

## Digital Auto-Ranging T-RMS Multimeter SOLAR 1A

### PRODUCT INTRODUCTION

- This versatile hand-held, Auto-Ranging Multimeter, provides T-RMS measurements, therefore being useful for all kinds of applications. The instrument measures AC/DC Voltage, AC/DC Current, Resistance, Low Voltage and Power Frequencies, Capacitance, Temperature, Diode Test and Audible Continuity Test.
- The back-lit, large, LCD Display with 6000 Counts not only gives it an advantage to use in poorly-lit areas, it also enables high resolution readings for larger ranges. **The 1500V DC measuring range makes it useful for Solar Applications specifically.**
- The **IP67 protection** helps in protecting the instrument during outdoor applications and makes it water and dust proof.
- The **VFD function**, makes it useful for measurements in variable frequency drives. A click of a button helps you toggle between measured voltage and frequency & measured current and frequency.




### FEATURES

- T-RMS Auto-Ranging Multimeter
- IP67 Standard : Water and Dust Proof
- VFD Function
- MAX / MIN Records
- Relative Measurements
- Data Hold
- 6000 Counts Back-lit LCD Display
- Auto Power-off
- Confirms to CAT IV 600V, CAT III 1000V
- 1500V DC Measurement for PV Applications
- Fast Blow Fuse Protection
- No need to open-up the instrument for fuse replacements

### GENERAL SPECIFICATIONS

<b>Enclosure</b>	Double-moulded, Waterproof
<b>Shock (Drop Test)</b>	2 meters (6.5 feet)
<b>Diode Test</b>	Test current of 0.9mA maximum; Open circuit voltage approx 3.2V DC typical.
<b>Continuity Check</b>	Audible signal will sound if the resistance is less than 50Ω (approx.), test current <0.35mA.
<b>Input Impedance</b>	> 10MΩ VDC & >10MΩ VAC

## **Digital Auto-Ranging T-RMS Multimeter SOLAR 1A**

<b>AC Response</b>	True RMS
<b>ACV Bandwidth Crest</b>	45Hz to 1kHz
<b>Factor</b>	≤3 at full scale up to 500V, decreasing linearly to ≤1.5 at 1000V
<b>Display</b>	6000 Counts back-lit liquid crystal
<b>Overrange Indication Auto</b>	“OL” is displayed.
<b>Power Off</b>	15 minutes (approximately) with disabling feature
<b>Polarity</b>	Automatic (no indication for positive); Minus (-) sign for negative
<b>Measurement Rate</b>	3 times per second, nominal
<b>Low Battery Indication</b>	“  ” is displayed if battery voltage drops below operating voltage
<b>Battery</b>	One 9 Volt (NEDA 1604) battery
<b>Fuses</b>	mA/μA ranges: 0.8A/1000V Ceramic Fast Blow; A range: 10A/1000V Ceramic Fast Blow
<b>Operating Temperature</b>	5° to 40°C (41° to 104°F)
<b>Storage Temperature</b>	-20° to 60°C (-4° to 140°F)
<b>Operating Humidity</b>	Max 80% up to 31°C (87°F) decreasing linearly to 50% at 40°C (104°F)
<b>Storage Humidity</b>	<80%
<b>Operating Altitude</b>	2000 meters (7000 ft.) maximum
<b>Safety</b>	This meter is intended for origin of installation use and protected, against the users, by double insulation per EN61010-1 and IEC61010-1, 2 <sup>nd</sup> Edition (2001) to Category IV 600V and Category III 1000V; Pollution Degree 2. The meter also meets UL 61010-1, 2 <sup>nd</sup> Edition (2004), CAN/CSA C22.2 No. 61 010 -1, 2 <sup>nd</sup> Edition (2004). and UL 610108-2-031, 1 <sup>st</sup> Edition (2003).

### **Input Protection Limits**

<b>Function</b>	<b>Maximum Input</b>
V DC	1500VDC
V AC	1000VAC RMS
mA AC/DC	800mA/1000V fast-acting fuse
A AC/DC	10A/1000V fast acting fuse (30 seconds max every 15 minutes)
Frequency, Duty Cycle, Resistance, CAP, Diode Test, Continuity, Temperature	250VDC/AC RMS
Surge Protection: 8kV peak per IEC 61010	

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### TECHNICAL SPECIFICATIONS

#### DC Voltage

Range	Resolution	Accuracy
60.00mV	0.01mV	±(0.9% + 9 digits)
600.0mV	0.1mV	
6.000V	0.001V	±[0.5% + 5 digits]
60.00V	0.01V	
600.0V	0.1V	±(0.6% + 6 digits)
1500V	1V	

#### AC Voltage (45Hz to 1kHz)

Range	Resolution	Accuracy
60.00mV	0.01mV	±(0.9% + 9 digits)
600.0mV	0.1mV	
6.000V	0.001V	±[0.8% + 3 digits]
60.00V	0.01V	
600.0V	0.1V	±(0.8% + 8 digits)
1000V	1V	

All AC Voltage ranges are specified from 5% of range to 100% of range.

**AC Voltage Bandwidth:** 45Hz to 1kHz (Sine): 50/60Hz  
(All wave)

#### VFD

Range	Resolution	Accuracy
150.0 to 600V	0.1V/1V	1±(4% + 3 digits)

#### DC Current

Range	Resolution	Accuracy
600.0µA	0.1µA	±(1.0% + 3 digits)
6000µA	1µA	
60.00mA	0.01mA	
600.0mA	0.1mA	
6.000A	0.001A	±(1.5% + 3 digits)
10.00A	0.01A	

10A: 30 sec max with reduced accuracy.

#### AC Current (45Hz to 1kHz)

Range	Resolution	Accuracy
600.0µA	0.1µA	±(1.5% + 3 digits)
6000µA	1µA	
60.00mA	0.01mA	
600.0mA	0.1mA	±(2.0% + 3 digits)
6.000A	0.001A	
10.00A	0.01A	

10A: 30 sec max with reduced accuracy.

All AC Current ranges are specified from 5% of range to 100% of range.

**AC Current Bandwidth:** 45Hz to 1kHz (Sine): 50/60Hz  
(All wave).

#### Resistance

Range	Resolution	Accuracy
600.0Ω	0.1Ω	±(1.0% + 2 digits)
6.000kΩ	0.001kΩ	±(0.8% + 2 digits)
60.00kΩ	0.01kΩ	
600.0kΩ	0.1kΩ	
6.000MΩ	0.001MΩ	±(1.2% + 2 digits)
60.00MΩ	0.01MΩ	±(1.0% + 5 digits)

#### Capacitance

Range	Resolution	Accuracy
99.99nF*	0.01nF	±(5.0% + 20 digits)
999.9nF	0.1nF	±(4.0% + 5 digits)
9.999µF	0.001µF	
99.99µF	0.01µF	
999.9µF	0.1µF	
9.999mF	0.001mF	±10% reading
99.99mF	0.01mF	

\*<99.99nF Not specified

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### Frequency (Electronic)

Range	Resolution	Accuracy
9.999Hz	0.001Hz	±(0.1% + 4 digits)
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999kHz	0.001kHz	
99.99kHz	0.01kHz	
999.9kHz	0.1kHz	
9.999MHz	0.001MHz	

**Sensitivity** : 0.8V RMS min. at 20% to 80% duty cycle and <100kHz; 5V RMS min. at 20% to 80% duty cycle and >100kHz.

### Frequency (Electrical)

Range	Resolution	Accuracy
10.00 - 1 kHz	0.01Hz	±0.5% reading

**Sensitivity** : ACmV Range(≥100mV), ACV Range (≥6% Range): 6000μA/600.0mA Range (≥6% Range); 600.0μA/60.00mA/6.000A/10.00A Range (≥60%Range).

### Duty Cycle

Range	Resolution	Accuracy
0.1 to 99.9%	0.1%	±(1.2% +2digits)

**Pulse Width**: 100μs -100ms; **Frequency**: 5Hz to 150kHz.

### Temperature (Type-K)

Range	Resolution	Accuracy
-40° to 1000°C	1°C	±(3.0% + 3°C)
-40° to 1832°F	1°F	±(3.0% + 5°F)

Probe accuracy not included.

**NOTE** : Accuracy specifications consist of two elements:

- (% reading) - This is the accuracy of the measurement circuit.
- (+ digits) - This is the accuracy of the analog to digital converter.

**NOTE**: Accuracy is stated at 18 to 28°C (65 to 83°F) and less than 75% RH.

