Solar Power Meter & Multimeter
User Manual

Please read this manual before switching the unit on.
Important safety information inside.

Contents

1.Introduction

Solar power meter&Digital Multimeter is a device used to measure solar power(sunlight) and measure DC/AC voltage, DC/AC current, Resist-ance, con-Tinuity & diode.

From the moment you buy such a product, your future is not uncertrain any more. When the sun shines recklessly, just take the meter and aim its opening the sun, and you will see how powerfull the sun is, if you want your skin white, you surely cannot do without it!

Measurement: Expressed by W/m^2 or $BTU(ft^2*h)$.

2.Safety Precautions and procedures

This meter is in compliance with safety standard EN 61010-1 related to electronic measuring instruments. For your own safety and to aviod damaging the instrument follow the procedures described in this instrution manual and read carefully all notes preceded by this symbol

•International Safety Symbols

⚠ This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.

⧈ Double insulation

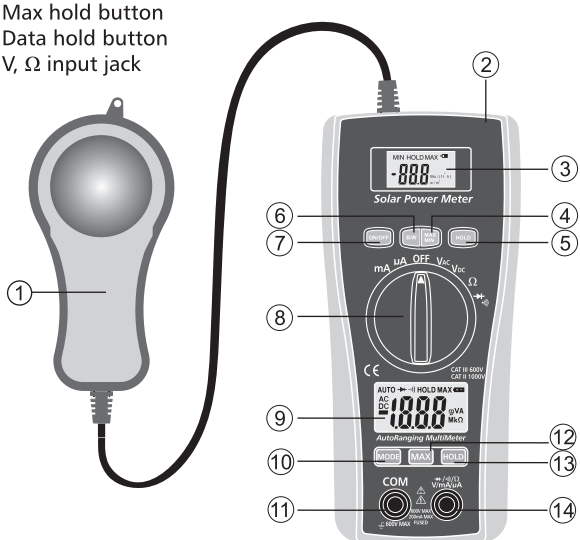
3. Meter Description

3.1 FEATURES

1.Sunlight measurement up to 1999w/m^2 or 634$BTU/(ft^2*h)$
2.High accuracy and rapid response
3.Data HOLD funtction to hold measurement values
4.Unit and sign display for easy reading
5.Measuring unit selection among w/m^2 and $BTU/(ft^2*h)$
6.Manual scale selection
7.Direct reading with no adjustments needed
8.Maximum and minimum values
9.Low battery indication
10.Digital multimeter function make it easy to measure DC/AC voltage, DC/AC current, Resist-ance, con-Tinuity & diode.

3.2 Instrument Description

1.Solar power meter the sunlight probe
2.0 adjust(Solar power meter)
3.LCD Solar power display(data, min/max, hold, w/m^2 or BTU(ft^2*h), low battery, range)
4.MIN/MAX key(Solar power meter)
5.DATA HOLD key(Solar power meter)
6.Unit (w/m^2 or BTU/(ft^2*h))selection key
7.ON/OFF key(Solar power meter)
8.Function switch(Digital Multimeter)
9.3 1/2 digit(2000 count) LCD display for DMM functions
10.Mode button
11.COM input jack
12.Max hold button
13.Data hold button
14.V, Ω input jack



3.3 Sloar Power Meter Description of function keys

5-DATA HOLD key:

Press the **'HOLD'** button to go into hold mode. appears on the screen to allow you to read the data.Press this button once again to deactivate it.

6-W/B key:

Press the **'W/B'** button to switch from BTU(ft^2*h) to W/m^2. To select a diffent unit just press this button once again.

7-ON/OFF key:

Press the ' ⏻ ' button to turn ON the power or OFF the power and put the device go into sleep mode. The display changes from light to dark.

4-MIN/MAX key:

When you test in W/m^2 or BTU(ft^2*h) Press the 'MIN/MAX' button to display the max or min. reading value. Press the button for more than 1 second, and the max and min. come off. When the **'MIN/MAX'** button is functional, the button is disabled.

4. Electrical Specification

Operating temp & RH	5°C—40°C, below 80%RH.
Storage temp & RH	-10°C—60°C, below 70%.
Display	3-1/2 digits LCD with maxmum reading 1999.
Sampling time	Appro x 0.25 second.
Resolution	1W/m^2; 1BTU(ft^2*h).
Accuracy	typically within ±10W/m^2 [±3BTU (ft^2*h)]or ±5%, whichever is greater in sunlight; Additional temperature induced error ±0.38W/m^2/°C.
Accuracy	< ±3/ year.
Over-input	Display shows 'OL'.
Range	1999W/m^2, 634BTU(ft^2*h).
Size	162(L)*74(W)*43(H)
Weight(includeing battery)	About 280g

12.Digital Multimeter:

Function	Range	Accuracy
DC Voltage	200mV,	±(0.5% rdg + 3d)
	2.000V, 20.00V,	±(1.0% rdg + 3d)
	200.0V, 600V	±(1.0% rdg + 3d)
AC Voltage 50-60Hz	2.000V, 20.00V	±(1.0% rdg + 5d)
	200.0V, 600V	±(1.5% rdg + 10d)
DC Current	200.0μA, 2000μA	±(1.5% rdg + 3d)
	20.00mA, 200.0mA	±(2.0% rdg + 3d)
AC Current	200.0μA, 2000μA	±(1.8% rdg + 8d)
	20.00mA, 200.0mA	±(2.5% rdg + 8d)
Resistance	200.0Ω	±(0.8% rdg + 5d)
	2.000kΩ, 20.00kΩ, 200.0kΩ	±(1.2% rdg + 3d)
	2.000MΩ	±(2.0% rdg + 5d)
	20.00MΩ	±(5.0% rdg + 8d)

Max input voltage	600V AC/DC
Diode Test	Test current 1mA max., open circuit voltage of 1.5V typical
Continuity Check	Audible signal if the resistance is <150Ω
Display	2000 count 3 -1/2 digit LCD
Over range indication	LCD displays "OL"
Polarity	Minus (-) sign for negative polarity.
Low Battery Indication	"**BAT**" symbol indicates low battery condition.
Input Impedance	>7.5MΩ (VDC & VAC)
AC Response	Average responding
ACV Bandwidth	50Hz to 60Hz
Auto Power Off	15 minutes (approximately)
Fuse	Ranges; 0.2A/250V fast acting Fuse
Batteries	9V battery and two "AAA" batteries
Operating Temperature	0°C to 40°C(32°F to 104°F)
Storage Temperature	-10°C to 50°C(14°F to 122°F)
Standard	IEC61010-1 CAT III-600V Pollution degree II, CE Approved

5. Operating instructions

5.1 Solar power meter Operating Instructions

- Press the power key ' ⏻ ' to turn on the meter.
- Press the 'W/B' key to select W/m^2 or BTU(ft^2*h) measurement.
- Remove the protection cap of the photo detector and expose it to the light source in horizontal position. Read the sunlight value on the LCD display.
- Wait for values to the stable on the display. Press **'HOLD'** key to activate the data hold function blocking the result on the display (NOTE:If the instrument display **'OL'**. the input signal is too strong. A higher rang must be selected.)
- When the measurement completed, fit the photo detector cap and check that the indication value should be '000' regargless of the range. If no, adjust the '0ADJ' trimmer on '000' before pressing the power key to turn off the meter.

5.2 Digital Multimeter Operating Instructions

AC/DC Voltage Measurements

- Insert the black test lead into the negative COM terminal and the red test lead into the positive V terminal.
- Set the function switch to VAC or VDC position.
- Connect the test leads in parallel to the circuit under test.
- Read the voltage measurement on the LCD display.

Caution: Do not measure AC/DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

AC/DC Current Measurements

- Set the function switch to the μA/mA position.
- Insert the black test lead into the negative COM terminal and the red test lead into the positive μA/mA terminal.
- For current measurements up to 2000μA DC/AC, set the function switch to the mA position
- Press the MODE button to indicate "DC"/"AC" on the display.
- Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.

- Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
- Apply power to the circuit.
- Read the current in the display.

Resistance Measurement

- Set the function switch to the Ω position.
- Insert the black test lead into the negative COM terminal and the red test lead into the positive Ω terminal.
- Touch the test probe tips across the circuit or part under test. It is best to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.
- Read the resistance in the display

Warning: To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.

Continuity Check

- Set the function switch to the ⇥ •)) position.
- Insert the black test lead into the negative COM terminal and the red test lead into the positive Ω terminal.
- Press the MODE button to indicate •)) on the display
- Touch the test probe tips to the circuit or wire you wish to check.
- If the resistance is less than approximately 100Ω, the audible signal will sound. If the circuit is open, the display will indicate “OL”.

Warning: To avoid electric shock, never measure continuity on circuits or wires that have voltage on them.

Diode Test

- Set the function switch to the ⇥ •)) position.
- Press the MODE button to Touch the test probes to the diode indicate⇥ on the display. under test. Forward voltage will typically indicate 0.400 to 0.700V. Reverse voltage will indicate “OL”. Shorted devices will indicate near 0V and an open device will indicate “OL” in both polarities.

MAX Hold button
To hold the highest reading on the LCD
- Press the MAX hold button. The meter reading will not change as readings change
- Press the MAX hold button again to return to normal operation.

Hold Button
The Data Hold function allows the meter to “freeze” a measurement for later reference
- Press the “DATA HOLD” button to “freeze” the display, the “HOLD” indicator will appear.
- Press the “DATA HOLD” button to return to normal operation.

Auto Power Off
The auto off feature will turn the meter off after 15 minutes.

Replacing The Fuses
- Disconnect the test leads from the meter.
- Remove the protective rubber holster.
- Remove the battery cover (two “B” screws) and the battery.
- Remove the four “A” screws securing the rear cover.
- Lift the center circuit board straight up from the connectors to gain access to the fuse holders.
- Gently remove the old fuse and install the new fuse into the holder.
- Always use a fuse of the proper size and value (0.2A/250V fast blow for the 200mA range).
- Align the center board with the connectors and gently press into place.
- Replace and secure the rear cover, battery and battery cover.

Warning: To avoid electric shock, disconnect the test leads from any source of voltage before removing the fuse cover.

6. Accessories

- User manual.
- 3V(1.5V AAA*2) battery and 9V type batery.
- Carrying case.

7.Safety and maintenance

- operating altitude: below 2000m.
- Operating environment: for indoor use, expose to pollution level II.
- This is a precisi0n device: Dring use or storage, do not go beyond its spec. to prevent any possible damage or danger.
- Do not put this device in direct sunlight or where it is hot an or damp.
- Remember to turn OFF the power after use. For long storage. Remove the battery to prevent the battery from leaking to cause damage to the parts inside.
- Clean the device with a dry soft cloth. Wet cloths, liquid and water are prohibited.

8. Battery Replacement

- When the symbol '  ' is display, batteries need replacement. Turn off the meter and disconnect the test leads from the input terminals.
- Unscrew the battery cover and remove the battery. Insert a new battery of the same type (1.5V AAA*2 battery or 9V type batery). observing the proper polarty, re-screw the battery cover and reposition the protective holster.

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