

**CLASS S**

IEC 61000-4-30

**CAT IV**

**300 V**

**IP65**

55°C  
**HEAVY DUTY**  
20°C

**EVENTS**



## Recording and diagnostics in all conditions



### Features

- **4 current inputs**, physical measurement of current in the neutral conductor.
- **Registration of up to 1100 parameters**, including average, maximum, minimum and instantaneous values.
- **Built-in heater**, stable operation at low temperatures down to -20°C.
- **Internal rechargeable battery**, autonomy of the meter (min. 6 hours).
- **IP65 ingress protection**, possibility of work in rain, snow and high humidity.

### Measured parameters

- **Voltages L1, L2, L3, N (four 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, maximum and instant 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 Hz – 70 Hz.
- Active power (P), reactive power (Q), distortion power (D), apparent power (S) with identification of the nature of reactive power (capacitive, inductive).
- Calculation of reactive power using the Budeanu method and IEEE 1459 method.
- Active energy ( $E_p$ ), reactive energy ( $E_q$ ), apparent energy ( $E_s$ ).
- Power factor (PF),  $\cos\varphi$ ,  $\tan\varphi$ .
- Harmonics up to the 40<sup>th</sup> in voltage and current.
- Total harmonic distortion THD for current and voltage.
- Short-term ( $P_{ST}$ ) and long-term ( $P_{LT}$ ) light flicker index.
- Unbalance of voltages (in compliance with IEC 61000-4-30 class S) and currents.
- Event logging for current and voltage along with oscillograms and half-period RMS charts.
- **All parameters are registered in compliance with class S according to standard EN 61000-4-30.**



## Wide range of mains to analyze

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- **With rated frequency** 50/60 Hz
- **With rated voltages:** 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; 265/460 V; 277/480 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 – WYE and Delta Aron
  - » with current and voltage transducers

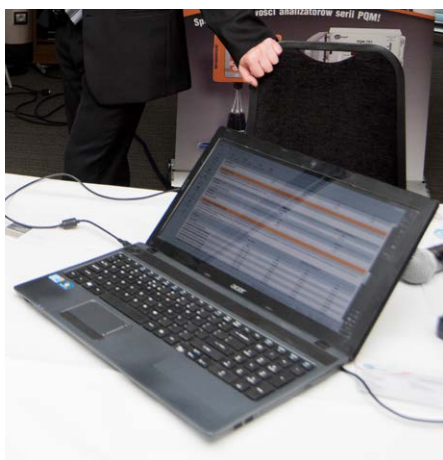


## Capabilities

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The analyzer provides comprehensive measurements of power quality parameters in **class S**, in accordance with IEC 61000-4-30, which guarantees high accuracy of results. Even when the temperature reaches -20°C, the measurements are reliable and the device operation is stable - all thanks to the built-in heater.

Thanks to the internal battery, the analyzer does not turn off after a power failure, but maintains recording - **up to 6 hours**. Data is recorded on a removable 2 GB memory card. Logs can be downloaded using a USB connection or using an external reader. Then they can be analyzed in free Sonel Analysis software.

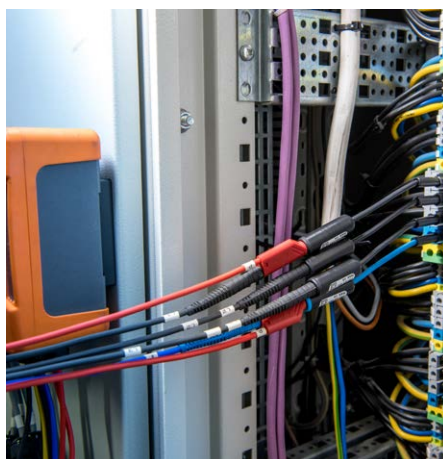


## Displaying data

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All recorded parameters - including indicated events - can be easily read using the dedicated **Sonel Analysis** software. The advanced features of the application allow you to view the collected results and save them on your computer's hard drive - in the form of raw data or reports.

**Sonel Analysis** is constantly updated and developed. This means that the user will keep up with the latest requirements of norms and standards.



## Application

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PQM-700 fulfills its role in industry - in hands of electricians, maintenance services etc. - as a cheap, multi-functional load parameter recorder. It is also used by consumers and producers of renewable energy (wind farms, solar farms), where a 4-quadrant power analysis is required.

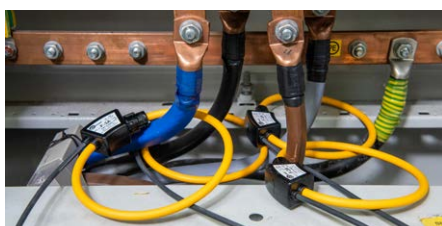
# Parameters

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 voltage)	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*	4 significant digits	$\pm 0.2\% I_{nom}$ (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...40	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...40	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%	$\pm 0.3\%$ (absolute error)

m.v. – measured value

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

								
	C-4A(US)	C-5A(US)	C-6A(US)	C-7A(US)	F-2A(US)	F-1A1 / F-1A / F-1A6	F-2A1 / F-2A / F-2A6	F-3A1 / F-3A / F-3A6
	WACEGC4A0KRUSA	WACEGC5A0KRUSA	WACEGC6A0KRUSA	WACEGC7A0KRUSA	WACEGF2A0KRUSA	WACEGF1A10KR WACEGF1A0KR WACEGF1A60KR	WACEGF2A10KR WACEGF2A0KR WACEGF2A60KR	WACEGF3A10KR WACEGF3A0KR WACEGF3A60KR
<b>Rated current</b>	1000 A AC	1000 A AC 1400 A DC	10 A AC	100 A AC	3000 A AC	1500 / 3000 / 6000 A AC	1500 / 3000 / 6000 A AC	1500 / 3000 / 6000 A AC
<b>Frequency</b>	30 Hz...10 kHz	DC...5 kHz	40 Hz...10 kHz	40 Hz...1 kHz	10 Hz...20 kHz	40 Hz...10 kHz		
<b>Max. diameter of measured conductor</b>	52 mm	39 mm	20 mm	24 mm	450 mm	380 mm	250 mm	140 mm
<b>Minimum accuracy</b>	$\leq 0.5\%$	$\leq 1.5\%$	$\leq 1\%$	0.5%	0.5%	1%		
<b>Battery power</b>	–	✓	–	–	–	–		
<b>Lead length</b>	2.2 m	2.2 m	2.2 m	3 m	2.5 m	2.5 m		
<b>Measurement category</b>	IV 300 V	IV 300 V	IV 300 V	III 300 V	IV 600 V	IV 600 V		
<b>Ingress protection</b>	IP40				IP65		IP67	





# SONEL ANALYSIS

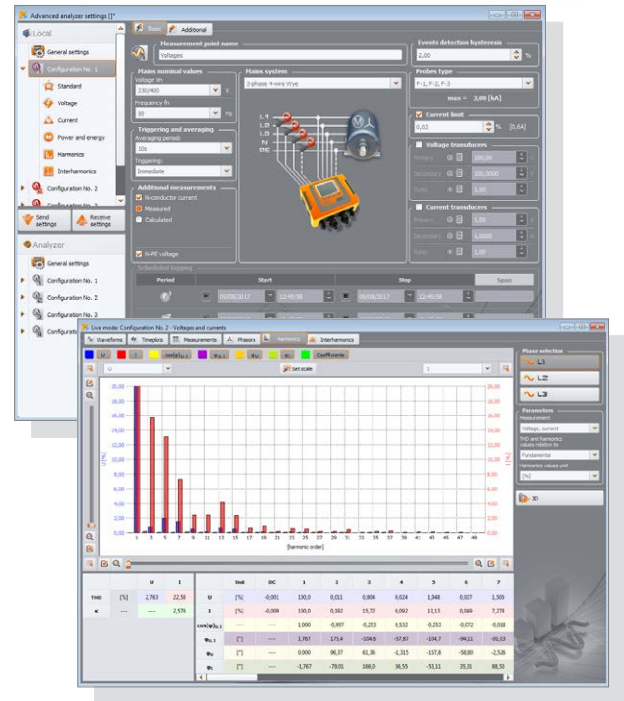


Sonel Analysis software – application delivered as standard accessory, indispensable for working with PQM-series analyzers. It enables:

- 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:

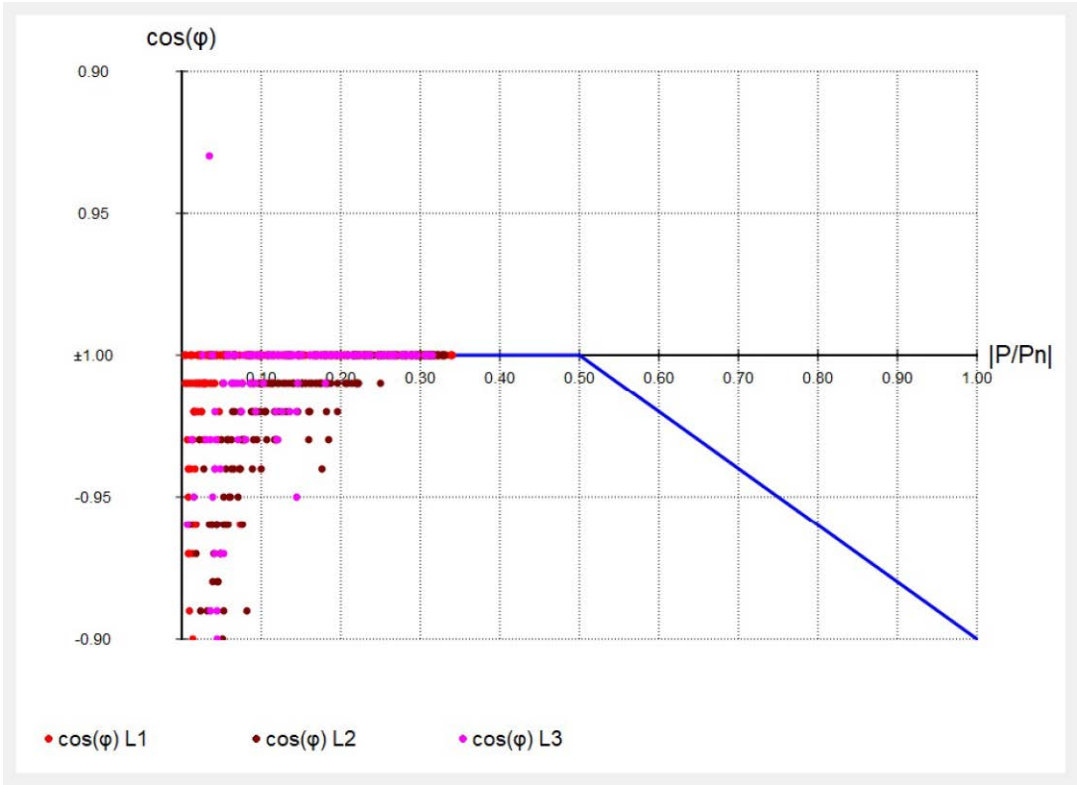
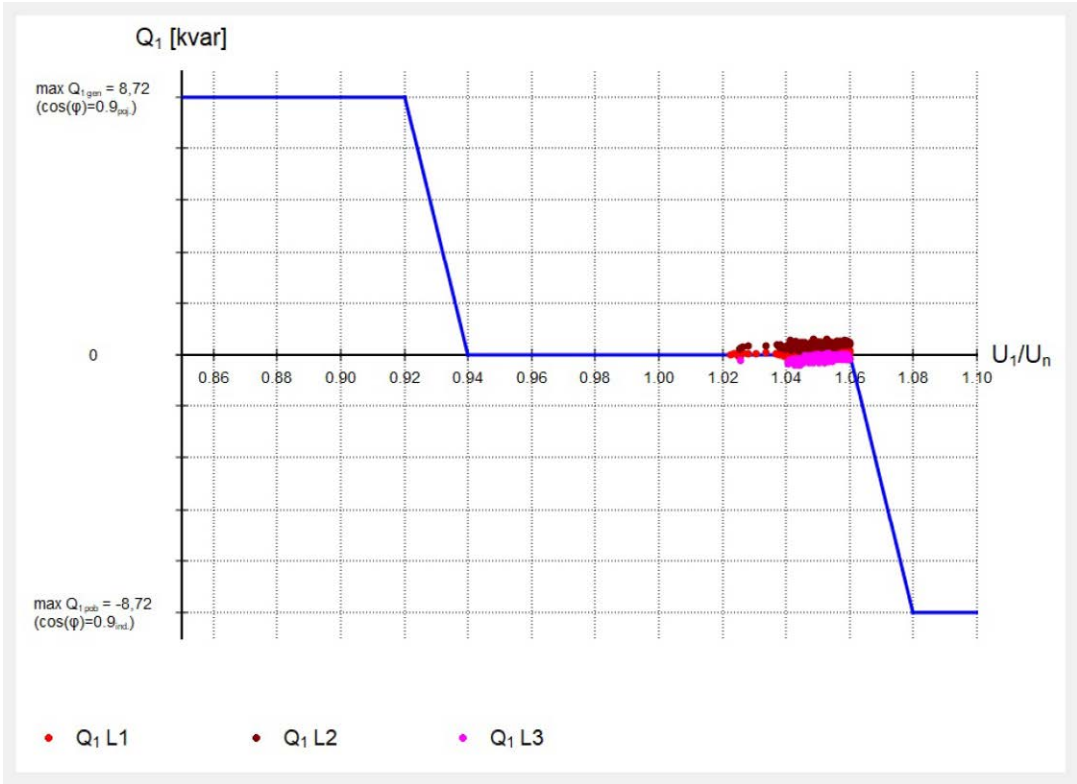
- charts of voltage and current progression (oscilloscope),
- charts of voltage and current over time,
- phasor diagram,
- measurements of multiple parameters,
- harmonics and harmonic powers (estimating the direction of harmonics),
- interharmonics.



## 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 (<math>P &gt; 0</math>, power consumption):</b>	L1 L2 L3 L123-N
<b>Number of parameter's samples averaged for every 10 min (<math>P &gt; 0</math>, power consumption):</b>	28,320 73,329 119,605 119,006
<b>Number of parameter's samples averaged for every 15 min (<math>P &gt; 0</math>, power consumption):</b>	243 682 1,002 994
<b>Number of excluded samples (<math>P &gt; 0</math>, power consumption):</b>	164 459 669 664
	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



**4 x magnetic voltage adapter - set**

WAADAUMAGKPL



**Straps for mounting on a pole - set - 1.2 m**

WAPOZOPAKPL



**DIN rail mounting bracket with positioning catches**

WAPOZUCH3

**2 x fasteners and bands for mounting the analyzer**

WAPOZUCH4



**AUS-1A power supply adapter (mains plug/banana inputs)**

WAADAAUS1A



**L-5 carrying case**

WAFUTL5



**Data transfer and analysis**

**USB cable**  
WAPRZUSB

**Sonel Analysis software**  
WAPROANALIZA4



**Factory calibration 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 (US) probe**  
(Ø 52 mm)  
1000 A AC

WACEGC4A0KRUSA



**C-5A (US) probe**  
(Ø 39 mm)  
1000 A AC/DC

WACEGC5A0KRUSA



**C-6A (US) probe**  
(Ø 20 mm)  
10 A AC

WACEGC6A0KRUSA



**C-7A (US) probe**  
(Ø 24 mm)  
100 A AC

WACEGC7A0KRUSA



**L2 carrying case**  
for clamps

WAWALL2



**AC-16 line splitter**

WAADAAC16US



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

WASONKCB1KPL



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

WASONKGB1KPL



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

WAADAPRZKPL1



**Voltage adapter  
with M4/M6  
thread - set 4 pcs**

WAADAM4M64



**Magnetic volt-  
age adapter**

black  
WAADAUMAGKBL  
blue  
WAADAUMAGKBU



**ASX-1 piercing  
adapter - set 4 pcs**

WAADAPRZASX1KPL



**AGT-16T indu-  
strial socket adapter**  
16 A / 32 A

WAADAAGT16T  
WAADAAGT32T



**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



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

WAADAAGT63P



**XL2 carrying case**

WAWAXL2





**PQM magnetic  
strap (2 pcs)**

WAPOZUCH5



**Calibration certificate  
with accreditation**



			<b>PQM-711</b> 
		<b>PQM-710</b> 	
	<b>PQM-707</b> 		
<b>PQM-700</b> 			
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

**INSULATION RESISTANCE METERS**

MIC-30 INSULATION RESISTANCE METER    MIC-5010 INSULATION RESISTANCE METER    MIC-10k1 INSULATION RESISTANCE METER

**EARTH RESISTANCE AND RESISTIVITY METERS**

MRU-30 EARTH RESISTANCE AND RESISTIVITY METER    MRU-200-GPS EARTH RESISTANCE AND RESISTIVITY METER

**POWER QUALITY ANALYSIS**

PQM-700 POWER QUALITY ANALYZER    PQM-711 POWER QUALITY ANALYZER



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