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# Guardian

# 6000 Series

## Electrical Safety Analyzer

### 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
- Simulated Leakage Current Measurement (UL1950)
- Built-in 8 Channel Scanner Option
- 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 Interface
- Insulation Resistance Measurements from 100kΩ to 50GΩ

### Introduction

The Guardian 6000 is five instruments in one providing AC Hipot, DC Hipot, Insulation Resistance, Leakage Current 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 all of the electrical safety tests in one box can reduce test time, increase productivity and reduce the number of boxes 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 0.1μA.

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 100kΩ to 50GΩ 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.

The Guardian 6000 Leakage Current A simulated line leakage test can be performed directly on the Guardian 6000. The simulation uses the recommended circuit for UL1950 and measures true RMS leakage current. The test voltage applied can be varied over the range of 50V to 400VAC.



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: 0.001mA
	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: 0.0001mA
	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:

Output Current:	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:	10mΩ to 510mΩ
Offset Function:	0 to 100mΩ offset, user selectable
Test Time:	0.5 - 999sec (+/-20ms)

### Simulated Leakage Current:

Output Voltage:	Range: 50V to 400V AC, 50 or 60Hz
	Regulation: <(1% +5V) at Rated Load
AC Current Display:	Range: 0.01 to 10mA, 0.003mA resolution
	Accuracy: +/- (1% + 5cnt), True RMS
Circuit:	IEC 950, UL1950, UL3101

### 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:	IEEE488
Optional Interface:	RS232
	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>	S09 HV Lead, 1M, Unterminated	G27 Rack Mount Flanges
<b>Includes:</b>	Calibration Data	S10 HV Lead, 1M, Unterminated	G28 Printer Interface (replace IEEE)
150354 Instruction Manual	6000-01 Scanner, 8 Channel 5HV,3GC	G13 Corded Product Adapter (115V)	
S02 HV Lead Set, 1m	6000-02 Scanner, 8 Channel 3HV,5GC	G14 Power Entry Adapter	
G15 Ground Continuity Lead Set	6000-03 Scanner, 8 Channel HV	G16 International Power Strip	
Power Cable	S04 HV Lead Set 2m	G24 Scanner Cable (5000 scanners)	
Calibration Cert. Traceable to NIST	S05 Foot Switch	G25 Corded Product Adapter (240V)	
	S08 Gun Probe	G26 RS232 Interface	

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