



PAT-820

Indeks: WMGBPAT820

Portable appliance tester

Description

PAT-820 digital meter is used to measure the parameters of electrical equipment (power tools, white goods, etc.) which determine their safety: **resistance of protective conductors, insulation resistance, continuity of connections, leakage current, power, automatic measurement of all RCD parameters. Meter allows fast test/high voltage test.**

PAT-820 can be used to test the equipment performed in accordance with standards:

- EN 60745-1 Hand-held motor-operated electric tools. Safety. General requirements
- EN 61029 Safety of transportable motor-operated electric tools - General requirements
- EN 60335-1 Household and similar electrical appliances -Safety - Part 1: General requirements
- EN 60950 Safety of information technology equipment (IT Equipment)
- AS/NZS 3760:2010 In-service safety inspection and testing of electrical equipment
- VDE 0404-1 Prüf - und Messeinrichtungen zum Prüfen der elektrischen Sicherheit von elektrischen Geräten. Teil 1: Allgemeine Anforderungen
- VDE 0404-2 Prüf - und Messeinrichtungen zum Prüfen der

elektrischen Sicherheit von elektrischen Geräten. Teil 2:
Prüfeinrichtungen für Prüfungen nach Instandsetzung, Änderung
oder für Wiederholungsprüfungen

- VDE 0701-0702 Prüfung nach Instandsetzung, Änderung elektrischer Geräte. Wiederholungsprüfung elektrischer Geräte. Allgemeine Anforderungen für die elektrische Sicherheit

Technical Specification

Common features of the instruments:

- measurement of protective conductor resistance with the currents: **200 mA, 10 A , 25 A** (protection class I),
- measurement of insulation resistance – three measurement voltages: **100 V, 250 V and 500 V,**
- **RCD testing,**
- measurement of equivalent leakage current,
- measurement of residual leakage current,
- measurement of touch leakage current,
- measurement of power,
- measurement of current consumption,
- IEC lead test,
- measurement of mains voltage and frequency.
- **flashtest/highvoltage test**

Other features:

- **intuitive user interface,**
- **typing with QWERTY keyboard on the large and clear touch display,**
- manual tests and auto tests, the ability to describe auto test with standards or any name,
- **automatic measurement of RCD parameters,**
- automatic measurement range selection,
- cooperation with a barcode reader and printer,
- support for barcode reader (including 2D), readings of the original serial numbers for the appliances and registration codes and auto test codes,
- the results can be printed (also automatically after every measurement), reports (works with the printer), two labels can be printed after a single test (for the device and a removable wire),

- build-in help with instructions how to connect test equipment and how to perform measurement,
- option to skip single measurement in the auto test, with the recording that choice of skipping of specified measurement was made conscious, the option does not apply to build-in auto tests,
- description of test equipment, measurement location, customer data, assigning the serial number of the device under test and the index can be stored in meter memory, ability to write notes about the device under the test
- base of the appliances, customers, description of the equipment and damage.
- ability to create many user accounts with log-in function (as an option),
- supports USB flash drive;
- communication with PC via USB,
- works with the program Sonel Reader and Sonel PAT (option); measurement and settings configuration from the meter and also from PC, data analysis.
- professional software for data processing and reporting.

Measurement of protective earth conductor resistance I=200mA (protection class I)

Display range	Resolution	Accuracy
0,00...0,99 Ω	0,01 Ω	$\pm(4\% \text{ m.v.} + 2 \text{ digits})$
1,00...19,99 Ω		$\pm(4\% \text{ m.v.} + 3 \text{ digits})$

- **test current: $\geq 200 \text{ mA}$ for $R = 0,2 \Omega \dots 1,99 \Omega$**
- adjustable measurement time: 1 s...60 s with 1 s resolution
- adjustable limit

Measurement of protective earth conductor resistance I=10A (protection class I)

Display range	Resolution	Accuracy
0...999 m Ω	1 m Ω	$\pm(3\% \text{ m.v.} + 4 \text{ digits})$

1,00...1,99 Ω 0,01 Ω

- **test current: $\geq 10\text{ A}$ for $R \leq 0,5\ \Omega$**
- adjustable measurement time: 1 s...60 s with 1 s resolution
- technical method
- adjustable limit

Measurement of protective earth conductor resistance $I=25\text{A}$ (protection class I)

Display range	Resolution	Accuracy
0...999 m Ω	1 m Ω	$\pm(3\% \text{ m.v.} + 4 \text{ digits})$
1,00...1,99 Ω	0,01 Ω	

- **test current: $\geq 25\text{ A}$ for $R \leq 0,2\ \Omega$**
- adjustable measurement time: 1 s...60 s with 1 s resolution
- adjustable limit

Measurement of insulation resistance

Measurement range according to IEC 61557-2 for:

- $U_N=100\text{ V}$: **100 k Ω ...99,9 M Ω**
- $U_N=250\text{ V}$: **250 k Ω ...199,9 M Ω**
- $U_N=500\text{ V}$: **500 k Ω ...599,9 M Ω**

U_N	Display range	Resolution	Accuracy
100V	0...1999 k Ω	1 k Ω	
	2,0...19,99 M Ω	0,01 M Ω	
	20,0...99,9 M Ω	0,1 M Ω	
	0...1999 k Ω	1 k Ω	

250V	2,00...19,99 MΩ	0,01 MΩ	±(5% m.v. + 8 digits)
	20,0...199,9 MΩ	0,1 MΩ	
500 V	0...1999 kΩ	1 kΩ	
	2...19,99 MΩ	0,01MΩ	
	20,0...599,9 MΩ	0,1 MΩ	

- nominal current: min 1 mA...1,4 mA
- adjustable limit
- adjustable measurement time: 3 s...3 min with 1 s resolution
- automatic discharge of the capacity of the tested device after measurement
- protection against measuring live devices

Measurement of PE and residual leakage current:

Display range	Resolution	Accuracy
0,00...3,99 mA	0,01 mA	±(5% m.v. + 2 digits)
4,0...19,9 mA	0,1 mA	

- adjustable limit
- adjustable measurement time: 1...60s with 1s resolution

Measurement of equivalent leakage current:

Display range	Resolution	Accuracy
0,00...3,99 mA	0,01 mA	±(5% m.v. + 2 digits)
4,0...19,9 mA	0,1mA	

- open circuit voltage 25...50 V
- adjustable limit
- adjustable measurement time:1...60s with1s resolution

Measurement of touch leakage current:

Display range	Resolution	Accuracy
0,00...4,999 mA	0,001 mA	$\pm(5\% \text{ m.v.} + 3 \text{ digits})$

- adjustable limit
- adjustable measurement time:1...60s with1s resolution

Measurement of power S:

Display range	Resolution	Accuracy
0...999 VA	1 VA	$\pm(5\% \text{ m.v.} + 3 \text{ digits})$
1...3,99 kVA	0,01 kVA	$\pm(8 \% \text{ m.v.} + 5 \text{ digits})^*$

- adjustable measurement time:1...60s with1s resolution
- * - for measurement with clamps

Measurement of power P:

Display range	Resolution	Accuracy
0...999 W	1 W	$\pm(5\% \text{ m.v.} + 3 \text{ digits})$
1...3,99 kW	0,01 kW	$\pm(8 \% \text{ m.v.} + 5 \text{ digits})^*$

- adjustable measurement time:1...60s with1s resolution

- * - for measurement with clamps

Power factor PF:

Display range	Resolution	Accuracy
0,00...1,00	0,01	$\pm(10\% \text{ m.v.} + 5 \text{ digits})$

- adjustable measurement time:1...60s with1s resolution

Measurement of current consumption:

Display range	Resolution	Accuracy
0,00...15,99 A	0,01 A	$\pm(2\% \text{ m.v.} + 3 \text{ digits})$

- adjustable measurement time:1...60s with1s resolution

Voltage measurement:

Display range	Resolution	Accuracy
195,0...265,0 V	0,1V	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$

Frequency measurement:

Display range	Resolution	Accuracy
45,0 Hz...55,0 Hz	0,1 Hz	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$

Measurements of RCD parameters

RCD trigger and response time test t_A

Test range according to IEC 61557: 0 ms ... to the upper limit of displayed value

RCD type	Factor	Range	Resolution	Accuracy
General	$0,5 \cdot I_{\Delta n}$	0...300 ms	1 ms	$\pm (2\% \text{ m.v.} + 2 \text{ digits})$ (for RCD of $I_{\Delta n}=10 \text{ mA}$ and the measurement with $0,5 \cdot I_{\Delta n}$ accuracy is: $\pm (2\% \text{ m.v.} + 3 \text{ digits})$)
	$1 \cdot I_{\Delta n}$			
	$2 \cdot I_{\Delta n}$	0...150 ms		
	$5 \cdot I_{\Delta n}$	0...40 ms		

Measurement of RCD disconnection current I_A for sinusoidal differential current

Test range according to IEC 61557: $(0,3...1,0) I_{\Delta n}$

Selected nominal current of RCD	Range	Resolution	Test current	Basic uncertainty
10 mA	3,3...10,0 mA	0,1 mA	$0,3 \times I_{\Delta n} \dots 1,0 \times I_{\Delta n}$	$\pm 5\% I_{\Delta n}$
15 mA	4,5...15,0 mA			
30 mA	9,0...30,0 mA			

- it is possible to start the measurement from the positive of the negative half of forced leakage current
- test current passage time max. 3200 ms
- automatic measurement of RCD disconnection time (t_A) and disconnection current
- measurement for: $0,5I_{\Delta n}$, $1I_{\Delta n}$, $2I_{\Delta n}$ i $5I_{\Delta n}$,

Flashtest

Display range	Resolution	Accuracy
0,00...2,50 mA	0,01 mA	$\pm(5\% \text{ m.v.} + 5 \text{ digits})$

Electrical safety:

- measurement category: II 300V acc.to EN 61010-1
- enclosure protection rating acc. to EN 60529: IP40 (IP67 with lid closed)

Other technical specification:

- power supply: 195 V...265V, 50Hz
- load current: max. 16A (230V)
- data transmission to PC: USB 2.0, WiFi
- dimensions: 330 x 235 x 120 mm
- weight: approx. 6,2 kg
- operating temperature: $-10^{\circ}\dots+50^{\circ}\text{C}$
- storage temperature: $-20^{\circ}\dots+70^{\circ}\text{C}$
- humidity: 20...80%
- display: TFT 7" 800x480