

PQM-711 Pro | index: WMGBPQM711LTEPRO

PQM-711 | index: WMGBPQM711LTE

PQM-710 Pro | index: WMGBPQM710LTEPRO

PQM-710 | index: WMGBPQM710LTE



Class A remote analysis

Features

- Remote control and data transfer through a built-in GSM modem.
- Anti-theft feature – SMS notification in the event of position change (built-in GPS receiver).
- Real-time clock synchronized to GPS protocol.
- Remote control of the analyzer via software: **Sonel Analysis** (Wi-Fi and GSM for Windows) or **Sonel Analysis Mobile** (Wi-Fi for Android).
- **Sonel PQM-711 Pro and Sonel PQM-710 Pro comes with 4 pcs of F-3A flexible current clamps.**

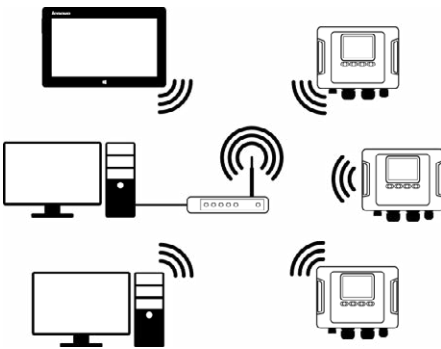
Measured parameters

- **PQM-711 | Transients up to ± 8000 V with max. sampling frequency 10 MHz.** Minimal transient time is **650 ns**.
- **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.
- Measurement of control signals up to 3000 Hz.
- 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, $\cos\phi$, $\tan\phi$.
- K factor (transformer overload caused by the harmonics).
- Up to 50th harmonics for voltage and current.
- Interharmonics measured as groups.
- Total Harmonic Distortion (THD) for voltage and current.
- Short-term (P_{ST}) and long-term (P_{LT}) flicker (IEC 61000-4-15 class A).
- Unbalance of voltage (IEC 61000-4-30 class A) and current.
- Current events detection including waveforms recording.
- Current and voltage events recording with waveforms (up to 1 s) and $RMS_{1/2}$ graphs with 30 s maximum recording time.
- Current and voltage waveforms recording after each averaging period.



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; 480/830 V (for systems with N conductor)
- 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

Sonel PQM-710 and Sonel PQM-711 have a **built-in GPS receiver** ensuring real time clock accuracy and an integrated **GSM modem** that facilitates remote analyzer operation. Furthermore, Sonel PQM-711 is also equipped with a **transient recorder** (sampling frequency 10 MHz, voltage range **up to ±8000 V**).

An additional trump card of the analyzers is the built-in **Wi-Fi communication module**, providing a number of advantages: no restrictions on file transfer, no data transfer costs, use of local wireless infrastructure... This gives the user the opportunity to adapt to the conditions prevailing on the site. They can supervise measurements from a convenient location – for example, an area without electromagnetic interference – using a laptop, smartphone or tablet.



Displaying data

Sonel PQM-710 and Sonel PQM-711 can be operated using a **touch screen computing device** equipped with **Sonel Analysis** software (Windows) or **Sonel Analysis Mobile** app (Android). The user can supervise the measurements and conduct diagnostics while maintaining mobility – he doesn't even have to be near the analyzer. In typical applications, the device plays the role of a remote display and an intermediate storage of measurement data with the functionality of a router. Therefore, the user can also connect to it using a wireless network – for example, to transfer the collected registrations to a desktop computer.



Application

Sonel PQM-710 and Sonel PQM-711 are widely used in the professional power industry. They provide full 4-quadrant analysis, meeting the needs of energy consumers and producers, such as renewable energy, including photovoltaic and wind farms. They enable forecasting failures in distribution networks. They provide analysis of the load capacity of networks and transformers, as well as recording their current states. In addition, they are powerful investment tools. Thanks to Sonel PQM-710 and Sonel PQM-711, the user will obtain the necessary data for development of power infrastructure, predict potential problems, and finally – verify the correctness and quality of implementation.

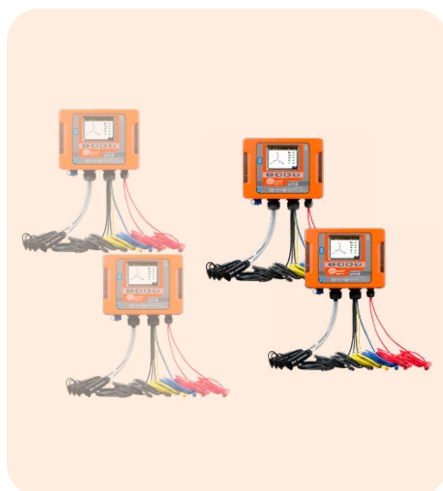
Parameters

Parameter	Measuring range	Max. resolution	Accuracy
Alternating voltage (TRMS) $U_{L,MAX} = 2000 \text{ V for } U_{L,PE,MAX} = 1000 \text{ V}^*$ $U_{L,MAX} = 1520 \text{ V for } U_{L,PE,MAX} = 760 \text{ V}^*$	0.0...1000.0 V or 0.0...760.0 V* range for $U_{L,N}$	4 significant digits	$\pm 0.1\% U_{nom}$
Crest Factor			
Voltage	1.00...10.00 (≤ 1.65 for voltage of 690 V)	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	$\pm 0.1\% I_{nom}$ (error does not account for clamp error)
Frequency	40.00...70.00 Hz	0.01 Hz	$\pm 0.01 \text{ Hz}$
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)	-1.00...1.00	0.01	± 0.03
tanϕ	-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}
PQM-711 Measurement of transients			
Voltage	$\pm 8000 \text{ V}$	4 significant digits	$\pm(5\% + 25 \text{ V})$

m.v. – measured value

* Depending on analyzer version

** 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 / 0...1400 A DC (3600 A_{pp}) • C-6A clamp: 0...12 A AC (36 A_{pp}) • C-7A clamp: 0...100 A AC (360 A_{pp})



Discontinued model

PQM-710

index: WMGBPQM710BTW
GSM modem: 3G
serial no: up to BR0999
firmware: up to v1.57
minimum version of Sonel Analysis software: -

PQM-711

index: WMGBPQM711BTW
GSM modem: 3G
serial no: up to BS0999
firmware: up to v1.57
minimum version of Sonel Analysis software: -

Current model

PQM-710 / PQM-710 Pro

index: WMGBPQM710LTE / WMGBPQM710LTEPRO
GSM modem: 4G LTE
serial no: from BR1000
firmware: from v1.58
minimum version of Sonel Analysis software: v4.7.1

PQM-711 / PQM-711 Pro

index: WMGBPQM711LTE / WMGBPQM711LTEPRO
GSM modem: 4G LTE
serial no: from BS1000
firmware: from v1.58
minimum version of Sonel Analysis software: v4.7.1



C-4A

WACEGC4AOKR



C-5A

WACEGC5AOKR



C-6A

WACEGC6AOKR



C-7A

WACEGC7AOKR

Rated current	1000 A AC	1000 A AC 1400 A DC	12 A AC	100 A AC
Frequency	30 Hz...5 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	III 600 V IV 300 V	IV 300 V	III 600 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

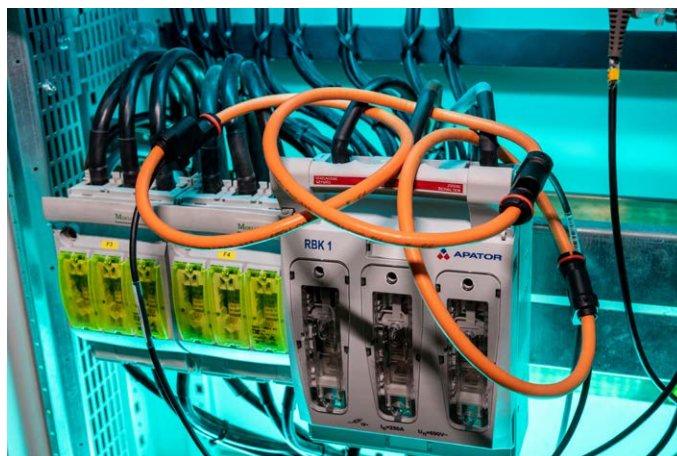
WACEGF2AHDOKR



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	0.5%			0.5%
Battery power	—			—
Lead length	2.5 m			2.5 m
Measurement category	III 1000 V IV 600 V			III 1000 V IV 600 V
Ingress protection	IP67			IP65



SONEL ANALYSIS



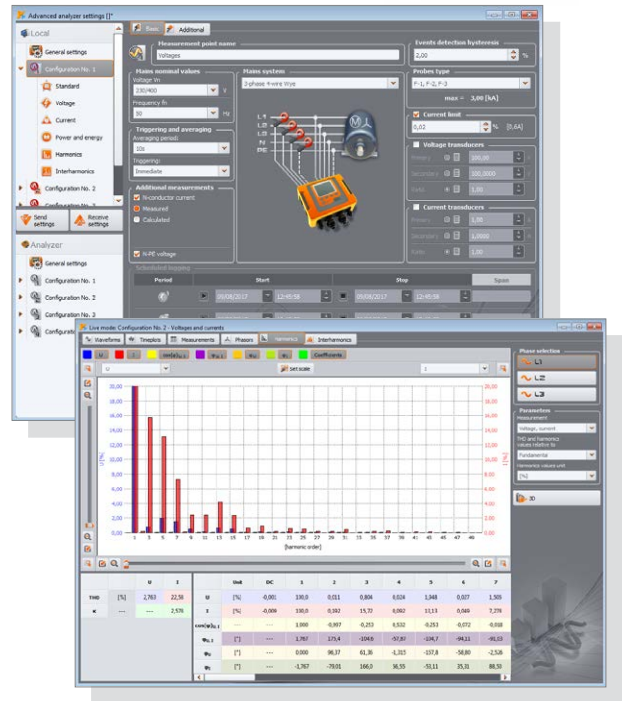
Sonel Analysis software – application delivered as standard accessory, indispensable for working with PQM-series analyzers. Depending on the mating instrument used, the software enables:

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

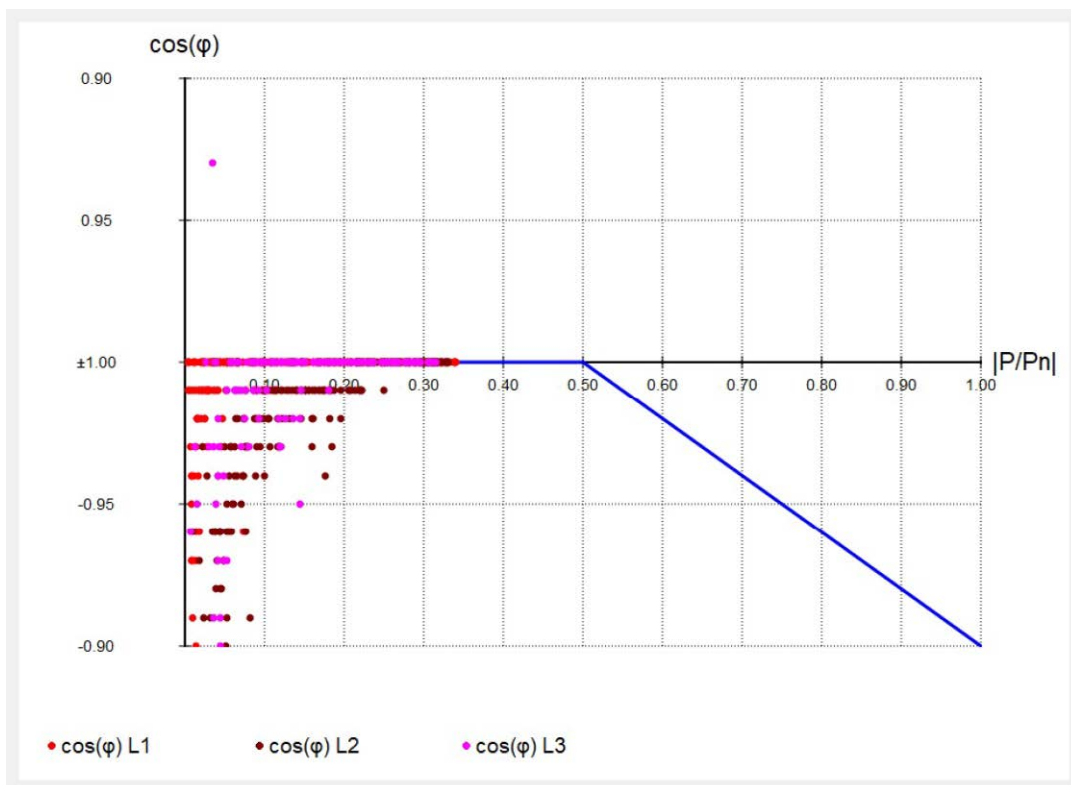
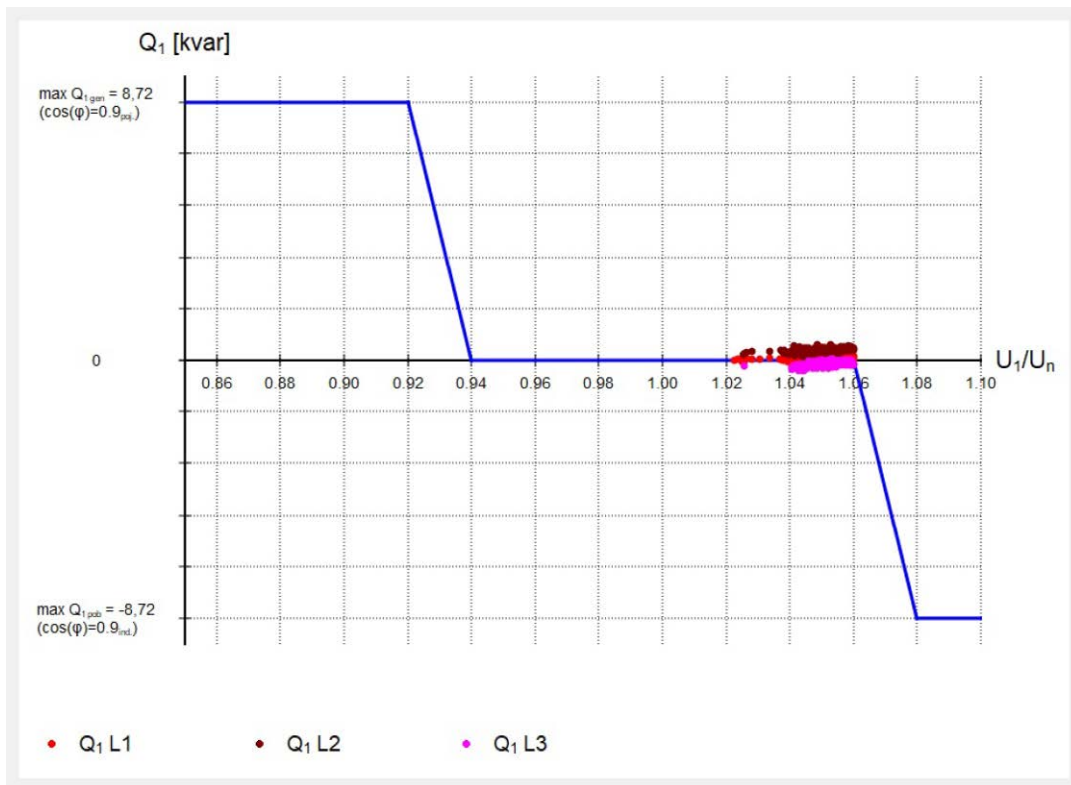
The report can be generated according to EN 50160, IEEE 519, NEC 220.87 and the standards of the following countries, among others: Poland, Australia, Russia, Chile, Moldova, Ecuador. The full list of standards can be found in the software.



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

GENERAL INFORMATION

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
















Sonel Analysis Mobile



















Mobile version of the program supports Sonel PQM-711 and Sonel PQM-710 power quality analyzers. It can be downloaded from the www.sonel.com website.














Standard accessories

		PQM-711 Pro	PQM-711	PQM-710 Pro	PQM-710
		WMGBPQM711LTEPRO	WMGBPQM711LTE	WMGBPQM710LTEPRO	WMGBPQM710LTE
	F-3A flexible clamp (Ø 120 mm) 3 kA WACEGF3AOKR	4		4	
	Crocodile clip 1 kV 20 A black / red / blue / yellow WAKROBL20K01 / WAKRORE20K02 / WAKROBU20K02 / WAKROYE20K02	3 / 2 / 1 / 1	3 / 2 / 1 / 1	3 / 2 / 1 / 1	3 / 2 / 1 / 1
	AC-16 line splitter WAADAAC16	1	1	1	1
	AZ-3 power supply adapter (mains plug/banana inputs) WAADAAZ3	1	1	1	1
	Voltage adapter with M4/M6 thread – set 5 pcs WAADAM4M6	1	1	1	1
	Magnetic voltage adapter – set 4 pcs WAADAUMAGKPL	1	1	1	1
	Straps for mounting on a pole – set – 1.2 m WAPOZOPAKPL	1	1	1	1
	DIN rail mounting bracket with positioning catches WAPOZUCH3	1	1	1	1
	Fasteners and bands for mounting the analyzer – set 2 pcs WAPOZUCH4	1	1	1	1
	XL-2 carrying case WAWALXL2	1	1	1	1
	USB cable WAPRZUSB	1	1	1	1
	Sonel Analysis software WAPROANALIZA4	1	1	1	1
	Factory calibration certificate	1	1	1	1






Optional accessories

		PQM-711 Pro	PQM-711	PQM-710 Pro	PQM-710
		WMGBPQM711LTEPRO	WMGBPQM711LTE	WMGBPQM710LTEPRO	WMGBPQM710LTE
	F-1A flexible clamp (Ø 360 mm) 1.5 kA WACEGF1A1OKR	✓	✓	✓	✓
	F-1A flexible clamp (Ø 360 mm) 3 kA WACEGF1AOKR	✓	✓	✓	✓
	F-1A flexible clamp (Ø 360 mm) 6 kA WACEGF1A6OKR	✓	✓	✓	✓
	F-2A flexible clamp (Ø 235 mm) 1.5 kA WACEGF2A1OKR	✓	✓	✓	✓
	F-2A flexible clamp (Ø 235 mm) 3 kA WACEGF2AOKR	✓	✓	✓	✓
	F-2A flexible clamp (Ø 235 mm) 6 kA WACEGF2A6OKR	✓	✓	✓	✓
	F-3A flexible clamp (Ø 120 mm) 1.5 kA WACEGF3A1OKR	✓	✓	✓	✓
	F-3A flexible clamp (Ø 120 mm) 3 kA WACEGF3AOKR		✓		✓
	F-3A flexible clamp (Ø 120 mm) 6 kA WACEGF3A6OKR	✓	✓	✓	✓
	C-4A clamp (Ø 52 mm) 1000 A AC WACEGC4AOKR	✓	✓	✓	✓
	C-5A clamp (Ø 39 mm) 0...1000 A AC / 0...1400 A DC WACEGC5AOKR	✓	✓	✓	✓
	C-6A clamp (Ø 20 mm) 12 A AC WACEGC6AOKR	✓	✓	✓	✓
	C-7A clamp (Ø 24 mm) 100 A AC WACEGC7AOKR	✓	✓	✓	✓
	L-2 carrying case for clamps WAWALL2	✓	✓	✓	✓
	Magnetic voltage adapter black / blue WAADAUMAGKBL / WAADAUMAGKBU	✓/✓	✓/✓	✓/✓	✓/✓
	Flat test clip (grip – banana socket) (5 pcs) WASONCGB1KPL	✓	✓	✓	✓

Optional accessories

		PQM-711 Pro	PQM-711	PQM-710 Pro	PQM-710
		WMGBPQM711LTEPRO	WMGBPQM711LTE	WMGBPQM710LTEPRO	WMGBPQM710LTE
	Test clips with steel jaws (5 pcs) WASONKGB1KPL	✓	✓	✓	✓
	Adapter for control terminals (5 pcs) WAADAPRZKPL1	✓	✓	✓	✓
	ASX-1 piercing adapter (4 pcs) WAADAPRZASX1KPL	✓	✓	✓	✓
	PQM magnetic strap (2 pcs) WAPOZUCH5	✓	✓	✓	✓
	AGT-16T industrial socket adapter 16 A / 32 A WAADAAGT16T / WAADAAGT32T	✓/✓	✓/✓	✓/✓	✓/✓
	AGT-16C three-phase socket adapter 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	✓	✓	✓	✓
	GPS antenna WAPOZANT10GPS	✓	✓	✓	✓
	GSM repeater WAPOZANTREPEATERV2	✓	✓	✓	✓
	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

Expand your capabilities with additional accessories