



# MPI-502

## MULTIFUNCTION ELECTRICAL INSTALLATIONS METER

**CAT IV**  
**300V**

**IP 67**



- **Short circuit parameters measurements:**
  - measurements of short circuit loop impedance in networks with rated voltage: 220/380V, 230V/400V, 240/415V and frequency 45...65Hz,
  - measurements of short circuit loop impedance with current 15mA without tripping the circuit breaker.
- **Testing the RCD breakers of AC, A types:**
  - testing of prompt, short-delay (general) and selective RCDs for the rated current values 10, 30, 100, 300, 500mA,
  - $I_A$  measurement
  - $R_E$  and  $U_B$  measurement without tripping the circuit breaker,
  - extended RCD test function AUTO, with measurement of  $Z_{L-PE}$  with current 15mA - measurement of  $I_A$  and  $t_A$  during one RCD tripping.
- **Detection of the replacement L and N in the socket and automatic swap in the meter.**
- **Low voltage resistance measurements of protective circuits and junctions:**
  - measurement of resistance with  $\pm 200$  mA current
  - calibration of test leads - possibility of using any length of test leads,
  - low current resistance measurement with acoustic signalling
- **Rapid check for the correct connection of PE wire using touch electrode.**
- **Measurement of mains voltage and frequency.**
- **Power supply from LR6 batteries or NiMH accumulators (option).**
- **Memory of 990 measurements.**
- **The device meets the requirements of IEC 61557 standard.**

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### Short circuit loop impedance measurement $Z_{L-PE}$ , $Z_{L-N}$ , $Z_{L-L}$

Measurement using 7.6/13.3A current – Measurement range according to IEC 61557: 0,13...1999Ω (for 1,2m lead) and 0,19...1999Ω (for WS-01 and WS-05).

Display range	Resolution	Accuracy
0,00...19,99Ω	0,01Ω	±(5% m.v. + 3 digits)
20,0...199,9Ω	0,1Ω	
200...1999Ω	1Ω	

- Nominal work voltage: UnL-N/ UnL-L: 220/380V, 230/400V, 240/415V,
- Voltage operating range: 100...264V (for ZL-PE i ZL-N) and 100...440V (for ZL-L),
- Nominal network frequency fn: 50Hz, 60Hz,
- Max. test current: 7.6A (230V), 13.3A (440V),
- PE terminal connection correctness check with the help of touch electrode

### Readings of fault loop impedance $R_s$ and fault loop reactance $X_s$

Display range	Resolution	Accuracy
0,00...19,99Ω	0,01Ω	±(5% m.v. + 5 digits) of $Z_s$ value
20,0...199,9Ω	0,1Ω	

- calculated and displayed for  $Z_s < 200Ω$ .

### Short circuit loop impedance $Z_{L-PE}$ in mode [RCD] – without RCD tripping

Measurement using <15mA current measurement range in accordance with IEC 61557: 0,51...1999Ω

Display range	Resolution	Accuracy
0,00...19,99Ω	0,01Ω	±(6% m.v. + 10 digits)
20,0...199,9Ω	0,1Ω	±(6% m.v. + 5 digits)
200...1999Ω	1Ω	

- test without tripping the RCD for  $I_{Δn} ≥ 30mA$ ,
- nominal work voltage: Un: 220V, 230V, 240V
- voltage operating range: 180...270V
- frequency operating range fn: 50Hz, 60Hz
- PE terminal connection correctness check with the help of touch electrode

### Readings of fault loop impedance $R_s$ and fault loop reactance $X_s$ (without tripping the RCD)

Display range	Resolution	Accuracy
0,00...19,99Ω	0,01Ω	±(6% m.v. + 10 digits) of $Z_s$ value
20,0...199,9Ω	0,1Ω	±(6% m.v. + 5 digits) of $Z_s$ value

- calculated and displayed for  $Z_s < 200Ω$ .

### RCD parameters test (voltage range 180...270V):

RCD tripping test and measurement of tripping time  $t_s$  (for  $t_s$  function)

Breaker Type	Test Current Multiplier	Range	Resolution	Accuracy
Standard	$0,5 * I_{Δn}$	0...300ms	1ms	±(2% m.v. + 2 digits)
	$1 * I_{Δn}$	0...150ms		
	$2 * I_{Δn}$	0...40ms		
	$5 * I_{Δn}$	0...500ms		
Selective	$0,5 * I_{Δn}$	0...200ms		
	$1 * I_{Δn}$	0...150ms		
	$2 * I_{Δn}$	0...150ms		
	$5 * I_{Δn}$	0...150ms		

- Precision of the differential current:  $0,5 * I_{Δn}$ : -8...0% for  $1 * I_{Δn}$ ,  $2 * I_{Δn}$ ,  $5 * I_{Δn}$ : 0...8%

### Earthing resistance measurement ( $R_e$ ) for RCD

Selected Current	Range	Resolution	Test Current	Accuracy
10mA	0,01...5,00kΩ	0,01kΩ	4mA	0...+10% m.v. ± 8 digits
30mA	0,01...1,66kΩ		12mA	0...+10% m.v. ± 5 digits
100mA	1...500Ω	1Ω	40mA	0...+5% m.v. ± 5 digits
300mA	1...166Ω		120mA	
500mA	1...100Ω		200mA	

- It is possible to start the measurement from the positive or negative half of the forced leaking current

### Voltage measurement

Range	Resolution	Accuracy
0,0V...299,9V	0,1V	±(2% m.v. + 6 digits)
300V...500V	1V	±(2% m.v. + 2 digits)

### Frequency measurement

Range	Resolution	Accuracy
45,0...65,0Hz	0,1Hz	±(0,1% m.v. + 1 digit)

### Touch voltage measurement referred to the rated residual current ( $U_b$ )

Range	Resolution	Test Current	Accuracy
0...9,9V	0,1V	$0,4 \times I_{Δn}$	10% m.v. ± 5 digits
10,0...99,9V			0...15% m.v.

### Measurement of the RCD disconnection current $I_a$ for sine waveform testing current

Selected Current	Range	Resolution	Test Current	Accuracy
10mA	3,3...10,0mA	0,1mA	$0,3 \times I_{\Delta n} \dots 1,0 \times I_{\Delta n}$	$\pm 5\% I_{\Delta n}$
30mA	9,0...30,0mA			
100mA	33...100mA	1mA		
300mA	90...300mA			
500mA	150...500mA			

- It is possible to start the measurement from the positive or negative half of the forced leaking current

### RCD $I_a$ tripping current measurement for unidirectional pulsating residual current

Selected Current	Range	Resolution	Test Current	Accuracy
10mA	4,0...20,0mA	0,1mA	$0,35 \times I_{\Delta n} \dots 2,0 \times I_{\Delta n}$	$\pm 10\% I_{\Delta n}$
30mA	12,0...42,0mA			
100mA	40...140mA	1mA	$0,35 \times I_{\Delta n} \dots 1,4 \times I_{\Delta n}$	$\pm 10\% I_{\Delta n}$
300mA	120...420mA			

- Measurement is possible for a positive or negative forced leakage current.

### Low voltage test of the circuit and insulation continuity

Measurement range in accordance with IEC61557: 0,12...400Ω

Test of PE wire continuity using a ±200mA current

Range	Resolution	Accuracy
0,00...19,99Ω	0,01Ω	±(2% w.m. + 3 cyfry)
20,0...199,9Ω	0,1Ω	
200...400Ω	1Ω	

- Voltage on open terminals: 4...9V,
- Test current at  $R < 2Ω$ : min. 200mA,
- Autocalibration of test leads
- Measurements for both polarizations of the current

### Standard accessories of meter MPI-502:

- Adapter UNI-SCHUKO (WS-05)
- Test lead with banana plug; 1,2m; red
- Test lead with banana plug; 1,2m; yellow
- Test lead with banana plug; 1,2m; blue
- Pin probe with banana connector; red
- Pin probe with banana connector; blue
- "Crocodile" clip K02; yellow
- Carrying case M6
- handle to suspend the meter
- hanging straps
- batteries
- operation manual
- calibration certificate

WAADAWS05  
WAPRZ1X2REBB  
WAPRZ1X2YEBB  
WAPRZ1X2BUBB  
WASONRE0GB1  
WASONBU0GB1  
WAKROYE20K02  
WAFUTM6  
WAP0ZUCH1  
WAP0ZSZE4

### Optional accessories of meter MPI-502:

- Test lead with banana plug 5m; red
- Test lead with banana plug 10m; red
- Test lead with banana plug 20m; red
- Probe with START button with UNI-SCHUKO (WS-01)
- Software for creation of documentation from electrical measurements "SONEL Reports"

WAPRZ005REBB  
WAPRZ010REBB  
WAPRZ020REBB  
WAADAWS01

WAPROSONPE4

The device meets the requirements of EMC standards EN 61326-1:2006 and EN 61326-2-2:2006.

#### Electric safety:

- type of insulation double, according to EN 61010-1 and IEC 61557
- measurement category IV 300V (III 600V) according to EN 61010-1
- protection class acc. to EN 60529 IP67

#### Other technical data:

- dimensions 220 x 98 x 58mm
- weight ~1kg
- Auto OFF time 300, 600, 900 second
- number of measurements Z and RCD (for NiMH batteries) >5000 (2 per minute)

MPI-502 is equipment to perform complete test and verify on electrical installations according to the most common safety standards (IEC 61557, VDE 0100, BS7671).

„m.v.” - measured value.