

Hypot[®] III

DIELECTRIC WITHSTAND TESTERS

For Production Line Safety Agency Compliance Testing



- Graphic Liquid Crystal Display **3605** **AC Hipot**
- 10 Memories with 3 Steps per Memory
- Low Limit Detection System
- SmartGFI™ Circuit (Patent Pending) **3665** **AC Hipot & DC Hipot**
- Adjustable/Ground Continuity Test
- Tamper Proof Controls
- 2U 1/2 Rack Mount Style Cabinet **3670** **AC Hipot, DC Hipot & IR**

FEATURES

BENEFITS

- **The first manual safety testing instrument with an enhanced graphic LCD display.**
- **Exclusive SmartGFI function**
- **Storage of up to 10 setups with 3 steps per setup**
- **Digitally controlled arc detection system**
- **Built-in Security settings**
- **Automatic storage of test program**
- **All parameters for the setups can be adjusted through a simple menu driven program**
- **Tamper proof front panel controls**
- **The Graphic display allows monitoring of current down to 1 microamp AC and 0.1 microamp DC**
- **PLC remote inputs and outputs**
- **Maximum output current 20 milliamps AC and 7.5 milliamps DC**
- **Software calibration control**
- **User selectable output voltage frequencies of 50 or 60 hertz**
- **Built-in adjustable Continuity test mode**
- **Comes complete with a test box for products terminated in a line cord**
- **User selectable input voltage**
- **Low-current sense**
- **Electronic ramping (up & down)**

The enhanced graphic display provides the operator with complete test setup and results in an easy-to-use interface. This eliminates the need to decipher cryptic abbreviations. The graphic display makes testing safer, easier and more reliable than ever before.

The patent pending SmartGFI provides maximum operator protection to the user. If the circuit detects excessive leakage to 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.

A real benefit for manufacturers that test different products. Each setup can store up to 3 steps, which can be configured to perform any of the safety tests. Tests can be linked and run in any order.

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.

Security settings provide the operator with an easy and safe way to set trip currents and output voltages since parameters are set without the high voltage activated.

Hypot III powers up with the parameters that were used during the last test to avoid operator set-up errors.

The easy to follow setup screens ensure that the operator correctly sets up all test parameters.

Tamper proof controls make it possible to limit user access to the setup screens so that only authorized personnel with a security code can change test parameters.

The graphic display allows the Hypot III to be used even when test requirements only allow a very low level of acceptable leakage current.

The standard 9 pin interfaces provide outputs for Pass, Fail, Reset and Test in Process. Inputs include Test, Interlock, Reset and Remote memory recall. This gives the user all the basic remotes required to configure the Hypot III through simple PLC relay control.

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.

Hypot III is calibrated through the front panel keypad. All calibration information is stored in non-volatile memory. This allows Hypot III to be completely calibrated without removing any covers and exposing the technician to hazardous voltages.

Hypot III was designed for the global market. The selectable voltage frequencies make it simple for the user to setup the AC hipot mode so that products can be tested at the same frequency they will be used at.

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

The standard US style receptacle box allows easy testing of hipot and continuity on line cord terminated products. As an additional benefit, termination boxes are available for testing products with line cords configured for other countries.

Hypot III can be switched for either 115 or 230 volt input operation through an easy access rear panel mounted switch to allow it to be used in any country.

Low-current sense monitors the minimum level of current flow, thus ensuring that the DUT is properly connected and the hipot test is being performed.

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.

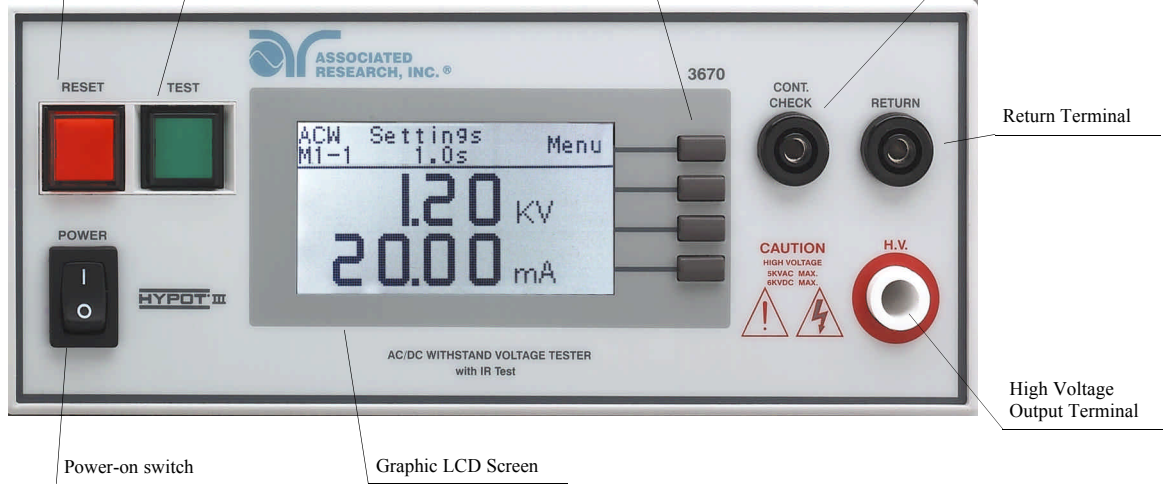
FRONT PANEL

Manual reset to re-activate the instrument after failure defect

Push Button Switch to activate high voltage

Menu Soft Keys

Continuity Test Terminal



Power-on switch

Graphic LCD Screen

Return Terminal

High Voltage Output Terminal

SPECIFICATIONS

INPUT	
Voltage	115 / 230V selectable
Frequency	47 - 63 Hz \pm 15 %
Fuse	115 VAC, 230VAC - 3.15A fast acting 250VAC

DIELECTRIC WITHSTAND TEST MODE	
Output	Rating: AC 0 - 5000V, 2V / step, 20mA DC 0 - 6000V, 2V / step, 7.5mA Regulation: \pm (1 % of output + 5V)
Voltage Setting	Rating: 0V-Max output rating, 10 volts/step Accuracy: \pm (2% of Setting + 5V) (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 6KVDC / 7.5mA, Resistive Load
Dwell Time Setting	0 and 0.2-999.9 seconds, 0.1 second / step (0=Constant)
Ramp Up & Down Time Setting	0 and 0.1-999.9 seconds, 0.1 second / step 0 ramp setting = 0.1 seconds fixed ramp Ramp = 0.1 seconds fixed
Failure Settings	AC Maximum Limit: 0.00-20.00 mA, 0.01 mA / step Minimum Limit: 0.00, 0.010-20.00 mA, 0.001 mA / step (0=OFF). Accuracy: \pm (2% of setting + 2.0 mA)
	DC Maximum Limit: 0.00 - 7.50 mA, 0.001 mA /step Minimum Limit: 0.00, 0.01 - 7.50 mA, 0.0001 mA / step (0=OFF) Accuracy: \pm (2% of setting + 2 mA)
Discharge Time	\leq 300 ms The maximum capacitive load vs. output voltage: 0.20 μ F --- <1KV 0.050 μ F --- <4KV 0.10 μ F --- <2KV 0.040 μ F --- <5KV 0.06 μ F --- <3KV 0.015 μ F --- <6KV

DIELECTRIC WITHSTAND TEST MODE (cont)		
Voltage Display	Range 0.00 - 5.00KV AC 0.00 - 6.00KV DC	
	Resolution .01 KV	
	Accuracy: \pm (2% of reading + 0.01KV)	
Current Display	Auto Range	
	AC Range 1: 0.000 mA - 3.500 mA Resolution 0.001 mA/step Range 2: 3.00 - 20.00 Resolution: 0.01 mA/step	
	DC Range 1: 0.0 μ A - 350.0 μ A Resolution 0.1 μ 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% of reading + 2 counts)	
	Timer Display	Range: 0.0 - 999.9 seconds
		Resolution 0.1 second
Accuracy (0.1% of reading + 0.05 seconds)		
Ground Continuity Check	Current: DC 0.1 A \pm 0.01A, fixed	
	Resistance: 0.01 Ω - to 1.50 Ω \pm 0.01 Ω	

INSULATION RESISTANCE TEST MODE (Model 3670)	
Output Voltage	Range: 50 - 1000 Volts DC
	Resolution: 10 volt/step
	Accuracy: \pm (2% of reading + 5 volts)
Resistance Display	Range: 1 - 9999 M Ω (4 Digit, Auto Ranging)
	Resolution: 500VDC - 100VDC
	M Ω M Ω
	0.001 1.000 - 9.999
	0.01 10.00 - 99.99
0.1 100.0 - 999.9	
1 1000 - 9999	

SPECIFICATIONS

INSULATION RESISTANCE TEST MODE (cont)

Resistance Display (cont)	Accuracy: \pm (2% of reading + 2 counts) at test voltage 500 - 1000V and 1 - 1000 M Ω \pm (5% of reading + 2 counts) at test voltage 500 - 1000V and 1000M-9999M Ω \pm (8% of reading + 2 counts) at test voltage 100 - 500V and 0 - 1000 M Ω
IR Voltage Display	Range: 50 – 1000 V Resolution: 1 volt/step Accuracy: \pm (2% of reading + 5 volts)
Maximum Resistance Limit	Range: 0 – 9999 M Ω (0 = Off)
Minimum Resistance Limit	Range: 0 – 9999 M Ω
IR Delay Timer	Range: 0, 0.5 – 999.9 sec (0 = Constant) Resolution: 0.1 sec/step Accuracy: \pm (0.1% + 0.05 sec)

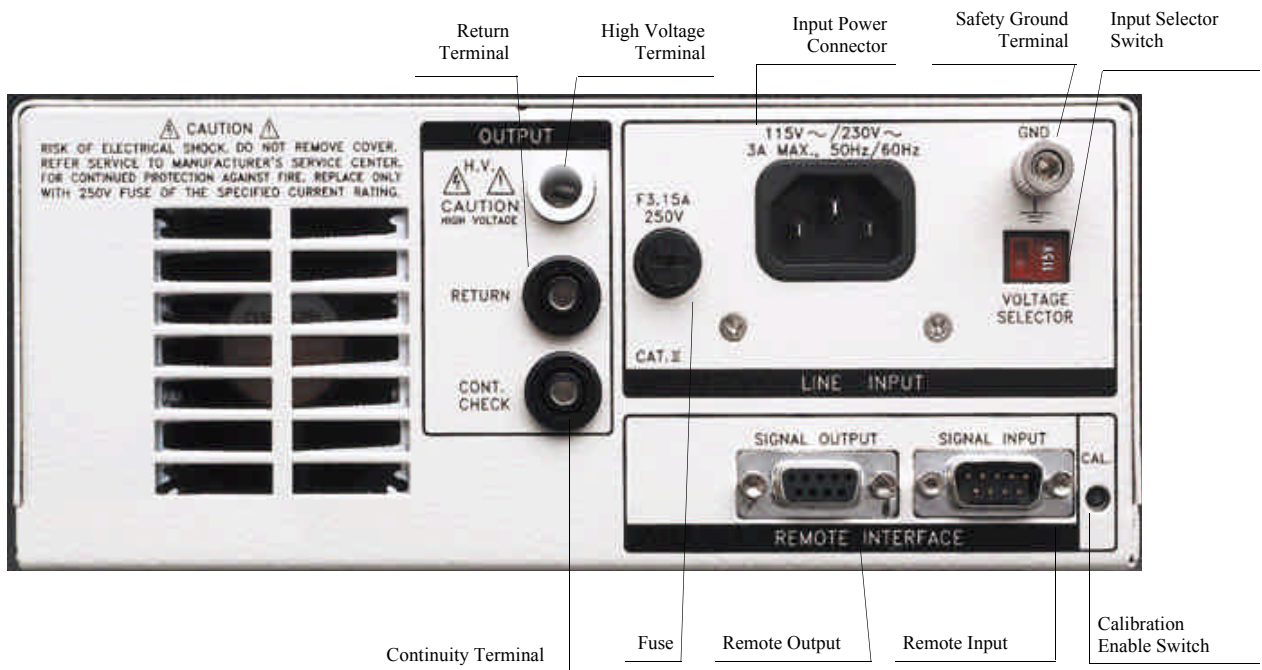
GENERAL

Remote Control and Signal Output	The following input and output signals are provided through two 9 pin D type connectors: 1. Remote control: Test, Reset, and Remote Interlock 2. Remote recall of memory program #1, #2 and #3 3. Outputs: Pass, Fail, Test-in-Process, and Reset
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GENERAL (cont)

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	100 X 37 (mm) view.
Buzzer	Alarm with volume control.
Line Cord	Detachable 6 ft. (1.8m) power cable terminated in a three prong grounding plug.
Terminations	Detachable 5ft. (1.52m) 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. Return mode menu selectable (floating or grounded)
Mechanical	Tilt up front feet. 2U and half rack Dimensions: 8.5 x 3.5 x 14.5 inches (215 x 89 x 370 mm) Weight: approx. 22 lbs. (10kgs)
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.

REAR PANEL



KEY DIFFERENCES

The Hypot III is Associated Research's latest generation of our manual line of microprocessor controlled electrical safety testers. The main feature added to the new Hypot III line is the enhanced graphic display. However, this is not the only advantage that the Hypot III line offers as compared to the older Hypot II line. The following chart summarizes all the key differences between the Hypot II and the Hypot III line. To simplify the chart the AC/DC/IR models in each product family were used for the comparison.

MODEL	Hypot III (3670)	Hypot II (3570D)
Graphic LCD	Yes	N/A
SmartGFI	Yes	N/A
Test Setups	10 Memories with 3 steps	5 Memories
DC Current Output	7.5mA	5mA
AC Current Output	20mA	12mA
Ramp Down	Yes	N/A
Interlock	Standard	Option
Grounded/Floating Return	Switchable Software	Fixed
IR Test	9999 MOhm	1000 MOhm
Arc Detection	1 – 9 range	Option
Half Rack Size	X	N/A
AC Current Resolution	1 microamp	10 microamps
DC Current Resolution	0.1 microamp	10 microamps
Continuity Limit	Adjustable	Fixed
Alarm Volume	Adjustable	Fixed

MODEL NUMBERS

3605	AC Hipot
3665	AC Hipot & DC Hipot
3670	AC Hipot, DC Hipot & IR

A Complete Mid-Range System to Meet the Most Common Electrical Safety Compliance Tests

With its 2U ½ rack mount cabinet design the Hypot III family of products can be interconnected to HYAMP® III, model 3130 Ground Bond tester that is also designed in a 2U ½ rack mount style cabinet. These two instruments can then be rack mounted side by side in a single 19" 2U rack space. The interconnection 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.



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