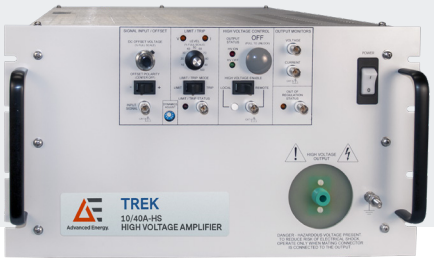
TREK 10/40A-HS

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



The Trek® 10/40A-HS is a DC-stable, high-speed, high voltage power amplifier used in industrial and research applications. It 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

- Electrostatic deflection
- Electrophoresis
- Electrorheological fluids
- Electro-optic modulation
- Material poling
- AC or DC biasing
- Ion beam steering
- Particle accelerators
- Mass spectrometers
- Material characterization
- Ferroelectrics
- Atmospheric plasma
- Dielectric barrier discharge

AT A GLANCE

Output Voltage Range

0 to ±10 kVDC or peak AC

Output Current Range

0 to ±40 mADC or 120 mA peak AC for 1 ms (must not exceed 40 mA rms max)

Slew Rate

Greater than 900 V/µs

Large Signal Bandwidth (-3 dB)

DC to greater than 23 kHz, typical

DC Voltage Gain

1000 V/V

TECHNICAL DATA

Performance Specifications		
Output Voltage Range	0 to ±10 k VDC or peak AC	
Output Current Range	0 to ±40 mA DC or ±120 mA peak for 1 ms (must not exceed 40 mA rms, max)	
Input Voltage Range	0 to ±10 VDC or peak AC	
Input Impedance	25 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 0.5 V rms[1]	
Slew Rate	Greater than 900 V/µs (10% to 90%, typical)	
Small Signal Bandwidth	DC to greater 25 Hz (-3dB)	
Large Signal Bandwidth	DC to greater than 23 kHz, typical (-3dB)	DC to greater than 9 kHz (1% distortion) (The unit will trip when the maximum bandwidth is reached)
Stability	Drift with Time: Less than 50 ppm/hr, noncumulative	Drift with Temp: Less than 100 ppm/°C

Voltage Monitor Specifications	
Ratio	1 V/1000 V
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	1 V/12 mA
DC Accuracy	Greater than 1% of full scale
Offset Voltage	Less than ±10 mV
Output Noise	Less than 30 mV rms[1]
Bandwidth (-3dB)	DC to greater than 20 kHz
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, Limit/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 IEC 320 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 switches	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.	
Limit/Trip Mode	Switch selectable for either limit or trip. Graduated one-turn panel potentiometer is used to adjust limit or trip level from 0 to 100% peak current. There is one LED indicator and one BNC connector	
Current Trip Limit Status Indicator/Connector	An indicator will Illuminate and a BNC will provide a TTL low when the Trek 10/40A-HS fails to produce the required high-voltage output such as during current limit.	
Out of Regulation Status	Illuminates and a TTL low is provided when unit fails to produce required HV output such as during a current limit	

REFERENCE NUMBERS

Included Accessories	
PN	**Description**
23462	Operator's Manual
43463	HV Output Cable
N5011	Line Cord, Spare Fuses (selected per geographic destination)

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.

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