USER MANUAL

PHOTOVOLTAIC METER

PCE-SPM 5

ENGLISH



User manuals in various languages (français, italiano, español, português, nederlands, türk, polski) can be found via our product search on:
www.pce-instruments.com

WARNINGS

» Read understand and follow safety rules and operating instructions in the manual before using this tester.

» Do not use if the tester appears damaged or if it is not operating properly. If in doubt, replace the tester.

» Use caution with voltages above 35 volts DC as a shock hazard may exist.

» Do not exceed the maximum rated input limits.

INTERNATIONAL SAFETY SYMBOLS



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



This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present.



Double insulation

USES OF THIS PRODUCT

» Measure the maximum power output of photovoltaic panels. Under the same sunlight intensity, the greater the maximum power output, the better the quality of the photovoltaic panel.

» Determine the optimal power generation voltage for the photovoltaic panel in order to match it with batteries. By measuring the maximum power point and the corresponding Vmax, one can ascertain the current optimal power generation voltage.

DEVICE DESCRIPTION

1 - Test Interface
2 - LCD Display
3 - Test Button
4 - Up Button
5 - ESC Button
6 - Power On/Off Button
7 - TYPE-C Charging Port
8 - Down Button
9 - Mode/°C/°F Button



STATUS ICONS

	Indicates that the device is ready and testing can be performed.
	Indicates that the device is actively conducting a test, typically lasting 0 to 2 seconds.
	Indicates that the device is in a cooling phase, typically lasting 1 to 10 seconds.
	Indicates that the device has detected a high-temperature condition and must be cooled to a safe temperature range before further testing can occur.
	Indicates that the device has detected input values exceeding its measurement range.
	Indicates that a positive or negative voltage is detected at both ends of the device's measuring line, and the voltage is above DC 1 V.

ELECTRICAL SPECIFICATIONS

Function	Description	
Open Circuit Voltage (Voc)	0 ... 60V	Accuracy ±1 %
Short Circuit Current (Ise)	0 ... 30A	Accuracy ±1 %
MPPT Point Power (Pmax)	0 ... 800W	Accuracy ±5 %
MPPT Point Voltage (Vmax)	0 ... 60V	Accuracy ±5 %
MPPT Point Current (Imax)	0 ... 30A	Accuracy ±5 %
Device Temperature Protection	60-C (Working)	
Power Supply Mode	Li-ion Battery 3. 7V, 1 000mAh	
Charge characteristic	DC5V, 500mA	
Product dimensions	151.6 x 72.5 x 38mm	
Operatlng Temperature	-10 ... 50°C (14 ... 122°F)	
Storage Temperature	-10 ... 60°C (14 ... 140°F)	
Humidity	80% max.	

IMPORTANT NOTES

- This product can only be used for the measurement of a single photovoltaic panel, and the test lines must be directly connected to the terminal connections of the photovoltaic panel. Intermediate connections through other connecting wires or similar means are not permissible, as they would affect the accuracy of the measurement results.
- Do not measure photovoltaic panels with a power output exceeding 800W, as it may damage the equipment.
- Do not measure photovoltaic panels with a voltage greater than 60V, as it may damage the equipment.
- Do not measure photovoltaic panels with a current greater than 30A, as it may damage the equipment.
- When using the tester, do not connect the photovoltaic panel simultaneously to other controllers or devices.
- If the tester triggers a high-temperature alarm, wait for it to cool down naturally before resuming use.
- In manual mode, the tester prohibits measuring photovoltaic panels with a power output exceeding 100W. The equipment may continuously generate heat under overload conditions, and if the temperature becomes too high, the device will automatically stop the test.

KEY FUNCTIONS

Power On/Off Button

» In the powered-off state, briefly press the Power On/Off button to turn on the tester.

» In the powered-on state, long-press the Power On/Off button to turn off the tester.

Mode/°C/°F Button

» Briefly press the Mode/°C/°F button to select either the automatic mode or manual mode.

» Long-press the Mode/°C/°F button to select either Celsius (°C) or Fahrenheit (°F) temperature units.

UP and DOWN Buttons

» In automatic mode, briefly press the UP or DOWN buttons to switch between different screens for easy data viewing.

» In manual mode, briefly press the UP or DOWN buttons to adjust the set values.

TEST Button

When the device is in the ready state (indicated by √), in automatic mode, briefiy press the TEST button to initiate testing.

ESC Button

Briefly pressing the ESC button on the tester will always return you to the home screen.

SELF-PROTECTION

Reverse Connection Protection
When the device detects that the polarity of the measurement lines is reversed, a pop-up window will alert the user of the incorrect wiring on the interface. This alert will not be dismissed until the device detects that the polarity of the measurement lines is no longer reversed. A reminder will continue to display for 5 seconds. If correct wiring is detected within this time, another pop-up will inform the user that the wiring is now correct, and this message will also be displayed for 5 seconds.

Temperature Protection
When the temperature alarm icon appears on the tester, you need to wait for the device to naturally cool down to a safe temperature range before testing data again.

Overload Protection
When the test process exceeds the range icon, it indicates that the input exceeds the tester's range. Only when the input is within the range can the device test data.

OPERATION

Auto Mode/Quick Use
- Connect the tester to the positive and negative terminals of the photovoltaic panel using connecting cables (**Note:** During testing, the photovoltaic panel should not be connected to other controllers).
- On page 1, when the device is in the ready state (indicated by √), briefly press the TEST button, wait for a few seconds, and the test data will be displayed.
- Briefly press the UP or DOWN buttons to switch between different screens for data analysis.

Peak Data
The table data measured by the instrument is only a part of the data, not all sample data points. The group of data in red font represents data for the maximum power point.

IV /PV Curve
In the curve data, blue represents current. purple represents power, black represents voltage, Pmax is the maximum power value, Vmax is the voltage value at the maximum power point, and Imax is the current value at the maximum power point.

Batch Mode
Batch mode table data is used for recording temporary data during short-term, consecutive testing sessions. It can record the most recent 10 measurement results. The latest measurement data is synchronized ta the complete dataset and saved. However, these temporary data in the batch mode table will net be saved after the device is turned off.

Manual Mode
Briefly press the Mode/° C/° F button on the tester to enter or exit manual mode. In manual mode, it can only be used for photovoltaic panels with small power less than 100W to obtain more accurate data. In manual mode, use the UP and DOWN buttons to increase or decrease the overload current value, adjust the load power size, and stop pressing the button when the power reaches its maximum.
(**Note:** The power will increase before decreasing, and the maximum power is the value we need to measure). You can first long-press the UP button to increase the power, and when it approaches the maximum power value, adjust the power by briefly pressing the UP and DOWN buttons, Update data every 3 seconds.

AUTO SHUTDOWN

In the absence of button operations for a long time, to extend the battery life of the tester, it will automatically shut down after approximately 5 minutes.

ABOUT THE BATTERY

- In the powered-on state, when the battery is low, the battery status icon will turn red. When the battery is too low to reliably operate, the tester will shut down automatically.
- When the battery is low or very low, please fully charge the tester before continuing to use it.

DISPOSAL

For the disposal of batteries in the EU, the (EU) 2023/1542 directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose. In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law. For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations. If you have any questions, please contact PCE Instruments.

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