

# Guardian

## 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 UL1950
- 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:

- Programmable output voltage to 5KV AC and 6KV DC
- Ground Bond Testing to 30A AC with Adjustable Limit
- Insulation Resistance Measurements from 100k $\Omega$  to 50G $\Omega$
- Programmable Ramp and Test Times
- Storage of 99 Tests Setups with 99 Steps per Setup
- Continuous Leakage Current Monitoring
- Trip Current Programmable to 40mA AC and 20mA DC
- Front Panel Lockout via Password
- Standard IEEE and Remote Control Interfaces
- Optional RS232, Printer Interfaces
- Built-in 8 Channel Scanner Option

# 6000 Series

## Electrical Safety Analyzer

### Introduction

The Guardian 6000 is four instruments in one providing AC Hipot, DC Hipot, Insulation Resistance and Ground Bond measurements from a single test connector in one versatile instrument. This provides a cost effective solution to electrical safety compliance testing with maximum flexibility for present and future requirements. Performing multiple electrical safety tests in one unit can reduce test time, increase productivity and reduce the number of instruments requiring calibration.

### Description

**The Guardian 6000 AC Hipot Tester** performs AC dielectric testing (hipot) over the voltage range from 50V to 5000VAC RMS. The maximum leakage current of 40mA RMS makes the Guardian 6000 ideal for testing devices with high leakage currents such as power supplies which have large filter or "Y" capacitors for noise reduction.

**The Guardian 6000 DC Hipot Tester** voltage range for DC dielectric testing is 50V to 6000VDC with a resolution of 1V. The maximum current leakage is 20mA which allows quick charging of capacitive devices. A quick discharge of the device when the measurement is complete, also minimizes test times. Leakage currents can be monitored down to 0.1 $\mu$ A.

**The Guardian 6000 Insulation Resistance** measurements are similar to a DC hipot but rather than displaying leakage current, resistance is calculated and displayed. The insulation resistance can be measured over the range of 100k $\Omega$  to 50G $\Omega$  with test voltages from 50VDC to 1000VDC in 1V steps.

**The Guardian 6000 Ground Bond** provides up to 30A AC for ground bond testing. The test current can be programmed from 1A to 30A in 0.1A steps. Hi current limit, test time, frequency and open circuit no load voltage can all be programmed. The offset feature can automatically compensate for any lead resistance.



For more detailed specifications, visit [www.quadtech.com](http://www.quadtech.com)

For more information about special purchase, rent & lease options, call

1-800-253-1230  
Fax 1-978-461-4295  
Intl. 1-978-461-2100



## Guardian 6000

**AC Output Voltage:** Range: 50V to 5000V AC, 1V resolution  
Frequency: 50 or 60 Hz Programmable  
Waveform: Sinusoidal  
Regulation: <(1% +5V) at Rated Load

**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% + 5cnt)

**High/Low Limit Test:** 1µA to 40mA AC  
Accuracy: ±(1% of limit + 1mA)  
Low limit can be turned OFF

**Arc Detection:** Programmable Level and OFF, >1mA

**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 20mA DC  
Resolution: 0.1, 1 or 10µA steps  
Accuracy: ±(1% or reading + 5cnt)

**High/Low Limit Test:** 0.0001mA to 20mA DC  
Low limit can be turned OFF

**Arc Detection:** Programmable Level and OFF, >1mA

**Insulation Resistance:** Range: 100kΩ - 50GΩ  
Accuracy: ±5% to ±15% depending upon voltage and resistance

**Voltage Range:** 50V to 1000V DC

**Voltage Accuracy:** ±(1% of setting + 5V)

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

**IR Test Delay:** 0.3 to 99.9 seconds Programmable in 0.1 second steps

**Ground Bond:** Range: 1.0 to 30.0A AC, setting 0.1A/step  
Accuracy: ±(1% of setting + 0.3A)

**Display:** ±(1% of reading + 3 counts)

**Frequency:** 50 or 60Hz Selectable

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

**Resistance:** Range: 0 - 500.0mΩ, 4 digits  
Accuracy: ±(1% of reading + 3 counts)  
Resolution: 1mΩ

**Hi Limit:** 10mV to 510mV

**Offset Function:** 0 to 100mV offset, user selectable

**Test Time:** 0.5 - 999sec (±20ms)

### Common Features:

**AC/DC Test Time:** Ramp: 0.1 to 999s (±20ms)  
Test: 0.1 to 999s (±20ms) and Continuous

**Remote Control:** Inputs: Start, Stop  
Characteristics: Optically Isolated with 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:** 99 Test Setups with 99 Steps each, Alpha-Numeric Label

**Connectors:** Front and Rear Connections

**Front Panel Lockout:** Password

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

**Miscellaneous:** Fail Retest  
Scanner Delay: 0.1 to 99.9, 0.1s/step  
PAUSE Mode: Program pause between steps

**Indication:** Pass/fail lights, audible sound

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

**Standard Interface:** IEEE-488

**Optional Interfaces:** RS-232, Printer  
Data bits: 8, Parity: None  
Stop bits: 1, Default Baud Rate: 9.6k  
EOS: CR + LF, Echo: Off  
Selectable Baud Rate: 300 - 19200

**Dimensions:** (w x h x d): 17x6.8x17.7in (430x175x450mm)

**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 • 500W max

## Ordering Information

Guardian 6000 Electrical Safety Analyzer		<b>Optional Accessories</b>	G13 Corded Product Adapter (115V)
<b>Includes:</b>		N/A Calibration Data	G14 Power Entry Adapter
150354	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)
4200-0300	AC Power Cable	S04 HV Lead Set 2m	G26 RS232 Interface
N/A	Calibration Cert. Traceable to NIST	S05 Foot Switch	G27 Rack Mount Flanges
		S08 Gun Probe	G28 Printer Interface (replace IEEE)
		S09 HV Lead, 1M, Unterminated	G41 RS232 Cable: DB9F to DB25M, 3 feet
		S10 HV Lead, 1M, Unterminated	

For more detailed specifications, visit [www.quadtech.com](http://www.quadtech.com) • For more information about special purchase, rent & lease options, call:

1-800-253-1230 • Fax 1-978-461-4295 • Intl. 1-978-461-2100

5 Clock Tower Place, 210 East, Maynard, MA 01754