

# PROFITEST PVsUN and PVsUN MEMO

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

3-349-671-03  
9/7.15

- **Voltage measurement:** 0 to 1000 V DC
- **Current measurement (direct):** 0 to 20 A DC
- **Insulation resistance measurement**  
Measuring range: 0 to 20 MΩ  
Test voltages: 250, 500 and 1000 V DC
- **Polarity test**
- **Ground fault measurement:** 0 to 1000 V DC
- **Testing for protective conductor continuity:** 0 to 10 Ω
- **Backlit LCD panel**
- **Compact and rugged:**  
for service calls under harsh conditions
- **Extensive accessories**



PROFITEST PVsUN

### PROFITEST PVsUN MEMO

- **Bidirectional USB interface**
- **Integrated memory** (> 10,000 data records)
- **PC software** (preparation of individual test structures, read-out and evaluation of measured values)

### PROFITEST PVsUN-SOR

- **Sensor for acquiring irradiation, temperature and inclination angle**



PROFITEST PVsUN MEMO

## Applications

With the PROFITEST PVsUN, all required electrical safety tests at photovoltaic systems can be executed simply and safely in accordance with DIN EN 62446.

The test instrument is suitable for testing PV modules and strings with up to 1000 V / 20 A.

In addition to insulation measurement, polarity testing and ground fault testing, protective conductor continuity can also be tested.

The tester is distinguished by its ergonomic design and easy handling with a weight of only 500 g.

## Applicable Regulations and Standards

Regulations and standards in accordance with which the test instrument is manufactured and tested:

|                                       |                                                                                                                    |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| IEC 61010-1 / EN 61010-1 / VDE 0411-1 | Safety requirements for electrical equipment for measurement, control and laboratory use – General requirements    |
| EN 60529 VDE 0470, part 1             | Test instruments and test procedures Degrees of protection provided by enclosures (IP code)                        |
| DIN EN 61326-1 VDE 0843-20-1          | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements |

### Regulations and Standards for Use of the Test Instrument

|                       |                                                                                                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|
| IEC 62446 VDE 0126-23 | Grid connected photovoltaic systems – Minimum requirements for system documentation, commissioning tests and inspection |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|

# PROFITEST PVSUN and PVSUN MEMO

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

### Characteristic Values

#### Voltage Measurement U<sub>0</sub>

|                 |                                           |
|-----------------|-------------------------------------------|
| Measuring range | 0 to 1000 V DC<br>(no transient voltages) |
| Resolution      | 1 V                                       |
| Accuracy        | ±(2% rdg. + 1 d)                          |

#### Current (direct)

|                        |                                          |
|------------------------|------------------------------------------|
| Measuring range        | 0 to 20 A DC, measuring time < 1 s       |
| 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 R<sub>ISO</sub>

| 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           |
| Number 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)                                                          |
| Number of measurements | approx. 500 low-resistance measurements<br>(batteries: 1.5 V per IEC LR6) |

### Display

|     |                                                                              |
|-----|------------------------------------------------------------------------------|
| LCD | Multiple display with background illumination<br>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<br>approx. < 30 mA during normal operation<br>approx. 190 mA with background 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)

|                 |                                                                                 |
|-----------------|---------------------------------------------------------------------------------|
| Memory capacity | max. 10,240 data records                                                        |
| Memory type     | non-volatile flash memory<br>(data are retained even if batteries are depleted) |

### Data Interface (PROFITEST PVSUN MEMO only)

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

### Mechanical Design

|            |                                                    |
|------------|----------------------------------------------------|
| Protection | Housing: IP 42<br>per DIN VDE 0470 part 1/EN 60529 |
| Dimensions | 209 x 98 x 35 mm                                   |
| Weight     | approx. 500 g with batteries                       |

# PROFITEST PV<sub>SUN</sub> and PV<sub>SUN</sub> MEMO

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

### Scope of Delivery

- 1 PROFITEST PV<sub>SUN</sub> or PROFITEST PV<sub>SUN</sub> MEMO test instrument
- 1 Set of 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 PV<sub>SUN</sub> MEMO only) can be downloaded from our website at: [www.gossenmetrawatt.com](http://www.gossenmetrawatt.com)
- 1 USB interface cable (PROFITEST PV<sub>SUN</sub> MEMO only)

### Included Accessories

#### Safety Measurement Cables and Solar Plug Adapters



#### Carrying Case



### Optional Accessories

#### PROFITEST PV<sub>SUN</sub>-SOR (Z360N)



#### PV Adapter Set MC3-MC4 (Z360K)



#### PV Adapter Set SUNCLIX-MC4 (Z360H)

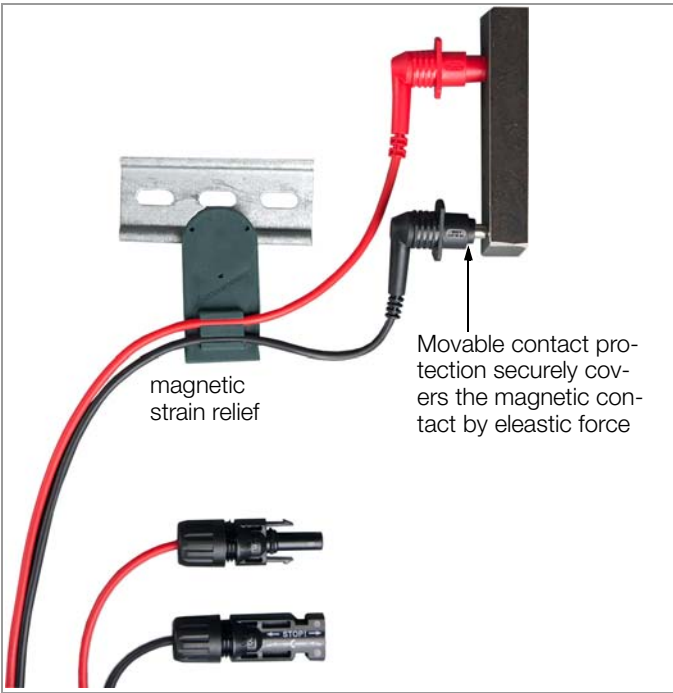


#### PV Adapter Set TYCO-MC4 (Z360J)



# PROFITEST PVSUN and PVSUN MEMO

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



| Description                                                                                                                                                                                                                                                                                                   | Type                            | Article Number     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------|
| Test instrument for testing PV modules and strings with up to 1.000 V / 20 A per DIN EN 62446. Insulation measurement with up to 1.000 V test voltage, polarity test, ground fault test and protective conductor continuity test. With measurement cables and adapters in test case.                          | PROFITEST PVSUN                 | M360C <sup>1</sup> |
| same as PROFITEST PVSUN, additionally with internal memory, bi-directional interface, software and USB interface cable                                                                                                                                                                                        | PROFITEST PVSUN MEMO            | M360D <sup>1</sup> |
| Test equipment consisting of PROFITEST PVSUN MEMO, PROFITEST PVSUN-SOR, Set 2 – Magnetic Measuring Tips and test case                                                                                                                                                                                         | PV SUN PACKAGE                  | M360E              |
| Sensor for irradiation, temperature and inclination angle for PROFITEST PVSUN and PROFITEST PVSUN MEMO                                                                                                                                                                                                        | PROFITEST PVSUN-SOR             | Z360N <sup>D</sup> |
| Solar connection cable, length 300 mm, diameter 4 mm                                                                                                                                                                                                                                                          | PV Adapter Set MC3-MC4          | Z360K              |
| Solar connection cable, length 300 mm, diameter 4 mm                                                                                                                                                                                                                                                          | PV Adapter Set SUNCLIX-MC4      | Z360H              |
| Solar connection cable, length 300 mm, diameter 4 mm                                                                                                                                                                                                                                                          | PV Adapter Set TYCO-MC4         | Z360J              |
| 2 magnetic measuring tips with contact protection – Set with magnetic holder 5,5 mm in diameter insulated with MC4 plug (for Photovoltaic Tester), CAT III 1.000 V / 4 A, temperature between –10 °C and 60 °C, under standard conditions and flat-head screws holding force 1.200 g vertical to contact area | Set 2 – Magnetic Measuring Tips | Z502Y              |

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