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MPI-502

MULTIFUNCTION ELECTRICAL INSTALLATIONS METER

CAT IV 300V

IP 67

` **Short circuit loop 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 ±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}

Measurment 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 corectores 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 IΔn ≥ 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) od $Z_s$value

- calculated and displayed for Z_s<200Ω.

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

RCD tripping test and measurment of tripping time t_A (for t_A function)

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

- Precision of the differential current: 0,5*$I_{\Delta n}$:-8...0% for 1*$I_{\Delta n}$, 2*$I_{\Delta n}$, 5*$I_{\Delta n}$: 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 x $I_{\Delta n}$	10% m.v. ± 5 digits
10,0..99,9V			0...15% m.v.

Measurementof the RCD disconection current I_A for sine waveform testing current

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

- It is posible 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 x $I_{\Delta n}$ ...2,0 x $I_{\Delta n}$	±10% $I_{\Delta n}$
30mA	12,0...42,0mA		0,35 x $I_{\Delta n}$ ...1,4 x $I_{\Delta n}$	
100mA	40...140mA	1mA		±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)	**WAADAWS05**
- Test lead with banana plug; 1,2m; red	**WAPRZ1X2REBB**
- Test lead with banana plug; 1,2m; yellow	**WAPRZ1X2YEBB**
- Test lead with banana plug; 1,2m; blue	**WAPRZ1X2BUBB**
- Pin probe with banana connector; red	**WASONREOGB1**
- Pin probe with banana connector; blue	**WASONBUOGB1**
- "Crocodile" clip K02; yellow	**WAKROYE20K02**
- Carrying case M6	**WAFUTM6**
- handle to suspend the meter	**WAPOZUCH1**
- hanging straps	**WAPOZSZE4**
- batteries	
- operation manual	
- calibration certificate	

Optional accessories of meter MPI-502:

- Test lead with banana plug 5m; red	**WAPRZ005REBB**
- Test lead with banana plug 10m; red	**WAPRZ010REBB**
- Test lead with banana plug 20m; red	**WAPRZ020REBB**
- Probe with START button with UNI-SCHUKO (WS-01)	**WAADAWS01**
- Software for creation of documentation from electrical measurements "SONEL Reports"	**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:

- dimentions	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.