Trek Model 603

Piezo Driver/Power Amplifier



The Trek Model 603 is a high-voltage DC power amplifier/piezo driver designed to provide precise control of output voltages in bipolar or unipolar ranges that are customer specified within a range of available settings. The instrument achieves the accurate output responses and high slew rates demanded by reactive loads by utilizing a four-quadrant active output stage that sinks or sources current into reactive or resistive loads.

The Model 603 is configured as a non-inverting amplifier. An inverting configuration is optionally available. Both configurations are available in single or dual channel packaging. They are operable on a bench top or in a 19-in rack.

Key Specifications

Available Voltage Ranges:
0 to ±125 V DC or peak AC or

0 to -250 V DC or peak AC or 0 to +250 V DC or peak AC

Output Current Range: 0 to ±40 mADC or ±80 mA peak AC for less than 1 ms

Slew Rate: Greater than 100 V/μs

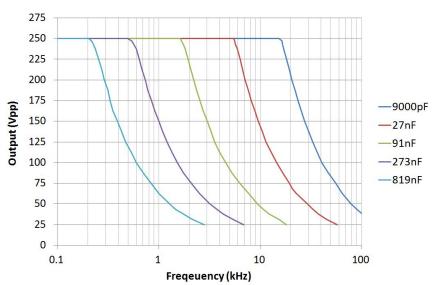
• Large Signal Bandwidth (5% distortion): DC to greater than 150 kHz

DC Voltage Gain: 50 V/V or 25 V/V

Model 603

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

- Four-quadrant output for driving capacitive loads
- Up to two independent amplifier channels in one enclosure
- Short-circuit protected for equipment protection
- Reprogrammable factory-set output configurations
- All solid-state design for maintenance free operation
- Low output noise for ultra-accurate outputs
- NIST-traceable Certificate of Calibration provided with each unit
- ← compliant



Model 603 Specifications

Performance

Available Output 0 to ±125 V DC or peak AC 0 to -250 V DC or peak AC Voltage Ranges

0 to +250 V DC or peak AC

Output Current ±40 mA DC

±80 mA peak AC, for less than 1 ms

DC Voltage Gain 50 V/V (a gain of 25 V/V is available)

DC Voltage Gain

Accuracy

Better than 0.1% of full scale

Less than ±500 mV DC Offset Voltage Output Noise* Less than 20 mV rms

Slew Rate

(10% to 90%, typical)

Large Signal Bandwidth (5% distortion) DC to greater than 150 kHz

Greater than 100 V/µs

Settling Time to 1%

Less than 5 µs for a 100 V step

Stability

Drift with Time Less than 100 ppm/hr, noncumulative

Drift with Temperature Less than 25 ppm/°C

Amplifier Input

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

Input Impedance 10 k Ω , nominal

Voltage Monitor

Ratio 1/25th of the high voltage output

DC Accuracy Better than 0.1% of full scale

Calibrated using a Ross Model VD30-4.1-BD-AC Accuracy

KC-ALU high voltage divider

DC Offset Voltage Less than 5 mV

Less than 5 mV rms* **Output Noise**

Output Impedance 0.1Ω

Current Monitor

Ratio 0.1 V/mA

DC Accuracy Greater than 1% of full scale

Offset Voltage Less than 10 mV

Output Noise Less than 10 mV rms*

Output Impedance 0.10

Features

Output Voltage Factory set for 0 to ±125 VDC or peak AC. Configuration Other ranges available.

*Measured using the true rms feature of the Hewlett Packard 34401A digital multimeter

Features (cont.)

Digital Enable An input providing a connection for a TTL

compatible signal to turn on/off the HV output

Slide switch to select high or low capacitive Load Range Switch

loads (more than 150 pF or less than 150 pF)

Dynamic Adjustment Graduated 1-turn panel potentiometer is used

to optimize the AC response for various load parameters.

Mechanical

Dimensions

Single Channel Instrument

222.3 mm H x 108 mm W 381 mm D

(8.75" H x 4.25" W x 15" D)

Double Channel Instrument

433.8 mm H x 108 mm W 381 mm D

(17" H x 4.25" W x 15" D)

Weiaht

Single Channel Instrument

4.3 kg (9.4 lb)

Double Channel Instrument

8.6 (18.8 lb)

HV Connector SHV High Voltage Connector

BNC Connectors

Power Switch, Amplifier Input, Voltage Monitor, Current Monitor, High Voltage ON/OFF, Digital

Enable

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

Standard 3-prong with integral fuse holder AC Line Receptacle

Power Consumption 125 VA, maximum **HV** Cable 2 m, 66 pF per foot

Supplied Accessories

Operators' Manual PN: 23166

HV Output Cable PN: 43874

N5002 Line Cord

Spare Fuses Selected per geographic destination

Optional Accessories

19" Rack Mount Kit Half-Rack Mount Kit Model 603RA

Model 604RA (3 1/2" Buckeye)

Dual Instrument Rack Model 603RA-2

Mount Kit

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