

# Trek Model 615-3

## ±10 kV High-Voltage AC/DC Generator



The Trek Model 615-3 is a precision high-voltage AC/DC generator that can be used in constant voltage, constant current or external amplifier mode. It is 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 Model 615-10 data sheet for more information.

### Key Specifications

- AC Voltage Range (DC bias is zero): 0 to ±5 kV DC peak-to-peak
- DC Bias (AC voltage is zero): 0 to ±5 kV DC
- AC Voltage + DC Bias: 0 to ±5kV (combined AC and DC instantaneous voltage value)
- AC Current (DC current is zero): 0 to 5 mA average where AC current average = (2) I peak / 3.14
- DC Current (AC current is zero): 0 to 8 mADC
- AC + DC Current: 0 to ±8 mA peak
- Frequency (Internal Generator): 100 Hz to 10 kHz

### 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



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## 615-3 Abridged Specifications

### Output Limits (any mode)

AC Voltage (DC Bias is zero)	0 to $\pm 5$ kV DC or peak AC
AC Voltage + DC Bias	0 to $\pm 5$ kV peak
DC Bias (AC Voltage is zero)	0 to $\pm 5$ V DC or peak AC
AC Current (DC Current is zero)	0 to 5 mA, average. AC current average = (2) I peak / 3.14
AC Current + DC Current	0 to $\pm 8$ mA peak
DC Current (AC Current is zero)	0 to 8 mA DC
Frequency (Internal Generator)	100 Hz to 10 kHz

### Additional Amplifier Specifications

Input Voltage Range	$\pm 5$ V DC or peak AC
Gain for Noninverting Range	Factory set for 1000 V/V, 500 V/V is available
Slew Rate (10% to 90%, typical)	Greater than 80 V/ $\mu$ s
DC Voltage Gain Accuracy	0.5% of full scale
Large Signal Bandwidth (1% distortion)	DC to greater than 3 kHz
Small Signal Bandwidth (-3dB)	DC to greater than 10 kHz

### Voltage Monitor

Scale Factor	1/1000th of the high-voltage output
DC Accuracy	Better than 0.1% of full scale
Offset Voltage	Less than 2 mV
Output Noise	Less than 10 mV rms*
Output Impedance	50 $\Omega$

### Current Monitor

Scale Factor	1 V/ mA
DC Accuracy	Better than 0.2% of full scale
Offset Voltage	Less than 2 mV
Output Noise	Less than 20 mV rms*
Output Impedance	50 $\Omega$

### Features

Internal AC Generator	An internal AC function generator is used to produce the AC output voltage (Constant AC Voltage mode) or the AC load current (Constant AC Current mode). Note: Not used in AMPLIFIER mode
Waveform Options	Square, sine, or triangle
Frequency Range	100 Hz to 10 kHz
Amplifier Input Mode	A front panel BNC connector which will process an external signal.

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

### Features (cont.)

Constant Voltage/ Constant Current	Two 10-turn dials for precise settings.
Constant Current Range Select	Selects current mode for 0 to 500 mA or 0 to 5 mA average
DC Bias	Adjustable from 0 to $\pm 5$ kV DC.
High-Voltage AC Output Limit	Adjustable from 0 to 10 kV p-p for both Constant Current mode and Constant Voltage mode
Accuracy	5% of full scale
High-Voltage On/Off	<i>Local</i> Front panel switch. <i>Remote</i> A TTL compatible input.
Master DC Switch	Turns ON and OFF the DC generator
Master AC Switch	Turns ON and OFF the AC generator
AC Voltage or Current Mode Selection	<i>Local Operation</i> A front panel switch. <i>Remote Operation</i> A TTL compatible signal applied to the Mode Select input of the Remote Interface connector
Compliance Indicator	A LED will illuminate during an over-voltage condition when operating in the Constant Current mode or during an over-current condition when operating in the Constant Voltage mode.
Overload Indicator	A red LED will illuminate when the output current limit is exceeded

### Mechanical

Dimensions	134 mm H x 432 mm W x 432 mm D (5.25" H x 17" W x 17" D)
Weight	24.9 kg (55 lb)
HV Connector	Alden High Voltage Connector

### Operating Conditions

Temperature	15°C to 35°C (59°F to 95°F)
Relative Humidity	To 85%, noncondensing
Altitude	To 3,048 meters (10,000 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
Power Consumption	100 VA, maximum

### Supplied Accessories

Operators' Manual	PN: 23186
HV Output Cable	PN: 43406
Line Cord	Selected per geographic destination

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