



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.**

Sonel S.A.
ul. Wokulskiego 11
58-100 Świdnica, PL
tel. +48 74 85 83 860
fax +48 74 85 83 809

export@sonel.pl
www.sonel.pl

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: 23A (230V), 44A (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 $Z_s < 200\Omega$.

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 $I_{\Delta n} \geq 30mA$,
- 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 $Z_s < 200\Omega$.

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 | $0,5 \cdot I_{\Delta n}$ | 0...300ms | 1ms | ±(2% m.v. + 2 digits) |
| | $1 \cdot I_{\Delta n}$ | | | |
| | $2 \cdot I_{\Delta n}$ | 0...150ms | | |
| | $5 \cdot I_{\Delta n}$ | 0...40ms | | |
| Selective | $0,5 \cdot I_{\Delta n}$ | 0...500ms | | |
| | $1 \cdot I_{\Delta n}$ | 0...200ms | | |
| | $2 \cdot I_{\Delta n}$ | 0...150ms | | |
| | $5 \cdot I_{\Delta n}$ | 0...150ms | | |

- Precision of the differential current: $0,5 \cdot I_{\Delta n}$: -8...0% for $1 \cdot I_{\Delta n}, 2 \cdot I_{\Delta n}, 5 \cdot I_{\Delta n}$: 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 | $0,4 \times I_{\Delta n}$ | 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 | $0,3 \times I_{\Delta n} \dots 1,0 \times I_{\Delta n}$ | ± 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 | $0,35 \times I_{\Delta n} \dots 2,0 \times I_{\Delta n}$ | ±10% $I_{\Delta n}$ |
| 30mA | 12,0...42,0mA | | | |
| 100mA | 40...140mA | 1mA | $0,35 \times I_{\Delta n} \dots 1,4 \times I_{\Delta n}$ | ±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 $R < 2\Omega$: min. 200mA,
- Autocalibration of test leads
- Measurements for both polarizations of the current

Standard accessories of meter MPI-502:

- Adapter UNI-SCHUKO (WS-05)
- Receiver - interface for radio transmission OR-1 (USB)
- 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
WAADAUSBOR1
WAPRZ1X2REBB
WAPRZ1X2YEBB
WAPRZ1X2BUBB
WASONREOGB1
WASONBUOGB1
WAKROYE20K02
WAFUTM6
WAPZOZUCH1
WAPZOSZE4

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 61326-2:2006.

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.