

# Dielectric Withstand and Ground Bond Testers

For Production Line Safety Agency Compliance Testing



CE

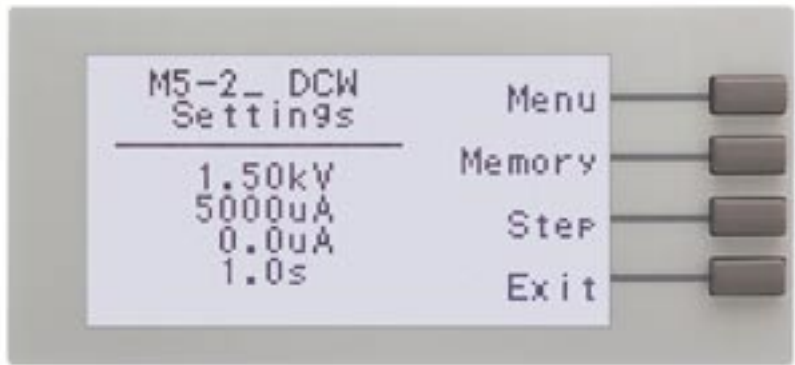
U.S. patent#: 5,548,501, 6,054,865. Other patents pending.



Safety agency listed.



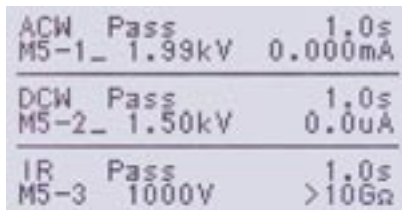
# ENHANCED GRAPHIC LCD



The enhanced graphic liquid crystal display on the Hypot<sup>®</sup>III and the HYAMP<sup>®</sup>III provides the operator with complete test setup and results in an easy-to-use interface. The graphic LCD makes testing safer, easier and more reliable than ever before.  
(Above display is shown at actual size.)



Clear test parameters can be displayed on a single screen



Configurable test result screen can be set up to show detailed test results



The test result screen can be set up to show a simple PASS/FAIL indication.

# INTERCONNECT CAPABILITIES



## A COMPLETE MID-RANGE SYSTEM TO MEET THE MOST COMMON ELECTRICAL SAFETY COMPLIANCE TESTS

With its 2U 1/2 rack mount cabinet design the Hypot<sup>®</sup>III family of products can be interconnected to the HYAMP<sup>®</sup>III, model 3130 Ground Bond tester that is also designed in a 2U 1/2 rack mount style cabinet. These two instruments can then be rack mounted side by side in a single 19" 2U rack space. The interconnect capability of these two instruments also provides a single DUT connection and automates the test sequence or sequences chosen by the operator such as AC Hipot, DC Hipot, IR test and Ground Bond test.



# USER-FRIENDLY FEATURES



- **Tamper Proof Front Panel Controls To Limit User Access**
- **User Selectable Output Voltage & Frequency**
- **PLC Remote Inputs & Outputs**
- **Built-In Security Settings**
- **Multiple Test Memories & Steps**
- **Electronic Dwell Setting**
- **No Load Setup Of Voltage Current**
- **Minimum & Maximum Trip Settings**

## NEW TO HYPOT® III & HYAMP® III

### **FEATURE** Enhanced graphic LCD

**BENEFIT** The enhanced graphic LCD provides the operator with an advanced user-interface. This backlit graphic display makes viewing and interpreting test results and data easier than ever before. The LCD can display text and symbols eliminating the need to decipher abbreviations.

### **FEATURE** Built-in verification menu

**BENEFIT** Regular verification is required by some agencies to validate that the instrument is functioning correctly. The verification menu, by prompting the user through the correct steps, allows for quick and easy validation. This built-in feature eliminates the additional cost of having to purchase an external box for verification.

### **FEATURE** Remote Safety Interlock

**BENEFIT** The Remote Safety Interlock prevents the high voltage from being activated without the interlock enabled. The interlock works as a safety feature by using a set of contacts to enable or disable the instrument's high voltage output. If the interlock contacts open during a test the high voltage output is shut down.

### **FEATURE** 2U 1/2 Rack Mount

**BENEFIT** Hypot III and HYAMP III are both smaller than their predecessors. Both instruments come in a 2U 1/2 rack mount space which allow them to be rack mounted side by side in a single 19" 2U rack space.

## NEW TO HYPOT® III

### **FEATURE** Exclusive SmartGFI™ function

**BENEFIT** The patent pending SmartGFI provides maximum operator protection to the user. If the circuit detects excessive leakage to the ground it shuts down the high voltage in less than 1 millisecond. SmartGFI is automatically activated if the DUT is not grounded so that the operator does not need to make the decision whether to activate the SmartGFI.

### **FEATURE** Max output current 20 mA AC and 7.5 mA DC

**BENEFIT** Hypot®III is a true hipot tester with enough output current to test capacitive loads in AC mode and allows the instrument to comply with the UL "120 K ohm" requirements.

### **FEATURE** Switchable Floating and Grounded Return

**BENEFIT** This feature is included within the software of the instrument. The instrument automatically detects if the DUT is floating or connected to Earth Ground. If the DUT is grounded the smart GFI circuit turns off the GFI detector. If the DUT is floating the GFI circuit is enabled.

### **FEATURE** Digitally controlled arc detection system

**BENEFIT** The arc detection system allows the operator to select whether low-level arcs should be detected and provides the operator with the ability to digitally select and program multiple sensitivity levels.

### **FEATURE** Built-in adjustable Continuity test mode

**BENEFIT** Hypot®III meets ground continuity test requirements called out by UL and other safety agencies.

### **FEATURE** Electronic ramping (up & down)

**BENEFIT** Electronic ramping provides a gradual and timed method to increase or decrease output voltage to the DUT effectively minimizing any damage from quick high voltage changes to sensitive DUTs.

### **FEATURE** Resistance Range of 1-9999 MΩ

**BENEFIT** Model 3670 AC/DC/IR includes an increased maximum resistance limit, which will allow for increased resistance measurement of the insulation of a DUT.

INPUT	
VOLTAGE	115/230 V selectable $\pm 10\%$ variation
FREQUENCY	50 - 60 Hz $\pm 5\%$
FUSE	115 VAC, 230 VAC - 3.15 A fast acting 250 VAC

DIELECTRIC WITHSTAND TEST MODE	
OUTPUT	Rating: AC 0 - 5000 V, 20 mA DC 0 - 6000 V, 7.5 mA Regulation: $\pm (1\% \text{ of output} + 5 \text{ V})$
VOLTAGE SETTING	Rating: 0 V - Max output rating, 10 V/step Accuracy: $\pm (2\% \text{ of setting} + 5 \text{ V})$ (relative to displayed output) Can be adjusted during operation via UP and DOWN arrow keys.
OUTPUT FREQUENCY	AC models: 50/60 Hz selectable AC & DC models: DC and 50/60 Hz selectable
WAVE FORM	Sine wave Distortion: $< 2\%$ THD
RIPPLE	$\leq 5\%$ at 6 KV DC/7.5 mA, Resistive Load
DWELL TIME SETTING	AC: 0 and 0.3 - 999.9 secs, 0.1 sec/step DC: 0 and 0.4 - 999.9 secs (0 = Constant)
RAMP TIMER	Range: Ramp-Up: 0.1 - 999.9 sec Ramp-Down: AC 0.0 - 999.9 sec DC 1.0 - 999.9 sec 0=OFF Resolution: 0.1 sec
FAILURE SETTINGS	AC Max. Limit: 0.00 - 20.00 mA, 0.01 mA/step Min. Limit: 0.0 - 9.999 mA, 0.001 mA/step (0 = OFF) Accuracy: $\pm (2\% \text{ of setting} + 2.0 \text{ mA})$  DC Max. Limit: 0.00 - 7.50 mA, 0.001 mA/step Min. Limit: 0.0 - 999.9 $\mu\text{A}$ , 0.0001 mA/step (0 = OFF) Accuracy: $\pm (2\% \text{ of setting} + 2 \text{ mA})$
DISCHARGE TIME	$\leq 200 \text{ ms}$ The maximum capacitive load vs. output voltage: 0.20 $\mu\text{F}$ $< 1 \text{ KV}$ 0.050 $\mu\text{F}$ $< 4 \text{ KV}$ 0.10 $\mu\text{F}$ $< 2 \text{ KV}$ 0.040 $\mu\text{F}$ $< 5 \text{ KV}$ 0.06 $\mu\text{F}$ $< 3 \text{ KV}$ 0.015 $\mu\text{F}$ $< 6 \text{ KV}$
VOLTAGE DISPLAY	Range: 0.00 - 5.00 KV AC 0.00 - 6.00 KV DC Resolution: 0.01 KV Accuracy: $\pm (2\% \text{ of reading} + 0.01 \text{ KV})$
CURRENT DISPLAY	Auto Range AC Range 1: 0.000 mA - 3.500 mA Resolution: 0.001 mA  Range 2: 3.00 - 20.00 Resolution: 0.01 mA  DC Range 1: 0.0 $\mu\text{A}$ - 350.0 $\mu\text{A}$ Resolution: 0.1 $\mu\text{A}$  Range 2: 0.300 mA - 3.500 mA Resolution: 0.001 mA  Range 3: 3.00 mA - 7.50 mA Resolution: 0.01 mA  ACCURACY All Ranges: $\pm (2\% \text{ of reading} + 2 \text{ counts})$
TIMER DISPLAY	Range: 0.0 - 999.9 secs Resolution: 0.1 sec Accuracy: (0.1% of reading + 0.05 secs)
GROUND CONTINUITY CHECK	Current: DC 0.1 A $\pm 0.01 \text{ A}$ , fixed Resistance: 0.01 $\Omega$ - to 1.50 $\Omega$
GROUND FAULT INTERRUPT	GFI Trip Current: 450 $\mu\text{A}$ max (AC or DC) HV Shut Down Speed: $< 1 \text{ ms}$

INSULATION RESISTANCE TEST MODE (Model 3670)	
OUTPUT VOLTAGE	Range: 30 - 1000 V DC Resolution: 1 V Accuracy: $\pm (2\% \text{ of reading} + 5 \text{ V})$
RESISTANCE DISPLAY	Range: 1 - 9999 M $\Omega$ (4 Digit, Auto Ranging) Resolution: 500 V DC - 100 V DC M $\Omega$ M $\Omega$ 0.001 1.000 - 9.999 0.01 10.00 - 99.99 0.1 100.0 - 999.9 1 1000 - 9999 Accuracy: $\pm (2\% \text{ of reading} + 2 \text{ counts})$ at test voltage 500 - 1000 V and 1 - 999.9 M $\Omega$ $\pm (5\% \text{ of reading} + 2 \text{ counts})$ at test voltage 500 - 1000 V and 1000 $\Omega$ - 9999 M $\Omega$ $\pm (8\% \text{ of reading} + 2 \text{ counts})$ at test voltage 30 - 500 V and 1 - 1000 M $\Omega$
IR VOLTAGE DISPLAY	Range: 0 - 1000 V Resolution: 1 V/step Accuracy: $\pm (2\% \text{ of reading} + 2 \text{ V})$
MAXIMUM RESISTANCE LIMIT	Range: 0,1 - 9999 M $\Omega$ (0 = OFF)
MINIMUM RESISTANCE LIMIT	Range: 1 - 9999 M $\Omega$
IR DELAY SETTING	Range: 0, 0.5 - 999.9 sec (0 = Constant) Resolution: 0.1 sec/step Accuracy: $\pm (0.1\% + 0.05 \text{ sec})$
GROUND FAULT INTERRUPT	GFI Trip Current: 450 $\mu\text{A}$ max HV Shut Down Speed: $< 1 \text{ ms}$

GENERAL SPECIFICATIONS	
REMOTE CONTROL & SIGNAL OUTPUT	The following input and output signals are provided through two 9 pin D type connectors: 1. Test, Reset, and Remote Interlock 2. Remote recall of memory program #1, #2 & #3 3. Outputs: Pass, Fail, Test-in-Process, & Reset.
PROGRAM MEMORY	10 Sets 3 steps per set-up with ability to link tests in any order.
SECURITY	Lockout capability to avoid unauthorized access to test set-up program.
DISPLAY	128 x 64 dot resolution with front panel contrast setting.
BUZZER	Alarm with volume control.
LINE CORD	Detachable 7 ft. (2.13 m) power cable terminated in a three prong grounding plug.
TERMINATIONS	Detachable 5ft. (1.52 m) high voltage and return leads (2) with clips and a standard U.S. style (NEMA 5 - 15) remote receptacle box for testing items terminated with a line cord. International receptacles also available. Front and Rear outputs standard.
MECHANICAL	Tilt up front feet. 2U 1/2 rack. Dimensions: 8.5 x 3.5 x 14.5 inches (215 x 89 x 370 mm) Weight: approx. 22 lbs. (10 kgs)
ENVIRONMENTAL	Operating Temperature: 32° - 104° F (0 - 40° C) Relative Humidity: 0 to 80%
CALIBRATION	Traceable to National Institute of Standards and Technology (NIST). Calibration controlled by software. Adjustments are made through front panel keypad in a restricted access calibration mode. Calibration information stored in non-volatile memory.

GROUND BOND TEST MODE	
<b>INPUT VOLTAGE</b>	115/230V selectable, ± 10% variation 50/60 Hz, ± 5%
<b>FUSE</b>	6.3 A fast blow 250 VAC
<b>OUTPUT</b>	Current: AC 1 - 30 A, 0.01 A/step Regulation: ± (2% of setting + 0.02 A) Voltage: AC 6 V fixed
<b>OUTPUT FREQUENCY</b>	50/60 Hz selectable
<b>DWELL TIME SETTING</b>	0 and 0.5 - 999.9 secs, 0.1 sec/step 0 for continuous running Accuracy: ± (0.1% of setting + 0.05 secs)
<b>FAILURE SETTINGS</b>	Max. limit: 0 - 120 mΩ for 1 - 30 A, 1 mΩ/step 0 - 510 mΩ for 1 - 10 A, 1 mΩ/step Accuracy: ± (2% of setting + 2 mΩ)  Min. limit: 0 - 120 mΩ for 1 - 30 A, 1 mΩ/step 0 - 510 mΩ for 1 - 10 A, 1 mΩ/step Accuracy: ± (2% of setting + 2 mΩ)
<b>MILLIOHM OFFSET</b>	Offset Capability: 0 - 100 mΩ, 1 mΩ/step Accuracy: ± (2% of setting + 2 mΩ)
<b>METERING</b>	Ammeter (3 digits) Range: 0 - 30 A Resolution: 0.01 A/step Accuracy: ± (3% of reading + 0.03 A)  Ohmmeter (3 digits) Range: 0 - 510 mΩ Resolution: 1 mΩ/step Accuracy: ± (2% of reading + 2 mΩ)  Timer (4 digits) Range: 0 - 999.9 secs Resolution: 0.1 secs/step Accuracy: ± (0.1% of reading + 0.05 secs)

GENERAL SPECIFICATIONS	
<b>VERIFICATION SYSTEM</b>	Built-in software driven verification menu to test fault detection circuits.
<b>REMOTE CONTROL &amp; SIGNAL OUTPUT</b>	The following input and output signals are provide through two 9 pin D type connectors;  1. Remote control: Test, Reset, Interlock and Withstand Processing  2. Outputs: Pass, Fail, Test in Process, Start Out, and Reset Out
<b>PROGRAM MEMORY</b>	10 Memories, 3 Steps per memory.
<b>SECURITY</b>	Key Lock capability to avoid unauthorized access to <u>all</u> test parameters. Memory Lock capability to avoid unauthorized access to Memory locations.
<b>LINE CORD</b>	Detachable 7 ft. (2.13m) power cable terminated in a three prong grounding plug.
<b>DISPLAY</b>	128 x 64 dot resolution with front panel contrast setting.
<b>ALARM VOLUME SETTING</b>	Front panel adjustable volume setting with 10 set points.
<b>CALIBRATION</b>	Traceable to National Institute of Standards and Technology (NIST). Calibration controlled by software. Adjustments are made through front panel keypad in a restricted access calibration mode. Calibration information stored in non-volatile memory.
<b>MECHANICAL</b>	Tilt up front feet. 2U 1/2 rack. Dimensions: 8.5 x 3.5 x 14.5 inches (215 x 89 x 370 mm)  Weight: 19.65 lbs. (8.9 Kgs)
<b>ENVIRONMENTAL</b>	Operating Temperature: (0° - 40° C) Relative Humidity - 0 to 80%

Unless otherwise stated, accuracies are relative to a laboratory standard measurement.

## ACCESSORIES

ACCESSORIES:		
<b>Resistor Kit</b>	Precision 1% resistor is ideal as a load to set current trip points. Meets 120 k ohm requirements.	<b>35534</b>
<b>Black Stationary Probe</b>	Provides an insulated fixed metallic contact point to a DUT for a return path.	<b>35539</b>
<b>Foot Switch</b>	Ideal for applications where an operator needs to start a test “hands off” the instrument.	<b>35822</b>
<b>Retractable Probe</b>	High voltage retractable 5 KV AC probe for safe testing and application of high voltage.	<b>38081</b>
<b>Retractable Return Probe</b>	This retractable probe is used on the return side of the Hypot®III.	<b>38082</b>
<b>Safe-T-Probe®</b>	Test gun with trigger that controls retractable probe and activates instruments high voltage circuit.	<b>38083</b>
<b>Adjustable Resistor Bank</b>	Provides test loads from 120 K to 2.148 k ohms. 6 terminals with 12 settings. Helps verify regulation.	<b>36956</b>
<b>Interface Kit</b>	Includes cables and adapter box so multiple tests can be performed through a single DUT.	<b>260-01</b>



# At Associated Research, Safety Compliance Testing Is Our Only Focus!

## The Industry's Most Complete Line of Instruments for Electrical Safety Compliance Testing

For Over 60 Years,  
We've Provided...

**NEW!**

### **OMNIA**

The first fully-automated, multi-functional Electrical Safety Compliance Analyzer with an enhanced graphic LCD that provides complete test setup and results in an easy-to-use interface. Our base model, OMNIA 4 includes AC Hipot, DC Hipot, Ground Bond/Continuity and Insulation Resistance. Also available for OMNIA 4 is an optional built-in scanner. The OMNIA 5 adds Functional Run testing and OMNIA 6 adds the Functional Run test and Line Leakage testing to the base model.



### **autoware™**

Software designed to store, analyze and retrieve data on automated Associated Research instruments, while performing Line Leakage, Insulation Resistance, Dielectric Withstand, Ground Bond and Functional Run tests. Autoware also allows for bar coding inputs and provides basic statistical analysis graphs.



### **HYPOTULTRA II**

3-in-1 Dielectric Analyzers with AC, DC or AC/DC Hipot, Insulation Resistance and optional built-in scanner available on some models. All models available with either IEEE-488 (GPIB), RS-232 or printer interface. Available in 500 VA output versions.



### **SWITCHING MATRIX**

The HS-8A is an 8 port scanner and the HS-16 is a 16 port scanner. Both models are high-voltage and high-current matrix scanners for multi-point or multi-product testing. (For use with QUADCHEK®II or HypotULTRA®II.)



### **HYPOTPLUS II**

The first semi-automated microprocessor controlled Dielectric Withstand testers available in AC or AC/DC versions. All models include enhanced PLC control, remote memory recall, advanced failure detection systems. Available optional 10 V analog signal and real current.

Catalog # HYPOT III 1/02



### **QUADCHEK II**

4-in-1 Electrical Safety Compliance Analyzers include AC/DC Hipot, Insulation Resistance, Ground Bond tester and optional built-in scanner in a single instrument. Complete with IEEE-488 (GPIB), RS-232 or printer interface. Available in 500 VA output versions.



### **LINECHEK**

Designed to automate line leakage testing in production line or lab environments. The 510L is a stand-alone system and the 520L can interconnect with other AR safety testers to form a complete automated testing system.



### **RUNCHEK**

The 905D functional run test system measures current, voltage, power factor and watts. It can be interconnected to our safety testers so all tests can be performed through a single DUT connection. Available with standard GPIB or RS-232 interface.



### **HYAMP II**

30 Amp Ground Bond tester that works as a stand-alone instrument or can be interconnected to the HypotPLUS®II to form a semi-automated test system with a single DUT connection.



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