

## USES:

- Production & Compliance Testing of Appliances, Instruments, and Information Technology Equipment in Accordance with UL, 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
- Testing Electronic Components

## FEATURES:

- Programmable Output Voltage to 5kV AC and 6kV DC
- Measurement of Real, Imaginary and Total Current
- Ground Fault Interruption (GFI) for operator safety
- Programmable Ramp, Test and Fall Times
- Storage of Tests Setups, 25 User (5 pre-defined), and 9 Multi-step with 3 steps per measurement
- Continuous Leakage Current Monitoring down to 0.1 $\mu$ A
- Ground Continuity Test with Adjustable Limits
- Password Protected Front Panel Lockout
- Remote I/O, RS-232 Interface standard, IEEE-488, and Enhanced Remote Optional
- Review of Data after Measurement
- Insulation Resistance Measurements from 10k $\Omega$  to 2T $\Omega$

## AC/DC/IR Hipot Testers

### Introduction

The Guardian 2500 Series of Hipot Testers is designed to perform the most common electrical safety tests outlined in UL, TUV, IEC and other standards. Emphasis has been placed on *ease of use, automation, rugged reliability* and *safety*, making the Guardian 2500 Series "The Safest Choice" in electrical safety testers.

### Description

The Guardian 2500 Series builds upon QuadTech's Sentry family of electrical safety testers and incorporates a unique Ground Fault Interruption (GFI) feature (patent pending) as well as RS-232 and remote interfaces and optional IEEE 488 and Enhanced Remote interfaces. The GFI circuit is designed to protect the operator from inadvertent contact with the units high voltage output. The principle of operation is based on independent current monitoring on both the high voltage output and the return line. Any imbalance of current shuts the units high voltage output down.

The 2500 provides arc detection capability for monitoring short duration transients in current flow which often go undetected. Both detection level and duration of the arc are user programmable.

**The Guardian 2510 AC Hipot Tester** performs AC dielectric withstand (hipot) tests. The test voltage is programmable in the range from 100VAC to 5kVAC with low and high current detection limits from 1 $\mu$ A to 15mA. The capability of measuring and displaying real, imaginary and total current makes the unit ideal for testing capacitive type devices, such as power supplies, cables and transformers, where the imaginary part of the total current may be significantly higher than the real part.

**The Guardian 2520 AC/DC Hipot Tester** has all the features of the Guardian 2510 with the addition of DC hipot. The test voltage can be programmed in the range from 100VDC to 6kVDC, with low and high current detection limits from 0.1 $\mu$ A to 7.5mA.

**The Guardian 2530 AC/DC/IR Hipot Tester** provides measurement of insulation resistance (IR) in addition to the AC/DC hipot capability of the 2510 and 2520. IR is the resistance in ohms, between two points separated by an insulating material. The measurement range is from 10k $\Omega$  to 2T $\Omega$  with a programmable voltage range from 50 to 1000VDC in 2V steps.



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 1-508-485-0295  
Intl. 1-508-229-0806



## Guardian 2510, 2520 and 2530

<b>AC Output Voltage:</b>	Range: 0.1kV to 5kV AC, in 2V steps Frequency: 50/60 Hz selectable Frequency Accuracy: 100ppm Waveform: Sinusoidal, crest factor 1.4 Regulation: +/- (1% of setting + 5V)
<b>Voltage Display:</b>	Accuracy: +/- (1% of reading + 5V) Resolution: 1V steps
<b>AC Current Display:</b>	Real, Imaginary or Total current (user selectable) Range: 1µA to 15mA AC, in 1µA steps Accuracy: +/- (0.5% of set high limit + 1µA)

## Guardian 2520 and 2530

<b>DC Output Voltage:</b>	Range: 0.1kV to 6kV DC, in 2V steps
<b>Voltage Display:</b>	Accuracy: +/- (1% of reading + 5V) Resolution: 1V steps
<b>DC Current Display:</b>	Range: 0.1µA to 1.0mA DC, in 0.1µA steps 1.0mA to 7.5mA DC, in 1µA steps Accuracy: +/- (0.5% set high limit + 0.1µA or 1µA)

## Guardian 2530

<b>Insulation Resistance:</b>	Voltage: 50 to 1000V DC, in 1V steps Accuracy: +/- (2% of setting + 5V) Range: 10kΩ - 2TΩ (voltage dependent) Accuracy: +/- 2% for V/R > 10nA +/- 5% for V/R < 10nA
<b>Charging Current:</b>	7.5mA maximum

## Common Features:

<b>Ground Continuity:</b>	Test Current: 100 mA DC +/- 10% Range: 10mΩ to 10Ω, in 1mΩ steps Accuracy: ±(5% of reading + 20mΩ)
<b>Limits:</b>	Programmable Hi/Lo during Test Time (Lo can be set to Off for Hipot & GC, Hi can be set to Off for IR) Programmable Hi/Lo during Ramp Time (AC/DC Hipot only) (Both limits can be set to Off)
<b>Ground Fault Interrupt:</b>	Shutdown within 2msec for current imbalance > 250µA (AC) > 400µA (DC)
<b>Arc Detection:</b>	Arc Level AC: 0.01mA - 0.5mA for Hi limit set ≤ 0.5mA 0.5mA - 15mA for Hi limit set > 0.5mA Arc Level DC: 0.01mA - 0.2mA for Hi limit set ≤ 0.2mA 0.2mA - 8mA for Hi limit set > 0.2mA Arc Time: 5µsec to 500µs programmable

<b>Indication:</b>	Pass/fail display, lights, audible sound
<b>Buzzer Level:</b>	Low, High, Off
<b>Time:</b>	AC Hipot: Ramp, Test, Fall: 0.1 to 999sec DC Hipot and IR: Ramp, Dwell, Test, Fall: 0.1 to 999sec GC: Test: 0.1 to 999sec (Test can be set to Continuous. Ramp, Dwell, & Fall can be set to Off)
<b>Standard Interfaces:</b>	RS-232 Remote: Inputs: Start, Stop Characteristics: TTL active low, Pulse width > 1ms Outputs: Pass, Fail, Under Test Characteristics: Dry contact relay, Closed if true 36V, 100mA max Connector: 9 pin male D-series (compatible w/Sentry Series)
<b>Test Setups:</b>	25 User Defined (shipped with some factory settings) 9 Multi-step (3 steps)
<b>Connectors:</b>	Front and Rear Connection High Voltage: Locking, Amp Plug 861610-2 Return: BNC female (Selectable for ground or virtual ground) Continuity: Standard Banana Socket
<b>Front Panel Lockout:</b>	6 Digit Password with or without memory recall
<b>Miscellaneous:</b>	Continue Step on Fail Stop Test on Pass Continuous Voltage on Fail Step and Increment
<b>Optional Interfaces:</b>	IEEE488 Enhanced Remote: Inputs: Test Selection, Start, Stop Outputs: Fail for Hi, Low, Arc and Continuity, Pass, Fail, Under Test Connector: 25 pin male D-series (compatible with Sentry Series via adaptor)
<b>Mechanical:</b>	Bench Mount Dimension: (w x h x d): 17 x 5.25 x 16in (432 x 133 x 406mm)
<b>Weight:</b>	29 lbs (13kg) net, 36 lbs (16kg) shipping
<b>Environmental:</b>	Meets MIL-T-28800E, Type 3, Class 5 Operating: 0 to 40° C, Humidity: < 75% Storage: - 10 to + 60° C Warm-up Time: 1minute
<b>Power:</b>	• 90 - 130V AC • 50 or 60Hz • 200 - 250V AC • 300W max

## Ordering Information

2510 AC Hipot Tester	<b>Optional Accessories</b>	2000-25 Corded Product Adapter(240V)
2520 AC/DC Hipot Tester	2000-04 HV Lead Set 2m	2000-40 IEEE Interface/ Remote
2530 AC/DC/IR Hipot Tester	2000-05 Foot Switch	2000-42 Enhanced Remote/ RS232
<b>Includes:</b>	2000-06 High Voltage Probe	2000-43 2TΩ Enhanced Option
150319 Instruction Manual	2000-07 Power Entry Adapter	(2530, factory installed)
Power Cable	2000-08 Gun Probe	Calibration Data
2000-02 Test Leads (3)	2000-13 Corded Product Adapter(115V)	
Calibration Certificate Traceable to NIST	2000-16 Rack Mount Kit	

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