

# Guardian

## 500VA, 10kV AC, 12kV DC & 20kV DC Hipot Testers

### USES:

- Production or Compliance Testing of Appliances, Wire, Cable and Other Electrical Products which have High Leakage Current
- Testing to Safety Standards which Require or Recommend a 500VA Tester
- Testing of Electrical Products Requiring the Application of High AC or DC Voltages
- Testing of Transformers, Coils and Large Horsepower Motors

### FEATURES:

- Programmable Output Voltage to 10kV AC, 12kV DC & 20kV DC
- Programmable Ramp and Test Times
- Storage of 99 Tests Setups with 99 Steps per Setup
- Continuous Leakage Current Monitoring
- Programmable Trip Current
- Front Panel Lockout via Password
- Remote Control Interface Standard
- RS232, IEEE-488 and Printer Interfaces, Optional
- Insulation Resistance Measurements from 100k $\Omega$  to 50G $\Omega$
- High and Low Test Limits
- Multi-Point Scanner Option for High Voltage Switching (500VA only)

### Introduction

The **Guardian 500VA, 10kVAC, 12kVDC and 20kVDC** are four different Hipot Testers designed for specific electrical safety test applications. The Guardian 500VA is intended for high leakage current measurements to 100mA, the Guardian 10kVAC for high voltage AC testing and the Guardian 12kVDC and 20kVDC for high voltage DC testing. The Guardian 500VA, 12kVDC and 20kVDC instruments also measure insulation resistance (IR). Selecting the right instrument for the specific application, provides a cost effective solution to special electrical safety compliance testing.

### Description

The **Guardian 500VA Hipot Tester** is an economically priced AC/DC Hipot Tester for testing products which have high leakage current. With a programmable voltage range from 50 to 5000V AC and maximum current output of 100mA, the unit is ideal for load testing of capacitive devices. The instrument's DC dielectric testing capability covers the range from 50 to 6000V DC, with a maximum current output to 20mA for quick charging of capacitive devices. DC leakage current can be monitored down to 0.1 $\mu$ A.

The Guardian 500VA also performs Insulation Resistance (IR) measurements, similar to DC hipot, except the product's insulation resistance value is displayed directly in ohms. The resistance can be measured over the range of 100k $\Omega$  to 50G $\Omega$  at test voltages from 50 to 1000VDC.

In all cases, both high and low limits are operator programmable for quick and easy pass/fail testing. These dual limits are essential to ensure that the device under test is actually making contact with the tester. For consistent testing, up to 99 setups can be stored in instrument memory for later recall. An optional high voltage scanner is also available for testing multi-connection devices.

The **Guardian 10kVAC Hipot Tester** performs AC Hipot Testing only, over the voltage range from 100 to 10,000V AC. With maximum current output of 20mA, the instrument is capable of testing capacitive devices at high AC voltages. The 10kV unit contains many of the features of the 500VA Tester including programmable min/max limits, setup storage and arc detection.

The **Guardian 12kVDC Hipot Tester** performs DC Hipot Testing over the voltage range from 100 to 12,000V DC with a maximum leakage current output of 10mA. Additionally, the 12kV tester provides Insulation Resistance measurement capability over a range of 100k $\Omega$  to 50G $\Omega$  at test voltages from 50 to 1000V DC. The new improved discharge function allows for fast controlled discharge of the DUT.

The **Guardian 20kVDC Hipot Tester** performs DC Hipot Testing over the voltage range from 100 to 20,000V DC with a maximum leakage current output of 5mA. Additionally, the 20kV tester provides Insulation Resistance measurement capability over a range of 100k $\Omega$  to 50G $\Omega$  at test voltages from 50 to 1000V DC. The new improved discharge function allows for fast controlled discharge of the DUT.



For more detailed specifications, visit

[www.quadtech.com](http://www.quadtech.com)

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Intl. 1-508-229-0806

## Guardian 500VA

<b>AC Output Voltage:</b>	Range: 50V to 5000V AC, 1V resolution Frequency: 50 or 60 Hz Programmable Waveform: Sinusoidal Regulation: <(1% +5V) at Rated Load
<b>Voltage Display:</b>	Accuracy: ±(1% of reading + 10V) Resolution: 1Volt
<b>AC Current Display:</b>	Total current Range: 1µA to 100mA AC Resolution: 0.001mA Accuracy: ±(1.5% + 5cnt)
<b>High/Low Limit Test:</b>	1µA to 100mA AC Accuracy: ±(1% of limit + 1mA) Low limit can be turned OFF
<b>DC Output Voltage:</b>	Range: 50V to 6000V DC, 1V resolution Regulation: <(1% +5V) at Rated Load
<b>Voltage Display:</b>	Accuracy: ±(1% of reading + 5V) Resolution: 1Volt
<b>DC Current Display:</b>	Range: 0.1µA to 20mA DC Resolution: 0.0001mA Accuracy: ±(1.5% or reading + 5cnt)
<b>High/Low Limit Test:</b>	0.1µA to 20mA DC Low limit can be turned OFF
<b>Insulation Resistance:</b>	Range: 100kΩ - 50GΩ Accuracy: ±5% to ±15% depending upon V and R
<b>Voltage Range:</b>	50V to 1000V DC
<b>Voltage Accuracy:</b>	± (1% of setting + 5V)
<b>High/Low Limit Test:</b>	100kΩ - 50GΩ Low limit can be turned OFF

## Guardian 10kVAC

<b>AC Output Voltage:</b>	Range: 100V to 10,000V AC, 10V resolution Frequency: 50 or 60 Hz Programmable Waveform: Sinusoidal Regulation: <(1% +10V) at Rated Load
<b>Voltage Display:</b>	Accuracy: ±(1% of reading + 10V) Resolution: 10Volt
<b>AC Current Display:</b>	Total current Range: 1µA to 20mA AC Resolution: 0.001mA Accuracy: ±(1.5% + 5cnt)
<b>High/Low Limit Test:</b>	1µA to 20mA AC Accuracy: ±(1% of limit + 1µA) Low limit can be turned OFF

## Guardian 12kVDC

<b>DC Output Voltage:</b>	Range: 100V to 12,000V DC, 10V resolution Regulation: <(1% +10V) at Rated Load
<b>Voltage Display:</b>	Accuracy: ±(1% of reading + 10V) Resolution: 10Volt
<b>DC Current Display:</b>	Range: 0.1µA to 10mA DC Resolution: 0.0001mA Accuracy: ±(1.5% or reading + 5cnt)
<b>High/Low Limit Test:</b>	0.1µA to 10mA DC Low limit can be turned OFF
<b>Insulation Resistance:</b>	Range: 100kΩ - 50GΩ Accuracy: ±5% to ±15% depending upon V and R
<b>Voltage Range:</b>	100V to 1000V DC
<b>Voltage Accuracy:</b>	± (5% of setting + 10V)
<b>High/Low Limit Test:</b>	100kΩ - 50GΩ Low limit can be turned OFF

## Ordering Information

Guardian 500VA Hipot Tester			G16*	International Power Strip
Guardian 10kVAC Hipot Tester			G25*	Corded Product Adapter (240V)
Guardian 12kVDC Hipot Tester	S03*	Calibration Data	G26	RS232 Interface
Guardian 20kVDC Hipot Tester	S04	HV Lead Set 2m	G27	Rack Mount Flanges
<b>Includes:</b>	S05	Foot Switch	G28	Printer Interface (replaces IEEE 488)
150514 Instruction Manual	S06*	High Voltage Probe	G29	IEEE-488 Interface
S02 HV Lead Set, 1m	S07*	Power Entry Adapter Cable	G41	RS232 Cable: DB9F to DB25M, 3 feet
700070 Power Cable	S08*	Gun Probe	5000-01*	Scanner 8 Channel HV
Calibration Certificate Traceable to NIST	S09	HV Lead, 1 meter, unterminated	5000-03*	Scanner 8 Channel HV Rack Mount
	S10	HV Lead, 2 meters, unterminated		
	S11*	Gun Probe with Remote Start		

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

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## Guardian 20kVDC

<b>DC Output Voltage:</b>	Range: 100V to 20,000V DC, 10V resolution Regulation: <(1% +10V) at Rated Load
<b>Voltage Display:</b>	Accuracy: ±(1% of reading + 10V) Resolution: 10Volt
<b>DC Current Display:</b>	Range: 0.1µA to 5mA DC Resolution: 0.0001mA Accuracy: ±(1.5% or reading + 5cnt)
<b>High/Low Limit Test:</b>	0.1µA to 5mA DC Low limit can be turned OFF
<b>Insulation Resistance:</b>	Range: 100kΩ - 50GΩ Accuracy: ±5% to ±15% depending upon V and R
<b>Voltage Range:</b>	100V to 1000V DC
<b>Voltage Accuracy:</b>	± (5% of setting + 10V)
<b>High/Low Limit Test:</b>	100kΩ - 50GΩ Low limit can be turned OFF
<b>Common Features:</b>	
<b>AC/DC Test Time:</b>	Ramp: 0.1 to 99.9s (±20ms) Test: 0.1 to 999s (±20ms) and Continuous
<b>Arc Detection:</b>	Programmable Level and OFF, 0.001mA/step
<b>Remote Control:</b>	Inputs: Start, Stop Outputs: Pass/Fail/Under Test Connector: Terminal Strip and 9 pin D Series
<b>Test Setups:</b>	99 Test Setups with 99 Steps each, Max. 500
<b>Connectors:</b>	Front and Rear HV and GND Connections
<b>Front Panel Lockout:</b>	Password
<b>Safety Features:</b>	Fast Cutoff (<0.4ms) and Fast Discharge
<b>Miscellaneous:</b>	Continuous Voltage on Fail
<b>Indication:</b>	Pass/Fail lights, audible sound
<b>Buzzer Level:</b>	1,2,3 and Off
<b>Interface Options:</b>	IEEE-488, RS-232 and Printer
<b>Dimensions:</b>	(w x h x d): 17x6.8x17.7in (430x175x450mm)
<b>Weight:</b>	Guardian 500VA: 53 lbs (24kg) - Net, 60 lbs (27kg) Shipping Guardian 10kVAC: 44 lbs (20kg) - Net, 51 lbs (23kg) Shipping Guardian 12kVDC: 44 lbs (20kg) - Net, 51 lbs (23kg) Shipping Guardian 20kVDC: 44 lbs (20kg) - Net, 51 lbs (23kg) Shipping
<b>Environmental:</b>	Operating: 0°C to + 40°C, Humidity: <75% Storage: -20°C to +70°C Warm-up Time: 1minute
<b>Power:</b>	• 90 - 130V AC • 50 or 60Hz • 200 - 250V AC • 500W max

