Trek Model 677B

High-Voltage Power Amplifier / Supply

The Model 677B is a high-voltage power amplifier/supply designed to provide precise control of output voltages. It can be operated in one of two modes: as a high-voltage amplifier when it is configured as a noninverting amplifier with a fixed gain or as high-voltage power supply that responds to front panel controls to command exact output voltage or current.

The 677B features an all-solid-state design for wide bandwidth, high slew rate and low-noise operation. The four-quadrant, active output stage sinks or sources current into reactive or resistive loads throughout the output voltage range. This type of output is essential to achieve an accurate output response and high slew rate demanded by a variety of loads such as highly capacitive or reactive loads.

Key Specifications

- Output Voltage Range: 0 to ±2 kV DC or peak AC
- Output Current Range: 0 to ±5 mA DC or peak AC
- Slew Rate: Greater than 15 V/µs
- Large Signal Bandwidth (1% distortion): DC to greater than 1.2 kHz
- DC Voltage Gain : 200 V/V

Typical Applications Include

- Electrostatic beam deflection
- Electrooptic modulation
- Electrophoresis research
- Piezoelectric poling and driving

Features and Benefits

- Operable as a high-voltage amplifier (in a noninverting configuration) or as a high-voltage power supply
- Four-quadrant output for driving capacitive loads
- Closed loop system for high accuracy
- Short-circuit protected for equipment protection
- All solid-state design for maintenance free operation
- DC-stable for programmable supply applications
- Low output noise for ultra-accurate outputs
- NIST-traceable Certificate of Calibration provided with each unit

Trek Has Joined Advanced Energy

HVP High Voltage Products. High Voltage Experts.

Model 677B Specifications

Performance

Output Voltage	0 to ±2 kV DC or peak AC
Output Current	0 to ±5 mA DC or peak AC
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 0.1% of full scale
DC Offset Voltage	Less than 5 mV
Output Noise	Less than 100 mV rms*
Slew Rate (10% to 90%, typical)	Greater than 15 V/µs
Settling Time (to 1%)	Less than 300 µs for a 2 kV step
Large Signal Bandwidth (1% distortion)	DC to greater 1.2 kHz
Small Signal Bandwidth (-3dB)	DC to greater than 5 kHz
Stability	
Drift with Time	Less than 100 ppm/hr, noncumulative
Drift with Temp	Less than 350 ppm/°C

Voltage Monitor

Ratio	1/200th of the high-voltage output signal
DC Accuracy	Better than 0.1% of full scale (May degrade to 0.6% in the presence of RF fields up to 3 V/m)
DC Offset Voltage	Less than 5 mV
Output Noise	Less than 10 mV rms*
Output Impedance	0.1 Ω

Current Monitor

Ratio	1 V/mA
DC Accuracy	Better than 1% of full scale
Offset Voltage	Less than 5 mV
Output Noise	Less than 10 mV*
Bandwidth (-3 dB)	DC to greater than 800 Hz
Output Impedance	0.1 Ω

Features

Digital Enable	An open collector, TTL compatible input to turn on and off the high voltage when the High Voltage switch is in the Remote position.

Features

High Voltage On/Off	A three-position rocker switch to select ON, OFF, or REMOTE.
Current Limit	Adjustable from 0 to ±5 mA. A multiturn control is used to set the current limit as indicated by the digital display. An amber LED will illuminate when the instrument is in a current limit condition.
Current Limit Set Accuracy	Better than 1% of setting.
Supply Mode Voltage Control	*Voltage Selection* A multiturn control to set the desired output voltage as indicated by the digital display. *Polarity* A two-position rocker switch.

Mechanical

Dimensions	110 mm H x 223 mm W x 432 mm D (4.3" H x 8.7" W x 17" D).
Weight	4 kg (9 lb).
Mode Switch	Selects either Amplifier or Supply operation
HV Connector	Alden High Voltage Connector
BNC Connectors	Voltage monitor, Current Monitor, Digital Enable, Amplifier Input
Amplifier Input	3-pin connector may be configured for inverting, noninverting or differential amplification

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
Power Consumption	220 VA, maximum

Supplied Accessories

Operator's Manual	PN: 23113
HV Output Cable	PN: 43406 (3M; other lengths available)
Input Cable	PN: 43418 Connector Assembly
Fuses	PN: H0050: 90-127 V AC; H0049: 180-250 V AC
Line Cord (90 V to 127 V operation)	PN: N5002
Line Cord 230 V AC	Contact factory

Optional Accessories

HV Output Cable	PN: 43421
19" Rack Mount Kit	Model 603RA Full Rack Mounting Kit Model 603 RA-2 Dual Instrument Full Rack Kit Model 604RA Metric Rack Mounting Kit

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