

## The first installation safety tester with automated testing based on patent pending **AUTO SEQUENCE**®.

Concentrate on your work instead on the instruction manual of your test instrument.



Overvoltage category  
600 V CAT III

### Standards applied

Functionality: EN 61557  
Other reference standards for testing: IEC/EN 60364; EN 61008; EN 61009; EN 60755; BS 7671; AS/NZ 3760; CEI 64-8; HD 384; VDE 413  
Electromagnetic compatibility (EMC): EN 61326  
Safety (LVD): EN 61010-1, EN 61010-031, EN 61010-02-032



**AUTO SEQUENCE**®

Continuity



Insulation



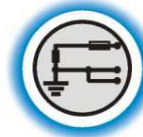
Earth



RCD



Line/Fault Loop



Voltage monitor



## Revolutionary **AUTO SEQUENCE**® testing and certifying safety of low voltage electrical installations.

**6** Strong reasons to ACT now!



Tested and recommended by specialists.


Based on 15 years of research and field experience.

EurotestAT is:

**Fast** - up to 5 times quicker testing.

**Simple** - only one single press of a TEST button guides the operator through whole procedure.

**Reliable** - it acquires up to 50 test results and parameters on each outlet, at once. None of necessary test will be forgotten.

**Automatic** - it gives automatic evaluation of safety status with Pass/Fail  certification of overall test results.

**Standardised** - it generates standardised test report in less than a minute.

**Safe** - automatically detects possible safety hazards for the operator.

If you are looking for a speedy, reliable and easy-to-use installation safety test instrument, the EurotestAT is the right solution for you. EurotestAT from Metrel's new generation of installation testers delivers you all these features, and even more.

# MAIN FEATURES

## Safe usage

Eurotest AT automatically detects possible safety hazards for the operator before the test is performed.



## SINGLE FUNCTION TESTS

The instrument is equipped with PE touch electrode - the TEST key to measure PE wire-to-ground voltage. The instrument informs the operator about the measurement conditions by a set of **easy-to-read** icons, warning messages and sounds.

## Help

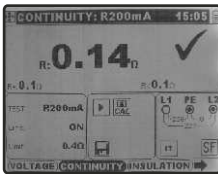


Help menu with connection diagrams and short descriptions for all available functions can be accessed from any instrument menu just by pressing HELP key.

The instrument also shows connection guidelines in on-line voltage monitor to further improve easy-of-use and decrease possibility for an incorrect measurement due to the mismatched wires.



## Continuity test



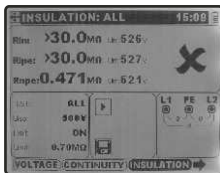
Continuity test uses N and PE wires for measurements to enable N-PE continuity verification on live installation through Schuko-plug.

This means that continuity test **auto sequence** needn't be interrupted to switch of mains voltage before verification of continuity.

Limited 7 mA current test for installations with  $I_{dn} 10..100mA$  of RCD or standard +200 mA current test for other installations could be selected.



## Insulation test



Automatic measurement of insulation resistance between all three installation wire pairs: L-N, L-PE and N-PE. Different test voltages: 50 V, 100 V, 250 V, 500 V and 1000 V with the measuring range up to 1000 MΩ.

Testing time is automatically adjusted to the tested object capacitance. The instrument automatically discharges tested objects after the test is finished.

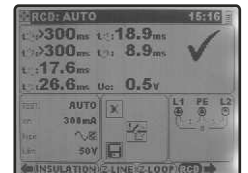
## Earth resistance measurement



Two-point and three-point earth resistance measurement.

Two-point method is intended for measuring earth resistance from the switchboard in TT systems. The instrument measures resistance between neutral and PE conductors. Three-point measurement can be performed by arranging rods in a straight line or a triangle (recommended for obtaining more reliable results).

## Complete RCD analysis



Complete RCD analysis also in automatic 6-step RCD test by providing various test currents ( $I_{dn}$  from 10 mA to 1000 mA and multipliers from  $\times 1/2$  to  $\times 5$ ), current polarities and shapes (sine AC and pulsed A types). General (G) and selective (S) RCD types are supported.

The operator can test RCD trip-out time, determine actual trip-out current with current ramp test, measure touch voltage level and estimate fault loop resistance. The instrument incorporates various (inter)national test limits, on which it makes PASS/FAIL decisions to facilitate certification of the tested installation.



320 x 240 dots matrix LCD with backlight - Easy-to-understand user interface with context-sensitive instructions, clearly laid out.



Jogger interface with PE touch electrode.



Voltage monitor On-line - single- or three-phase.



TN, TT and IT earthing systems support - single or three-phase. Support for measurements in reduced-low-voltage systems (2x55 V, 3x63 V).



Phase sequence testing with voltage monitor between phases.



RS 232 or USB connections - Transfer of saved results and installation structure between instrument and PC.



Built-in Cable Locator offers quick straightforward locating of energized cables, fuses and faults.



Support for multiple languages all on-screen information and front panel labels are available in many different languages.



As long as 13 hours of working time the instrument can operate on rechargeable or standard alkaline battery cells (6 cells, LR6/AA type).



Automatic instrument switch-off helps prolonging battery operation time.



Real-time clock and date - also applied to each test result.

## Line / Fault loop impedance and corresponding short circuit current (ISC)



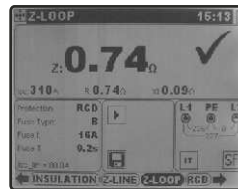
Precise measurement of phase-to-neutral L-N and phase-to-phase L-L line impedances in extremely wide voltage range from 30 V to 440 V. This test of installation quality is recommended for any type of earthing system (TN, TT or IT).

Fault loop impedance L-PE measurement on fuse-protected line and measurement on RCD-protected line with RCD trip-lock function.

Both types of measurement offer accurate and repeatable fault loop impedance results in wide voltage range from 30 V to 265 V.

Each fault loop impedance result is accompanied with calculated short circuit current. The operator can adjust safety factor, thus accommodating the result to (inter) national regulations. The instrument even certifies installed fuse.

Extensive Fuse characteristics database built-in with limit values of loop impedances.



	A	B	C	D	E	F
1	<b>FUSE</b>	<i>B type limit</i>	<i>C type limit</i>			
	<b>I nominal (A)</b>	<b>Isc (A)</b>	<b>Zs (Ω)</b>	<b>Isc (A)</b>	<b>Zs (Ω)</b>	<b>Isc (A)</b>
2						
3	2	10	22	20	11	30
4	4	20	11	40	5,5	60
5	6	30	7,3	60	3,65	90
6	10	50	4,4	100	2,2	150
7	16	80	2,8	160	1,4	240
8	20	100	2,2	200	1,1	300
9	25	125	1,8	250	0,9	375
10	32	160	1,4	320	0,7	480
11	35	175	1,3	350	0,65	525
12	40	200	1,1	400	0,55	600
13	50	250	0,9	500	0,45	750
14	63	315	0,7	630	0,35	945



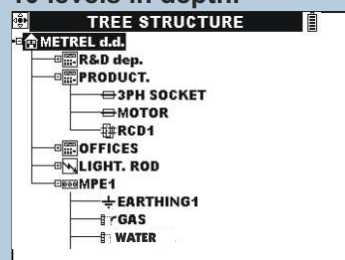
Using EurotestAT and Euro Link PC Software for certifying installations and providing measurement reports EurotestAT offers several strong visual tools for certifying installations and providing measurement reports.

All tools are tightly linked together:

- Internal memory organization which represents installation structure and editor of this structure.
- Internal **AUTO SEQUENCE**® editor for fast and error-proof execution of pre-programmed measurement sequences.
- EuroLink, powerful PC program for creating installation structures, reviewing measurement results and creating standard measurement reports.

Installation structure can be prepared in advance on a PC by using EuroLink program. Being out on the field one can also create or adapt existing structure by using instrument internal structure editor.

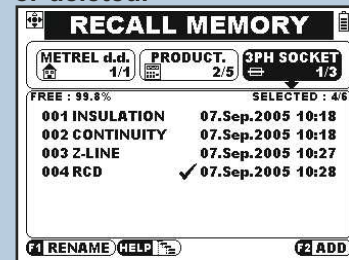
Memory tree structure can contain 2000 locations with 10 levels in depth.



A comprehensive name can be assigned to each location. The name can later be changed.



Stored results at each location can later be recalled or deleted.

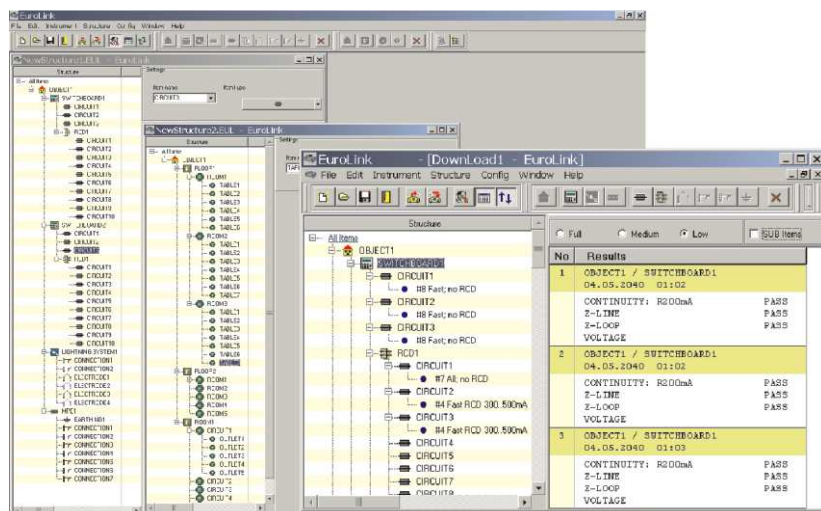
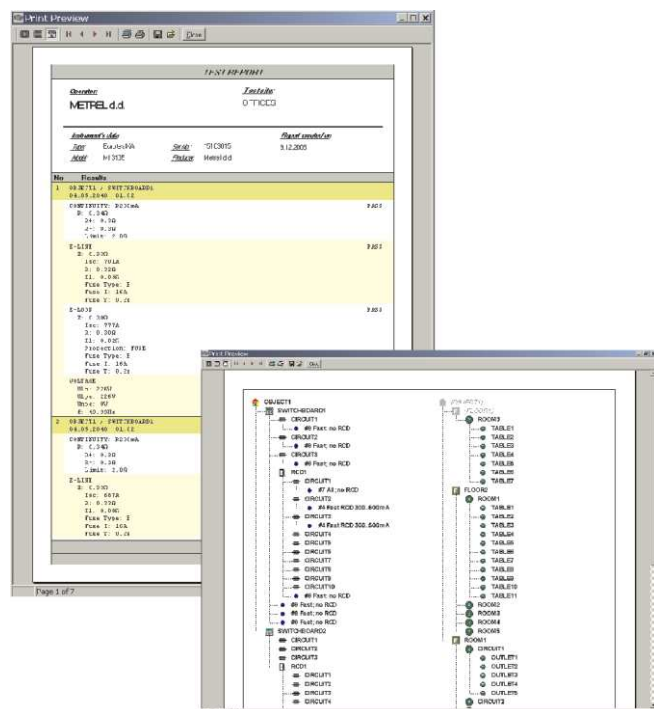


After the results are transferred to a PC, standardised test reports can be prepared with little or no modification of information in a memory tree structure.

## Example of a created standardised test report

The test report is prepared in less than a minute. All the results are displayed under the corresponding location of the structure, including the parameters of belonging fuse characteristics, limits and PASS/FAIL information.

The following example shows the installation structure as presented in Eurolink. The operator can view many different structures at the same time and combine their parts by simple drag & drop operation. In that way it is even possible to create the final report from results acquired with several instruments.



## Communication interface

EurotestAT comes with USB and RS 232 ports as standard. Both can be used to transfer test results to a PC for further use.



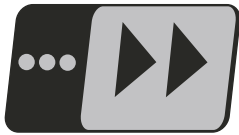
EuroLink also enables printing of the installation structure.



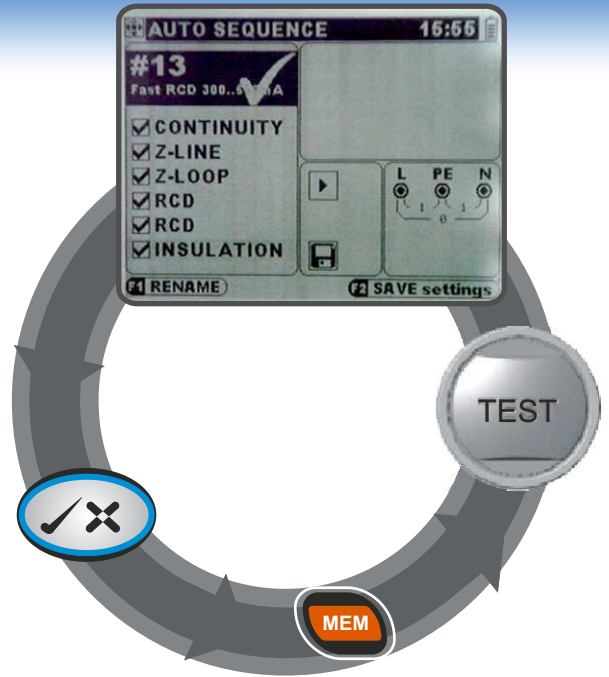
## AUTO SEQUENCE<sup>®</sup>

Metrel's unique *AUTO SEQUENCE<sup>®</sup>* testing makes evaluation and certification of safety, operational quality and fire protection of electrical installations much easier. EurotestAT with programmed *AUTO SEQUENCE<sup>®</sup>* will execute all requested tests while taking care of irregular installation conditions, and display test results accompanied with PASS/FAIL decision.

### Revolutionising the testing of electrical safety.



## AUTO SEQUENCE<sup>®</sup>



The main benefits of the new *AUTO SEQUENCE<sup>®</sup>* testing are:

- **Save time and speed-up operator's work:** up to 5 times faster testing than with manual procedures.
- **Make test operation simple and comprehensible:** one single press of the TEST button for all the necessary operations. EurotestAT guides the operator through whole procedure.
- **Increase reliability:** up to 50 acquired test results with corresponding parameters are saved at once. Preprogrammed test sequences guarantee that none of necessary tests will be forgotten ever.
- **Immediate certification:** delivering automatic evaluation of safety with pass/fail indication for each performed test and overall test results simultaneously.
- **Take the troubles out of report creation:** EurotestAT PC software gives you all the necessary tools to generate standardized test report in less than a minute.
- **Safe usage:** automatically detects possible safety hazards for the operator, by means of continuous monitoring of terminal voltages and by PE touch electrode TEST key, which are active in all test functions.

6

Strong reasons to ACT now!



Tested and recommended by specialists.

Based on 15 years of research and field experience.

How the revolutionary *AUTO SEQUENCE<sup>®</sup>* testing works? Using *AUTO SEQUENCE<sup>®</sup>* testing is as simple as telling A-B-C. Actually, *AUTO SEQUENCE<sup>®</sup>* testing can be divided into 3 steps, which lead the operator to the standardised test report.

### Execute predefined *AUTO SEQUENCE<sup>®</sup>* test at the switchboard side.

The *AUTO SEQUENCE<sup>®</sup>* will automatically perform all predefined tests, like measurements of external impedance ZE, RCD parameters, voltage drop, earth resistance and insulation resistances. When the test sequence is finished, EurotestAT will display overall PASS/FAIL decision.

### Execute predefined *AUTO SEQUENCE<sup>®</sup>* at the circuit side and repeat it at each outlet.

The *AUTO SEQUENCE<sup>®</sup>* will automatically perform all predefined tests, like verifying of voltage system, measurements of N-PE wiring continuity, loop and line impedances, evaluation of installed fuses, etc. EurotestAT will display the PASS/FAIL evaluation of safety of the tested outlet after the automatic sequence test is completed.

**Save *AUTO SEQUENCE<sup>®</sup>* test results to memory, transfer results to a PC and create standardised test reports.** The operator can save acquired test results to structured memory, under switchboard level or under circuit level, all at once. Run Eurolink PC program, transfer all acquired test results to a PC over USB or RS 232 connection, verify the data and print automatically generated test report.

SWITCHBOARD TEST	LIVE	DEAD	COMBI
ZE ext. IMPEDANCE	●	●	●
RCD I, I <sub>dn</sub> x1, x5, Id, Voltage system, 3ph	●	●	●
INSULATION	●	●	●
CONTINUITY	●	●	●
EARTH	●	●	●

CIRCUIT TEST	Lock	Fast	All
CONTINUITY	●	●	●
Z-LINE impedance	●	●	●
Z-LOOP impedance	●	●	●
RCD Uc	●	●	●
RCD I at I <sub>dn</sub> x1, x5, +/-	●	●	●
RCD I, Id ramp	●	●	●
INSULATION	●	●	●

A

B

C

## Technical specification

### Line impedance (EN 61557-3)

Meas. ranges ( $\Omega$ ):  $R_{L-N(L)}$ :  $0.25 \Omega \div 19.9k \Omega$   
 $I_{PSC}$ : calculated value  
 Nominal voltage:  $30 V \div 500 V / 15 Hz \div 500 Hz$

### Fault loop impedance (EN 61557-3)

Meas. ranges ( $\Omega$ ):  $R_{L-PE}$ :  $0.25 \Omega \div 19999 \Omega$   
 $I_{PFC}$ : calculated value  
 Nominal voltage:  $50 V \div 500 V / 15 Hz \div 500 Hz$

### Voltage, frequency

U:  $0V \div 550 V / f: 15 Hz \div 500 Hz$

### Phase rotation (EN 61557-7)

Nominal voltage:  $100 V \div 550 V / 15 Hz \div 500 Hz$   
 Results: 1.2.3 or 2.1.3

### RCD (EN 61557-6)

Meas. range ( $I_{\Delta N}$ ): 10 mA, 30 mA, 100 mA, 300 mA, 500 mA, 1 A  
 Nominal voltage:  $50 V \div 264 V / 15 Hz \div 500 Hz$

### Contact voltage $U_c$

$U_c$ :  $20.0 V \sim \div 31.0 V (62.0 V) \sim$   
 for  $U_{c_{lim}}$ : 25 V (50 V)

### Tripping time

non-delayed  
 (time-delayed) RCDs

$\times 1$ : 0 ms  $\div$  300 ms (500 ms)  
 $\times 2$ : 0 ms  $\div$  150 ms (200 ms)  
 $\times 5$ : 0 ms  $\div$  40 ms (150 ms),  $U_c$ : 0.0 V  $\div$  99.9 V

### Tripping current

$I_{\Delta}$ :  $0.2 \times I_{\Delta N} \div 1.1 \times I_{\Delta N} AC (\div 1.5 \times I_{\Delta N} A)$   
 $t_{\Delta}$ : 0 ms  $\div$  300 ms,  $U_c$ : 0.0 V  $\sim \div$  100.0 V  $\sim$

Multiplier:  $\times 0.5, \times 1, \times 2, \times 5$

### Resistance to earth (EN 61557-5)

R:  $0.67 \Omega \div 9999 \Omega$   
 Open-circuit voltage:  $< 45 V_{RMS}$   
 Short-circuit current:  $< 20 mA$

### General

Power supply voltage	6x1.5 V AA alkaline or rechargeable battery cells
Operation	typical 13 h
Charger socket input voltage	12 V $\div$ 10 V
Charger socket input current	400 mA max.
Battery charging current	250 mA (internally regulated)
Overvoltage category	600 V CAT III
Plug commander - overvoltage category	300 V CAT III
Protection classification	double insulation
Pollution degree	2
Protection degree	IP 40
Display	320x240 dots matrix display with backlight
Dimensions (w x h x d)	23 cm x 10,3 cm x 11,5 cm
Weight (with batteries)	1,32 kg without battery cells
Reference temperature range	10 °C $\div$ 30 °C
Reference humidity range	40 % RH $\div$ 70% RH
Working temperature range	0 °C $\div$ 40 °C
Storage temperature range	-10 °C $\div$ +70 °C
Maximum relative humidity	95 % RH (0 °C $\div$ +40 °C), non-condensing
Locator supports inductive mode	operating voltage up to 440 V
RS 232	115200 baud
USB	256000 baud

## Order Information

Standard set

Part No. MI 3101



- Instrument EurotestAT
- Soft carrying bag
- Soft carrying neck belt
- Test tips, 3 pcs (blue, black, green)
- Aligator clips, 3 pcs (blue, black, green)
- Plug commander 1,5 m
- USB cable
- Test cable Universal connection 3 x 1,5 m
- Power supply adapter with 6 NiMH AA rechargeable battery cells
- RS 232/PS cable
- Instruction manual on CD
- Instruction manual short
- Declaration of conformity
- Production verification data
- Warranty declaration
- Handbook on CD
- PC SW EuroLink - Lite

## Optional Accessories



- |        |  |           |   |
|--------|--|-----------|---|
| A 1197 | Tip Commander 1,5 m, 3 wire                                | S 2027    | Earth 50 m set 3 wire                         |
| S 2026 | Earth 20 m set 3 wire                                      | A 1110    | Three phase cable                             |
| A 1160 | Fast 6 cells AA charger with a set of 6 pcs NiMH batteries | A 1111    | Three phase adapter                           |
| A 1169 | Fast 12 cells AA charger                                   | A 1192    | Selective probe                               |
| A 1012 | Probe lead 2 m   | A 1191    | Receiver R10K                                 |
|        |  | A 1196    | EuroLink PC software PRO for MI 3101, MI 3105 |
|        |  | * A 1143  | Euro Z 290 A adapter                          |
|        |  | * CS 2099 | Eurocheck                                     |



\* A 1143



\* CS 2099

The Euro Z 290 A high current impedance adapter is a professional portable adapter. In combination with the Eurotest instrument it performs high precision line and high precision fault loop impedance measurements down to 1 m $\Omega$ .

Eurocheck is a professional, multifunctional field calibrator - boasts the following features: Insulation and Continuity calibration, Line impedance and Fault loop trip-lock impedance calibration, Calibration of RCD trip-out time measurement, including test current verification (30 mA test current is supported), Voltage and frequency calibration and PE test terminal functional verification.

Distributor: