



TREK PZD2000A

Wide bandwidth, high voltage power amplifier for precision high power applications featuring an all-solid-state design for high reliability and low-noise operation.



The Trek® 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.

PRODUCT HIGHLIGHTS

- 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

TYPICAL APPLICATIONS

- Dielectric charge material characterization
- Polymer and ceramic corona charging
- Piezoelectric driving and control

AT A GLANCE

Output Voltage Range

0 to ± 2 kVDC or peak AC

Output Current Range

0 to ± 200 mA DC or ± 400 mA peak AC

Slew Rate

Greater than 750 V/ μ s

Large Signal Bandwidth (3%)

DC to greater than 60 kHz

DC Voltage Gain

200 V/V

TREK PZD2000A HIGH VOLTAGE POWER AMPLIFIER

TECHNICAL DATA

| Performance Specifications | |
|----------------------------|---|
| Output Voltage Range | 0 to ± 2 kVDC 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. ¹ |
| 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, non-inverting |
| Input Impedance | 25 k Ω , 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 ² |
| Slew Rate | Greater than 750 V/ μ s (10% to 90%, typical) |
| Settling Time | Less than 50 μ s for a 2 kV step |
| Large Signal Bandwidth | DC to greater than 60 kHz (3% Distortion) |
| Small Signal Bandwidth | DC to greater than 100 kHz (-3dB) |
| Stability | Drift with Time: Less than 50 ppm/hr, noncumulative Drift with Temp: Less than 100 ppm/ $^{\circ}$ C |
| Auto Power Limit | Limits internal power dissipation to protect from overheating |

| Voltage Monitor Specifications | |
|--------------------------------|------------------------------------|
| Ratio | 1/200th 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 ² |
| Output Impedance | 47 Ω |

| Current Monitor Specifications | |
|--------------------------------|----------------------------------|
| Ratio | 0.025 V/mA |
| DC Accuracy | Better than 1% of full scale |
| Offset Voltage | Less than ± 10 mV |
| Output Noise | Less than 10 mV rms ¹ |
| Bandwidth | DC to greater than 5 Hz (-3 dB) |

| Mechanical Specifications | |
|---------------------------|--|
| Dimensions (H x W x D) | 266 x 482 x 655 mm (10.5 x 19 x 25.8 in) |
| Weight | 24.9 kg (55 lb) |
| HV Connector | Alden High Voltage Connector |
| BNC Connectors | Amplifier input, voltage monitor, current monitor, digital enable, fault/trip status, out of regulation status |

| Electrical Specifications | |
|---------------------------|--|
| Line Voltage | Factory Set for one of two ranges: 104 to 127 VAC or 180 to 250 VAC, either at 48 to 63 Hz |
| AC Line Receptacle | Standard three-prong AC line connector |

¹ See Automatic Power Limit feature for limitations

² Measured using the true rms feature of the HP Model 34401A digital multimeter

TECHNICAL DATA

| | |
|-------------------|------------------|
| Power Consumption | 1000 VA, maximum |
|-------------------|------------------|

Environmental Specifications

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

Features

| | | |
|--------------------------|---|--|
| High-Voltage On/Off | Local: Individual push-button switch | Remote (TTL compatible input): TTL high (or open) turns off high voltage output. TTL low turns on high voltage output. |
| Dynamic Adjustment | Graduated one-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 one-turn panel potentiometer is used to adjust 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 | |

REFERENCE NUMBERS

Included Accessories

| PN | Description |
|-----------------|----------------------------|
| 23271 | Operator's Manual |
| 43406 | HV Output Cable |
| N5011 | Line Cord (104 to 126 VAC) |
| Contact Factory | Line Cord (180 to 250 VAC) |

Other Accessories

| PN | Description |
|-------|-----------------|
| 43406 | HV Output Cable |



ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

PRECISION | POWER | PERFORMANCE



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