



EN / IEC 61557-5  
 DIN / VDE 0100  
 BS 7671, 16th Edition  
 CEI 64.8  
 EN / IEC 61010-1

**Technical Specification**

<b>Earth Resistance (four-lead method)</b>	
Display range	0 ÷ 19.99 kΩ
Resolution	0.01; 0.1; 1; 10 Ω
Basic accuracy	±(2 % + 3 D)... (0 ÷ 2 kΩ)
Test voltage	<40 V / 125 Hz / sine wave
Short-circuit test current	<20 mA
High noise rejection	yes
Aut. potential and current probe res. test	yes
<b>Earth Resistance (four-lead method + clamp) <span style="float: right;">A 1018</span></b>	
Display range	0 ÷ 1.99 kΩ
Other characteristics see under <b>four-lead method</b>	
<b>Earth Resistance (two test clamps) <span style="float: right;">A 1018, A 1019</span></b>	
Display range	0 ÷ 19.99 Ω      20.0 ÷ 100.0 Ω
Basic accuracy	±(10 % + 2 D)...      ±(20 %)
<b>Specific Earth Resistance</b>	
Display range	0 ÷ 1999 kΩm (kΩft)
Calculation	$\rho = 2 \pi a R_E$
Distance between test rods	1 ÷ 30 m (1 ÷ 90 ft)
Other characteristics see under <b>four-lead method</b>	
<b>Current (True RMS) <span style="float: right;">A 1018, A 1019</span></b>	
Measurement principle	current clamp 1 A / 1 mA
Display range	0 ÷ 200 A
Resolution	0.1; 1 mA; 0.01; 0.1; 1 A
Basic accuracy	±(5 % + 5 D)... (0.5 mA ÷ 200 A)
Nominal frequency	50/60 Hz

**Optional Accessories**

- Soft carrying bag **Order No. A 1006**
- Small soft carrying bag **Order No. A 1020**
- Carrying strap **Order No. A 1007**
- Battery charger (230 V and/or 12 V DC) with a set of 4 NiCd batteries **Order No. A 1045**
- Earth test set - 50 m **Order No. S 2002**
- Test cable 4 x 1 m **Order No. S 2009**
- Low range clamp **Order No. A 1018**
- Standard range clamp **Order No. A 1019**
- Windows Software "Smart Link" with RS 232 interface cable **Order No. A 1050**

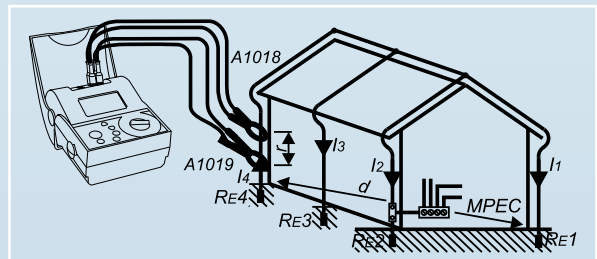
**Earth resistance measurement**

- 2-pole, 3-pole, 4-pole earth resistance measurements.
- Selective earth resistance measurement with clamp (no influence from parallel earths; no opening of rusty junctions is needed).
- Two clamp earth measurement for quick testing in urban areas (no opening of rusty junctions).

**Specific earth resistance (ρ) measurement.**

**True RMS current measurement** for determining problems on earth systems and conductors.

- Outstanding features even in presence of mains interference and high probe resistance.
- Warnings indication for out of limits results and incorrect test conditions.
- 1000 memory locations and PC Software for print-out of measurement protocol.
- Socket for external battery charger.
- Auto power-off.



Example of recommended measuring method

**Standard Set**

**Order No. MI 2124**

- Instrument
- Test lead 4.5 m, (black)
- Test lead 4.5 m, (green)
- Test lead 15 m, (red)
- Test lead 20 m, (blue)
- Earth test rod, 4 pcs
- Instruction manual
- Declaration of conformity
- Production verification data
- Declaration of warranty



**Optional Accessories**



## General Characteristics

Power supply	6 V (4 x 1.5 V IEC LR14)
Memories	1000 measurements
Degree of protection	IP 54
Protection classification	double insulation
Computer connection	RS 232
Overvoltage category	CAT III/300 V, CAT II/600 V
Dimensions (w x h x l)	156 x 100 x 190 mm
Mass	ca. 1.2 kg

## Windows Downloading Software "Smart Link"

- ◆ The memories of SMARTEC testers can store approximately 1000 measurement values.
- ◆ Transfer of measurement values via RS 232 serial port to a PC
- ◆ Print-out of tabular display used as a measuring report
- ◆ Runs on Windows 95/98/2000/NT/XP



n	Selection	Function	Results	Parameters	Limits
1	BAAS DEG	RCD Ith	U <sub>th</sub> = 2.46 V R <sub>th</sub> = 21.6 Ohm	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V
2	BAAS DEG	RCD Ith	U <sub>th</sub> = 3.84 V R <sub>th</sub> = 21.3 Ohm	U <sub>th</sub> = 1.06 mV Type = Selective Stage: AC	U <sub>th</sub> < 50 V
3	BAAS DEG	RCD Ith	U <sub>th</sub> = 3.27 V R <sub>th</sub> = 21.5 Ohm	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V
4	BAAS DEG	RCD Ith	U <sub>th</sub> = 7.82 V R <sub>th</sub> = 21.3 Ohm	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V
5	BAAS DEG	R CD	P = 19.13 Ohm I <sub>sc</sub> = 13.44 A	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V
6	BAAS DEG	RCD I	C > 300 mA U <sub>th</sub> = 6.85 V	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V
7	BAAS DEG	RCD I	C > 300 mA U <sub>th</sub> = 11.55 V	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V
8	BAAS DEG	RCD I	C > 300 mA U <sub>th</sub> = 0.25 V	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V
9	BAAS DEG	RCD I	C > 300 mA U <sub>th</sub> = 15.55 V	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V
10	PROBD DEG	RCD I	C = 81 mA U <sub>th</sub> = 6.81 V	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V
11	PROBD DEG	RCD I	C < 120 mA U <sub>th</sub> = 11.94 V	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V
12	PROBD DEG	RCD I	C = 21 mA U <sub>th</sub> = 0.35 V	U <sub>th</sub> = 1.06 mV Type = General Stage: AC	U <sub>th</sub> < 50 V



## Key Features



Simple operation with only one selection switch and large start button



Large custom designed display offers warning indication of incorrect or out of limit results



New modern compact design with protective plastic cover. Meets high degree of protection IP 54 and pollution degree 2. Small size and easy to carry.

## Optional Accessories

### Order No.:

- A 1111 Three phase adapter
- A 1020 Soft carrying bag – small
- A 1007 Carrying strap
- A 1026 Test lead 20 m, red
- A 1011 Universal test cable, 3 x 1.5 m
- A 1055 Universal test cable, 2 x 1.5 m
- A 1016 Test tip, red
- A 1015 Test tip, blue
- A 1014 Test tip, black
- A 1013 Alligator clip (black)
- A 1064 Alligator clip (red)
- A 1045 Fast battery charger (230 V AC and/or 12 V DC) with a set of 4 NiCd batteries
- A 1050 Windows Software "Smart Link" with RS 232 interface cable



For MI 2120, MI 2121, MI 2122, MI 2123, MI 2123C

Distributor:

**METREL**® Measuring and Regulating Equipment Manufacturer, d.d.

Horjul 188, 1354 Horjul - SLOVENIA

Tel.: +386 1 755 82 00; Fax: +386 1 754 92 26

Internet: <http://www.metrel.si>; E-mail: [metrel@metrel.si](mailto:metrel@metrel.si)

Subject to technical change without notice!