TREK PD05034

High voltage power amplifier for industrial and research applications featuring an all-solid-state design for wide bandwidth, high slew rate, and low-noise operation.

The Trek® PD05034 is a DC-stable, high voltage power amplifier that features an all-solid-state design for high slew rate, wide bandwidth and low-noise operation. The four-quadrant, active output stage sinks or sources current into reactive or resistive loads throughout the output voltage range. This type of output is essential to achieve an accurate output response and high slew rate demanded by a variety of loads such as highly capacitive or reactive loads. It is configured as a non-inverting amplifier.

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
- NIST-traceable Certificate of Calibration provided with each unit

TYPICAL APPLICATIONS

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

AT A GLANCE

Output Voltage Range

0 to ±7.5 kV DC or peak AC

Output Current Range

0 to ±50 mA DC with a 0 to ±160 mA peak current capability for 50 µs

Slew Rate

Greater than 1000 V/µs

Large Signal Bandwidth (3%)

DC to greater than 15 kHz

DC Voltage Gain

Fixed at 1000 V/V

TREK PD05034 HIGH VOLTAGE POWER AMPLIFIER

TECHNICAL DATA

Performance Specifications		
Output Voltage Range	0 to ±7.5 kV DC or peak AC	
Output Current Range	0 to ±50 mA DC with a peak current capability of ±160 for 60 µs	
Input Voltage Range	0 to ±7.5 V DC or peak AC	
Input Impedance	10 kΩ, nominal	
DC Voltage Gain	1000 V/V	
DC Voltage Gain Accuracy	Better than 0.1% of full scale	
DC Offset Voltage	Less than ±2 V	
Output Noise	Less than 5 V rms[1]	
Slew Rate	Greater than 1000 V/µs (10% to 90%, typical)	
Settling Time	Less than 50 µs for a 0 to 7.5 kV step	
Large Signal Bandwidth	DC to greater than 15 kHz (3% Distortion)	
Small Signal Bandwidth	DC to greater than 75 kHz (-3dB)	
Stability	Drift with Time: Less than 50 ppm/hr, noncumulative	Drift with Temp: Less than 100 ppm/°C

Voltage Monitor Specifications	
Ratio	1/1000th 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 10 mV rms[1]
Output Impedance	47 Ω

Current Monitor Specifications	
Ratio	0.05 V/mA
DC Accuracy	Better than 1% of full scale
Offset Voltage	Less than ±10 mV
Output Noise	Less than 30 mV rms[1]
Bandwidth	DC to greater than 5 Hz (-3 dB)
Output Impedance	47 Ω

Mechanical Specifications	
Dimensions (H x W x D)	279 x 482 x 654 mm (11 x 19 x 25.75 in)
Weight	24.9 kg (55 lb)
HV Connector	Alden High Voltage Connector
BNC Connectors	Amplifier Input, Voltage Monitor, Current Monitor, Remote High Voltage ON/OFF, Out of Regulation Status, Fault/ Trip 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
Power Consumption	1000 VA, maximum

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

TECHNICAL DATA

Environmental Specifications	
Temperature	0 to 40°C (32 to 104°F)
Relative Humidity	To 85%, 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 0 to ±50 mA	
Out of Regulation Status	Illuminates and a TTL low is provided when unit fails to produce required HV output such as during current limit or short circuit conditions	
Trip Status	Illuminates and a TTL low is provided when the high voltage output is disabled due to the output current exceeding the current trip level, the detection of a high voltage supply fault or the removal of the top cover	
Fault Status	A BNC provides a TTL low when the Trek PD05034 is out of regulation for greater than 100 ms	

REFERENCE NUMBERS

Included Accessories	
PN	**Description**
23340	Operator's Manual
43463	HV Output Cable
N5011	Line Cord, Spare Fuses, selected per geographic region

Other Accessories	
PN	**Description**
43463	HV Output Cable
603RA	19 in Rack Mount Kit (with EIA hole spacing)
603RAJ	19 in Rack Mount Kit (with JIS hole spacing)

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

For international contact information,
visit advancedenergy.com.

sales.support@aei.com
+1.970.221.0108

ENG-HV-Amplifier-Trek-PD05034-235-01 8.20