# 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 lownoise 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 ±500 V, 0 to -1 kV, or 0 to +1 kV DC or peak AC

Output Current Range: 0 to ±10 mA DC or 0 to ±20 mA peak AC

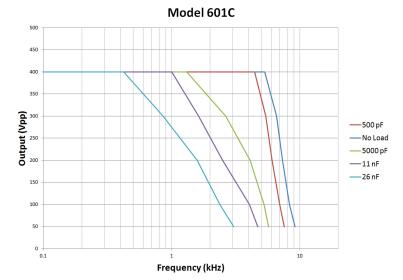
Slew Rate: Greater than 50 V/µs

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 ±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
- ← compliant





## Model 601C Specifications

#### Performance

Output Voltage

0 to ±500 V, 0 to -1 kV, or 0 to +1 kV DC or

Range peak AC

**Output Current** Range

0 to ±10 mA DC; 0 to ±20 mA peak AC

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

Input Impedance 25 k $\Omega$ . nominal

DC Voltage Gain 100 V/V (50 V/V avail. for ±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/µs

Small Signal Bandwidth (-3dB) DC to greater than 30 kHz

Large Signal Bandwidth

DC to greater than 8 kHz

(1% distortion)

Stability

Drift with Time Less than 100 ppm/hr, noncumulative

Drift with Temp Less than 50 ppm/°C

#### Voltage Monitor

Ratio 1/100th of the high-voltage output

Better than 0.1% of full scale DC Accuracy

DC Offset Voltage Less than ±5 mV

**Output Noise** Less than 10 mV rms\*

Output Impedance  $0.1 \Omega$ 

#### **Current Monitor**

Ratio 0.5 V/mA

Greater than 1% of full scale DC Accuracy

Offset Voltage Less than ±10 mV

**Output Noise** Less than 20 mV rms\*

Output Impedance  $0.1 \Omega$ 

#### **Features**

Output Voltage Factory set for 0 to ±500 V DC or peak AC. Configurations

Other available output voltage ranges are 0 to-1 kV or 0 to +1 kV DC or peak AC. This setting is

customer specified.

#### 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** 

Single Channel

222.3 mm H x 108 mm W 335 mm D

Instrument (8.75" H x 4.25" W x 13.2" D)

Double Channel Instrument

433.8 mm H x 108 mm W 335 mm D

(17" H x 4.25" W x 13.2" D)

Weight

Single Channel 4.3 kg (9.4 lb)

Double Channel 8.6 kg (18.8 lb)

**HV** Connector SHV High Voltage Connector

#### **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**

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

150 VA, maximum **Power Consumption** 

**HV** Cable 2 m, 66 pF per foot

#### Supplied Accessories

Operators' Manual PN: 23146

**HV Output Cable** 

PN: 43874R

Assembly, 3 m

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

Copyright © 2012 TREK, INC. All specifications are subject to change. 1229/DEC



Measurement and Power Solutions™



<sup>\*</sup>Measured using the true rms feature of the Hewlett Packard Model 34401A digital multimeter

<sup>\*\*</sup>Please specify when ordering.