



# **SOLAR-100**

## **Solar Power Meter**

### **Users Manual**

- Mode d'emploi
- Bedienungshandbuch
- Manual d'Uso
- Manual de uso





# **SOLAR-100**

## **Solar Power Meter**

### **Users Manual**

**English**

July 2009, Rev.1  
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### **Limited Warranty and Limitation of Liability**

Your Amprobe product will be free from defects in material and workmanship for 1 year from the date of purchase. This warranty does not cover fuses, disposable batteries or damage from accident, neglect, misuse, alteration, contamination, or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on Amprobe's behalf. To obtain service during the warranty period, return the product with proof of purchase to an authorized Amprobe Test Tools Service Center or to an Amprobe dealer or distributor. See Repair Section for details. THIS WARRANTY IS YOUR ONLY REMEDY. ALL OTHER WARRANTIES - WHETHER EXPRESS, IMPLIED OR STATUTORY - INCLUDING IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, ARE HEREBY DISCLAIMED. MANUFACTURER SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, ARISING FROM ANY CAUSE OR THEORY. Since some states or countries do not allow the exclusion or limitation of an implied warranty or of incidental or consequential damages, this limitation of liability may not apply to you.

### **Repair**

All test tools returned for warranty or non-warranty repair or for calibration should be accompanied by the following: your name, company's name, address, telephone number, and proof of purchase. Additionally, please include a brief description of the problem or the service requested and include the test leads with the meter. Non-warranty repair or replacement charges should be remitted in the form of a check, a money order, credit card with expiration date, or a purchase order made payable to Amprobe® Test Tools.

### **In-Warranty Repairs and Replacement – All Countries**

Please read the warranty statement and check your battery before requesting repair. During the warranty period any defective test tool can be returned to your Amprobe® Test Tools distributor for an exchange for the same or like product. Please check the "Where to Buy" section on [www.amprobe.com](http://www.amprobe.com) for a list of distributors near you. Additionally, in the United States and Canada In-Warranty repair and replacement units can also be sent to a Amprobe® Test Tools Service Center (see address below).

### **Non-Warranty Repairs and Replacement – US and Canada**

Non-warranty repairs in the United States and Canada should be sent to a Amprobe® Test Tools Service Center. Call Amprobe® Test Tools or inquire at your point of purchase for current repair and replacement rates.

In USA

Amprobe Test Tools  
Everett, WA 98203  
Tel: 877-AMPROBE (267-7623)

In Canada

Amprobe Test Tools  
Mississauga, ON L4Z 1X9  
Tel: 905-890-7600

### **Non-Warranty Repairs and Replacement – Europe**

European non-warranty units can be replaced by your Amprobe® Test Tools distributor for a nominal charge. Please check the "Where to Buy" section on [www.amprobe.com](http://www.amprobe.com) for a list of distributors near you.

European Correspondence Address\*

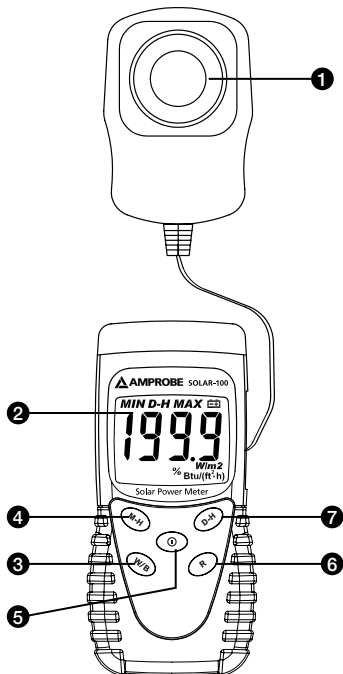
Amprobe® Test Tools Europe

In den Engematten 14  
79286 Glottertal, Germany  
Tel.: +49 (0) 7684 8009 - 0

\*(Correspondence only – no repair or replacement available from this address. European customers please contact your distributor.)

## SOLAR-100 Solar Power Meter

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- 1 Light Sensor
- 2 Display (LCD)
- 3 W/m<sup>2</sup>/BTU (ft<sup>2</sup>·h) Switch Button
- 4 Lock Up Max/Min Button
- 5 Power Button
- 6 Auto Range
- 7 Data Hold Button

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## SYMBOLS

	Caution! Refer to the explanation in this Manual
	Conforms to relevant Australian standards
	Complies with European Directives
	Do not dispose of this clamp meter as unsorted municipal waste. Contact a qualified recycler for disposal.

### **Warning and Precautions**

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 

#### **When taking measurements:**

- Avoid doing that in humid or wet places or using in rooms where explosive gas, combustible gas, steam or excessive dust is present.
- Avoid doing that if you notice anomalous conditions such as breakages, deformations, fractures, leakages of battery liquid, blind display etc.
- Operating environment: for indoor use, expose to pollution level II.
- Do not put this device in direct sunlight or where it is hot and/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.
- This is a precision device. During use or storage, do not go beyond its spec. to prevent any possible damage or danger



## **UNPACKING AND INSPECTION**

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Your shipping carton should include:

- 1 SOLAR-100 Solar Power Meter
- 1 9 volt battery
- 1 User manual

If any of the items are damaged or missing, return the complete package to the place of purchase for an exchange.

## **INTRODUCTION**

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The SOLAR-100 measures the solar energy and radiation, the typical application for this model are:

- Transmission measurement is most suitable for measuring the effectiveness of the solar film.
- Solar radiation measurement.
- Car windows light intensity measurement.
- Optimal incident angle for the solar panel.
- Measurement of the sun's transmission through transparent and film glass.
- Convenient, no need to adjust, data displayed clearly.

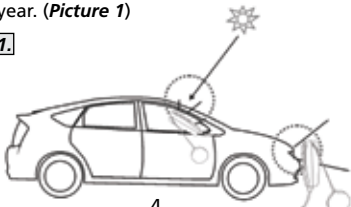
## OPERATION

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### To Measure Car's Headlights or Car Windows Solar Insulation

- Use a screw driver to adjust the hole of "0 ADJ" for the zero adjustment if any digits is appear
- If performing the zero adjustment after powering on, several digits may not disappear. In this case, perform the zero adjustment again.
- Measure your car's headlights
- Turn ON your car's headlights. Then turn ON the SOLAR-100 meter, and "00.0" appears on the screen. Put the device down close to the headlights. Switch between high beam and low beam, and light intensity values appear on the screen. Both the right and left headlights must be tested. Note the values and put them in your car for reference. **(Picture 1)**
- Measure the effect of solar insulation of your vehicle's windows
- Press the "☉" button to turn ON the SOLAR-100 meter, "00.0" appears on the screen. Aim the device at the sun and close to a window, and the intensity appears on the screen. Open the window and aim the device at the sun. Compare the value against that acquired when the window is closed to understand the efficiency of the window's solar film. Test your new car and preserve the measurements in it. After that, test it at least once every year. **(Picture 1)**

**Picture 1.**








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- NOTE: When the light sensor cover is not attached "CAP" is indicated. Make sure that it is attached. If performing the zero adjustment after powering on, several digits may not disappear. In this case, perform the zero adjustment again.


### To Measure House's Windows Solar Insulation

- Measure the solar insulation effect of your house's windows
- Close the window. Press the "⊙" button on your SOLAR-100 solar power meter, and "00.0" comes up on the screen. Put the device close to the window and aim it at the sun. Compare the value against that acquired when the window is closed and the device is placed at the same position, in order to understand the window's heat efficiency. (*Picture 2*)

### **Max / Min Button**



- When you test in W/m<sup>2</sup> or BTU (ft<sup>2</sup>\*h) press the "" button to display the max. or min. reading.
- Press and hold the "" button for 1 second to allow the device to read the max. value. Press the button one more time to read the min value.
- Press and hold the "" button for more than 1 second, and the max. and min. come off.
- When the "" button is functional, the "" button is disabled.

### **BTU (ft<sup>2</sup>\*h) / W/m<sup>2</sup> Button**



- Press the "⊙" button to turn ON the power and put the device to operating mode. The screen displays BTU (ft<sup>2</sup>\*h). Press the "" button to switch from BTU (ft<sup>2</sup>\*h) to W/m<sup>2</sup>. To select a different unit, just press this button once again.

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### Data Hold Button

- Press the "" button to go into hold mode, and "" appears on the screen to allow you to read the data. Press this button once again to deactivate it.

### Auto Range Button

- Press the "" power button to turn ON the power and put the device to operating mode. If "1999" comes up on the screen, it suggests the device will become overloaded or has become overloaded "OL". In this case, press the "" button, and "199" or your acquired value then comes up.

**Picture 2.**



## SPECIFICATION

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**Battery Life :** Approx. 100 hr

**Accuracy :** Typically within  $\pm 10\text{W/m}^2$  [ $\pm 3 \text{ BTU} / (\text{ft}^2 \cdot \text{h})$ ] or  $\pm 5\%$ , whichever is greater in sunlight; Additional temperature induced error  $\pm 0.38\text{W/m}^2 / ^\circ\text{C}$  [ $\pm 0.12 \text{ BTU} / (\text{ft}^2 \cdot \text{h}) / ^\circ\text{C}$ ] from  $25^\circ\text{C}$

**Operating temp. & RH :**  $5^\circ\text{C} \sim 40^\circ\text{C}$ , below 80%RH

**Storage temp. & RH :**  $-10^\circ\text{C} \sim 60^\circ\text{C}$ , below 70%RH

**Display :** 3-1/2 digits LCD with maximum reading 1999

**Sampling Time :** Approx. 0.25 second

**Resolution :**  $0.1\text{W/m}^2$  ;  $0.1 \text{ BTU} / (\text{ft}^2 \cdot \text{h})$

**Accuracy :**  $< \pm 3/\text{year}$

**Over-input :** Display shows "OL"

**Range :**  $1999\text{W/m}^2$  ;  $634 \text{ BTU} / (\text{ft}^2 \cdot \text{h})$ .

**Dimensions :** 132(L) x 60(W) x 38 (H)mm

**Weight :** Approx. 150g.

**EMC :** This instrument is EMC-compliant and has undergone compatibility tests according to EN61326-1: 2006


**CE - EMC:** Conforms to EN61326-1.

This product complies with requirements of the following European Community Directives: 89/ 336/ EEC (Electromagnetic Compatibility) and 73/ 23/ EEC (Low Voltage) as amended by 93/ 68/ EEC (CE Marking). However, electrical noise or intense electromagnetic fields in the vicinity of the equipment may disturb the measurement circuit. Measuring instruments will also respond to unwanted signals that may be present within the measurement circuit. Users should exercise care and take appropriate precautions to avoid misleading results when making measurements in the presence of electronic interference.

## **MAINTENANCE AND REPAIR**

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If there appears to be a malfunction during the operation of the meter, the following steps should be performed in order to isolate the cause of the problem.

1. Check the battery. Replace the battery immediately when the “” symbol appears on the LCD.
2. Review the operating instructions for possible mistakes in operating procedure.

Except for the replacement of the battery, repair of the meter should be performed only by a Factory Authorized Service Center or by other qualified instrument service personnel. The front panel and case can be cleaned with a mild solution of detergent and water. Apply sparingly with a soft cloth and allow to dry completely before using. Do not use aromatic hydrocarbons or chlorinated solvents for cleaning.

## **BATTERY REPLACEMENT**

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When the symbol “” is displayed, batteries need replacement.

Unscrew the battery cover and remove the battery. Insert a new battery of the same type (9V NEDA1604, JIS006P, IEC6F22) observing the proper polarity, re-screw the battery cover and reposition the protective holster.

- Type (9V NEDA1604, JIS006P, IEC6F22) observing the proper polarity

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