

Stationary, modular, comprehensive

Features

- Full class A according to IEC 61000-4-30, confirmed by a certificate from an accredited laboratory
- Voltage inputs L1, L2, L3, N, E (5 terminals)
- L1, L2, L3, N, E currents (5 current transformers)
- Built-in **5 A or 1 A** current transducers, or **a variant without transducers, but cooperating with external transducers***
- Possibility of indirect measurements with calculation results for the primary side
- Operation in 50 Hz, 60 Hz, 400 Hz networks
- Recording of voltage and current events along with waveforms
- **Design with or without transient measurement module**
- Measurement of more than 4,000 parameters
- 24-bit analog-to-digital converter
- Basic sampling rate of 80 kHz
- Conducted emissions monitoring in the 2...150 kHz band
- Two LAN ports, including one with the option of powering the meter with PoE (Power over Ethernet)
- Built-in rechargeable battery
- **Two mains power supply options: built-in power supply unit 85...264 V AC (120...300 V DC) or 18...60 V DC**
- 8 GB memory (microSD card)
- USB port for meter updates and data exchange
- Two binary inputs, two relay outputs, two RS-485 ports
- Relay output to monitoring analyzer operation (Watchdog)
- 1-wire input for external temperature sensors
- 2.4" touch screen
- DIN rail or wall mounting
- Expansion bus allowing connection of various external modules (e.g. GPS, LTE)
- Built-in web server for programming the meter, reading current data, viewing the list of recorded events with oscillogram/RMS display
- Time synchronization with the reference via NTP servers, IRIG-B (via built-in RS-485)
- **Optional GPS module and antennas**
- Measurement category CAT III 600 V (IV 300 V) for voltage inputs
- Measurement category CAT III 300 V for current inputs
- Possibility of sealing current and voltage inputs

* coming soon

	I [A]	THDI [%]
L1	1.1900	14.52
L2	1.5700	13.22
L3	0.9102	10.58
N	0.0008	>999.9
E	2.9712	0.00

Description

Stationary meter designed to measure and record power supply parameters for compliance with standards and applicable laws, and with the ability to verify preset terms of a power sale/purchase contract.

Made in class A. Designed to be mounted on a DIN rail (with the possibility of mounting on a wall in a cabinet). Modular design allows adding new modules to expand the capabilities of the meter. The instrument allows measurements in 50 Hz, 60 Hz and 400 Hz networks.

Additional features

Standard transmission protocols

- Modbus TCP/IP
- Modbus RTU
- IEC 61850
- PQdif

Web interface (webserver)

- Access to the interface from any web browser



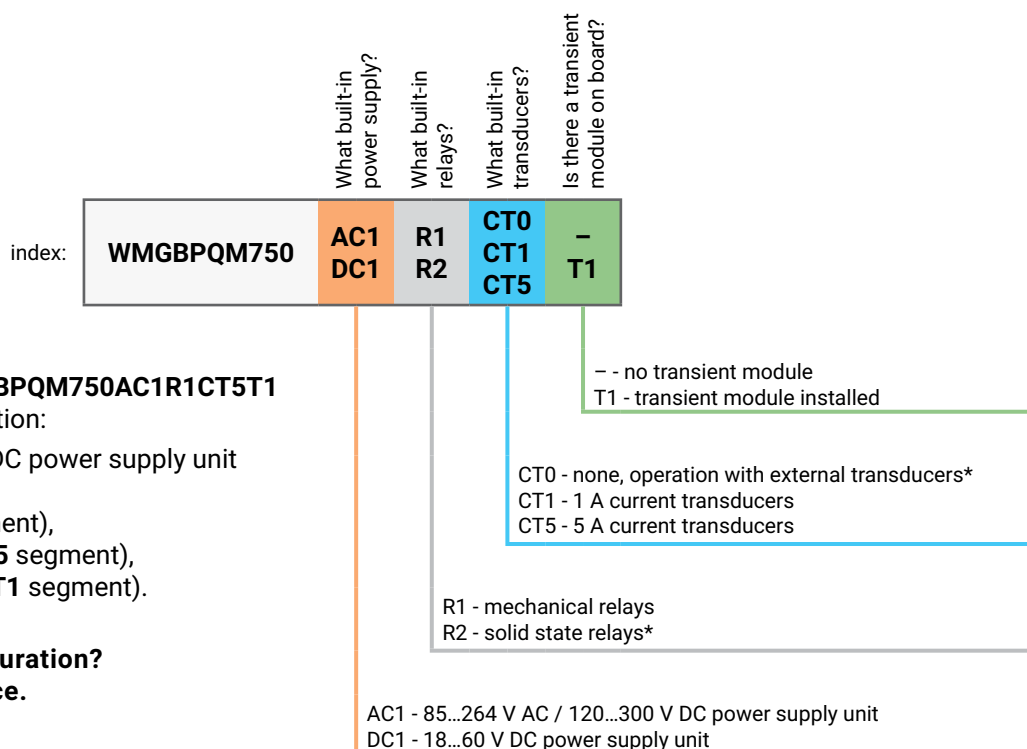
Variants

The PQM-750 can be configured in various ways. Each set of built-in internal modules is a separate sales index for the analyzer.

For example, the index **WMGBPQM750AC1R1CT5T1** means the following configuration:

- 85...264 V AC / 120...300 V DC power supply unit (**AC1** segment),
- mechanical relays (**R1** segment),
- 5 A current transducers (**CT5** segment),
- installed transient module (**T1** segment).

Need help choosing a configuration?
Contact our Customer Service.



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Modularity



LCD 7" touch panel*



I/O module*



LTE GSM module*

The instrument can be expanded with additional communication protocols and physical and software functionality.

- GPS module with IRIG-B output and GPS module antenna (10 m / 20 m / 30 m)
- LTE GSM module*
- I/O module*
- LCD 7" touch panel for full operation of the analyzer at the mounting location*



GPS module

It allows time synchronization via GPS.



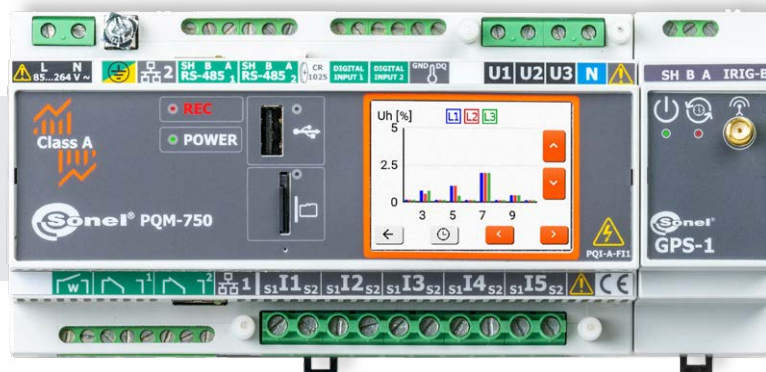
Antenna with 10 m cable



Antenna with 20 m cable



Antenna with 30 m cable



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Measured parameters

Built-in software (web interface – webserver) allows you to configure the device and view actual data. It allows measurement of the following parameters.

- Phase RMS voltage **U** for L1, L2, L3+N/PE
- Phase-to-phase RMS voltages **U** for **L12, L23, L31**
- RMS currents **I** of all phases + N + PE
- Crest factor **CF** of voltages and currents
- Network frequency **f** for L1
- Active power **P** for L1, L2, L3
- Active power **P1 (separated 50 Hz)** for L1, L2, L3
- Reactive power **Q** for L1, L2, L3
- Reactive power **Q1 (separated 50 Hz)** for L1, L2, L3
- Apparent power **S** for L1, L2, L3
- Apparent power **S1 (separated 50 Hz)** for L1, L2, L3
- Three-phase total power **P_{3F}, Q_{3F}, S_{3F}**
- Three-phase total power **P_{1 3F}, Q_{1 3F}, S_{1 3F}**
- **cosφ** for L1, L2, L3, **cosφ_{3F}**
- Power factor **PF** for L1, L2, L3, **PF_{3F}**
- **tgφ** for L1, L2, L3, **tgφ_{3F}**
- Distortion power **D** for L1, L2, L3
- Three-phase total distortion power **D_{3F}**
- Distortion power factor **DPF** for L1, L2, L3
- Shape of phase voltages and currents for events
- Phase diagrams for currents and voltages
- Active energy for L1, L2, L3 – taken **E_{p+}** or given **E_{p-}**
- Three-phase active energy – drawn **E_{p3F+}** or given **E_{p3F-}**
- Inductive reactive energy for L1, L2, L3 for consumption – **E_{QL+}**
- Capacitive reactive energy for L1, L2, L3 for consumption – **E_{QC+}**
- Three-phase reactive energy for consumption – inductive **E_{QL3F+}** and capacitive **E_{QC3F+}**
- Apparent energy for L1, L2, L3 – **E_s**
- Three-phase apparent energy **E_{s3F}**
- Harmonics **h_n** to 256th in current and voltage
- Interharmonics up to 256th in current and voltage
- Angles between current and voltage harmonics
- Monitoring of 2...150 kHz bandwidth
- **U_{dc}** phase voltage components
- Shares of harmonic currents and voltages in relation to RMS value (%) – **h_{nR}**
- Shares of harmonic currents and voltages in relation to the fundamental harmonic **h₁** (%) – **h_{nF}**
- **THD_R** for voltages and currents calculated against RMS value (%)
- **THD_F** for voltages and currents calculated relative to the fundamental harmonic (%)
- **TID_R** for voltages and currents calculated against RMS value (%)
- **TID_F** for voltages and currents calculated relative to the fundamental harmonic (%)
- Active and reactive harmonic powers
- **K-factor** for **I₁, I₂, I₃, I_N**
- **Factor K** (Europe)
- Symmetrical voltage components: zero **U₀**, direct **U₁**, inverse **U₂**
- Symmetrical components of current: zero **I₀**, direct **I₁**, inverse **I₂**
- Short-term light flicker factor **P_{st}**
- Long-term light flicker factor **P_{lt}**
- Voltage unbalance
- Current unbalance
- Transients **U** up to 6000 V
- Ripple control signals
- Temperatures: **T_w** (analyzer internals), **Tz1...Tz4** (1-wire)

Parameters

Parameter	Measuring range	Max. resolution	Accuracy
Alternating voltage (TRMS) $U_{L-L,MAX} = 2000 \text{ V}$ for $U_{L-E,MAX} = 1000 \text{ V}$	0.0...1000.0 V	4 significant digits	$\pm 0.1\% U_{din}$
Crest Factor			
Voltage	1.0...6.5 (1.65 for voltage of 690 V)	0.01	$\pm 5\%$
Current	1.00...10.00	0.01	$\pm 5\%$
Alternating current (TRMS)	0...20 A	4 significant digits	$\pm 0.2\%$
Frequency			
50 Hz and 60 Hz mains	40.000...70.000 Hz	0.001 Hz	$\pm 0.01 \text{ Hz}$
400 Hz mains	340.00...460.00 Hz	0.01 Hz	$\pm 0.1 \text{ Hz}$
Active power IEC 62053-22 class 0,2S	depending on voltage and current ratio	4 significant digits	$\pm 0.2\%$
Reactive power IEC 62053-24 class 0,5S	depending on voltage and current ratio	4 significant digits	$\pm 0.5\%$
Apparent power	depending on voltage and current ratio	4 significant digits	$\pm 0.2\%$
Active energy IEC 62053-22 class 0,2S	depending on voltage and current ratio	4 significant digits	$\pm 0.2\%$
Reactive energy IEC 62053-24 class 0,5S	depending on voltage and current ratio	4 significant digits	$\pm 0.5\%$
Apparent energy	depending on voltage and current ratio	4 significant digits	$\pm 0.2\%$
cosφ and power factor (PF)	-1.000...1.000	0.001	0.05
tanφ	-10.000...10.000	0.001	depends on error of active and reactive power
Harmonics and interharmonics			
Voltage	DC, 0...256	4 significant digits	$\pm 0.05\% U_{din}$ for m.v. < 1% U_{din} $\pm 5\%$ m.v. for m.v. $\geq 1\% U_{din}$
Current	0...256	4 significant digits	$\pm 0.15\% I_{rin}$ for m.v. < 3% I_{rin} $\pm 5\%$ m.v. for m.v. $\geq 3\% I_{rin}$
THD-F			
Voltage	0...20%	0.01%	$\pm 0.3\%$ (absolute error)
Current	0...100%	0.01%	$\pm 0.3\%$ (absolute error)
Active and reactive power of harmonics	depending on voltage and current ratio	4 significant digits	—
Angle between current and voltage harmonics	-180.0...+180.0°	0.1°	$\leq 0.05^\circ$ for $n = 1$ $\leq 1^\circ$ for $2 \leq n \leq 60$ at $f_{nom} = 50 \text{ Hz}$ $\leq 4^\circ$ for $61 \leq n \leq 256$ at $f_{nom} = 50 \text{ Hz}$
K-Factor	1.0...50.0	0.01	$\pm 10\%$
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 $15\% U_{din}$ at $f_R = 5...30000 \text{ Hz}$	4 significant digits	unspecified for $< 1\% U_{din}$ $\pm 0.15\%$ for $1...3\% U_{din}$ $\pm 5\%$ for $3...15\% U_{din}$
Emissions in band			
2...9 kHz	a single frequency that is multiple of 200 Hz	0.01 V	$\pm 0.1\% U_{din}$ for m.v. < 2% U_{din} $\pm 5\%$ m.v. for m.v. $\geq 2\% U_{din}$
8...150 kHz	a single frequency that is multiple of 2 kHz	0.01 V	$\pm (5\% + 0.1 \text{ V})$

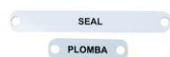
m.v. – measured value

Standards

Made in class A of the IEC 61000-4-30 standard, the instrument is compliant:

- Product standards:
 - » **IEC 62586-1** – Power quality measurement in power supply systems – Part 1: Power quality instruments (PQI)
 - » **IEC 62586-2** – Power quality measurement in power supply systems – Part 2: Functional tests and uncertainty requirements
- Standards for measuring network parameters:
 - » **IEC 61000-4-30** – Electromagnetic compatibility (EMC) – Testing and measurement techniques – Power quality measurement methods
 - » **IEC 61000-4-7** – Electromagnetic compatibility (EMC) – Testing and Measurement Techniques – General Guide on Harmonics and Interharmonics Measurements and Instrumentation for Power Supply Systems and Equipment Connected thereto
 - » **IEC 61000-4-15** – Electromagnetic compatibility (EMC) – Testing and Measurement Techniques – Flickermeter – Functional and Design Specifications
 - » **EN 50160** – Voltage characteristics of electricity supplied by public electricity networks
- Safety standards:
 - » **IEC 61010-1** – Safety requirements for electrical equipment for measurement control and laboratory use. Part 1: General requirements
 - » **IEC 61010-2-030** – Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: Particular requirements for equipment having testing or measuring circuits
- Standards for electromagnetic compatibility:
 - » **EN 55032** – Electromagnetic compatibility of multimedia equipment – Emission Requirements
 - » **IEC 61000-6-5** – Electromagnetic compatibility (EMC) – Part 6-5: Generic standards – Immunity for equipment used in power station and substation environment

Standard accessories



Seal for voltage and current terminals (set of 2 pcs.)

WAPOZPLOKPL



Fork terminal for grounding terminal

WAZACWID



8 GB microSD card

WAPOZMSD8



Wall mounting kit

WAPOZUCH17



LAN network cable, shielded, 1.5 m

WAPRZRJ451X5EKR



Factory calibration certificate

Optional accessories

External GPS module

WAMODGPS1

External antenna for GPS module 10 m / 20 m / 30 m

WAPOZANT10MODGPS1 / WAPOZANT20MODGPS1 / WAPOZANT30MODGPS1






External GSM LTE module with external antenna*

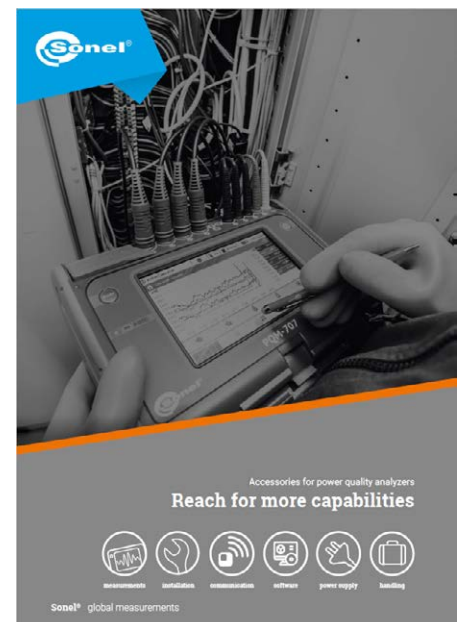
External module of additional inputs/outputs*

External 7" LCD touch panel*

Calibration certificate with accreditation

* coming soon

			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



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