

E-617 High-Power Piezo Amplifier

Top-Hat & OEM Modules with Energy Recovery for High-Dynamics 24/7 Operation



The E-617.001 high-power piezo amplifier is intended for top-hat-rail mounting in switching cabinets

- Peak Power to 280 W
- High Currents to 2000 mA
- Energy Recovery for Low Power Consumption
- OEM Module and Top-Hat-Rail Versions

The E-617 is an exceptionally efficient, high-power, piezo amplifier for low-voltage piezo actuators. Providing peak power of up to 280 W and average power of 100 W, it can output and sink a peak current of 2000 mA. This allows driving high-capacitance piezo actuators at frequencies in the kilohertz range.

Energy Recovery Operating Principle

The working principle of the E-617 series is ideally suited for high-dynamics scanning and switching applications.

The innovative, efficient circuitry reduces power consumption and heat dissipation, especially in dynamic applications. Charge is transferred to the piezo actuator using low-loss PWM techniques. When the actuator is discharged, the

energy not consumed is fed through the energy recovery circuitry for reuse in the next charging cycle.

Two models are available: The E-617.001 version is equipped for top-hat rail mounting which makes it ideal for automation and industry applications. The E-617.00F version is a compact module for chassis mounting.

High Performance with High Capacitive Loads

The E-617 amplifiers provide precision control of piezo actuators and positioning systems in open-loop operation with an analog control voltage amplified by the factor 10. Such analog operation is ideal for applications where fast response and very high resolution with maximum bandwidth are essential, but where commanding and reading the target

position absolutely is either not important or carried out by external position sensors.

Power Supply / Contents of Delivery

Only one unipolar stabilized voltage in the range of 23 to 26 V is required to operate the E-617.

All connections of the E-617.001 top-hat rail module are conveniently provided on the front of the device. All inputs and outputs of the E-617.00F OEM module are via a 32-pin rear connector. Mating connectors are included.

Remote Control via Computer Interface

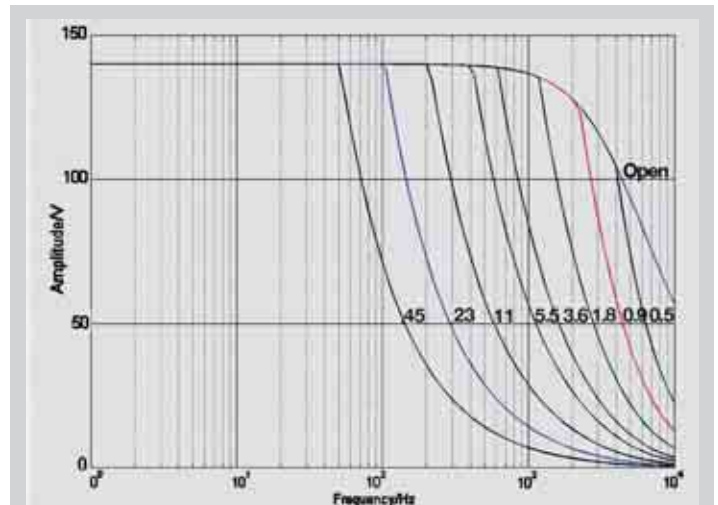
Optionally, digital control via an external D/A converter is possible. For several D/A boards from National Instruments, PI offers a corresponding LabVIEW driver set which is compatible with the PI General Command Set (GCS), the command set used by all PI controllers. A further option includes the patented Hyperbit™ technology providing enhanced system resolution.

Ordering Information

E-617.001
High-Power-Piezo Amplifier with Energy Recovery, 1 Channel, -30 to 130 V, 100 W, Top-Hat Rail

E-617.00F
High-Power-Piezo Amplifier with Energy Recovery, OEM-Module, 1 Channel, -30 to 130 V, 100 W

The same functionality and specifications are available in the E-504 amplifier module. see p. 2-148.



E-617: operating limits with various PZT loads (open-loop), capacitance is measured in μF



E-617.00F high-power piezo amplifier OEM module

Technical Data

Model	E-617.001	E-617.00F
Function	High-Power-Piezo Amplifier with Energy Recovery, 1 Channel, -30 to 130 V, for Top-Hat Rail mounting	High-Power-Piezo Amplifier with Energy Recovery, OEM-Module, 1 Channel, -30 to 130 V
Amplifier		
Input voltage	-2 to +12 V	-2 to +12 V
Output voltage	-30 to +130 V	-30 to +130 V
Peak output power <5 ms	280 VA	280 VA
Average output power >5 ms	Equivalent to 100 W reactive power	Equivalent to 100 W reactive power
Peak current, <5 ms	2000 mA	2000 mA
Average current, >5 ms	1000 mA	1000 mA
Current limitation	Short-circuit-proof	Short-circuit-proof
Voltage gain	10 ±0.1	10 ±0.1
Amplifier bandwidth, small signal	3.5 kHz	3.5 kHz
Ripple, noise, 0 to 100 kHz	<30 mV _{rms} <100 mV _{pp}	<30 mV _{rms} <100 mV _{pp}
Capacitive base load (internal)	2.5 µF	2.5 µF
Suggested capacitive load	>3 µF	>3 µF
Output impedance	0.5 Ω	0.5 Ω
Amplifier resolution	1 mV	1 mV
Amplifier classification	class D (switching amp), 100 kHz	class D (switching amp), 100 kHz
Input impedance	100 kΩ	100 kΩ
Interfaces and operation		
Piezo connector	Phoenix-plug connector MINI-COMBICON 3-pin MC1.5/3-ST-3.81	LEMO ERA.00.250.CTL (front); DIN 41612 32-pin (rear)
Analog input	Phoenix-plug connector MINI-COMBICON 6-pin IMC1.5/6-ST-3.81	SMB
DC-Offset	External potentiometer (not included), adds 0 to + 10 V to Control In	External potentiometer (not included), adds 0 to + 10 V to Control In
Miscellaneous		
Operating temperature range	+5 to +50 °C (10% derated over 40 °C)	+5 to +50 °C (10% derated over 40 °C)
Dimensions	205 x 105 x 60 mm	7HP/3U
Mass	1 kg	0.35 kg
Operating voltage	23 to 26 VDC, stabilized, on Phoenix plug MINI-COMBICON 3-pin IMC1.5/3-ST-3.81	23 to 26 VDC, stabilized, on 32-pin rear connector
Max. power consumption	<30 W	<30 W

Linear Actuators & Motors

Nanopositioning/Piezoelectrics

Piezo Flexure Stages /
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Linear

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Active Optics

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Multi-Channel

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Index