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For more than 40 years, our product range has been dynamically adapting to the constant changes in the industry. We commit to offering first-class quality to our customers while delivering an excellent cost-performance ratio. This philosophy remains the cornerstone of Voltcraft's success.

ET-240 PV

PHOTOVOLTAIC INSULATION RESISTANCE TESTER



Item no. 3414441

Resistance tester to measure photovoltaic energized (max. 1000 V/DC) insulation resistance and conventional insulation resistance (de-energized) and automatically identify AC/DC voltage.

FEATURES

CAT IV 600 V, CAT III 1000 V // 10 A current rating // 0.125 – 4000 M Ω // IP 54 Ingress protection



TECHNICAL DATA

Product

Power supply	6x 1.5 V LR6 AA alkaline batteries
Rated voltage	125 V, 250 V, 500 V, 1000 V
Output voltage accuracy.....	+ (0% – 20%)
Testing range of insulation resistance	0.125 – 4000 MΩ
Testing range of PV insulation resistance.....	0.50 – 4000 MΩ
Output short-circuit current.....	< 1.5 mA
Voltage testing	Automatic identification of AC/DC voltage
Test with external voltage	Test with external voltage Prohibited:>25V AC/DC in standard IR mode Permitted >1000 V/DC in PV mode.
Timer	Auto record: 0 sec – 99 min and 59 sec.
High voltage warning	yes
Automatic discharge	yes
Backlight.....	Manual/Automatic
Storage function	max. 1000 sets of data
Communication.....	Data upload to PC via USB cable.
Auto power off	10 mins of inactivity
Operating altitude	≤ 2000 m
Drop proof.....	1 m
Ingress protection	IP54
Pollution degree.....	2
Intended use.....	Indoor use
Operating environment.....	0 to +40 °C: < 80 % RH (non-condensing) +40 to +50 °C: < 70%RH
Storage environment	-20 to +60 °C: < 75% (non-condensing)
Measurement category.....	CAT II 1000 V/DC, CAT III 600 V
Regulatory compliance	EN 61010-1; EN IEC 61010-2-034; EN 61557-1, -2.
Dimensions (L x D x H).....	161 × 117.3 × 63 mm
Weight	500 g (including battery)

Test leads

Measurement category.....	CAT IV 600 V, CAT III 1000 V
Current rating.....	10A
Protection class	II
Length.....	approx. 70 cm

Remote test probe

Measurement category.....	CAT IV 600 V, CAT III 1000 V
Current rating.....	10A
Protection class	II

Operational uncertainty

Intrinsic uncertainty or influence quantity	Designation code	Max value
Intrinsic uncertainty	IEC 61557-2 A Reference conditions	3 %
Position	IEC 61557-2 E1 ±90 °	3 %
Supply voltage	IEC 61557-2 E2	3 %
Temperature	IEC 61557-2 E3 0 °C and 40 °C	4 %
Operating uncertainty	IEC 61557-2 B ≤ 30%	17.8 %

Accuracy

- Accuracy: ± (a% of reading + b digits); one-year warranty
- Ambient temperature: 23 ± 5 °C (73.4 ± 9 °F)
- Ambient humidity: 45 to 75 % RH
- Temperature coefficient: For testing out of specified temperature range (i.e., >28°C or <18°C), the testing error is increased by ±0.25% per degree Celsius.

Conventional insulation resistance measurement

Rated voltage	Measurement range	Measurement accuracy	Overrange indication
125V	<1.51MΩ	For reference only	>1100MΩ
	1.51MΩ-100.0MΩ	±(1.5%+5)	
	100.1MΩ-1000MΩ	±(5%+6)	
250V	<1.51MΩ	For reference only	>2200MΩ
	1.51MΩ-200.0MΩ	±(1.5%+5)	
	200.1MΩ-2000MΩ	±(5%+6)	
500V	<1.51MΩ	For reference only	>4200MΩ
	1.51MΩ-1000MΩ	±(1.5%+5)	
	1001MΩ-4000MΩ	±(5%+6)	
1000V	<1.51MΩ	For reference only	>4200MΩ
	1.51MΩ-1000MΩ	±(1.5%+5)	
	1001MΩ-4000MΩ	±(5%+6)	
Short-circuit current: <1.5mA On-load current capacity (Only applicable to conventional insulation resistance measurement): 1mA-1.2mA (125V, 0.125 MΩ; 250V, 0.25 MΩ; 500V, 0.5 MΩ; 1000V, 1.0 MΩ)			

1 MΩ (Mega ohm) =1000KΩ=10⁶Ω
Note: For insulation resistance measurement, a large offset value may occur if the measured capacitive reactance is greater than about 100nF.

Photovoltaic (PV) insulation resistance measurement

Rated voltage	Measurement range	Measurement accuracy	Overrange indication
500V	<1.51MΩ	For reference only	>4200MΩ
	1.51MΩ-1000MΩ	±(1.5%+5)	
	1001MΩ-4000MΩ	±(5%+6)	
1000V	<1.51MΩ	For reference only	>4200MΩ
	1.51MΩ-1000MΩ	±(1.5%+5)	
	1001MΩ-4000MΩ	±(5%+6)	

- Short-circuit current:** <1.5mA
Notes:
- Measurement cannot be performed correctly if the open-circuit voltage of solar cell string or the energized voltage of other measured object is higher than the testing voltage. At PV 500V range, please use in the condition of open-circuit voltage of below 500V; at PV 1000V range, please use in the condition of open-circuit voltage of below 1000V.
 - For measured object with voltage of over 900VDC, the measurement result is for reference only.

Output voltage of conventional insulation resistance

Rated voltage	Output accuracy	Display accuracy	Output voltage range
125V	+ (0%-20%)	1V	125V-150V
250V			250V-300V
500V			500V-600V
1000V			1000V-1200V

In conventional testing mode, the step voltage can be adjusted as follows:

- For 125V position: 125V, 138V, 150V
- For 250V position: 125V, 150V, 175V, 200V, 225V, 250V, 275V, 300V
- For 500V position: 250V, 300V, 350V, 400V, 450V, 500V, 550V, 600V
- For 1000V position: 500V, 600V, 700V, 800V, 900V, 1000V

Output voltage of photovoltaic (PV) insulation resistance

Rated voltage	Output accuracy	Display accuracy	Output voltage range
500V	+ (0%-20%)	1V	500V-600V
1000V			1000V-1200V

In PV testing mode, the step voltage can be adjusted as follows:

- For 500V position: 500V, 550V, 600V
- For 1000V position: 500V, 600V, 700V, 800V, 900V, 1000V, 1100V

Note:

- When the PV measurement function is used, there is a current-limiting resistance of 1MΩ connected to the EARTH terminal, so the output voltage will be divided by 1MΩ and the resistance of the measurement terminal.
- For example, when measuring a resistance of 10MΩ, the output voltage will be divided by 1MΩ and 10MΩ.

Photovoltaic (PV) insulation resistance measurement

DC voltage

Measurement range	Measurement accuracy	Range	Resolution	Overrange indication
5-1000V	±(1%+4)	500V: 5.0-499.9V	0.1V	>1050V
		1000V: 500-1050V	1V	
-5 -1000V		-500V: -5.0-499.9V	0.1V	>-1050V
		-1000V: -500-1050V	1V	

Note: If the detected voltage exceeds the voltage testing range specified by the Tester, the LCD will provide an indication of over-voltage.

AC voltage

Measurement range	Measurement accuracy	Range	Resolution	Overrange indication
5-600V 50/60Hz	±(1%+4)	300V: 5.0-299.9V	0.1V	>630V
		600V: 300-630V	1V	

Note: If the detected voltage exceeds the voltage testing range specified by the Tester, the LCD will provide an indication of over-voltage.

PACKAGE CONTENTS

- Insulation resistance tester
- 6x LR6 AA Alkaline batteries
- 1x pair: test leads (black/red)
- 1 remote control probe
- 1x pair: Lantern-tip test probes
- 1x pair: Alligator clips (black/red)
- 1x pair: Solar connectors
- 1x USB-A to USB-C® data cable
- 1x Carrying strap
- 1x Case
- Operating instructions