Trek Model 2220

Piezo Driver/Power Amplifier

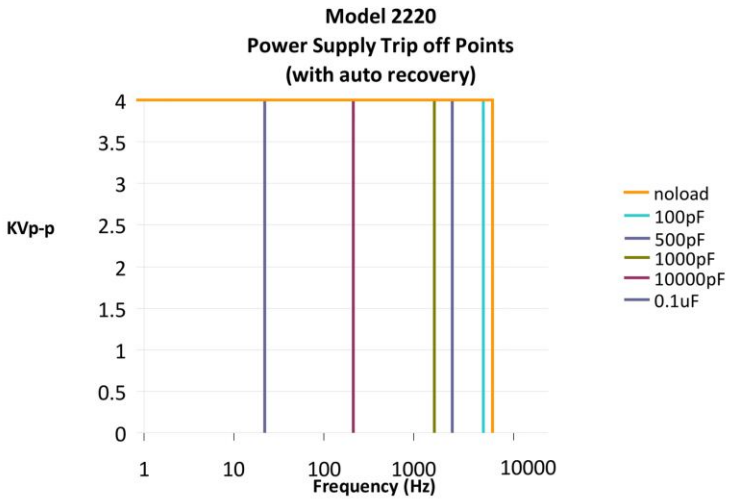
Trek's Model 2220 is one of several models within our 2200-series of high-voltage 40 W amplifiers. Provided at an attractive price and offering high performance, the unit incorporates DC stability, wide bandwidth and well regulated/controlled AC output signals. It also features full four-quadrant class AB all-solid-state output stages, DC offset adjustment with front panel metering, and auto-recovery shutdown to protect the output from being overpowered. The instrument sinks or sources current into reactive or resistive loads throughout the output voltage range, making it ideal to achieve the accurate output response and high slew rates demanded by reactive loads.

Key Specifications

- Output Voltage Range: 0 to ±2 kV DC or peak AC
- Output Current Range: 0 to ±10 mA DC or ±20 mA peak AC for 5 ms minimum
- Slew Rate: 100 V/µs, typical
- Large Signal Bandwidth (-3 dB): DC to greater than 7.5 kHz (minimum trip off frequency)
- Small Signal Bandwidth(-3 dB): DC to greater than 50 kHz
- DC Voltage Gain: 200 V/V

Typical Applications Include

- Piezoelectric driving/control
- Electro-optic
- MEMS
- Many areas of research



Features and Benefits

- Four-quadrant output for driving capacitive loads
- 2-year warranty
- DC offset adjustment with front panel metering
- Auto-recovery shutdown protects the output from being overpowered
- Low output noise for ultra-accurate outputs
- All solid-state output stages
- HALT Tested
- NIST-traceable Certificate of Calibration provided with each unit

TREK Has Joined Advanced Energy

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Model 2220 Specifications

Performance

Output Voltage Range	0 to ±2 kV DC or peak AC
Output Current	0 to ±10 mA DC or ±20 mA peak (for 5 ms
Input Voltage Range	0 to ±10 V DC or peak AC
Input Impedance	10 kΩ, nominal
DC Voltage Gain	200 V/V
DC Voltage Gain Accuracy	Better than 0.5% of full scale
Offset Voltage	Less than 1 V
Output Noise	Less than 50 mV rms*
Slew Rate (10% to 90%, typical)	Greater than 100 V/µs
Large Signal Bandwidth (-3 dB)	DC to greater than 7.5 kHz
Small Signal Bandwidth (-3dB)	DC to greater than 50 kHz
Settling Time to 1%	Less than 50 µs for 0 to 2 kV step
Internal Capacitance (HV Output)	300 pF
Automatic Power Limit	Limits internal power dissipation for protection from overheating
Stability	
Drift with Time	Less than 300 ppm/hr, noncumulative
Drift with Temp	Less than 180 ppm/°C

Voltage Monitor

Noise	5 mV rms
Ratio	1/200th of the high voltage output

Current Monitor

Ratio	0.4 V/mA
DC Offset Adjust	Better than 2% of full scale

*Measured using the true rms feature of the Hewlett Packard Model 34401A digital multimeter

Features

Digital Enable	A BNC connection for a TTL compatible signal to turn ON/OFF the high voltage output is provided. TTL high (or open) turns off the HV output; TTL low turns on the HV output.
Response	A graduated 1-turn panel potentiometer is used to optimize the AC response for various load parameters.
High Voltage LED	Front panel red LED illuminates when the high voltage is on.

Mechanical

Dimensions	85 mm H x 205 mm W 325 mm D (3.3" H x 8.1" W x 12.8" D)
Weight	2 kg (4.4 lb)
HV Connector	SHV Connector
BNC Connectors	Amplifier Input, Voltage Monitor, Current Monitor, Digital Enable

Operating Conditions

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

Electrical

Input Power	90 to 265 V AC, at 50/60 Hz
Output Power	24 V DC, regulated at 1.75A maximum
HV Cable	2 m, 30.8 pF per foot

Supplied Accessories

Operators' Manual	PN: 23447
AC Adapter	PN: F5058R
HV Output Connector (SHV Mating Connector)	PN: 43874R

Optional

Accessories	None

Note

The output cable supplied with this instrument uses a coaxial cable that has 30.8 pF/ft of capacitance at 1 kHz nominal. This cable capacitance must be factored in as a portion of the load and will reduce slew rates and large signal bandwidth. In applications that require maximum performance it is suggested that the supplied high voltage coaxial cable be kept as short as possible to reduce capacitance. Another option is to cut the coaxial cable short and add two break out leads (1 for shield [ground] and 1 for the center conductor) for the connection to load.

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