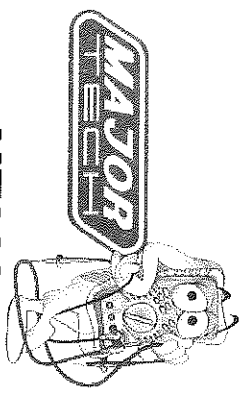


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MT922
Solar Power Meter and Multimeter
User Manual



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1. Introduction


Solar power meter & Digital Multimeter is a device used to measure solar power (sunlight) and measure DC/AC voltage, DC/AC current, Resistance, continuity & diode. from the moment you buy such a product, you are always able to measure the sun's intensity. When the sun shines, just take the meter and aim its probe at the sun, and you will see how powerful the sun is. Measurement: Expressed by W/m² or BTU/(ft²*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 avoid damaging the instrument follow the procedures described in this instruction 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

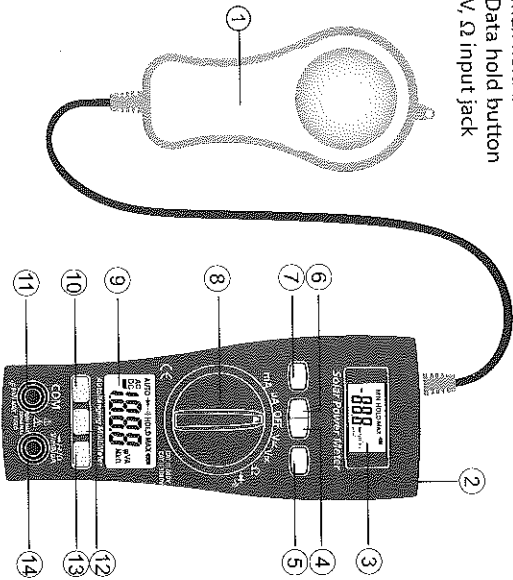
3. Meter Description

3.1 FEATURES

1. Sunlight measurement up to 1999w/m² or 634BTU/(ft²*h)
2. High accuracy and rapid response
3. Data HOLD function to hold measurement values
4. Unit and sign display for easy reading
5. Measuring unit selection among w/m² and BTU/(ft²*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, Resistance, continuity & 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/m² or BTU(ft²*h), low battery, range)
- 4.MIN/MAX key(Solar power meter)
- 5.DATA HOLD key(Solar power meter)
- 6.Unit (w/m² or BTU(ft²*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.COM1 input jack
- 12.Max hold button
- 13.Data hold button
- 14.V, Ω input jack



3.3 Solar Power Meter Description of function keys

5-DATA HOLD key:

Press the "Hold" appears on the screen to allow you to read the captured data. Press this button once again to deactivate it.

6-W/B key:

Press the 'W/B' button to switch from BTU(ft²*h) to W/m². To select a different unit just press this button once again.

7-ON/OFF key:

On/off button to turn ON the meter of OFF to switch the meter off.

4-MIN/MAX key:

When you test in W/m² or BTU(ft²*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 will switch 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, -10°C—60°C, below 70%.
Display	3-1/2 digits LCD with maximum reading 1999.
Sampling time	Approx x 0.25 second.
Resolution	1W/m ² ; 1BTU(ft ² *h).
Accuracy	typically within $\pm 10\text{W/m}^2$ [$\pm 3\text{BTU}$ (ft ² *h)] or $\pm 5\%$, whichever is greater in sunlight. Additional temperature induced error $\pm 0.38\text{W/m}^2/\text{C}$.
Accuracy	$< \pm 3/\text{year}$
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	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 on/off to turn on the meter.
- Press the 'W/B' key to select W/m² or BTU/(ft²h) 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 be stable on the display. Press 'HOLD' key to activate the data hold function capturing the result on the display (NOTE: if the instrument display 'OL', the input signal is too strong. A higher range must be selected.)
- When the measurement completed, fit the photo detector cap and check that the indication value should be '000' regardless of the range. If not, adjust the '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 one side of the open. Touch the red test probe to the other side of the open.
- 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 power supplied to the circuit under test.

Continuity Check

- Set the function switch to the \rightarrow 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 \rightarrow on the display
 - Touch the test probe tips to the circuit or wire you wish to check.
 - If the resistance is less than approximately 100 Ω , 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 \rightarrow position.
- Press the MODE button to touch the test probes to the diode indicate \rightarrow 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 battery.
- Carrying case.

7. Safety and maintenance

- Operating altitude: below 2000m.
- Operating environment: for indoor use, expose to pollution level II.
- This is a precision device: During use or storage, do not exceed its spec, to prevent any possible damage.
- Do not leave this device in direct sunlight or where it is hot or damp.
- Remember to turn OFF the power after use. For long storage: Remove the battery to prevent the battery from leaking and 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 battery), observing the proper polarity; re-screw the battery cover and reposition the protective holster.