INSTRUMENTS FOR

ELECTRICAL SAFETY COMPLIANCE TESTING

HIPOT TESTERS
GROUND BOND TESTERS
INSULATION RESISTANCE TESTERS
LINE LEAKAGE TESTERS
MEDICAL TEST SYSTEMS
HV/HC SCANNING MATRICES
SOFTWARE SOLUTIONS
FUNCTIONAL RUN TESTERS
CUSTOM INSTRUMENTS
Fully-Automated Dielectric Withstand Analyzer

HypotULTRA®III is a multi-function dielectric analyzer with an enhanced graphic LCD. Choose from two models: the 7620 AC Hipot tester and the 7650 AC/DC/IR tester. Both testers include an optional 4-port or 8-port built-in scanner. An additional external modular scanner is available for use with both testers. All testers come standard with USB and RS-232 interfaces. Ethernet, GPIB, and RS-485 interfaces are also available.

Model 7620 - 5 kVAC Hipot Tester. Internal 4 or 8 Port Scanning Matrix available

Model 7650 - 5 kVAC Hipot Tester, 5 kVDC Hipot Tester & Insulation Resistance Tester. Internal 4 or 8 Port Scanning Matrix available

Features and Benefits

- Patented SmartGFI® safety circuit protects the operator from shock hazards
- Patented VERI-CHEK® feature prompts the users through steps to validate the instrument’s operation
- Patented Prompt and Hold function provides a unique method for performing multiple steps during a test cycle
- Patented CAL-ALERT® alerts the operator when the HypotULTRA III is due for re-calibration
- RAMP HI® and CHARGE LO® for more effective DC Hipot testing
- Two Continuity Test modes allow for simultaneous continuity tests during Hipot testing as well as point-to-point continuity testing
- USB/RS-232, GPIB, Ethernet, or RS-485 automation interfaces available
- Data Storage card available for storing and transferring test data without a connection to a PC
- Graphic LCD and intuitive menu system to simplify the entire testing process from set-up to results
- 50 memories with 30 steps per memory that can be stored and recalled in any alphanumeric combination
- Real Current measurement allows operators to monitor total and real current on a single screen
- Advanced functionality available with an optional 4 or 8 port internal scanner
- Autoware Testing Software available for complete Automation Control

Safety agency listed.
**Input Specifications**

Voltage  
115 / 230 VAC ± 10%, Automatically Selected

Frequency  
50/60 Hz ± 5%

Fuse  
4 Amp 250 V Slow Blow

**Dielectric Withstand Test Mode**

Output Rating  
5 kV @ 30 mAAC  
5 kV @ 10 mADC for 7650 only

Output Adjustment  
Range: 0 – 5000 VAC  
0 – 5000 VDC for 7650 only  
Resolution: 1 V  
Accuracy: ± (2% of setting + 5 volts)  
(Disabled during operation. Can be adjusted during operation. When key lockout is active.)

Ramp-HI  
12 mA peak maximum, ON/OFF selectable

Charge-LO  
Range: 0.0 – 350.0 µA DC or Auto set

Maximum & Minimum Limits  
AC Total  
Range 1: 0.000 – 9.999 mA  
Resolution: 0.001 mA  
Accuracy: ± (2% of setting + 2 counts)

Range 2: 10.0 – 30.0 mA  
Resolution: 0.01 mA  
Accuracy: ± (2% of setting + 2 counts)

AC Real  
Range 1: 0.000 – 9.999 mA  
Resolution: 0.001 mA  
Accuracy: ± (2% of setting + 2 counts)

Range 2: 10.0 – 30.0 mA  
Resolution: 0.01 mA  
Accuracy: ± (2% of setting + 2 counts)

Accuracy: (3% of setting + 0.05 mA) All Ranges  
PF > 0.1  
V > 250 VAC

DC  
Range 1: 0.0 – 999.9 µA for 7650 only  
Resolution: 0.1 µA  
Accuracy: ± (2% of setting + 2 counts)

Range 2: 100 – 10000 µA for 7650 only  
Resolution: 1 µA  
Accuracy: ± (2% of setting + 2 counts)

Arc Detection  
Range: 1 – 9

Voltage Display  
Range: 0.00 – 5.00 kV Full Scale  
Resolution: 10 V  
Accuracy: ± (2% of setting + 2 counts)

Current Display  
Auto Range  
Range 1: 0.000 mA – 3.500 mA  
Resolution: 0.001 mA  
Range 2: 3.00 – 30.00 mA  
Resolution: 0.01 mA  
Accuracy: ± (3% of reading + 0.05 mA) All Ranges  
PF > 0.1  
V > 250 VAC

**Dielectric Withstand Test Mode (continued)**

Current Display  
DC  
Range 1: 0.0 µA – 350.0 µA for 7650 only  
Resolution: 0.1 µA  
Range 2: 0.300 mA – 3.500 mA for 7650 only  
Resolution: 0.001 mA  
Range 3: 3.00 mA – 9.99 mA for 7650 only  
Resolution: 0.01 mA  
Accuracy: ± (2% of reading + 2 counts)

DC Output Ripple  
≤ 4% Ripple rms at 5 kVDC @ 10 mA, Resistive Load

Discharge Time  
≤ 200 ms

Maximum Capacitive  
1 µF ≤< 1 kV  
0.08 µF ≤< 4 kV

Load in DC Mode  
0.75 µF ≤< 2 kV  
0.04 µF ≤< 5 kV  
0.5 µF ≤< 3 kV

AC Output Wave Form  
Sine Wave, Crest Factor = 1.3 - 1.5

Output Frequency  
Range: 60 or 50 Hz, User Selection  
Accuracy: ± 0.1%

Output Regulation  
± (1% of output + 5 V)  
From no load to full load and over input voltage range

Dwell Timer  
Range: 0.0, 0.4 – 999.9 sec (0 = Continuous)

Ramp Timer  
Ramp-Up: 0.1 - 999.9 sec  
Ramp-Down: AC 0.0 - 999.9 sec  
DC: 0.0, 1.0 - 999.9 sec  
0.0=OFF

Ground Continuity  
Current: DC 0.1 A ± 0.01 A, fixed  
Max. ground resistance: 1 Ω ± 0.1 Ω, fixed

Ground Fault Interrupter  
GFI Trip Current: 450 µA max (AC or DC)  
HV Shut Down Speed: < 1 ms

**Insulation Resistance Test Mode**

(Model 7650 Only)

Output Voltage  
Range: 50 - 1000 VDC  
Resolution: 1 V  
Accuracy: ± (2% of reading + 2 counts)

Short Circuit Current Maximum  
12 mA peak

Voltage Display  
Range: 0 – 1000 V  
Resolution: 1 V  
Accuracy: ± (2% of reading + 2 counts)
**Insulation Resistance Test Mode**  Model 7650 Only (continued)

<table>
<thead>
<tr>
<th>Resistance Display</th>
<th>Range:</th>
<th>0.05 MΩ - 50000 MΩ (5 Digit, Auto Ranging)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution:</td>
<td>500 VDC</td>
<td>1000 VDC</td>
</tr>
<tr>
<td>MQ</td>
<td>MQ</td>
<td>MQ</td>
</tr>
<tr>
<td>0.001</td>
<td>0.050 - 9.999</td>
<td>1.00 - 9.999</td>
</tr>
<tr>
<td>0.01</td>
<td>1.00 - 99.99</td>
<td>10.0 - 999.9</td>
</tr>
<tr>
<td>0.1</td>
<td>10.0 - 999.9</td>
<td>100 - 50000</td>
</tr>
<tr>
<td>1</td>
<td>100 - 50000</td>
<td>100 - 500000</td>
</tr>
<tr>
<td>Accuracy:</td>
<td>50 - 499 V</td>
<td>0.05 MΩ - 999.9 MΩ</td>
</tr>
<tr>
<td></td>
<td>± (7% of reading + 2 counts)</td>
<td>± (2% of reading + 2 counts)</td>
</tr>
<tr>
<td></td>
<td>500 - 1000 V</td>
<td>0.10 MΩ - 999.9 MΩ</td>
</tr>
<tr>
<td></td>
<td>± (5% of reading + 2 counts)</td>
<td>± (15% of reading + 2 counts)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Charge-LO</th>
<th>Range:</th>
<th>0.000 - 3.500 µA or Auto Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum and</td>
<td>Range:</td>
<td>0.00 - 99.99 Ω</td>
</tr>
<tr>
<td>Minimum Limits</td>
<td>Resolution:</td>
<td>0.01 Ω</td>
</tr>
<tr>
<td></td>
<td>Range:</td>
<td>100.0 Ω - 999.9 Ω</td>
</tr>
<tr>
<td>Ramp Timer</td>
<td>Range:</td>
<td></td>
</tr>
<tr>
<td>Ramp-Up:</td>
<td>0.1 - 999.9 sec</td>
<td></td>
</tr>
<tr>
<td>Ramp-Down:</td>
<td>0.0, 1.0 - 999.9 sec</td>
<td></td>
</tr>
<tr>
<td>Delay Timer</td>
<td>Range:</td>
<td>0.0, 1.0 - 999.9 sec 0 = Continuous</td>
</tr>
<tr>
<td>Ground Fault</td>
<td>GFI Trip Current:</td>
<td>450 µA max</td>
</tr>
<tr>
<td>Interrupt</td>
<td>HV Shut Down Speed:</td>
<td>&lt; 1 ms</td>
</tr>
<tr>
<td>Milliohm Offset</td>
<td>Range:</td>
<td>0.00 - 10.00 Ω</td>
</tr>
</tbody>
</table>

**Continuity Test Mode** (continued)

| Maximum and        | Range 1: | 0.00 - 99.99 Ω |
| Minimum Limits     | Resolution: | 0.01 Ω          |
| Accuracy:          | ± (1% of setting + 0.05 Ω) |
|                    | Range 2: | 100.0 - 999.9 Ω |
| Resolution:        | 0.1 Ω   |
| Accuracy:          | ± (1% of setting + 0.2 Ω) |
|                    | Range 3: | 1000 - 2000 Ω   |
| Resolution:        | 1 Ω     |
| Accuracy:          | ± (1% of setting + 2 Ω) |

| Dwell Timer        | Range: | 0.0, 0.3 - 999.9 sec 0 = Continuous |
| Milliohm Offset    | Range: | 0.00 - 10.00 Ω |

**General Specifications**

- **Mechanical**: Bench or rack mount (2U height) with tilt up front feet
- **Dimensions** (WxHxD): 16.92 x 3.50 x 15.75 in (430 x 89 x 400 mm)
- **Weight**: 31.38 Lbs (14.23 kg) variable with options
- **Interface**
  - Standard USB/RS-232
  - Optional Ethernet, GPIB, Data Storage (RS-485) or Printer Port with Date and Time Stamp
- **Memory**: 50 memories, 30 steps/memory

Specifications subject to change without notice.


For more information on testing to a specific standard, refer back to the Common Safety Standard Reference Chart.

**Continuity Test Mode**

| Output Current     | DC 0.1 A ± 0.01 A |
|                   | Total Resistance*: 0.00-33.0 Ω |
|                   | DC 0.01 A ± 0.001 A |
|                   | Total Resistance*: 31.0-330 Ω |
|                   | DC 0.001 A ± 0.0001 A |
|                   | Total Resistance*: 310-2000 Ω |

<table>
<thead>
<tr>
<th>Resistance Display</th>
<th>Range 1:</th>
<th>0.00 - 19.99 Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution:</td>
<td>0.01 Ω</td>
<td></td>
</tr>
<tr>
<td>Accuracy:</td>
<td>± (1% of reading + 0.05 Ω)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range 2:</td>
<td>20.0 - 199.9 Ω</td>
</tr>
<tr>
<td>Resolution:</td>
<td>0.1 Ω</td>
<td></td>
</tr>
<tr>
<td>Accuracy:</td>
<td>± (1% of reading + 0.2 Ω)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range 3:</td>
<td>200 - 2000 Ω</td>
</tr>
<tr>
<td>Resolution:</td>
<td>1 Ω</td>
<td></td>
</tr>
<tr>
<td>Accuracy:</td>
<td>± (1% of reading + 2 Ω)</td>
<td></td>
</tr>
</tbody>
</table>

*Total Resistance of Test Leads, Fixture and DUT.*
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