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**
- **Insulation Resistance Measurements from 100kΩ to 50GΩ**
- **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, Printer Interfaces**
- **Built-in 8 Channel Scanner Option**

Introduction

The Guardian 6000 is four instruments in one providing AC Hipot, DC Hipot, Insulation Resistance 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 multiple electrical safety tests in one unit can reduce test time, increase productivity and reduce the number of instruments 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.

QuadTech
ISO 9001 Certified

Product Specifications

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: 1 or 10µA steps
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: 0.1, 1 or 10µA steps
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: 10mV to 510mV

Offset Function: 0 to 100mV offset, user selectable

Test Time: 0.5 - 999sec (±20ms)

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

Miscellanious: 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: IEEE-488

Optional Interfaces: RS-232, Printer
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

Includes:

150354	Instruction Manual
S02	HV Lead Set, 1m
G15	Ground Continuity Lead Set
4200-0300	AC Power Cable
N/A	Calibration Cert. Traceable to NIST

Optional Accessories

N/A	Calibration Data
6000-01	Scanner, 8 Channel 5HV,3GC
6000-02	Scanner, 8 Channel 3HV,5GC
6000-03	Scanner, 8 Channel HV
S04	HV Lead Set 2m
S05	Foot Switch
S08	Gun Probe
S09	HV Lead, 1M, Unterminated
S10	HV Lead, 1M, Unterminated
G13	Corded Product Adapter (115V)
G14	Power Entry Adapter
G16	International Power Strip
G24	Scanner Cable (5000 scanners)
G25	Corded Product Adapter (240V)
G26	RS232 Interface
G27	Rack Mount Flanges
G28	Printer Interface (replace IEEE)
G41	RS232 Cable: DB9F to DB25M, 3 feet