GOSSEN METRAWATT

PROFITEST PVSUN and PVSUN MEMO

Test Instruments for Testing PV Modules and Strings per DIN EN 62446 (VDE 0126-23)

3-349-672-15
12/7.19

These operating instructions are available in this, as well as other languages, in PDF format on the Internet at www.gossenmetrawatt.com.

Contents

1 Scope of Delivery

1 **PROFITEST PVsun** or **PROFITEST PVsun memo**
4 Batteries, 1.5 V IEC LR6 (AA)
3 Safety measurement cables, 1.5 m, red, blue and yellow: banana plug – banana plug
1 Solar plug adapter, red: MC3 socket – banana socket
1 Solar plug adapter, red: MC4 socket – banana socket
1 Solar plug adapter, blue: MC3 plug – banana socket
1 Solar plug adapter, blue: MC4 socket – banana socket
1 Plug-on safety test probe with socket, red
1 Plug-on safety alligator clip with socket, yellow-gray
1 Carrying case with foam insert
1 Set of operating instructions
1 PC software (**PROFITEST PVsun memo** only) can be downloaded from our website at: www.gossenmetrawatt.com
1 USB interface cable (**PROFITEST PVsun memo** only)

2 Significance of Symbols

Meanings of Symbols on the Instrument

Warning concerning a point of danger (attention: observe documentation!)

Protection class II device (continuous, doubled or reinforced insulation)

This device may not be disposed of with the trash. Further information regarding the WEEE mark can be accessed on the Internet at www.gossenmetrawatt.com by entering the search term “WEEE”.

Indicates European Conformity

Meanings of Symbols in the Operating Instructions

Caution! Dangerous Voltage

Attention!
While performing measurements in the presence of dangerous voltages, the **PROFITEST PVsun**/ **PROFITEST PVsun memo** should only be operated with PPE safety gloves as it involves the risk of hazardous contact.

Warning!
Warning concerning a source of danger

Attention!
Non-observance may result in distorted measurement results.

Note
Please observe!

Opening of Equipment / Repair

The equipment may be opened only by authorized service personnel to ensure the safe and correct operation of the equipment and to keep the warranty valid.

Even original spare parts may be installed only by authorized service personnel.

In case the equipment was opened by unauthorized personnel, no warranty regarding personal safety, measurement accuracy, conformity with applicable safety measures or any consequential damage is granted by the manufacturer.

Measuring Categories and their Significance per IEC 61010-1

CAT	Definition
0	Measurements in other electrical circuits which are not directly connected to the mains: *e.g. electrical systems in motor vehicles and aircraft, batteries etc.*
II	Measurements in electrical circuits which are electrically connected to the low-voltage mains: *via plug, e.g. in household, office and laboratory applications*
III	Measurements in building installations: *Stationary consumers, distributor terminals, devices connected permanently to the distributor*
IV	Measurements at power sources for low-voltage installations: *meters, mains terminals, primary overvoltage protection devices*

3 Introduction

These operating instructions contain information and directions which are necessary for safe operation and use of the instrument. Before using the instrument, the operating instructions must be carefully read and all points contained therein must be followed correctly. Non-observance of the operating instructions, as well as warnings and directions included therein, may result in severe injury to the user or damage to the instrument.

The **PROFITEST PVSUN** is used for simple testing of solar cells and modules. The terms used in these operating instructions to designate systems for generating electrical power from sunlight include: solar system, photovoltaic system, PV system and the like.

Scope of Functions

- Voltage measurement to 1000 V DC
- Short circuit current measurement to 20 A DC
- Selection of insulation test voltage: 250, 500 or 1000 V DC
- Insulation measurement to 20 MΩ with display of limit value
- Testing of protective conductor continuity
- Earth fault measurement
- Polarity check
- Backlit LCD panel
- Optional temperature measurement

4 Transport and Storage

Please retain the original packaging for subsequent shipment of the instrument. Transport damages due to inadequate packaging are excluded from the guarantee.

The instrument may only be stored in dry, closed rooms.

If the instrument is subjected to extreme temperature during transport, it requires at least 2 hours for acclimatization before it is switched on.

5 Safety Precautions

The instrument has been manufactured and tested in accordance with IEC/EN 61010-1, “Safety requirements for electrical equipment for measurement, control and laboratory use”, and has been shipped from the factory in flawless technical safety condition. In order to assure that this condition is retained, the user must observe the safety precautions included in these operating instructions.

Caution! Dangerous Voltage
In order to prevent electrical shock, corresponding safety precautions must be implemented when working with voltages of greater than 120 V (60 V) DC or 50 V (25 V) AC TRMS. In accordance with DIN VDE, these values specify the limit for exposed (touchable) voltages (the values in parentheses apply to, for example, the fields of medicine and agriculture).

Before each measurement, make sure that the measurement cables and the measuring instrument are in flawless condition. The measuring instrument may only be used within the specified measuring ranges.

If the safety of the user is no longer assured, the instrument must be removed from service and secured against unintentional use.

Safety of the user is no longer assured if the instrument:

- Demonstrates apparent damage
- No longer performs the desired measurements
- Has been stored for too long under unfavorable conditions
- Has been subjected to mechanical stressing during transport

The instrument may not be opened, dismantled or modified in any way. The instrument may only be used with recommended accessories. The use of unsuitable accessories is impermissible.

Trade association accident prevention regulations for electrical systems and operating equipment must be adhered to during all work with the instrument.

Do not allow the **instrument to warm up** due to exposure to direct sunlight. Flawless functioning and a long service life cannot otherwise be assured.

Attention!
The **internal warming of the test instrument** is measured electronically. An inpermissible overheating is signalled by I_{SC} and **°C** in the display while further measurements are being disabled. Allow the test instrument to cool down before continuing measurements.

6 Use for Intended Purpose

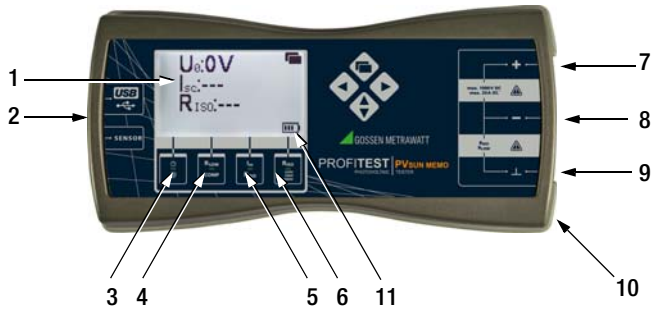
The instrument may only be used under the conditions and for the purposes for which it has been designed. In this respect, special attention must be given to safety precautions, technical data regarding ambient conditions and use in a dry environment.

Warning!
The instrument may not be operated at measuring category II, III and IV mains power circuits.
In accordance with EN 61010-1:2010, the instrument has been designed without a rated measuring category, and may only be used at direct voltage circuits with up to 1000 V without transient overvoltages.

Operating safety is no longer assured in the event of modification or alteration. The instrument may only be opened by authorized service technicians.

Never operate the instrument at a higher voltage than specified in the technical data! The instrument may otherwise be destroyed or permanently damaged.

7 Operating and Display Elements



1 LCD panel with background illumination
2 Sensor socket for temperature measurement (optional)
3 On/Off switch / background illumination
4 Low-resistance measurement R_{LOW} / measurement cable compensation **COMP**
5 Short-circuit measurement I_{SC} / insulation resistance measurement R_{ISO} per EN 62446
6 General insulation resistance measurement RISO / selection of insulation test voltage
7 Measurement input +
8 Measurement input – / insulation measurement / continuity test
9 Measurement input ground terminal / insulation measurement / continuity test
10 Back: battery compartment
11 Battery level indicator

Battery full Battery weak

8 Initial Start-Up

The **PROFITEST PVSUN** is supplied with power from four AA batteries (1.5 V IEC LR6). The batteries must be inserted before the instrument can be used.

- ➪ Remove the battery compartment lid on the back of the instrument by loosening the two Phillips head screws.
- ➪ Insert the batteries. Be sure to observe the polarity symbols which are embossed into the floor of the battery compartment.
- ➪ Replace the battery compartment lid and retighten the screws.

Attention!
The test instrument may only be operated with installed battery compartment lid.

9 Measurements

Warning!
The photovoltaic system's plug connectors may not be disconnected under load. Please observe warnings and instructions provided by the plug manufacturer.

Caution! Dangerous Voltage
Solar modules continuously generate current, even when shaded. Regulations for working with live voltage must be adhered to during all work.

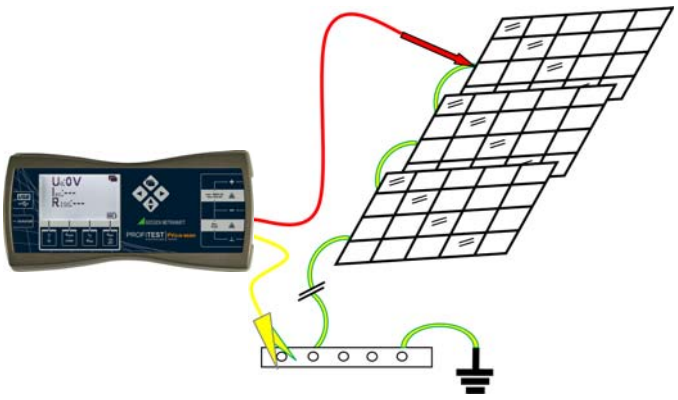
Switching the PROFITEST PVSUN On

- ➪ The test instrument is switched on by pressing the ⏻ key.
- ➪ After the test instrument has been switched on, background illumination can be switched on by briefly pressing the same key once again.
- ➪ Briefly pressing the key a third time switches background illumination back off.
- ➪ The test instrument can be switched off by pressing and holding the key for longer than 2 seconds.

9.1 Testing Protective Conductor Continuity per EN 62446 (VDE 0126-23) (> 200 mA)

If a protective conductor or an equipotential bonding conductor is included at the DC side of the photovoltaic system, its electrical connection must be tested for continuity.

The connection to the main grounding terminal must also be tested.



Warning!
Disconnect all solar modules from the system before performing the measurement.

Compensation for Measurement Cable Resistance

Ohmic measurement cable resistance can be subtracted from the measurement results automatically. Proceed as follows in order to determine the resistance offset value:

- ➪ Switch the **PROFITEST PVSUN** test instrument on.
- ➪ Connect the measurement cables to the (–) and (⊥) sockets and short-circuit the plug-on test probes.
- ➪ Press and hold the **COMP** key for at least 2 seconds in order to trigger offset resistance measurement.
  Symbol [0 Ω] briefly appears.
  The following display appears after completion of the measurement: R_{LOW}: 0.0 Ω .

The measured R_{OFFSET} value is not displayed, but is permanently stored internally and is subtracted from the actual result of all subsequent R_{LOW} measurements, until a new offset resistance value is acquired.

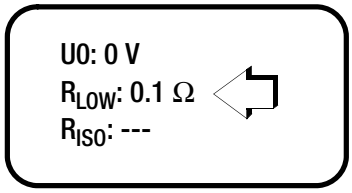
If the measured value of the connected cable is > 5 Ω the symbol [0 Ω] briefly appears. Compensation of measurement cable resistance is not possible.

Protective Conductor Resistance Measurement

- ➪ Connect the (–) socket to a protective conductor terminal at the solar module and the (⊥) socket to the equipotential bonding busbar.
- ➪ Briefly press the R_{LOW} key.

Measurement is started. The R_{LOW} resistance value measured for the protective conductor system appears at the display:

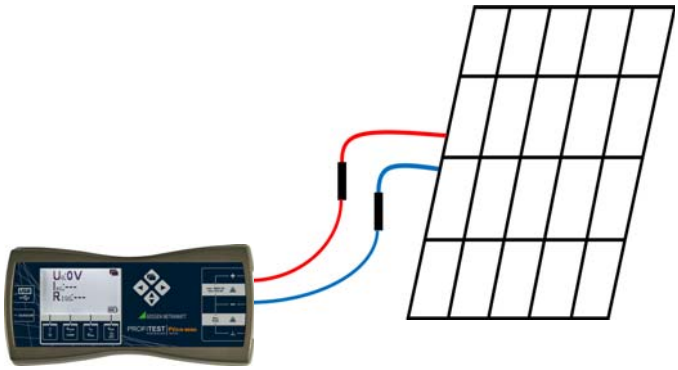
Example



Attention!
Measurement results may be distorted due parallel connected impedances at load current circuits, as well as equalizing current.

9.2 Polarity Test / Measuring Open Circuit Voltage U_0 per EN 62446 (VDE 0126-23)

Warning!
Disconnect the solar module under test from the system before performing measurement.

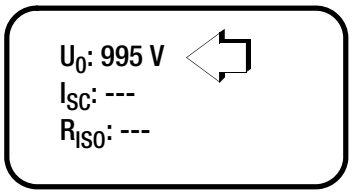


- ➪ Connect the **PROFITEST PVSUN** test instrument to the module with the help of suitable solar plugs.

➪ Switch the **PROFITEST PVSUN** test instrument on.

The module's open circuit voltage U_0 appears at the display.

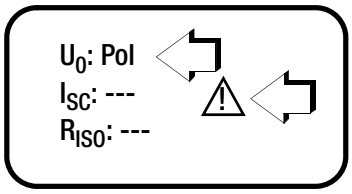
Example



Note

In the case of incorrect polarity, a warning symbol appears to the right of the voltage display.

Example

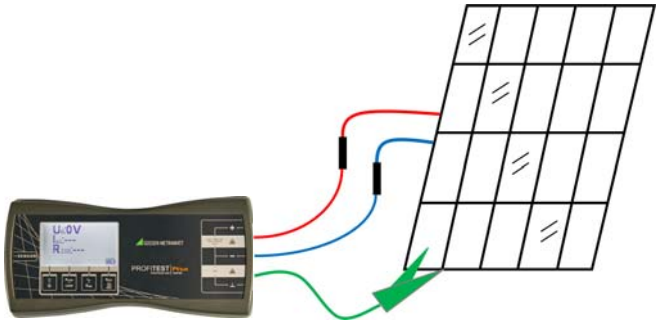


➪ Reverse polarity at the solar module and start testing over again.

9.3 Measuring Short-Circuit Current I_{SC} per EN 62446

Warning!

Disconnect the solar module under test from the system before performing the measurement.



➪ Connect the **PROFITEST PVSUN** test instrument to the module with the help of suitable solar plugs.

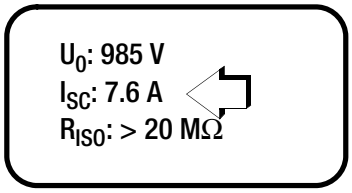
➪ Switch the **PROFITEST PVSUN** test instrument on.

The module's open circuit voltage U_0 appears at the display.

➪ Press the I_{SC} key.

Open circuit voltage U_0 and short-circuit current I_{SC} appear at the display:

Example

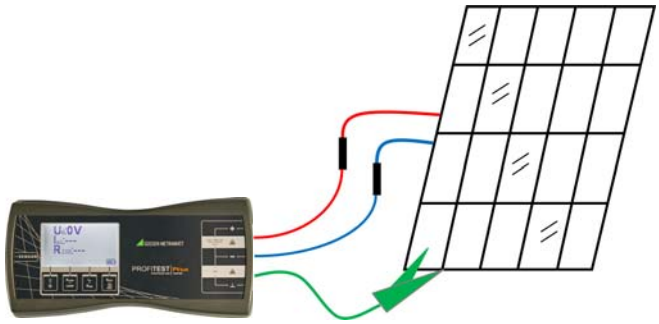


The (+) and (–) terminals at the solar module are short circuited during the measurement, and momentary short-circuit current is measured. Insulation resistance is measured at the same time (see section 9.4).

9.4 Testing Insulation Resistance per EN 62446

Warning!

Disconnect the solar module under test from the system before performing measurement.



Attention!

Insulation measurement per EN 62446 is executed between short circuited (+) / (–) and (⊥) terminals.

➪ Connect the **PROFITEST PVSUN** test instrument to the module with the help of suitable solar plugs.

➪ Connect the ground terminal at the **PROFITEST PVSUN** to the module frame.

➪ Switch the **PROFITEST PVSUN** test instrument on.

The module's open circuit voltage U_0 appears at the display.

Selecting the Test Voltage

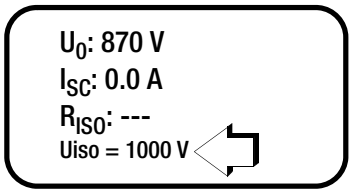
➪ Press and hold the **RISO/250V/500V/1000V** key for at least 2 seconds.

The currently selected test voltage appears the display.

➪ Select the required insulation test voltage by briefly and repeatedly pressing the R_{ISO}**/250V/500V/1000V** key.

The last selected value is saved after a short period of time, and is then cleared from the display.

Example



Executing the Insulation Resistance Measurement

➪ Press the I_{SC}/R_{ISO} key and read the measured value from the display.

The (+) and (–) terminals at the solar module are short circuited during the measurement, and momentary short-circuit current is measured. Insulation resistance is measured at the same time.

Minimum Permissible Limit Values for Insulation Resistance Relative to Insulation Test Voltage per EN 62446

System Voltage (U0 x 1.25)	Test Voltage	Limit Value
< 120 V	250 V	0.5 MΩ
120 to 500 V	500 V	1 MΩ
> 500 V	1000 V	1 MΩ

Note
If the limit value is fallen short of,
< 1 MΩ or < 0.5 MΩ appears for R_{ISO}.

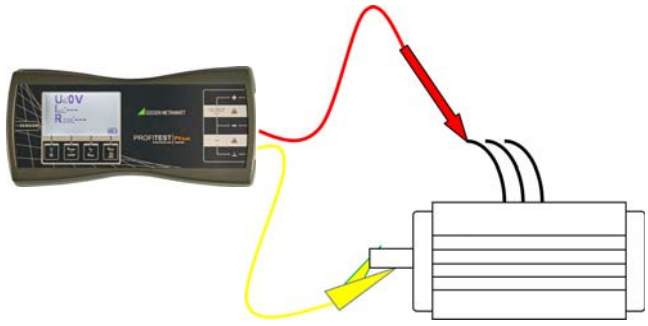
Example

U_0: 0 V
I_{SC}: 0.0 A
R_{ISO}: < 1 MΩ

9.5 General Insulation Resistance Measurement

The **PROFITEST PVSUN** test instrument is additionally equipped with system-independent insulation testing. This is helpful, for example, when testing systems or supply lines when no modules have yet been installed. All insulations tests known to date can be performed.

Warning!
The test object must be potential-free. Assure absence of voltage with the help of a suitable measuring instrument, for example the METRAVOLT 12D+L voltage tester.



Note
General insulation measurement is executed between short circuited (–) and (⊥) terminals.

- Connect the (–) and (⊥) terminals at the **PROFITEST PVSUN** to the device under test.
- Switch the **PROFITEST PVSUN** test instrument on.

Selecting the Test Voltage

- Press and hold the **RISO/250V/500V/1000V** key for at least 2 seconds.

The currently selected test voltage appears at the display.

- Select the required insulation test voltage by briefly and repeatedly pressing the **R_{ISO}/250V/500V/1000V** key.

The last selected value is saved after a short period of time, and is then cleared from the display.

Example

U_0: 0 V
I_{SC}: 0.0 A
R_{ISO}: ---
Uiso = 1000 V

Executing the Insulation Resistance Measurement

- Press the **R_{ISO}/250V/500V/1000V** key and read the measured value from the display.

Example

U_0: 0 V
I_{SC}: 0.0 A
R_{ISO}: > 20 MΩ

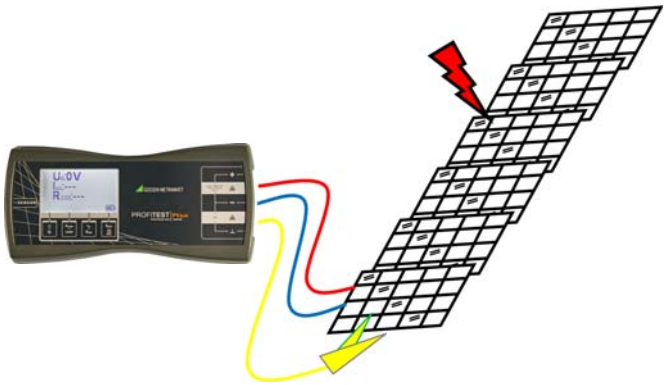
Note
If the minimum permissible limit value is fallen short of,
< 1 MΩ or < 0.5 MΩ appears for R_{ISO}.

9.6 Ground Fault Test

If the test instrument recognizes an inadmissible, low insulation value during I_{SC}/R_{ISO} measurement, the instrument tests for possible ground fault.

If a ground fault occurs within the system, the error can be narrowed down on the basis of the voltage ratio.

Warning!
Disconnect all solar modules from the system before performing the measurement.



- Connect the **PROFITEST PVSUN** to the module with the help of suitable solar plugs.
- Connect the ground terminal at the **PROFITEST PVSUN** to the module frame.
- Switch the **PROFITEST PVSUN** test instrument on.

Momentary open circuit voltage is displayed.

At the same time, a second voltage (**Ue**) appears in the event of a ground fault.

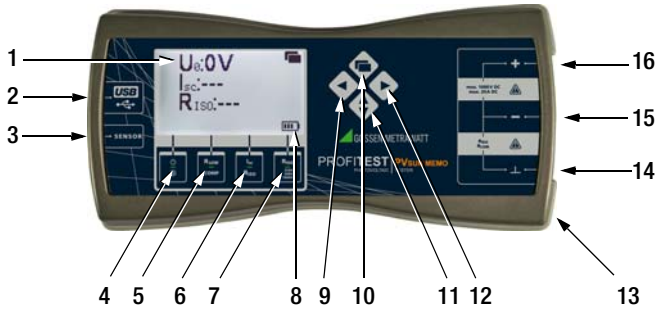
Example

U_0: 144 V
I_{SC}: 0.0 A
Ue: 48 V

10 Data Storage with PROFITEST PVSUN MEMO

The **PROFITEST PVSUN MEMO** test instrument is equipped with an internal memory for the storage of 10,240 data records. The stored data can be read out via a USB port for subsequent evaluation from a PC. Furthermore, the included PC software allows for the creation of individual test structures.

10.1 Operating and Display Elements



1 LCD panel with background illumination
2 USB interface
3 Sensor socket for temperature measurement (optional)
4 ON/OFF switch / background illumination
5 Low-resistance measurement R_{LOW} / measurement cable compensation **COMP**
6 Short-circuit measurement I_{SC} / insulation resistance measurement R_{ISO} per EN 62446
7 General insulation resistance measurement R_{ISO} / selection of insulation test voltage
8 Battery level indicator

Battery full Battery weak

9 Selection of objects or strings
10 Switch between display / activation of storage function
11 Switch between objects and strings
12 Selection of objects or strings
13 Back: battery compartment
14 Measuring input ground terminal (⊥) / insulation measurement / continuity test
15 Measuring input – / insulation measurement / continuity test
16 Measuring input +

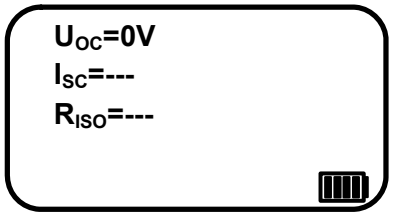
10.2 Function Description

Switch between standard measurement display and storage display

Switch to previous object or string

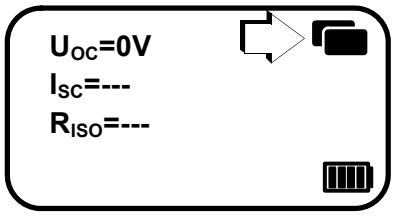
Switch to next object or string. If the last object or string is reached, a new object or a new string can be created by pushing this key (> 2 s).

Switch between objects and strings. Symbol ► indicates whether objects or strings are active (e. g.: ►OBJ:Object1).



Standard measurement display without memory function

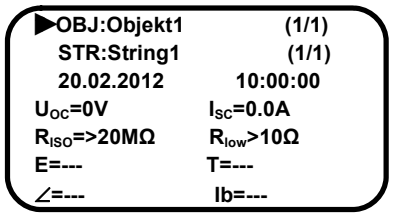
The storage function is not activated before switch-over to storage display, see screenshot below.



Standard measurement display with activated storage function.

If a measurement is performed, the measured values are stored under the object and string selected before.

Note
Stored values are overwritten in the activated object/ string.



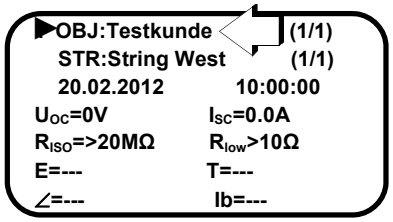
Storage display

►OBJ:Object1 / STR:String1 are active. Presently, one object (1/1) and one string (1/1) have been created.

Date / time

Measured values currently stored (meaning of abbreviations):

U_{OC} Open-circuit voltage
I_{SC} Short-circuit voltage
R_{ISO} Insulation resistance
R_{low} Low-resistance measurement
E Solar irradiation (optional with **PROFITEST PV SUN-SOR**)
T Module temperature (optional with **PROFITEST PVSUN-SOR**)
∠ Inclination angle of module (optional with **PROFITEST PVSUN-SOR**)
I_b Operating current (optional with current clamp)



(Alphanumeric) names can be assigned to objects and strings with the PC software (e. g. **OBJ: test client**).

Note
If objects and strings are extended in the test instrument, it is not possible to assign alphanumeric characters. There is only an incrementation instead (gradual increase by one character each).

11 Application of PC Software

Individual test structures can be created at the PC with the included software. This structure makes it possible to assign measurements to the objectes and strings of different units and buildings. For use at the construction site, the respective test structures are first transferred to the test instrument via the USB interface. After performing the measurements, the test instrument is read out and the structures are represented together with the measured values in tabular form.

11.1 System Requirements

Hardware

- Processor and RAM see minimum requirements of the respective operating system
- VGA monitor with a resolution of at least 1024 x 768 pixels
- Hard disc with at least 12 MB available memory
- Both input devices (mouse / keyboard)
- One or several USB interfaces

Operating System – Software

- Windows Vista, Windows 7, 8 or 10

11.2 Installation

The latest version of the PC software PV SUN MEMO Control Center is available for free download as a zip file from our homepage:

www.gossenmetrawatt.com
→ PRODUCTS → MEASURING AND TEST TECHNOLOGY → Test Technology → Testing of Electric Installations and Systems → PROFITEST PVSUN (MEMO)

The zip file must be unpacked and stored in a directory. The setup file has been placed in this directory. Double-click on the setup to launch the installation routine. An assistant guides you through the complete installation.
The installation directory and the program file can be selected at your own discretion.

11.3 Initial Startup of the Device

➪ Switch on the test instrument and connect it with your PC.

Windows announces that a device has been connected and that the driver must be installed.

➪ Select manual installation „Install software from a list or a specific source“.

➪ Click on „Search“ in the next menu and select directory „C:\Programme\PVSUN MEMO Control Center\USB Driver“ (unless you have changed the installation path).

➪ Ignore the message regarding unknown provenance of the software.

➪ Complete the driver installation.

➪ Please check: „PVSUN MEMO Memory (COMxx)“ should be displayed in the device manager under Connections.

➪ Start the installed program „PVSUN MEMO Control Center“.

➪ Click on icon „Search device“.

11.4 Creation of Structures and Transfer to the Test Instrument

Create a new structure by clicking on icon „New“ under „Measuring Data“.

Attention!
Clicking on „New“ deletes the structures and measuring data indicated before.

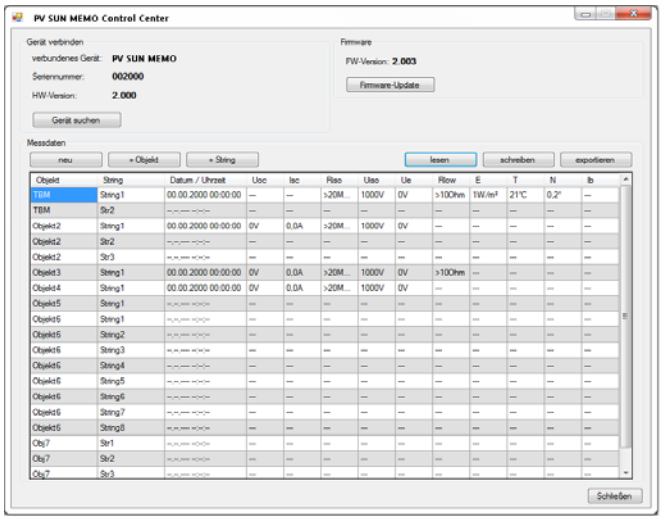
You can freely extend a structure by clicking on icon „+Object“ or „+String“. Repeat these steps until you have created the requested structure. By clicking on the object or string denomination you can change the name at your discretion (alphanumeric).
The number of possible data records = objects which can be transferred to the test instrument, amounts to approx. 10,000.
Click on the „Write“ icon for transferring the data records to the test instrument.

Setting of Date/Time

Date/time in the test instrument are synchronized automatically upon importing the file (structure) from the PC.

11.5 Reading Out and Exporting Test Data

After performing the measurements, click on icon „Read“ for reading out the data records (structures and measured values) from the test instrument. The structures are presented in tabular form together with the measuring data. The column width of the header elements can be adjusted by dragging the column border lines to the right or to the left.



For storage and subsequent evaluation of the measuring data, press icon „Export“. The data are written into a csv file so that they can be exported to other programs, such as Microsoft Excel.

Deleting of Structures

The structural contents are automatically deleted when an empty structure is transmitted to the test instrument.

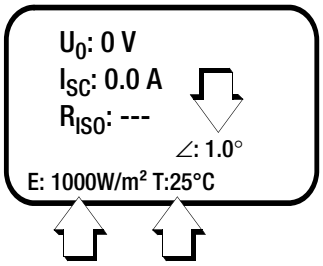
12 Measurement of irradiation, temperature and inclination with PROFITEST PVSUN-SOR (optional)

Warning!
Hot surfaces may cause burns.

- Connect the **PROFITEST PVSUN-SOR** to the sensor socket.
- Place the **PROFITEST PVSUN-SOR** onto the surface of the photovoltaic module.
- Switch the **PROFITEST PVSUN** / **PROFITEST PVSUN MEMO** on.

The display shows the monentary irradiation, the surface temperature and the inclination angle of the modules.

Example:



Characteristic Values PROFITEST PVSUN-SOR

Irradiance	Measuring range 0 … 2000 W/m² Resolution 1 W/m² Cell monocrystalline, approx. 27 x 16 mm Accuracy ±15% (T = 25 °C)
Temperature Measurement	Measuring range –55…99 °C Resolution 1 °C Accuracy ±1 °C
Inclination Angle	Measuring range 0 … 90° Resolution 0,1° Accuracy ±1°
Cable length	approx. 10 m
Power Supply	via **PROFITEST PVSUN** / **PROFITEST PVSUN MEMO** approx. 3,3 V / 3,1 mA
Dimensions	approx. 120 x 65 x 27 mm
Weight	approx. 150 g

13 Characteristic Values

Voltage Measurement U0

Measuring range	0 to 100 V to 1000 V DC (no transient voltages)
Resolution	1 V
Accuracy	±(2% rdg. + 1 d)

Current (direct)

Measuring range	0 to 20 A DC
Voltage range	2 to 1000 V DC
Resolution	0.1 A
Accuracy	±(1% rdg. + 1 d)
Overcurrent protection	Max. 24 A (shutdown of internal circuit)

Insulation Resistance Measurement RISO

Test voltage	250 V DC	500 V DC	1000 V DC
Measuring range	0.5 MΩ to 1 MΩ	1 MΩ to 20 MΩ	1 MΩ to 20 MΩ
Resolution	0.1 MΩ	1 MΩ	1 MΩ
Accuracy	±(1% rdg. + 1 d)	±(1% rdg. + 2 d)	±(1% rdg. + 2 d)
Limit value	> 0.5 MΩ	> 1 MΩ	> 1 MΩ
No. of measurements	Approx. 1000 (with battery set per IEC LR6)		

Earth Fault Measurement

Measuring range	0 to 1000 V DC
Resolution	1 V
Accuracy	±(5% rdg. + 1 d)

Low-Resistance Measurement

Measuring range	0 to 10 Ω
Test current	> 200 mA
Resolution	0.1 Ω
Accuracy	±(1% rdg. + 1 d)
No. of measurements	Approx. 500 low-resistance measurements (batteries: 1.5 V per IEC LR6)

Display

LCD	Backlit multiple display Dot matrix: 128 x 64 pixels

Reference Conditions

Ambient temperature	+23 °C ±2 K
Relative humidity	40 to 75%
Battery voltage	6 V ± 1 V

Ambient Conditions

Operating temperature	0 to +40 °C
Storage temperature	–10 °C to 60 °C
Relative humidity	< 80%, no condensation allowed
Elevation	Max. 2000 m above sea level

Power Supply

Batteries	4 ea. 1.5 V IEC LR6, AA, AM3, MN1500
Consumption	Approx. 20 µA when switched off Approx. < 30 mA during normal operation Approx. 190 mA with backgr. illumination

Electrical Safety

Voltage range	1000 V

Electromagnetic Compatibility (EMC)

EMC directive	EMC 2004/108/EC
Basic standard	EN 61326-1:2006

Data Memory (PROFITEST PVSUN MEMO only)

Storage capacity	max. 10,240 data records
Memory type	non-volatile flash memory (data are preserved even if batteries are depleted)

Data Interface (PROFITEST PVSUN MEMO only)

Type	USB 2.0 (USB 2.0 full speed (12 Mbps) compatible)
Connection	mini-USB type B (5-pin)
Cable	USB 2.0 cable (A plug | Mini-B-)

Mechanical Design

Protection	Housing: IP 42 per DIN VDE 0470 part 1/EN 60529
Dimensions	209 x 98 x 35 mm
Weight	Approx. 500 g with batteries

14 Maintenance

14.1 Battery Replacement

If the battery level indicator displays only minimal remaining battery capacity (only one segment appears, see figure at right), the batteries must be replaced.

- ➪ Switch the instrument off and disconnect it from all measuring circuits.
- ➪ Remove the battery compartment lid on the back of the instrument by loosening the two Phillips head screws.
- ➪ Remove the depleted batteries.
- ➪ Insert new batteries. Be sure to observe the polarity symbols which are embossed into the floor of the battery compartment.
- ➪ Replace the battery compartment lid and retighten the screws.

After inserting new batteries, all four segments should appear at the display.

14.2 Housing

No special maintenance is required for the housing. Keep outside surfaces clean. Use a slightly dampened cloth for cleaning. Avoid the use of cleansers, abrasives or solvents.

Return and Environmentally Sound Disposal

The instrument is a category 9 product (monitoring and control instrument) in accordance with ElektroG (German electrical and electronic device law). This device is subject to the RoHS directive. Furthermore, we make reference to the fact that the current status in this regard can be accessed on the Internet at www.gossenmetrawatt.com by entering the search term WEEE.

In accordance with WEEE 2012/19/EU and ElektroG, we identify our electrical and electronic devices with the symbol in accordance with DIN EN 50419 which is shown at the right. Devices identified with this symbol may not be disposed of with the trash. Please contact our service department regarding the return of old devices (see address in section 15).

If the batteries used in your instrument are depleted, they must be disposed of properly in accordance with valid national regulations. Batteries may contain pollutants and heavy metals such as lead (Pb), cadmium (Cd) and mercury (Hg).

The symbol at the right indicates that batteries must not be disposed of with the trash, and must be brought to a designated collection point.

15 Repair and Replacement Parts Service Calibration Center* and Rental Instrument Service

If required please contact:

GMC-I Service GmbH
Service Center
Beuthener Strasse 41
90471 Nürnberg • Germany
Phone: +49 911 817718-0
Fax: +49 911 817718-253
e-mail service@gossenmetrawatt.com
www.gmci-service.com

This address is only valid in Germany.

Please contact our representatives or subsidiaries for service in other countries.

* DAkkS Calibration Laboratory for Electrical Quantities
D-K-15080-01-01 accredited per DIN EN ISO/IEC 17025

Accredited measured quantities: direct voltage, direct current values, DC resistance, alternating voltage, alternating current values, AC active power, AC apparent power, DC power, capacitance, frequency and temperature

16 Product Support

If required please contact:

GMC-I Messtechnik GmbH
Product Support Hotline
Phone: +49-911-8602-0
Fax: +49 911 8602-709
e-mail: support@gossenmetrawatt.com

Edited in Germany • Subject to change without notice • PDF version available on the Internet

GOSSEN METRAWATT

GMC-I Messtechnik GmbH
Südwestpark 15
90449 Nürnberg • Germany

Phone: +49 911 8602-111
Fax: +49 911 8602-777
e-mail: info@gossenmetrawatt.com
www.gossenmetrawatt.com