



**POWER - MAP ENGINEERING**

MAP your POWER needs  
to the utmost satisfaction with us.

Authorised Channel Partner





## POWER - MAP ENGINEERING

### PRODUCTS



### SERVICES

- RLA / Diagnostic Testing of Transformer
- Oil Testing With NABL Mobile / Static Lab
- Switchyard Equipment Testing up to 400kV
- GIS Substation Equipment Testing
- HT Cable Testing & Cable Route Tracing
- HT/LT Switchgear & Panels Maintenance
- Power System Study on ETAP Software
- Testing & Commissioning of S/s Equipment
- Transformer Rental / Hiring Services

### WHO WE ARE

We, Power Map Engineering are torchbearers in providing Testing and Measuring instruments specifically OUR JOURNEY catered according to customer requirements.

We provide instruments for testing of electric apparatus in High Voltage substations, including

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• Transformers</li><li>• Motors &amp; Generators</li><li>• Switchgears And network instruments, including</li><li>• Relays</li><li>• Energy Meters</li></ul> | <ul style="list-style-type: none"><li>• Transducers</li><li>• Transformers and cables</li><li>• Power quality meters etc.</li></ul> |
|--|---|

We are the leaders in providing extensive technical support, after-sales service, and a comprehensive stock level for immediate response to customer's requirements.

### OUR JOURNEY

We started in June 2014 with the sole intention of making a difference to clients with specific needs in the power industry. We scaled new heights in September 14, when we get ISA authorization for Channel Partnership for all ISA products. We continued working hard to build a brand name & then in year 2017 added another feather to our caps i.e. METREL to take up their distributorship in supplying instruments to our clients. Then in year Jan 2022, we started our new vertical for on site equipment testing. We continue working with renowned clients including ERDA, Torrent Power Ltd., Suzlon, Godrej, Atlanta Electricals, TBEA, T & R, GETCO, NPCIL, GSECL and many more, to name a few. We humbly proceed to serve many other companies with our products and services.

### ABOUT OUR PRINCIPLES

We are authorized channel partners of the two leading brands Doble Group from USA and Metrel from Slovenia.



Founded in 1920, Doble Engineering Company ensures reliable, safe and secure power for all. We do this by providing comprehensive diagnostics and engineering expertise for the energy industry. Doble is part of the Utility Solutions Group of ESCO Technologies Inc. (NYSE: ESE) and serves customers around the globe. Doble is an ISO 9001 & ISO/IEC 17025 & 17034 certified company.

Doble Group has been a one-stop solution for all off-line testing and online monitoring instruments. ISA, TECHIMP, MORGAN SCHAFFER, VANGUARD & PHENIX are the five companies of Doble Group.



### TECHIMP ADVANCED TESTING AND MONITORING SOLUTIONS FOR ELECTRICAL ASSETS

Altanova offers a wide range of diagnostic and monitoring equipment for electrical assets in the field of power generation, transmission & distribution networks and process industries.



### ACCURACY BY DESIGN

Providing the most reliable & accurate online & portable DGA monitoring equipment, ISO-certified laboratory testing services, diagnostic software & the only commercially available gas-in-oil standards.



## POWER - MAP ENGINEERING



### **SUBSTATION TEST EQUIPMENT**

Rugged, reliable, accurate, and user friendly diagnostic test equipment that measures the health of critical substation equipment.



### **HIGH VOLTAGE - HIGH CURRENT HIGH POWER TEST SYSTEMS AND COMPONENTS**

Phenix Technologies provides a complete line of high voltage, high power, and high current test systems and components.



Metrel has been a leader in offering instruments for various functions since 1957. These functions include

- |   |                              |
|---|------------------------------|
| • Electrical Installations safety       | • LAN Cabling certification  |
| • Power quality analysis                | • Indoor Environment Quality |
| • High Voltage insulation diagnostics   | • Equipment for laboratories |
| • Machines/Appliances/Switchgear safety | • Variable Transformers      |

### **OUR VISION**

We believe in holistic growth by catering the customer demands and mutually growing together by raising our standards. We seek to achieve this by fulfilling specific customer needs and excellent service responses. We always strive to be the chosen ones for our customers by serving engineering and project services that positively impact the industry.

### **OUR MISSION**

We strive to formulate design requirement-based product solutions, expanding our branches by winning the trust of our customers. Customer support is our strength and our ultimate goal to success. We always seek to maintain a highly professional atmosphere to create a productive growth pathway and add value to our clients.

### **OUR MOTTO**

Our goal is to ensure our clients' smooth progress, so the project meets the time frames within available resources and is managed efficiently and effectively. We are bound to improve our processes to create a healthy environment in equipping our staff with the required skillset and providing them opportunities for their own development through their experiences to strengthen their portfolios.

### **CORE VALUES**

- |                            |   |
|----------------------------|---|
| - Sound business ethics    | - Professional approach, cooperation with clients |
| - Honesty and transparency | - Customer focus                                  |

### **VALUE STATEMENT**

**QUALITY** – We are bound to provide the highest quality services and products to our clients and adding value to their investment. Our end-to-end engineering processes and systems see to our deliverables, service, and commitments.

**SERVICE** – We are driven by the motive of treating our client's business as our business and hence believe in making our services worth the client's investment by providing competitive pricing and value for money.

**HONESTY**– We desire to be open in all our dealings to gain the trust of our clients.

**TEAMWORK** – We actively promote cooperation and expect each person to be responsible and treat others with respect.

**INNOVATION** – We aspire to provide our clients with innovative and effective solutions in our production and provision of service building.



## OFFLINE TESTING EQUIPMENT

### PROTECTIVE RELAY TEST SET



#### DRTS 66

- Manual control with color display and by laptop with TDMS software
- Simultaneously available: 6 Current and 6 Voltage plus 1 battery simulator output
- High current outputs: 6 x 32 A, 3 x 64 A, 1 x 128 A
- High power outputs: 6 x 430 VA, 3 x 860 VA, 1 x 1000 VA
- Voltage outputs: 6 x 300V at 100 VA
- High accuracy outputs: better than 0.05%
- IEC 61850 protocol interface. USB, Ethernet and Pen drive interface
- IRIG-B interface for end-to-end tests

#### DRTS 34

- Manual control with color display and by laptop with TDMS software
- Simultaneously available: 3 Current and 4 Voltage plus 1 battery simulator output
- High current outputs: 3 x 32 A, 1 x 96 A
- High power outputs: 3 x 420 VA, 1 x 1000 VA
- Voltage outputs: 4 x 300V at 100 VA
- High accuracy outputs: better than 0.05%
- IEC 61850 protocol interface. USB, Ethernet and Pen drive interface
- IRIG-B interface for end-to-end tests

### T 1000 PLUS - TD 1000 PLUS SECONDARY INJECTION RELAY TEST SET

- Multi-tasking test set designed for testing relays and transducers.
- Max current output: 250 A.
- Max AC voltage output: 250 V. Max DC voltage output: 300 V.
- Two current outputs to test the differential relay.
- TD 1000 PLUS 15 Hz model with higher power at 15 Hz.
- Frequency generator: 15 ÷ 550 Hz.
- Phase angle shifter.
- Oscilloscope function for current and voltage.
- USB port - Microprocessor controlled.

This advanced secondary injection relay test system and power system simulator is designed to satisfy all the needs related to commissioning and maintaining substations, and to testing protection relays, energy meters, transducers and power quality meters.

- DRTS 66
- DRTS 64
- DRTS 34
- DRTS 33

#### DRTS 64

- Manual control with color display and by laptop with TDMS software
- Simultaneously available: 6 Current and 4 Voltage plus 1 battery simulator output
- High current outputs: 6 x 32 A, 3 x 64 A, 1 x 128 A
- High power outputs: 6 x 430 VA, 3 x 860 VA, 1 x 1000 VA
- Voltage outputs: 4 x 300V at 100 VA
- High accuracy outputs: better than 0.05%
- IEC 61850 protocol interface. USB, Ethernet and Pen drive interface
- IRIG-B interface for end-to-end tests

#### DRTS 33

- Manual control with color display and by laptop with TDMS software
- Simultaneously available: 3 Current and 3 Voltage plus 1 battery simulator output
- High current outputs: 3 x 32 A, 1 x 96 A
- High power outputs: 3 x 430 VA, 1 x 900 VA
- Voltage outputs: 3 x 300V at 100 VA
- High accuracy outputs: better than 0.05%
- IEC 61850 protocol interface. USB, Ethernet and Pen drive interface
- IRIG-B interface for end-to-end tests
- Optional PC control using TDMS - Advanced Test and Data Management software





## POWER TRANSFORMER TEST SET



### TDX 5000

#### TAN DELTA AND CAPACITANCE DIAGNOSTIC SYSTEM FOR POWER APPARATUS\*

- Tan Delta, capacitance, dissipation factor measurements and exciting current test
- Output voltage up to 12 kV
- Variable output frequency: 15 - 500 Hz
- Compact and lightweight
- TDMS software for test set control, results storage and analysis
- PADS software for the remote control of STS family test equipment
- RCTD - compensating reactor module allows increasing the test current and getting the maximum test voltage with high capacitive burdens



### STS 5000 / STS 4000 WITH TD 5000

MULTIFUNCTION TEST SYSTEM FOR CURRENT, VOLTAGE AND POWER TRANSFORMERS. CAPACITANCE AND TAN DELTA DIAGNOSTIC SYSTEM WITH THE OPTIONAL MODULE TD 5000\*

- Primary injection testing capabilities: up to 800 A or up to 5000 A/7000 A, with the optional module BUX 5000
- Variable output frequency: 15 - 500 Hz
- Power dissipation factor test with the optional module TD 5000 (voltage up to 12 kV)
- 2000 v AC high-pot test
- Local control by large color display
- PADS - Power Apparatus Diagnostic Software for automatic testing, assessment and report
- IEC 61850-9-2 communication protocol
- Patented technology for Capacitance and Tan Delta measurement
- USB interface and Ethernet interface for PC connection.
- Compact and lightweight



### ACCESSORIES FOR POWER TRANSFORMER TESTING

#### ACCESSORIES FOR STS 5000 / STS 4000

- CAP-CAL calibrator module to check the correctness of Tan Delta and Capacitance TD 5000 measurement
- RCTD compensating reactor module to increase the test current and getting the maximum test voltage with high capacitive burdens
- STOIL 12kV OIL CELL to test the isolation oil characteristics
- STCS with 20A DC BOOSTER to perform the test of ratio per tap, winding resistance and OLTC dynamic test with a current up to 20 A DC
- STLG line and grid module and STSG safety grounding module to perform the measurement of soil resistivity, ground grid resistance, step and touch tests and of overhead lines zero sequence and mutual coupling coefficients

## INSTRUMENT TRANSFORMERS TEST SET

### eKAM ELECTRONIC AND AUTOMATIC PRIMARY INJECTION TEST SYSTEM UPTO 2000A, 3000A AND 5000A

- Fully automatic test set. Two portable units: control and current units
- High current output: up to 2000 A, 3000 A and 5000 A
- Variable output frequency: 15 - 500 Hz
- CT ratio, burden and polarity test
- IEC 61850-9-2 sample values protocol interface
- Large graphic display
- Step & touch plus ground resistance tests with STLG option
- Advanced Test & Data Management Software for test set control, results storage and analysis



### T 3000 - T2000 SUBSTATION MAINTENANCE AND COMMISSIONING TEST EQUIPMENT

- Multi function system for testing current, voltage and power
- transformers, all type of protection relays (T 3000 only) energy meters and transducers
- Primary injection testing capabilities
- 3000 V AC high-pot test
- Generates up to 800 A (option up to 4000 A)
- Microhmmeter function (option): up to 400 A DC
- RS232 interface for PC connection
- Test results and settings are saved into local memory

### iCT1 - CT/VT TEST SET

The new and most advanced portable equipment capable to test current, voltage and combined transformers. With the low voltage method, known as "DC method", iCT1 is able to test Current Transformers with a very high saturation voltage, up to 30 kV, in a complete safety mode.

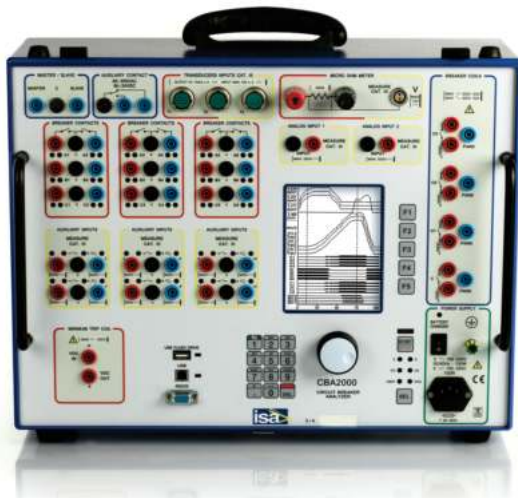
- Designed to test Current, Voltage and Combined Transformers
- Time saving testing: only 1 set up connection to perform all the tests
- Main tests performed: Ratio & Phase Error, Excitation, Resistance, Accuracy, Burden
- 5-TAP integrated Switchbox describing the behavior of the CT
- Able to test CT with saturation voltage up to 2kV and till 30kV applying DC indirect method
- Integrated Demagnetizer
- CT Explorer function: able to find the nameplate data of the CT
- Compact and lightweight
- Patented technology



## CIRCUIT BREAKER TEST SET

### CBA 3000 ALL IN ONE CIRCUIT BREAKER ANALYZER AND MICROOHMMETER

- Faster: one single connection set up to perform automatically all possible Circuit Breaker Test Safer: Both Side Grounded facility without any additional external boxes/modules
- 3/6/9 static and dynamic contact resistance measurement – 200A DC output each
- First trip measurement three phase
- 16 or 24 fully user configurable Main/PIR and auxiliary input contacts
- 4 or 6 Open / Close coil commands
- 8 analog input measurements
- 3 analog linear/rotary transducers and 3 digital transducers inputs for travel/ speed analysis
- Minimum voltage trip coil test fully automatic
- On-screen control and test results evaluation
- PC Software suite TDMS for analysis, archiving and test report creation



### CBA 2000 HV CIRCUIT BREAKER ANALYZER AND MICROOHMMETER

- Designed for the complete test of all circuit breakers
- Built-in 200 A microhmmer - static and dynamic contact resistance measurement
- 12 auxiliary timing inputs
- Up to 4 trip/close coils control
- Up to 18 main and 18 resistive contact inputs
- Digital transducer option for motion analysis
- Minimum Trip Voltage Test (optional)
- Stand alone functionality - no PC connection is required
- Analysis and result evaluation directly on the display
- Internal memory for up to 500 test results and 64 pre-defined test plans

### CBA 1000 Circuit breaker analyzer

- Circuit Breaker timing test set suitable for EHV, HV and MV circuit breakers
- Built-in 200 A microhmmer - static and dynamic contact resistance measurement
- 6 main and 6 resistive contact inputs
- Up to 4 trip/close coils control
- 7 analog inputs
- 4 auxiliary timing contact
- Cross trigger for the synchronization of up to 4 CBA 1000
- Stand alone functionality - no PC connection is required
- Analysis and result evaluation directly on the display
- Internal memory for up to 250 test results and 64 pre-defined test plans
- USB and RS232 ports





### ONLINE MONITORING SOLUTIONS

#### ACQUISITION UNITS

TECHIMP offer a variety of devices and sensors whose combination allows the diagnostic of all types of HV/MV electrical systems such as, Power Transformer, GIS, HV/MV Cables, Motors & Generators, etc..

#### FALCON MK II

##### PD Monitoring for MV Switchgears

FALCON MKII System is a comprehensive solution to monitor Partial Discharge, enclosure contact temperature, and humidity, designed to monitor large clusters of switchgear.



#### FALCON

##### Medium voltage PD monitoring

FALCON is representing the latest state of the art technology for partial discharge monitoring (PDM) of MV assets, combining proven and patented technology from HV asset monitoring with economic requirements. FALCON™ is acquiring and processing high frequency PD signals locally detected by the sensors to which it is connected, whether inductive (HFCT), capacitive (TEV).



#### PDScope™

##### Acquisition unit for PD Monitoring

The PDScope™ is a part of the PDCheck™ family and particularly designed to be an integral part of TECHIMP's monitoring systems.

The PDScope™ is the ideal device for PD Monitoring of HV Cable, Generators, GIS, MV cable and switchgear as well as transformers.



#### TD GUARD™

##### Intelligent TD sensor

TD Guard™ Intelligent Sensor is an on-line CONTINUOUS Capacitance and Tan-δ monitoring system for transformer bushings.

The TD Guard™ Intelligent Sensor is providing absolute Tan-δ measurement in on-line permanent monitoring of transformer bushings, granting the best level of diagnostic leverage and reliability.



#### AQUILA

##### Portable PD analyzer

A compact and portable Partial Discharge acquisition unit, which allows to detect and analyze partial discharge activities in all electrical assets: from power cables to transformers, rotating machines and switchgears, together with the right combination of sensors and accessories. AQUILA comes with a full range of options, ideal for field testing.



#### microAQUILA

##### Ultimate portable solution for PD assessment

MicroAquila is a Highly flexible and reliable instrument for Partial Discharge (PD) diagnostic campaigns, a practical all-in-one instrument, equipped with all you need for a complete PD assessment.



## ONLINE MONITORING SOLUTIONS

### SENSOR & ACCESSORIES



Derivation Box



TEV Antenna



TEM Antenna



Tap Adapter



Global Tap Adapter Kit



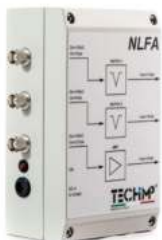
UHF Spiral Antenna



UHF Spiral Antenna



Permanent Power Supply



NLFA



1nF PD Coupling Capacitors



ITSM Synch Module



PD Calibrator



UHF Horn Antenna



HFCT



HFCT clamp



FMC

### ONLINE MONITORING SOLUTIONS

#### LABORATORY EQUIPMENT

#### PD Simulator

##### Partial Discharge Simulator

TECHIMP's PD Simulator is a portable device designed to demonstrate typical partial discharge phenomena (corona, superficial, internal) present in all MV and HV electrical assets.



#### Techsquare

##### Impulse Voltage Generator (for the new IEC standards, IEC 60034-18-41 and IEC 60034-18-42)

##### Techsquare impulse voltage generator for qualification and quality control tests

Impulse Generator and Partial Discharge Detector for insulation systems subjected to repetitive voltage impulses. TechSQUARE is suitable for design and qualification tests of electrical insulation systems to be used under power electronic waveforms.



#### PEA

##### Space Charge Measurement System

The pulsed electro-acoustic (PEA) method is a non-destructive space charge measurement technique. It is used to profile the space charge distribution, accumulation and its overall behavior inside polymeric insulating materials.

Used by many research labs of cable manufacturers, research institutes and universities around the world.



#### PDBASE II

##### Acquisition Unit for Research and Quality Control

PDBasell™ has been expressly designed for the needs of a researchlab or for quality control. The PDBasell™ is equipped with an ultra-wide band digitizer and integrated processing capabilities. With its fast sampling rate (200 MS/s) and its on-board processing capabilities, a considerable number of digitized PD pulse waveforms are analyzed and pulse features are stored for a further processing leading to the final PD source identification



#### HV Test bench

It is a deeply customizable test bench which is suitable to generate frequency and amplitude controlled voltage. This test bench could be used for life test or quality test on samples or devices.



#### Capacitive Divider

##### Capacitive Coupler for PD measurements.

17.5 to 100kV Capacitive Couplers suitable for on-line or off-line PD tests on rotating machines, for both spot measurements and monitoring applications. A BNC termination is available to connect the coupler through a coaxial cable.





## TRANSFORMERS MONITORING SOLUTIONS

### Myrkos (Portable Dissolved Gas Analyzer)

The most accurate portable gas analyzer on the market To make informed decisions on site, you need fast and reliable data. Myrkos portable gas analyzers provide laboratory quality DGA data where you need it, when you need it. In remote locations, to confirm monitoring data, or whenever on-site diagnosis is required, Myrkos portable gas analyzers provide results as accurate as a lab through our proprietary Shake Test® syringes.

With the lowest detection limits, Myrkos is the most accurate portable gas analyzer on the market. Its proven gas chromatography (GC) technology, built-in diagnostics and solubility coefficients provide interference-free analysis of all 9 fault gases in all common oil types.

Myrkos is the only DGA portable analyzer to use both gas chromatography and headspace extraction, as prescribed in ASTM 3612 and IEC 60567 standards.



### Calisto Series

#### Complete DGA + Moisture Diagnostic Monitor

The Calisto® R9 brings something new to the market of DGA monitors: long-term accuracy without calibration gas cylinders to manage. This breakthrough is achieved by combining a novel IR gas measurement technology with a game-changing calibration system that uses water vapor as a calibrant to maintain accuracy over time.

Calisto R9 combines these innovations with robust design features that have been continuously improved through many years of serving Calisto customers around the world. These include membrane extraction to keep the gas measurement system free of oil and oil vapors, our sludge-tolerant pump that eliminates the need for oil filtration, and precision thermal controls for DGA accuracy.



**Calisto R9** High-Accuracy & Low-Maintenance DGA



**Calisto 9** Complete DGA + Moisture Diagnostic Monitor



**Calisto 5** 5 Fault Gases + Moisture Diagnostic Monitor



**Calisto 2** Hydrogen, Moisture + Carbon Monoxide Detection Monitor



**Calisto 1** Hydrogen + Moisture Detection Monitor



**Calisto H1** Hydrogen Sensor for Transformers

## ELECTRICAL TEST INSTRUMENTS

### FOR TRANSFORMERS

#### M5500

##### Sweep Frequency Response Analyzer

The M5500 Sweep Frequency Response Analyzer is our newest generation of SFRA diagnostic instrument. With incredibly fast sweep speed and expanded dynamic range, you can use the Doble M5500 test set to investigate mechanical integrity of transformers, reactors and other equipment with windings. Coupled with the ease-of-use and powerful features of the new SFRA 6 Software, conducting SFRA testing and analysis of your apparatus has never been easier or more productive.



#### M4100

##### High Voltage Apparatus Tester

The M4100's unique combination of test capabilities and artificial intelligence analysis software makes it the power industry's most trusted Power Factor/Tan-Delta instrument.

The M4100 instruments are used around the globe thanks to their comprehensive testing options, safety features and measurement accuracy.

Testing is simple and accurate with the M4100 and Doble Test Assistant (DTA) software. You can then analyze your test results with the help of FRANK™, the First Response Analytics Knowledgebase, which provides clear recommendations and explanations.



#### M7100 Analyzer High-Voltage Asset Analyzer

##### Complete solution for high and low voltage testing

The only test set featuring two dual-function high-voltage leads for source and measurement delivers the fastest, complete set of measurements. Compared to a single-lead system, this patented design dramatically improves technician safety by reducing ladder trips by as much as two-thirds and simplifying lead placement.

The M7100 automates multiple tests, previously performed by several pieces of equipment, cutting down testing time from seven hours to one and a half hours. Reduced testing time means technicians can safely perform more commissioning, scheduled maintenance and diagnostic activities.



### FOR CIRCUIT BREAKER

#### TDR9100 / TDR900 Circuit Breaker Test System

##### Performs timing for up to 4 breaks per phase w/motion measurements for any circuit breaker

The only test set featuring two dual-function high-voltage leads for source and measurement delivers the fastest, complete set of measurements. Compared to a single-lead system, this patented design dramatically improves technician safety by reducing ladder trips by as much as two-thirds and simplifying lead placement.

The M7100 automates multiple tests, previously performed by several pieces of equipment, cutting down testing time from seven hours to one and a half hours. Reduced testing time means technicians can safely perform more commissioning, scheduled maintenance and diagnostic activities.



## FOR PROTECTION RELAY

### F6150e

#### Power System Simulator

This power system simulator performs the simplest through the most complex tests. Meeting all your protective relay testing needs, the F6150e is available in different configurations.

Whether you need to test a specific component or test an entire scheme, the F6150e is the proven solution to assess protection system performance.



### F6150sv

#### Power System Simulator

This power system simulator performs the simplest through the most complex tests. The F6150sv has the highest output current of any test set on the market – all within a single box.

Meeting all your testing and budgetary needs, the F6150sv is available in different configurations.

The F6150sv tests IEC 61850-based systems at the process-bus level and station-bus level using both sampled values and GOOSE messages.\*

\*F6870 Sampled Values option required



### F6880

#### Digital Network Analyzer (DNA)

#### Detect and address issues in IEC 61850 network traffic

The Doble F6880 Digital Network Analyzer (DNA) reveals details that are essential to helping protection engineers and relay test technicians quickly resolve issues in IEC 61850 network traffic.

This compact and lightweight instrument is paired with powerful software that analyzes IED communications and provides diagnostic and analytical functionality in real time.

The DNA is a digital substation multimeter, capable of plotting IEC 61850 sampled values (SV) and GOOSE messages via real-time oscillography, phasor, and tabular data views.

It is also a system event recorder, capturing events via customizable triggers and producing analysis reports that allow the user to evaluate network performance and power system anomalies, like voltage sag, harmonic distortion, and underfrequency.

The F6880 compares SV and GOOSE information from SCL files with the present network traffic to identify system misconfiguration issues such as missing, duplicated, or unknown messages.

The DNA can even be left connected in the substation for extended periods, offering remote access and control.





## CONDITION MONITORING SOLUTIONS

### TRANSFORMERS

#### SPARK P3

Universal PD & EMI analyzer

Doble Spark P3 is a universal partial discharge (PD) and electromagnetic interference (EMI) analyzer that uses a software defined radio signal detector to identify characteristics of insulation system deterioration that could lead to the failure of high voltage equipment. It detects signals from suitable sensors in a frequency range between 9 kHz to 2 GHz for PD and EMI, and DC to 500k Hz for acoustic and reference voltage measurements.



#### PRIME PD-Guard Partial Discharge Monitor

The doblePRIME PD-Guard™ continuously monitors partial discharge (PD) in equipment such as transformers, rotating machines, cables and switchgear.

The doblePRIME PD-Guard provides local alarms and will communicate data and notifications across standard interface channels and through to networked supervisory systems. It analyzes RF emissions in the HF, VHF and lower UHF ranges.

Install the doblePRIME PD-Guard on critical assets and configure using a computer, tablet or web-enabled device to monitor PD activity.



#### PRIME IDD Bushing Monitor

For on-line monitoring of bushings and current transformers

The doblePRIME Intelligent Diagnostic Device™ (IDD) Bushing Monitor detects deterioration in bushings, finding abnormalities in the insulation and issuing actionable alerts.

The doblePRIME IDD Bushing Monitor provides leakage current and phase analysis for up to 12 bushings, measuring parameters for each bushing individually and together.

This intelligent device uses its embedded Expert System to provide you with notifications and alarms based on comparisons between off-line and calculated on-line data. Designed to fit your monitoring program, the doblePRIME IDD Bushing Monitor can operate as a standalone device or as part of a doblePRIME Condition Monitoring Platform.



#### PRIME Condition Monitoring Platform for Transformers

The doblePRIME™ Transformer Condition Monitoring System gives you a clear, consolidated means to assess overall transformer condition.

Now you can pick the appropriate level of condition monitoring for an individual transformer or group of transformers in one location.

doblePRIME is a scalable, on-line monitoring solution. It can be as simple as one diagnostic device such as the Morgan Schaffer Calisto for DGA. It can also be a robust system monitoring and analyzing oil status, tap changer condition, bushing health, while integrating all types of diagnostic indicators, IEDs and sensor data. View this critical information on site or remotely.



## TRANSFORMER TURNS RATIO TESTERS

Vanguard offers an extensive line of microprocessor-based, automatic single-phase and three-phase turns ratio testers that use the IEEE C57.12.90 measurement method. Vanguard's three-phase turns ratio testers can automatically detect and test.

### TRF-250 *automatic, 3-phase transformer ratio finder*



- ANSIIEEE C57.12.90 testing method
- Ratios: 0.8-50,000 to 1
- Test voltages: 4 Vac, 40 Vac, 100 Vac, and 250 Vac
- 4.5" thermal printer Built-in LTC Controller
- Optional
- USB Flash drive USB PC. Bluetooth PC interfaces
- Export test report in Excel, XML, and PDF format
- Stand-alone or computer-controlled
- Automatically detects and tests 67 transformer types defined by ANSI, CEI/IEC and Australian standards

### TRF-250A



Battery-operated, automatic, 3-phase transformer ratio finder with 250 Vac maximum test voltage

### TRF-100



Automatic, 3-phase transformer ratio finder with 100 Vac maximum test voltage

### ATRT-03 S2



Automatic, 3-phase transformer turns ratio tester

## VACUUM BOTTLE TESTERS

### VBT-75 S2/VBT-75P S2 *75 kVdc vacuum bottle testers*



- 10 kV to 75 kVdc test voltages in 5 kV steps
- 100, 200, 300 micro-amperes program mable test current
- Displays test voltage and test current
- "Pass/Fail" indicator and message
- VBT-75P S2 only
- Very lightweight
- Shipping case included
- Built-in 2.5" thermal printer\*
- Can store up to 84 records of 16 readings in Flash EEPROM\*
- USB Flash drive interface\*

## TRANSFORMER WINDING RESISTANCE METERS

Vanguard's winding resistance meters are designed to accurately measure the winding resistance of highly inductive power transformers and can also be used to measure EHV circuit - breaker contact resistance, motor winding resistance, or any low resistance.

### TRM-403 *40 A three-phase winding resistance meter with demagnetization*



- Three - phase winding resistance meter
- Calculates resistance value of each delta winding
- Calculates resistance value of Wye wind ings with no accessible neutral
- Calculates equivalent resistance value
- Heat run test
- Demagnetizes transformer after test
- Detects LTC contact make - before - break using resistance graph
- USB Flash drive, USB PC and Bluetooth PC interfaces
- Built - in LTC controller

### TRM-203



25 A three-phase winding resistance meter with demagnetization

### TRM-20/40



25 or 40 A single-phase winding resistance meters with demagnetization

## MICRO - OHMMETERS

- AUTO-OHM 200 S4
- Selectable true DC test current from 1A to 200A. (Selectable 1A stage)
- Resistance Reading Range: From 1  $\mu\Omega$  to 5 $\Omega$ .
- Internal Data Storage: Up to 128 test records (each with 64 readings).
- Software: Windows®-based analysis software included for exporting data to PDF, Excel, XML.
- Display: Back-lit LCD screen viewable in bright sunlight and low-light levels.

### Auto-ohm 200 S4



200 A true DC micro-ohmmeter



## High Voltage Insulation Testers



### Features

- Insulation Resistance upto 35TΩ & Voltage upto 15kV
- Diagnostic Test (PI, DAR, DD)
- Step Voltage Test
- Withstanding voltage test (DC) up to 15 kV
- Burn or Breakdown Mode
- Voltage upto 999V TRMS and frequency measurement
- Capacitance measurements
- Adjustable test voltage (50V to 15 kV) in 50 V and 100 V steps
- Maximum short circuit/charge current > 6mA
- Live voltage detection > 30V
- Programmable timers upto 100min
- AC current noise rejection 8 mA
- AC voltage noise rejection 1.5 kV
- Filters (Off, 5, 10, 30, 60, 100, 200)
- Measurement results in numerical and graphical form
- High quality accessories, including shielded test leads
- Measurement results in numerical and graphical form
- PC software for download and analysis of test results and for test report creation
- Isolated RS 232, USB and Bluetooth communication ports
- High quality accessories including shielded test leads in the standard set
- High EM interferences protection (input AC current noise rejection and additional averaging of results)
- Mains and rechargeable battery power supply

### Available Models



**MD 9070**  
1 kV Insulation Resistance /  
Digital Multimeter



**MI 3121H SMARTec**  
2.5 kV Insulation  
Continuity



**MI 3201**  
TeraOhm 5 kV Plus



**MI 3205**  
TeraOhmXA 5kV



**MI 3211**  
TeraOhmHP 10 kV



**MI 3215**  
TeraOhmHP 15 kV



## Earth Testers ( Earth / Tower Footing / Step & Contact Voltage )



### Features

- Earth Resistance 2/3/4 – pole with Fixed or Programmable frequency 55Hz to 15kHz
- Sweep mode Z(f) with graphical presentation of the results
- Selective Earth Resistance (1 x clamp)
- Soil Resistance via Wenner and Schlumberger method
- Earth Resistance with 2 iron clamps
- Earth Potential
- Step and touch voltage measurement with high current of up to 50A
- Insulation resistance with DC voltage from 50V to 2500V and PI, DAR & DD tests
- Capacitive measurements
- Varistor test 2.5 kV
- Withstand voltage test with DC voltage up to 2.5 kV
- Possibility of performing all types of earth measurements with a single instrument
- TFR / HF-Earth Resistance (25 kHz, acc. to IEEE\_ Std 81)
- Earth Resistance of mono pylons with 10 m flex clamp
- TFR / Earth Resistance of multi-leg pylons with upto four flex clamps
- Current measurement (Iron, flex clamps)
- Low Ohm measurement 7 mA and 200 Ma
- Impulse Earth measurement 10/350  $\mu$ s
- Measurement of DC resistance
- Built-in help screens for referencing on site
- Support for AUTO SEQUENCE@s and visual tests for advanced users
- Checkbox: different self-check methods
- 4.3" colour LCD display with touch screen
- Floating Mains (universal 90 to 260 V AC) or rechargeable battery
- powered
- High degree of protection: IP 65 case closed, IP 54 case open
- Software with USB or Bluetooth communication
- Memory: up to 1000 test results
- Compact and light weight

### Available Models



MI 3123  
SMART-EC Earth  
Clamp



MI 3288 Earth  
Insulation Tester



MI 3295 Step Contact  
Voltage Measuring System



MI 3290  
GH Earth Analyser /  
Tower Footing  
Resistance





## Continuity Tester ( Micro Ohm / Contact Resistance )



Whereas high electrical resistance is a desired quality for insulation materials, the opposite is true for conductors of all shapes and sizes that have to conduct electricity with minimal losses. Like in their counterparts, properties of conductors are degraded by physical and chemical factors and improper construction.

Measuring very low resistances in large conductors such as windings, breakers and busbars requires high current to minimize errors as well as the use of 4 wire Kelvin method to eliminate errors due to lead and contact resistances. Selected Metrel continuity testers use both this method and currents up to 100 A to ensure the highest measuring accuracy possible.

### Features

- Equipotential Bonding with 4 wire MicroOhm meter with 2A, 10A or 100A battery operated generator with results in fine resolution up to 1 nanoOhm.
- Accurate: 0.1 nΩ best resolution with 0.25% accuracy.
- Bar graph: on screen resistance bar graph.
- Battery powered: the instrument enables measurements with 100 A for up to 10 minutes when powered from internal battery only.
- Four measuring modes: Automatic, single, continuous and inductive.
- Automatic thermal EMF elimination: with automatic bidirectional measurement.
- Temperature compensation: measured resistance can be adjusted according to ambient temperature, which can be

entered manually or measured by external probe.

- Custom limits: limits can be set for PASS/FAIL evaluation of test results.

### Available Models



MI 3242  
MicroOhm 2 A



MI 3250  
MicroOhm 10 A



MI 3252  
MicroOhm 100A

## Transformer Tester (Winding Resistance –1Phase / 3Phase)

### Features

- The MI 3281 WR Analyser is a portable test instrument designed for measuring winding resistance in single-phase and three-phase transformers, including those with manual or automatic tap changers. It also supports transformer demagnetization and offers intuitive operation, enabling use without special training.
- Winding resistance measurements (single and three phase transformers) with manual or automatic Tap changer tests (automatic measurement of all winding).
- Demagnetization of single and three phase transformers.
- Selectable test current from 10 mA to 20 A
- Automatic winding resistance tests of transformers with on-load or no-load tap changers.
- Automatic discharge after finishing measurement.
- Emergency stop switches in case of any emergency situation.
- A 4.3" colour LCD display with touchscreen, offers easy to read results and all associated parameters.
- PC software (Metrel ES Manager) for creation of Test structure and uploading, downloading of test setup, Auto Sequence® editor and report generation.
- Bluetooth communication with PCs, tablets, and smartphones
- Winding resistance conversion to a desired reference temperature.
- Protection rating: IP 65 (closed), IP 40 (open)

### Available Models



MI 3281  
WR Analyser



## Power Quality Analysers ( Class A / S )



Power quality is a broad term that traditionally encompasses voltage, frequency and waveform of a power supply system and how well or poor they conform to established specifications. Poor power quality translates to inefficient and even dangerous operation of supplied electrical systems and may lead to damage to connected equipment and risk of fire or electrocution and loss of production.

Metrel offers class A / S power quality analysers that are suitable for advanced troubleshooting of even the most complex electrical systems. Detect, record and analyse voltage dips, swells, sags, harmonic and interharmonic components and transients and other power quality events with ease.

### Features

- Voltage TRMS, peak, crest factor (4 channel), 0 to 1000 Vrms measurement.
- Current TRMS, peak, crest factor (4 channel), automatic clamp recognition measurement.
- Power (fundamental, non-fundamental, combined, active, reactive, apparent), power factor, cos  $\phi$ , unbalance measurement and analysis.
- Power harmonic analysis.
- Harmonic pollution analysis.
- Energy (fundamental, non-fundamental, combined, active, reactive, apparent, generated, consumed) measurement.
- Harmonic analysis up to the 50th harmonic, THD, TID, TDD measurement, K-factor.
- VFD measurement.
- Support for 50/60 Hz, 400 Hz systems.
- Power measurement: IEEE 1459 / classic (vector, arithmetic).
- Flicker measurement.
- Waveform display and transient snapshotting.
- Fast logging and inrush current recording.
- Recording of fast transients.
- Analysis of signalling.
- Temperature measurement.
- Fast troubleshooting due to on-screen displaying of trends and captured events.
- Capture of voltage events and user defined alarms.
- GPS time synchronization.
- Internal memory for recording over one year period (exchangeable SD card).
- The analyser, or a group of them, can be remotely controlled and programmed via GPRS/Wi-Fi modem.
- Automatic voltage and power quality analysis according to EN 50160 with PASS / FAIL limit evaluation, including flickers and harmonics.
- Creation of reports in accordance with IEEE-519 Recommended Practice and Requirements for Harmonics Control in Electric Power Systems.
- Creation of energy demand reports.
- Compliance with power quality standard IEC 61000-4-30 Class A / S.
- Predefined recorder profile for EN 50160 survey.

- Useful for discovering voltage sags and swells, resonant states, high neutral conductor currents in 3 phase systems, asymmetry, transients.
- Useful in design of filtering systems, power correction equipment, over voltage protection and UPS systems.
- PC software Power3.0 for download, management and analysis of results and data.



### Available Models



MI 2883  
MI 2883 Energy Master



MI 2884  
Energy Master XA



MI 2885  
Master Q4



MI 2892  
Power Master  
Edition 3



MI 2893  
Power Master  
Edition 3

## Impedance Tester / Ground Integrity Tester 300A



### Available Models



MI 3143  
Euro Z 440 V



MI 3144  
Euro Z 800 V

### Features

- Earth Resistance 2/3/4 – pole with Fixed or Programmable
- frequency 55Hz to 15kHz
- Sweep mode Z(f) with graphical presentation of the results
- Selective Earth Resistance (1 x clamp)
- Soil Resistance via Wenner and Schlumberger method
- Earth Resistance with 2 iron clamps
- Earth Potential
- Step and touch voltage measurement with high current of up to 50A
- Insulation resistance with DC voltage from 50V to 2500V and
- PI, DAR & DD tests
- Capacitive measurements
- Varistor test 2.5 kV
- Withstand voltage test with DC voltage up to 2.5 kV
- Possibility of performing all types of earth measurements with
- a single instrument
- TFR / HF-Earth Resistance (25 kHz, acc. to IEEE\_ Std 81)
- Earth Resistance of mono pylons with 10 m flex clamp
- TFR / Earth Resistance of multi-leg pylons with upto four flex clamps
- Current measurement (Iron, flex clamps)
- Low Ohm measurement 7 mA and 200 Ma
- Impulse Earth measurement 10/350  $\mu$ s
- Measurement of DC resistance
- Built-in help screens for referencing on site
- Support for AUTO SEQUENCE®s and visual tests for advanced users
- Checkbox: different self-check methods
- 4.3" colour LCD display with touch screen
- Floating Mains (universal 90 to 260 V AC) or rechargeable battery
- powered
- High degree of protection: IP 65 case closed, IP 54 case open
- Software with USB or Bluetooth communication
- Memory: up to 1000 test results
- Compact and light weight boards and switchyards whenever energetic loads and sources of
- protection exceed 200A
- Ground grid integrity testing by measuring the resistance between
- two risers.
- Contact voltage measurement.
- Portable battery (Li-ion) or mains powered test instrument.
- IP protection: IP65 (case closed).
- CAT IV 600 V (3000 m) safety category.
- Bluetooth communication.
- Black box design (remote-controlled via an Android device)
- Standards EN 61557, IEEE 81-2012, EN 60909-0, EN 60947-2 Annex
- M, EN 61326, EN 61010-1, EN 61010-2-30, EN 61010-031
- MI 3144 Euro Z 800 V or MI 3143 Euro Z 440 V both are fully operated
- test instruments that could be driven through Android Application
- aMESM or one of supported instrument like MI 3155 EurotestXD or MI
- 3325 MultiservicerXD. Powerful features for industrial environment are
- implemented where hi test current is crucial demand to evaluate results.



## Single Function / Multi Function Testers (LV Installation - Line / Loop Impedance / RCD)



Electrical installation safety is nowadays more important than ever with the proliferation of increasingly complex domestic electronic appliances people install in their homes that require reliable power supply lest they become damaged and pose a fire and electrocution risk. Effects of unreliable and even dangerous electrical installations are even more acutely felt in industrial environments where they translate into production losses.

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 virtually all installation safety testing by combining an array of functionalities and features in a single rugged device, enhanced with a myriad of

### Features

- TN/TT/IT and other earthing systems support.
- 3- and 4-wire Zloop (L-PE) and Zline (L-N and L-L) impedances at entry and exit points of circuits, comparison of both results and  $\square U$  calculation in %, Ip<sub>sc</sub> and Ip<sub>fc</sub> calculation, Fuse protection evaluation.
- Uc, Zline & Zloop tests combined into one automated impedance testing procedure (Z AUTO).
- Automated RCD testing procedure (RCD AUTO).
- Contact voltage measurement with P/S probe.
- Test of RCD protection at AC / A / F / B / B+ / MI RCD / EV RCD current shape on G or S type.
- Evaluation of PE continuity, automatic polarity switch.
- PE resistance evaluation.
- Insulation testing (Switchboard, Circuits, Insulation of Walls and Floors, Antistatic Floors, Automatic insulation testing).
- PI/DAR calculation.
- Varistor test.
- TRMS Clamp-on Leakage Current testing.
- Over voltage protection with ramp.
- IMD and ISFL testing on IT systems, Medical site testing, Mobile Installations.
- Test of IMD, ELM and RCM devices with ISFL pre-test and Voltage balance evaluation.
- Earth / Ground resistance testing: 2 wire, 3 wire, 4 wire (option), 1 clamp, 2 clamps.
- Functional inspections.
- EVSE AUTO SEQUENCES and functional inspections.
- Machine functional and visual inspections.
- Measurement filtering by selected area group.
- Other tools for Three Phase Systems, Locating fuses and cables, Illumination measuring, high resolution Z impedance for power lines, QR and/or barcode scanner support.

### Available Models



MI 3122  
SMARTEC Z Line  
Loop RCD



MI 3125 BT  
EurotestCOMBO



MI 3102H BT  
EurotestXE, 2.5kV



MI 3152H  
EurotestXC, 2.5 kV



MI 3152H  
EurotestXC, 2.5 kV



MI 3155  
EurotestXD



## Photovoltaic and Electrical Installation Tester



### Available Models



MI 3114  
PV Tester  
(40A / 1500V)



MI 3115  
PV Analyser  
(20A / 1500V)

MI 3116  
PV Tester  
(40A / 1500V)

### Features

- 1000V / 1500 V insulation resistance of strings ( 15A,20A & 40A).
- Continuity of PE conductors & Polarity test.
- Isc and Uoc test & I/U characteristics.
- Wireless acquisition of irradiation and temperature of PV modules.
- Insulation resistance & Continuity of PE conductors.
- Line impedance & Loop impedance.
- RCD testing (type AC, A and B) & Earth resistance.
- AC current (load and leakage) & TRMS voltage, frequency, phase sequence.
- Power, energy, harmonics.
- Insulation and I/U measurement of 1500 V PV systems in one instrument.
- Capacitive measurement method.
- Wireless (Wi-Fi) remote unit for measuring and logging of irradiation and cell temperature of PV modules.
- Auto test for Category1 tests Calculation of STC values and comparison with nominal data.
- Correction of previously wrong entered parameters on already executed measurement or group of measurements.
- Colour TFT display, 4.3", 480 x 272 pixels with touch screen.
- Rechargeable Li-Ion battery, 14.4 V, 4400mAh, non-removable.
- IP protection: IP54 (case closed).
- CAT II / 300V, up to 4000 m.
- In built memory storage up to 8Gb.
- RS 232, USB and Bluetooth Communication.
- Standards EN 62446-1, EN 62446-2, EN 61557, EN 61326-1, EN 61010-1, EN 61010-2-30, EN 61010-031.



## Features

- Insulation measurements according to UN ECE R100 and ISO 6469-3 with own REESS as DC voltage source.
- Insulation resistance with DC voltage from 50 V to 1500 V.
- DC voltage measurement & TRMS voltage and frequency measurements.
- Four wire Micro Ohm measurements with 2 A DC test current. Low Ohm measurements with 7 mA and 200 mA DC test current.
- Visual safety and functional inspections & Support for CCS2, CHAdeMO and AC EVSE.
- Functional test protocol for measuring voltages and current on the terminals.
- Fault simulation on CCS2 and Type 2 for CP open, PE open and CP short.
- Fault simulation on CHAdeMO for CP3 open, PE open and CAN stop.
- Banana test points for DC, AC and PE terminals.
- Double PE test terminals (PE© and PE(P)) for a true 4-wire Rlow measurement.

## Available Models



**A 1532 XA**  
EVSE adapter



**A 1732 DC**  
EVSE adapter



**A 1632**  
eMobility Analyser



**MI 3132**  
EV Tester

## eMobility



- Bluetooth communication with MI 3155 EurotestXD.
- Overvoltage category CAT III / 300 V.
- CCS ISO 15118-1 or DIN 70121 communication support.
- CHAdeMO version 0.9.1 and higher communication support.
- AC EN 61851-1 communication support.
- Simulated EV Battery of 300 V and 5 A.
- Performing accurate 4-wire measurements with 200 mA measuring current.
- Insulation resistance with DC voltage up to 2500 V.
- Functional test with a live view of charge protocol and voltages and currents on the test terminals.
- Remote faults triggering and reaction time measuring.
- DC impedance measurement & Discharge time measurement.
- Asymmetric IMD test with a setupable fault resistance between 20 kΩ and 640 kΩ at 5 kΩ intervals.
- Banana socket outputs for connection to a 3-phase installation tester.
- Voltage indicators on EVSE output.
- Proximity Pilot resistance selector for simulation of EV cable presence and current rating detection.
- Control Pilot resistance selector for simulation of electric vehicle status.
- Socket output for connection to a 1-phase installation tester (Phase 1, Neutral, PE).
- Type 2 Male Plug connector for connection to EVSE.
- 6 mA EV RCD support & Load testing up to 13 A on socket - 1 phase or on banana sockets - 3 phase.
- Fault simulation of Diode short, PE-CP short and PE open & Output BNC connector for CP signal monitoring.





## PAT Testers (Portable Appliance Tester)



### Features

- Earth bond / continuity testing with test currents between 200 mA and 10 A and 25 A (including built-in function for limit calculation based on wire length and cross section).
- Insulation resistance testing with 250 V and 500 V.
- Leakage testing (PE, differential, touch, substitute, applied part, equipment).
- Innovative active polarity function for testing live RCD / PRCD protected cords.
- Multiple point testing for testing of extension leads with multiple socket-outlets.
- Safety and functional testing of special types of PRCDs: 2 pole, 3 pole, K/Di (varistor), S (3 pole), S+.
- Traceability of performed measurements and tests (user profiles).
- Results can be read / written / sent via USB, Bluetooth, external printers, barcodes and QR codes and RFID/NFC communication channels.
- Support for AUTOSEQUENCES for automatic safety testing of portable and fixed appliances, IT equipment, IEC cords, portable RCD devices, extension leads, welding equipment, medical appliances etc.
- Automatic evaluation of safety with simple PASS / FAIL information (with additional all sub-results for a detailed report creation).
- 3-phase appliance testing (with optional passive or active adapters).
- Support for aMESM, aPAT & PATLink Android applications for scanning of QR codes (containing information on the previous results, the test status, and the previously used test sequence).
- Easy retesting thanks to the scan, test and print barcoding system (PASS / FAIL labels).
- Report creating tool (PC software PATLink PRO and MESM).

### Available Models



MI 3360  
25A OmegaGT XA



MI 3309  
BT DeltaGT



MI 3340  
AlphaEE XA

## Machine and Switchboard Testers (Electrical Safety Testers)

### Features

- High voltage withstanding dielectric testing with programmable voltage ramp AC (from 500 VA and up to 5.1 kV), and DC up to 6kV.
- Earth bond / continuity testing with test currents between 200 mA and 10 A and 25 A (including built-in function for limit calculation based on wire length and cross section).
- Insulation resistance testing with voltages up to 1000 V DC. Leakage testing (PE, differential, touch, substitute, applied part, equipment).
- Functional testing (power P / S / Q, voltage, current, cos fi, frequency, ThdU, ThdI, PF).
- RCD testing (RCD Uc, RCD t, RCD I).
- Polarity testing.
- Measurement of clamp current.
- Voltage, frequency, phase rotation testing.
- Measurement of Z loop – fault loop impedance and prospective fault current (Ipsc, Ulpe, Uc(P)).
- Measurement of Zs rcd – fault loop impedance and prospective fault current in systems with RCD (Ipsc, pe, Uc(P)).
- Measurement of Z line – line impedance and prospective short-circuit current (Ipsc, UlN).
- Measurement of voltage drop.
- Measurement of discharging time.
- Results can be read / written / sent via USB, Bluetooth, external printers, barcodes and QR codes and RFID/NFC communication channels.
- Pre-defined AUTOSEQUENCE®s to meet requirements prescribed the standards IEC/EN 60204, IEC/EN 61439 for PAT and welding and other electrical equipment.
- Automatic evaluation of safety with simple PASS / FAIL information (with additional all sub-results for a detailed report creation).
- 3 phase appliance testing (with optional passive or active adapters).
- Specialized test commander for earth continuity testing on larger objects with remote start/stop.
- Easy retesting thanks to the scan, test and print barcoding system (PASS / FAIL labels).
- Report creating tool (PC software PATLink PRO and MESM).

### Available Models



MI 3325  
MultiServicerXD



MI 3394  
EU CE MultiTesterXA



## Digital Multimeters



### Features

- TRMS & Large 500,000 counts display.
- Continuity and insulation as per IEC 61557.
- Calculation of PI and DAR factors.
- Compensation of test leads.
- Data hold and MIN/MAX/AVG recording.
- Measurement of conductance & Duty Cycle.
- Voltage measuring range: 0.003 V to 1000 V (AC and DC).
- Accuracy of voltage measurements: 0.02 %.
- Current measuring range: 0.00025 A to 10 A, 20 A for 30 s.
- Accuracy of current measurements: 0.15 %.
- Resistance measurements in the 1  $\Omega$  to 50 M $\Omega$  range.
- Diode testing, Capacitance measurement.
- Frequency & Temperature measurement

### Available Models



MD 9040 TRMS  
Industrial Digital  
Multimeter



MD 9050 TRMS  
Heavy Duty Industrial  
Digital Multimeter



MD 9055 TRMS  
Advanced Multimeter



MD 9060 TRMS,  
500.000 Counts  
100k Hz Bandwidth  
Heavy Duty Industrial



MD 9070  
Insulation / Continuity  
Digital Multimeter

## Digital Clamp Meters

### Features

- AC leakage current measuring from 0.01 A.
- Current measurements up to 2000 A.
- Power measurement.
- Harmonic content measurement.
- 3-phase power measurement.
- Energy logging & Diode testing.
- AC and DC voltage range: 0.001 V to 1000 V.
- Resistance measuring range: 0.1  $\Omega$  to 60 M $\Omega$ .
- Capacitance & Frequency measurement.
- Acoustic continuity testing.
- Temperature measurements up to 1000  $^{\circ}\text{C}$ .
- Data hold and MIN/MAX/AVG recording.
- Phase rotation detection.
- Manual or automatic range selection



### Available Models



MD 9231  
Industrial TRMS AD/DC  
Current Clamp Meter



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



MD 9250 Industrial  
TRMS AC/DC CAT IV 1000 V



MD 9260 TRMS  
Photovoltaic Clamp Meter  
CAT III 1500 V DC



MD 9272/9273 Leakage  
Clamp TRMS Meter  
with Power Functions

## Non Contact Voltage Detectors



### Features

- Optical, acoustic and vibration indication of voltage.
- Detection from 12 V AC and higher.
- Integrated LED flashlight.
- CAT IV 1000 V overvoltage protection.
- IP 65 protection from water and dust. -
- 12 VAC to 1000 V AC sensing range.
- Frequency range: 40 to 400 Hz.

### Available Models



MD 106 Non Contact  
Voltage Detector



MD 116 Non Contact  
Voltage Detector



MD 126 Non Contact  
Voltage & Phase Rotation  
Detector

## Voltage and Continuity Tester



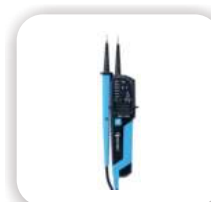
### Features

- Voltage testing up to 690 V.
- Automatic AC/DC recognition.
- Visual and audio (buzzer) indication of continuity.
- LCD display.
- Indication of protective low voltage.
- GS38 compatible guarded probe tips.
- AC and DC voltage testing.
- Phase testing.
- Rotary field testing.
- Continuity testing.
- Auto power off.
- IEC 61243-3:2014 certificate.

### Available Models



MD 1060 LED  
Voltage/Continuity Tester



MD 1160 LCD  
Voltage/Continuity Tester

## OUR VALUABLE CUSTOMERS



Many more...

### WHY US?

- We improvise our products to make them customer-centric. For this purpose, we include highly innovative and well-researched products for ease of use.
- Our instruments' quality and technical parameters align with the global requirements and satisfy specific standards. To provide at par services, we renew our accreditations every year as per the market standards.
- We offer the best after-sales service and application and service support at an affordable price according to the market scenario.
- We believe in quality over quantity and supply products that last. The product is always at the higher end with the market benchmark and protocols.
- Our application and service support has consistently rewarded us with retained and highly satisfied customers who are our pride.
- We maintain a high level of professionalism in our dealings with clients to add significant value to the projects we undertake.
- We ensure sound governance of projects of all the clients we deal with our highly competent staff to optimize productivity at the desired cost.
- We always believe in developing an end-to-end product and service capability.
- We work honestly by creating a follow-up strategy to maintain a transparent line of communication that gauges performance and builds trust with all our clients.
- In summary, we believe our commercial/trading engineering approach and passion for delivering the highest levels of customer service sets us apart from other consultants and consistently provides considerable added value to any project.

If you feel the need to have a word with us for pre-qualification, please reach out to us, and we would be happy to help you.



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