

# Photovoltaic and electrical installations tester

## MI 3109 EurotestPV Lite



MI 3109 EurotestPV Lite is a photovoltaic (PV) tester. It performs all necessary tests required on photovoltaic installations. This includes all of the tests as required by EN 62446, but also includes I - U characteristic measurements, calculation of STC values as required by EN 61829 and power measurements on Inverter's DC and AC sides (single-phase only). MI 3109 EurotestPV Lite is optimized for PV tests therefore the Autotest operation mode is implemented which is intended to perform a complete set of test needed for verification of PV installations according to EN 62446 with pressing off only one button. With this instrument the tests for the first inspection of PV systems as well as periodic maintenance tests, evaluation tests or troubleshooting tests are possible. With optional accessories the same PV test functionality as with MI 3108 EurotestPV is available.

### MEASURING FUNCTIONS

#### Photovoltaic installations:

##### • Measurements on DC side of PV installation:

- Insulation resistance;
- Continuity of PE conductors;
- Uoc (Open Circuit Voltage) and Isc (Short Circuit Current);
- I - U curve of PV modules and strings;
- Voltage, current and power of strings and inverters;
- Irradiance;
- Module temperature.

##### • Measurements on AC side of PV installation:

- Voltage, current, power;
- Efficiency of PV module, inverter, PV system calculation.

### KEY FEATURES

- **Insulation and I-U curve measurements in one instrument:** with MI 3109 only one instrument is needed to perform insulation measurements with up to 1000V for proofing the PV installation safety and I-U curve measurements needed for evaluation and troubleshooting of PV modules or strings.
- **Autotest:** This function is intended to perform a complete set of tests according to EN 62446 on PV modules or strings with pressing only one button:
- insulation resistance between positive output and earth;

- Insulation resistance between negative output and earth.
- Open circuit voltage.
- Short circuit current.
- **Calculation to STC values:** the measured current and voltage values are, according to environment conditions, recalculated to Standard Test Condition values which makes possible to compare the results of different measurements even if they were taken under different test conditions.
- **Efficiency calculations:** 2 voltage & 2 current channels for simultaneous AC & DC parameters measurements.
- **PV Remote Unit:** Optional unit for simultaneous measurements of solar irradiation and temperature of PV module.
- **Graphical representation of module's I - U curve:** the I-V characteristic of PV module or string is graphically represented on LCD display.
- **Memory:** Up to 1800 test results or up to 500 graphical results with timestamp can be stored in internal memory.
- **BT connectivity:** it enables BT communication with Android tablets and smart phones via optional BT dongle.
- **Android application:** enables advanced data management APP EuroLink PV.
- PC SW **EuroLink PRO** enables downloading, uploading, review, analyses and printing of test results.

### APPLICATION

- First inspection Testing.
- Periodic maintenance tests.
- Evaluation and troubleshooting of photovoltaic installations.
- Power and efficiency measurements (AC and DC).

### STANDARDS

#### Functionality

- IEC/EN 61557 series;
- IEC 62446 (photovoltaics);
- IEC 61829.

#### Electromagnetic compatibility

- EN 61326

#### Safety

- EN 61010-1;
- EN 61010-2-030;
- EN 61010-031;
- EN 61010-2-032

## TECHNICAL DATA

### PHOTOVOLTAIC INSTALLATION MEASUREMENTS

| Function    | Measuring range                | Basic accuracy                                     |
|-------------|--------------------------------|----------------------------------------------------|
| Voltage     | 0 VDC ... 999 VDC              | $\pm(1\% \text{ of reading} + 2 \text{ digits})$   |
|             | 0 VAC ... 999 VAC              | $\pm(1.5\% \text{ of reading} + 3 \text{ digits})$ |
|             | I-V m.: 0 VDCC ... 999 VDC     | $\pm(1\% \text{ of reading} + 2 \text{ digits})$   |
| Current     | Panel m.: 0.0 mA ... 300 ADC   | $\pm(1\% \text{ of reading} + 2 \text{ digits})$   |
|             | Invert. m.: 0.0 mA ... 300 AAC | $\pm(1.5\% \text{ of reading} + 3 \text{ digits})$ |
|             | I-V m.: 0.00 A ... 15 ADC      | $\pm(1\% \text{ of reading} + 2 \text{ digits})$   |
| Power       | Panel m.: 0 ... 199.9 kW       | $\pm(2.5\% \text{ of reading} + 6 \text{ digits})$ |
|             | I-V m.: 0 ... 14.99 kW         | $\pm(2\% \text{ of reading} + 3 \text{ digits})$   |
| U / I curve | 1000 V / 15 A / 15 kW          |                                                    |
| Irradiation | 000 ... 1.75 kW/m <sup>2</sup> | $\pm(4\% \text{ of reading} + 5 \text{ digits})$   |
| Temperature | -10.0 °C ... + 85.0 °C         | $\pm 5 \text{ digits}$                             |

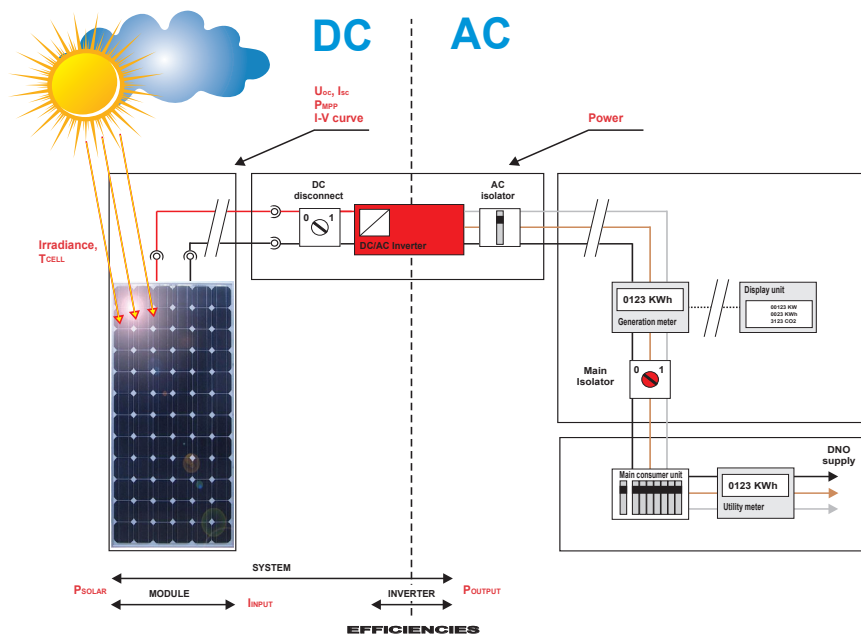
The instrument delivers accurate measurement results, fully within technical specifications, for modules with efficiencies of up to 20%.

### ELECTRICAL INSTALLATION MEASUREMENTS

| Function                           | Measuring range       | Basic accuracy                                   |
|------------------------------------|-----------------------|--------------------------------------------------|
| Insulation resistance (EN 61557-2) | U = 50, 100, 250 VDC: | $\pm(5\% \text{ of reading} + 3 \text{ digits})$ |
|                                    | R: up to 199.9 MΩ     |                                                  |
|                                    | U = 500 VDC, 1 kVDC:  |                                                  |
| Continuity, 200 mA (EN 61557-4)    | R: up to 999 MΩ       | $\pm(5\% \text{ of reading} + 3 \text{ digits})$ |
|                                    | 0.00 Ω ... 1999 Ω     | $\pm(3\% \text{ of reading} + 3 \text{ digits})$ |
| Continuity, 7 mA                   | 0.0 Ω ... 1999 Ω      | $\pm(5\% \text{ of reading} + 3 \text{ digits})$ |

| General              | Main unit                                          | Remote unit                                 |
|----------------------|----------------------------------------------------|---------------------------------------------|
| Display              | 128 x 64 dots matrix display with backlight        | 128 x 64 dots matrix display with backlight |
| Power supply         | 6 x 1.2 V NiMH batteries, type AA                  | 6 x 1.2 V NiMH batteries, type AA           |
| Overvoltage category | CAT II / 1000 VDC; CAT III / 600 V; CAT IV / 300 V |                                             |
| Protection class     | double insulation                                  |                                             |
| COM port             | RS232 and USB                                      | RS232                                       |
| Dimensions           | 230 x 103 x 115 mm                                 | 140 x 230 x 80 mm                           |

## PV SYSTEM PARAMETERS



### METREL D.O.O.

Measuring and Regulation Equipment Manufacturer  
Ljubljanska 77, SI-1354 Horjul, Slovenia  
T +386 (0)175 58 200  
metrel@metrel.si  
www.metrel.si

Note! Photographs in this catalogue may slightly differ from the instruments at the time of delivery.  
Subject to technical change without notice.

## ORDERING INFORMATION



### MI 3109 ST

- Instrument MI 3109 EurotestPV Lite
- A 1289 Soft carrying bag
- A 1411 Universal PV test lead, 3 x 1.5 m
- A 1412 PV Continuity test lead, 2 x 1.5 m
- A 1016, A 1015, A 1062 Test probe, 3 pcs (red, blue, green)
- A 1064, A 1310, A 1309 Crocodile clip, 3 pcs (red, blue, green)
- S 2145 PV MC3/4 male/female adapters
- Power supply adapter + 6 NiMH batteries, type AA
- USB and RS232 - PS/2 cable
- PC SW EuroLink PRO
- A 1707 Carrying strap
- Short instruction manual
- Instruction manual and handbook on storage media
- Calibration certificate

### MI 3109 PS

- MI 3109 ST
- A 1378, A 1414 EurotestPV Remote
- A 1427 PV Reference Cell
- A 1400 Temperature probe
- A 1552 Soft carrying bag
- PC SW EuroLink PRO Plus licence

## OPTIONAL ACCESSORIES

| Photo | Order No. | Acc. description                               |
|-------|-----------|------------------------------------------------|
|       | A 1378    | EurotestPV Remote                              |
|       | A 1385    | PV fused test lead                             |
|       | A 1427    | PV reference cell                              |
|       | A 1400    | Temperature probe                              |
|       | A 1018    | Current clamp (low range, leakage)             |
|       | A 1391    | AC/DC Current clamp                            |
|       | A 1105    | Barcode scanner                                |
|       | A 1292    | Upgrade code EuroLink PRO to EuroLink PRO Plus |
|       | A 1436    | Bluetooth dongle                               |