

## Portable power quality analysis center

### Features

- 7" touchscreen - ergonomic and intuitive graphical user interface.
- Over 10 years of recording.
- CAT IV 600 V measurement category - high safety.
- All parameters according to class S - high accuracy of measurements.
- Li-Ion rechargeable battery - higher mobility.
- Powering from measured network - reliability of measurements.
- Removable memory card - recording data with no restrictions.
- Quick setup and reporting - ease of use.
- Cooperation with desktop Sonel Analysis software - extended data analysis.

### Measured parameters

- Inrush current.
- Inverter efficiency.
- Voltages L1, L2, L3, N, PE (five measurement inputs) – average, minimum, maximum and instant values within the range up to 760 V, interoperability with voltage transducers.
- Currents L1, L2, L3, N (four measurement inputs) – average, minimum and maximum values, current measurement within the range up to 6 kA (depending on applied current clamp), interoperability with current transducers.
- Crest factors for current CFI and voltage CFU.
- Frequency within the range of 40...70 Hz.
- Active (P), reactive (Q), distortion (D) and apparent (S) power with the type of reactive power (capacitive and inductive).
- Active ( $E_p$ ), reactive ( $E_q$ ) and apparent ( $E_s$ ) energy.
- Power factor PF,  $\cos\phi$ ,  $\tan\phi$ .
- Harmonics up to the 50<sup>th</sup> order of voltage and current.
- Event logging for current and voltage along with oscillograms and half-period RMS charts.
- Energy cost calculator.
- ...and much more.
- All parameters are recorded in compliance with class S according to IEC 61000-4-30 standard



## Wide range of mains to analyze

- With rated frequency 50/60 Hz
- With rated voltages: 58/100 V, 64/110 V, 110/190 V, 115/200 V, 120/208 V, 127/220 V, 133/230 V, 220/380 V, 230/400 V, 240/415 V, 254/440 V, 290/500 V, 400/690 V
- Direct current
- Systems:
  - » single-phase
  - » split-phase with common N
  - » three-phase – WYE with and without N conductor
  - » three-phase – Delta
  - » three-phase – 2-element WYE without N conductor (Aron/Blondel)
  - » three-phase – 2-element Delta (Aron/Blondel)
  - » with current and voltage transducers



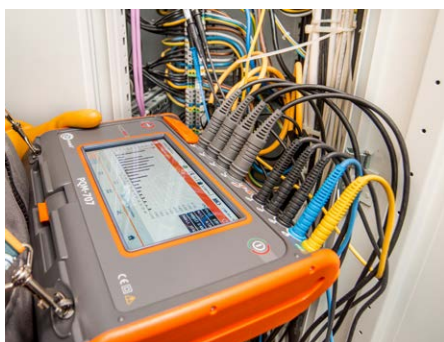
## Capabilities

PQM-707 is an autonomous meter allowing versatile measurement, analysis, and registration of energy network (DC and 50/60 Hz) parameters. All parameters are measured I/A/W class S of the IEC 61000-4-30 standard guaranteeing high accuracy of measurements. The **7-inch colour touchscreen** - The largest in this class of analyzers! - enables intuitive and ergonomic operation. Thanks to the built-in lithium-ion battery, the analyzer allows for efficient work during the measurement without the necessity of connecting an external AC adapter.



## Displaying data

The analyzer is equipped with a readable colour touchscreen. Its **800 x 480 pixel** resolution provides both high comfort of interacting with the interface and high readability of the measurement results. **The included stylus allows you to work with dielectric gloves.**



## Application

The analyzer is directed to a very wide range of users, with particular reference to the maintenance staff. Due to its mobility and autonomy, any problems occurring in the supply networks can be diagnosed on the spot. The analyzer can be used in virtually all kinds of networks with rated voltage from 54 V to 760 V - directly or indirectly via transducers. PQM-707 can be used in the field of professional power engineering, maintenance services in industrial plants, as well as among those providing services focused on network analysis.



## Durable and practical casing

The casing has been designed to allow easy access to the touchscreen and all measurement and communication sockets. Folding lid protects the display from damages. Thanks to the IP51 protection degree, the device can be used in difficult conditions - it is not afraid of dust or water splashes.

# Parameters

Parameter	Measuring range	Max. resolution	Accuracy
<b>Alternating voltage (TRMS)</b>	0.0...760.0 V	4 significant digits	$\pm 0.5\% U_{nom}$
<b>Crest Factor</b>			
Voltage	1.00...10.00 ( $\leq 1,65$ for 690 V)	0.01	$\pm 5\%$
Current	1.00...10.00 ( $\leq 3.6$ for $I_{nom}$ )	0.01	$\pm 5\%$
<b>Alternating current (TRMS)</b>	depending on clamp *	$0.01\% I_{nom}$	$\pm 0.2\% I_{nom}$ (error does not account for clamp error)
<b>Frequency</b>	40.00...70.00 Hz	0.01 Hz	$\pm 0.05$ Hz
<b>Active, reactive, apparent and distortion power</b>	depending on configuration (transducers, clamps)	4 significant digits	depending on configuration (transducers, clamps)
<b>Active, reactive and apparent energy</b>	depending on configuration (transducers, clamps)	4 significant digits	as power error
<b>cos<math>\phi</math> and power factor (PF)</b>	0.00...1.00	0.01	$\pm 0.03$
<b>tan<math>\phi</math></b>	0.00...10.00	0.01	depends on error of active and reactive power
<b>Harmonics</b>			
Voltage	DC, 1...50	as for alternating voltage True RMS	$\pm 0.15\% U_{nom}$ for m.v. < 3% $U_{nom}$ $\pm 5\%$ m.v. for m.v. $\geq 3\% U_{nom}$
Current	DC, 1...50	as for alternating current True RMS	$\pm 0.5\% I_{nom}$ for m.v. < 10% $I_{nom}$ $\pm 5\%$ m.v. for m.v. $\geq 10\% I_{nom}$
<b>THD</b>			
Voltage	0.0...100.0% (relative to RMS value)	0.1%	$\pm 5\%$
Current			$\pm 5\%$
<b>Flicker index</b>	0.40...10.00	0.01	$\pm 10\%$
<b>Unbalance factor</b>			
Voltage and current	0.0...10.0%	0.1%	$\pm 0,15\%$ (absolute error)
<b>Inrush current</b>			
Current	depending on clamp *	$0.01\% I_{nom}$	$\pm 4\%$ m.v. for m.v. $\geq 10\% I_{nom}$ $\pm 4\% I_{nom}$ for m.v. < 10% $I_{nom}$ (RMS <sub>1/2</sub> )

m.v. – measured value

\* F-1A1, F-2A1, F-3A1 clamp: 0...1500 A AC (5000 A<sub>p-p</sub>) • F-1A, F-2A, F-3A clamp: 0...3000 A AC (10 000 A<sub>p-p</sub>) • F-1A6, F-2A6, F-3A6 clamp: 0...6000 A AC (20 000 A<sub>p-p</sub>)  
F-2AHD, F-3AHD clamp: 0...3000 A AC (10 000 A<sub>p-p</sub>)  
C-4A clamp: 0...1000 A AC (3600 A<sub>p-p</sub>) • C-5A clamp: 0...1000 A AC / 0...1400 A DC (3600 A<sub>p-p</sub>) • C-6A clamp: 0...12 A AC (36 A<sub>p-p</sub>) • C-7A clamp: 0...100 A AC (360 A<sub>p-p</sub>)





**C-4A**

WACEGC4AOKR



**C-5A**

WACEGC5AOKR



**C-6A**

WACEGC6AOKR



**C-7A**

WACEGC7AOKR

<b>Rated current</b>	1000 A AC	1000 A AC 1400 A DC	12 A AC	100 A AC
<b>Frequency</b>	30 Hz...5 kHz	DC...5 kHz	40 Hz...10 kHz	40 Hz...1 kHz
<b>Max. diameter of measured conductor</b>	52 mm	39 mm	20 mm	24 mm
<b>Minimum accuracy</b>	≤0.5%	≤1.5%	≤1%	0.5%
<b>Battery power</b>	—	✓	—	—
<b>Lead length</b>	2.2 m	2.2 m	2.2 m	3 m
<b>Measurement category</b>	III 600 V IV 300 V	IV 300 V	III 600 V IV 300 V	III 300 V
<b>Ingress protection</b>	IP40			



**F-1A1 / F-1A / F-1A6**

WACEGF1A1OKR  
WACEGF1AOKR  
WACEGF1A6OKR



**F-2A1 / F-2A / F-2A6**

WACEGF2A1OKR  
WACEGF2AOKR  
WACEGF2A6OKR



**F-3A1 / F-3A / F-3A6**

WACEGF3A1OKR  
WACEGF3AOKR  
WACEGF3A6OKR



**F-2AHD**

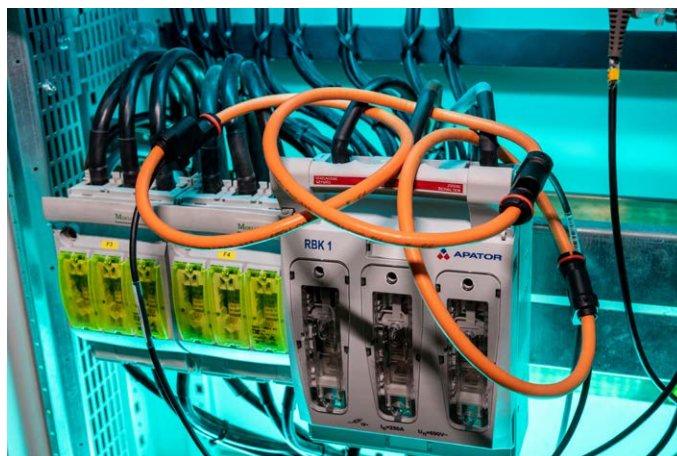
WACEGF2AHDOKR



**F-3AHD**

WACEGF3AHDOKR

<b>Rated current</b>	1500 / 3000 / 6000 A AC	1500 / 3000 / 6000 A AC	1500 / 3000 / 6000 A AC	3000 A AC
<b>Frequency</b>	40 Hz...10 kHz			10 Hz...20 kHz
<b>Max. diameter of measured conductor</b>	380 mm	250 mm	140 mm	290 mm 145 mm
<b>Minimum accuracy</b>	0.5%			0.5%
<b>Battery power</b>	—			—
<b>Lead length</b>	2.5 m			2.5 m
<b>Measurement category</b>	III 1000 V IV 600 V			III 1000 V IV 600 V
<b>Ingress protection</b>	IP67			IP65



# SONEL ANALYSIS



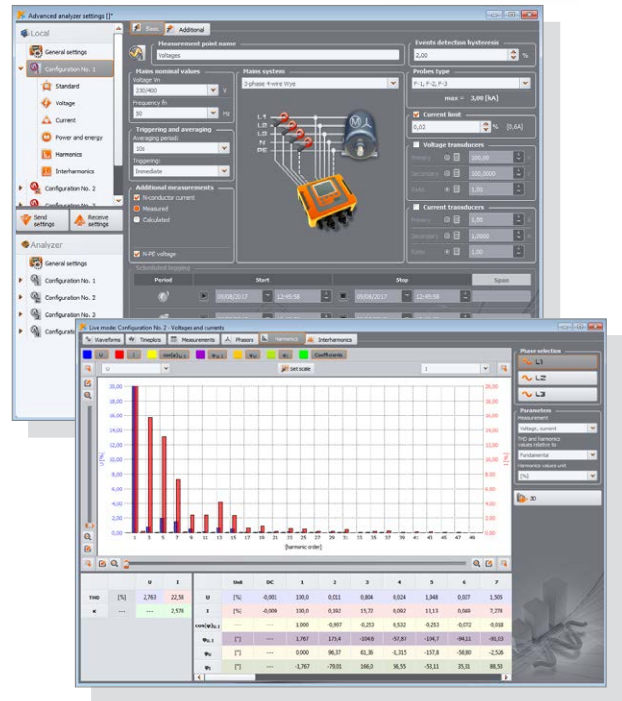
Sonel Analysis software – application delivered as standard accessory, indispensable for working with PQM-series analyzers. Depending on the mating instrument used, the software enables:

- analyzer configuration,
- data reading from logger,
- preview of network parameters in real time (with capability of reading via GSM modem),
- deletion of data in the analyzer,
- data presentation in tables,
- data presentation in charts,
- data analysis and generating reports in compliance with standard EN 50160 (reports) and other user defined reference conditions - also for PV micro-installations up to 50 kW, a breakdown for active power states  $P > 0$ ,  $P < 0$  and  $P = 0$  and taking into account the graphs  $Q_1 = f(U_1/U_n)$  and  $\cos\varphi = f(P/P_n)$ ,
- independent support of multiple analyzers,
- analyzer firmware updates.

The software enables readout of selected parameters and their visualization in real time. These parameters are measured independently from the registration saved on the memory card. The user can view:

- charts of voltage and current progression (oscilloscope),
- charts of voltage and current over time,
- phasor diagram,
- measurements of multiple parameters,
- harmonics and harmonic powers (estimating the direction of harmonics),
- interharmonics.

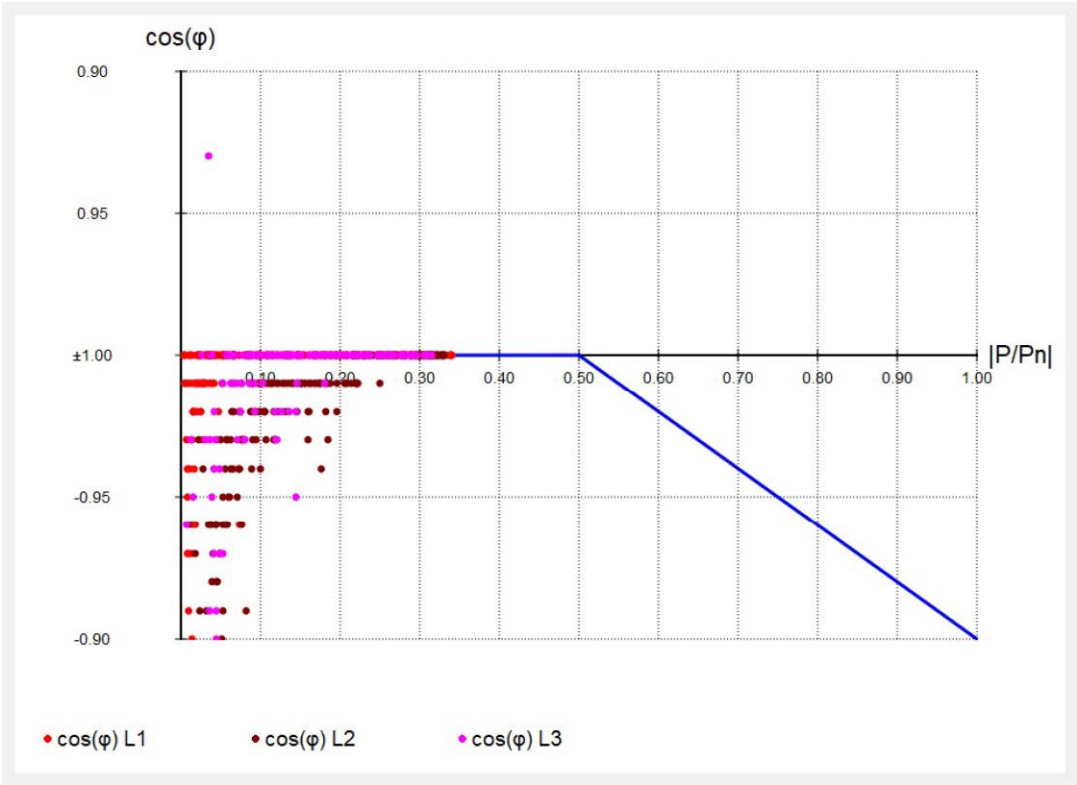
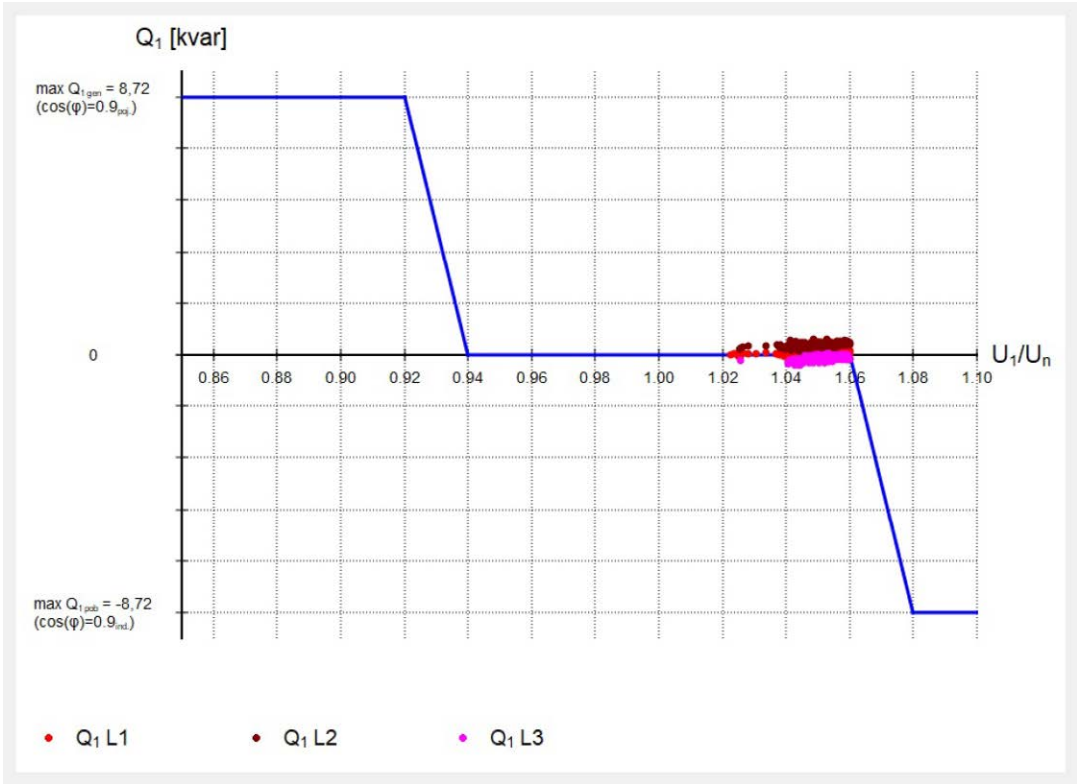
The report can be generated according to EN 50160, IEEE 519, NEC 220.87 and the standards of the following countries, among others: Poland, Australia, Russia, Chile, Moldova, Ecuador. The full list of standards can be found in the software.



## REPORT: Micro-installations up to 50 kW (P > 0, power consumption)

### GENERAL INFORMATION

<b>Analyzer:</b>	Type: PQM-702   Version: FW1.50HWc   Serial number: AZ0025
<b>Report generated using:</b>	SONEL Analysis 4.6.0 BUILD 111
<b>Measurement time (UTC±00:00):</b>	Start: 2021-12-03 16:00:00.000 Stop: 2021-12-10 16:00:00.000 Time: 1w 0d 0h 0m 0s
<b>Number of parameter's samples averaged for every 5 s:</b>	120,960
<b>Number of parameter's samples averaged for every 10 min:</b>	1,008
<b>Number of parameter's samples averaged for every 15 min:</b>	672
<b>Number of parameter's samples averaged for every 2 h:</b>	84
<b>Number of excluded samples:</b>	0 (PLT: 0)
<b>Number of parameter's samples averaged for every 5 s (P &gt; 0, power consumption):</b>	L1 28,320 L2 73,329 L3 119,605 L123-N 119,006
<b>Number of parameter's samples averaged for every 10 min (P &gt; 0, power consumption):</b>	243 682 1,002 994
<b>Number of parameter's samples averaged for every 15 min (P &gt; 0, power consumption):</b>	164 459 669 664
<b>Number of excluded samples (P &gt; 0, power consumption):</b>	0 0 0 0
<b>Nominal values:</b>	Mains system: 3-phase 4-wire Wye Phase voltage: 230.00 V Phase-to-phase voltage: 400.00 V Frequency: 50.00 Hz Inverter power (3-p): 30.00 kW Insensitivity threshold: 300.00 W
<b>Events limits:</b>	Swells %Un: 10.00 Dips %Un: -10.00 Interruptions %Un: -95.00



## Standard accessories



**3 x crocodile clip,  
black, 1 kV, 20 A**  
WAKROBL20K01

**2 x crocodile clip,  
red, 1 kV, 20 A**  
WAKRORE20K02



**Crocodile clip,  
blue, 1 kV, 20 A**  
WAKROBU20K02

**Crocodile clip,  
yellow, 1 kV, 20 A**  
WAKROYE20K02



**4 x F-3A flex-  
ible clamp  
(Ø=120 mm) 3 kA**

WACEGF3AOKR



**Test lead with  
banana plugs;  
1 kV; 2.2 m; black**

L1  
WAPRZ2X2BLBBL1

L2  
WAPRZ2X2BLBBL2

L3  
WAPRZ2X2BLBBL3



**Test lead with ba-  
nana plugs;  
1 kV; 2.2 m**

blue  
WAPRZ2X2BUBB

yellow-green  
WAPRZ2X2YEBB



**4 x magnetic volt-  
age adapter - set**

WAADAUMAGKPL



**Li-ion recharge-  
able battery  
11.1 V 3.4 Ah**

WAAKU15



**AC-16 line splitter**

WAADAAC16



**Touchscreen pen**

WAP0ZTPEN



**Storage & carrying**

**L-4 carrying case**  
WAFUTL4



**Meter strap  
(type L-2)**  
WAP0ZSZEKPL



**Power supply**

Z-7 power supply +  
230 V power cord  
WAZASZ7

AZ-2 power adapter  
(IEC C7 plug / banana  
plugs)  
WAAZAAZ2

Battery charging cable  
for 12 V car sockets  
WAPRZLAD12SAM



**Data transfer  
and analysis**

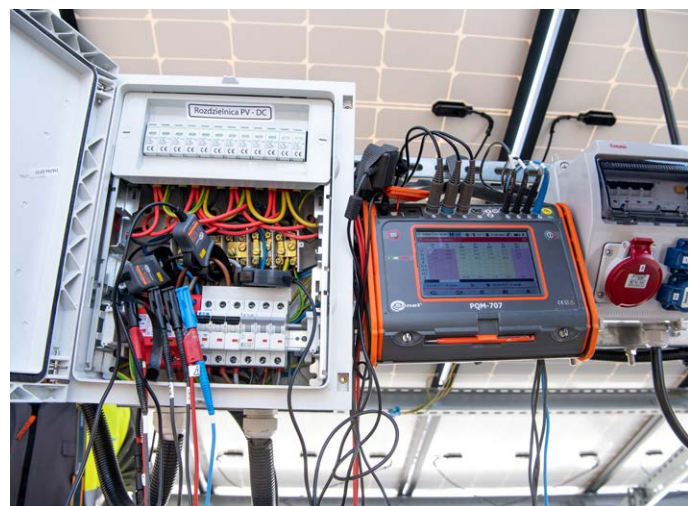
USB cable  
WAPRZUSB



Sonel Analysis software  
WAPROANALIZA4



**Factory calibra-  
tion certificate**



## Optional accessories



**F-1A flexible clamp**  
(Φ=360 mm)

1.5 kA: WACEGF1A10KR  
3 kA: WACEGF1A0KR  
6 kA: WACEGF1A60KR



**F-2A flexible clamp**  
(Φ=235 mm)

1.5 kA: WACEGF2A10KR  
3 kA: WACEGF2A0KR  
6 kA: WACEGF2A60KR



**F-3A flexible clamp**  
(Φ=120 mm)

1.5 kA: WACEGF3A10KR  
3 kA: WACEGF3A0KR  
6 kA: WACEGF3A60KR



**C-4A clamp**  
(Ø 52 mm)  
1000 A AC

WACEGC4A0KR



**C-5A clamp**  
(Ø 39 mm)  
0...1000 A AC /  
0...1400 A DC

WACEGC5A0KR



**C-6A clamp**  
(Ø 20 mm)  
12 A AC

WACEGC6A0KR



**C-7A clamp**  
(Ø 24 mm)  
100 A AC

WACEGC7A0KR



**L2 carrying case**  
for clamps

WAWALL2



**Magnetic volt-  
age adapter**

black  
WAADAUMAGKBL  
blue  
WAADAUMAGKBU



**Pin probe, blue 1 kV**  
(banana socket)

black / blue / red / yellow  
WASONBLOGB1  
WASONBUOGB1  
WASONREOGB1  
WASONYEOGB1



**ASX-1 piercing**  
adapter (4 pcs)

WAADAPRZASX1KPL



**Voltage adapter**  
with M4/M6  
thread (5 pcs)

WAADAM4M6



**Flat test clip**  
(grip - banana  
socket) (5 pcs)

WASONCGB1KPL



**Test clips with**  
steel jaws (5 pcs)

WASONKGB1KPL



**Adapter for control**  
terminals (5 pcs)

WAADAPRZKPL1



**AGT-16C three-  
phase socket adapt-  
er 16 A / 32 A (PEN)**

WAADAAGT16C  
WAADAAGT32C



**AGT-16P three-  
phase socket**  
adapter 16 A / 32 A

WAADAAGT16P  
WAADAAGT32P



**Cover with a**  
magnetic strip  
(universal)

WAPOZUCH8



**AGT-63P three-  
phase socket**  
adapter 63 A

WAADAAGT63P








**AGT-16T indus-  
trial socket adapter**  
16 A / 32 A

WAADAAGT16T  
WAADAAGT32T



**Calibration**  
certificate with  
accreditation

			PQM-750 
			PQM-711 
		PQM-710 	
	PQM-707 		
PQM-700 			
Portable Class S analyzer for basic and long term analysis	Stand alone Class S mains network analyzer for fast diagnosis	Class A high accuracy mains network analyzer	Top class of mains network analyzers with transients capture



Get to know the instrument before buying

[www.sonel.com](http://www.sonel.com)

Expand your capabilities with additional accessories