

Photovoltaic and electrical installations tester MI 3108 EurotestPV



MI 3108 EurotestPV is a combined photovoltaic tester and electrical installations safety tester. It enables complete testing of electrical installations according to EN 61557 standards and in addition performs all necessary tests required on single-phase photovoltaic (PV) installations. This includes all of the tests as required by EN 62446, but also includes I - U characteristic, Calculation of STC values as required by EN 61829 and power measurements on Inverter's DC and AC sides. The unit is designed for the demanding working conditions (up to 1000 V, with 15 A DC). To greatly improve user safety the MI 3108 EurotestPV comes with the PV Safety Probe which ensures safe disconnection every time.

MEASURING FUNCTIONS

Photovoltaic installations:

• Measurements on DC side of PV installation:

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

• Measurements on AC side of PV installation:

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

Electrical installations:

- Insulation resistance;
- Continuity of PE conductors;
- Line impedance;
- Loop impedance (sub-functions with high current and without RCD tripping);
- RCD testing (type AC, A and B);
- Earth resistance;
- AC current (load and leakage);
- TRMS voltage, frequency, phase sequence;
- Power, energy, harmonics.

KEY FEATURES

Photovoltaic installations:

- **Calculation of 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 even if they were taken under different test conditions.

- **Graphical representation:** the I-V characteristic of PV module or string is graphically represented on LCD display.
- **Power and efficiency measurements:** 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.

Electrical installations

- **RCD Auto:** Automated RCD testing procedure significantly reduces test time.
- **Trip Lock function:** Loop impedance test are performed without tripping the RCD.
- **B type RCD testing:** is supported.
- **Earth resistance measurement:** instrument supports 3-wire earth resistance testing.
- **Built-in fuse tables:** for automatic evaluation of the line / loop impedance results.
- **Online voltage monitoring:** monitors all 3 voltages in real time.
- **Scope function:** real-time U/I scope.
- **Harmonics analysis:** 1-phase power and energy measurements with up to 11th harmonics analysis is supported.
- **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 and EuroLink Android.

- PC SW **EuroLink PRO** enables downloading, uploading, review, analyses and printing of test results.

APPLICATION

- Testing, evaluations and troubleshooting of photovoltaic installations.
- Power and energy efficiency measurements (AC and DC).
- Initial and periodic testing of domestic and industrial single and three-phase electrical installations.

STANDARDS

Functionality

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

Other reference standards for testing

- BS 7671;
- EN 61008;
- EN 61009;
- EN 60364-4-41;
- AS/NZ 3017

Electromagnetic compatibility

- EN 61326

Safety

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

TECHNICAL DATA

PHOTOVOLTAIC INSTALLATION MEASUREMENTS

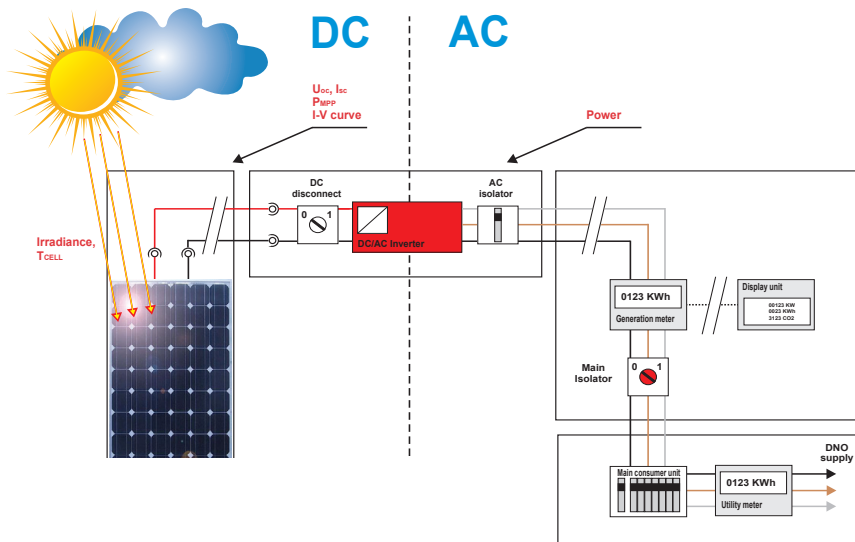
| Function | Measuring range | Basic accuracy |
|-------------|--------------------------------|--|
| Voltage | 0 VDC ... 999 VDC | $\pm(1\% \text{ of reading} + 2 \text{ digits})$ |
| | 0 VAC ... 999 VAC | $\pm(1.5\% \text{ of reading} + 3 \text{ digits})$ |
| | I-V m.: 0 VDC ... 999 VDC | $\pm(1\% \text{ of reading} + 2 \text{ digits})$ |
| 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 ... 999 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 ² | $\pm(4\% \text{ of reading} + 5 \text{ digits})$ |
| Temperature | -10.0 °C ... + 85.0 °C | $\pm 5 \text{ digits}$ |

ELECTRICAL INSTALLATION MEASUREMENTS

| Function | Measuring range | Basic accuracy |
|------------------------------------|---|--|
| Insulation resistance (EN 61557-2) | U = 50, 100, 250 VDC: R: up to 199.9 M Ω | $\pm(5\% \text{ of reading} + 3 \text{ digits})$ |
| | U = 500 VDC, 1 kVDC: R: up to 999 M Ω | |
| Continuity, 200 mA (EN 61557-4) | 0.00 Ω ... 1999 Ω | $\pm(3\% \text{ of reading} + 3 \text{ digits})$ |
| Continuity, 7 mA | 0.0 Ω ... 1999 Ω | $\pm(5\% \text{ of reading} + 3 \text{ digits})$ |
| Loop impedance (EN 61557-3) | 0.00 Ω ... 9.99 k Ω | $\pm(5\% \text{ of reading} + 5 \text{ digits})$ |
| Line impedance (EN 61557-3) | 0.00 Ω ... 9.99 k Ω | $\pm(5\% \text{ of reading} + 5 \text{ digits})$ |
| Voltage | 0 VAC ... 550 VAC | $\pm(2\% \text{ of reading} + 2 \text{ digits})$ |
| Frequency | 0.00 Hz ... 499.9 Hz | $\pm(0.2\% \text{ of reading} + 1 \text{ digits})$ |
| Phase sequence (EN 61557-7) | 1.2.3 or 3.2.1 | |
| RCD testing (EN 61557-6) | I Δ N: 10 mA, 30 mA, 100 mA, 300 mA, 500 mA, 1 A | |
| Contact voltage UC | 0.0 V ... 99.9 V | $(-0\% / +15\%) \text{ of reading}$ |
| Trip-out time | 0 ms ... 40 ms | $\pm 1 \text{ ms}$ |
| Trip-out current | 0.2 x I Δ N ... 2.2 x I Δ N | $\pm 0.1 \times I\Delta N$ |
| Earth resistance (EN 61557-5) | 0.00 Ω ... 9999 Ω | $\pm(5\% \text{ of reading} + 5 \text{ digits})$ |
| Energy | 0.000 Wh - 1999 kWh | |
| Harmonics | up to 11th | |

| 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 |
| Weight | 1.3 kg | 1.0 kg |

PV SYSTEM PARAMETERS



METREL D.D.

Measuring and Regulation Equipment Manufacturer
Ljubljanska 77, SI-1354 Horjul, Slovenia
T +386 (0)1 75 58 200, F +386 (0)1 75 49 226
metrel@metrel.si, www.metrel.si

ORDERING INFORMATION



MI 3108 ST

- Instrument MI 3108 EurotestPV
- Large carrying bag
- Schuko-plug test cable
- Test lead, 3 x 1.5 m
- Test probe, 4 pcs (red, green, blue, black)
- Crocodile clip, 3 pcs (red, green, blue, black)
- PV Safety Probe
- PV MC3/4 male/female adapters
- AC/DC current clamp
- PV Reference Cell
- Temperature probe
- USB and RS232 - PS/2 cable
- Power supply adapter + 6 NiMH batteries, type AA
- PC SW EuroLink PRO
- Set of carrying straps
- Short instruction manual
- Instruction manual and handbook on storage media
- Calibration certificate

MI 3108 PS

- MI 3108 ST
- EurotestPV Remote
- Tip commander
- PC SW EuroLink PRO Plus licence

OPTIONAL ACCESSORIES

| Photo | Order No. | Acc. description |
|-------|-----------|--|
| | A 1378 | EurotestPV Remote |
| | A 1314 | Plug commander |
| | A 1401 | Tip commander |
| | A 1018 | Current clamp (low range, leakage) |
| | A 1391 | AC/DC Current clamp |
| | A 1105 | Barcode scanner |
| | A 1431 | EuroLink Android |
| | A 1436 | Bluetooth dongle |
| | A 1385 | PV fused test lead |
| | S 2026 | Earth 20 m set, 3 wire |
| | S 2027 | Earth 50 m set, 3 wire |
| | A 1292 | Upgrade code EuroLink PRO to EuroLink PRO Plus |