KIT SETS
Kit set IM/PAT PRO

Best combination in Kit set to cover all Safety demands for Installations, Portable and Permanent connected Appliances. With Leakage and Power Clamps for Troubleshooting! All in high IP protected carrying case.

- MI 3110 EurotestIM
- A 1314 Plug Commander
- MI 3309 DeltaGT
- MD 9270 Leakage CLAMP with POWER
- IP67 Portable Case

KIT SETS
Kit set IM/PAT EU

Kit set cover all Safety demands for Installations and Portable Appliances. All in high IP protected carrying case.

- MI 3110 EurotestIM
- MI 3311 GammaGT
- IP67 Portable Case

RECOMMENDED TESTING INSTRUMENTS

Photo	Order No.	Acc. decription
	MI 3125B Eurotest Combo	Safety of Electrical Installations in Buildings with Low Voltage Power Generator or Transformer.
	MI 3123 Smartec Earth	Earth resistance testing with most known testig methods for any situation.
	MD 9270 Leakage Current Clamps	Troubleshooting tool for tracing faults on Leakage and Insulation by direct or differential method. Additional functions.
	MD 9250 Current Clamps	Industrial multifunctional First Class Clamp Meter with AC and DC current for fixed LV Installations and Vehicle Installations.
	MD 9035 Automotive Multimeter	Designed with special functions for Car signals testing, including engine RPM, triggers, ms readings and more.

STANDARD SET
MI 3110 EurotestIM

Safety of Mobile Units and Permanent mounted Integrated IT Earthing System with Low Voltage Power Generator or Transformer.

- Instrument MI 3110 EurotestMI
- Soft carrying bag
- Mains cable
- Test lead, 1.5 m
- Crocodile clip, black, green, brown
- Test probe, black, green, brown
- NiMH rechargeable batteries, type AA, 6 pcs
- PC software EuroLink PRO
- USB and RS232 cable
- Instruction manual
- Calibration certificate

STANDARD SET
MI 3309 DeltaGT

Safety of Portable Appliances, Equipment, Extension Leads and Cables.

- Instrument MI 3309 DeltaGT
- Soft carrying bag
- IEC cable, 2m, 2 pcs
- Test lead, black, green, brown, 1.5 m
- Crocodile clip, black, green, brown
- Test probe, black, green, brown
- NiMH rechargeable batteries, type AA, 6 pcs
- PC software PATLink PRO
- USB and RS232 cable
- Instruction manual
- Calibration certificate

TROUBLESHOOTING
MD 9270 Leakage Clamp TRMS

Installed IMDs and ELMs detect excessive currents but cannot localize the problem.

A simple method for localizing excessive leakage currents causing problems is the selective differential or direct Leakage / Fault Current measurement with current clamps.

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

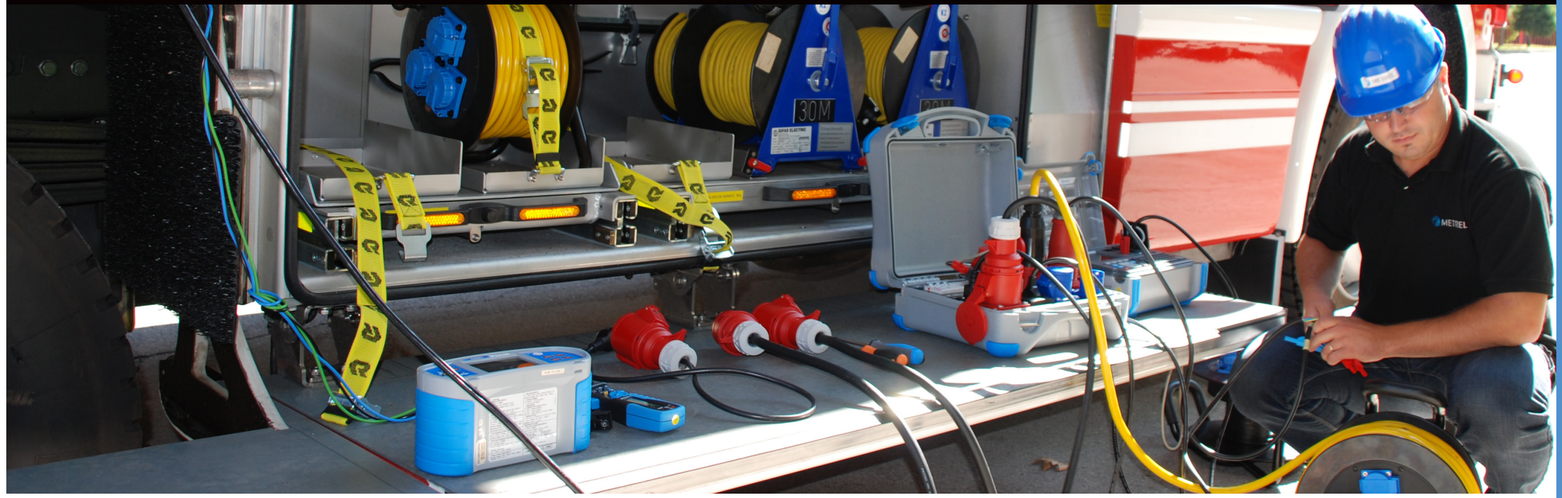
Metrel GmbH
Metrel Mess- und Prüftechnik GmbH
Orchideenstraße 24, 90542 Eckental
Tel.: +49 9126 28996-0; Fax: +49 9126 28996-20
E-mail: metrel@metrel.de; http://www.metrel.de

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; http://www.metrel.co.uk

APPLICATIONS AND SOLUTIONS FOR AUTOSEQUENCE TESTING OF SAFETY:

Electrical Installation Safety
- IT Earthing System Voltage Range
- Fuse Trip-Out Ability and Line Impedance Z / I sc
- ISFL Single Fault Leakage Current
- IMD Insulation / ELM Earth Leakage / RCM Residual Current
- Monitor Devices Control
- Alarm Trigger or Trip-Out Check and Adjust

Machines Appliances Switchboards Safety
- Portable Appliance Testing
- Extension leads and Cables Polarity
- Earth Bonding and Continuity of Connections
- RCD / PRCD protection
- Tracing Leakage and Insulation Faults



METREL®

APPLICATION_Fire_Oktober_2012_Ang

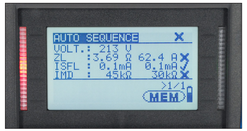
SAFETY ON BOARD

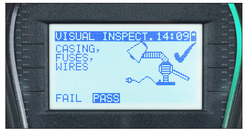
Fire Brigade Engines and Vehicles, Fire Boats, Emergency Vehicles and Cars, Mobile Units with Integrated IT Generators / Transformers / LV Electrical Installations

APPLICATIONS AND SOLUTIONS FOR AUTOSEQUENCE TESTING OF SAFETY

"Functional Safety of Electrical/Electronic/ Programmable Electronic Safety related Systems" EN 61508 defining the human error as "human action or inaction that can produce an unintended result".

AUTO SEQUENCE ® Safety evaluation with human error minimized!





Due to unique single and clear ***AUTO SEQUENCE*** ® procedure the Human Error Factor in Functional Safety IEC / EN 61508 is minimized Regardless of Operator competence level.

AUTO SEQUENCE ® enables all testing to be carried out with a single button press. All tests are Pre-programmed with PASS levels saved against the relevant test result.

PC SW EuroLink and PATLink are designed for Creating of Reports based Saved results connected to Memory Structure. PASS or FAIL evaluation on Results, Parameters, Dates and Time of testing are all connected to Memory Structure, prepared for printing Reports to prove Safety and Operational Quality of tested.

Applied standards:

Safety
- IEC/EN 61010 -1
- EMC IEC/EN 61326

Measurements
- IEC/EN 61557
- Parts 1 to 7 and 10: Equipment for testing, measuring and monitoring of protective measures.
- Part 8: Insulation monitoring devices for IT systems
- Part 9: Equipment for insulation fault location for IT systems

Functionality
- IEC/EN 60364-4-41/ 42 / 43, Protection for safety
- IEC/EN 60364-6, Verification, testing and reporting
- IEC/EN 60364-7, Requirements for special installations or locations
- IEC / EN 60364-7-717, Mobile and transportable units
- IEC 60364-7-722, Electric Vehicles
- IEC 61892-6, Mobile and fixed offshore units - Electrical installations, Installation

Verification after assembly (initial verification)
The purpose of initial verification is to prove that the assembly of the installation was made properly and according to the project documentation. A verification report should be provided.

Maintenance (after modifications, additions, alterations, service) testing
The purpose of the verification after maintenance is to verify the performed works and to check that installation's performance remains within specified limits. A verification report should be provided.

Periodic (recurrent) testing
Periodic tests are to be carried out to determine whether the installation is in satisfactory condition after a certain period and should consist of inspection and testing as far as reasonably practicable.

Dangers
Electrical installation and Equipment is a source of many dangers. Two most often dangers are:
- Overheating through excessive thermal dissipation or insulation fault on installation components and electrical equipment.
- Excessive touch voltage on accessible conductive parts and consequentially dangerous current through human body.

Both problems can have fatal consequences!
Accidents happen daily!

APPLICATIONS AND SOLUTIONS FOR AUTOSEQUENCE TESTING OF SAFETY
MI 3110 EurotestIM

The MI 3110 EurotestIM is a perfect tool for testing permanent Integrated or mobile IT Earthing Systems with Low Voltage Electrical Installation's Power Supply from Generator or Transformer.

The MI 3110 EurotestIM is the first and unique automatic tester for measuring in single ***AUTO SEQUENCE*** ®.

KEY FEATURES:
- IT System recognizing, Voltage Range and Voltage Balance,
- ISFL Single Fault Leakage current from Phase 1 and Phase 2 to PE,
- Fuse Trip-out Ability Evaluation, Line Impedance and Ipsc Prospective Short Circuit Current,
- IMD Insulation / ELM Earth Leakage / RCM Residual Current Monitor Devices Control,
- Alarm Trigger or Trip-Out Check and Adjust.

Designed for testing Safety of Integrated IT Earthing System with LV Power Generator or Transformer!
One single *AUTO SEQUENCE*® with programmable limits and sub-tests ensuring Safety on all PASS barrier parameters.

APPLICATIONS AND SOLUTIONS:

IT System recognizing, Voltage Range

Voltage below minimum value means non operating connected loads, pumps, appliances, machines, transformers, motors etc when needed. Generators and transformers can overheat or burn.
Unbalanced system means presence of First Fault in Insulation and Single Fault Leakage Current. The EurotestIM measure voltages of balanced system and makes warning when recognize Single Fault situation.

Voltage Balance, ISFL Single Fault Leakage current

Unbalanced system means presence of First Fault in Insulation and Single Fault Leakage Current.
The purpose of this test is to check if contact voltages stay inside the safety limits during single fault condition.

The EurotestIM measure voltages of balanced system and makes warning when recognize Single Fault situation.

Fuse Trip-out ability Evaluation, Line Impedance and Ipsc Prospective Short Circuit Current,

Limit barrieres of installed fuses are built-in the EurotestIM and the instrument generate warnings in case of improper protective devices, bad connections, bad assembling, lenghts and cross section of wiring in installation and in case windings of generator / transformer are already damaged.

IMD Insulation / ELM Earth Leakage / RCM Residual Current Monitor Devices Control, Alarm Trigger or Trip-Out Check and Adjust

Applying an adjustable fault with the EurotestIM could prove the proper connection of Insulation Monitor protection Devices in the system and Alarm operating when currents exceeds the dangerous level.

APPLICATIONS AND SOLUTIONS FOR AUTOSEQUENCE TESTING OF SAFETY
MI 3309 DeltaGT, MI 2142 AlphaPAT 25A, MI 3250 MicroOhm 10A or MI 3242 MicroOhm 2A

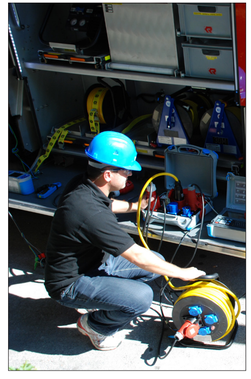
Designed for testing Safety of Portable Appliances, Equipment, Extension Leads and Cables with *AUTO SEQUENCE* ® evaluating Safety on all PASS barrier parameters!

The MI 3309 DeltaGT/PAT or MI 3311 GammaGT/PAT testers are measuring in single ***AUTO SEQUENCE*** ®.

KEY FEATURES:
- Portable Appliance Testing
- Earth Bonding and Continuity of Connections
- Extension leads, Cables and Cords testing
- RCD / PRCD protection
- Tracing Leakage and Insulation Faults

APPLICATIONS AND SOLUTIONS:

Earth Bonding and Continuity of Connections



With the earth bond test all metal construction of the vehicle and the contacts between accessible metal parts on connected appliances are firm. Extension leads, IEC Leads, prolongation cords and Cables Polarity need to be checked. With the polarity test shorts, crossed and opened wires in cords can be found.

Portable Appliance Testing

Testing of appliances locates faults in decreased insulation resistance because of dirt, dust, moisture.
Too high leakage can result in sparking and local overheating of appliance. This is especially dangerous in case of bad earthing of the installation.
Dangerous contact voltage on accessible metal part is a potential risk of electrical shock if this part would be touched.
Any of critical fault or error will be discovered under simple autosequence procedure with DeltaGT or GammaGT tester.

RCD / PRCD protection for single or three phase systems

The purpose of this test is to ensure the proper operation of residual current devices (RCD) built into appliances / installations and portable residual current devices (PRCD). Trip-out time measurement verifies the sensitivity of a (P)RCD at selected residual currents.