Index: WMGBPQM710
WMGBPQM711

POWER QUALITY ANALYZERS

PQM-710 / PQM-711

PQM-711
Transients
measurement up to
6000 V

TRANSIENT RECORDER
PQM-711

CAT IV 600V

IP 65

GPS

GSM

WiFi

TOUCH SCREEN

HEAVY DUTY
-20 °C + 55°C

ANALYZER MEASURES AND RECORDS ACCORDING TO THE IEC 61000-4-30

CLASS A

STANDARD

- the included touch screen tablet with 10" screen is a virtual display allows to easy operation of the analyzer,
- dedicated tablet with Windows OS allows: full configuration of the analyzer, reads the current data, reads the data stored in the memory and complete data analysis,
- remote control and data transfer through a built-in GSM modem (GPRS),
- anti-theft feature - SMS notification in the event of position change - built-in GPS receiver,
- real-time clock synchronized to GPS protocol.

Possible measurements:

- Voltage L1, L2, L3, N-PE (5 inputs),
  - average, minimum, maximum and instantaneous values, range to 760 V, ability to work with voltage transformers,
- Current L1, L2, L3, N (4 inputs),
  - average, minimum, maximum and instantaneous values, measurement current with range to 3 kA (depends on used clamp), ability to work with current transformers,
- Crest factor for voltage and current,
- Frequency from 40 Hz to 70 Hz ,
- Active, reactive, distortion, apparent power, including the type of reactive power (capacitive, inductive),
- Power recording:
  - Budeanu method,
  - IEEE 1459,
- Active, reactive, apparent energy,
- Power factor, cosφ, tgφ,
- K factor (transformer overload caused by the harmonics),
- Up to 50th harmonics for voltage and current,
- Total Harmonic Distortion (THD) for voltage and current,
- Short-term (P_{ST}) and long-term (P_{LT}) flicker,
- Unbalance of voltage (EN 61000-4-30 class A) and current,
- Current events detection including waveforms recording,
- Current and voltage events recording with waveforms (up to 1s) and RMS 10 ms graphs with 30 s maximum recording time,
- Current and voltage waveforms recording after each averaging period,
- Mains signaling up to 3000 Hz,
- **Transients up to ±6000 V with max. sampling frequency 10 MHz. Minimal transient time is 650 ns (PQM-711 only).**

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Power quality analyzer
PQM-710 / PQM-711

The device is designed to work with networks:
- with nominal frequency 50/60Hz,
- with nominal voltage:
  64/110 V; 110/190V; 115/200V; 127/220V; 220/380V;
  230/400V; 240/415V; 254/440V; 290/500 V; 400/690V.
- DC network

Supported networks:
- single-phase,
- two-phase with common N conductor,
- three-phase star connection with and without N conductor,
- three-phase delta.

Parameters of analyzers:

Parameter		Measurement range	Max. resolution	Accuracy
Alternating voltage (TRMS)	—	0.0…760 V	0.01 % U_n	±0.1% U_n
Crest factor	Voltage	1.00…10.00 (≤1.65 for 690 V voltage)	0.01	±5%
	current	1.00…10.00 (≤3,6 I_{nom})	0.01	± 5% m.v.
Alternating current TRMS	—	depending on clamp*	0.01% of nominal range	±0.1% of nominal range (error does not account for clamp error)
Frequency	—	40.00...70.00 Hz	0.01Hz	±0.01 Hz
Active, reactive, apparent and distortion power	—	depending on configuration (transformers, clamp)	up to four decimal places	depending on configuration (transformers, clamp)
Active, reactive apparent energy	—	depending on configuration (transformers, clamp)	up to four decimal places	as power error
cosφ and power factor (PF)	—	0.00...1,00	0.01	±0.03
tgφ	—	0.00...10.00	0.01	depends on active and reactive power error
Harmonics and interharmonics	Voltage	as for alternating voltage True RMS	as for alternating voltage True RMS	±5% U_h for U_h≥1% U_n ±0.05% U_n for U_h<1% U_n
	Current	as for alternating voltage True RMS	as for alternating voltage True RMS	± 5% I_h for I_h≥3% I_n ± 0.15% I_n for I_h<3% I_n
THD	Voltage	0.0..100.0% (in regards to the rms value)	0.1%	±5%
	Current			±5%
Active and reactive power of harmonics	—	depending on configuration (transformers, clamp)	depending on minimal current and voltage values	—
Angle between current and voltage harmonics	—	-180.0…+180.0°	0.1°	±(h x 1°)
K- factor	—	1.0...50.0	0.1	±10%
Flicker severity P_{ST}, P_{LT}	—	0.20...10.00	0.01	±5%
Voltage asymmetry	Voltage and current	0.0...20.0%	0.1%	±0.15% (absolute error)
Mains signaling	Voltage	5...3000 Hz	0.01 Hz	± 0.15% U_n for 1...3% U_n, 5% U_n for 3...15% U_n
Transients (PQM-711 only)		±6000 V (with max. sampling 10 MHz)	5V	± (0.5% + 25 V)

*Clamp F-1, F-2, F-3:0..3000A (10000A_{p-p}) *Clamp C-4: 0..1000A (3600A_{p-p}) *Clamp C-5: 0..1000A (3600A_{p-p}) *Clamp C-6: 0..10A (36A_{p-p}) (without current transformers) Clamp C-7: 0...100 A (360A_{p-p})

Standard accessories:

- Test leads 2.2 m; 7 pcs (installed),
- "Crocodile" clip K01; black; 3 pcs, **WAKROBL20K01**
- "Crocodile" clip K02; yellow, **WAKROYE20K02**
- "Crocodile" clip K02; blue, **WAKROBU20K02**
- "Crocodile" clip K02; red; 2 pcs, **WAKRORE20K02**
- USB cable, **WAPRZUSB**
- Power supply plug (L1 and N), **WAADAAZ1**
- Adapter AC-16, **WAADAAC16**
- heavy duty backpack for analyzer, tablet and accessories **WAWALXL2**
- Straps for PQM, **WAPOZOPAKPL**
- DIN Rail Mounting Clip (ISO) (3 - elements), **WAPOZUCH3**
- Voltage Adapter with M4/M6 thread; 5 pcs, **WAADAM4M6**
- Magnetic voltage adapter; 4 pcs, **WAADAUMAGKPL**
- Fasteners and bands for mounting the analyzer on a pole; 2 pcs, **WAPOZUCH4**
- Sonel Analysis software for data analysis,
- tablet with case, power supply and USB cable,
- Built-in rechargeable battery,
- instruction manual, calibration certificate.

Additional accessories:

- Carrying case for clamps, **WAWALL2**
- Carrying case for analyzer and accesoriess **WAWALXL2**
- External IP67 GPS antenna, 10 m, **WAPOZANT10GPS**
- Rechargeable Li-Ion battery **WAAKU11**







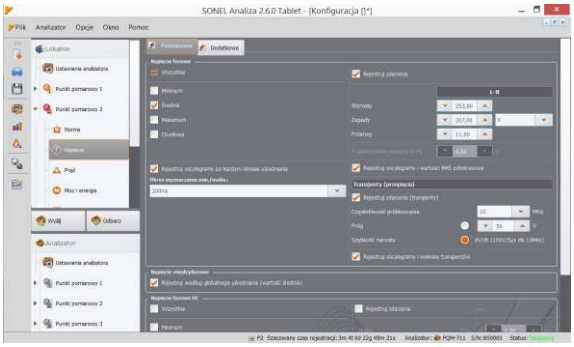
Clamp	C-4	C-5	C-6	C-7	F-1	F-2	F-3
INDEX	WACEGC40KR	WACEGC50KR	WACEGC60KR	WACEGC70KR	WACEGF10KR	WACEGF20KR	WACEGF30KR
Rated current	1000A AC	1000A AC 1400A DC	10A AC	100 A AC	3000A AC		
Max. overload current	1200A AC	1000A AC 3000A DC	20A AC	100 A AC	10kA AC		
Minimal measurable current	100mA	500mA	10mA	20 mA	1A		
Frequency	30Hz…10kHz	DC…5kHz	40Hz…10kHz	40 Hz…1 kHz	40Hz…10kHz		
Input signal level	1mV / 1A	1mV / 1A	100mV / 1A	500 mV / 1A	38.8µV / 1A		
Max. diameter of measured cord	52mm	39mm	20mm	24 mm	360mm	235mm	120mm
Minimal basic accuracy	≤0.5%	≤1.5%	≤1%	0,5%	1%		
Battery power supply	—	+	—	—	—		
Lead length	2.2m	2.2m	2.2m	3 m	2.2m		
Measurement category	IV 300V	IV 300V	IV 300V	III 300 V	IV 600V		

Sonel Analysis

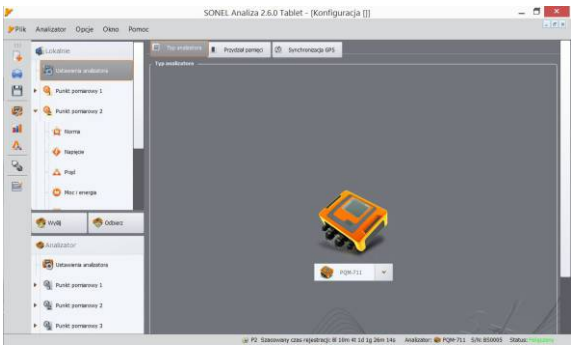
„SONEL Analysis" the tablet version of the application is necessary to work with the PQM-710 and PQM-711. This software allows:
- analyzer configuration,
- reading data from the analyzer,
- network parameters check in real time (the ability to read data through GSM modem),
- data deleting in the analyzer,
- data presentation in tables,
- data presentation in diagrams,
- data analysis according to EN 50160 or according to user defined conditions,
- independent service of multiple analyzers,
- software upgrade through the Internet.

Analyzer configuration

The software enables configuration of all analyzer's parameters. The configuraton is made on the computer and later transferred to the analyzer. The configuration settings can be stored on hard drive or other data storage devices to be used later. The software enables the configuration of:



- the choice of Measurement Points and memory assignment to each Measurement Point,
- analyzer time settings,
- keyboard lock,
- PIN code security,
- averaging time setting,
- choice of current and voltage transformers,
- trigger mode choice (immediately, after an event or according to the scheduler),
- choice of clamp's type, setting of additional parameters registration in N and PE channels,
- choice of network type, for which the analyzer will be used.

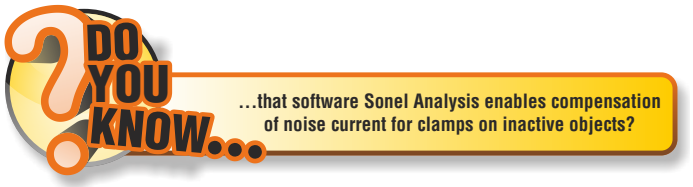


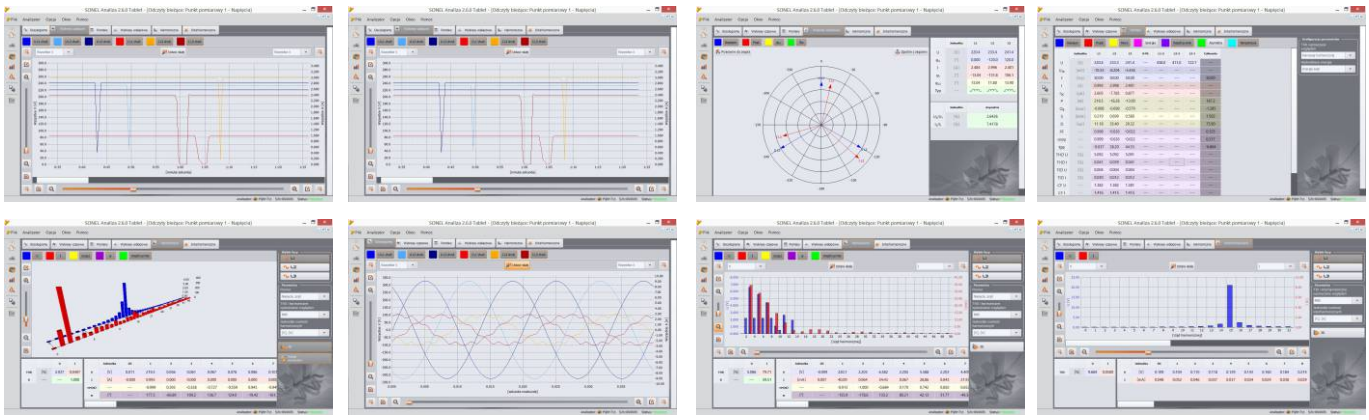
The analyzers PQM-710/711 have four independent Measurement Points. Each Measurement Point can be set individually to perform four different types of registration without need to change analyzer's configuration.

For each Measurement Point the following settings can be made:
- whether the analyzer shall work according to EN 50160 or according to user defined conditions,
- for each registration user can define, which network parameters shall be registered,
- for each parameter user can define whether the analyzer shall register average, minimum, maximum or instantaneous values,
- the limits beyond which the analyzer will record the event can be defined.

Live mode

"SONEL Analysis" software enables reading of selected parameters and their graphic presentation in real time. These parameters are measured independently of the registration saved in the memory. User can check:
- voltage and current diagrams (oscilloscope),
- diagrams of voltage and current in time function,
- scope phasor,
- different parameters values,
- harmonics and harmonics' power,
- interharmonics.

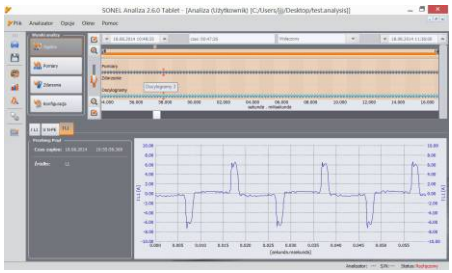
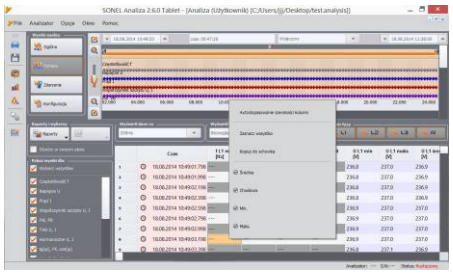
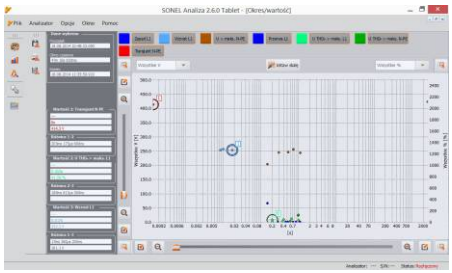




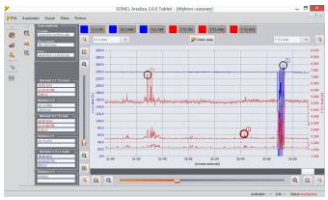
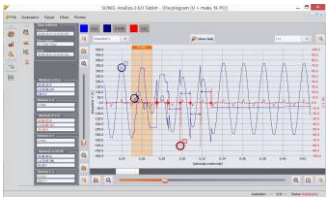
Data analysis

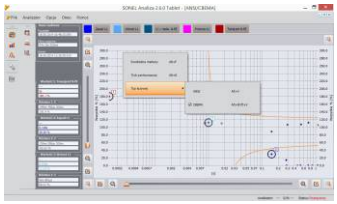
With "SONEL Analysis" software user can read data stored on the memory and analyze them. Data from the analyzer can be stored on tablet memory and be used later. This feature enables data archiving.

The user can analyze the data from the device. There is a choice of:
- **General** – all data are shown with dots (Measurements, Events and Waveforms),
- **Measurements** – all measured values registered in averaging time are shown in table (voltage, frequency, etc.),
- **Events** – all detected events are shown in table (dips, swells, interruptions, etc.),
- **Configuration** – display of settings, according to which data were recorded.

The software enables different types of diagrams, which show in a simple way the registered data:



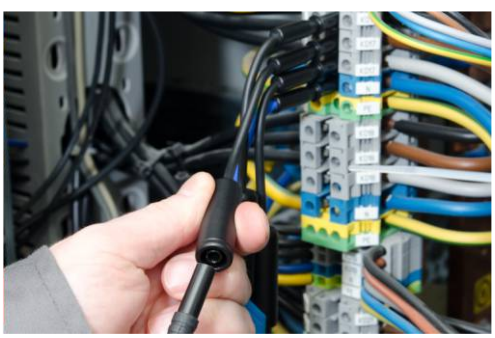
- **Time diagram** – graphs of indicated parameters in time function,
- **Waveforms** – graphs of instantaneous voltage and current during an event or at the end of averaging time,
- **Harmonics diagram** – bar graph showing harmonics from 1 to 50,
- **Interharmonics** – candle graph presenting up to 50th interharmonic.,
- **Value/Time diagram** – graph of events' duration time.

With data from the analyzer user can prepare reports, which can be saved on the hard drive in PDF, HTML, CSV or TXT files.The software enable to prepare the report according to EN 50160 or other predefined standards.

Standard accessories:

Magnetic voltage adapter used to connect voltage test leads to circuit breakers (type S) and residual current in switchgear - 4 pcs - **WAADAUMAGKPL**


Voltage Adapter with M4/M6 thread used to connect voltage test leads to rail connectors in switchgear - 5 pcs - **WAADAM4M6**

Heavy duty backpack for analyzer, tablet and accessories