

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), $\cos\phi$, $\tan\phi$.
- Harmonics up to the 40th 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

- 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 – 2-element WYE without N conductor (Aron/Blondel)
 - » three-phase – 2-element Delta (Aron/Blondel)
 - » with current and voltage transducers



Capabilities

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

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

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
Alternating voltage (TRMS)	0.0...760.0 V	4 significant digits	$\pm 0.5\% U_{nom}$
Crest Factor			
Voltage	1.00...10.00 (≤ 1.65 for 690 V voltage)	0.01	$\pm 5\%$
Current	1.00...10.00 (≤ 3.6 for I_{nom})	0.01	$\pm 5\%$
Alternating current (TRMS)	depending on clamp*	4 significant digits	$\pm 0.2\% I_{nom}$ (error does not account for clamp error)
Frequency	40.00...70.00 Hz	0.01 Hz	± 0.05 Hz
Active, reactive, apparent and distortion power	depending on configuration (transducers, clamps)	4 significant digits	depending on configuration (transducers, clamps)
Active, reactive and apparent energy	depending on configuration (transducers, clamps)	4 significant digits	as power error
cosϕ and power factor (PF)	0.00...1.00	0.01	± 0.03
tanϕ	0.00...10.00	0.01	depends on error of active and reactive power
Harmonics			
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. $\geq 10\% I_{nom}$
THD			
Voltage	0.0..100.0%	0.1%	$\pm 5\%$
Current	(relative to RMS value)	0.1%	$\pm 5\%$
Flicker index	0.40...10.00	0.01	$\pm 10\%$
Unbalance factor			
Voltage and current	0.0...10,0%	0.1%	$\pm 0.3\%$ (absolute error)

m.v. – measured value

* F-1A1, F-2A1, F-3A1 clamp: 0...1500 A AC (5000 A_{pp}) • F-1A, F-2A, F-3A clamp: 0...3000 A AC (10 000 A_{pp}) • F-1A6, F-2A6, F-3A6 clamp: 0...6000 A AC (20 000 A_{pp})
 F-2AHD, F-3AHD clamp: 0...3000 A AC (10 000 A_{pp})
 C-4A clamp: 0...1000 A AC (3600 A_{pp}) • C-5A clamp: 0...1000 A AC/DC (3600 A_{pp}) • C-6A clamp: 0..10 A AC (36 A_{pp}) • C-7A clamp: 0...100 A AC (360 A_{pp})





C-4A

WACEGC4AOKR



C-5A

WACEGC5AOKR



C-6A

WACEGC6AOKR



C-7A

WACEGC7AOKR

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

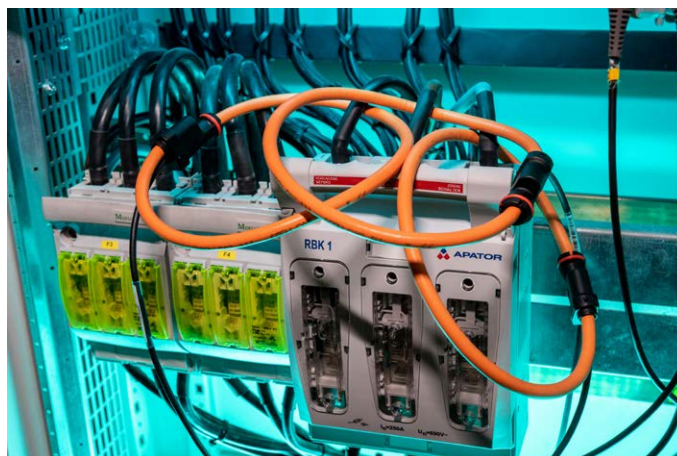
WACEGF2AHDOKR



F-3AHD

WACEGF3AHDOKR

Rated current	1500 / 3000 / 6000 A AC	1500 / 3000 / 6000 A AC	1500 / 3000 / 6000 A AC	3000 A AC
Frequency	40 Hz...10 kHz			10 Hz...20 kHz
Max. diameter of measured conductor	380 mm	250 mm	140 mm	290 mm 145 mm
Minimum accuracy	1%			0,5%
Battery power	—			—
Lead length	2.5 m			2.5 m
Measurement category	IV 600 V			IV 600 V
Ingress protection	IP67			IP65



SONEL ANALYSIS

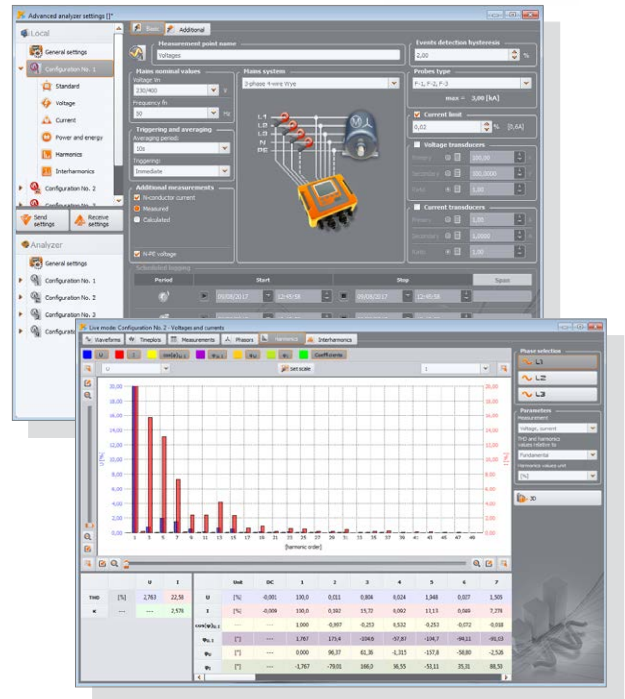


Sonel Analysis software – application delivered as standard accessory, indispensable for working with PQM-series analyzers. Depending on the mating instrument used, the software enables:

- 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 $\cos\phi = f(P/P_n)$,
- 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

Analyzer:	Type: PQM-702 Version: FW1.50HWc Serial number: AZ0025
Report generated using:	SONEL Analysis 4.6.0 BUILD 111
Measurement time (UTC±00:00):	Start: 2021-12-03 16:00:00.000 Stop: 2021-12-10 16:00:00.000 Time: 1w 0d 0h 0m 0s
Number of parameter's samples averaged for every 5 s:	120,960
Number of parameter's samples averaged for every 10 min:	1,008
Number of parameter's samples averaged for every 15 min:	672
Number of parameter's samples averaged for every 2 h:	84
Number of excluded samples:	0 (PLT: 0)
Number of parameter's samples averaged for every 5 s ($P > 0$, power consumption):	L1 L2 L3 L123-N
Number of parameter's samples averaged for every 10 min ($P > 0$, power consumption):	28,320 73,329 119,605 119,006
Number of parameter's samples averaged for every 15 min ($P > 0$, power consumption):	243 682 1,002 994
Number of excluded samples ($P > 0$, power consumption):	164 459 669 664
	0 0 0 0
Nominal values:	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
Events limits:	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



AZ-3 power supply adapter (mains plug/banana inputs)

WAADAAZ3



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
($\Phi=360$ mm)

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



F-2A flexible clamp
($\Phi=235$ mm)

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



F-3A flexible clamp
($\Phi=120$ mm)

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



C-4A clamp
(Φ 52 mm)
1000 A AC

WACEG4A0KR



C-5A clamp
(Φ 39 mm)
1000 A AC/DC

WACEG5A0KR



C-6A clamp
(Φ 20 mm)
10 A AC

WACEG6A0KR



C-7A clamp
(Φ 24 mm)
100 A AC

WACEG7A0KR



L2 carrying case
for clamps

WAWALL2



AC-16 line splitter

WAADAAC16



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

WASONCGB1KPL



Test clips with
steel jaws (5 pcs)

WASONKGB1KPL



Adapter for control
terminals (5 pcs)

WAADAPRZKPL1



Voltage adapter
with M4/M6
thread (4 pcs)

WAADAM4M64



Magnetic voltage
adapter

black
WAADAUMAGKBL
blue
WAADAUMAGKB



ASX-1 piercing
adapter (4 pcs)

WAADAPRZASX1KPL



AGT-16T industrial
socket adapter
16 A / 32 A

WAADAAGT16T
WAADAAGT32T



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

WAADAAGT16C
WAADAAGT32C



PQM magnetic
strap (2 pcs)

WAPOZUCH5



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

WAADAAGT16P
WAADAAGT32P



AGT-63P three-
phase socket
adapter 63 A

WAADAAGT63P

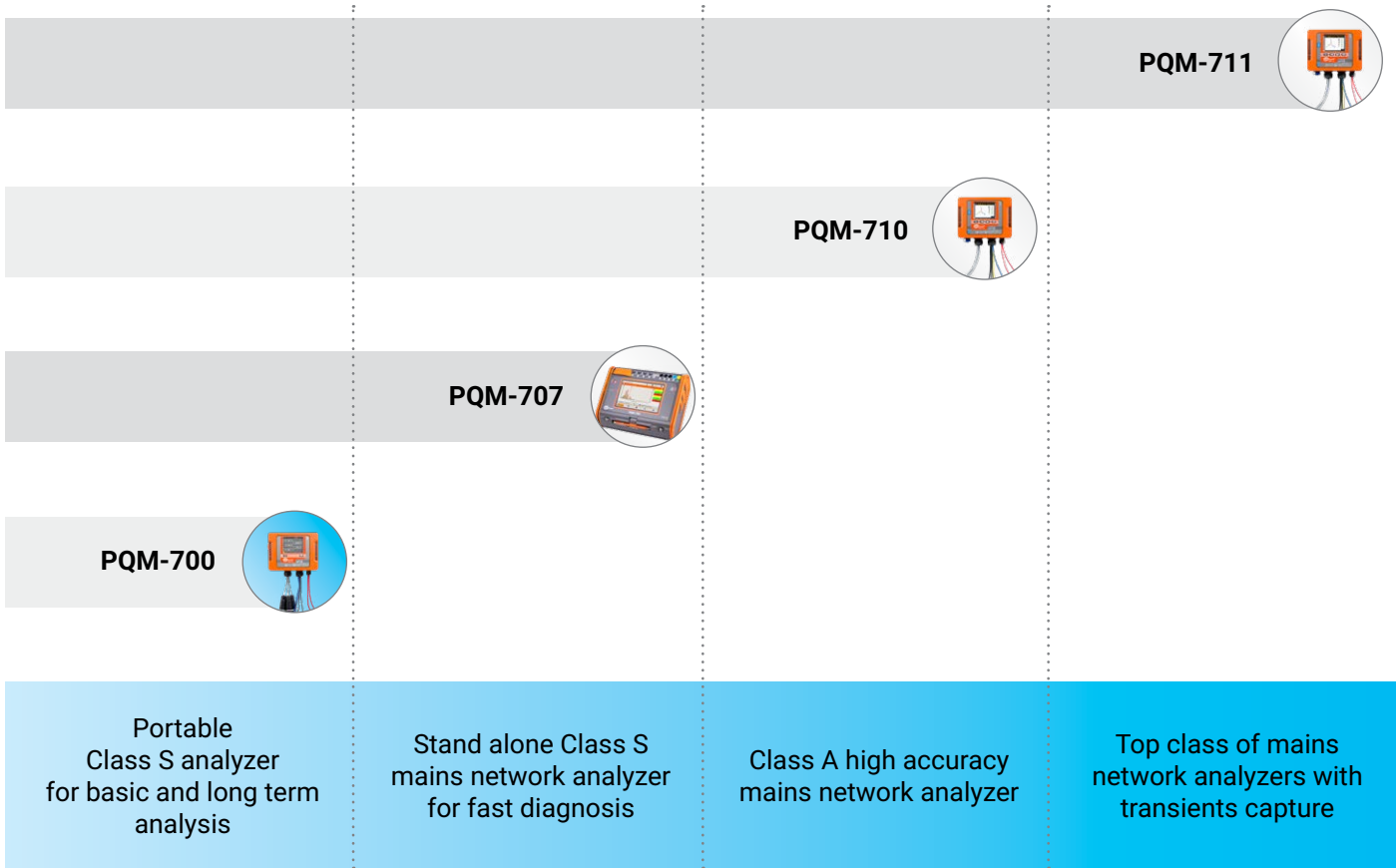


XL2 carrying case

WAWALXL2



Calibration certificate
with accreditation



Get to know the instrument before buying

www.sonel.com

Expand your capabilities with additional accessories