



# Guardian 6000 Plus

## Electrical Safety Analyzer with Revolutionary Twin Port Technology

### USES:

- Production and Compliance Testing of Appliances, Instruments and Information Technology Equipment in Accordance with UL, CSA, IEC, TUV and Other Standards such as EN60335, EN60950, EN61010, CSA C22.2 No. 1010.1, UL3111 and UL60950
- Transformer Electrical Safety Testing
- Electric Motor Safety Testing
- Power Supply Safety Testing
- Verification of the Ground Connection on Products with a Three Prong Power Cord

### FEATURES:

- Twin Port - Simultaneous Hipot & GB
- Programmable Output Voltage to 5KV AC and 6KV DC
- Ground Bond Testing to 30A AC (to 40A with Optional Transformer)
- Insulation Resistance Measurements from 100kΩ to 50GΩ
- Open/Short Circuit Detection Mode
- Programmable Ramp, Dwell & Test Times
- Storage of 100 Test Setups, 50 Steps Each
- Continuous Leakage Current Monitoring
- Programmable Trip Current to 40mA AC and 12mA DC
- Front Panel Lockout via Password
- Standard RS-232 & Remote I/O Interfaces
- Optional IEEE-488, Printer Interfaces
- Optional Built-in 8 Channel Scanner
- Optional CaptivATE Automation Software for G6000 Plus

### Introduction

The Guardian 6000 Plus is the industry's first safety analyzer with simultaneous Hipot and Ground Bond capability providing a dramatic savings in test time. Five instruments in one, the G6000 Plus provides AC Hipot, DC Hipot, Insulation Resistance, Ground Bond and Open/Short measurements from a single test connection. Versatile and packed with features, the G6000 Plus is a cost effective solution to the full spectrum of electrical safety compliance testing.

### Description

**AC Hipot:** AC dielectric testing over the voltage range from 50V to 5000VAC RMS. The maximum leakage current of 40mA RMS is ideal for testing devices with high leakage currents such as power supplies which have large filter or "Y" capacitors for noise reduction.

**DC Hipot:** DC dielectric testing from 50V to 6000VDC with a resolution of 1V. Leakage current can be continuously monitored from 0.1μA to 12mA DC.

**Insulation Resistance:** The G6000 Plus is capable of measuring IR from 100k to 50GΩ with test voltage from 50V to 1000VDC in 1V steps.

**Quick Discharge:** In both DC and IR modes, the device under test is discharged through the HV transformer resulting in a rapid and safe discharge.

**Ground Bond:** With test current from 1A to 30A in 0.1A steps and programmable current limits, test time, frequency and open circuit no load voltage, the G6000 Plus provides full GB testing capability. The offset feature automatically compensates for any lead resistance. A 40A GB option is also available.

**Twin Port Technology:** This patented feature allows for simultaneous Ground Bond and Hipot Testing. Decrease test time and increase device through-put.

**Open/Short Circuit Detection Mode:** Check for Opens and Shorts against a standard capacitance value, Cs, and have confidence the DUT is properly connected.

**Optional Scanners:** One internal and/or multiple external scanners may be added to the G6000 Plus for testing multiple devices simultaneously. Add up to 8 HV channels or a combination of HV and GB channels.

**Standard Interfaces:** The Remote I/O and RS-232 interfaces provide remote control and serial data collection capability for automated applications.



*For more detailed information on specifications, pricing and special purchase, rent and lease options, contact us at:*

**www.quadtech.com**  
**800-253-1230**



## Guardian 6000 Plus

**AC Output Voltage:** Range: 50V to 5000V AC, 1V resolution  
 Regulation: <(1% of setting +5V) at Rated Load  
 Freq: 50-600 Hz, programmable in 1Hz steps  
 50~60Hz : 1% + 5 cnts, > 60Hz: 3%+10 cnts  
 Waveform: Sinusoidal

**Voltage Display:** Accuracy: ±(1% of reading + 5V)  
 Resolution: 1Volt

**AC Current Display:** Total current  
 Range: 0.001 to 40mA AC  
 Resolution: 1 or 10µA steps  
 Accuracy: ±(1% of reading + 5cnt)

**High/Low Limit Test:** 1µA to 40mA AC  
 Low limit can be turned OFF

**Arc Detection:** Programmable 1-20mA,  
 Pulse Width 40µ, 20µ, 10µ or 4µsec

**DC Output Voltage:** Range: 50V to 6000V DC, 1V resolution  
 Regulation: <(1% +5V) at Rated Load

**Voltage Display:** Accuracy: ±(1% of reading + 5V)  
 Resolution: 1Volt

**DC Current Display:** Range: 0.1µ to 12mA DC  
 Resolution: 0.1, 1 or 10µA steps  
 Accuracy: ±(1% or reading + 5cnt)

**High/Low Limit Test:** 0.0001mA to 12mA DC  
 Low limit can be turned OFF

**Arc Detection:** Programmable 1-10mA  
 Pulse Width 40µ, 20µ, 10µ or 4µsec

**Insulation Resistance:** Range: 50V - 1000V DC  
 Accuracy: ±5% to ±15% depending upon  
 voltage and resistance

**Voltage Range:** 100kΩ - 50GΩ

**Voltage Display:** ±(1% of reading + 5V)

**High/Low Limit Test:** 100kΩ - 50GΩ  
 Low limit can be turned OFF

### Ground Bond:

**Output Current:** Range: 1.0 to 30.0A AC, setting .01A/step; \*40A  
 Regulation: ±(1% of setting + 0.3A)  
 Accuracy: ±(1% of reading + 3 counts)

**Frequency:** 50 or 60Hz Selectable

**No Load Voltage:** 6 to 15 V Programmable

**Resistance:** Range: 0.1mΩ - 510mΩ, 4 digits  
 Accuracy: ±(1% of reading + 3 counts)  
 Resolution: 0.1mV

**High Limit:** 0.1mΩ to 510mΩ

**Start Wait:** 0.1 - 99.9sec

\*GB to 40A with optional transformer

### Common Features:

**Open/Short Circuit Mode:** Check for Open & Short against a standard capacitance value (Cs); <100V, 600Hz

**Offset Function:** 0 to 100mΩ offset, user selectable  
 AC Programmable Offset, 0-25mA

**Test Time:** Ramp: 0.3 to 999s (±20ms), (AC/DC/IR)  
 Dwell: 0 to 999s (±20ms), (DC only)  
 Start Wait: 0.1 to 99.9s (±20ms), (GB only)  
 Test: 0.3 to 999s (±20ms) or Continuous (ALL)  
 Ramp, Dwell & Start Wait can be set to OFF

**Remote Control:** Inputs: Start, Stop  
 Characteristics: Optically Isolated, Low,  
 Pulse Width >1ms.  
 Outputs: Pass/Fail/Under Test  
 Characteristics: Dry Contact relay  
 Electrical Characteristics: 120V 100mA max.  
 Logic: Closed if True  
 Connector: Terminal Strip and 9 pin D Series

**Test Setups:** 100 Test Setups with 50 Steps each,  
 13 character Alpha-Numeric Label

**Connectors:** Front and Rear 4- terminal connection

**Display:** 320 x 240 enhanced LCD with status indicators

**Front Panel Lockout:** Key Lock with Password  
 Fail Lock with Password

**Safety Features:** Fast Cutoff (<0.4ms) & Fast Discharge (0.2s)  
 Adjustable Discharge: .05-5.1kV DC

**Miscellaneous:** Fail Retest; Continue on Fail  
 PAUSE Mode: Program pause between steps  
**Indication:** Pass/Fail lights, audible sound; Remote, Lock,  
 Offset & Error status indicators

**Buzzer Level:** 1,2,3 and Off

**Standard Interfaces:** RS-232, Remote I/O  
 Data bits: 8, Stop bits: 1; Parity: None  
 Selectable Baud Rate: 300 - 19200

**Optional Interfaces:** IEEE-488, Printer

**Dimensions:** (w x h x d):17x5.25x18.5in (430x133x470mm)

**Weight:** 53 lbs (24kg) - Net, 60 lbs (27kg) Shipping

**Environmental:** Operating: 0 to + 40° C,  
 Humidity: <75%  
 Storage: - 20 to + 70° C  
 Warm-up Time: 1minute

**Power:** • 90 - 130V AC • 50 or 60Hz  
 • 200 - 250V AC • 800W max

## Ordering Information

Guardian 6000 Plus Electrical Safety Analyzer	<b>Optional Accessories</b>	G13 Corded Product Adapter (115V)
<b>Includes:</b>	N/A Calibration Data	G14 Power Entry Adapter
150798 Instruction Manual	6000-01 Scanner, 8 Channel 5HV,3GC	G16 International Power Strip
S02 HV Lead Set, 1m	6000-02 Scanner, 8 Channel 3HV,5GC	G24 Scanner Cable (5000 scanners)
G15 Ground Continuity Lead Set	6000-03 Scanner, 8 Channel HV	G25 Corded Product Adapter (240V)
G14 Power Entry Adapter	S04 HV Lead Set 2m	G38 Printer Interface (replaces IEEE)
4200-0300 AC Power Cable	S05 Foot Switch	G39 IEEE-488 Interface
520157 8A 250V Power Line Fuse	S08 Gun Probe	G43 Rack Mount Kit
520053 4A 250V Power Line Fuse	S09 HV Lead, 1M, Unterminated	G44 Barcode Scanner
N/A Calibration Cert. Traceable to NIST	S10 HV Lead, 1M, Unterminated	G45 40A Ground Bond Transformer

For more detailed information on specifications, pricing and special purchase, rent and lease options, contact us at:

**www.quadtech.com or 800-253-1230**

