

A 1632 eMobility Analyser

The A 1632 eMobility Analyser is a special accessory designed for functional, diagnostic and electrical safety testing of Electric Vehicle Supply Equipment (EVSE) together with Type 1 and/or Type 2 connections through the support of METREL installation testers. It also supports testing of Mode 2 electrical vehicle (EV) cable safety features through mains fault simulation and electrical safety testing of both Mode 2 and Mode 3 EV charging cables. Fully supported professional station-based and cable-based report creation with MESM software.



APPLICATION

- EVSE functional and diagnostic according to EN 61851-1 and electrical safety testing according to EN 60364-6;
- Simulation of faults on mains for verification of Mode 2 electrical vehicle (EV) charging cable safety features;
- Electrical safety testing of 1-phase and 3-phase Mode 2 EV cables;
- Electrical safety testing of Mode 3 EV cables.

KEY FEATURES

- Functional testing of EVSE via simulation of electrical vehicle's CP and PP circuits;
- Diagnostic testing of EVSE via simulation of errors on CP circuit;
- Electrical safety testing of EVSE;
- Functional testing of Mode 2 EV cables via simulation of electrical vehicle's CP and PP circuits;
- Diagnostic testing of Mode 2 EV

- cables via simulation of errors on CP circuit;
- Simulation of faults on mains for verification of Mode 2 EV charging cable safety features;
- Electrical safety testing of Mode 2 and Mode 3 EV cables;
- Accessible inputs/outputs for connection of safety testers;
- 1-phase and 3-phase Mode 2 cable connections;
- Integrated 4400 mAh Li-Ion battery;
- Bluetooth communication with Metrel safety testers.

SUPPORTED INSTRUMENTS

- MI 3152 EurotestXC
- MI 3152H EurotestXC 2.5kV
- MI 3155 EurotestXD
- MI 3325 MultiserviserXD

A 1507 3-phase active switch adapter

The A 1507 3-Phase Active Switch is an accessory intended for automating the process of electrical safety testing of three phase circuits. In combination with Auto Sequences and one of Metrel's electrical installation safety testers MI 3155 EurotestXD or MI 3152 EurotestXC it is possible to automate the process of 3-phase system testing even further.



APPLICATION

- On-site automated testing of:**
- 3-phase systems via the added crocodile clips and probes;
 - 3-phase sockets with the use of additional adapters.

- Supported measurements:**
- Voltage and 3-phase sequence;
 - Insulation resistances;
 - Continuity of protective conductor;
 - Resistance to earth;
 - Resistance N-PE;
 - RCD testing;
 - Loop / Line impedances.

KEY FEATURES

- Banana socket outputs for connection to a 3-phase system;
- Motor driven through Bluetooth communication with Metrel's electrical safety testers;
- Automatic ON/OFF.

SUPPORTED INSTRUMENTS

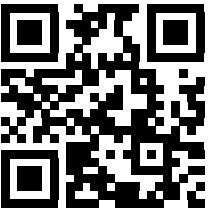
- MI 3152 EurotestXC
- MI 3152H EurotestXC 2.5kV
- MI 3155 EurotestXD

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Product
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Measuring
instruments
and testers



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MI 3144 Euro Z 800 V

The MI 3144 Euro Z 800 V is a Multi-function, portable battery (Li-ion) or mains powered test instrument with excellent IP protection: IP65 (case closed), IP54 (case opened). It can be controlled via an Android app aMESM, MI 3152, MI 3152H, MI 3155 or MI 3325. The MI 3144 Euro Z 800 V is intended for measuring the effectiveness of automatic trip out protection in case of faults in transformers and other HV equipment. With its high precision line and loop impedances on AC and DC circuits, high current dR 300A loop and line measurements for testing of partial currents and partial voltage drops, contact voltage measurement, ELR electrical leakage relay testing with fault current injection and trip-out time measurement and DC Source, accumulator, battery, DC lines and circuit measurement it is ideal for testing in industrial settings.



APPLICATION

- Live Power Transformer Hi Precision 4-wire 300A Z Line / Loop Impedance Testing;
- Partial Voltage Drops and Partial Clamp Current's Path Resistances;
- Airports High Frequency Band 16 ... 420 Hz Installation Impedances testing;
- DC Networks' and Power Sources' Line and Loop Resistances;
- Flex & Iron One-Clamp High Current dR 300A Grounding method for Lightning systems;
- High Current dR 300A Integrity of Grounding system with Flex and Iron One-Clamp method;
- ELR (MRCD) trip-out Current and trip-out Time testing;
- Earth Potentials by method of measuring Step, Touch and Transfer voltages;
- Automatic trip-out protection evaluation in case of faults in transformers, generators, turbines, contactors, distribution boards and switchyards whenever energetic loads and sources of protection exceed 200A;
- Power transformer and motor winding measurement;
- High accuracy battery resistance testing;
- Ground grid integrity testing by measuring the resistance between two risers;
- U contact measurement.

KEY FEATURES

- Hi Precision 4-wire 300A Z Line and Z Loop Impedance Tester;
- Hi Range Impedance measurements in 800 V / 16 ... 420 Hz AC networks;
- DC Source & Line Resistance measurements in 3 ... 260 V DC networks;
- Hi Current dR 300A 4-wire Partial Voltage drops and Current's Path Resistances;
- Earth Leakage Relay (ELR) Trip-out Testing Time and Current;
- ELR supported types AC, A, B;
- Ground Fault Analysis with Contact, Touch and Step Voltage;
- Floating Voltmeter for partial contact results;
- One-Clamp Hi Current Grounding method with clamps (Flex & Iron);
- Selectable test load (16.6 % to 100 %);
- Improved thermal performance;
- Portable battery (Li-ion) or mains powered test instrument;
- IP protection: IP65 (case closed), IP54 (case opened);
- CAT IV 600V (3000 m) safety category;
- Bluetooth communication;
- Black box design (remote-controlled via an Android device).

MI 3143 Euro Z 440 V

The MI 3143 Euro Z 440 V is a Multi-function, portable battery (Li-ion) or mains powered test instrument with excellent IP protection: IP65 (case closed), IP54 (case opened). It can be controlled via an Android app aMESM, MI 3152, MI 3152H, MI 3155 or MI 3325. The MI 3143 Euro Z 440 V is intended for measuring the effectiveness of automatic trip out protection in case of faults in transformers and other HV equipment. With its high precision line and loop impedances on AC circuits, high current dR 300A loop and line measurements for testing partial voltage drops and contact voltage measurement, it is ideal for testing in industrial settings.



APPLICATION

- Live Power Transformer Hi Precision 4-wire 300A Z Line / Loop Impedance Testing;
- Partial Voltage Drops Resistances;
- High Current dR 300A Integrity of Grounding system with Flex and Iron One-Clamp method;
- Earth Potentials by method of measuring Step, Touch and Transfer voltages;
- Automatic trip-out protection evaluation in case of faults in transformers, generators, turbines, contactors, distribution boards and switchyards whenever energetic loads and sources of protection exceed 200A;
- Power transformer and motor winding measurement;
- U contact measurement;
- High current injection ground fault simulation;
- One clamp earth resistance testing.

KEY FEATURES

- Hi Precision 4-wire 220A Z Line and Z Loop Impedance Tester;
- Hi Range Impedance measurements in 440 V / 16 ... 420 Hz AC Networks;
- Hi Current dR 300A 4-wire Partial Voltage drops;
- Ground Fault Analysis with Contact, Touch and Step Voltage;
- Floating Voltmeter for partial contact results;
- Selectable test load (33.3 % to 100 %);
- Improved thermal performance;
- Portable battery (Li-ion) or mains powered test instrument;
- IP protection: IP65 (case closed), IP54 (case opened);
- CAT IV 600V (3000 m) safety category;
- Bluetooth communication;
- Black box design (remote-controlled via an Android device).

MI 3325 MultiServicerXD

The MI 3325 MultiServicerXD is a top-of-the-line multi-functional instrument covering diverse industrial applications, where robustness and reliability are a must. In Metrel range of the instruments it is introduced as a successor of MI 3321 MultiServicerXA. The new platform integrated in the MI 3325 features in support for colour touch screen technology, advanced memory organizer including large SD-card storage media and state of the art AUTOSEQUENCE®s.



- Automated RCD testing procedure (RCD AUTO).
- Automated Impedance testing procedure (Z AUTO).
- Measurement filtering according to the selected area group.
- Large memory: support for microSD memory cards, 8 GB card already integrated in the instrument, although that can be expanded to 32 GB.
- PC SW Metrel ES Manager: enables creation of test structures, user-defined AUTOSEQUENCE®s, professional test reports and data transfer for archiving.

THE INDUSTRIAL APPLICATIONS COVERED BY THE INSTRUMENT ARE AS FOLLOWS:

- Safety of machinery, in compliance to IEC/EN 60204 Ed.5, IEC 60204 Ed.6;
- Safety of low-voltage Switchgear and cotrolgear testing, in compliance to IEC/EN 61439-1 Ed.2,
- Safety of portable appliances, in compliance to VDE 0701-0702, AS/ NZS 3760, Code of Practice,
- Safety of Arc welding equipment, in compliance to IEC/EN 60974-4 Ed.2.

MACHINE TESTING ACCORDING TO IEC/EN 60204

EN 60204-1 provides requirements and recommendations relating to the electrical equipment of machines so as to promote:

- Safety of persons and property.
- Consistency of control response.
- Ease of maintenance.

EN 60204-1 applies to the application of electrical, electronic and programmable electronic equipment and systems to machines not portable by hand while working, including a group of machines working together in a co-ordinated manner. The standard applies from the point of connection of the supply to the electrical



equipment of the machine. EN 60204-1 is applicable to the electrical equipment or parts of the electrical equipment that operate with nominal supply voltages not exceeding 1000V for alternating current (ac) and not exceeding 500V for direct current (dc), and with nominal supply frequencies not exceeding 200 Hz.

The MI 3325 MultiServicer XD completely comply to the IEC/EN 60204-1 Ed.5, & IEC 60204-1 Ed.6 and it has a built in AutoSequences, which guide the user through test procedure.

SWITCHGEAR AND CONTROL GEAR TESTING ACCORDING TO IEC/EN 61439-1

The protective circuit of the switchgear and controlgear assembly is an important element of the protection system against electric shock (particularly when using the protective measures of protective neutral earthing and residual current protective devices). This ensures the automatic disconnection of the power supply in the event of a fault.

The effectiveness of the protective circuit must be verified according to IEC /EN 6143-1 as part of the design verification for the following functions:

- Protection against the consequences of a fault in the switchgear and controlgear assembly (internal faults) and
- Protection against the consequences of faults in external circuits (outgoing circuits) that are supplied through the switchgear and controlgear assembly (external faults).

In terms of protection against the consequences of an internal error, it must be verified that

- The various bodies of the switchgear and controlgear assembly are effectively coupled to the connection of the incoming external protective conductor and that
- The resistance of the circuit does not exceed 0,1 Ω.

MI 2893 Power Master XT

The MI 2893 Power Master XT is a hand-held three phase power quality analyzer with a large easy-to-read graphical color display enabling the user to detect harmonics, phasors, waveforms and transient anomalies in the installation simply by connecting the device. The instrument is designed for a long term recording as well as for troubleshooting power quality problems in three-phase and single-phase power distribution systems. The handy Quick Set buttons makes the instrument more user friendly and are allowing faster data overview for troubleshooting. Advanced PC SW package PowerView3 enables detailed analysis of recorded data, direct and remote reading from the micro SD memory card, analysis of long term records and automatic creation of professional test report.



MEASURING FUNCTIONS

- Voltage and Current: TRMS, peak, crest factor (4-channel);
- Power (active, reactive, apparent);
- Power measurements fully compliant with IEEE 1459 (active, non active, fundamental, harmonic, load un-balance) and classic (vector or arithmetic) method;
- VFD (variable frequency drive, 5 Hz – 110 Hz);
- 400 Hz;
- Unbalance, flicker measurement;
- Harmonic and interharmonic analysis up to 50th harmonics, THD & TDD measurement;
- Energy (active, reactive, generated, consumed);
- Capturing and recording of power supply events (shutdowns, interruptions, swells, dips);
- Inrush currents monitoring and recording;
- Waveform/inrush displaying, snapshot and recording;
- Transients recording;
- Power inverter efficiency measurement;
- Power quality analysis according to EN 50160, IEEE 519;
- Recording up to 7 adjustable alarms;
- Temperature measurement;
- Power factor, cos fi.

KEY FEATURES

- 4-voltage channels with wide measurement range;
- 4-current channels with support for automatic clamp recognition and "on instrument" range selection;
- Automatic Smart Clamp detection and Smart Clamp range selection;
- Sampling frequency on transients recording >1 MSamples/sec;
- Compliance with power quality standard IEC 61000-4-30 Class A;
- Complete power quality analysis according to EN 50160 including signalling and interharmonics;
- Support for microSD memory card up to 32GB;
- Color-coded input terminals and terminal labels to suit your application region;
- Intuitive main menu and large icons that makes the equipment very easy to navigate and configure;
- Current clamp auto range selection;
- Powerful PC SW PowerView3 enables downloading, view, analysis of recorded data and professional report creation;
- Flexible clamps (without additional power supply) are included in the Euro set;
- Remote communication via Ethernet;
- (GPS clock synchronization - optional).

CS 2890 Power Calibrator/Simulator

The CS 2890 Power Calibrator/Simulator is handheld multifunction four-phase instrument intended for calibrating and adjusting Metrel Power Quality Class A and Class S instruments as well as simulation of typical voltages and current power quality phenomena's and situations on electrical network. Calibration/Adjustment of Metrel Power Quality devices is performed according the Metrel defined procedure in specific test points as well as under specified environmental conditions. Final user can perform the calibration as well as adjustment by themselves. To ensure correct generated values, it is essential that the CS 2890 is regularly calibrated. If used continuously on a daily basis, a three-month calibration period is recommended, otherwise annual calibration is sufficient. Simulator offers an excellent tool for training, demonstration purposes, or as an electrical didactic tool. The user can decide between different load character adjustments, adjustable current and voltage level with a simulation of various different power quality issues.



GENERAL

- Simple and powerful waveform generator with various settings;
- 4 voltage channels with wide simulation range: up to 350 Vrms;
- 4 current channels with current clamps simulation up to 2000 A;
- Simultaneous voltage and current (8 channels) simulation, 16-bit Digital to Analogue conversion for accurate signal generation;
- Saving current system settings on power off;
- 4.3" TFT colour display;
- Calibration of METREL Class A and Class S Power Quality devices;
- Adjustment of METREL Class A and Class S Power Quality devices;
- Training purposes;
- Demonstration of PQ4 testing equipment by sales personnel;
- Education of power quality phenomena.

POWER SIMULATOR

- Dip, swell, interrupt, signalling, transient and inrush events simulation;
- Voltage and current harmonics waveform simulation;
- Unbalanced voltage and current waveform simulation;
- Square flicker simulation;

- Various character load/character type (inductive/capacitive) combination simulation;
- Thorough signal parameters settings;
- Programming event occurrence (key, manual, periodically, random);
- Voltage, Current, Frequency;
- Harmonics, Phase angle, Phase sequence, Unbalance (U,I).

CALIBRATOR

- Calibration of METREL power quality devices Class A (MI 2893, MI 2892) and Class S (MI 2885, MI 2883) - predefined calibration points, related to the tested instruments.

ADJUSTMENT

- Adjustment of METREL power quality devices Class A (MI 2893, MI 2892) and Class S (MI 2885, MI 2883).

KEY FEATURES CALIBRATOR/ADJUSTMENT

- Voltage/current stability in the predefined calibration/adjustment points better than ±0.06% under prescribed environmental conditions;
- Fine adjustment of calibration points with substandard volt-meter control measurements.