

# Trek Model 601C

## High-Voltage Power Amplifier



The Model 601C is a DC-stable, high-voltage power amplifier designed to provide precise control of output voltages. It features up to two independent amplifier channels in one enclosure and an all solid-state design for high slew rate, wide bandwidth and low-noise operation. The four-quadrant, active output design of the Model 601C sinks or sources current into reactive or resistive loads. These features are essential for achieving the accurate output response and high slew rates demanded by reactive loads.

### Key Specifications

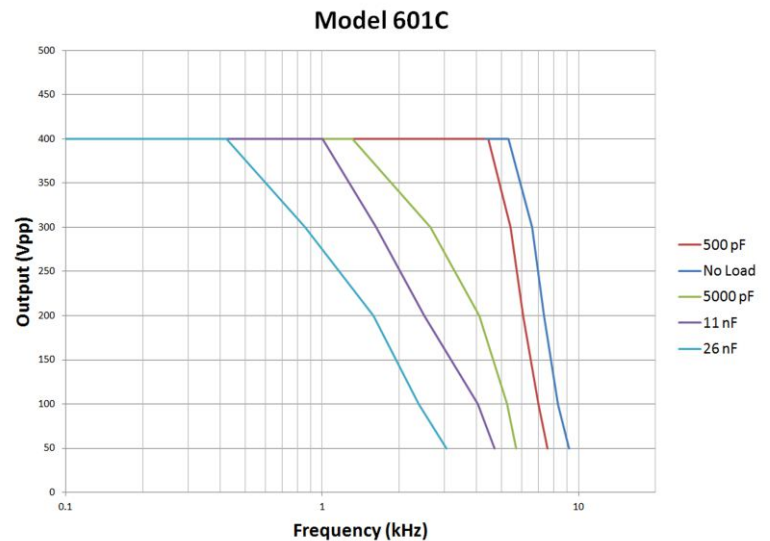
- Output Voltage Range: 0 to  $\pm 500$  V, 0 to -1 kV, or 0 to +1 kV DC or peak AC
- Output Current Range: 0 to  $\pm 10$  mA DC or 0 to  $\pm 20$  mA peak AC
- Slew Rate: Greater than 50 V/ $\mu$ s
- Large Signal Bandwidth (1% distortion): DC to 8 kHz
- DC Voltage Gain: 100 V/V (a gain of 50 V/V is available for the  $\pm 500$  V range only)

### Typical Applications Include

- Driving piezoelectric actuators
- Modulating electrooptics
- Electrostatically controlling ion beams
- Providing remote ON/OFF capabilities for automated or computer controlled systems

### Features and Benefits

- DC accuracy is better than 0.1% of full scale
- Precision voltage and current monitors provide low-voltage representations of the high-voltage output and load current for monitoring purposes or for use as feedback signals in a closed-loop system
- Remote high-voltage ON-OFF
- Operation as a noninverting or inverting amplifier with a fixed gain
- Different output voltage ranges, input configurations and voltage gain ratios are available; please contact Trek, Inc. for more information
- NIST-traceable Certificate of Calibration provided with each unit



## Model 601C Specifications

### Performance

Output Voltage Range	0 to $\pm 500$ V, 0 to -1 kV, or 0 to +1 kV DC or peak AC
Output Current Range	0 to $\pm 10$ mA DC; 0 to $\pm 20$ mA peak AC
Input Voltage Range	0 to $\pm 10$ V DC or peak AC, noninverting
Input Impedance	25 k $\Omega$ , nominal
DC Voltage Gain	100 V/V (50 V/V avail. for $\pm 500$ V range only)
DC Voltage Gain Accuracy	Better than 0.1% of full scale
DC Offset Voltage	Less than 500 mV
Output Noise	Less than 10 mV rms*
Slew Rate (10% to 90%, typical)	Greater than 50 V/ $\mu$ s
Small Signal Bandwidth (-3dB)	DC to greater than 30 kHz
Large Signal Bandwidth (1% distortion)	DC to greater than 8 kHz
Stability	
<i>Drift with Time</i>	Less than 100 ppm/hr, noncumulative
<i>Drift with Temp</i>	Less than 50 ppm/ $^{\circ}$ C

### Voltage Monitor

Ratio	1/100th of the high-voltage output
DC Accuracy	Better than 0.1% of full scale
DC Offset Voltage	Less than $\pm 5$ mV
Output Noise	Less than 10 mV rms*
Output Impedance	0.1 $\Omega$

### Current Monitor

Ratio	0.5 V/mA
DC Accuracy	Greater than 1% of full scale
Offset Voltage	Less than $\pm 10$ mV
Output Noise	Less than 20 mV rms*
Output Impedance	0.1 $\Omega$

### Features

Output Voltage Configurations	Factory set for 0 to $\pm 500$ V DC or peak AC. Other available output voltage ranges are 0 to -1 kV or 0 to +1 kV DC or peak AC. This setting is customer specified.
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\*Measured using the true rms feature of the Hewlett Packard Model 34401A digital multimeter

### Features (cont.)

Digital Enable	An input providing a connection for a TTL compatible signal to turn on and off the high-voltage output.
Input Configuration**	Factory set as a noninverting amplifier, the Model 601C can be configured as an inverting amplifier.
Dynamic Adjustment	Graduated 1-turn panel potentiometer is used to optimize the AC response for various load parameters.

### Mechanical

#### Dimensions

<i>Single Channel Instrument</i>	222.3 mm H x 108 mm W 335 mm D (8.75" H x 4.25" W x 13.2" D)
<i>Double Channel Instrument</i>	433.8 mm H x 108 mm W 335 mm D (17" H x 4.25" W x 13.2" D)

#### Weight

<i>Single Channel</i>	4.3 kg (9.4 lb)
<i>Double Channel</i>	8.6 kg (18.8 lb)

HV Connector	SHV High Voltage Connector
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### Operating Conditions

Temperature	0 $^{\circ}$ C to 40 $^{\circ}$ C (32 $^{\circ}$ F to 104 $^{\circ}$ F)
Relative Humidity	To 85%, noncondensing
Altitude	To 2000 meters (6561.68 ft.)

### Electrical

Line Voltage	Factory Set for one of two ranges: 90 to 127 V AC or 180 to 250 V AC, either at 48 to 63 Hz
Power Consumption	150 VA, maximum
HV Cable	2 m, 66 pF per foot

### Supplied Accessories

Operators' Manual	PN: 23146
HV Output Cable Assembly, 3 m	PN: 43874R
Line Cord	PN: N5002 (90 to 127 V AC) Contact Factory: (80 to 250 V AC)

### Optional Accessories

HV Output Cable	PN: 43874R (3 meters)
Rack Mount Kits	PN: C4036, 603RA Full Rack Mount Kit PN: C4060, 603RA-2 Dual Instrument Rack Kit PN: C4008, Half-Rack Mount Kit

\*\*Please specify when ordering.  
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