

Trek Model P0621P / P0621N

High-Voltage/Power DC Amplifiers



Trek Model P0621P (+) / P0621N (-) is a high-voltage DC-stable piezo driver/amplifier designed to provide precise control of output voltages in ranges that are customer specified within a range of available settings. It is configured as a noninverting amplifier with a variable DC gain. An inverting amplifier configuration is also available.

The unit features an all-solid-state design, a high slew rate and a four-quadrant active output stage which sinks or sources current into reactive or resistive loads throughout the output voltage range. This capability is essential for achieving the accurate output responses and high slew rates demanded by reactive loads.

Key Specifications

- Output Voltage Range: 0 to +30 kV DC or peak AC (P0621P)
0 to -30 kV DC or peak AC (P0621N)
- Output Current Range: 0 to ± 20 mA DC or peak AC
- Slew Rate: Greater than 350 V/ μ s (10% to 90%, typical)
- Large Signal Bandwidth: DC to greater than 3.5 kHz (1% distortion)
- Small Signal Bandwidth: DC to greater than 25 kHz (-3 dB)
- DC Voltage Gain: 3000 V/V

Typical Applications Include

- Closed-loop systems
- Automated or computer controlled systems

Features and Benefits

- Four-quadrant active output stage sinks or sources current into reactive or resistive loads throughout the output voltage range
- 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
- NIST-traceable Certificate of Calibration provided with each unit



Models P0621P and N Specifications

Performance

Output Voltage Positive Polarity (P0621P)	0 to +30 kV DC or peak AC
Output Voltage Negative Polarity (P0621N)	0 to -30 kV DC or peak AC
Output Current	0 to ± 20 mA
Input Voltage Range (P0621P)	0 to +10 V DC or peak AC
Input Voltage Range (P0621N)	0 to -10 V DC or peak AC
Input Impedance	50 k Ω , nominal
DC Voltage Gain	3000 V/V
DC Voltage Gain Accuracy	Better than 0.1% of full scale
Offset Voltage	Less than ± 4 V
Output Noise	Less than 5 V rms*
Slew Rate (10% to 90%, typical)	Greater than 350 V/ μ s
Large Signal Bandwidth (1% distortion)	DC to greater than 3.5 kHz
Small Signal Bandwidth (-3dB)	DC to greater than 25 kHz
Automatic Power Limit	Automatically limits the internal power dissipation to protect the Models P0621P and P0621N from overheating

Voltage Monitor

Ratio	1/3000th of the HV output signal
DC Accuracy	Better than 0.1% of full scale
Offset Voltage	Less than ± 2 mV
Output Noise	Less than 20 mV*
Output Impedance	47 Ω

Current Monitor

Ratio	0.5 V/mA
DC Accuracy	Better than 1% if full scale
Offset Voltage	Less than ± 10 mV
Output Noise	Less than 30 mV rms*
Bandwidth	DC to greater than 10 kHz
Output Impedance	47 Ω

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

Features

High Voltage On/Off	
<i>Local</i>	Individual push-button switches
<i>Remote</i>	TTL high turns OFF the high voltage; TTL low turns on the high voltage
Dynamics Adjustments	Graduated 1-turn potentiometer used to optimize the AC response for various load parameters
Current Limit/Trip	Switch selectable for limit or trip. Graduated 1-turn potentiometer adjusts from 0 to 20 mA
Out of Regulation	LED illuminates and BNC provides a TTL low when P0621 fails to produce HV output such as during a current limit
Trip Status	LED illuminates and BNC provides a TTL low when HV is disabled due to the output current exceeding the current trip level, a high voltage fault is detected or the top cover is removed
Fault Status	BNC provides a TTL low when P0621 is out of regulation for greater than 500 ms

Mechanical

Dimensions	222 mm H x 432 mm W x 584 mm D (8.75" H x 17" W x 23" D)
Weight	24.9 kg (55 lb)
HV Connector	Caton High Voltage Connector
BNC Connectors	Amplifier input, voltage monitor, current monitor, remote HV ON/OFF, out of regulation, fault/trip status

Operating Conditions

Temperature	0°C to 40°C (32°F to 104°F)
Relative Humidity	To 75%, 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
AC Line Receptacle	Standard 3-prong with integral fuse holder
Power Consumption	1000 VA, maximum

Supplied Accessories

Operators' Manual	PN: 23147
HV Output Cable	PN: 47067
Line Cord (for 104 to 127 V AC)	PN: N5011
Line Cord (for 180 to 250 V AC)	Selected per geographic destination

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