3. SPECIFICATIONS AND CONTROLS

3.1. OMNIA II Functional Specifications

INPUT	
Voltage	115 / 230V auto-range, ± 15 % variation
Frequency	50/60 Hz ± 5%
Fuse	115 VAC, 230VAC – 10A Slow-Blo 250VAC
DIELECTRIC WITHSTAND TEST MODE	
Output Rating	5KV @ 50mA AC 5KV @ 100mA AC (Models 825x) 6KV @ 20 mA DC
Voltage Setting	Range: 0–5000V AC 0–6000V DC Resolution: 1 V Accuracy: ± (2% of setting + 5 volts)
Voltage Display	Range: 0.00 – 6.00KV Full Scale Resolution: 0.01 KV Accuracy: ± (2% of reading + 1 count)
Ramp-HI DC	>20 mA peak maximum, ON/OFF Selectable
Charge-LO DC	Range: 0.0 – 350.0 μA DC or Auto set
HI and LO-Limit AC Total AC Real DC	 Range: 0.000 – 9.999mA Resolution: 0.001mA Range: 10.00 – 50.00mA (100.00mA, Models 825x) Resolution: 0.01mA Accuracy: ± (2% of setting + 2 counts) Range: 0.000 – 9.999mA Resolution: 0.001mA Range: 10.00 – 50.00mA (99.99mA, Models 825x) Resolution: 0.01mA Accuracy: ± (3% of setting + 50 μA) Range: 0.0 – 999.9μA Resolution: 0.1μA Range: 1000 – 20000μA Resolution: 1μA Accuracy: ± (2% of setting + 2 counts)
Arc Detection	Range: 1 – 9
Ground Continuity	Current : DC 0.1 A ± 0.01A, fixed Max. ground resistance : 1 Ω ± 0.1Ω, fixed
Ground Fault Interrupt	GFI Trip Current: 0.4mA - 5.0mA (AC or DC) HV Shut Down Speed: < 1mS

DIELECTRIC WITHSTAND TEST MODE (CONT.)			
Current Display	Auto Range*		
AC Total	Range 1:	0.000 mA – 3.500 mA RMS (0.000 mA – 5.500 mA Peak)	
	Resolution:	0.001 mA	
	Range 2	3.00 mA – 50.00 mA RMS (5.00 mA – 70.07 mA Peak)	
AC Real	Resolution:	0.01 mA	
	Accuracy:	± (2% of reading + 2 counts) All Ranges	
DC	Range 1:	0.000 mA – 9.999 mA	
	Resolution:	0.001 mA	
	Range 2:	10.00 mA – 50.00 mA	
	Resolution:	0.01 mA	
	Accuracy:	± (3% of reading + 50μA) All Ranges PF > 0.1 V > 250VAC	
	Range 1:	0.0 μA – 350.0 μA DC (0.0 μA – 550.0 μA Peak)	
	Resolution:	0.1 μA	
	Range 2 :	0.300 mA –3.500 mA DC (0.400 mA –5.500 mA Peak)	
	Resolution:	0.001 mA	
	Range 3	3.00 mA – 20.00 mA DC (4.00 mA – 25.00 mA Peak)	
	Resolution:	0.01 mA	
	Accuracy:	± (2% of reading + 2 counts) All Ranges	
DC Output Ripple	≤ 4% Ripple RMS at 5 KV DC @ 20mA, Resistive Load		
Discharge Time	≤ 50 ms no load, < 100 ms for capacitive load		
Maximum Capacitive Load DC Mode	1uF < 1KV 0.75uF < 2KV 0.5uF < 3KV	0.08uF < 4KV 0.04uF < 6KV	
AC Output Waveform	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:	AC 0.4 –999.9 sec (0 = Continuous)	
	Range:	DC 0.3 –999.9 sec (0 = Continuous)	
	Resolution:	0.1 sec	
	Accuracy:	± (0.1% + 0.05 sec)	
Ramp Timer	Range:	Ramp-Up:	AC 0.1 – 999.9 sec DC 0.4 – 999.9 sec
		Ramp-Down:	AC 0.0 – 999.9 sec DC 0.0 , 1.0 – 999.9 sec
	Resolution:	0.1 sec	

	Accuracy: ± (0.1% + 0.05 sec)
Short Circuit Protection	Minimum current 100mA peak (200mA, Models 825x) at short circuit, response time < 2ms

*Autorange operation:

Ranges up to higher range when Peak **OR** RMS values are greater than range maximum
Ranges down to lower range when Peak **AND** RMS values are less than range minimum

INSULATION RESISTANCE TEST MODE			
Voltage Setting	Range: 30 – 1000 VDC Resolution: 1 V Accuracy: ± (2% of setting + 2 counts)		
Charging Current	Maximum >20mA peak		
Voltage Display	Range: 0 – 1000 V Resolution: 1 V Accuracy: ± (2% of reading + 2 counts)		
Resistance Display	Range:	0.05MΩ – 50000 MΩ (4 Digit, Auto Ranging)	
	Resolution:	30 – 499 VDC	500 – 1000VDC
	MΩ	MΩ	MΩ
	0.001	0.050 – 1.999	0.050 – 9.999
	0.01	2.00 – 19.99	10.00 – 99.99
	0.1	20.0 – 199.9	100.0 – 999.9
	1	200 – 50000	1000 – 50000
	Accuracy:	50 – 499V 0.05M – 999.9M, ± (7% of reading +2 counts)	
		500 – 1000V 0.05M – 999.9M, ± (2% of reading +2 counts) 1000M – 9999M ± (5% of reading +2 counts) 10000M – 50000M, ± (15% of reading +2 counts)	
Charge-LO	Range: 0.000 – 3.500μA or Auto Set		
HI and LO–Limit	Range: 0.05M – 99.99MΩ Resolution: 0.01M Range: 100.0M – 999.9M Resolution: 0.1M Range: 1000M – 50000M Resolution: 1M (HI – Limit: 0 = OFF) Accuracy: Same as Resistance Display Accuracy		
Ramp Timer	Range: Ramp-Up: 0.1 – 999.9 sec Ramp-Down: 0.0, 1.0–999.9 sec Resolution: 0.1 sec Accuracy: ± (0.1% + 0.05 sec)		
Delay Timer	Range: 0.5 – 999.9 sec (0 = Continuous) Resolution: 0.1 sec Accuracy: ± (0.1% + 0.05 sec)		
Ground Fault Interrupt	GFI Trip Current: 0.4mA - 5.0mA		
	HV Shut Down Speed: < 1mS		

GROUND BOND TEST MODE	
Output Voltage (Open Circuit Limit)	Range: 3.00 – 8.00 VAC Resolution: 0.01 V Accuracy: ± (2 % of setting + 0.03V) O.C. Condition
Output Frequency	Range: 60 or 50 Hz, user selectable Accuracy: ± 0.1%
Output Current	Range: 1.00 – 40.00 A Resolution: 0.01 A Accuracy: ± (2 % of setting + 0.02 A)
Output Regulation	Accuracy: ± (1% of output + 0.02A) Within maximum load limits, and over input voltage range.
Maximum Loading	1.00 – 10.00A, 0 – 600mΩ 10.01 – 30.00A, 0 – 200mΩ 30.01 – 40.00A, 0 – 150mΩ
Current Display	Range: 0.00 – 40.00 A Resolution: 0.01 A Accuracy: ± (3 % of setting + 0.03 A)
HI and LO-Limits	Range: 0 – 150 mΩ for 30.01 – 40.00 Amps 0 – 200 mΩ for 10.01 – 30.00 Amps 0 – 600 mΩ for 1.00 – 10.00 Amps Resolution: 1 mΩ Accuracy: Same as Ohmmeter Display
Ohmmeter Display	Range: 0 – 150 mΩ for 30.01 – 40.00 Amps 0 – 200 mΩ for 10.01 – 30.00 Amps 0 – 600 mΩ for 6.00 – 10.00 Amps Resolution: 1 mΩ Accuracy: ± (2% of reading + 2 mΩ)
	Range: 0 – 600 mΩ for 1.00 – 5.99 Amps Resolution: 1 mΩ Accuracy: ± (3% of reading + 3 mΩ)
Dwell Timer	Range: 0.5 – 999.9 sec (0 = Continuous) Resolution: 0.1 sec Accuracy: ± (0.1% + 0.05 sec)
Milliohm Offset	Range: 0 – 200mΩ Resolution: 1 mΩ Accuracy: ± (2 % of setting + 2 mΩ)

CONTINUITY TEST MODE		
Output Current	DC 0.1A ± 0.01A	Total Resistance*:0.00 – 12.0Ω
	DC 0.01A ± 0.001A	Total Resistance*:12.1 – 120Ω
	DC 0.001A ± 0.0001A	Total Resistance*:121 – 1200Ω
	DC 0.0001A ± 0.00001A	Total Resistance*:1201 – 10000Ω
Resistance Display	Range 1:	0.00 – 10.00 Ω
	Resolution:	0.01 Ω
	Accuracy:	± (1 % of reading + 3 counts)
	Range 2:	10.1 – 100.0 Ω
	Resolution:	0.1 Ω
	Accuracy:	± (1 % of reading + 3 counts)
	Range 3:	101 – 1000 Ω
	Resolution:	1 Ω
	Accuracy:	± (1 % of reading + 3 counts)
	Range 4:	1001 – 10000 Ω
	Resolution:	1 Ω
	Accuracy:	± (1 % of reading + 10 counts)
HI and LO-Limits	Range 1:	0.00 – 10.00 Ω
	Resolution:	0.01 Ω
	Accuracy:	± (1 % of reading + 3 counts)
	Range 2:	10.1 – 100.0 Ω
	Resolution:	0.1 Ω
	Accuracy:	± (1 % of reading + 3 counts)
	Range 3:	101 – 1000 Ω
	Resolution:	1 Ω
	Accuracy:	± (1 % of reading + 3 counts)
	Range 4:	1001 – 10000 Ω
	Resolution:	1 Ω
	Accuracy:	± (1 % of reading + 10 counts)
	(Max Limit:	0 = OFF)
Dwell Timer	Range:	0.0, 0.3 – 999.9 sec (0 = Continuous)
	Resolution:	0.1 sec
	Accuracy:	± (0.1% + 0.05 sec)
Milliohm Offset	Range:	0.00 – 10.00Ω
	Resolution:	0.01 Ω
	Accuracy:	± (1 % of reading + 0.03 Ω)

GENERAL SPECIFICATIONS	
PLC Remote Control	Input: Test, Reset, Interlock, Recall File 1 through 3
	Output: Pass, Fail, Test-in-Process
Safety	Built-in Smart GFI circuit
Memory	10000 steps
Interface	Standard USB/RS-232, Ethernet, or GPIB.
Security	Advanced security system with access levels and username/password requirements
Graphic Display	800 x 480 digital TFT LCD display
Alarm Volume Setting	Range: 0 – 9; 0 = OFF, 1 is softest volume, 9 is loudest volume.
Calibration	Adjustments are made through the front panel. Automatic Calibration alert function to signal operator when calibration is due.
Mechanical	Bench or rack mount with tilt up front feet.
Dimensions	3U (W x H x D) (430 X 133 X 500 mm) (16.93” x 5.24” x 19.69”)
Weight	31.16kgs (68.70lbs)
OPTIONS	
Scanning Matrix	8 channel high voltage and high current switching matrix.

Why use the term “Counts”?

Associated Research publishes some specifications using COUNTS which allows us to provide a better indication of the tester’s capabilities across measurement ranges. A COUNT refers to the lowest resolution of the display for a given measurement range. For example, if the resolution for voltage is 1V then 2 counts = 2V.

RUN TEST MODE (MODELS 82X6 AND 82X7)		
DUT POWER		
Voltage	0 – 277 VAC Single Phase Unbalanced (One Hot or Line conductor and One Neutral)	
Current	16AAC max continuous	
Voltage Display	Range:	0.0 – 277.0 VAC Full Scale
	Resolution:	0.1 V
	Accuracy:	± (1.5% of reading +0.2V), 30.0 – 277.0VAC
Short Circuit Protection	23 AAC, Response Time < 3s	
DELAY AND DWELL TIMER SETTINGS		
Delay time setting	Range: Resolution: Accuracy:	0.2 – 999.9 seconds 0.1 second ± (0.1% + 0.05 sec)
Dwell time setting	Range: Resolution: Accuracy:	0.1 – 999.9 seconds (0 = Continuous) 0.1 second ± (0.1% + 0.05 sec)
TRIP POINT SETTINGS		
Voltage: Volt-Hi Volt-LO	Range: Resolution: Accuracy:	30.0 – 277.0 VAC 0.1 V ± (1.5% of setting + 0.2 V), 30.0 – 277VAC
Current: Amp-HI Amp-LO	Range: Resolution: Accuracy:	0.0 – 16.00 AAC 0.01 A ± (2.0% of setting + 2 Counts)
Watts: Power-HI Power-LO	Range: Resolution: Accuracy:	0 – 4500 W 1 W ± (5.0% of setting + 3 Counts)
Power Factor: PF-HI PF-LO	Range: Resolution: Accuracy:	0.000 – 1.000 0.001 ± (8% of setting + 2 Counts)
Leakage Current: Leak-HI Leak-LO	Range: Resolution: Accuracy: Leakage current measuring resistor MD=2KΩ ± 1%	0.00 – 10.00 mA (0 = OFF) 0.01 mA ± (2% of setting + 2 Counts)
METERING		
Voltmeter	Range: Resolution: Accuracy:	0.0 – 277.0 VAC 0.1 V ± (1.5% of reading + 2 Counts), 30.0 – 277VAC
Ammeter	Range: Resolution: Accuracy:	0.0 – 16.00 AAC 0.01 A ± (2.0% of reading + 2 Counts)
Wattmeter	Range: Resolution: Accuracy:	0 – 4500 W 1 W ± (5% of reading + 3 Counts)
METERING		

RUN TEST MODE (MODELS 82X6 AND 82X7)	
Power Factor	Range: 0.000 – 1.000 Resolution: 0.001 Accuracy: ± (8% of reading + 2 Counts)
Leakage Current	Range: 0.00 – 10.00 mA Resolution: 0.01 mA Accuracy: ± (2% of reading + 2 Counts) Leakage current measuring resistor MD = 2KΩ ± 1%
Timer display	Range: 0.0 – 999.9 seconds Resolution: 0.1 second Accuracy: ± (0.1% of reading + 0.05 seconds)

LINE LEAKAGE TEST MODE (82X6 AND 82X7 ONLY)		
DUT POWER		
Voltage	0 – 277 VAC	
Current	16AAC max continuous	
Voltage Display	Range:	0.0 – 277.0 VAC Full Scale
	Resolution:	0.1 V
	Accuracy:	± (1.5% of reading +0.2V), 30.0 – 277.0VAC
Short Circuit Protection	23 AAC, Response Time < 3s	
DELAY AND DWELL TIMER SETTINGS		
Delay time setting	Range: 0.5 – 999.9 seconds (AC+DC) 1.8-999.9 seconds (AC/DC Only and Auto Range) 1.3-999.9 seconds (AC/DC Only and Fixed Range) Resolution: 0.1 second Accuracy: ± (0.1% + 0.05 sec)	
Dwell time setting	Range: 0.0,0.5 – 999.9 seconds (AC+DC) 0.1-999.9 seconds (AC Only and DC Only) (0 = Continuous) Resolution: 0.1 second Accuracy: ± (0.1% + 0.05 sec)	
LINE CONDITION		
Reverse Power Switch	Reverse polarity switch setting select ON/OFF/AUTO ON: Reverse power OFF: Normal AUTO: Automatic Reverse Polarity. With AUTO mode, the polarity switches for normal conditions in one step setting menu but will run two steps for both conditions. In this mode, the unit only records and displays the maximum leakage current value.	
Neutral Switch	ON/OFF selection for single fault condition	
Ground Switch	ON/OFF selection for Class I single fault condition	
PROBE SETTING		

Surface to Surface (PH – PL)
Surface to Line (PH – L)
Ground to Line (G – L)

LEAKAGE LIMIT SETTING		
Touch Current High Limit (RMS)	Range:	0.0uA ~ 999.9uA 1000uA ~ 10.00mA
	Resolution:	0.1uA / 1uA / 0.01mA
Touch Current Low Limit (RMS)	Range:	0.0uA ~ 999.9uA 1000uA ~ 10.00mA
	Resolution:	0.1uA/1uA/0.01mA
Touch Current High Limit (Peak)	Range:	0.0uA - 999.9uA 1000uA - 10.00mA
	Resolution:	0.1uA/1uA/0.01mA
Touch Current Low Limit (Peak)	Range:	0.0uA - 999.9uA 1000uA - 10.00mA
	Resolution:	0.1uA/1uA/0.01mA
DISPLAY		
Touch Current Display (RMS)	Range 1	0.0uA ~ 32.0uA, frequency DC, 15Hz - 1MHz
	Resolution	0.1uA
	Accuracy	DC , 15Hz ≤ f <100KHz: ±(2% of reading + 3counts) 100KHz ≤ f ≤ 1MHZ : ±5% of reading (10.0uA - 999.9uA)
	Range 2	28.0uA ~ 130.0uA, frequency DC, 15Hz - 1MHz
	Resolution	0.1uA
	Accuracy	DC , 15Hz ≤ f <100KHz: ±(2% of reading + 3counts) 100KHz ≤ f ≤ 1MHZ : ±5% of reading (10.0uA - 999.9uA)
	Range 3	120.0uA ~ 550.0uA, frequency DC, 15Hz - 1MHz
	Resolution	0.1uA
	Accuracy	DC , 15Hz ≤ f <100KHz: ±(2% of reading + 3counts) 100KHz ≤ f ≤ 1MHZ : ±5% of reading (10.0uA - 999.9uA)

DISPLAY (CONT.)		
	Range 4	400uA ~ 2100uA, frequency DC, 15Hz - 1MHz
	Resolution	1uA
	Accuracy	DC , 15Hz ≤ f <100KHz: ±(2% of reading + 3counts) 100KHz ≤ f ≤ 1MHZ : ±5% of reading (10uA - 8500uA)
	Range 5	1800uA ~ 8500uA, frequency DC, 15Hz - 1MHz
	Resolution	1uA
	Accuracy	DC , 15Hz ≤ f <100KHz: ±(2% of reading + 3counts) 100KHz ≤ f ≤ 1MHZ : ±5% of reading (10uA - 8500uA)
	Range 6	8.00mA ~ 10.00mA, frequency DC, 15Hz – 100kHz
	Resolution	0.01mA
	Accuracy	DC, 15Hz ≤ f ≤ 100KHz : ±5% of reading (0.01mA -10.00mA)
Touch Current Display (Peak)	Range 1	0.0uA ~ 32.0uA, frequency DC - 1MHz
	Resolution	0.1uA
	Accuracy	DC : ±(2% of reading + 2uA) 15Hz ≤ f ≤ 1MHZ : ±10% of reading + 2uA
	Range 2	28.0uA ~ 130.0uA, frequency DC - 1MHz
	Resolution	0.1uA
	Accuracy	DC : ±(2% of reading + 2uA) 15Hz ≤ f ≤ 1MHZ : ±10% of reading + 2uA
	Range 3	120.0uA ~ 550.0uA, frequency DC - 1MHz
	Resolution	0.1uA
	Accuracy	DC : ±(2% of reading + 2uA) 15Hz ≤ f ≤ 1MHZ : ±10% of reading + 2uA

DISPLAY (CONT.)		
	Range 4	400uA ~ 2100uA, frequency DC - 1MHz
	Resolution	1uA
	Accuracy	DC : ±(2% of reading + 2uA) 15Hz ≤ f ≤ 1MHZ : ±10% of reading + 2uA
	Range 5	1800A ~ 8500uA, frequency DC - 1MHz
	Resolution	1uA
	Accuracy	DC : ±(2% of reading + 2uA) 15Hz ≤ f ≤ 1MHZ : ±10% of reading + 2uA
	Range 6	8.0mA ~10.00mA, frequency DC – 100KHz
	Resolution	0.01mA
	Accuracy	DC : ±(2% of reading + 3counts) 15Hz ≤ f ≤ 100KHz : ±10% of reading + 2counts
MD CIRCUIT MODULE		
MD1	UL544NP, UL484 , UL923, UL471, UL867, UL697	
MD2	UL544P	
MD3	IEC 60601-1	
MD4	UL1563	
MD5	IEC60990 Fig4 U2, IEC 60950-1, IEC60335-1, IEC60598-1, IEC60065, IEC61010	
MD6	IEC60990 Fig5 U3, IEC60598-1	
MD7	IEC60950, IEC61010-1 FigA.2 (2K ohm) for Run function.	
External MD	Basic measuring element 1k ohm	
Scope Output Interface	BNC type connector on rear panel for Oscilloscope connection	
MD voltage limit	Maximum 70VDC	
MD Component Accuracy	Capacitors = 5% Resistors = 1%	

AC SOURCE 500VA				
OUTPUT				
Power	630VA and 500W Maximum			
Voltage	0 - 150.0V / 0 - 277.0V			
Current	4.20A maximum for 0-150V range / 2.10A maximum 0-277V range			
Distortion	≤ 1% at 45-500Hz and output voltage within the 80~140Vac at Low Range or the 160~277Vac at High Range. (Resistive Load)			
Regulation	≤ 0.5% + 5V (Resistive Load), From no load to full load and Low Line to High Line (combined regulation)			
Crest Factor	> 3			
Test timing limit	< 350mS at start and between steps when internal AC source is ON			
SETTINGS				
Voltage	Low range	0.0 - 150.0V	0.1	± (1.5% of setting + 2 counts)
	High range	0.0 - 277.0V		
Frequency	45.0Hz - 99.9Hz		0.1	±0.1% of setting
	100Hz - 500Hz		1	
A-Hi-limit	Range		4.20A/2.10A	
	Resolution		0.01	
	Accuracy		± (2 % of reading +2 counts)	
OC Fold Current	Range		4.20A/2.10A	
	Resolution		0.01	
	Accuracy		± (2 % of reading +2 counts)	
	Response time		< 1500ms	
MEASUREMENT				
Voltage	0.0-277.0		0.1	± (1.5 % of reading +2 counts)
Current	0.00-16.00		0.01	± (2 % of reading +2 counts)
Power	0-4500		1	± (5% of reading +3 counts) for PF>0.100
Power Factor	0.000-1.000		0.001	± (8 % of reading +5 counts)
Frequency	45-500Hz		0.1	±0.1Hz
GENERAL				
Over Current Fold back	On/Off, When the output current exceeds the A-Hi value it will fold back output voltage to keep constant output current at A-Hi value.			
Protection	OCP, OTP, OVP, OPP and Alarm			