Trek Model PZD2000A

High-Voltage, High-Bandwidth Power Amplifier

The Model PZD2000A is a wide bandwidth, high-voltage power amplifier used for precision high power applications. The amplifier incorporates an all-solid-state design for high reliability and low-noise operation. Its four-quadrant output stage sinks as well as sources load current throughout the output voltage range, thus achieving accurate output response and high slew rates, even into highly capacitive loads.

Key Specifications

- Output Voltage Range: 0 to ±2 kV DC or peak AC
- Output Current Range: 0 to ±200 mA DC or ±400 mA peak AC. Maximum duration for ±400 mA current pulse is 2 ms at 50% duty cycle using a square wave
- Slew Rate: Greater than 750 V/µs
- Large Signal Bandwidth (3% distortion): DC to greater than 60 kHz
- DC Voltage Gain: 200 V/V

Typical Applications Include

- Dielectric material characterization
- Polymer and ceramic corona poling
- Piezoelectric driving and control

Features and Benefits

- DC accuracy is better than 0.1% of full scale
- Precision voltage and current monitors provide buffered low-voltage representations of the high-voltage output and load current for monitoring purposes, or for use as feedback signals in closed-loop systems
- Remote high-voltage ON-OFF suitable for use with automated or computer controlled systems
- Output stage fully protected against over voltage and over current conditions that may be generate by active loads, overloads or arcing to ground
- Adjustable current limit or current trip level
- NIST-traceable Certificate of Certification provided with each unit shipped

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Model PZD2000A Specifications

Performance

Output Voltage Range	0 to ±2 kV DC or peak AC
Output Current Range	0 to ±200 mA DC or ±400 mA peak AC. Maximum duration for ±400 mA current pulse is 2 ms at 50% duty cycle using a square wave.*
Maximum Power	500 W (real, apparent or reactive). Unit will trip off if internal power dissipation exceed 500 W
Input Voltage Range	0 to ±10 V DC or peak AC, noninverting
Input Impedance	25 kΩ, nominal
DC Voltage Gain	200 V/V
DC Voltage Gain Accuracy	Better than 0.1% of full scale
DC Offset Voltage	Less than ±2 V
Output Noise	Less than 500 mV rms**
Slew Rate (10% to 90%, typical)	Greater than 750 V/µs
Small Signal Bandwidth (-3dB)	DC to greater than 100 kHz
Large Signal Bandwidth (3% distortion)	DC to greater than 60 kHz
Settling Time to 1%	Less than 50 µs for a 2 kV step
Stability	
Drift with Time	Less than 50 ppm/hr, noncumulative
Drift with Temp	Less than 100 ppm/°C
Auto Power Limit	Limits internal power dissipation to protect from overheating

Voltage Monitor

Ratio	01/200th of the high voltage output
DC Accuracy	Better than 0.1% of full scale
DC Offset Voltage	Less than ±2 mV
Output Noise	Less than 5 mV rms**
Output Impedance	47 Ω

Current Monitor

Ratio	0.025 V/mA
DC Accuracy	Greater than 1% of full scale
Offset Voltage	Less than ±10 mV
Output Noise	Less than 10 mV rms**
Bandwidth (-3 dB)	DC to greater than 5 kHz

Current Monitor (cont.)

Output Impedance	47 Ω

Features

High Voltage On-Off	Switch selectable for local or remote. Local: Individual push-button switches; Remote: TTL compatible input. TTL High turns off high voltage. TTL low turns on high voltage.
Dynamic Adjustment	Graduated 1-turn panel potentiometer is used to optimize the AC response for various load parameters.
Current Limit/Trip	Switch selectable for either limit or trip. Graduated 1-turn potentiometer is used to adjust current limit or trip level from 10 to 200 mA
Out of Regulation Status	Indicator illuminates and BNC provides a TTL low when required high voltage is not provided such as during a current limit
Trip Status	Indicator illuminates and BNC provides a TTL low when high voltage output trips due to current trip, detection of fault or removal of cover
Fault Status	BNC provides TTL low when out of regulation for greater than 500 ms

Mechanical

Dimensions	266 mm H x 482 mm W 655 mm D (10.5” H x 19” W x 25.8” D)
Weight	24.9 kg (55 lb)
HV Connector	Alden high voltage connector
BNC Connector	Amplifier input, voltage monitor, current monitor, digital enable, fault/trip status, out of regulation status

Operating Conditions

Temperature	0°C to 40°C (32°F to 104°F)
Relative Humidity	To 75%, noncondensing
Altitude	To 2000 meters (6561.68 ft.)

Electrical

AC Line Receptacle	Standard three-prong AC line connector
Line Voltage	Factory set for one of two ranges: 104 to 126 V AC or 180 to 250 V AC, at 48 to 63 Hz
Power Consumption	1000 VA, maximum

Supplied Accessories

Operators’ Manual	PN: 23271
HV Output Cable	PN: 43406
Line Cord	PN: N5011 (104 to 126 V AC) Contact Factory: (180 to 250 V AC)

Optional Accessories

HV Output Cable	PN: 43406

*See Automatic Power Limit feature for limitations
**Measured using the true rms feature of the Hewlett Packard Model 34401A digital multimeter