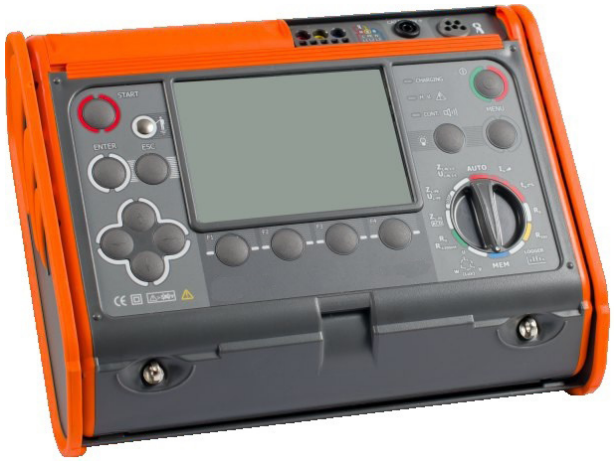
# AMPI-530

HIGHEST ACCURACY & LOWEST COST



# Multifunction Electrical Installations Meter

## AMPI-530

Short-circuit loop measurement.
Testing of general and selective RCD with the rated differential current.
Measurement of insulation resistance: Up to 10GΩ.
Voltages: 50 V, 100 V, 250 V, 500 V, 1000 V.
Measurement of earthing resistance.
Bi-directional testing of PE wire continuity.
Phase sequence testing.
Measurement and recording of voltage, frequency, AC, cosφ, power, harmonics, THD.

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## Possible measurements:

**Short-circuit loop measurement:**
-Impedance measurement with 23A (44A phase-to-phase) short-circuit resistor $R_{ZW}$ =10Ω.
-Measurement range: 95...440V, frequency 45...65Hz.

**Short - circuit loop measurement with resolution 0,01Ω, in distribution network without triggering RCD ($I_{\Delta n}$ ≥30mA):**
-Automatic calculation of short-circuit, detection of phase and phase-to-phase voltage.
-Additional UNI-Schuko plug for automatic measurement, AGT adapter for 3 phase network measurement.

**Testing of general and selective RCD with the rated differential current of 10, 30, 100, 300, 500 and 1000mA. (Type AC, A and B).**

**Measurement of insulation resistance:**
-With test voltage 50V, 100V, 250V, 500V, 1000V.
-Measurement range up to 10GΩ.
-UNI-Schuko plug for insulation measurement.
-Automatic discharging after measurement.
-Automatic measurement of all resistances in 3,4,5-wire cables using optional adapter AUTO-ISO.
-Acoustic signals in 5sec intervals for insulation resistance characteristic.
-Safety measurement - protection against overvoltage.

**Bi-directional testing of PE wire continuity using 200mA current:**
-Autocalibration of test leads.

**Phase sequence testing**
**Battery charge indicator**
**AUTO-OFF function**
**USB interface**
**Earth resistance measurements**
-Measurement with 3- and 4-pole methods with 2 additional electrodes.
-Measurement with the 3-pole method with and additional clamp.
-Measurement with 2-clamp method.

**Soil resistivity measurements.**
**Illuminance measurements.**
**Quick check of PE connection correctness**
**Measurement and recording of voltage, frequency, AC, cosφ and power (active,reactive and apparent), voltage and current harmonics up to 40, THD.**
**Checking reactive phase sequence and motor direction of rotation.**
**Innovative memory with possibility of description of measurement points, facilities, names of customers.**
**Power supply from rechargeable of disposable batteries (optional).**

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

Test of PE wire continuity using a ±200mA current.

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

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

"m.v." – measured value

### RCD trigger and response time test $t_A$ (for $t_A$ mode)

Measurement ranges in acc. with IEC61557: 0ms ... up to the upper bound of the displayed value.

| Breaker Type | Test Current Multiplier | Measurement 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: for 0,5*$I_{\Delta n}$ :-8...0%; for 1* $I_{\Delta n}$,2* $I_{\Delta n}$,5*$I_{\Delta n}$ : 0...8%.

### Measurement of the RCD triggering current ($I_A$) for sine waveform testing current

| Selected Current | Range | Resolution | Test Current | Accuracy |
|---|---|---|---|---|
| 10mA | 3,3...10,0mA | 0,1mA | 0,3*$I_{\Delta n}$...1*$I_{\Delta n}$ | ±5% $I_{\Delta n}$ |
| 30mA | 9,0...30,0mA | | | |
| 100mA | 33...100mA | 1mA | | |
| 300mA | 90...300mA | | | |
| 500mA | 150...500mA | | | |
| 1000mA | 330...1000mA | | | |

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

### Measurement of the RDC triggering current ($I_A$) for a unidirectional half period sine waveform test current with a 6mA direct current offset

| Selected Current | Range | Resolution | Test Current | Accuracy |
|---|---|---|---|---|
| 10mA | 4,0...20,0mA | 0,1mA | 0,4*$I_{\Delta n}$...2*$I_{\Delta n}$ | ±10% $I_{\Delta n}$ |
| 30mA | 12,0...42,0mA | | | |
| 100mA | 40...140mA | 1mA | 0,4*$I_{\Delta n}$...1,4*$I_{\Delta n}$ | |
| 300mA | 120...420mA | | | |
| 500mA | 200...700mA | | | |

A measurement is possible for a positive or negative forced leakage current.

### Measurement of the RCD triggering current ($I_A$) for direct testing current

| Selected Current | Range | Resolution | Test Current | Accuracy |
|---|---|---|---|---|
| 10mA | 4,0...20,0mA | 0,1mA | 0,4*$I_{\Delta n}$...2*$I_{\Delta n}$ | ±10% $I_{\Delta n}$ |
| 30mA | 12,0...60,0mA | 1mA | | |
| 100mA | 40...200mA | | | |
| 300mA | 120...600mA | | | |
| 500mA | 200...1000mA | | | |

A measurement is possible for a positive or negative forced leakage current.

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## Also can make following:

**Phase sequence**

-Phase sequence indicator: forward, reverse.
-Mains voltage range $U_{L-L}$ : 100...440V (45…65Hz).
-Display of pase-to-phase voltages.

**Measurement of the active P, passive Q and apparent S power and cosφ**

-Range of voltajes $U_{L-N}$ : 100...440V.
-Nominal frequency of the network: 45...65Hz.
-Frequency measurement for voltage 50...440V in range 45,0...65,0Hz (accuracy max. ± 0,1% m.v. + 1 digit).
-Measurement cosφ: 0,00...1,00 (resolution 0,01).

**Analysis and recording of single-phase system**

-Voltage measurement U : 0...500 V.
-Frequency range for measured voltages: 45,0...65,0 Hz.
-Frequency measurement range for 50...500 V voltages: 45,0...65,0 Hz (basic uncertainty max. ± 0,1% m.v. + 1 digit).
-Cosφ measurement: 0,00...1,00 (resolution 0,01).
-Measurement and recording in single-phase system.

### Current measurement (True RMS)

| Clamps | Range | Resolution | Accuracy* |
|---|---|---|---|
| C-3, C-6 | 0,0...99,9 mA | 0,1 mA | ±(5% m.v. + 3 digits) |
| | 100...999 mA | 1 mA | |
| C-3,C-6<br>F-1, F-2, F-3 | 1,00...9,99 A | 0,01 A | ±(5% m.v. + 5 digits)<br>(C-3, C-6)<br>±(0,1% I + 2 digits) n<br>(F-1, F-2, F-3) |
| | 10,0...99,9 A | 0,1 A | |
| | 100...999 A | 1 A | |
| F-1, F-2, F-3 | 1,00...3,00 kA | 0,01 kA | |

* - the accuracy of current clamps must also be taken into account.

### Measurement of active P, reactive Q and apparent power S and cosφ

| Range [W], [VA], [var] | Resolution [W], [VA], [var] | Accuracy* |
|---|---|---|
| 1,00...9,99 k | 0,01 k | ±(7% m.v. + 3 ddigits) |
| 10,0...99,9 k | 0,1 k | |
| 100...999 k | 1 k | ±(7% m.v. + 5 digits) |
| 1,00...1,50 M | 0,01 M | |
| 10,0...19,9 klx | 0,1 klx | |

Voltage range: 0…500V.
Current range: 0...1000A (3000A).
Mains rated frequency f : 50Hz, 60Hz.

### Illuminance measurement

| Range | Resolution | Accuracy |
|---|---|---|
| 0,1...99,9 lx | 0,1 lx | ±(5% m.v. + 2 digits) |
| 100...999 lx | 1 lx | |
| 1,00...9,99 klx | 0,01 klx | |
| 10,0...19,9 klx | 0,1 klx | |

Measurement in luxes (lx) or feet-candles (fc).

### Voltage harmonics measurement

| Range | Resolution | Harmonics num. | Accuracy |
|---|---|---|---|
| 0,0...500 V | 0,1 (1*) V | 1,2,...15 | ±(5% m.v. + 3 digits) |
| | | 16,...40 | ±(5% m.v. + 10 digits) |

In addition display of $h_{02}$ ...$h_{40}$ values as percent of $h_{01}$ (up to 999% ).
*) from 300V to 500V.

### Medición de armónicos de la corriente

| Range | Resolution | Harmonics num. | Accuracy |
|---|---|---|---|
| 0,0...1000 A* | results from the I measurement ranges | 1,2,...15 | ±(5% m.v. + 3 digits) |
| | | 16,...40 | ±(5% m.v. + 10 digits) |

In addition display of $h_{02}$ ...$h_{40}$ values as percent of $h_{01}$ (up to 999% ).
*) for C-3 clamp, for C-6 - 10A, for F clamp up to 3000A.

### THD (in relation to the 1st harmonics)

| | | Resolution | Accuracy |
|---|---|---|---|
| THD-F voltage<br>(h = 2...40) | 0,0...999,9%<br>for $U_{RMS} \geq 1\% U_{nom}$ | 0,1% | ±5% |
| THD-F current<br>(h = 2...40) | 0,0...999,9%<br>for $I_{RMS} \geq 1\% I_{nom}$ | 0,1% | ±5% |

### Soil resistivity mesurement (ρ)

| Range | Resolution | Accuracy |
|---|---|---|
| 0,0...99,9 Ωm | 0,1 Ωm | Depending on accuracy of $R_E$ measurement |
| 100...999 Ωm | 1 Ωm | |
| 1,00...9,99 Ωm | 0,01 kΩm | |
| 10,0...99,9 kΩm | 0,1 kΩm | |

Measurement with Wenner's method.
Distance settable in metres or feet.
Distance range: 1...30 m (1...90 feet).

### Selective earth resistance measurement with clamp (3p + clamp)

Measuring range acc. to IEC 61557-5: 0,5...1999Ω

| Range | Resolution | Accuracy |
|---|---|---|
| 0,00...9,99 Ω | 0,01 Ω | ±(8% m.v. + 4 digits) |
| 10,0...99,9 Ω | 0,1 Ω | |
| 100...999 Ω | 1 Ω | |
| 1,00...1,99 kΩ | 0,01 kΩ | |

Measurement with additional current clamp.
Interference current measuring range: up to 9,99 A.

### Selective earth measurement with two clamps

| Range | Resolution | Accuracy |
|---|---|---|
| 0,00...9,99 Ω | 0,01 Ω | ±(10% m.v. + 4 digits) |
| 10,0...19,9 Ω | 0,1 Ω | |
| 20,0...99,9 Ω | | ±(20% m.v.+ 4 digits) |

Measurement with transmitting and receiving clamps.
Interference current measuring range: up to 9,99 A.

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# AMPI-530 Specifications

**Electric security:**

| | |
|---|---|
| **Type of insulation** | Double, according to EN 61010-1 and IEC 61557, EMC |
| **Measurement category** | CAT IV 300V acc. to EN 61010-1 |
| **Protection class acc. to EN 60529** | IP54 |

**Other technical data:**

| | |
|---|---|
| **Power supply** | Alkaline batteries LR14 (5 szt.) or battery package Ni-MH (additional option) |

**Rated operational conditions:**

| | |
|---|---|
| **Operation temperature** | 0...+50°C |

## Standard accesories:

- Adapter with START button UNI-Schuko (WS-03)
- Test lead with banana plug; 1,2m; yellow
- Test lead with banana plug; 1,2m; blue
- Test lead with banana plug; 1,2m; red
- Test lead on a reel with banana plugs; 30m; red
- Test lead on a reel with banana plugs; 15m; blue
- USB cable
- Pin probe with banana connector; yellow
- Pin probe with banana connector; red
- Pin probe with banana connector; blue
- "Crocodile" clip K02; red
- "Crocodile" clip K02; yellow
- Earth contact test probe (rod); 0,30m
- Carrying case L1
- Set of hanging straps
- Cable for battery charge with car plug 12V
- Calibration Certyficate
- Software "Reader"
- Power supply adaptor Z7
- Cable for battery charger
- NiMH 4,8V 4,2Ah rechargeable battery

## Optional accesories:

- Test lead with banana plug 5m; red
- Test lead with banana plug 10m; red
- Test lead with banana plug 20m; red
- Test lead on a reel with banana plugs; 25m; blue
- Test lead on a reel with banana plugs; 50m
- Receiving clamp C 3
- Receiving clamp C 6
- Transmitting clamp N1 (with test lead)
- Flexible clamp F-1 Ø 40cm
- Flexible clamp F-2 Ø 25cm
- Flexible clamp F-3 Ø 13cm
- Triple phase socket adapter AGT-16P
- Triple phase socket adapter AGT-32P
- Triple phase socket adapter AGT-63P
- Triple phase socket adapter AGT-16C
- Triple phase socket adapter AGT-32C
- Adapter for industrial sockets AGT-16T
- Adapter for industrial sockets AGT-32T
- RCD breaker testing adapter TWR-1J
- Adapter AutoISO 1000C
- Light meter probe LP1 with WS-06 plug
- Box for batteries
- Adapter WS-04 with UNI-Schuko
- Earth contact test probe (rod); 0,80m
- Mini bluetooth keyboard with casing
- Software for creation of documentation from electrical measurements
- Software for creation drawings and diagrams

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

Measurement using 23/40A current measurement range in accordance with IEC 61557: 0,13...1999,9Ω (for 1,2m lead)

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

Rated voltage: 95...270V (for $Z_{L-PE}$ y $Z_{L-N}$ ) and 95...440V (for $Z_{L-L}$ ) .
Frequency: 45...65Hz.

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

Measurement using 15mA current measurement range in accordance with IEC 61557: 0,50...1999,9Ω.

| 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 | |

Rated voltage: 95...270V.
Frequency:: 45...65Hz.

## Measurement of earthing $R_E$

Rated voltage in accordance with IEC 61557-5: 0,5...1999Ω.

| Range | Resolution | Accuracy |
|---|---|---|
| 0,00...9,99Ω | 0,01Ω | ±(2% m.v. + 4 digits) |
| 10,0...99,9Ω | 0,1Ω | ±(2% m.v. + 3 digits) |
| 100...999Ω | 1Ω | |
| 1,00...1,99kΩ | 10Ω | |

## Insulation resistance measurement

Measurement range in accordance with IEC 61557-2:

- $-U_N$=50V: 50kΩ...250MΩ
- $-U_N$=100V: 100kΩ...500MΩ
- $-U_N$=250V: 250kΩ...1GΩ
- $-U_N$=500V: 500kΩ...2GΩ
- $-U_N$=1000V: 1MΩ...3GΩ

| Range | Resolution | Accuracy |
|---|---|---|
| 0...1999kΩ | 1kΩ | ±(3% m.v. + 8 digits) |
| 2,00...19,99MΩ | 0,01MΩ | |
| 20,0...199,9MΩ | 0,1MΩ | |
| 200...999MΩ | 1MΩ | |
| 1,00...3,00GΩ | 0,01GΩ | ±(4% m.v. + 6 digits) |

With UNI-Schuko additional error ±2%.

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