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Advanced Energy

TREK PZD350A

High voltage piezo driver/power amplifier for precise control of output voltages in customer specified bipolar or unipoloar ranges within available range settings.

The Trek® PZD350A is a high-voltage DC-stable piezo driver/amplifier configured as a non-inverting amplifier with a variable DC gain. An inverting amplifier configuration is also available. The unit features an all-solid-state design, a high slew rate, and a four-quadrant active output stage which sinks or sources current into reactive or resistive loads throughout the output voltage range. This capability is essential for achieving the accurate output responses and high slew rates demanded by reactive loads.

PRODUCT HIGHLIGHTS

- Four-quadrant output for driving capacitive loads
- Closed loop system for high accuracy
- Short-circuit protected for equipment protection
- All solid-state design for maintenance free operation
- DC-stable for programmable supply applications
- Low output noise for ultra-accurate outputs
- Model PZD350A M/S is also available with twice the current capability of the Trek PZD350A
- NIST-traceable Certificate of Calibration provided with each unit

TYPICAL APPLICATIONS

- Piezoelectric driving/control
- Laser modulation
- MEMS
- Semiconductor research
- Piezoelectric vibration damping

AT A GLANCE

Output Voltage Range

Bipolar: 0 to ±350 V DC or peak AC

Unipolar: 0 to +700 V DC or peak AC or 0 to -700 VDC or peak AC

Output Current Range

Bipolar: 0 to ±200 mA
Unipolar: 0 to ±100 mA

Slew Rate

Bipolar: Greater than 550 V/µs
Unipolar: Greater than 440 V/µs

DC Voltage Gain

0 to 150 V/V, adjustable using a front panel potentiometer

TECHNICAL DATA

Performance Specifications		
	Bipolar	Unipolar
Output Voltage Range	0 to ±350 V DC or peak AC	0 to +700 V DC or 0 to -700 V DC or peak AC
Output Current Range	0 to ±200 mA	0 to ±100 mA
Input Voltage Range	0 to ±10 V DC or peak AC	
Input Impedance	90 kW, nominal (non-inverting)	
	1 MW nominal, (inverting)	
DC Voltage Gain	0 to 150 V/V	
DC Voltage Gain Accuracy	Better than 0.1% for factory set gain of 100 V/V (input to output)	
Offset Voltage	Less than ±500 mV	
Output Noise[1]	Less than 100 mV rms to 20 kHz w/100 pF load	
	Less than 150 mV rms to 20 kHz with no load	
Slew Rate	Greater than 550 V/µs (10% to 90%, typical)	Greater than 440 v/µs (10% to 90%, typical)
Settling Time	Less than 30 µs when critically damped	
Large Signal Bandwidth	DC to greater than 250 kHz (-3 dB)	DC to greater than 200 kHz (-3 dB)
	DC to greater than 90 kHz (1%)	DC to greater than 70 kHz (1%)
Small Signal Bandwidth	DC to greater than 350 kHz (-3dB)	DC to greater than 250 kHz (-3dB)
Stability	Drift with Time: Less than 50 ppm/hr, noncumulative	
	Drift with Temp: Less than 100 ppm/°C	

Voltage Monitor Specifications	
Ratio	1/100th of the high voltage output

Current Monitor Specifications	
Ratio	0.05 V/mA, ±1% of full scale

Mechanical Specifications	
Dimensions (H x W x D)	Single Channel: 110 x 220 x 445 mm (4.3 x 8.7 x 17.5 in)
	Dual Channel: 110 x 432 x 445 mm (4.3 x 17 x 17.5 in)
Weight	Single Channel: 5 kg (11 lb)
	Dual Channel: 10 kg (22 lb)
HV Connector	SHV High Voltage Connector

Electrical Specifications	
Line Voltage	Factory Set for one of two ranges: 90 to 127 VAC or 180 to 250 VAC, either at 48 to 63 Hz
AC Line Receptacle	Standard three-prong with integral fuse holder
Power Consumption	Single Channel: 90 VA
	Dual Channel: 175 VA

Environmental Specifications	
Temperature	0 to 40°C (32 to 104°F)
Relative Humidity	To 85%, noncondensing
Altitude	To 2000 meters (6561.68 ft.)

[1] Measured using the true rms feature of the HP Model 34401A digital multimeter

TECHNICAL DATA

Features	
Digital Enable	BNC connection for TTL compatible signal to turn ON/OFF the HV output for each channel
Gain Control	The gain of the Trek PZD350A is adjustable to 150 V/V
Dynamic Adjustment	A graduated one-turn front panel potentiometer is used to optimize the AC response of the output signal for various load configurations
Input Configuration	The input is configured as a non-inverting amplifier. An inverting amplifier is also available
Limit Indicator	An amber indicator warns when the Trek PZD350A fails to produce the required HV output
Automatic Power Limit	Automatically limits the internal power dissipation to protect the Trek PZD350A from overheating

REFERENCE NUMBERS

The Trek PZD350A comes from the factory with settings for an output voltage of ±350 VDC or peak AC, a voltage gain ratio of 100 V/V, with a non-inverting input. Please specify voltage range (±350 V, +700 V, or -700 V) and input configuration (inverting or non-inverting) when ordering. The Trek PZD350A M/S is also available with twice the current capability of the standard PZD350A.

PZD350A	
PN	**Description**
PZD350A-1-L	Single Unit, 90 to 127 VAC
PZD350A-2-L	Dual Unit, 90 to 127 VAC
PZD350A-1-H	Single Unit, 180 to 250 VAC
PZD350A-2-H	Dual Unit, 180 to 250 VAC

Included Accessories	
PN	**Description**
23432	Operator's Manual
-	HV Cable, 2 m, 30.8pf/ft @ 1kHz, nominal
43874R	HV Output Cable Assembly, cable and SHV mating connector
Varies	Line Cord, Spare Fuses, selected per geographic region