

Multi Function Withstand Electrical Safety Tester
4000 Series (4 in 1) - AC/DC Hipot, Insulation and Ground Bond Tester

The 4000 Series provides advanced 4-in-1 test capability in a convenient one-box solution. Our most popular multi-function tester, the 4000 Series performs AC Hipot, DC Hipot, Insulation Resistance and Ground Bond tests while taking up minimal production line space. The 4000 Series includes the most intuitive menu system in the industry, reducing setup time and increasing production line throughput for any application. With multiple memories and an optional RS-232 interface, you can quickly perform tests on a variety of DUT's (Device Under Test) from the front panel or with a PC. Choose from two models.

Relevant Applications: • Appliance • Cable • Motors & Pumps

Features:

- Versatile 4-in-1 functionality
- Intuitive user interface
- Meets 200 mA short circuit requirements
- 6 programmable memories with 6 test steps each
- Automate with PLC control or optional RS-232 interface
- Remote Safety Interlock


Specifications:
4320 & 4520: MULTI-FUNCTION ELECTRICAL SAFETY TESTER

Specifications	4320	4520
Input		
Voltage	115/230V AC $\pm 10\%$, User Selection	115/230V AC Auto Range, $\pm 15\%$ variation
Frequency	50/60 Hz $\pm 5\%$	50/60 Hz $\pm 5\%$
Fuse	6.3A 250V Slow blow	15A 250V Slow blow
Dielectric Withstand Test mode		
Output Rating	5 kV @ 20 mAAC 6 kV @ 5 mADC	5 kV @ 100 mAAC 6 kV @ 10 mADC
Voltage Setting		
- Range	0.00 - 5.00 kVAC 0.00 - 6.00 kVDC	0.00 - 5.00 kVAC 0.00 - 6.00 kVDC
- Resolution	0.01 kV	0.01 kV
- Accuracy	$\pm (2\% \text{ of setting} + 5 \text{ volts})$	$\pm (2\% \text{ of setting} + 5 \text{ volts})$
Voltage Display		
- Range	0.00 - 5.00 kVAC 0.00 - 6.00 kVDC	0.00 - 5.00 kVAC 0.00 - 6.00 kVDC
- Resolution	0.01 kV	0.01 kV
- Accuracy	$\pm (2\% \text{ of reading} + 10 \text{ volts})$	$\pm (2\% \text{ of reading} + 10 \text{ volts})$
Current Display		
- Range	0.00 - 20.00 mAAC 0.00 - 5.00 mADC	0.00 - 99.99 mAAC 0.00 - 10.00 mADC
- Resolution	0.01 mA	0.01 mA
- Accuracy	$\pm (2\% \text{ of reading} + 0.02 \text{ mA})$	$\pm (2\% \text{ of reading} + 0.06 \text{ mA})$
Hi - Lo Limit AC		
- Range	0.00 - 20.00 mA	0.00 - 99.99 mAAC
- Resolution	0.01 mA	0.01 mA
- Accuracy	$\pm (2\% \text{ of setting} + 0.02 \text{ mA})$	$(2\% \text{ of reading} + 0.06 \text{ mA})$
Hi - Lo Limit DC		
- Range	0.00 - 5.00 mA	0.00 - 10.00 mADC
- Resolution	0.01 mA	0.01 mA
- Accuracy	$\pm (2\% \text{ of setting} + 0.02 \text{ mA})$	$(2\% \text{ of reading} + 0.06 \text{ mA})$
Failure Detector	Audible and Visual	Audible and Visual
DC Output Ripple	$< 5\%$ at 6 kVDC @ 5 mA, resistive load	$\leq 5\%$ Ripple RMS at 6 kVDC @ 10 mA, resistive load
Discharge Time	$\leq 200 \text{ ms}$	$\leq 200 \text{ ms}$

TESTING AND MEASURING EQUIPMENTS
Multi Function Withstand Electrical Safety Tester

Specifications	4320	4520
Max. Capacitive Load in DC Mode		
- 1.00 uF	< 1 kV	< 1 kV
- 0.75 uF	< 2 kV	< 2 kV
- 0.50 uF	< 3 kV	< 3 kV
- 0.08 uF	< 4 kV	< 4 kV
- 0.04 uF	< 5 kV	< 5 kV
- 0.01 uF	< 6 kV	< 6 kV
AC Wave Form	Sine Wave, Crest Factor = 1.3 – 1.5	Sine Wave, Crest Factor = 1.3 – 1.5
AC Output Frequency (Range)	60 or 50 Hz, user selection	60 or 50 Hz, user selection
Output Regulation	± (1 % of setting + 5 volts) from no load to full load	± (1 % of setting + 5 volts) from no load to full load
Dwell Timer		
- Range	0, 0.2 - 999.9 sec (0 = continuous)	0, 0.2 - 999.9 sec (0 = continuous)
- Resolution	0.1 sec increments	0.1 sec increments
- Accuracy	± (0.1% + 0.05 sec)	± (0.1% + 0.05 sec)
Ramp Timer		
- Range	0.1 – 999.9 sec	0.1 – 999.9 sec
- Resolution	0.1 sec increments	0.1 sec increments
- Accuracy	± (0.1% + 0.05 sec)	± (0.1% + 0.05 sec)
Insulation Resistance Test Mode		
Output Voltage		
- Range	100 – 1000 Volts DC	100 – 1000 Volts DC
- Resolution	1 volt	1 volt
- Accuracy	± (2% of reading + 5 volts)	± (2% of reading + 5 volts)
Voltage Display		
- Range	0 – 1000 V	0 – 1000 V
- Resolution	1 volt	1 volt
- Accuracy	± (2% of reading + 2 counts)	± (2% of reading + 2 counts)
Resistance Display		
- Range	1 - 1000 MΩ (4 digit, auto ranging)	1 - 1000 MΩ (4 digit, auto ranging)
- Resolution 500VDC, 0.01MΩ	1.00–40.00	1.00–40.00
- Resolution 500VDC, 0.1MΩ	35.0–999.9	35.0–999.9
- Resolution 1000VDC, 0.01MΩ	1.00–80.00	1.00–80.00
- Resolution 1000VDC, 0.1MΩ	75.0–999.9	75.0–999.9
HI-Limit Range	0, 1 – 1000 MΩ (0 = off)	0, 1 – 1000 MΩ (0 = off)
LO-Limit Range	1 – 1000 MΩ	1 – 1000 MΩ
	0, 0.5 - 999.9 sec (0 = constant)	0, 0.5 - 999.9 sec (0 = constant)
Delay Timer		
- Resolution	0.1 sec	0.1 sec
- Accuracy	± (0.1% + 0.05 sec)	± (0.1% + 0.05 sec)
Ground Bond Test Mode		
Output Voltage Range	6 VAC fixed	6 VAC fixed
Output Frequency Range	60 or 50 Hz, user selectable	60 or 50 Hz, user selectable
Output Current		
- Range	0.1 Amp	0.1 Amp
- Resolution	± (2 % of setting + 0.02 A)	± (2 % of setting + 0.02 A)
- Accuracy	0.0 – 30.0 Amps	0.0 – 30.0 Amps
Current Display		
- Range	0.0 – 30.0 Amps	0.0 – 30.0 Amps
- Resolution	0.1 Amp	0.1 Amp
- Accuracy	± (3 % of reading + 0.1 A)	± (3 % of reading + 0.1 A)
HI-Limit LO-Limit		
- Range	0 – 510 mΩ for 3.0 – 10.0 Amps 0 – 200 mΩ for 10.1 – 25.0 Amps 0 – 150 mΩ for 25.1 – 30.0 Amps	0 – 510 mΩ for 3.0 – 10.0 Amps 0 – 200 mΩ for 10.1 – 25.0 Amps 0 – 150 mΩ for 25.1 – 30.0 Amps
- Resolution	1 mΩ	1 mΩ
- Accuracy	± (2 % of setting + 2 mΩ)	± (2 % of setting + 2 mΩ)
Dwell Timer		
- Range	0, 0.5 - 999.9 sec (0 = constant)	0, 0.5 - 999.9 sec (0 = constant)
- Resolution	0.1 sec	0.1 sec
- Accuracy	± (0.1% + 0.05 sec)	± (0.1% + 0.05 sec)
Milliohm Offset		
- Max. Offset Capability:	100 mΩ	100 mΩ
- Resolution	1 mΩ	1 mΩ
- Accuracy	± (2 % of setting + 2 mΩ)	± (2 % of setting + 2 mΩ)

Multi Function Withstand Electrical Safety Tester
General Specifications

PLC Remote Control	Inputs – test, reset, interlock & recall memory 1–6 Outputs – pass, fail, test-in-process	
Memory	Allows storage of up to 6 different test programs and 6 steps per memory and a single step mode	
Interface	Optional RS-232 interface	
Security	Lockout capability to avoid unauthorized access to test set-up programs	
Calibration	Software & adjustments made through front panel	
Mechanical	Bench or rack mount with tilt up front feet	
Dimensions (W x H x D)	11" x 3.5" x 17" (280 x 89 x 430 mm)	16.9" x 5.2" x 15.7" (430 x 133 x 400 mm)
Weight	33 lbs. (15 kg)	54 lbs. (24.5 Kg)

Supplied Accessories

102-050-913	High Voltage Probe (6 ft.)
102-055-913	Input Voltage Clip (6 ft.)
125-013-001	Input Power Cable (6 ft.) (4320)
99-10164-01	Input Power Cable (6 ft.) (4520)
99-10008-01	High Current Return Lead
99-10009-01	High Current Output Lead
99-10040-01	Interlock
99-10106-01	Fuse (4320)
99-10656-01	Fuse (4520)

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Multi Function Withstand Electrical Safety Tester

6000 Series (6 in 1) AC/DC Hipot, Insulation, Functional Run, Line Leakage & Ground Bond Tester

The 6330 is our most advanced multi-function electrical safety tester with 6-in-1 test capability. Our flagship model is designed to make advanced testing applications simple with the most intuitive user interface on the market. With minimal setup time, you can perform AC Hipot, DC Hipot, Ground Bond, Insulation Resistance, Functional Run and Line Leakage tests on a variety of DUT's (Device Under Test). The 6330 maximizes production line throughput far beyond a single function instrument, while taking up less space. Use the 6330 from the front panel or automate your testing via the RS-232 interface.



Relevant Applications: • Medical • Appliance • Motors & Pumps • Information Technology

Features:

- Versatile 6-in-1 functionality
- Intuitive user interface
- 4 built-in NRTL-compliant measuring devices
- 10 programmable memories with 20 test steps each
- Automate with PLC control or RS-232 interface
- Remote Safety Interlock

Specifications	6330
Input	
Voltage	115/230V AC selectable, $\pm 10\%$ variation
Frequency	50/60 Hz $\pm 5\%$
Fuse	6.3A 250V Slow blow
Dielectric Withstand Test mode	
Output Rating	3.5 kV @ 30 mAAC 4.0 kV @ 5 mADC
Voltage Setting	
- Range	0.00 - 3.50 kVAC 0.00 - 4.00 kVDC
- Resolution	0.01 kV
- Accuracy	$\pm (2\% \text{ of setting} + 5 \text{ volts})$
Current Display	
- Range	0.00 - 30.00 mAAC 0.00 - 5.00 mADC
- Accuracy	$\pm (2\% \text{ of reading} + 0.02 \text{ mA})$
Hi - Lo Limit AC	
- Range	0.00 - 30.00 mA
- Accuracy	$\pm (2\% \text{ of setting} + 0.02 \text{ mA})$
Hi - Lo Limit DC	
- Range	0.00 - 5.00 mA
- Accuracy	$\pm (2\% \text{ of setting} + 0.02 \text{ mA})$
Failure Detector	Audible and Visual
DC Output Ripple	$< 5\%$ at 6 kVDC @ 5 mA, resistive load
Discharge Time	$\leq 200 \text{ ms}$
Max. Capacitive Load in DC Mode	
- 1.00 μF	$< 1 \text{ kV}$
- 0.75 μF	$< 2 \text{ kV}$
- 0.50 μF	$< 3 \text{ kV}$
- 0.08 μF	$< 4 \text{ kV}$
AC Wave Form	Sine Wave, Crest Factor = 1.3 – 1.5
AC Output Frequency	60 or 50 Hz, user selection
Output Regulation	$\pm (1\% \text{ of setting} + 5 \text{ volts})$ from no load to full load
Dwell Timer	0, 0.2 - 999.9 sec (0 = continuous)
Ramp Timer	0.1 – 999.9 sec

Multi Function Withstand Electrical Safety Tester
Insulation Resistance Test Mode

Output Voltage	
- Range	100 – 1000 Volts DC
- Accuracy	± (2% of reading + 5 volts)
Resistance Display	
- Range	1 - 1000 MΩ (4 digit, auto ranging)
- Resolution 500VDC, 0.01MΩ	1.00–40.00
- Resolution 500VDC, 0.1MΩ	35.0–999.9
- Resolution 1000VDC, 0.01MΩ	1.00–80.00
- Resolution 1000VDC, 0.1MΩ	75.0–999.9
HI/LO -Limit - Range	1 – 1000 MΩ (0 = off)
Delay Timer - Range	0, 0.5 - 999.9 sec (0 = constant)

Ground Bond Test Mode

Output Voltage	6 VAC fixed
Output Frequency	60 or 50 Hz, user selectable
Output Current	3.0 - 30.0A AC
Current Display	0.0 – 30.0 Amps
HI-Limit LO-Limit	
- Range	0 – 510 mΩ for 3.0 – 10.0 Amps 0 – 200 mΩ for 10.1 – 25.0 Amps 0 – 150 mΩ for 25.1 – 30.0 Amps
- Accuracy	± (2 % of setting + 2 mΩ)
Dwell Timer	0, 0.5 - 999.9 sec (0 = constant)
Milliohm Offset	
- Range	0 - 100 mΩ
- Accuracy	± (2 % of setting + 2 mΩ)

Run Test Mode

DUT Power	
- Voltage	0 - 277 VAC Single Phase Unbalanced 0 - 30 A maximum
- Current	30 AAC max continuous
Voltage Display	0.0 – 277.0 VAC Full Scale
Short Circuit Protection	
- Short Circuit Current	50A < 3s
- Inrush current	180A
- Response time	10 μs
Delay Time Setting	0.2 - 999.9 seconds
Dwell Time Setting	0, 0.1 - 999.9 seconds (0 = continuous)
Timer Display	0.0 - 999.9 seconds
TRIP POINTS	
- Voltage	0.0 - 277.0 VAC
- Current	0.0 - 30.0 AAC
- Watts	0 - 8400 Ω
- Power Factor	0.000 - 1.000
- Leakage Current	0.00 - 10.00 mA (0 = off) Leakage current measuring resistor MD=2KΩ ± 1%

Line Leakage Test Mode

DUT Power	
- Voltage	0 - 277 VAC Single Phase Unbalanced 0 - 30 A maximum
- Current	30 AAC max continuous
Voltage Display	0.0 - 277.0 VAC Full Scale
Short Circuit Protection	
- Short circuit current	50 A < 3 s
- Inrush current	180A
- Response time	10 μs
Leakage Current (RMS Only)	
- Range	0.0 μA - 6000 μA
- Accuracy	15 to 100 kHz ± (2% of reading + 3 μA)
- DC	>100 k to 1 MHz ± 5% of reading

Multi Function Withstand Electrical Safety Tester
Measuring Device

- A	UL544 Non Patient
- B	IEC60990 Fig4-U2
- C	UL2601-1, UL60601-1
- F	Frequency Check, External MD (1k Ω)
- X	External MD (1k Ω)
Line Condition	Neutral, Reverse, Ground
Probe	G – L
HI-Limit / LO-limit	0 – 6000 μ A
Delay Timer	0, 1.0 – 999.9 sec (0 = continuous)

General Specifications

PLC Remote Control	Inputs – test, reset, interlock & recall memory 1–6 Outputs – pass, fail, test-in-process
Memory	10 memories with 20 steps per memory
Interface	RS-232 interface
Security	Key lock and memory lock capability to avoid unauthorized access
Terminations	6' (1.80 m) high voltage and (2) return leads w/clips.
Calibration	Software & adjustments made through front panel
Mechanical	Bench or rack mount with tilt up front feet
Environmental	
- Operating temperature	32° - 104° F (0° - 40° C)
- Relative Humidity	0 - 80%
Dimensions (W x H x D)	16.9" x 5.2" x 19.6" (430 x 133 x 500 mm)
Weight	48.5 lbs. (22 kg)

Supplied Accessories

102-055-913	High Voltage Lead (6 ft.)
125-013-001	Input Power Cable (6 ft.)
99-10457-01	Cable Assembly High Current Lead
99-10468-01	Cable Assembly Ground Lead
99-10009-01	High Current Output Lead
99-10008-01	High Current Return Lead
99-10469-01	LLT DUT Input Cable LINE
99-10470-01	LLT DUT Input Cable NEUTRAL
99-10471-01	LLT DUT HV Output Cable LINE
99-10472-01	LLT DUT HV Output Cable NEUTRAL
99-10040-01	Interlock
99-10467-01	Adaptor Box
99-10106-01	Fuse

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