

**CAT II****300 V****IEC****61557** **IP40** **WiFi** **TOUCH
SCREEN** **QR CODE
SYSTEM**

Safety of welding machines outright

Features

- Extensive measuring system enables:
 - measurement of welding equipment parameters:
 - » rated voltage of welding devices in no-load condition,
 - » welding circuit leakage current,
 - » primary leakage current,
 - protective conductor resistance measurement,
 - residual voltage measurement,
 - measurement of insulation resistance in three points,
 - measurement of substitute, differential and touch leakage current,
 - functional test,
 - test of RCD and PRCD switches,
 - ...and much more.
- Intuitive user interface.
- Cooperation with a label printer and QR code scanner.
- Robust, compact housing.
- Operation time at rechargeable battery power supply: up to 1 hour.



Application

PAT-86 is used wherever safety is the most important thing. Ideally suited to situations where it is necessary to check welders, power tools, three-phase devices and household appliances.

Welders

PAT-86 was created for testing welding equipment in compliance with EN 60974-4 standard.



Capabilities

Thanks to the extensive measuring part, PAT-86 enables comprehensive checking of electrical devices. The touch screen and autoprotocols section make testing quick and efficient.

The meter cooperates with a label printer and QR scanner, which greatly facilitates the recordkeeping of tools. The following printouts are available:

- initial measurement report,
- QR code, where information on performed tests and the parameters of the tested device are saved.

These data can be read and added to the meter memory using the optional QR code scanner.

The whole picture is complemented by a compact and durable housing. It provides instrument protection during both measurements and transport.

13/09/2019 10:47:33 AM admin U _{UK} = 239.3 V U _{UPE} = 0.8 V f = 50.0 Hz			
234/455			
Evidence No	37422		
Name	toster	✓	13/09/2019 11:38:00 AM admin Sonel PAT-86 501
Producer		✓	13/09/2019 11:01:48 AM admin Sonel PAT-86 101
Model	5r4yg	✓	13/09/2019 10:59:34 AM admin Sonel PAT-86 101
Serial No	574		
Year of production	2019		
Class			
Cycle	6		
Date of retest	13/03/2020		

Memory

The memory has a tree structure. For each device tested it contains its description, location of measurements, customer data and registration number.



Communication

The meter provides many modes of transmission of measurement results: via USB, LAN and WiFi. In addition, it is possible to upload the results to a USB stick.

Dedicated **PAT Analysis** software allows for data management and also reports preparation - in several versions, depending on the user's needs. In addition, it is possible to use the **PAT Server** solution. This system allows you to work in many modes, including:

- smooth data management,
- online upload to server,
- work through a web browser,
- work in task ordering mode,
- storing copies of data on the server.

Standard accessories



Power cord

WAPRZZAS1



L-11 carrying case

WAFUTL11



**2x 5x20 mm,
16 A fuse**

WAPOZB16PAT



Test lead

1.8 m (crocodile clip)
WAPRZ1X80RKS

1.5 m (PAT plug/banana plugs)
WAPRZ1X5DZBB



USB cable

WAPRZUSB



**Crocodile clip
1 kV 20 A**

red
WAKRORE20K02
blue
WAKROBU20K02

Optional accessories



**Three-phase socket
adapter 16 A**

5P
WAADAPAT16P

5P switchable
WAADAPAT16PR

4P
WAADAPAT16C

4P switchable
WAADAPAT16CPR



**Three-phase socket
adapter 32 A**

5P
WAADAPAT32P

5P switchable
WAADAPAT32PR

4P
WAADAPAT32C

4P switchable
WAADAPAT32CPR



**3P industrial
socket adapter**

16 A
WAADAPAT16F1

32 A
WAADAPAT32F1

**PAT-3F-PE adapter
for leakage current
measurement**

WAADAPAT3FPE



**Pin probe 1 kV
CAT III/1000 V
CAT IV/600 V
(banana socket) red**

WASONREOGB1



**Pin probe 1 kV
CAT III/1000 V
CAT IV/600 V
(banana socket) blue**

WASONBUOGB1



Kelvin clip 1 kV 25 A

WAKROKELK06



**High-current
pin probe (ba-
nana sockets)**

WASONSPGB1



**Brush probe
(banana socket)**

WASONSZ1



**C-3 current clamp
(Ø 52 mm)**

WACEGC30KR



**Double-wire test
lead 2.1 m
(IEC C13/ba-
nana plugs)**

WAPRZ2X1DZIECB



**IEC/Uni Schuko
adapter for exten-
sion cords testing**

WAADAPATIEC2



**IEC 60320 C6 to
C13 adapter**

WAADAPATIEC1



**Report / barcode
printer (USB,
portable)**

WAADAD2



**Report / barcode
printer (Wi-Fi /
D3, portable)**

WAADAD3



**Barcode scan-
ner (USB)**

WAADACK2D



**Accessories for
SATO printer**

Tape / paper (glued)
WANAKD2

Ink tape
WANAKD2BAR



**Accessories for
Brother printer**

Ink tape
WANAKD3



Sonel PAT Analysis

WAPROSONPAT3

Technical specification

Measurement functions	Range	Resolution	Accuracy $\pm(\% \text{ m.v.} + \text{digits})$
Resistance of protective conductor (PE) $I = 200 \text{ mA} / 10 \text{ A} / 25 \text{ A}$	up to 19.99 Ω	from 1 m Ω	from $\pm(3\% \text{ m.v.} + 4 \text{ digits})$
Insulation resistance $U_{\text{ISO}} = 100 \text{ V} / 250 \text{ V} / 500 \text{ V} / 1000 \text{ V}$	up to 599.9 M Ω	from 1 k Ω	$\pm(5\% \text{ m.v.} + 8 \text{ digits})$
Current (clamp measurement)	up to 24.9 A	from 1 mA	$\pm(5\% \text{ m.v.} + 5 \text{ digits})$
Visual test		✓	
Continuity check of protective conductor (PE)		✓	
Insulation resistance measurement at three points		✓	
IEC cable test		✓	
Functional test			
Apparent power S	up to 3.99 kVA	from 1 VA	$\pm(5\% \text{ m.v.} + 3 \text{ digits})$
Active power P	up to 3.99 kW	from 1 W	$\pm(5\% \text{ m.v.} + 3 \text{ digits})$
Reactive power Q	up to 3.99 kvar	from 1 var	$\pm(5\% \text{ m.v.} + 3 \text{ digits})$
Power Factor (PF)	up to 1.00	0.01	$\pm(10\% \text{ m.v.} + 5 \text{ digits})$
Current consumption for power measurement	up to 15.99 A	0.01 A	$\pm(2\% \text{ m.v.} + 3 \text{ digits})$
THD for voltage and current	up to 99.9%	0.1%	$\pm(5\% \text{ m.v.} + 5 \text{ digits})$
Cos ϕ	up to 1.0	0.1	$\pm(5\% \text{ m.v.} + 5 \text{ digits})$
Voltage measurement for welding machines			
RMS voltage U_{RMS}	up to 170.0 V	0.1 V	$\pm(2.5\% \text{ m.v.} + 5 \text{ digits})$
DC and AC peak voltage	up to 240.0 V	0.1 V	$\pm(2.5\% \text{ m.v.} + 5 \text{ digits})$
Residual voltage U_{R}	up to 240.0 V	0.1 V	$\pm(2.5\% \text{ m.v.} + 5 \text{ digits})$
Leakage current measurement			
Welding circuit leakage current I_{L}	up to 14.99 mA	0.01 mA	$\pm(5\% \text{ m.v.} + 2 \text{ digits})$
Leakage current of the welding machine's primary circuit I_{p}	up to 14.99 mA	0.01 mA	$\pm(5\% \text{ m.v.} + 5 \text{ digits})$
PE leakage current and differential leakage current	up to 19.9 mA	0.01 mA	$\pm(5\% \text{ m.v.} + 2 \text{ digits})$
Substitute leakage current	up to 19.9 mA	0.01 mA	$\pm(5\% \text{ m.v.} + 2 \text{ digits})$
Touch leakage current	up to 4.999 mA	0.001 mA	$\pm(5\% \text{ m.v.} + 3 \text{ digits})$
RCD and PRCD switch test			
Measurement of RCD parameters according to IEC 61557	up to 300 ms	1 ms	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$
Measurement of RCD tripping current I_{A} for sinusoidal residual current (AC type)	up to 30 mA	0.1 mA	$\pm 5\% I_{\Delta n}$
Measurement of power network parameters			
Voltage	up to 265.0 V	0.1 V	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$
Frequency	up to 55.0 Hz	0.1 Hz	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$

Technical data

Technical data	TFT 5.6" 800 x 480 px
Power supply	195...265 V, 50 / 60 Hz mains NiMH 7.2 V / 2 Ah rechargeable battery
Load current	max. 16 A (230 V)

Safety and work conditions

Measuring category according to EN 61010	II 300 V
Ingress protection	IP40
Type of insulation according to EN 61010-1 and IEC 61557	double
Dimensions	318 x 257 x 152 mm
Weight	ca. 5 kg
Operating temperature	-10...+50°C
Storage temperature	-20...+70°C
Humidity	20...80%
Nominal temperature	+20...+25°C
Reference humidity	40%...60%
Altitude a.s.l.	<2000 m

Memory and communication

Memory of measurement results	min. 4 GB
Data transmission	USB 2.0, Wi-Fi, LAN

Other information

Quality standard - development, design and production	ISO 9001
	ISO 14001
	ISO 45001
The product meets the EMC (emission for industrial environment) requirements according to standards	EN 61326-1
	EN 61326-2-2