SOLAR / EVSE TESTING
Products Guide

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NATA accredited ISO 17025 calibration laboratory, accreditation #20391

PV Testers

An overview of our PV testing product range

Photovoltaic (PV) safety testing is a special area of electrical installation safety testing as it involves testing on DC systems with PV-specific tests that are outside the scope of standard procedures.

Metrel offers various PV electrical installation safety testers. The MI 310x series suits up to 1000 V installations, the MI 3108 being a complete test and measurement solution with support for line/loop impedance testing, type A, AC, B RCD testing, power and energy measurements; while the MI 3109 is a more streamlined testing tool for simplified assessment of PV installations.

MI 3108 EurotestPV

MI 3108 EurotestPV is a combined PV and installation tester. The unit can perform all standard measurements on DC and AC sides of the PV system as well as electrical installation testing. Included PC software allows downloading, uploading, review, analyses and printing of test results.

Applications: Testing, evaluation and troubleshooting of photovoltaic installations. • Power and energy efficiency measurements. • Initial and periodic testing of domestic and industrial single and three-phase electrical installations.

MI 3109 EurotestPV Lite

MI 3109 EurotestPV Lite is a dedicated PV tester. Utilizing 'autosequences', this tester is specifically optimized for PV installation testing. You can perform a complete set of tests needed by pressing only one button.
Included PC software allows downloading, uploading, review, analyses and printing of test results.

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

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Test **1500 V** photovoltaic systems in style. The new Metrel PV MI 311x series PV Analysers offer testing in accordance with the IEC 62446 standard and support all category 1 and category 2 tests and measurements. Like insulation resistance measurements of PV strings, I/U characteristic measurements (MI 3115 & MI 3116), conversion of measured values to STC values and comparison with nominal values given by the PV modules manufacturers.

The irradiance and cell temperature are measured in real time via the wireless remote unit. Additionally, category 1 tests are collected in one auto test, which enables the user to perform all the desired tests with a single touch of the start button.

MI 3114

Available Q3, 2024

Next generation of Metrel solar PV testers

MI 3114 can test insulation resistance at 1500 V for solar strings, continuity of conductors, polarity, Isc & Voc and capture of irradiance and cell temperature of the PV modules wirelessly via the remote unit.

Calculation of STC values and retrospective correction of parameters on completed measurements via MESM software make these a very versatile instrument.

For systems rated **1500 V/40 A**, these are ideal for first inspection testing, periodic testing, troubleshooting and generating reports for large solar plants.

MI 3115

Available Now

MI 3115 can test insulation resistance at 1500 V for solar strings, continuity of conductors, polarity, Isc & Voc and capture of irradiance and cell temperature of the PV modules wirelessly via the remote unit.

Measuring of the I/V curve, calculation of STC values and retrospective correction of parameters on completed measurements via MESM software make these a very versatile instrument.

For systems rated **1500 V/20 A**, these are ideal for first inspection testing, periodic testing, troubleshooting and generating reports for large solar plants.

MI 3116

Available Q3, 2024

MI 3116 can test insulation resistance at 1500 V for solar strings, continuity of conductors, polarity, Isc & Voc and capture of irradiance and cell temperature of the PV modules wirelessly via the remote unit.

Measuring of the I/V curve, calculation of STC values and retrospective correction of parameters on completed measurements via MESM software make these a very versatile instrument.

For systems rated **1500 V/40 A**, these are ideal for first inspection testing, periodic testing, troubleshooting and generating reports for large solar plants.

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While most electricians prefer multimeters as their go-to troubleshooting tool for quick current and voltage measurements, some individuals, particularly those who work with high current electrical equipment and installations, don't go to work without a clamp meter in their pocket. The benefits of the latter are obvious, the chief ones being the ability to measure current without breaking the circuit.

Metrel has several clamp meters in its product portfolio, differing mainly in the jaw size and highest current they can measure and advanced functionalities some of them have. These include the ability to measure both AC and DC current (with additional test probes), temperature (with additional temperature probe) and 3-phase power and energy.

The **MD 9260** is the first Metrel instrument to support measurements up to 1500 V with CAT III safety. Its voltage range and safety make it useful in highly demanding environments like solar power plants, wind power plants, or other high power environment using DC current.

Complimentary instruments for solar testing

MD 9260 PV Clamp Meter

- Designed specifically for PV use
- Measures 1500V DC (CAT III safety)
- 2000 A AC/DC current range
- Measures Ω , Hz, capacitance, and temperature

MD 9070 Insulation DMM

- Insulation to 1 kV
- 200 mA continuity test
- 2-line LCD display
- CAT IV / 1000 V, TRMS voltage measurement

MD 9273 BT Clamp Meter

- AC Earth leakage clamp meter
- Bluetooth to master device for control and results (e.g. MI 3155)
- Also measures voltage, power, harmonics, power factor (PF), total harmonic distortion (THD)

MD 9060 DMM

- CAT IV / 1000 V, TRMS current and voltage measurement
- Res/conductance measurement
- VFD feature - measure true values in accordance with frequency

Did you know?

NATA

Our in house ISO17025 NATA accredited calibration laboratory can calibrate your test and measurement equipment with fast turn around times.

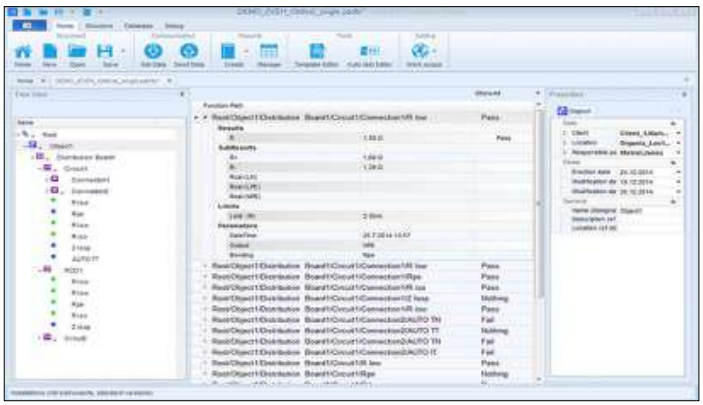
MD 9055 DMM

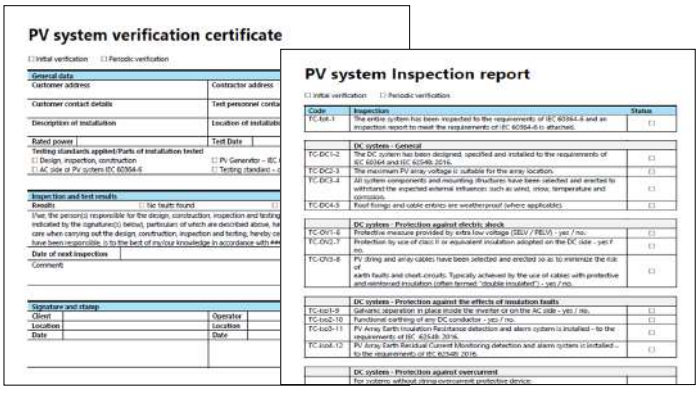
- Wide range of test functions including accurate TRMS readings
- CAT III / 1000 V protection
- Auto-hold of the measurement for working in confined spaces

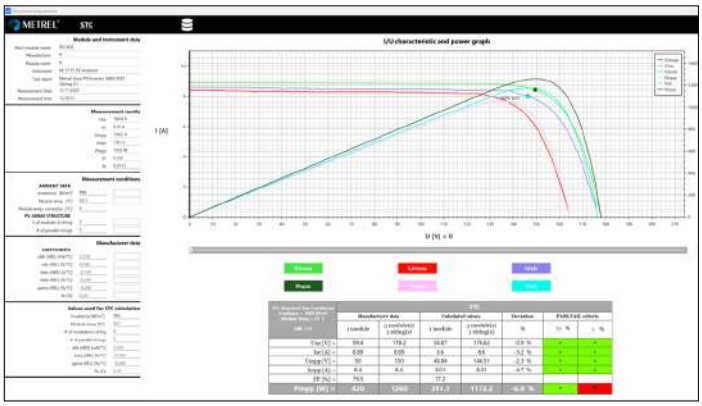
Software and reporting tools

An overview software packages for analysis and reporting

Software for data management and analysis is an essential part of today's test and measurement devices and those manufactured by Metrel are no exception. Originally, there were distinct software for specific products or product groups until the development of **Metrel ES Manager (MESM)**, which offers a complete data management suite across multiple product platforms. Users can pre-prepare test structures for faster work at the testing location, easily download test results from a test instrument, forward them to others over the Internet, and use them for test report creation and much more.







PC Software - Metrel ES Manager enables

- Pre-preparation of measurement structure and measurements
- Upload or download of that structure
- AUTOSEQUENCE editor
- The review of the results
- Enables advanced analysis of the I/U curve
- Includes the PV modules DB explorer and
- Enables generation of professional reports

Special Function: PV Anaylse Tool

This analysis tool provides a detailed graphical and numerical overview of the test results

For analysis based on modifying or changing the parameters, modifications are visible immediately and is a valuable tool for Rs calculation.

Power quality meters/loggers

An overview of our power quality testing products

The Metrel power quality (PQ) analysis range allows automatic voltage/current and thus power quality analysis. They can be used as a maintenance and troubleshooting tool to discover transients, resonant states, high neutral conductor currents and asymmetric harmonics. All models can be used as power loggers or PQ meters.

There are various models available to suit your requirements.

MI 2883 Energy Master

The **MI 2883 Energy Master** is the most basic and economical version. As a single & 3 phase PQ analyser, it offers basic operation with 4 voltage & current measuring inputs.

MI 2884 Energy Master

The **MI 2884 Energy Master** which while still being economically-priced, it allows for waveforms and transient recordings as well.

MI 2885 Master Q4

The **MI 2885 Master Q4** has 4 voltage inputs, waveform recording, inrush currents and variable frequency drives, extra comms ports, remote access & GPS synchronisation.

MI 2892 Power Master

The **MI 2892 Power Master** is a class A 0.1% option which introduces transient measurement at >49,000 samples/sec and includes temperature measurement as standard.

MI 2893 Power Master XT

The top of the range **MI 2893 Power Master XT** improves the sampling rate (>1,000,000 samples/sec). These units can be used for long-term logging to uncover hard-to-find or intermittent issues and can later be analysed with included PC software.

MI 2885/2892/2893 can simultaneously measure DC and AC Volts/Amps for inverter efficiency.

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PowerView3 PC analysis software

PowerView3 software is an effective platform for downloading, analysing (recorded data) and creating power quality test reports. This PC Software contains a package of functionalities needed for detailed evaluation of power quality phenomena, data comparison and creation of highly informative test reports.

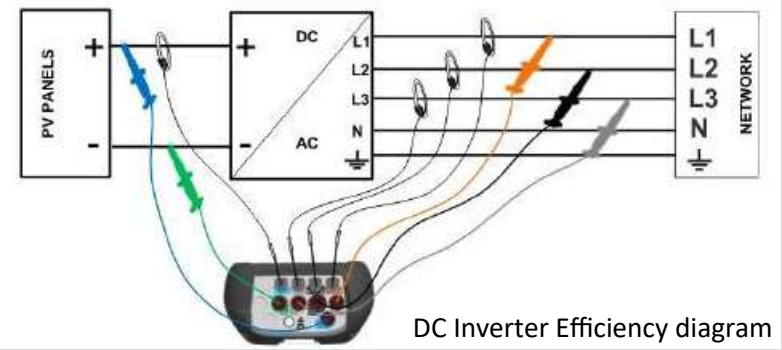
It works in conjunction with Metrel's new generation power quality analysers. For GPRS-equipped instruments, PowerView3 enables remote control of the instrument as well which makes for convenient control in hard-to-reach or remote applications.

Applications

- Power quality, maintenance, compensation PF, Filters, start up machines.
- Power quality assessment and troubleshooting in electrical systems.
- Energy assessment to quantify before and after installation improvements in energy consumption.
- Electrical Safety in Public Areas.
- Checking power correction equipment performance.
- Long-term logging/analysis, to uncover hard-to-find or intermittent issues.
- Predictive maintenance, detect and prevent power quality issues.
- Load studies, to verify electrical system capacity before adding loads.
- Start up current, unbalance/asymmetry recording to optimize systems efficiency.

Diagnosing hidden PQ problems such as:

- Voltage dips and Swells
- Harmonic Distortion
- Voltage Unbalance
- Flicker
- Transients
- Inrush current recording
- DC Inverter Efficiency



DC Inverter Efficiency diagram

EVSE EV car and charger testing

An overview of our installation testers product range

Electric mobility has become a powerful trend in recent years. The network is expanding rapidly, the cars are being developed at break-neck speed, and the standardisation organisations are struggling to keep up. Electric Vehicle Supply Equipment (EVSE) stations are the face of the network, the part that the customer comes into contact with. It means the system of supply, from the network and the hardware that enables plugging into the car. For most customers, it is the most powerful electric device or piece of installation they regularly see with fast chargers that can deliver up to 350kW. Metrel's range of testers covers your future needs in this new market.

MI 3365 Omega EE

The **MI 3365** is a state of the art appliance tester and is one of Metrel's latest addition to the EVSE market. Along with conventional tests that you may associate with portable applicate testing, when combined with a series of available adaptors it can be used to test Mode 2 and Mode 3 cables and perform EVSE diagnostic tests.

This model is versatile and also has options for Medical parameters so covers testing in many industries and applications.

MI 3132 EV tester

The **MI 3132** is designed for testing the safety and integrity of the circuits and grounding systems on electric vehicles themselves. It is used for periodic testing and checking after maintenance, checking electrical safety after accident or mechanical repairs and to ensure the vehicle is safe before handling or removing from a crash site.

It can test insulation (including UN ECE R100 with own DC source), continuity, DC volts, TRMS volts & frequency.

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Is a crashed EV safe? In short, who knows? Better have the MI 3132 EV Tester at hand to check if it is safe!

Through the use of Metrel's range of testers and adaptors you can test any EVSE related application whether it be after a crash, after repair, or periodic inspections.

Recommended inspection intervals are half a year for cables and a year for a whole system in public use.

Complimenting adaptor sets for EVSE testing

A 1832 adaptor

The **A 1832** Mode 3 Charging cable adapter is used for electrical safety testing of Mode 3 EV charging cables with Type 2 connectors together with supported METREL or third-party testers. If used together with Metrel AutoSequences®, integrated in the newer multifunctional testers, the EV charging cable can be comprehensively tested (including functionally) with a push of a button. It is possible to create a professional report using MESM software.

A 1532 XA EVSE Adaptor

The **A 1532 XA** is the entry level accessory for testing charging stations. It simulates a car to test the function of Control Pilot and Proximity Pilot performing electrical tests on its output socket. It is intended for testing Mode 3 EV supply equipment with a type 2 connector. XA version supports 3 phase load testing up to 13 A and different error types, including PE open. When used together with Metrel AutoSequences® multifunctional tester, the complete EVSE charging station can be tested (state-by-state) electrically and functionally with a push of a button.

A 1632 eMobility Analyser

The **A 1632** is a different kind of instrument. It is designed to thoroughly test the charging station on both the installation and the output sides. It can test Mode 2 and Mode 3 cables and monitor communication between station and car. Rather than for periodic testing, it is meant for installation tests and equipment producers. Professional reports for both station and cable status can be created in Metrel electrical safety management software (MESM).

Electrical installation testers

An overview of our installation testers product range

Electrical installation safety is more important than ever with the increase in complex domestic electronic appliances installed in homes, requiring reliable and safe power supplies.

Metrel offers a wide range of multifunctional electrical installation safety testers suitable for testing domestic and industrial electrical installations. They offer a versatile solution for installation safety testing by combining an array of functionalities in a single rugged device. A range of accessories are offered to enhance tester functionality in specialised applications.

MI 3152 Electrical Installation Tester

The **MI 3152** multifunction installation tester offers complete installation safety testing (according to AU/NZ 3017) that comes with pre-defined auto sequence testing of TN, TT and IT earthing systems. A wide range of functions are included: from on-line voltage monitoring, phase sequence testing, insulation testing, earth measurement, to RCD tests, line and loop impedance tests and more.

Its large, intuitive touch screen LCD display makes it a breeze to pick up and navigate from the get go.

MI 3155 Electrical Installation Tester

The **MI 3155** multifunction Installation tester is Metrel's flagship instrument and is designed specifically for testing in industry. It boasts an ergonomic design and intuitive user colour touch-screen interface. This tester offers upgrades over the MI3152 including; measurement spec advantages (e.g. 2500V insulation testing), fully customisable auto sequences, large capacity Li-ion battery pack and the more advanced 'ES Manager PRO software' license which provides more in depth and professional report creation functionality.

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No electrical installation safety tester, single function or multifunctional, is complete without appropriate accessories. We are not talking only about trivial ones like the test leads, probes, crocodile clips and other essentials, but specialized adapters for expanding measuring ranges of connected electrical installation safety testers or for enabling new test and measurement functionalities.

Metrel has developed adapters for automated testing of 3-phase electrical systems, for testing automatic trip out protection in high-voltage equipment using high current and even a dedicated adapter for testing proper functioning and safety of portable RCD devices. Last but not least are adapters for comprehensive testing of electric vehicle supply equipment (EVSE).

The extensive range of adaptors brings tremendous expandability into various test and measurement applications and markets.

For high precision line and loop impedance measurements

MI 3143 Multifunction Tester

The **MI 3143** is intended for measuring the effectiveness of automatic trip out protection in case of faults in transformers and other HV equipment.

High precision 4 wire, 220 A Loop and Line impedance testing. High range 440V/16 to 420 Hz impedance. Test earth leakage relays trip out time and current, partial voltage drops, current path resistances and ground fault analysis with contact, touch and step voltage. Can be used as a stand alone device with Android app A 1522 aMESM or in conjunction with various Metrel Multifunction testers.

MI 3144 Multifunction Tester

The **MI 3144** is a high precision 4 wire, 300 A Loop and Line impedance testing. High range 800 V/16 to 420 Hz impedance measurements and DC sourcing and line resistance measurements from 3 to 260 V. Test earth leakage relays trip out time and current, partial voltage drops, current path resistances and ground fault analysis with contact, touch and step voltage. Can be used as a stand alone device with Android app A 1522 aMESM or in conjunction with various Metrel Multifunction testers.

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