



SAMPLING  
FREQUENCY  
10.24 kHz



## Reliable class A measurements



## Features

- Power from the measured network.
- Designed for use in virtually all network types from 64 V to 760 V directly, with particular emphasis on measurements at low voltage poles, due to the ease of installation.
- Independent power supply makes it particularly suitable for measurements behind voltage transformers. It can also be used for measurements in DC voltage systems.
- Remote configuration and data transfer (GPRS) in real time using the built-in GSM modem.
- Anti-theft function – text message notification in case of position change – built-in GPS receiver.
- Real time clock synchronized using GPS protocol.

## Measured parameters

- **Voltages L1, L2, L3, N, PE (five measurement inputs)** – average, minimum, maximum and instant values within the range up to 1000 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),  $\cos\phi$ ,  $\tan\phi$ .
- K factor (transformer overload caused by the harmonics).
- Harmonics up to the 50<sup>th</sup> in voltage and current.
- Interharmonics measured as groups.
- 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 A) and currents.
- Event logging along with oscillograms.



## 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 – WYE and Delta Aron
  - » with current and voltage transducers



## Capabilities

As a standard, the analyzers are equipped with an **8 GB** memory card, which allows you to collect **over 4500 parameters** simultaneously – at intervals of up to 200 ms. In addition to checking the power quality according to standards and ordinances, it allows you to create a detailed situation picture in terms of operation and possible disturbance. However, nothing stands in the way to make this image even clearer – the manufacturer can expand the memory to 32 GB (optional).

PQM-702 and PQM-703 record control signals in power networks. In addition, the PQM-703 model is equipped with a **transient recorder** with voltage range **up to ±8000 V** and a maximum sampling frequency of 10 MHz.

The built-in GPS receiver ensures real time clock accuracy, and the integrated GSM modem facilitates remote analyzer operation.

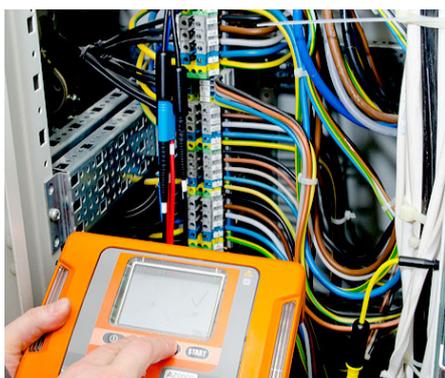


## Displaying data

The colorful, backlit 3.5" LCD screen with a resolution of 320 x 240 pixels presents basic parameters of the tested network, such as voltage, current and power – everything in a clear and transparent way. Information about the device configuration as well as messages and warnings about the operation status or emergency conditions are available. In addition, the user can check the phasor diagram to check the network connection.

The analyzers can be **remotely controlled**. The user can set up the meter, check measured parameters in real time and download registered data. The remote connection is made in two ways: either by the OR-1 radio receiver or using the built-in GSM modem.

OR-1 radio transmission operates over a distance of up to 50 m. GSM transmission gives an incomparably greater range: after inserting any SIM card with a static IP number into the analyzer, you can access it from anywhere in the world.



## Application

The analyzers are addressed to users who need to control power quality using a mobile device that meets the requirements of the IEC 61000 class A standard for analyzers. PQM-702 and PQM-703 fully satisfy the functional needs of power quality analysis and interference diagnostics in power networks. They are used in the field of professional energy and maintenance services in industrial plants, as well as among independent power quality specialists.

# Parameters

Parameter		Measuring range	Max. resolution	Accuracy
Alternating voltage (TRMS)	–	0,0...1000,0 V or 0,0...760,0 V*	4 significant digits	$\pm 0.1\% U_{nom}$
Crest Factor	Voltage	1.00...10.00 ( $\leq 1.65$ for voltage of 690 V)	0.01	$\pm 5\%$
	Current	1.00...10.00 ( $\leq 3.6$ for $I_{nom}$ )	0.01	$\pm 5\%$
Alternating current (TRMS)	–	depending on clamp**	4 significant digits	$\pm 0.1\% I_{nom}$ (error does not account for clamp error)
Frequency	–	40.00...70.00 Hz	0.01 Hz	$\pm 0.01$ 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
cos $\phi$ and power factor (PF)	–	-1.00...1.00	0.01	$\pm 0.03$
tan $\phi$	–	-10.00...10.00	0.01	depends on error of active and reactive power
Harmonics and interharmonics	Voltage	DC, 1...50	as for alternating voltage True RMS	$\pm 0.05\% U_{nom}$ for m.v. < 1% $U_{nom}$ $\pm 5\%$ m.v. for m.v. $\geq 1\% U_{nom}$
	Current	DC, 1...50	as for alternating current True RMS	$\pm 0.15\% I_{nom}$ for m.v. < 3% $I_{nom}$ $\pm 5\%$ m.v. for m.v. $\geq 3\% I_{nom}$
THD	Voltage	0.0...100.0% (relative to RMS value)	0.1%	$\pm 5\%$
	Current			$\pm 5\%$
Active and reactive power of harmonics	–	depending on configuration (transducers, clamps)	depends on minimum current and voltage values	–
Angle between current and voltage harmonics	–	-180.0...+180.0°	0.1°	$\pm (n \times 1^\circ)$
K-Factor	–	1.0...50.0	0.1	$\pm 10\%$
Flicker index	–	0.20...10.00	0.01	$\pm 5\%$
Unbalance factor	Voltage and current	0.0...20.0%	0.1%	$\pm 0.15\%$ (absolute error)
Measurement of control signals	Voltage	up to 15% $U_{nom}$ at 5.00...3000.00 Hz	4 significant digits	unspecified for <1% $U_{nom}$ $\pm 0.15\%$ for 1...3% $U_{nom}$ $\pm 5\%$ for 3...15% $U_{nom}$
Measurement of transients (PQM-703)	Voltage	$\pm 8000$ V	4 significant digits	$\pm (5\% + 25$ V)

m.v. – measured value

\* Depending on analyzer version

\*\* 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>)  
C-4A clamp: 0...1000 A AC (3600 A<sub>p-p</sub>) • C-5A clamp: 0...1000 A AC/DC (3600 A<sub>p-p</sub>) • C-6A clamp: 0...10 A AC (36 A<sub>p-p</sub>) • C-7A clamp: 0...100 A AC (360 A<sub>p-p</sub>)

							
	C-4A	C-5A	C-6A	C-7A	F-1A1 / F-1A / F-1A6	F-2A1 / F-2A / F-2A6	F-3A1 / F-3A / F-3A6
	WACEGC4AOKR	WACEGC5AOKR	WACEGC6AOKR	WACEGC7AOKR	WACEGF1A1OKR WACEGF1AOKR WACEGF1A6OKR	WACEGF2A1OKR WACEGF2AOKR WACEGF2A6OKR	WACEGF3A1OKR WACEGF3AOKR WACEGF3A6OKR
Rated current	1000 A AC	1000 A AC 1400 A DC	10 A AC	100 A AC	1500 / 3000 / 6000 A AC		
Frequency	30 Hz...10 kHz	DC...5 kHz	40 Hz...10 kHz	40 Hz...1 kHz	40 Hz...10 kHz		
Output signal level	1 mV / 1 A	1 mV / 1 A	100 mV / 1 A	5 mV / 1 A	77.6 $\mu$ V / 1 A	38.8 $\mu$ V / 1 A	19.4 $\mu$ V / 1 A
Max. diameter of measured conductor	52 mm	39 mm	20 mm	24 mm	360 mm	235 mm	120 mm
Minimum accuracy	$\leq 0.5\%$	$\leq 1.5\%$	$\leq 1\%$	0.5%	1%		
Battery power	–	✓	–	–	–		
Lead length	2.2 m	2.2 m	2.2 m	3 m	2.2 m		
Measurement category	IV 300 V	IV 300 V	IV 300 V	III 300 V	IV 600 V		
Ingress protection	IP40				IP67		

## SONEL ANALYSIS

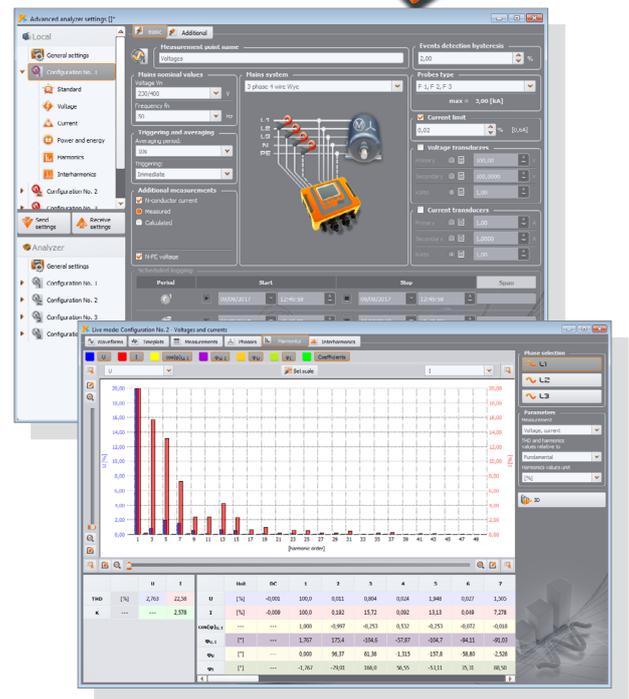


Sonel Analysis software – application delivered as standard accessory, indispensable for working with PQM-series analyzers. It enables:

- 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 in compliance with standard EN 50160 (reports) and other user defined reference conditions,
- 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,
- interharmonics.



## 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



**AC-16 line splitter**  
WAADAAC16



**AZ-1 power supply adapter (mains plug/banana inputs)**  
WAADAAZ1



**Voltage adapter with M4/M6 thread – set 5 pcs**  
WAADAM4M6



**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



**XL2 carrying case**  
WAWALXL2



**Data transfer and analysis**

**USB cable**  
WAPRZUSB

**Sonel Analysis software**  
WAPROANALIZA4



**OR-1 USB wireless receiver**  
WAADAUSBOR1

## 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)  
1000 A AC/DC

WACEGC5A0KR



**C-6A clamp**  
(Ø 20 mm)  
10 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



**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



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

WAADAAGT16T  
WAADAAGT32T



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

WAADAAGT63P



**PQM magnetic  
strap (2 pcs)**

WAPOZUCH5



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

WAADAPRZASX1



**GPS antenna**

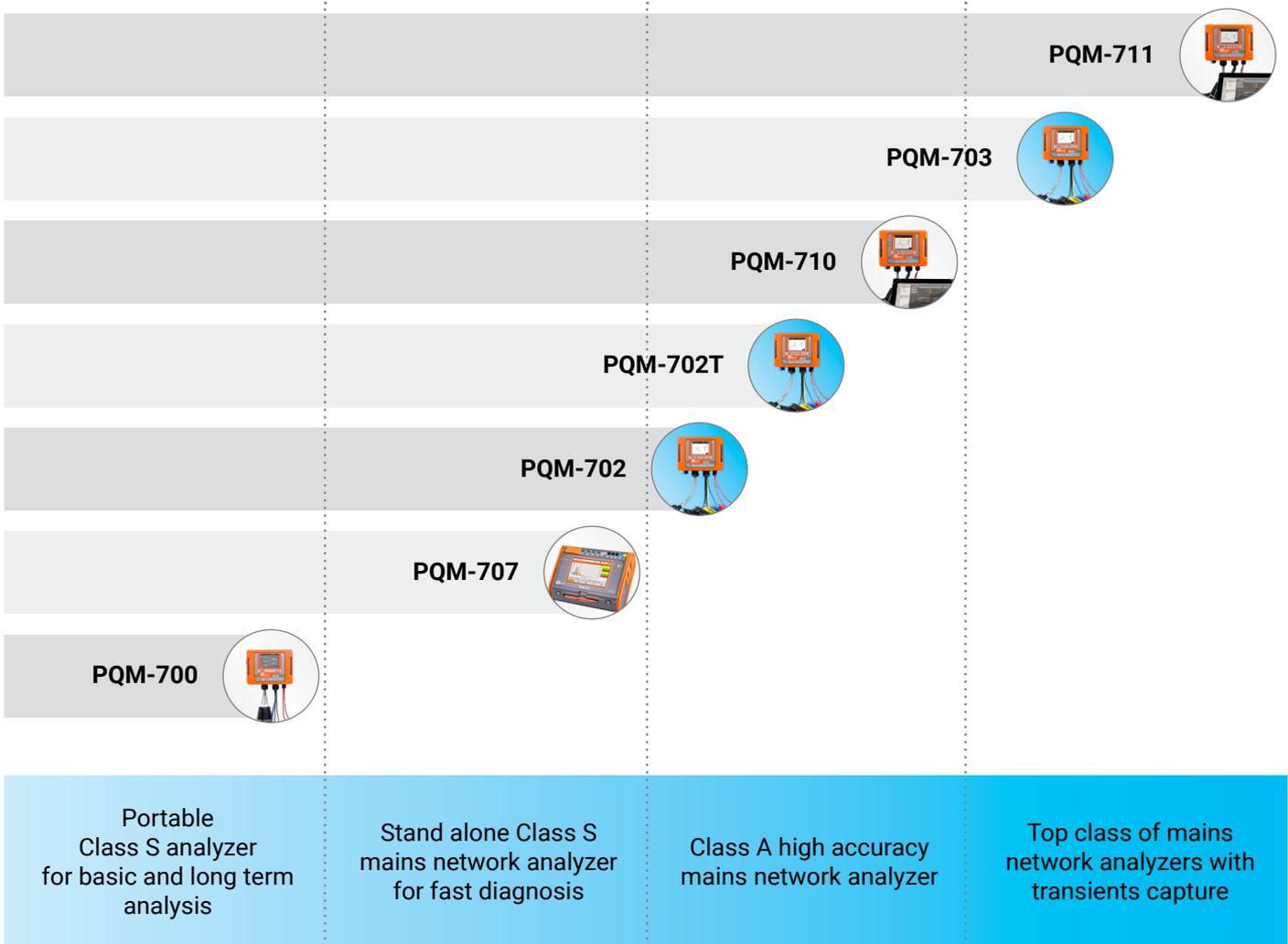
WAPOZANT10GPS



**GSM repeater**

WAPOZANTREPEATER





INSULATION RESISTANCE METERS

MIC-30 INSULATION RESISTANCE METER

MIC-5010 INSULATION RESISTANCE METER

MIC-10k1 INSULATION RESISTANCE METER

EARTH RESISTANCE AND RESISTIVITY METERS

MIRU-30 EARTH RESISTANCE AND RESISTIVITY METER

MIRU-200-GPS EARTH RESISTANCE AND RESISTIVITY METER

POWER QUALITY ANALYZERS

PQM-700 POWER QUALITY ANALYZER

PQM-711 POWER QUALITY ANALYZER

Accessories for power quality analyzers

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