

Model 2220

Piezo Driver/Power Amplifier



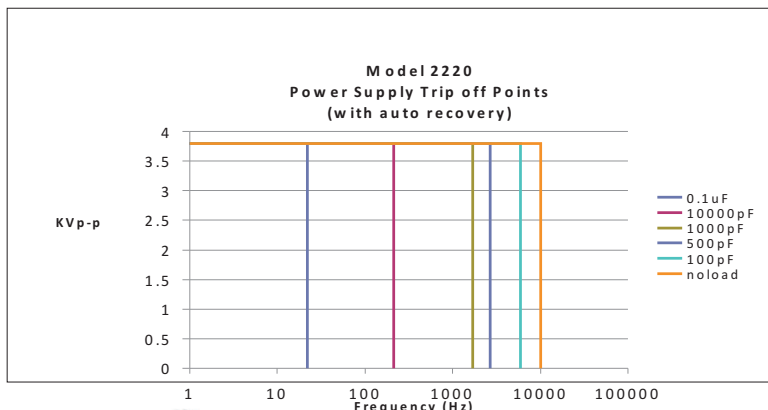
Trek Model 2220 is one of several members in the Trek 2200 Series. This series of high-voltage 40 watt amplifiers offers high performance and attractive pricing. Model 2220 provides precise control of output voltages in the range of 0 to +/-2 kV DC or peak AC with an output current range of 0 to +/-20 mA peak AC and large signal bandwidth DC to 7.5 kHz (-3dB).

Similar to other Trek amplifier models, the 2220 unit incorporates high performance features such as DC stability and wide bandwidth, well regulated and controlled AC output signals, full four-quadrant class AB all-solid-state output stages, DC offset adjustment with front panel metering, and auto-recovery shutdown for output-overpowering protection.

The output stage sinks or sources current into reactive or resistive loads throughout the output voltage range. This is critical to attain the accurate output response and high slew rates as demanded by reactive loads.

Model 2220 provides additional value since it comes with a 2-year warranty, and is CE marked, RoHS compliant and HALT tested.

Applications for Model 2220 include piezoelectric, electro-optic, MEMS and many others.



- Output Voltage Range:
0 to ± 2000 V
- Output Current:
0 to ± 10 mA DC
0 to ± 20 mA peak AC
(for 5 ms minimum)
- Slew Rate:
100 V/ μ s, typical
- Large Signal Bandwidth
(-3dB): 7.5 kHz (minimum
trip off frequency)
- Small Signal Bandwidth
(-3dB): 50 kHz
- DC Voltage Gain:
200 V/V
- DC Voltage Gain
Accuracy: Better than
0.5% of full scale
- DC Offset Adjust Range:
0 to ± 2000 V (switch
selectable polarity)
- 2 Year Warranty
- RoHS Compliant
- CE Compliant
- HALT Tested



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Model 2220 Specifications

All specifications are with no load unless otherwise noted.

Outputs

Output Voltage Range
0 to ± 2000 V

Output Current Range
0 to ± 10 mA DC
0 to ± 20 mA peak AC
(for 5 ms minimum)

Amplifier Input

Input Voltage Range
0 to ± 10 V DC or peak AC

Input Impedance
10 k Ω , nominal

Features

Digital Enable
A BNC connection for a TTL compatible signal to turn on and off the high-voltage output is provided for each channel. A TTL high (or open) turns off the high-voltage output. A TTL low turns on the high-voltage output.

Response
A graduated potentiometer is used to optimize the AC response of the output signal under various load parameters.

High-Voltage LED
Front panel red LED illuminates when the high-voltage is on.

Voltage Monitor
A buffered output provides a low-voltage replica of the high-voltage output.

Scale Factor
1/200th of high-voltage output.

Current Monitor
A buffered output provides a low-voltage representation of the load current.

Scale Factor
0.4 V/mA

Features (cont.)

DC Offset Adjustment Range
0 to ± 2000 V
(switch selectable polarity)

Accuracy
Better than 1% of reading

Offset
2 counts maximum

Performance

DC Voltage Gain (Accuracy)
200 V/V
(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/ μ s

Large Signal Bandwidth (-3dB)*
DC to greater than 7.5 kHz
(minimum trip off frequency)

Small Signal Bandwidth (-3 dB)
DC to greater than 50 kHz

Settling Time to 1%
Less than 50 μ s for a 0 to 2000 V step

Internal Capacitance (HV output)
300 pF

Automatic Power Limit
Automatically limits the internal power dissipation to protect the Model 2220 from overheating.

Stability
Drift with Temperature
Less than 180 ppm/ $^{\circ}$ C
Drift with Time
Less than 300 ppm/hr,
noncumulative

General

Dimensions
85 mm H x 205 mm W x 325 mm D
(3.3" H x 8.1" W x 12.8" D)

Weight
2 kg (4.4 lb)

High-Voltage Output Connector
SHV connector

Amplifier Input
BNC connector

Voltage Monitor
BNC connector

Current Monitor
BNC connector

Digital Enable Connector
BNC connector

Power Supply
Input Power
90 to 265 V AC, at 50/60 Hz
line power

Output Power
24 V DC, regulated at
1.75 A maximum

Note: The power supply is an integral part of the system and is provided by Trek.

Operating Conditions
Temperature
0 $^{\circ}$ C to 40 $^{\circ}$ C
Relative Humidity
To 85%, noncondensing

Accessories

Accessories Supplied
Operator's manual, SHV high-voltage cable assembly and external 24 VDC (± 0.5 V) regulated power supply.

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All specifications are subject to change. 1122/DEC.

*Large Signal Bandwidth, Square Wave Response and Output Noise are optimized using the "Dynamic Adjustment" on the front panel of the amplifier



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