

# MI 3121H SMART<sup>TEC</sup>® 2,5 kV Insulation / Continuity



## Professional 2,5 kV Insulation / Continuity tester



The MI 3121H Smartec 2,5 kV Insulation / Continuity is the portable measuring instrument for complete diagnostic testing of insulation and continuity measurements. Due to insulation resistance measurement with the test voltages up to 2.5 kV (measuring range is up to 100 GΩ) and calculation of PI and DAR indexes the instrument is ideally suited for testing insulation of cable lines, current and voltage transformers, electric motors, etc.

#### MEASURING FUNCTIONS:

- Insulation resistance up to 100 GΩ with DC voltage up to 2.5 kV;
- PI, DAR calculation;
- Continuity of PE conductors with 200 mA test current and polarity change;
- Continuity of PE conductors with 7 mA test current (continuous measurement) without RCD tripping;
- TRMS voltage and frequency.

#### KEY FEATURES:

- **High measuring range:** up to 100 GΩ with test voltage from 100 to 2500 V.
- **Insulation diagnostics:** Polarisation Index (PI) and Dielectric Absorption Ratio (DAR) calculation.
- **Analog scale:** measuring results are displayed in numeric and analogue representation.
- **Guard test terminal:** for elimination of potential surface leakage currents.
- **Polarity swap:** automatic polarity reversal on continuity test.
- **Custom limits:** if limits are set on insulation or continuity function then large green and red lights of the LEDs will indicate a PASS or FAIL evaluation of test result.
- **Safe:** suited for testing on **CAT IV** installations.
- **Magnetic holder:** magnet for fixing instrument on metal surfaces enables hands-free operation.
- **Built-in charger & rechargeable batteries:** instrument has a built-in charging circuit and comes complete with a set of rechargeable NiMH batteries.
- **Memory:** two level memory structure for saving of test results and parameters.
- **Downloadable:** downloads via RS232 or USB cable directly to the PC with the help of the PC software EuroLink PRO.
- **Easy to use:** large bright LCD display and large buttons enable easy handling of the instrument (even while wearing gloves).

#### APPLICATION:

- Insulation resistance of transformers, motors, cables, machines, etc.;
- Testing on CAT IV installations (distribution side of installations, industrial plants etc);
- Observation of insulation trends;
- PE conductors continuity testing;
- Main and supplementary PE connections testing;
- Troubleshooting (connectivity, polarity).

#### STANDARDS APPLIED:

##### Functionality:

IEC/EN 61557 Parts 1,2, 4, 10  
IEC/EN 60364  
VDE 100  
BS 7671 17th edition  
CEI 64.8

##### Safety:

IEC/EN 61010-1

##### Electromagnetic compatibility:

IEC/EN 61326



## Technical specifications

### Insulation resistance

Insulation resistance (test voltages 100 Vdc and 250 Vdc)  
Measuring range according to EN 61557 is 0.15 M $\Omega$  ... 999.9 M $\Omega$

Measuring range (M $\Omega$ )	Resolution (M $\Omega$ )	Accuracy
0.00 ... 19.99	0.01	$\pm$ (5 % of reading + 3 digits)
20.0 ... 199.9	0.1	$\pm$ 10 % of reading
200 ... 999	1	$\pm$ 20 % of reading

Insulation resistance (test voltages 500 Vdc, 1000 Vdc and 2500 Vdc)  
Measuring range according to EN61557 is 0.15 M $\Omega$  ... 100 G $\Omega$

Measuring range	Resolution (M $\Omega$ )	Accuracy
0.00 M $\Omega$ ... 19.99 M $\Omega$	0.01	$\pm$ (5 % of reading + 3 digits)
20.0 M $\Omega$ ... 199.9 M $\Omega$	0.1	$\pm$ 5 % of reading
200 M $\Omega$ ... 999 M $\Omega$	1	$\pm$ 5 % of reading
1.00 G $\Omega$ ... 4.99 G $\Omega$	10	$\pm$ 10 % of reading
5.00 G $\Omega$ ... 19.99 G $\Omega$	10	$\pm$ 20 % of reading
20.0 G $\Omega$ ... 99.9 G $\Omega$	100	$\pm$ 20 % of reading

Measuring range	Resolution (V)	Accuracy
0 V ... 1999 V	1	$\pm$ (3 % of reading + 3 digits)
2.00 kV ... 3.00 kV	10	$\pm$ 3 % of reading

### Dielectric absorption ratio DAR, Polarization index PI

Measuring range	Resolution	Accuracy
0.01 ... 9.99	0.01	$\pm$ (5 % of reading + 2 digits)
10.0 ... 100.0	0.1	$\pm$ 5 % of reading

### Continuity (200 mA)

Measuring range according to EN61557 is 0.16  $\Omega$  ... 1999  $\Omega$

Measuring range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy
0.00 ... 19.99	0.01	$\pm$ (3 % of reading + 3 digits)
20.0 ... 199.9	0.1	$\pm$ 5 % of reading
200 ... 1999	1	$\pm$ 10 % of reading

Open-circuit voltage 6.5 Vdc ... 9 Vdc  
Measuring current min. 200 mA into load resistance of 2  $\Omega$   
Test lead compensation up to 5  $\Omega$   
Automatic polarity reversal of the test voltage.

### Continuity (7 mA)

Measuring range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy
0.0 ... 19.9	0.1	$\pm$ (5 % of reading + 3 digits)
20 ... 1999	1	$\pm$ 10 % of reading

Open-circuit voltage 6.5 Vdc ... 9 Vdc  
Short-circuit current max. 8.5 mA  
Test lead compensation up to 5  $\Omega$

### Voltage

Measuring range (V)	Resolution (V)	Accuracy
0.00 ... 9.99	0.01	$\pm$ (3 % of reading + 3 digits)
10.0 ... 99.9	0.1	$\pm$ (3 % of reading + 3 digits)
100 ... 550	1	$\pm$ (3 % of reading + 3 digits)

Result type True r.m.s. (TRMS)  
Nominal frequency range 0 Hz, 15 Hz ... 500 Hz

### Frequency

Measuring range (Hz)	Resolution (Hz)	Accuracy
0.00 ... 19.99	0.01	$\pm$ (0.2 % of reading + 1 digit)
20.0 ... 199.9	0.1	$\pm$ (0.2 % of reading + 1 digit)
200 ... 500	1	$\pm$ (0.2 % of reading + 1 digit)

Nominal voltage range 10 V ... 550 V

### General data

Power supply: 6 x 1.5 V batteries or rechargeable batteries, size AA  
Overvoltage category: CAT III / 600 V; CAT IV / 300 V  
Protection classification: double insulation  
Pollution degree: 2  
Protection degree: IP 40  
Display: custom liquid crystal display with backlight  
Memory: 1900 measurements  
Dimensions (w x h x d): 14 cm x 8 cm x 23 cm  
Weight (without batteries): 0.85 kg

## Ordering information:

MI 3121H

Standard set



- Instrument SMATREC 2,5 kV Insulation / Continuity
- Soft hand strap
- Test lead, 2 x 1.5 m
- Test probes, 2 pcs (black, red)
- Crocodile clips, 2 pcs (black, red)
- Power supply adapter + 6 NiMH rechargeable batteries, size AA
- Instruction manual on CD
- Short instruction manual
- Calibration certificate
- Handbook "Guide for testing and verification of low voltage installations" on CD

## Optional accessories:

Photo	Order No.	Description
	A 1319	2.5 kV test lead, 3 x 1.5 m
	A 1309	Crocodile clip, green
	A 1153	Test lead, black, 20 m
	A 1154	Test lead, black, 4 m
	A 1160	Fast charger for 8 AA batteries with a set of 6 NiMH bat., type AA
	A 1198	Magnetic contact probe
	A 1271	Small soft carrying bag
	A 1289	Soft carrying bag
	A 1291	PC SW EuroLink PRO with USB and RS232-PS/2 cable



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