

**NEW !**

**Model 2210**

# Piezo Driver/Power Amplifier



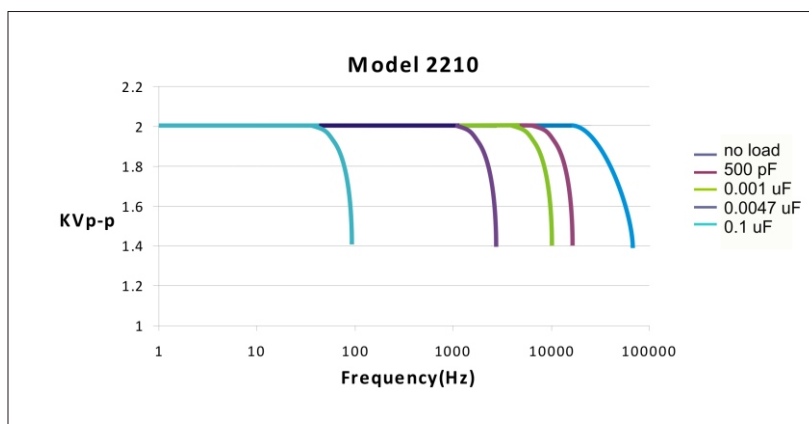
Trek Model 2210 is one of several models in Trek's 2200 Series of high-voltage 40 watt amplifiers providing high performance and attractive pricing. Model 2210 offers precise control of output voltages in the range of 0 to +/-1 kV DC or peak AC, output currents in the range of 0 to +/-40 mA peak AC, and large signal bandwidth DC to 40 kHz (-3dB).

As with other Trek amplifiers, Model 2210 includes high performance features such as DC stability, wide bandwidth, well-regulated & 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 protection from overpowering the output.

The output stage sinks or sources current into reactive or resistive loads throughout the range of output voltages. This is important to achieve accurate output response and high slew rates demanded by reactive loads.

Model 2210 offers additional value. The unit comes with a 2-year warranty, is CE marked, RoHS compliant and HALT tested.

Applications for Model 2210 include piezo-electric, electro-optic, MEMS and many others.



**Output Voltage Range:**  
0 to  $\pm 1000$  V

**Output Current:**  
0 to  $\pm 20$  mA DC  
0 to  $\pm 40$  mA peak AC  
(for 5 ms minimum)

**Slew Rate:**  
150 V/ $\mu$ s, typical

**Large Signal Bandwidth (-3dB):**  
40 kHz

**Small Signal Bandwidth (-3dB):**  
100 kHz

**DC Voltage Gain:**  
100 V/V

**DC Voltage Gain Accuracy:**  
Better than 0.5% of full scale

**DC Offset Adjust Range:**  
0 to  $\pm 1000$  V  
(switch selectable polarity)

**2 Year Warranty**

**RoHS Compliant**

**CE Compliant**

**HALT Tested**

[www.trekinc.com](http://www.trekinc.com)



# Model 2210 Specifications

All specifications are with no load unless otherwise noted.

## Outputs

**Output Voltage Range**  
0 to  $\pm 1000$  V

**Output Current Range**  
0 to  $\pm 20$  mA DC  
0 to  $\pm 40$  mA peak AC  
(for 5 ms minimum)

## Amplifier Input

**Input Voltage Range**  
0 to  $\pm 10$  V DC or peak AC

**Input Impedance**  
10 k $\Omega$ , 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**  
1/100th of high-voltage output

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

**Scale Factor**  
0.2 V/mA

## Features (cont.)

**DC Offset Adjustment Range**  
0 to  $\pm 1000$  V  
(switch selectable polarity)

**Accuracy**  
Better than 1% of reading

**Offset**  
2 counts maximum

## Performance

**DC Voltage Gain (Accuracy)**  
100 V/V  
(Better than 0.5% of full scale)

**Offset Voltage**  
Less than 1 V

**Output Noise**  
Less than 30 mV rms

**Slew Rate (10% to 90%, typical)**  
Greater than 150 V/ $\mu$ s

**Large Signal Bandwidth (-3dB)\***  
DC to greater than 40 kHz

**Small Signal Bandwidth (-3 dB)**  
DC to greater than 100 kHz

**Settling Time to 1%**  
Less than 30  $\mu$ s for a 0 to 1000 V step

**Internal Capacitance (HV output)**  
300 pF

**Automatic Power Limit**  
Automatically limits the internal power dissipation to protect the Model 2210 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 ( $\pm 0.5$  V) regulated power supply.

\*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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