



Power supply analyzers

Q.2

Power supply analyzers

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Power quality analyzers

The consumption of electricity exists thanks to a series of agents that participate throughout a special process. The process starts with the generation of electricity, which is then distributed to the final consumer. Throughout these phases, electricity undergoes a series of alterations that can greatly affect it. The electricity companies in charge of distributing electrical energy are responsible for guaranteeing that the voltage supplied meets a series of parameters, which will depend on the geographic area. There are different loads connected to the distribution network and, in many cases, loads can vary as technology evolves, thus affecting the stability of the distribution network as a whole.

Industries use increasingly more sophisticated processes with a greater number of control, automation and regulation elements, allowing companies to execute such processes automatically and be more competitive. In general, said loads are very sensitive to voltage variations, which can lead to faulty performance and critical problems in processes. On the other hand, more and more companies are starting to invest in the measurement and control of the quality of the electricity supplied, in order to avoid a series of costs that are usually associated to production processes.

This means that the costs associated to a lack in the continuity of the supply and those related to an insufficient supply quality must be controlled. It is very important to supervise the correct operation of the installation and equipment

connected to it, including the correct management of energy to avoid unnecessary consumption excesses.

The globalization of markets has also led the different players involved in the energy generation, transport and consumption processes to communicate on the same terms to face the new future challenges required to optimise distribution networks and electricity installations. Therefore, current regulations pay special attention to the use of elements that take measurements in accordance with a series of specific criteria, to facilitate the interpretation of all information gathered.

The intake of measurements from different points of the distribution network requires the use of equipment that can guarantee the total precision of the measurement taken and a proven robustness, since the equipment will have to face complex environments and situations. We are talking about equipment of reference for electricity companies throughout the world in very different environments and distribution networks. At the same time, companies are operating in increasingly global environments, forcing them to be more competitive and to optimise their processes. Therefore, the electrical alterations affecting productive processes in companies must be analysed and studied with the purpose of improving and protecting installations against such alterations.





Definition

The **QNA** power analyzers comply with the strictest international regulations. Currently, the **IEC-61000-4-30** standard specifies the way in which this type of equipment must take the measurements of a set of parameters. The standard has defined 2 classes: Firstly, class A is reserved for the most accurate equipment with the highest performance features, which must comply with the strict measurement methodology and have a high degree of accuracy in all parameters measured. The equipment certified with class A precision in this standard will be used as pattern elements and can be used to resolve any type of dispute. The **QNA** range of power quality analyzers, series 400, complies with the strictest regulations. Likewise, the measurement patterns are used in very different installations.

The log of historic values can be used to analyse the evolution and trends in the power supplied and consumed by the electricity installation, with the identification of the anomalies that can interfere

in the optimum performance of the machines and systems connected to the network.

The energy records can also be used to study the use of loads connected to the network. The correct study of the said energy records will provide precise information about the existing energy consumption trends, thanks to the load curves, while adapting the charges to the usual consumption patterns.

Any voltage event can be perceived and it can lead to a faulty operation in some electronic equipment. These events are recorded in accordance with the **IEC-61000-4-30** class A network quality standard, in order to identify the causes of faults accurately and implement the corrective actions required to minimise the costs associated to productivity.

Applications

Utilities companies

Currently, many utilities companies throughout the world use **QNA** power quality analyzers to analyze the behaviour of the quality of waves in distribution networks. The panel and portable types are used in sub-stations to detect any event that could occur in the network and quantify the events caused in such network.

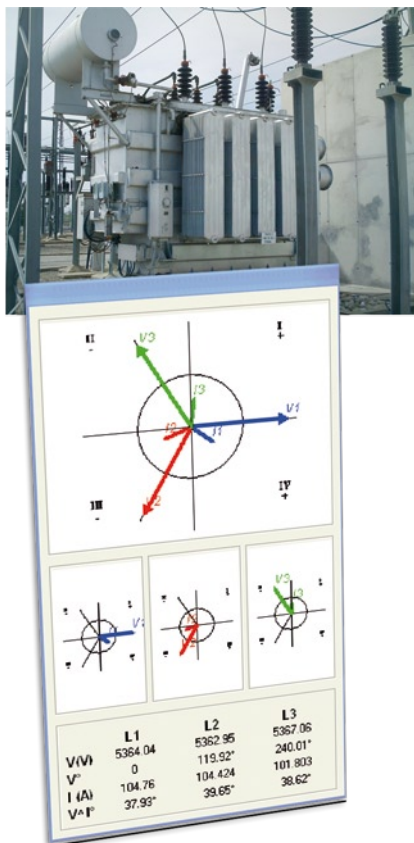
Notification via email or SMS alarms can be sent when a programmed event takes place. This minimises the problem in many cases, since different actions can be implemented on the different burdens, thus avoiding greater problems associated to production processes.

Ease of connection

In accordance with the regulations followed for the measurement of MV, the addition of an assembly cabinet facilitates the installation of the analyzer, whereby only the measurement of voltages and currents and the auxiliary power supply have to be connected.

Large consumers

The network quality study in the network connection point is particularly important for the optimisation of the productive processes of companies. The detection of any network alteration and assessment of the content of harmonic distortion in installations and the energy consumed are the parameters that must be assessed in any installation, with the purpose of improving its performance. **CIRCUTOR's** systems offer the solutions required to cater for these needs.



Product selection table

	Equipment	Communications	Voltage	Flicker	Harmonics and THD	Unbalance	Events	Current	Power (act / react)	FP	Power (act / react)	Digital inputs	6 voltage channels	Assembly	Page
QNA -413		RS-232 / RS-485	•	•	50	•	•							Panel	7
		GPRS / GSM / RS-232	•	•	50	•	•							Panel	
QNA -423		RS-232 / RS-485	•	•	25	•	•						•	Panel	10
		GPRS / GSM / RS-232	•	•	25	•	•						•	Panel	
QNA -412		RS-232 / RS-485	•	•	50	•	•	•	•	•	•	•		Panel	13
		GPRS / GSM / RS-232	•	•	50	•	•	•	•	•	•	•		Panel	
		ETHERNET	•	•	50	•	•	•	•	•	•	•		Panel	
QNA-P		RS-232	•	•	50	•	•	•	•	•	•	•		Portable	16
		GSM / RS-232	•	•	50	•	•	•	•	•	•	•		Portable	

QNA 413

Power quality analyzers



Description

QNA 413 is a state-of-the-art power quality analyzer certified as a class A device, in compliance with the **IEC-61000-4-30 Standard**. It takes measurements in compliance with the international standard and has a high degree of accuracy. It can be used to analyze the quality of supply (voltage, flicker, harmonics, events, etc.) in any installation. The most common cases are sub-stations or transformation centres and points where companies are connected to the network.

Application

- Real-time supervision and continuous recording of the power supply quality in any measurement point.
- Detection and instantaneous recording of all events (in compliance with the **IEC Standards**) detected in the measurement point. It can be used to detect the origin of events to implement the necessary actions and carry out the preventive maintenance actions, in order to optimize the performance of the installation, thus increasing the company's productivity.
- It is certified as class A in compliance with the **IEC-61000-4-30** international standard, allowing it to define the quality of supply, regardless of the country and area of distribution.

Characteristics

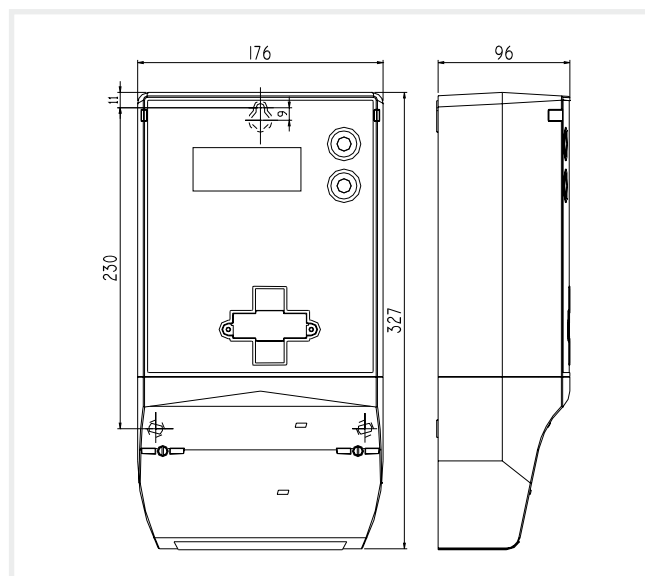
Power circuit	
Power supply range	100 - 400 Vac ($\pm 30\%$) / 90 - 730 Vdc
Consumption	16 V·A / 8 W
Frequency	50 - 60 Hz
Auxiliary power circuit	
Battery	Ni MH
Autonomy	Configurable, up to 9999 s of continuous operation
Voltage measurement circuit	
Nominal voltage	3 x 500 / 866 Vac (for 4-wire connections) 3 x 500 Vac (for 3-wire connections)
Other voltages	Through the measurement transformers
Frequency	42.5 ... 69 Hz
Sampling frequency	14.130 kHz
Consumption of the voltage per phase circuit	0.3 V·A
Accuracy	
Voltage	0.1 % U_n (IEC-61000-4-30 class A)
Unbalance	$\pm 0.15\%$ (IEC-61000-4-30 class A)
Flicker	5 % (IEC-61000-4-15 , IEC-61000-4-30 class A)
Harmonics	IEC-61000-4-7 class I, IEC-61000-4-30 class A
Communications	RS-232 / RS-485, GPRS / GSM / RS-232
Data memory	
Size	2 MB
Setup	Rotary (FIFO)
Ambient conditions	
Usage temperature	0 °C ... +50 °C
Storage temperature	-20 °C ... + 70 °C
Build features	
Enclosure	In compliance with DIN 43859
Differential	IP 51
Dimensions	327 x 176 x 96 mm
Weight	2.3 kg
Safety	EN-61010-1 category III 600 V

QNA 413

Power quality analyzers



Dimensions



Standards

EN 60664, EN 61036, VDE 110, UL 94

Electromagnetic emission		Electromagnetic immunity	
EN 61000-3-2	Harmonics	EN 50082-2	Industrial immunity
EN 61000-3-3	Voltage fluctuations	EN 61000-4-2	Electrostatic discharge
EN 55022 class B	Driven	ENV 50140	EM Radiated field of RF
EN 55022 class A	Radiated	EN 61000-4-4	Quick temporary bursts
EN 50081-2	Industrial emission	ENV 50141	RF in common mode
-	-	EN 61000-4-5	Shockwave
-	-	EN 61000-4-8	50 Hz Magnetic field
-	-	EN 61000-4-11	Power supply interruptions

References

Voltage	Current	Power rating	Energy	Flicker	Harmonics and THD	Unbalance	Events	Certificate	Communications	Type	Code
•				•	50	•	•	Class A	RS-232 / RS-485	QNA-413 RS232/RS485	Q20411
•				•	50	•	•	Class A	GPRS / GSM / RS-232	QNA-413 GSM-Free	Q20413

Distribution of memory

Type of file	Default storage capacity	Data stored
*.STD	33 days	Voltage, flicker, harmonics and unbalance
*.EVQ	minimum of 342 events	Measurement events (overvoltages, voltage gaps and interruptions)
*.EVE	4655 records	Events related to the analyzer (change of setup, change of hour, etc.)
*.H24	32 days	Data for the statistical study of the evolution of harmonics every 24 hours
*.STP	16 weeks	Weekly statistical voltage values, THD (U), flicker, frequency and unbalance

La distribución de la memoria es flexible y configurable por el usuario.

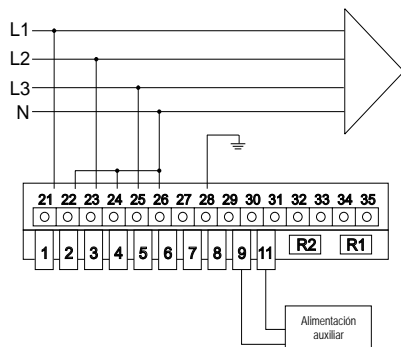
QNA 413

Power quality analyzers

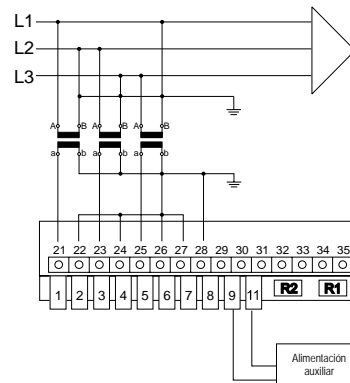


Connections

LV 4 wires



MV 3 wires



QNA 423

Power quality analyzer with simultaneous measurement in two bus bars



Description

QNA 423 is a state-of-the-art power quality analyzer certified as a Class A device, in compliance with the **IEC-61000-4-30 Standard**. It takes measurements in compliance with the international standard and has a high degree of accuracy. Analysis of the power supply quality (voltage, flicker, harmonics, events, etc.) in two three-phase systems simultaneously. Therefore, the quality of the voltage wave can be determined in the installations where the power supply is received from two connection points.

Application

- Real-time supervision and continuous recording of the power supply quality in any measurement point.
- Detection and instantaneous recording of all events (in compliance with the **IEC Standard**) detected in the measurement point. It can be used to detect the origin of events and implement the necessary actions, with the appropriate preventive maintenance that can optimise the performance of the installation, improving the company's productivity.
- Analysis of the quality of the wave in sub-stations that receive the power supply from two lines.
- Industries that receive the power supply from the two sub-stations or two transformers.
- Companies that must analyse the input and output voltage of an auxiliary power supply system (generator set, UPS, etc).

Characteristics

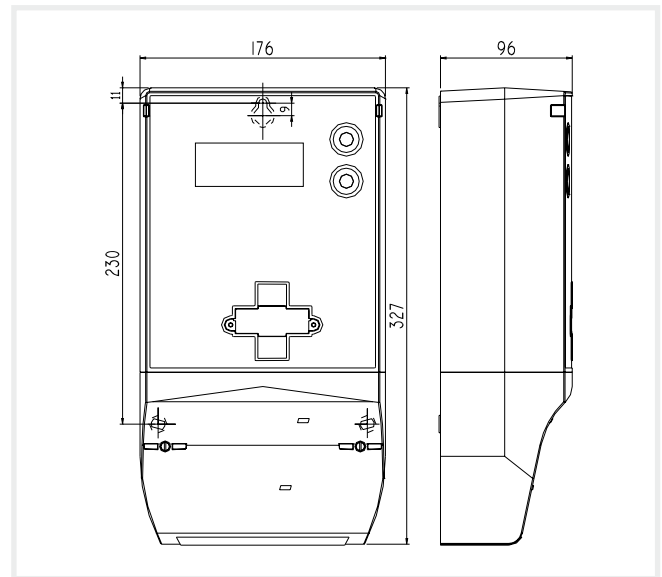
Power circuit	
Power supply range	100 - 230 V a.c. ($\pm 30\%$) / 90 - 400 V d.c.
Consumption	16 V·A / 8 W
Frequency	50 - 60 Hz
Auxiliary power circuit	
Battery	Ni MH
Autonomy	Configurable, up to 9999 s of continuous operation
Voltage measurement circuit	
Nominal voltage	3 x 63.5 / 110 Vac (for 3-wire connections)
Other voltages	Through the measurement transformers
Frequency	42.5 ... 69 Hz
Sampling frequency	14.130 kHz
Consumption of the voltage per phase circuit	0.3 V·A
Accuracy	
Voltage	0.1 % U_n (IEC-61000-4-30 class A)
Unbalance	$\pm 0.15\%$ (IEC-61000-4-30 class A)
Flicker	5 % (IEC-61000-4-15, IEC-61000-4-30 class A)
Harmonics	IEC-61000-4-7 class I, IEC-61000-4-30 class A
Communications	RS-232 / RS-485, GPRS / GSM / RS-232
Data memory	
Size	4 MB
Setup	Rotary (FIFO)
Ambient conditions	
Usage temperature	0 °C ... +50 °C
Storage temperature	-20 °C ... + 70 °C
Build features	
Enclosure	In compliance with DIN 43859
Differential	IP 51
Dimensions	327 x 176 x 96 mm
Weight	2.3 kg
Safety	EN-61010-1 category III 600 V

QNA 423

Power quality analyzer with simultaneous measurement in two bus bars



Dimensions



Standards

EN 60664, EN 61036, VDE 110, UL 94, IEC-6100-4-30, IEC-6100-4-7, IEC-6100-4-15

Electromagnetic emission		Electromagnetic immunity	
EN 61000-3-2	Harmonics	EN 50082-2	Industrial immunity
EN 61000-3-3	Voltage fluctuations	EN 61000-4-2	Electrostatic discharge
EN 55022 class B	Driven	ENV 50140	EM Radiated field of RF
EN 55022 class A	Radiated	EN 61000-4-4	Quick temporary bursts
EN 50081-2	Industrial emission	ENV 50141	RF in common mode
-	-	EN 61000-4-5	Shockwave
-	-	EN 61000-4-8	50 Hz Magnetic field
-	-	EN 61000-4-11	Power supply interruptions

References

Voltage	Current	Power rating	Energy	Flicker	Harmonics and THD	Unbalance	Events	Certificate	Communications	Type	Code
•				•	25	•	•	Class A	RS-232 / RS-485	QNA-423 RS232/RS485	Q20421
				•	25	•	•	Class A	GPRS / GSM / RS-232	QNA-423 GPRS/RS232	Q20423

Distribution of memory

Type of file	Default storage capacity	Data stored
*.STD	39 days	Voltage, flicker, harmonics and unbalance
*.EVQ	minimum of 342 events	Measurement events (overvoltages, voltage gaps and interruptions)
*.EVE	4655 records	Events related to the analyzer (change of setup, change of hour, etc.)
*.H24	32 days	Data for the statistical study of the evolution of harmonics every 24 hours
*.STP	16 weeks	Weekly statistical voltage values, THD (<i>U</i>), flicker, frequency and unbalance

La distribución de la memoria es flexible y configurable por el usuario.

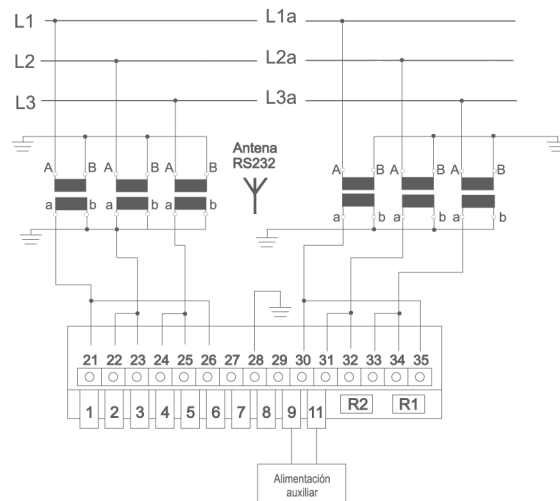
QNA 423

Power quality analyzer with simultaneous measurement in two bus bars



Connections

MV 3 wires



QNA 412

Power quality analyzer that measures voltages and currents



Description

QNA 412 is a state-of-the-art power quality analyzer certified as a class A device, in compliance with the **IEC-61000-4-30 Standard**. It takes measurements in compliance with the international standard. In addition to the analysis of the variables related to the quality of supply (voltage, flicker, harmonics, events, etc.), it also acts as a network analyzer and redundant counter, since it can be used to analyse the current signals, power consumed (active and reactive), the power factor and active and reactive energy consumed or generated with an accuracy of 0.2S, as in the case of the high-precision energy meters.

Application

- Supervise the optimum operation of electric installations and transformers. The LV connection enables the supervision of the saturation of the power transformer and the reactive energy consumed in each installation.
- Detection and instantaneous recording of all events (in compliance with the **IEC Standard**) detected in the measurement point. It can be used to detect the origin of events to implement the necessary actions and carry out the preventive maintenance actions, in order to optimize the performance of the installation, thus increasing the company's productivity.
- It can work as a redundant counter to check the energy charged by the company. The unit is fully sealable, so that it can not be tampered with.

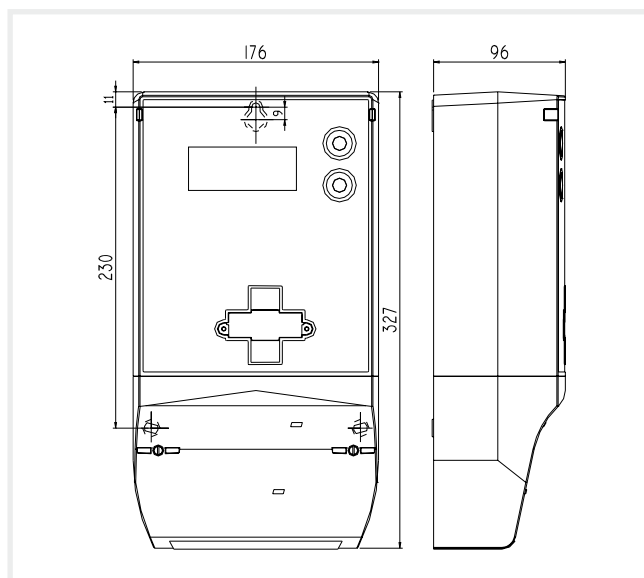
Characteristics

Power circuit	
Power supply range	100 - 400 Vac ($\pm 30\%$) / 90 - 730 Vdc
Consumption	16 V-A / 8 W
Frequency	50 - 60 Hz (QNA 412-T type, only 50 Hz)
Auxiliary power circuit	
Battery	Ni MH
Autonomy	Configurable, up to 9999 s of continuous operation
Voltage measurement circuit	
Nominal voltage	3 x 500 / 866 Vac (for 4-wire connections) 3 x 500 Vac (for 3-wire connections) 110 V c.a. (only for QNA 412-T type)
Other voltages	Through the measurement transformers
Frequency	42.5 ... 69 Hz
Sampling frequency	14.130 kHz
Consumption of the voltage per phase circuit	0.3 V-A
Current measurement circuit	
Measurement margin	.../5 (6) A (input with galvanic insulation) .../1 (1.2) A (input with galvanic insulation).../2 V.../ITF-EXTERIOR
Overload (permanent)	40 A (in types .../5 A) and saturated at $1.2 I_n$
Consumption of the circuit, current per phase	0.01 V-A
Maximum sampling frequency	14.130 kHz
Energy meter, maximum value	1 999 999 kWh (rotates)
Accuracy	
Voltage	0.1 % U_n (IEC-61000-4-30 class A)
Current	0.1 % I_n (IEC-61000-4-30 class A)
Energy	Class 0.2S in accordance with EN-62053-22
Unbalance	$\pm 0.15\%$ (IEC-61000-4-30 class A)
Flicker	5 % (IEC-61000-4-15 , IEC-61000-4-30 class A)
Harmonics	IEC-61000-4-7 class I, IEC-61000-4-30 class A
Communications	
RS-232 / RS-485, GPRS / GSM / RS-232, Ethernet	
Data memory	
Size	4 MB
Setup	Rotary (FIFO)
Ambient conditions	
Usage temperature	0 °C ... +50 °C
Storage temperature	-20 °C ... +70 °C
Build features	
Enclosure	In compliance with DIN 43859
Differential	IP 51
Dimensions	327 x 176 x 96 mm
Weight	2.3 kg
Safety	
EN-61010-1 category III 600 V	

QNA 412

Power quality analyzer that measures voltages and currents

Dimensions



Standards

EN 60664, EN 61036, VDE 110, UL 94			
Electromagnetic emission		Electromagnetic immunity	
EN 61000-3-2	Harmonics	EN 50082-2	Industrial immunity
EN 61000-3-3	Voltage fluctuations	EN 61000-4-2	Electrostatic discharge
EN 55022 class B	Driven	ENV 50140	EM Radiated field of RF
EN 55022 class A	Radiated	EN 61000-4-4	Quick temporary bursts
EN 50081-2	Industrial emission	ENV 50141	RF in common mode
-	-	EN 61000-4-5	Shockwave
-	-	EN 61000-4-8	50 Hz Magnetic field
-	-	EN 61000-4-11	Power supply interruptions

References

Voltage	Current	Power rating	Energy	Flicker	Harmonics and THD	Unbalance	Events	Certificate	.../5 A	.../1 A	.../2 V	.../ITF-EXTERIOR	RMS Gráph	Forma onda evento	Communications	Type	Code
•	•	•	•	•	•	•	•	A	•						RS-232 / RS-485	.../5 A	Q20510
•	•	•	•	•	•	•	•	A		•					RS-232 / RS-485	.../1 A	Q20510 001
•	•	•	•	•	•	•	•	A			•				RS-232 / RS-485	.../2 V	Q20510 002
•	•	•	•	•	•	•	•	A				•			RS-232 / RS-485	.../ITF-EXTERIOR	Q20510 003
•	•	•	•	•	•	•	•	A	•						GPRS / GSM / RS-232	.../5 A	Q20530
•	•	•	•	•	•	•	•	A		•					GPRS / GSM / RS-232	.../1 A	Q20530 001
•	•	•	•	•	•	•	•	A			•				GPRS / GSM / RS-232	.../2 V	Q20530 002
•	•	•	•	•	•	•	•	A				•			GPRS / GSM / RS-232	.../ITF-EXTERIOR	Q20530 003
•	•	•	•	•	•	•	•	A	•						Ethernet	.../5 A	Q20542
•	•	•	•	•	•	•	•	A		•					Ethernet	.../1 A	Q20542 001
•	•	•	•	•	•	•	•	A			•				Ethernet	.../2 V	Q20542 002
•	•	•	•	•	•	•	•	A				•			Ethernet	.../ITF-EXTERIOR	Q20542 003
•	•	•	•	•	•	•	•	A					•	•	Ethernet	QNA-412 T Ethernet	Q20543

QNA 412

Power quality analyzer that measures voltages and currents

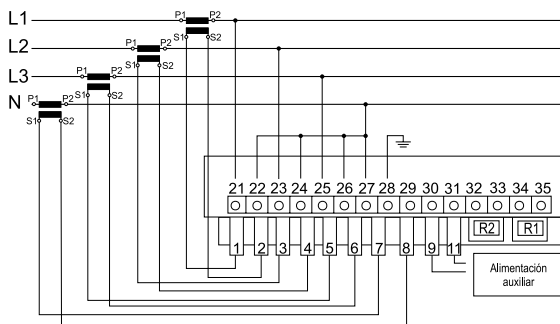


Distribution of memory

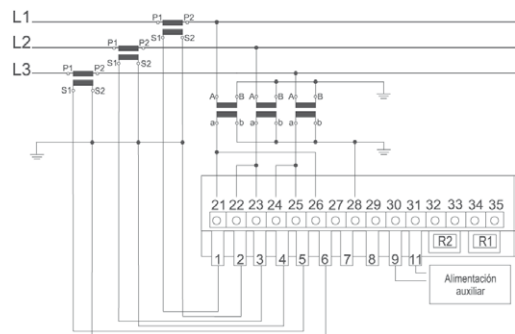
Type of file	Default storage capacity	Data stored
*.STD	74 days	Voltage, flicker, harmonics and unbalance
*.EVQ	minimum of 342 events	Measurement events (overvoltages, voltage gaps and interruptions)
*.EVE	4655 records	Events related to the analyzer (change of setup, change of hour, etc.)
*.WAT	32 days	Active, reactive <i>L</i> and reactive <i>C</i>
*.H24	32 days	Data for the statistical study of the evolution of harmonics every 24 hours
*.STP	16 weeks	Weekly statistical voltage values, THD (<i>U</i>), flicker, frequency and unbalance

Connections

LV 4 wires



MV 3 wires



QNA-P

Portable power quality analyzer



Description

Portable electric power quality analyzer that measures and records the data in compliance with the class A **IEC-61000-4-30 Standard**. Specially designed for outdoor measurements or in situations that require a highly accurate and very robust unit.

The **QNA-P** enclosure has an IP 67 degree of protection, which guarantees its robustness to strong impacts. The **QNA-P** analyzer has been tailor-made with clips and it has a wide range of flexible (LV measurements) and rigid clips (LV and MV Measurements). The internal switches can be adapted to any type of network (3/4 wires), with the use of its rigid (**CP** type) and flexible (**C-FLEX** type) clips.

Application

- The **QNA-P** portable analyzer is highly versatile and can combine rigid and flexible nucleus clips. Its robustness makes it ideal for the intake of measurements in places subject to severe weather conditions.
- The unit has been specially designed for the execution of audits and revisions, since it has been certified as Class A, in compliance with the **IEC-61000-4-30 Standard**, so that the measurements taken can be used for any type of verification; a pattern element is used during the intake process.
- The internal GSM type can also be used to download the information remotely and draft a report with the data, even before removing the analyzer, which avoids the need of travelling to the installations.

Characteristics

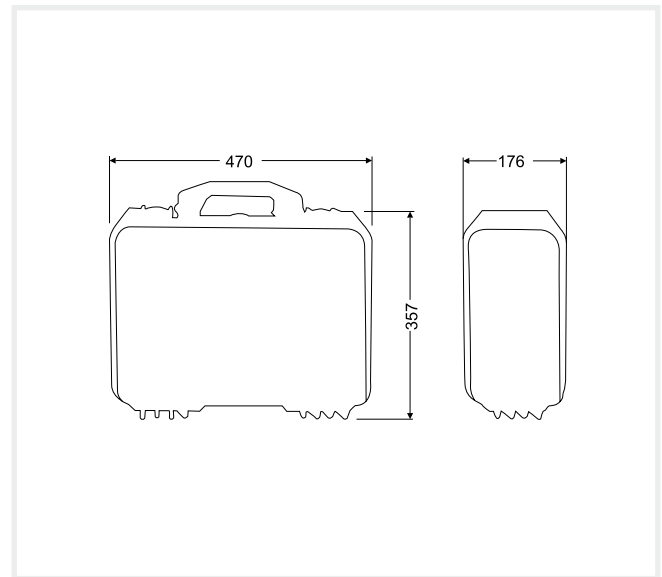
Power circuit	
Power supply range	100 - 240 Vac
Consumption	16 V·A / 8 W
Frequency	50 - 60 Hz
Auxiliary power circuit	
Battery	Ni MH
Autonomy	Configurable, up to 9999 s of continuous operation
Voltage measurement circuit	
Nominal voltage	3 x 500 / 866 Vac (for 4-wire connections) 3 x 500 Vac (for 3-wire connections)
Other voltages	Through the measurement transformers
Frequency	42.5 ... 69 Hz
Sampling frequency	14.130 kHz
Consumption of the voltage per phase circuit	0.3 V·A
Current measurement circuit	
Measurement margin	Depending on the clip
Maximum current	1.2 I_n
Maximum sampling frequency	14.130 kHz
Energy meter, maximum value	1 999 999 kW·h (rotates)
Accuracy	
Voltage	0.1 % U_n (IEC-61000-4-30 class A)
Current	0.1 % I_n (IEC-61000-4-30 class A)
Energy	Class 0.2S in accordance with EN-62053-22
Unbalance	± 0.15 % (IEC-61000-4-30 class A)
Flicker	5 % (IEC-61000-4-15 , IEC-61000-4-30 class A)
Harmonics	IEC-61000-4-7 class I, IEC-61000-4-30 class A
Communications	RS-232 / RS-485, GPRS / GSM / RS-232
Data memory	
Size	4 MB
Setup	Rotary (FIFO)
Ambient conditions	
Usage temperature	-20 °C ... +65 °C
Build features	
Enclosure	Sealed enclosure
Differential	IP 67
Dimensions	470 x 357 x 176 mm
Weight	6.7 kg
Safety	EN-61010-1 category III 600 V

QNA-P

Portable power quality analyzer



Dimensions



Standards

EN 60664, EN 61036, VDE 110, UL 94

IEC-61000-4-30 class A	Quality
IEC-61000-4-7 class I	Harmonics
IEC-61000-4-15	Flicker

Electromagnetic emission

EN 61000-3-2	Harmonics
EN 61000-3-3	Voltage fluctuations
EN 55022 class B	Driven
EN 55022 class A	Radiated
EN 50081-2	Industrial emission
-	-
-	-
-	-

Electromagnetic immunity

EN 50082-2	Industrial immunity
EN 61000-4-2	Electrostatic discharge
ENV 50140	EM Radiated field of RF
EN 61000-4-4	Quick temporary bursts
ENV 50141	RF in common mode
EN 61000-4-5	Shockwave
EN 61000-4-8	50 Hz Magnetic field
EN 61000-4-11	Power supply interruptions

References

Analyzer	Clips	Type	Code
QNA-412 RS232/RS485	3 x C-FLEX 20k/2k/200-80	Kit 1 QNA-P RS	Q20711
QNA-412 GPRS/RS232	3 x C-FLEX 20k/2k/200-80	Kit 1 QNA-P GPRS	Q20731
QNA-412 RS232/RS485	3 x C-FLEX 20k/2k/200-80, kit 3 CP-5 A and 1 x CPR-500	Kit 2 QNA-P RS	Q20712
QNA-412 GPRS/RS232	3 x C-FLEX 20k/2k/200-80, kit 3 CP-5 A and 1 x CPR-500	Kit 2 QNA-P GPRS	Q20732

Distribution of memory

Type of file	Default storage capacity	Data stored
*.STD	74 days	Voltage, flicker, harmonics and unbalance
*.EVQ	minimum of 342 events	Measurement events (overvoltages, voltage gaps and interruptions)
*.EVE	4655 records	Events related to the analyzer (change of setup, change of hour, etc.)
*.WAT	32 days	Active, reactive <i>L</i> and reactive <i>C</i>
*.H24	32 days	Data for the statistical study of the evolution of harmonics every 24 hours
*.STP	16 weeks	Weekly statistical voltage values, THD (<i>U</i>), flicker, frequency and unbalance

CAVA

Single-phase power quality analyzers



Description

The **CAVA** series analyzers are measurement equipment that can analyze and record the main supply quality parameters of an electricity network. There are three types with different measurement capacities. The basic performance features are stated next:

- Analysis of 100% of the voltage and current cycles
- Optional measurement of currents between 2 A and 10 000 A with different current sensing clips
- Large storage capacity
- Easy installation and programming
- Programming and extraction of data with a PC
- **PowerVision** software used to analyse measurements.

Application

The **CAVA** single-phase analyzer has been specially designed for the intake of LV measurements during long periods of time, with the purpose of determining the supply quality existing in the measurement point (voltage, flicker, harmonics, etc). It is the perfect product to analyze the difference in voltage between the start and end of distribution lines. Its easy installation and the user-oriented **PowerVision** software can be used to analyze any information and apply the quality standards (for ex., **EN-50160**) to the measurements taken to determine the degree of quality.

Characteristics

Power circuit

Power supply (*) (**)	230 Vac
Voltage tolerance	- 15 % / + 15 %
Frequency	50 - 60 Hz
Consumption	3 V·A

(*) The power supply voltage is taken during the measurement

(**) Other voltages, on demand

Current measurement circuit

With current sensing clip:

CP-2000-200	20 ... 2 000 Aac (scale 2 000 A) 2 ... 200 Aac (scale 2 000 A)
CPR-1000	10 ... 1 000 Aac
CPR-500	5 ... 500 Aac
CP-200 (M1-U)	2 ... 200 Aac
CP-100 (M1-U)	1 ... 100 Aac
CP-5	50 mA ... 5 Aac
C-FLEX 2000/200-45	200 ... 2,000 Aac
C-FLEX 2000/200-80	200 ... 2,000 Aac
C-FLEX 10 k / 1 K - 120	1 000 ... 10 000 A c.a.

Measurement accuracy (+5 °C ... / +45 °C)

Voltage	0.5 % of the reading
Current	0.5 % of the reading
Power ratings	1 % of the reading

Error in current sensing clips is not included

Data memory

Recording capacity	1 MB
Recording period	Programmable
Software: Program to configure the reading and presentation of data in an environment	PowerVision

Ambient conditions

Limit temperature	0 °C ... +50 °C
Relative humidity	Maximum 85 % without condensation

Standards

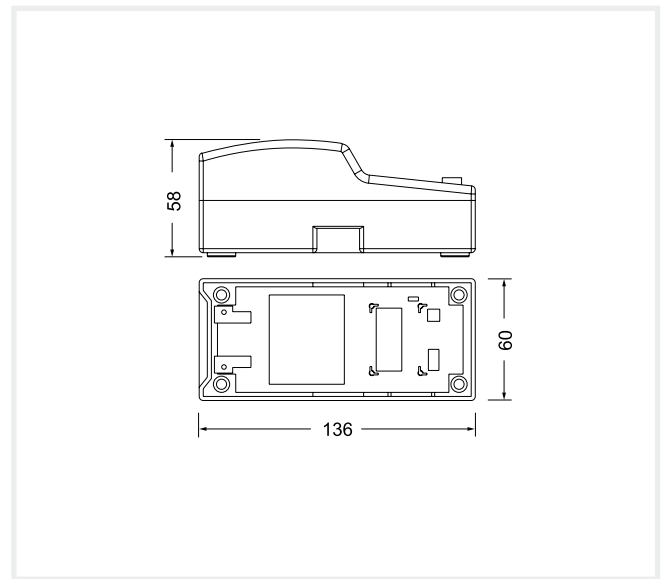
EN-61010 cat. III (Safety), IEC-60664, VDE-0110, UL-94, EN-50081-1, EN-50082, EN-61000-4-15

CAVA

Single-phase power quality analyzers



Dimensions



References

RMS voltage	RMS current	Active, reactive and apparent power	FP	Frequency	Weighted RMS Flicker: WA	Flicker: Pst	Harmonics: THD	Gaps (Number of cycles)	Micro-drops (Number of cycles)	Classification of intervals of U	% correct cycles	Communications	Type	Code
•				•	•	•	•	•	•	•	•	RS-232	CAVA-251	Q20112
•	•			•	•	•	•	•	•	•	•	RS-232	CAVA-252	Q20122
•	•	•	•	•	•	•	•	•	•	•	•	RS-232	CAVA-253	Q20132

Distribution of memory

Type of file	Default storage capacity	Data stored
*.STD	74 days	Voltage, current, power, FP, flicker, harmonics, ...
*.EVQ	minimum of 342 events	Measurement events (overvoltages, voltage gaps and interruptions)
*.EVE	4655 records	Events related to the analyzer (change of setup, change of hour, etc.)

Relation between products and accessories

		Converters	Transformers	Clips	Software
					
		Communications converters	Measurement transformers	Current sensing clips	Energy management software
		See M.5	See M.7	See M.8	See M.9
QNA-413		•	•	--	•
QNA-423		•	--	--	•
QNA-412		•	•	--	•
QNA-P		--	--	•	•
CAVA		--	--	•	•