Index: WMPLMPI505

MULTI-FUNCTION ELECTRICAL INSTALLATIONS METER

MPI-505

CAT IV 300V

IP 54

- **Measurement of short-circuit loop parameters:**
- in L-PE, L-N, L-L circuits as well as in L-PE (RCD) circuits - without tripping RCD breakers of current ≥ 30 mA.
- impedance measurement of short-circuit loops in power networks of nominal voltages: 115/200 V, 220/380 V, 230/400 V, 240/415 V and frequencies in the range of 45…65 Hz..

- **Testing of AC and A types residual current circuit breakers:**
- testing of regular and selective residual current circuit breakers of nominal differential currents: 10 mA, 30 mA, 100 mA, 300 mA, 500 mA, 1000 mA,
- I_A trip current measurement,
- t_A trip time measurement for $0.5I_{\Delta n}$, $I_{\Delta n}$, $2I_{\Delta n}$, $5I_{\Delta n}$,
- measurement of earth continuity and touch voltage without tripping RCDs,
- functionality of automatic measurement of residual current circuit breaker parameters.

- **Measurement of insulation resistance at voltages: 100 V, 250 V, 500 V and 1000 V.**

- **Low-voltage measurement of resistance, protective connections and equipotential bonding:**
- measurement of continuity of protective connections with current ±200 mA,
- automatic calibration of test leads - capability of using any test leads,
- measurement of resistance with low current and acoustic signaling.

- **Quick verification of correctness of the PE wire connection with a touch probe.**
- **Measurement of AC voltage.**
- **Indication of phase sequence.**
- **Memory of 990 measurements, data transfer to a PC over the USB interface.**
- **MPI-505 is equipment to perform complete test and verify on electrical installations according to the most common safety standards (IEC 61557, VDE 0100, BS7671).**

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MPI-505

Measurement of short-circuit loop impedance Z_{L-PE}, Z_{L-N}, Z_{L-L}

Measurement range acc. to IEC 61557: **0.13…1999Ω** for a 1.2 m test lead:

Display range	Resolution	Intrinsic error
0.00...19.99Ω	0.01Ω	±(5% w.m. + 3 digits)
20.0...199.9Ω	0.1Ω	
200...1999Ω	1Ω	

- Nominal operating voltage Un_{L-N}/ Un_{L-L}: 115/200V, 220/380V, 230/400V, 240/415V
- Operating voltage range: 100…264V (for Z_{L-PE} i Z_{L-N}) and 100…440V (for Z_{L-L})
- Nominal power network frequency f_n: 50Hz, 60Hz
- Operating frequency range: 45…65Hz
- Maximal measurement current: 23A at 230V (10ms), 40A at 400V (10ms),
- Verification of correctness of the PE terminal connection with a touch (for Z_{L-PE})

Measurement of short-circuit loop impedance Z_{L-PE} in the RCD mode

Measurement range acc. to IEC 61557: **0.5…1999Ω** for a 1.2 m test lead

Display range	Resolution	Intrinsic error
0.00...19.99Ω	0.01Ω	±(6% w.m. + 10 digits)
20.0...199.9Ω	0.1Ω	±(6% w.m. + 5 digits)
200...1999Ω	1Ω	

- Does not trip RCD breakers of RCD current $I_{\Delta n} \geq 30mA$
- Nominal operating voltage U_n: 115V, 220V, 230V, 240V
- Operating voltage range: 100…264V
- Nominal power network frequency f_n: 50Hz, 60Hz
- Operating frequency range: 45…65Hz
- Verification of correctness of the PE terminal connection with a touch probe

Measurements of RCD breaker parameters (operating voltage range 100…264 V):

RCD tripping test and measurement of t_A trip time (for the t_A measurement function)

RCD type	Multiplicity	Range	Resolution	Intrinsic error
General	$0.5*I_{\Delta n}$	0...300ms	1ms	±(2% w.m. + 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		

* - for $I_{\Delta n}$= 10mA and 0.5 $I_{\Delta n}$ uncertainty is ± 2% w.m. ± 3 digits

Measurement of I_A RCD trip current for sinusoidal differential current:

Nominal current	Measurement range	Resolution	Measurement current	Intrinsic error
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			
1000mA	330...1000mA			

- Capability of starting the measurement from either positive or negative half-period of forced leakage current

Measurement of I_A RCD trip current for pulsating unidirectional current:

Nominal current	Measurement range	Resolution	Measurement current	Intrinsic error
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			
100mA	40...140mA	1mA	0.35 x $I_{\Delta n}$ ...1.4 x $I_{\Delta n}$	
300mA	120...420mA			
500mA	200...700mA			

- Capability of measurement for either positive or negative half-periods of forced leakage current
- Maximal time of the measurement current flow is 3200 ms

Indication of phase sequence

- Indication of phase sequence: consistent, inconsistent
- Power network U_{L-L} voltage range: 100…440 V
- Displaying inter-phase voltage values

Low-voltage measurement of circuit continuity and resistance

Measurement of protective conductor continuity with current ±200 mA
Measurement range acc. to IEC 61557-4: **0.12…400Ω**

Range	Resolution	Intrinsic error
0.00...19.99Ω	0.01Ω	±(2% w.m. + 3 digits)
20.0...199.9Ω	0.1Ω	
200...400Ω	1Ω	

- Voltage on open terminals: 4…9V
- Output current at R<2Ω: min. 200mA
- Compensation of test lead resistance
- Measurements for both polarities of current

Measurement of resistance with low current

Range	Resolution	Intrinsic error
0.00...199.9Ω	0.1Ω	±(3% w.m. + 3 digits)
200...1999Ω	1Ω	

- Voltage on open terminals: 4…9V, short-circuit current I_{SC}:7mA
- Acoustic signal for a measured resistance value <30Ω ± 50%
- Compensation of test lead resistance

Measurement of insulation resistance

Measurement range acc. to IEC 61557-2:

- for U_N = 100V: 100kΩ...500MΩ
- for U_N = 250V: 250kΩ...1GΩ
- for U_N = 500V: 500kΩ...2GΩ
- for U_N = 1000V: 1MΩ...3GΩ

Display range *)	Resolution	Intrinsic error
0...1999kΩ	1kΩ	±(3% w.m. + 8 digits)
2.00...19.99MΩ	0.01MΩ	
20.0...199.9MΩ	0.1MΩ	
200...500MΩ	1MΩ	
200...1000MΩ	1MΩ	
200..1999MΩ	1MΩ	
2.00...3.00GΩ	0.01GΩ	±(4% w.m. + 6 digits)

*) not exceeding the measurement range for a given voltage.

- Measurement voltage: 100 V, 250 V, 500 V and 1000 V
- Detection of presence of voltage before the measurement
- Discharge of the measured object after the measurement
- Measurements of voltage on terminals $+R_{ISO}$, $-R_{ISO}$ within the range of: 0…440 V
- Measurement current < 2 mA

Standard accessories of the meter:

- WS-01 measurement triggering adapter with a UNI-Schuko plug	**WAADAWS01**
- 1.2 m red test lead terminated with banana plugs	**WAPRZ1X2REBB**
- 1.2 m yellow test lead terminated with banana plugs	**WAPRZ1X2YEBB**
- 1.2 m blue test lead terminated with banana plugs	**WAPRZ1X2BUBB**
- USB data transfer cable	**WAPRZUSB**
- red test probe with a banana socket	**WASONREOGB1**
- yellow test probe with a banana socket	**WASONYEOGB1**
- blue test probe with a banana socket	**WASONBUOGB1**
- K02 yellow alligator clip	**WAKROYE20K02**
- K02 red alligator clip	**WAKRORE20K02**
- L4 case	**WAFUTL4**
- meter harness	**WAPOZSZE2**
- calibration certificate	
- operating instructions	
- SONEL CD	
- warranty card	
- 4 LR6 batteries	

Additional accessories of the meter:

- 5 m red test lead terminated with a banana plug	**WAPRZ005REBB**
- 10 m red test lead terminated with a banana plug	**WAPRZ010REBB**
- 20 m red test lead terminated with a banana plug	**WAPRZ020REBB**
- WS-05 adapter with a UNI-Schuko plug	**WAADAWS05**
- AGT-16C adapter for 4-contact 3-phase sockets	**WAADAAGT16C**
- AGT-16P adapter for 5-contact 3-phase sockets	**WAADAAGT16P**
- AGT-16T adapter for industrial sockets	**WAADAAGT16T**
- AGT-32C adapter for 4-contact 3-phase sockets	**WAADAAGT32C**
- AGT-32P adapter for 5-contact 3-phase sockets	**WAADAAGT32P**
- AGT-32T adapter for industrial sockets	**WAADAAGT32T**
- AGT-63P adapter for 5-contact 3-phase sockets	**WAADAAGT63P**
- TWR-1J adapter for testing RCD breakers	**WAADATWR1J**
- "SONEL Pomiary Elektryczne" program for creating reports	**WAPROSONPE5**
- "SONEL Schematic" prog. for creating drafts, electr. inst. schem.	**WAPROSCHEM**
- "SONEL PE Kalkulacje" program for creating measurement calc.	**WAPROKALK**
- official calibration certificate	

The acronym "m.v." stands for a "measured reference value".