

# Guardian 6100 Plus Safety Analyzer

*for Electronics Production & Compliance Testing*

## 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, UL60950, EN61010 and CSA C22.2 No. 1010.1
- 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:

- Twin Port - Simultaneous Hipot & GB
- Built-in 20A Hipot/Line Leakage Scanner
- Output Voltage to 5kV AC and 6kV DC
- Ground Bond Testing to 30A AC (to 40A with Optional Transformer)
- Insulation Resistance Measurements from 100k $\Omega$  to 50G $\Omega$
- Earth, Enclosure & Patient Line Leakage Current Measurements to 9.999mA
- Open/Short Circuit Detection Mode
- Pause Mode with Message Capability
- Continuous Leakage Current Monitoring
- Programmable Trip Current to 40mA AC and 12mA DC
- Programmable Ramp, Dwell & Test Times
- Storage of 100 Test Setups, 50 Steps Each
- Front Panel Lockout via Password
- Standard RS-232 & Remote I/O Interfaces
- Optional IEEE-488, Printer Interfaces
- Optional CaptivATE Automation Software for G6100 Plus

## Introduction

The Guardian 6100 Plus is the industry's first production safety analyzer with simultaneous Hipot and Ground Bond capability providing a dramatic savings in test time. Six instruments in one, the G6100 Plus provides AC Hipot, DC Hipot, Insulation Resistance, Leakage Current/Functional Run, Ground Bond and Open/Short measurements from a single test connection. Versatile and packed with features, the G6100 Plus is a cost effective solution for the full spectrum of electrical safety compliance testing.

## Description

**Twin Port Technology:** This patented feature allows for simultaneous Ground Bond and Hipot Testing. Decrease test time and increase device through-put.

**Leakage Current:** With 20A input current capability, Leakage Current can be measured from 0.1 $\mu$ A to 9.999mA. Perform Functional Run Tests while monitoring the Voltage, Current or Power plus perform Earth, Enclosure and Patient leakage testing in 8 possible modes including Normal, Reverse Line, Single Fault Normal and Single Fault Reverse.

**Ground Bond:** With test current from 1A to 30A in 0.1A steps and programmable current limits, test time, frequency and open circuit no load voltage, the G6100 Plus provides full GB testing capability. A 40Amp GB option is also available.

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

**DC Hipot:** DC dielectric testing from 50V to 6000VDC with a resolution of 1V. Leakage current can be continuously monitored from 0.1 $\mu$ A to 12mA DC.

**Insulation Resistance:** The G6100 Plus is capable of measuring IR from 100k to 50G $\Omega$  with test voltage from 50V to 1000VDC in 1V steps.

**Open/Short Circuit Detection Mode:** Avoid false pass results by checking for Open and Short connections and ensure that the DUT is properly connected not shorted.

**Optional Scanners:** Increase the number of test channels for multi-point or multi-device testing by adding an external scanner to the G6100 Plus. Add up to 8HV channels or a combination of HV and GB channels with just one external scanner.

**Standard Interfaces:** The Remote I/O and RS-232 interfaces provide remote control and serial data collection capability for automated applications.



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Hipot Testers • LCR Meters • Cable Testers • AC/DC Programmable Power Sources  
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## Guardian 6100 Plus

**AC Output Voltage:** Range: 50V to 5000V AC, 1V resolution  
 Regulation: <(1% of setting +5V) at Rated Load  
 Freq: 50-600 Hz, programmable in 1Hz steps  
 50~60Hz : 1% + 5 cnts, > 60Hz: 3%+10 cnts  
 Waveform: Sinusoidal

**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% of reading + 5cnt)

**High/Low Limit Test:** 1µA to 40mA AC  
 Low limit can be turned OFF

**Arc Detection:** Programmable 1-20mA,  
 Pulse Width 40µ, 20µ, 10µ or 4µsec

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

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

**DC Current Display:** Range: 0.1µ to 12mA DC  
 Resolution: 0.1, 1 or 10µA steps  
 Accuracy: ±(1% or reading + 5cnt)

**High/Low Limit Test:** 0.0001mA to 12mA DC  
 Low limit can be turned OFF

**Arc Detection:** Programmable 1-10mA  
 Pulse Width 40µ, 20µ, 10µ or 4µsec

**Insulation Resistance:** Range: 100kV - 50GV  
 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

### Ground Bond:

**Output Current:** Range: 1.0 to 30.0A AC, setting 0.1A/step; \*40A  
 Accuracy: ±(1% of setting + 0.3A)

**Frequency:** 50 or 60Hz Selectable

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

**Resistance:** Range: 0.1mΩ-510.0mV, 4 digits; Resol: 1mV  
 Accuracy: ±(1% of reading + 3 counts)

**High Limit:** 0.1mΩ to 510mΩ

**Start Wait:** 0.1 - 99.9sec, OFF

### Leakage Current:

**Input Voltage:** Range: 0V to 300V

**Line Voltage Meter:** 0 - 300V AC, ±(1% of reading + 6cnts)

**Line Current Meter:** 0 - 20A, ±(1.5% of reading + 0.1A)

**Power:** 0 - 4400VA

**High/Low Limits:** Programmable for Voltage, Current, Power

**Current Display:**

Range	Res.	Accuracy
0.0001-0.59mA	0.0002mA	±(2% + 5cnts)
0.6 - 9.999mA	0.003mA	±(2% + 5cnts)

**Current Trip Limits:** 0.1µA to 9.999mA, 1µA Resolution (Range Dep.)  
 0.1µA to 6.000mA for UL544NP

**Measuring Circuit:** 5 Human Body Models IAW UL544 NP,  
 UL544P, UL1563, UL2601-1, IEC60601-1, IEC  
 950, UL1950, UL3101 Standards

**Measurement Modes:** Normal, Reverse, Single Fault with Ground  
 ON/OFF, Earth Line Leakage, Patient Line  
 Leakage and Patient Auxiliary Leakage.

**Max. DUT Current:** 20A

### Common Features:

**Open/Short Circuit Mode:** Check for Open & Short against a standard  
 capacitance value (Cs); <100V, 600Hz

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

**Test Time:** Ramp: 0.3 to 999s (±20ms), AC/DC/IR  
 Dwell: 0 to 999s (±20ms), DC only  
 Start Wait: 0.1 to 99.9s (±20ms), GB only  
 Test: 0.3 to 999s (±20ms) & Continuous (ALL)

**Remote Control:** Inputs: Start, Stop  
 Characteristics: Optically Isolated, 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:** 100 Test Setups with 50 Steps each,  
 13 character Alpha-Numeric Label

**Connectors:** Front and Rear 4- terminal connection

**Display:** 320 x 240 enhanced LCD with status indicators

**Front Panel Lockout:** Key Lock w/ Password; Fail Lock w/ Password

**Safety Features:** Fast Cutoff (<0.4ms) & Fast Discharge (0.2s)  
 Adjustable Discharge: .05-5.1kV DC

**Miscellaneous:** Fail Retest; Continue on Fail  
 PAUSE Mode: Program pause between steps

**Indication:** Pass/Fail lights, audible sound; Remote, Lock,  
 Offset & Error status indicators

**Interfaces:** Std RS-232, Remote I/O Opt IEEE-488, Printer

**Dimensions:** (w x h x d):17x5.25x18.5in (430x133x470mm)

**Weight:** 53 lbs (24kg) - Net, 60 lbs (27kg) Shipping

**Environmental:** Operating: 0 to + 40° C; Humidity: <75%  
 Storage: - 20 to + 70° C

**Power:** • 90 - 130V AC • 50 or 60Hz  
 • 200 - 250V AC • 800W max

## Ordering Information

\*GB to 40A with optional transformer

Guardian 6100 Plus Safety Analyzer		Optional Accessories			
<b>Includes:</b>		N/A	Calibration Data	G14	Power Entry Adapter
150799	Instruction Manual	5000-01	External Scanner, 8 Channel: 8HV	G16	International Power Strip
S02	HV Lead Set, 1m	5000-02	External Scanner, 8 Channel: 8HV, 4GB	G24	Scanner Cable (5000 scanners)
G15	Ground Continuity Lead Set	5000-03	External Scanner, 8 Channel: 8HV	G25	Corded Product Adapter (240V)
G30	Corded Product Adapter	5000-04	External Scanner, 8 Channel: 8HV, 3GB	G31	Isolation Transformer, 500VA
G33	Power Entry Adapter	S04	HV Lead Set 2m	G32	Isolation Transformer, 1000VA
4200-0300	AC Power Cable	S05	Foot Switch	G38	Printer Interface (replaces IEEE)
520157	8A 250V Power Line Fuse	S08	Gun Probe	G39	IEEE-488 Interface
520053	4A 250V Power Line Fuse	S09	HV Lead, 1m, Unterminated	G43	Rack Mount Kit
520124	20A 250V Power Line Fuse: Scanner	S10	HV Lead, 1m, Unterminated	G44	Barcode Scanner
N/A	Calibration Cert. Traceable to NIST	G13	Corded Product Adapter (115V)	G45	40A Ground Bond Transformer
				630157	RS232, 9-pin (M-F), 10' length

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

**www.quadtech.com or 800-253-1230**

