

# CA 8345

## Class A power quality analyser



### Recording

Hundreds of parameters stored in memory every 10/12 periods.

### Alarms

The parameters are monitored within configurable limits.

### Transients

Fast events are captured and their characteristics are stored in memory.

### TrueInrush

Studying loads during startup is now much simpler.

**QUALISTAR**  
Class A

## The Qualistar moves up a grade

- Voltage quality diagnostics
- Full compliance with IEC 61000-4-30 Class A
- Highly communicating instrument
- Qualistar range of easy-to-use products

IP 54



WEB SERVER



WIFI

1000V  
CAT IV



Measure up



# Power and energy quality analyser

Intended for inspection and maintenance teams on industrial or tertiary installations, the Qualistars give you a snapshot of the main electrical network quality features.

**Comfortable to handle and equipped with an intuitive GUI, these analysers offer high measurement accuracy. They also feature numerous calculated values and several processing functions.**



Measurement terminal strip with isolated inputs

Multilingual online help

RJ45 connector

SD card reader

Large colour touch screen

USB connector

USB drive connector

All the data recorded are saved on an accessible SD card. They can be transferred onto a PC by means of the software or by duplication on a USB drive connected directly to the Qualistar. The memory card can also be extracted.



# Functions & Measurements



## General

- Portable energy quality analyser
- Instrument compliant with IEC 61000-4-30 edition 3.0 Class A for all functions
- Measurements on all installation types: three-phase, Aron connection, etc.
- Electrical network monitoring with setting of alarms
- IP54 casing 55 mm thick with stand
- IEC 61010 CAT IV 1000 V
- Parameterization with software for EN 50160 reports



## Measurements

- All DC components taken into account
- Harmonics (amplitude and phase shift) from DC to the 127rd order
- Inter-harmonic subgroups from 0 to the 126nd order
- 2 carrier current frequencies monitored
- Measurement of P, N, Q<sub>1</sub>, S and D power values (total and per phase)
- Measurement of energy values (total and per phase) with Energy valuation
- Internal GPS for precise UTC synchronization (NTP possible too)



## Communication

- USB 2.0 external flash drive supported (host devices)
- USB 2.0 connection with a PC
- Ethernet 100 Mbps communication
- Wi-Fi 802.11b/g communication
- Webserver for a remote user interface with Android, Microsoft and iOS applications
- Backup and recording of screenshots (image and data)
- Recording and export to a PC
- Software for real-time data recovery and communication with a PC



## Ergonomics

- Wide 7-inch colour LCD touch screen (WVGA)
- Real-time display of waveforms (4 voltage and 4 current)
- DC current sensor power supply
- 5 x 50 Hz/60 Hz AC/DC voltage inputs
- User-friendly, multilingual GUI
- Intuitive use
- User profiles
- Fully multi-task instrument
- Automatic recognition of different current sensors
- Display of phasor diagrams
- Waveforms at 512 samples per cycle, with Min/Max 2.5µs
- Real-time waveforms displayed from 1 cycle to 10/12 cycles



## Calculations

- Calculation of K factor & FHL
- Calculation of distorting voltages and currents
- Calculation of Displacement Power Factor (DPF) and Power Factor (PF)
- Calculation of Pst & Plt flicker and the sliding Pst
- Calculation of unbalance (current and voltage)
- Waveform Inrush with a duration of 10 minutes
- RMS and Peak Inrush for up to 30 minutes
- Capture of hundreds of 2.5 µs transients
- Capture shockwaves up to 12kV with a resolution of 500ns
- Recording of trends
- Trend recording period from 200 ms to 2 hrs

# Standard verification campaigns

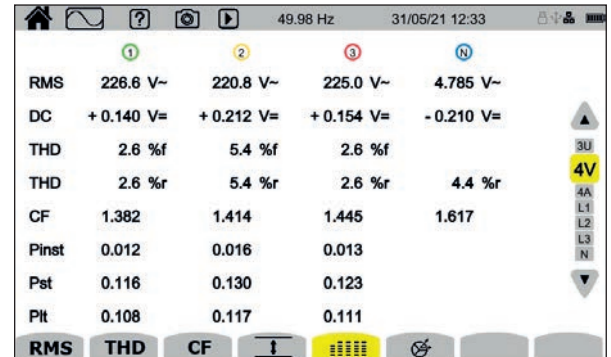
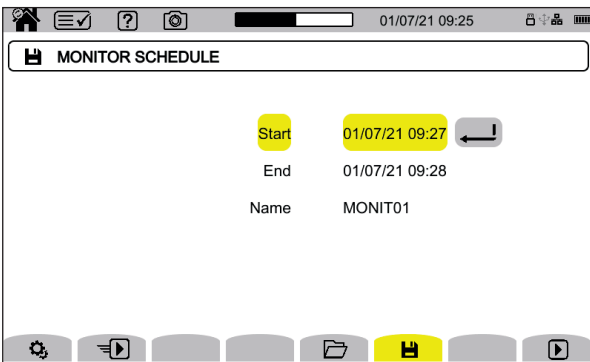
## IEC 61000-4-30

### Definition of the measurement methods

The International Electrotechnical Commission (IEC) has drawn up the IEC 61000-4-30 standard. This standard defines:

- the methods for measuring the quality parameters for the supply of power to electrical power networks
- in the form of alternating current at a stated fundamental frequency
- and how to interpret the results.

The measurement parameters are described for each applicable parameter in terms which provide reliable, repeatable results, however the method is implemented.

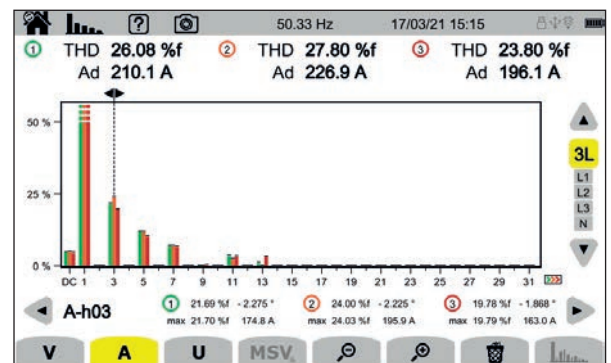


## EN 50160

### Homogeneous tolerances

The EN 50160 standard characterizes the quality of the voltage supplied. It presents the different types of disturbances which may affect the voltage on a network. It lists the parameters to be monitored and defines how long the parameters should be monitored for.

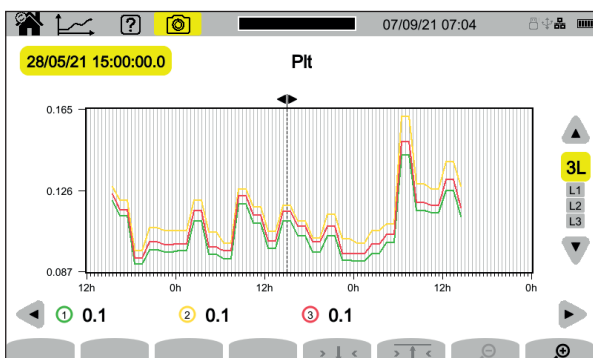
With the PAT3 software, the Monitoring mode can be used to set up a simplified configuration of all the limits to be monitored and the parameters to be recorded.



## IEC 61000-4-7

### Harmonics and interharmonics

The IEC 61000-4-7 standard defines the measurement methods for voltage quality analysers so that they remain compliant with the emission levels stipulated in certain standards (e.g. the harmonic current limits specified by IEC 61000-3-2) and for the measurement of harmonic currents and voltages on the power networks themselves.



## IEC 61000-4-15

### Short or long-term flicker

This is caused by mains voltage modulation. When it affects lighting, it gives an impression of unstable vision due to a light stimulus whose luminance or spectral distribution fluctuates over time.

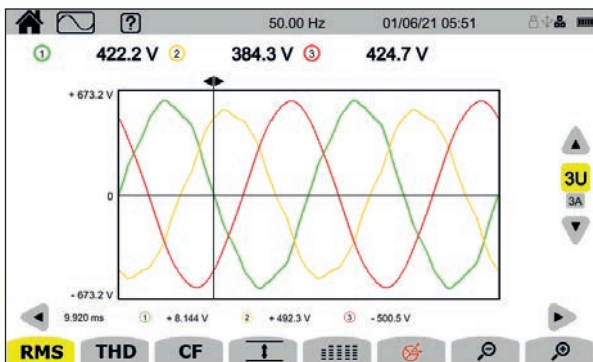
There are 2 parameters calculated from the mains voltage.

- $P_{st}$  which is a short-term assessment based on a 10-minute observation period
- $P_{lt}$  which is a long-term assessment, usually over a period of 2 hours

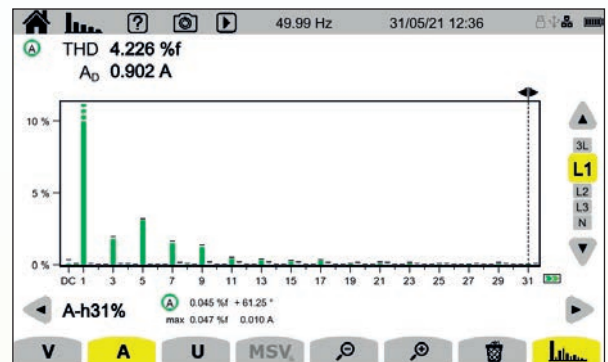
# The CA 8345: a diagnostic tool

## Viewing the signal and its components

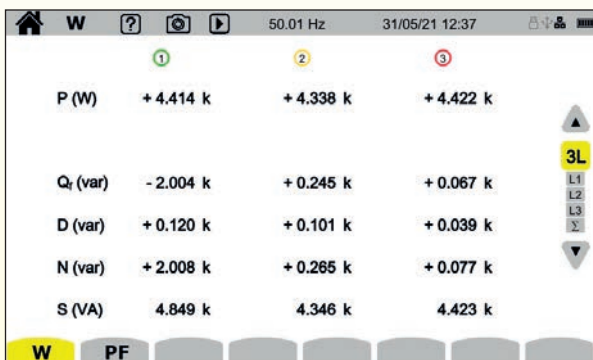
The CA 8345 is an easy-to-use analytical tool. After connection, the CA 8345 immediately and totally automatically displays the voltages up to 1,000 V AC and DC and the currents, thanks to a function which automatically recognizes the sensor connected. A large number of sensors are compatible with the Qualistar range.



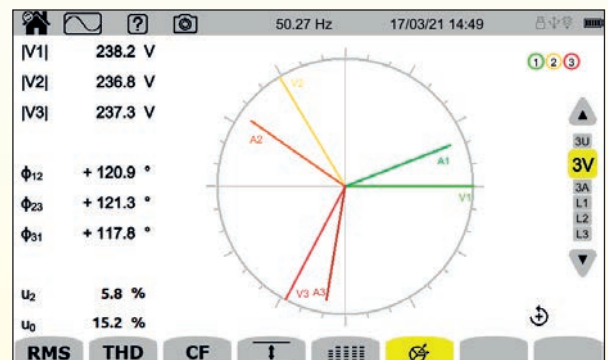
The Waveform mode automatically provides an oscillogram showing the voltage and/or current waveforms.



It is very simple to measure harmonics and interharmonics with the CA 8345, which is very easy to use as an analytical tool.

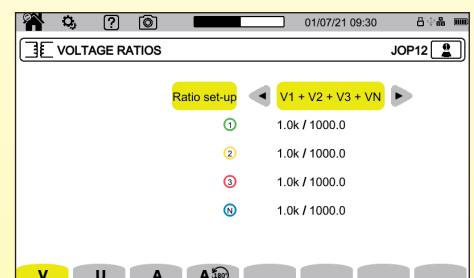
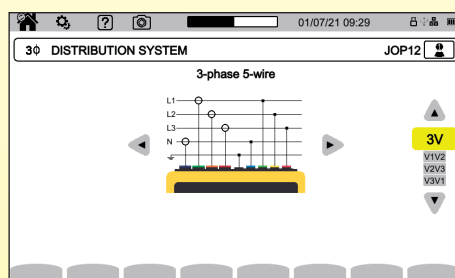
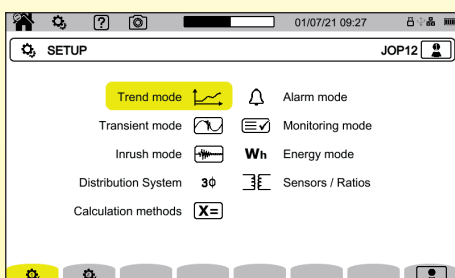


The CA8345 can be used to monitor all the power values (P, Q, D, etc.) in real time over periods of varying durations. Measurement and analysis of all the power values measured enables you to perform a full power survey in compliance with the standards.



The phase relation between the voltages and currents is displayed with a vectorial diagram. The vectorial representation allows you to confirm that the instrument is connected to the mains.

## With a simplified configuration

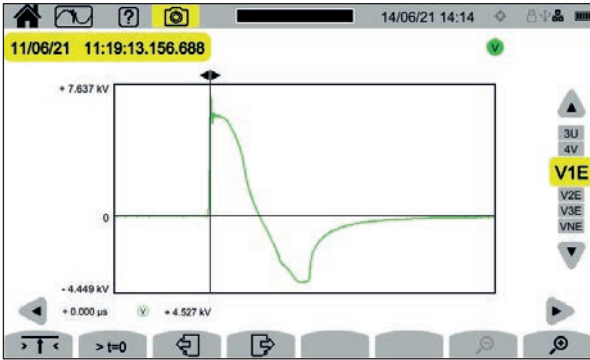
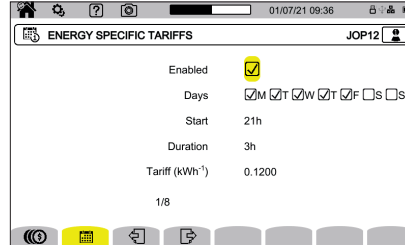


# Standard verification campaigns

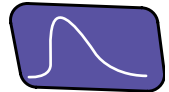
W/h

## Energy valuation

The Qualistar Class A offers users all the measurements required to successfully implement energy efficiency projects and monitor electricity distribution.



## Shockwaves

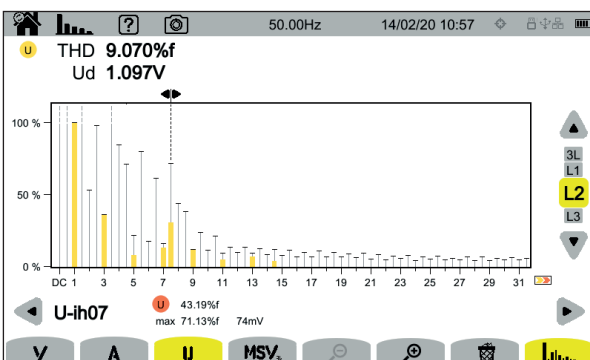
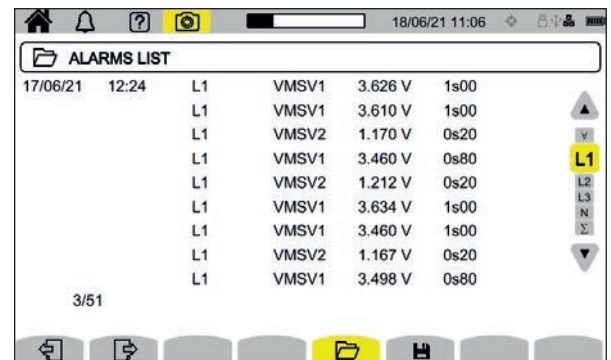


Usually caused by lightning, shockwaves are spectacular instantaneous electrical voltage surges. They also propagate in the digital network. The Qualistar Class A can withstand shockwaves up to 12 kV which are sampled every 500 ns.

MSV<sub>3k</sub>

## Carrier currents

In the harmonic analysis function, there is also a mode for monitoring carrier currents. After defining their frequency in the instrument, the command signals will then be measured.



## Interharmonics



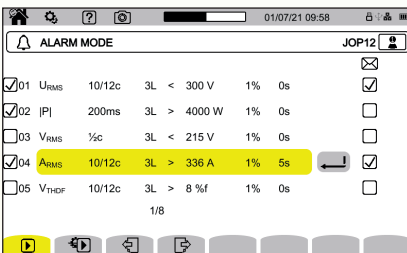
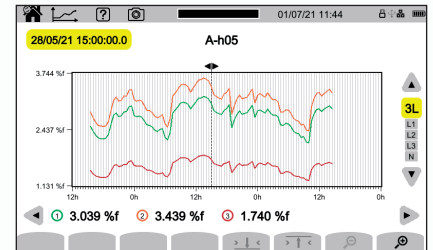
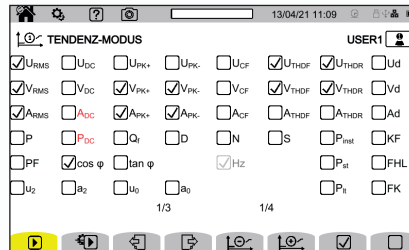
The Qualistar Class A models can be used to measure and display the interharmonics, as requested in IEC 61000-4-7, for very precise analysis of all the disturbances on an electrical network.

# Monitoring



## Trend

The trend graph shows the variations of the parameters measured over time every 200ms.

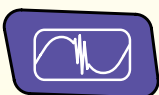


Timestamp	Parameter	Value	Duration
19/05/21 17:02	L1 U_RMS	232.5 V	0s19
	L1 U_RMS	292.3 V	0s19
	L1 U_RMS	204.7 V	0s19
20/05/21 16:44	L2 U_RMS	254.7 V	0s19
	L3 U_RMS	211.2 V	0s19
	L1 U_RMS	0.000 V	1s80
	L2 U_RMS	0.156 V	1s80
	L3 U_RMS	0.000 V	1s80

## Alarms



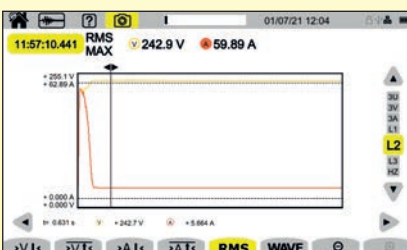
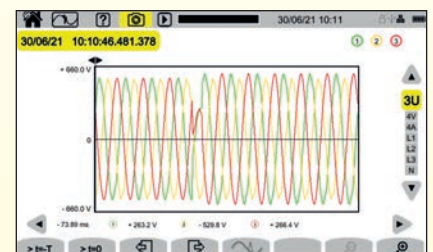
Alarms for parameterizing the threshold overruns to be monitored, which are then recorded and time-stamped with the duration and extreme values. Users can be informed directly by email when an alarm is triggered.



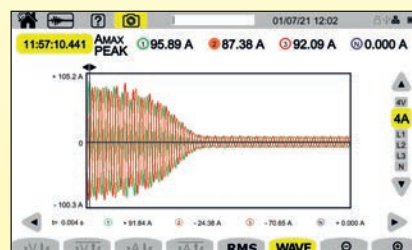
## Transients

Transients correspond to peaks in the voltage or current waveform. Shockwaves are extremely fast transients with even greater possible amplitude

Event ID	Date/Time	Value	Unit
TRANSY1 0001	30/06/21 10:09:12.549.664	V2	
0002	30/06/21 10:09:12.974.851	V2	
0003	30/06/21 10:10:46.481.378	V1	
0004	30/06/21 10:10:47.474.058	V1	
0005	30/06/21 10:59:16.406.975	V1	
0006	30/06/21 10:59:16.842.430	V1	

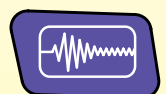


30 min



10 min

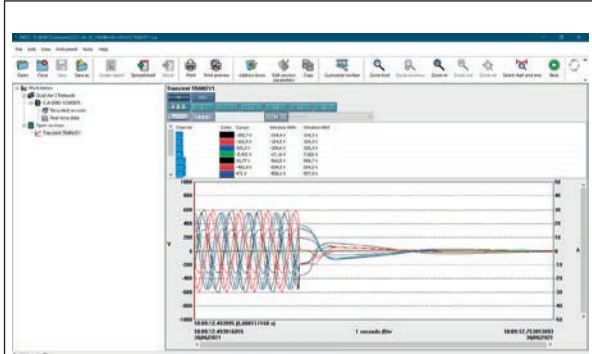
## TrueInrush



For tests when starting up loads, these instruments can record 1/2-period values covering more than half an hour and the waveform of the signal (three-phase voltages and currents).

# Communication

## Software

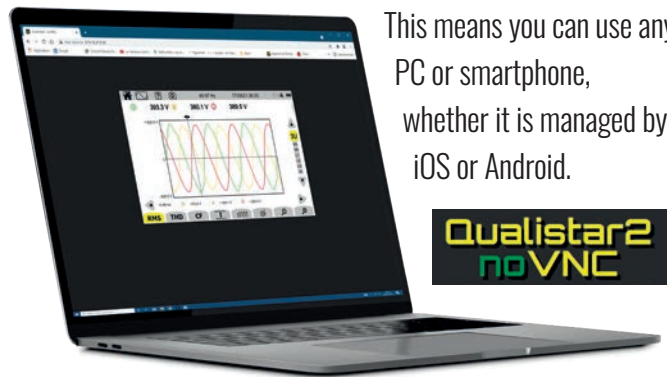


The Power Analyzer Transfer software processes the measurements made with the Qualistar Class A.

- Configuration of the instrument: setup, recording, alarms
- Real-time display
- Processing of all the recorded data
- Transfer of screenshots and transients
- Data export into spreadsheet (Excel, CSV)
- Data export in graphic form in Windows™

## The web server

The Qualistar Class A models are equipped with firmware for remote access. It can be controlled via VNC, which controls a remote machine while displaying its desktop. It can be activated from any browser (Chrome, Edge, Firefox, Qwant, etc.).



This means you can use any PC or smartphone, whether it is managed by iOS or Android.

## Communication

In addition to using media such as SD cards and USB keys, it is possible to recover the measurements and communicate with the instrument remotely via USB, remote links, Wifi (direct or via server) or RJ45.

There is no limit to accessibility of the measurements.



### IRD Server/DataView Synchronisation

All our IT networks are protected against external attack. Thanks to the provision of access to our DataView Synchronisation, a single authorized IP output address allows you to transmit your measurements all over the world.

### SCPI commands

With an integrated interfacing software layer, it is possible to control your instrument via its own software application. SCPI commands are available for all the instrument's functions.

### Data files in JSON format

Saved in JSON format, all the recordings are accessible and can be processed with a third-party and/or proprietary application.





# Applications



## Tertiary and industrial

Today, electrical distribution networks are judged according to their ability to power loads causing disturbances and loads sensitive to disturbances.

The latter may take multiple forms.

A voltage quality analyser can be used to detect and qualify each one: outage, dip, voltage swell, flicker, THD, voltage variations, etc.

## Energy efficiency

For energy diagnostics on a site, a logger must be set up to record the electrical power and energy consumed. Once all the measurements have been taken, the billing data are compared with the actual measurements.

The study determines whether corrective action needs to be taken. This action may take different forms: resizing of a transformer, implementation of filtering systems, replacement of faulty equipment, etc.

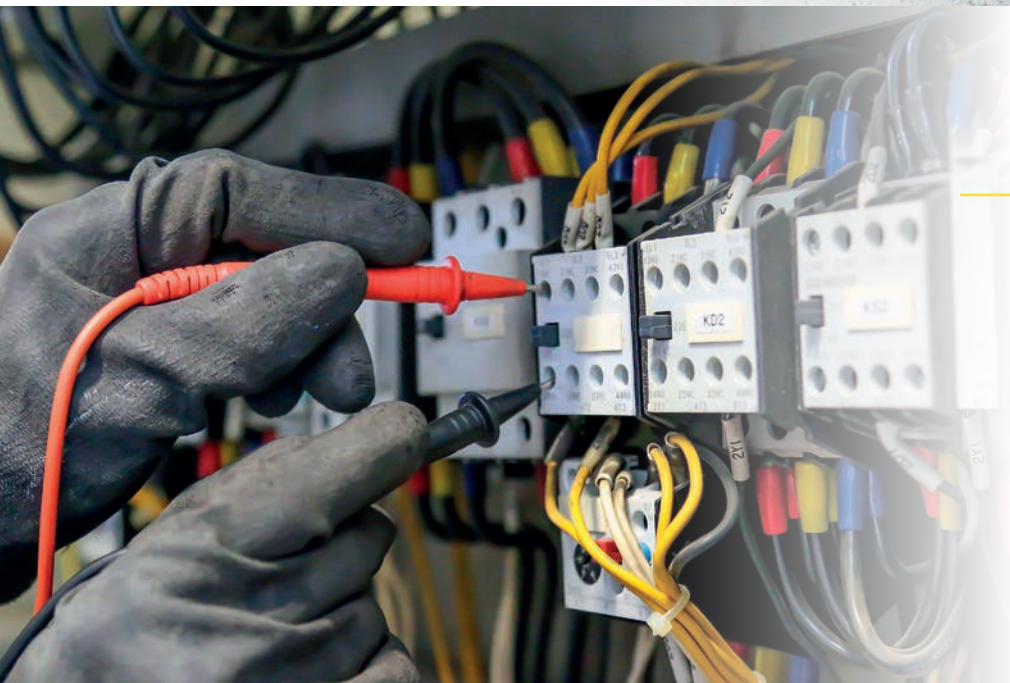
This analysis helps you to act in the right place at the right time to provide the best solution.



## Electrical maintenance

The spread of electronic power supplies in industrial processes has led to an increase in harmonic disturbances on the electrical network which have a direct impact on the quality of the energy distributed. In the short or medium term, these disturbances may cause failures across all the electrical devices connected to the network in question.

Harmonic currents have negative effects on nearly all the components in the electrical system, creating new dielectric, thermal and/or mechanical stresses.



# Power and energy quality analysers

## Current accessories



Model	MN93	MN93A	MINI94	MA194	PAC 93	A193-450 A193-800	C193	E94	J93
<b>Measurement range</b>	500 mA to 200 Aac	0.005 Aac to 100 Aac	50 mA to 200 Aac	100 mA to 10 kAac	1 A to 1,000 Aac 1 A to 1,300 Adc	100 mA to 10 kAac	1 A to 1,000 Aac	50 mA to 10 Aac/dc 100 mA to 100 Aac/dc	50 A to 3,500 Aac 50 A to 5,000 Adc
<b>Clamping diam. /length</b>	Ø 20 mm	Ø 20 mm	Ø 16 mm	Ø 70mm / 250mm Ø 100mm / 350mm Ø 300mm / 1,000mm	1 x Ø 39 mm 2 x Ø 25 mm	Ø 140 mm / 450 mm Ø 250 mm / 800 mm	52 mm	11.8 mm	72 mm
<b>IEC 61010</b>	600 V CAT III / 300 V CAT IV		IEC 61010 CAT III 600V/CAT IV 300 V	1000 V CAT III / 600 V CAT IV	600 V CAT III / 300 V CAT IV	1000 V CAT III / 600 V CAT IV	600 V CAT IV	600 V CAT III / 300 V CAT IV	600 V CAT III / 300 V CAT IV

### Essailec unit



A cable with an ESSAILEC plug can be used to perform tests without disturbing or interrupting the power supply circuit on the meters and the protection relays installed in the secondary circuits of current or voltage transformers. The main advantage is that it speeds up and simplifies measurement while ensuring maximum user safety.



### Reeling Box

This practical magnetized reeling box equipped with the MultiFix system lets you adjust the lengths of your cables. The reeling box can be opened to install banana cables for voltage measurements or MiniFlex MA194 sensors for current measurements, as required. It also makes it simple to stow your cables.

### Shoulder bag

All-terrain bag with watertight base and shoulder strap (380 x 280 x 200 mm)



### with internal compartment

Compartmented internal bag for storage.



## Magnetized mounting system



## Power supply accessories



### PA40W-2

The PA40W power supply with charger can power the instrument when it is used over long periods, so that you can work without draining the internal battery. It can also be used to recharge the battery.



### PA32ER

The PA32ER power supply/charger can also be used to connected directly to a 1,000 AC or DC electrical network, between phases or phase-neutral with banana leads.

	PA40W-2	PA32ER
Rated voltage and overvoltage category	600 V CAT III	1000 V CAT IV
Input voltage	100 to 260 V	100 to 1,000 V <sub>AC</sub> / 150 to 1,000 V <sub>DC</sub>
Input frequency	0 to 440Hz	DC, 40 to 70 Hz, 340 to 440Hz
Output power	40 W max	30 W max
Dimensions	160 x 80 x 57 mm	220 x 112 x 53 mm
Weight	460 g approx	900 g approx.



C8 adapter



Li-ion battery



Li-ion battery charge support

## CA8345

Inputs	Voltage/current, isolated
Voltage	5 V to 1,000 V <sub>AC</sub> and V <sub>DC</sub>
IEC 61000-4-30 (Ed 3)	Class A (Full)
Screen	7" colour LCD touch screen: 800 x 480 (WVGA)
Clock / GPS	Yes, built-in
Real-time mode	Yes
Sampling rate	Voltage 400 kSps / Current 200 kSps / Surge 2 MSps
Power mode	Yes
Energy mode	Yes
Unbalance mode	Composite
Harmonics mode	DC to 127rd order
Interharmonics mode	0 to 126nd order
Trend recording	> 900 parameters
Alarm mode (types / number)	52 / 20,000
Carrier current detection mode	Yes
Inrush capture (number)	100
2.5 µs transients (number)	No maximum (SD card)
Shockwaves	Up to 12 kV sampled every 500ns
EN50160 monitoring mode	With PAT3 software
USB communication	Yes
SD card	Accessible, external
Ethernet	Yes
Wifi	Yes
Web server	Yes
USB key port (Type A)	Yes
Battery cartridge	Li-ion – 5800 Ah
IEC 61010 safety	CAT IV 1000V
Protection	IP54
Operating temperature	[+0 °C; +40 °C]
Environmental compliance	IEC 61557-12 & IEC 126586
Dimensions (H x L x D)	200x285x55 mm / 1.9 kg
Warranty	3 years

## CA 8345 delivered with

- Safety datasheet
- 5 reeling boxes
- Shoulder bag
- USB A/B cable 1.80 m long
- Multilingual Quick Start Guide
- Set of 5 banana leads and crocodile clips
- Set of identification inserts and rings
- Verification certificate
- Removable wrist strap
- Magnetic hook
- SD memory card

## CA 8345 standard.....P01160657

- PA40W-2 mains power supply/charger

## CA 8345-1000.....P01160658

- PA32ER mains power supply/charger

## Accessories / Replacement parts

- 1000V STD PA32ER power supply..... P01103076
- PA40W-2 mains adapter..... P01102155
- C8 adapter..... P01103077
- Bag..... P01298083
- SD card..... P01103078
- Magnetized hook..... P01103079
- Wrist strap..... HX0122
- External battery charger support..... P01102130
- Li-ion battery..... P01296047
- C193 clamp..... P01120323B
- MN93 clamp..... P01106194
- MINI94 clamp..... P01120425B
- MN93A clamp..... P01120434B
- E94 clamp..... P01120044
- E3N/E27 adapter..... P01102081
- PAC93 clamp..... P01120079B
- J93 clamp..... P01120110
- In-vehicle charger..... HX0061
- AmpFlex® A193-450 mm clamp..... P01120526B
- AmpFlex® A193-800 mm clamp..... P01120531B
- MiniFlex MA194-250 mm clamp..... P01120593
- MiniFlex MA194-350 mm clamp..... P01120592
- MiniFlex MA194-1000 mm clamp..... P01120594
- 5 A casing..... P01101959
- ESSAILEC casing..... P01102131
- Reeling box..... P01102149
- Kit of banana leads with crocodile clips x5 P01295483
- C7 mains power cable..... P01295174

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