

## DIGITAL MULTIMETERS/ CURRENT CLAMPS/ VOLTAGE TESTERS

MD 9016 Electrical Field Service Multimeter

MD 9035 Automotive Multimeter Designed to Work On Real-World Car Signals

MD 9060 TRMS, 500.000 counts LCD, 100 kHz Voltage Bandwidth Heavy Duty Industrial Multimeter



Metrel's new Range of Professional digital Multimeters are characterized by their versatility and robustness. The user achieve's very high measuring accuracy, and many other key features. The RMS measurement (TRMS AC and DC range) is particularly important when measuring non-sinusoidal voltages and currents. The instruments high overvoltage category rating offers a wide variety of measuring functionality.

### KEY FEATURES:

- Large LCD display with backlight;
- TRMS AC / DC ranges (MD 9060);
- Acoustic signal detects incorrect electrical connection;
- Data hold / peak hold function;
- MIN / MAX hold function;
- Non-contact voltage detection;
- Automotive sector (MD 9035);
- 100 kHz range when measurement voltage signal (MD 9060);
- CAT IV/300 V CAT III/600 V for your safety.

## DIGITAL MULTIMETERS/ CURRENT CLAMPS/ VOLTAGE TESTERS

MD 9225 Most Complete Industrial TRMS AC/DC Current Clamp Meter

MD 9235 TRMS Power Clamp Meter, 3-Phase, Unbalanced-Load

MD 9250 Industrial TRMS AC/DC CAT IV 1000 V



Metrel's new Current and Power clamp Meters are characterized by their versatility, high accuracy, robust housing, and many measuring functions. The large jaw opening (MD 9250 - 55 mm) allows AC & DC measurement and power measurement on large conductors up to 200 A. Developed at the cutting edge of measurement technology, They are the ideal choice for all electricians, as well for field servicing engineers. With large easy to read LCD and non-contact voltage detection of electric fields the MD 9250 EF shows you the presence of electrical fields. The auto function and other Key measurement functions characterize these excellent products.

### KEY FEATURES:

- TRMS AC / DC ranges;
- Auto-Ranging;
- Clamp opening size 55 mm (MD 9250);
- One-handed operation (MD 9250);
- Data hold / peak hold function;
- MIN / MAX hold function;
- Non-contact voltage detection;
- Performance measurement (converted to 3-Phase in symmetric and asymmetric 3-Phase systems);
- Safety: double insulation according to IEC / EN 61010-1 (DIN VDE 0411).

### METREL d.d.

Measuring and Regulation Equipment Manufacturer

Ljubljanska 77, SI-1354 Horjul

Tel: +386 (0)1 75 58 200; Fax: +386 (0)1 75 49 226

E-mail: metrel@metrel.si; <http://www.metrel.si>

### METREL GmbH

Metrel Mess- und Prüftechnik GmbH

Orchideenstraße 24, 90542 Eckental

Tel.: +49 9126 28996-0; Fax: +49 9126 28996-20

E-mail: metrel@metrel.de; <http://www.metrel.de>

### Metrel UK Ltd.

Test and Measuring Equipment Unit 1, Hopton House, Ripley Drive,

Normanton, West Yorkshire, WF6 1QT

Tel.: +44 (0) 1924 245 000

E-mail: [info@metrel.co.uk](mailto:info@metrel.co.uk); <http://www.metrel.co.uk>

## METREL Measuring and Regulation Equipment

### ELECTRICAL INSTALLATION SAFETY

- MI 3108 EurotestPV
- MI 2230 VAFMeter

### MACHINES/APPLIANCES/SWITCHGEAR SAFETY

- A 1322 Active 3-phase Adapter
- MI 3310 SigmaGT

### HIGH VOLTAGE INSULATION/CONTINUITY/EARTH

- MI 3250 MicroOhm 10A
- MI 3252 MicroOhm 100A

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- MD 9016 Electrical Field Service Multimeter
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Note! Photographs in this catalogue may slightly differ from the instruments at the time of delivery. Subject to technical change without notice.

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## ELECTRICAL INSTALLATION SAFETY

### MI 3108 EurotestPV

MI 3108 EurotestPV is on the market an unique instrument for both photovoltaic and electrical installations safety testing. The instrument enables complete electrical installation testing according to EN 61557 standard. In addition EurotestPV performs all necessary tests on single-phase photovoltaic installations. This includes the basic parameters according to EN 62446 standard as well as the I-U curve, calculation of STC values as well as power measurements on inverter's DC and AC side.



#### MEASURING FUNCTIONS

##### Electrical installations:

- Insulation resistance;
- Continuity of PE conductors;
- Line/Loop impedance;
- RCD testing (type AC, A and B);
- Earth resistance;
- AC current (load and leakage);
- TRMS voltage, frequency, phase sequence;
- Power, energy, harmonics.

##### Photovoltaic installations:

Measurements on DC side of PV installation:

- Voltage, current, power, energy;
- U - I curve of PV modules and strings;
- Irradiance;
- Module temperature.

Measurements on AC side of PV installation (power quality):

- Voltage, current, frequency, power, PF, energy, harmonics;
- Efficiency of PV module, inverter, PV system calculation.

#### KEY FEATURES

##### Electrical installations:

- Automated RCD testing procedure;
- Support for B type RCD;
- Earth resistance measurement;
- Built-in fuse tables for automatic evaluation of the line / loop impedance results;
- Online monitoring of all 3 voltages;
- Scope function;
- Loop impedance test without tripping the RCD;
- 1-phase power and energy measurements (including harmonics up to 11<sup>th</sup>).

##### Photovoltaic installations:

- 2 voltage & 2 current channels for simultaneous AC & DC parameters measurements;
- Efficiency calculations;
- Graphical representation of module's U - I curve;
- Optional Remote Unit for simultaneous measurements of solar irradiation and temperature of PV module.

## ELECTRICAL INSTALLATION SAFETY

### MI 2230 VAFMeter

MI 2230 VAFMeter is handheld multifunction instrument which can accurately measure voltage, current, power, harmonic distortion and phase angles in single, two and three phase systems.



#### MEASURING FUNCTIONS:

- TRMS Two channel voltage measurements, up to 600 Vac;
- TRMS Two channel current measurements, up to 3000 Aac;
- U-U, I-I, U-I angle measurement, phase diagram;
- Support for 3-Phase (Aaron) systems;
- Active, reactive and apparent power, PF, cos φ, THD, frequency;
- Continuity/resistance of conductors with 200mA test current with polarity change and with pass/fail functionality.

#### KEY FEATURES:

- Simultaneous measurement and display of voltage, current phase angles and frequency on two or three-phase systems;
- Accurate phase angle measurement at low current levels;
- Easy-to-use: large bright LCD display and large buttons enable easy handling of the instrument;
- Memory storage for storing up to 1500 measurements;
- Safe: built for CAT II / 600 V environments;
- Portable: rugged carrying case with a handle and lightweight design enable easy moving the instrument between sites;
- Built-in charger & rechargeable batteries: instrument has a built-in charging circuit and comes with a set of rechargeable NiMH batteries;
- Downloadable: downloads test results via RS232 or USB cable directly to the PC with the help of the Metrel EuroLink software.

## MACHINES/ APPLIANCES/ SWITCHGEAR SAFETY

### A 1322 Active 3-phase Adapter

Metrel's all new A 1322 Multifunctional test adapter is designed for troubleshooting, as well as for periodic testing on 3-phase appliances and machinery. Unique functions such as, active polarity testing, differential leakage testing and testing of 3-phase RCD's make the A 1322 Active 3-phase Adapter an ideal instrument for advanced applications. The A 1322 adapter is designed for use alongside the MI 3321 MultiservicerXA and the MI 3310/MI 3310A SigmaGT enabling functional tests to be carried out on machines up to 40 A. Several test socket outlets make this instrument an ideal tester for testing industrial extension leads that may also be RCD protected.



#### MEASURING FUNCTIONS:

- Earth bond / continuity resistance;
- Continuity (single / auto);
- Insulation resistance;
- Insulation resistance - s;
- High voltage test;

- Loop impedance and prospective fault current;
- Discharging time;
- Voltage, frequency, three-phase rotary field;
- Substitute leakage current;
- Substitute leakage - s;
- Differential leakage current;
- 3-Phase differential leakage current;
- Touch leakage current;
- Polarity test;
- Active polarity test;
- 3-Phase polarity test / 3-Phase active polarity test;
- Clamp current test;
- P/RCD test;
- 3-Phase P/RCD test;
- Power / functional test;
- 3-Phase power / functional test.

#### KEY FEATURES:

- All tests on 3-phase electrical equipment can be carried out, including live leakage test, power, polarity, RCD and Active polarity;
- Simple connection to the PAT/MACHINE tester with automatic detection;
- Simple test procedures, identical to single phase equipment;
- Test sequence for 3-Phase tests are automatically set, based on entered test codes and input voltages;
- Built-in CEE 3-PH/32A 5 pin, CEE 3-PH/16A 5 pin and CEE 1-PH/16A 3 pin test sockets;
- Instrument comes complete with all accessories necessary for comfortable measurements and kept in a robust waterproof case.

## MACHINES/ APPLIANCES/ SWITCHGEAR SAFETY

### MI 3310 SigmaGT

The multifunctional portable test instrument SigmaGT is intended to perform all measurements for testing the electrical safety of portable electrical equipment. The instrument can operate from mains power or batteries. Instrument's extended communication facility supports use of RS232 and Bluetooth label printer and RS232 and Bluetooth barcode scanner. In addition it has the support for reading / writing RFID tags. The instrument has a powerful test data management system where auto tests and single tests can be stored in 6000 memory locations. Powerful data management system PC SW PATLink PRO enables uploading and downloading of test results and parameters for further data handling, trend analysis, and test report creation.



#### MEASURING FUNCTIONS:

- Continuity tests (200 mA, 10 A);
- Insulation resistance, Insulation resistance - S;
- Substitute leakage, Substitute leakage - S current;
- Differential leakage current;
- Touch leakage current;
- IEC cord polarity test;
- Leakage and TRMS load currents with current clamp;
- Portable RCD test / RCD test;
- Functional test.

#### KEY FEATURES:

- Pre-programmed test autosequences;
- PASS / FAIL evaluation of results;
- Active polarity function for live RCD protected cords / leads testing;
- P/RC testing without reconnection;
- Testing of both portable and fixed installed appliances;
- Built-in help screens;
- Three communication ports (USB and 2 x RS232C) for communication with PC, barcode scanner and printer;
- Optional Bluetooth communication with printer and barcode scanner;
- On site label printing;
- Support of barcode and RFID tag identification systems;
- Upload of test data from PC for retesting and on site comparison of old and new results;
- Soft touch keyboard with cursor keys;
- Internal memory for up to 6000 results;
- Battery powered;
- Built-in charger;
- PC SW PATLink PRO as a standard accessory.

## HIGH VOLTAGE INSULATION / CONTINUITY / EARTH

### MI 3250 MicroOhm 10A

MicroOhm MI 3250 is portable low resistance ohmmeter for measuring low resistances of breakers and switches, busbars, cable joints, small to medium sized transformer and motor windings for industrial application, etc., with test current up to 10 A.



#### MEASURING FUNCTIONS:

- Bidirectional resistance measurement from 0,1 μΩ up to 2000 Ω with test current up to 10 A;
- Temperature compensation (with optional temperature probe).

#### KEY FEATURES:

- Highly efficient 10 A current source generates 10 A into 200 mΩ load for 15 min without overheating;
- High overvoltage protection (CAT IV / 300 V) allows measurement in substations and other points with low line resistance;
- Internal protection circuit protects user and instrument from inadvertent connection to lines;
- Custom limits can be set for PASS / FAIL evaluation of test result.
- 50 Hz / 60 Hz ripple detection and rejection;
- Instrument can be powered from mains or internal rechargeable battery. Instrument can be normally used while built-in fast battery charger charges the NiMH batteries;
- Large 320 x 240 dots matrix LCD offers easy-to-read results and all associated parameters;
- Lightweight portable design;
- Up to 1000 test results with timestamp can be stored in internal memory;
- PC SW HVLink PRO enables downloading, review, analyses, and printing of test results.

## HIGH VOLTAGE INSULATION / CONTINUITY / EARTH

### MI 3252 MicroOhm 100A

MI 3252 MicroOhm 100A is a portable low resistance ohmmeter used to measure low contact resistances of breakers and switches, busbars using test current from 100 mA to 100 A.



#### MEASURING FUNCTIONS:

- Resistance measurement: wide measuring range (10 μΩ ... 20 Ω) with high accuracy 0.25 % of reading and resolution down to 1 nΩ;
- adjustable test current (100 mA ... 100 A);
- Voltage drop measurement;
- Bar graph: on screen resistance bar graph.

#### KEY FEATURES:

- Safe: sustain external voltages in case of wrong connection, protection level (CAT IV, 50 V); automatically detects continuity in current circuit;
- Single and continuous measuring mode;
- Portable: rugged carrying case with a handle and lightweight design enable easy moving the instrument between sites;
- High protection degree: IP 64;
- Custom limits: the limits can be set for PASS or FAIL evaluation of test result;
- Battery powered: the instrument enables measurements with 100 A for up to 10 minutes when powered from internal battery only;
- Memory: built-in memory enables storage of up to 1000 test results;
- Downloadable: downloads test results via RS232 or USB cable directly to the PC with the help of the software.