

Trek Model 615 Series

High-Voltage AC/DC Generators



The Trek Model 615A-1 and the Model 615-3 are precision high-voltage AC/DC generators that can be used in constant voltage, constant current or external amplifier mode. They are specifically designed to simultaneously provide the AC and DC operating potentials required to operate/control an electrostatic charger roller and offer features such as four-quadrant output, high rejection of load current noise and three wave output shapes.

The Model 615-10 has the same features with a 20 kV peak-to-peak capability. Please refer to the separate 615-10 data sheet for more information.

Key Specifications

- Output Voltage Range: 0 to ± 7.5 kV DC or peak AC
- Output Current Range: 0 to ± 50 mA DC with a 0 to ± 160 mA peak current capability for 50 μ s
- Slew Rate: Greater than 1000 V/ μ s
- Large Signal Bandwidth (1% distortion): DC to greater than 15 kHz
- DC Voltage Gain: Fixed at 1000 V/V

Typical Applications Include

- Dielectric charge material characterization
- Polymer and ceramic corona charging
- Piezoelectric driving and control

Features and Benefits

- Monitor and control photoreceptor charging current with very high accuracy
- Four-quadrant output for driving capacitive loads
- Short-circuit protected for equipment protection
- Operator-selectable sine, square or triangle wave output shape
- NIST-traceable Certificate of Calibration provided with each unit
- CE compliant



615 Series Abridged Specifications

Performance

Output Voltage Range	0 to ± 7.5 kV DC or peak AC
Output Current Range	0 to ± 50 mA DC with a peak current capability of ± 160 for 60 μ s
Input Voltage Range	0 to ± 7.5 V DC or peak AC
Input Impedance	10 k Ω , nominal
DC Voltage Gain	1000 V/V
DC Voltage Gain Accuracy	Better than 0.1% of full scale
DC Offset Voltage	Less than ± 2 V
Output Noise	Less than 5 V rms*
Slew Rate (10% to 90%, typical)	Greater than 1000 V/ μ s
Large Signal Bandwidth (1% distortion)	DC to greater than 15 kHz
Small Signal Bandwidth (-3dB)	DC to greater than 75 kHz
Settling Time (to 1%)	Less than 50 μ s for a 0 to 7.5 kV step
Stability	
<i>Drift with Time</i>	Less than 50 ppm/hr, noncumulative
<i>Drift with Temp</i>	Less than 100 ppm/ $^{\circ}$ C

Voltage Monitor

Ratio	1/1000th of the high-voltage output
DC Accuracy	Better than 0.1% of full scale
DC Offset Voltage	Less than ± 2 mV
Output Noise	Less than 10 mV rms*
Output Impedance	47 Ω

Current Monitor

Ratio	0.05 V/ mA
DC Accuracy	Better than 1% of full scale
Offset Voltage	Less than ± 10 mV
Output Noise	Less than 30 mV rms*
Bandwidth (-3dB)	DC to greater than 5 kHz
Output Impedance	47 Ω

Features

High-Voltage On/Off	
<i>Local</i>	Individual push-button switch
<i>Remote (TTL compatible input)</i>	TTL high (or open) turns off high-voltage output. TTL low turns on high-voltage output.

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

Features (cont.)

Dynamic Adjustment	Graduated 1-turn panel potentiometer is used to optimize the AC response for various load parameters
Current Limit/Trip	Switch selectable for either limit or trip. Graduated 1-turn panel potentiometer is used to adjust limit or trip level from 0 to ± 50 mA
Out of Regulation Status	Illuminates and a TTL low is provided when unit fails to produce required HV output such as during current limit or short circuit conditions
Trip Status	Illuminates and a TTL low is provided when the high-voltage output is disabled due to the output current exceeding the current trip level, the detection of a high-voltage supply fault or the removal of the top cover
Fault Status	A BNC provides a TTL low when the PD05034 is out of regulation for greater than 100 ms

Mechanical

Dimensions	279 mm H x 482 mm W 654 mm D (11" H x 19" W x 25.75" D)
Weight	24.9 kg (55 lb)
HV Connector	Alden High Voltage Connector
BNC Connectors	Amplifier Input, Voltage Monitor, Current Monitor, Remote High Voltage ON/OFF, Out of Regulation Status, Fault/Trip Status

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: 104 to 127 V AC or 180 to 250 V AC, either at 48 to 63 Hz
AC Line Receptacle	Standard 3-prong AC line connector
Power Consumption	1000 VA, maximum

Supplied Accessories

Operators' Manual	PN: 23340
HV Output Cable	PN: 43463
Line Cord, Spare Fuses	PN: N5011; selected per geographic destination

Optional Accessories

HV Output Cable	PN: 43463
19-in Rack Mount Kit	Model 608RA (with EIA hole spacing)
19-in Rack Mount Kit	Model 608RAJ (with JIS hole spacing)

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