.0B.302.CLL	
Analog input	BNC	
DC Offset	10-turn pot., adds 0 to 10 V to Control In	
Piezo temperature sensor (input)	PT 1000; LEMO socket; deactivation of the piezo voltage output at 150°C	
Miscellaneous		
Operating temperature range	+5 to +50 °C	
Dimensions	14HP / 3U	
Mass	0.9 kg	
Operating voltage	E-500 System	
Power consumption	55 W	max.

* Max. 85 °C, deactivation of the piezo voltage output (internal overtemp protection)

Minimum frequencies* for charge-controlled operation

Capacitance (piezo actuator)	ftrans
0.33 µF	250 mHz
1.06 µF	80 mHz
6.2 µF	9 mHz
14 µF	4 mHz

* Voltage-controlled operation for lower frequencies