

# 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
- Programmable Trip Current
- Continuous Leakage Current Monitoring
- Insulation Resistance Measurements from 100k $\Omega$  to 50G $\Omega$
- High and Low Test Limits
- Pause Mode
- Store & Recall 99 Tests Setups with up to 99 Steps per Setup
- Fast HV Cutoff & DUT Discharge
- Front Panel Lockout via Password
- Front & Rear Panel Connection
- RS232, Remote I/O - Standard
- IEEE-488, Printer - Optional
- Multi-Point Scanner Option for High Voltage Switching

## 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 100 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 100 to 1000V DC. The new improved discharge function allows for fast controlled discharge of the DUT.



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



Product Specifications

50V to 5000V AC, 1V resolution  
cy: 50 or 60 Hz Programmable  
waverorm: Sinusoidal  
Regulation: <(1% +5V) at Rated Load

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

**AC Current Display:** Total current  
Range: 1 $\mu$ A to 100mA AC  
Resolution: 0.001mA  
Accuracy:  $\pm(1\%$  + 5cnt)

**High/Low Limit Test:** 1 $\mu$ A to 100mA AC  
Low limit can be turned OFF

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

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

**DC Current Display:** Range: 0.1 $\mu$ A to 20mA DC  
Resolution: 0.1 $\mu$ A  
Accuracy:  $\pm(1\%$  or reading + 5cnt)

**High/Low Limit Test:** 0.1 $\mu$ A to 20mA DC  
Low limit can be turned OFF

**Insulation Resistance:** Range: 100k $\Omega$  - 50G $\Omega$   
Accuracy:  $\pm 5\%$  to  $\pm 15\%$  depending upon V and R

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

**Voltage Accuracy:**  $\pm (5\%$  of setting + 5V)

**High/Low Limit Test:** 100k $\Omega$  - 50G $\Omega$   
Low limit can be turned OFF

**Guardian 10kVAC**

**AC Output Voltage:** Range: 100V to 10kV AC, 10V resolution  
Frequency: 50 or 60 Hz Programmable  
Waveform: Sinusoidal  
Regulation: <(1% +10V) at Rated Load

**Voltage Display:** Accuracy:  $\pm(1\%$  of reading + 10V)  
Resolution: 10Volt

**AC Current Display:** Total current  
Range: 0.1mA to 20mA AC  
Resolution: 0.001mA  
Accuracy:  $\pm(1.5\%$  + 5cnt)

**High/Low Limit Test:** 0.1mA to 20mA AC  
Low limit can be turned OFF

**Guardian 12kVDC**

**DC Output Voltage:** Range: 100V to 12kV DC, 10V resolution  
Regulation: <(1% +10V) at Rated Load

**Voltage Display:** Accuracy:  $\pm(1\%$  of reading + 10V)  
Resolution: 10Volt

**DC Current Display:** Range: 0.01mA to 10mA DC  
Resolution: 0.0001mA  
Accuracy:  $\pm(1\%$  or reading + 5cnt)

**High/Low Limit Test:** 0.1 $\mu$ A to 10mA DC  
Low limit can be turned OFF

**Insulation Resistance:** Range: 100k $\Omega$  - 50G $\Omega$   
Accuracy:  $\pm 5\%$  to  $\pm 15\%$  depending upon V and R

**Voltage Range:** 100V to 1000V DC

**Voltage Accuracy:**  $\pm (5\%$  of setting + 5V)

**High/Low Limit Test:** 100k $\Omega$  - 50G $\Omega$   
Low limit can be turned OFF

**Guardian 20kVDC**

**DC Output Voltage:** Range: 100V to 20kV DC, 20V resolution  
Regulation: <(1.5% +5V) at Rated Load

**Voltage Display:** Accuracy:  $\pm(1.5\%$  of reading + 5 counts)  
Resolution: 10Volt

**DC Current Display:** Range: 0.01mA to 5mA DC  
Resolution: 0.0001mA  
Accuracy:  $\pm(1.5\%$  or reading + 5 counts)

**High/Low Limit Test:** 0.1 $\mu$ A to 5mA DC  
Low limit can be turned OFF

**Insulation Resistance:** Range: 100k $\Omega$  - 50G $\Omega$   
Accuracy:  $\pm 5\%$  to  $\pm 15\%$  depending upon V and R

**Voltage Range:** 100V to 1000V DC

**Voltage Accuracy:**  $\pm (5\%$  of setting + 5V)

**High/Low Limit Test:** 100k $\Omega$  - 50G $\Omega$   
Low limit can be turned OFF

**Common Features:**

**AC/DC Test Time:** Ramp: 0.1 to 99.9s ( $\pm 20$ ms)  
Test: 0.1 to 999s ( $\pm 20$ ms) and Continuous

**Arc Detection:** Programmable Level and OFF, 0.001mA/Step

**Remote Control:** Inputs: Start, Stop  
Outputs: Pass/Fail/Under Test  
Connector: Terminal Strip and 9 pin D Series

**Standard Interfaces:** Remote I/O, RS-232

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

**Test Setups:** 99 Test Setups with 99 Steps each, Max. 500

**Connectors:** Front and Rear HV and GND Connections

**Front Panel Lockout:** Password

**Safety Features:** Fast Cutoff (<0.4ms) and Fast Discharge

**Miscellaneous:** Continuous Voltage on Fail

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

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

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

**Weight:**  
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

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

**Power:** • 90 - 130V AC • 50 or 60Hz  
• 200 - 250V AC • 500W max

**Ordering Information**

Guardian 500VA Hipot Tester  
Guardian 10kVAC Hipot Tester  
Guardian 12kVDC Hipot Tester  
Guardian 20kVDC Hipot Tester

**Includes:**

150514 Instruction Manual  
S02 HV Lead Set, 1m  
S07\* Power Entry Adapter Cable  
71007\* HV Gun Probe  
Calibration Certificate Traceable to NIST

**Optional Accessories**

Calibration Data  
S04 HV Lead Set 2m  
S05 Foot Switch  
S06\* High Voltage Probe  
S07\* Power Entry Adapter Cable  
S08\* Gun Probe  
S09 HV Lead, 1 meter, unterminated  
S10 HV Lead, 2 meters, unterminated  
S11\* Gun Probe with Remote Start  
G13\* Corded Product Adapter (115V)

G16\* International Power Strip  
G25\* Corded Product Adapter (240V)  
G26 RS232 Interface  
G27 Rack Mount Flanges  
G38 Printer Interface (replaces IEEE 488)  
G39 IEEE-488 Interface  
5000-03\* Scanner 8 Channel HV Rack Mount

\*Maximum Voltage Rating: 5kV AC & 6kV DC