

# CA 8345

## Class A electrical network quality analyser



### QUALISTAR Class A

## Qualistar is gaining in power

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

### New

Motor parameter measurement.

### Recordings

Hundreds of parameters stored every 10/12 periods.

### Alarms

Parameters are monitored within configurable limits.

### Transients

Rapid events are captured and their characteristics stored in memory.

IP 54



WEB SERVER



WIFI



SD™



Measure up

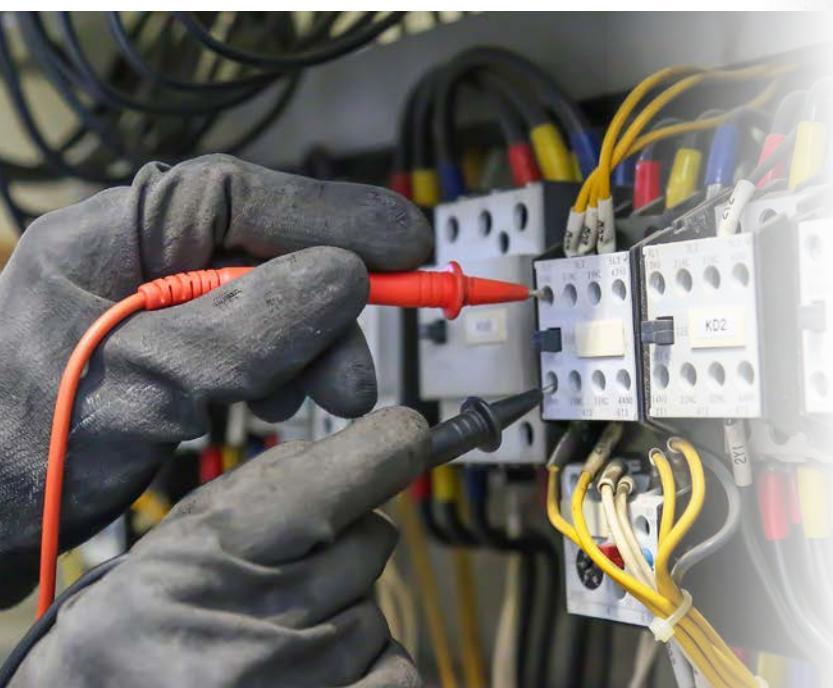


# Applications



## Energy efficiency

To perform an energy diagnosis of a site, a power and electrical energy consumption recorder must be used. Once all the measurements have been taken, a comparison is made between the billing and the actual measurements. The study determines whether or not corrective action should be taken. These actions can be of various types: resizing the transformer, installing filtering systems, replacing defective equipment, etc. This analysis allows us to intervene in the right place at the right time, providing the best solution.



## Tertiary and industry

Today, electrical distribution networks are judged on their ability to supply disruptive loads and loads that are sensitive to disruptions. These can take many forms. A voltage quality analyser can detect and classify each of them: outages, dips, surges, flicker, harmonic content, rapid voltage variations, etc.

## Electrical maintenance

The widespread use of electronic power supplies in industrial processes leads to an increase in harmonic disturbances on the electrical network, which directly impact the quality of the energy distributed. In the short or medium term, these disturbances may cause failures in all electrical instruments connected to the same network. Harmonic currents have negative effects on almost all components of the electrical system, creating new dielectric, thermal and/or mechanical stresses.

# Power and energy quality analyser

Designed for the control and maintenance of industrial or tertiary installations, Qualistar devices provide an instant snapshot of the main characteristics of the electrical network's quality.

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



Insulated input terminal block

All recorded information is saved on an accessible SD card. It can be transferred to a computer using the software, or by copying it to a USB flash drive connected directly to the Qualistar. The memory card can also be removed.



Large colour touch screen

Multilingual online help

USB connector

RJ45 connector

USB flash drive connector

SD card reader

# Power and energy quality analyser

Depending on the country, in order to comply with local standards, the CA 8345 can be configured to integrate the required measurements and thresholds.

## IEC 61000-4-30 Edition 3

### Definition of measurement methods

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

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

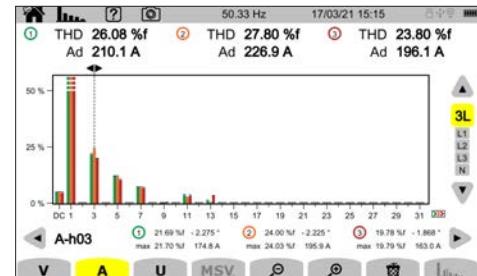
The measurement methods are described for each applicable parameter in terms that provide reliable and repeatable results regardless of how the method is implemented.



## IEC 61000-4-7

### Harmonics and interharmonics

The IEC 61000-4-7 standard specifies the instruments and measurement methods for voltage quality analysers, in particular harmonic measurements. It applies to power supply networks and the devices connected to them.



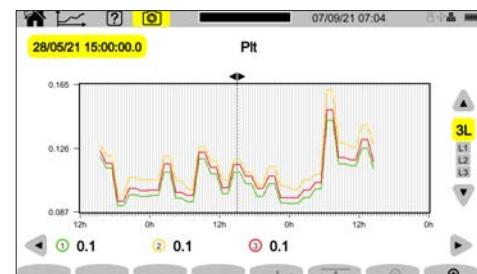
## IEC 61000-4-15

### Short-term or long-term flicker

Flicker corresponds to a modulation in the mains voltage. In relation to lighting, this gives an impression of instability in the visual sensation due to a light stimulus whose luminance or spectral distribution fluctuates over time.

Two parameters are calculated from the mains voltage.

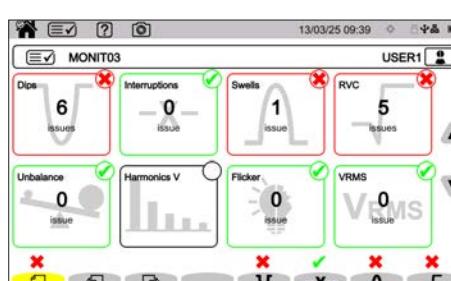
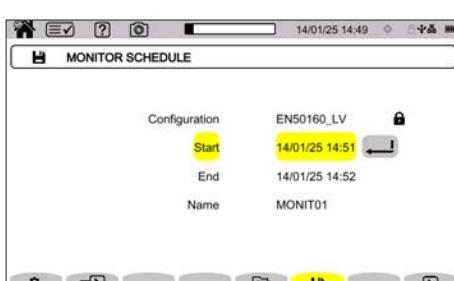
- $P_{st}$ , which is a short-term assessment based on a 10-minute observation period
- $P_{lt}$ , which is a long-term assessment, generally 2 hours



## EN 50160 Ed.3 (Europe) & IEC 62749 (International)

### Consistent tolerances

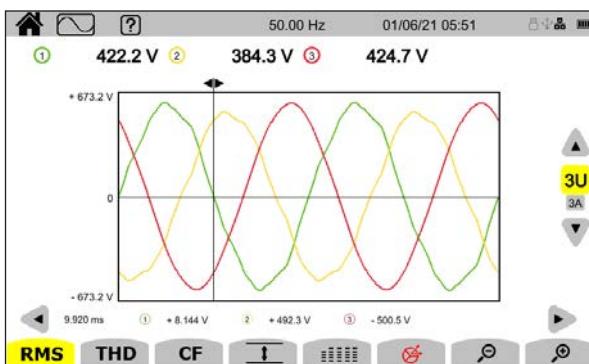
The EN 50160 standard characterizes the quality of the voltage supplied. It presents the different types of disturbances to which the voltage of a network may be subjected. It lists the parameters to be monitored and the duration of monitoring for these parameters.



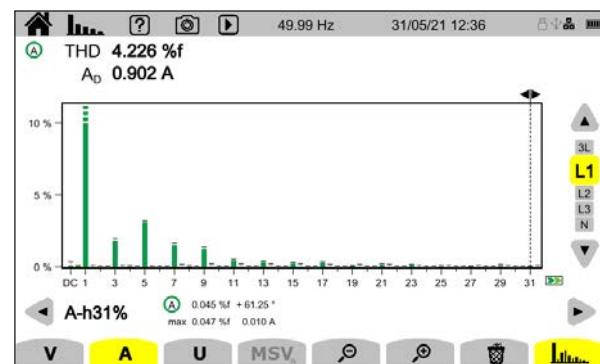
# CA 8345, a diagnostic tool

## Visualization of the signal and its components

The CA 8345 is an easy-to-use analysis tool. Once connected, the CA 8345 immediately and automatically displays: voltages up to 1000 V AC and DC, currents, thanks to automatic recognition of the connected sensor. Many sensors are compatible with the Qualistar range.

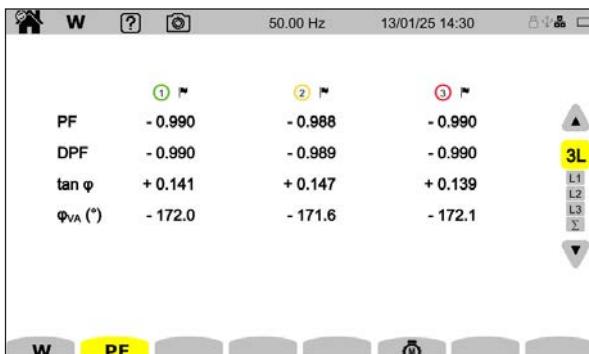


The 'waveform' mode automatically displays the voltage and/or current waveforms in the form of an oscilloscope.

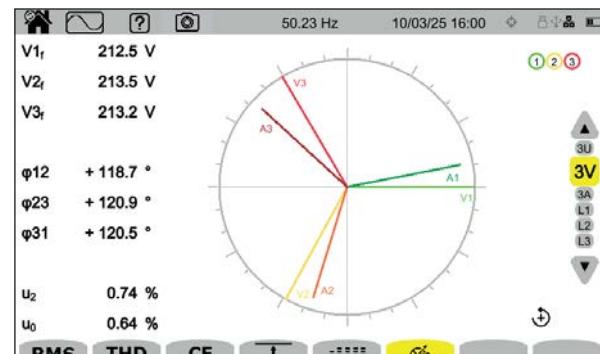


Harmonic and interharmonic measurements are readily available.

The CA 8345 is an easy-to-use analysis tool.

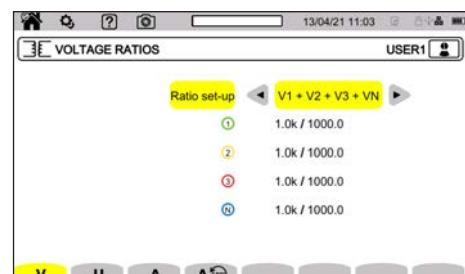
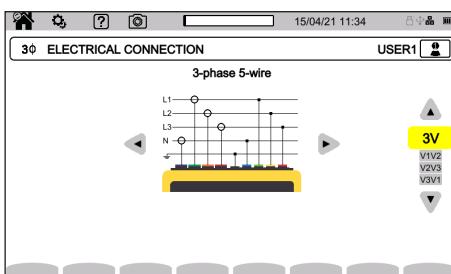
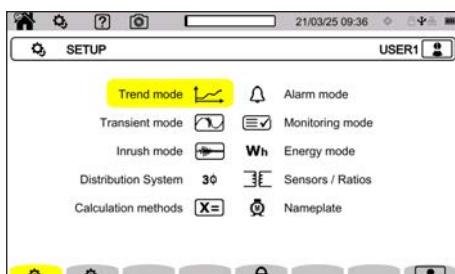


The CA 8345 allows all power values (P, Q<sub>1</sub>, D, etc.) to be monitored in real time over campaigns of varying lengths. The measurement and analysis of all measured power values enable a complete power balance to be established in accordance with standards.



A vector diagram displays the phase relationship between voltages and currents. The vector representation enables the connection of the instrument to the network to be validated.

## With a simplified configuration

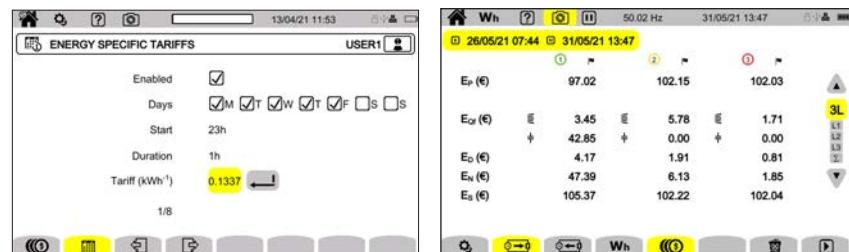


# To improve your energy efficiency

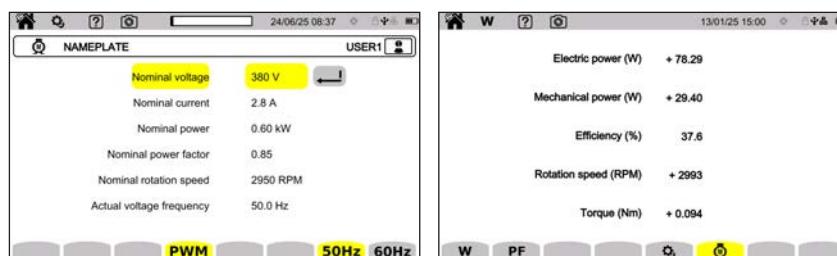
## Energy valuation



The Qualistar range provides users with all the measures necessary to carry out energy efficiency projects and monitor electrical distribution.



## Motors

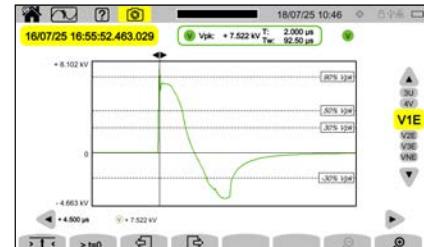


The 'Motors' function of the CA 8345 allows you to analyse the electrical and mechanical performance of a motor simultaneously. The CA 8345 can perform the necessary measurements upstream of a variable speed drive.

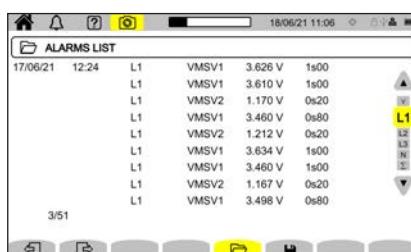
## Surges



Mostly caused by lightning, surges are instantaneous and spectacular increases in electrical voltage. They also propagate in digital networks. The Qualistar Class A can withstand surges of up to 12 kV, which are sampled every 500 ns. On the display, the thresholds imposed by the IEC 61000-4-5 standard are represented as horizontal lines.



## Power-line communication

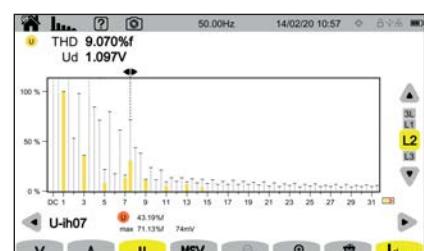


Harmonic analysis can be used to access the carrier current monitoring mode. The control signals whose frequency has been defined in the device will be measured.

## Interharmonics

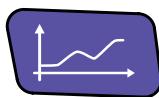


The Qualistar range measures and displays interharmonics, as required by IEC 61000-4-7, and provides a highly accurate analysis of all disturbances on an electrical network.

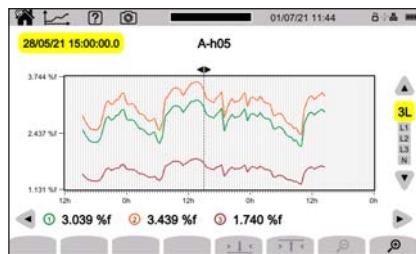
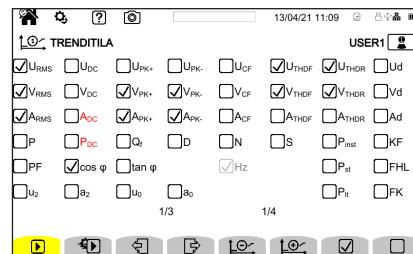


# Monitoring

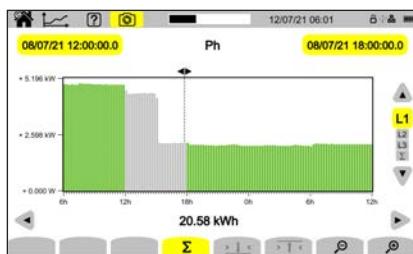
## Trend



The trend diagram shows the variations in the parameters measured over time every 200 ms.



## Power recording



All power values are recorded at the desired acquisition rate.

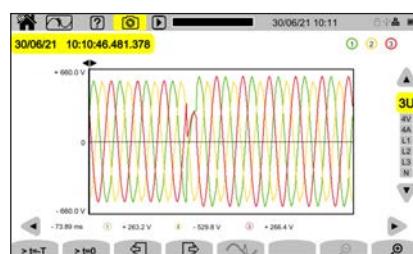
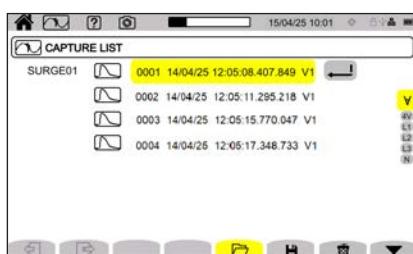
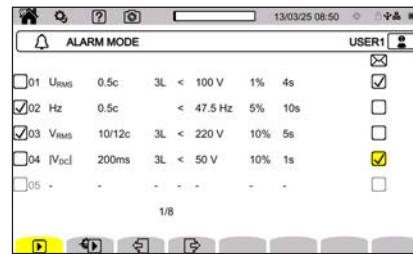
The CA 8345 calculates the energy consumed over a period of time.

## Alarms



Alarms can be set to monitor threshold exceedances, which are recorded and time-stamped with duration and extreme values.

The user can be notified directly by email when an alarm is triggered.



## Transients



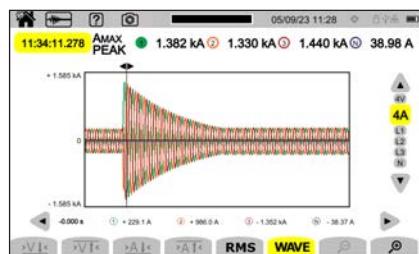
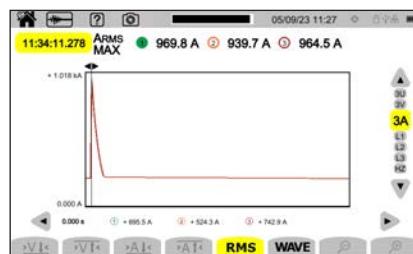
Transients correspond to peaks in the voltage or current waveform.

Surges are transients with even greater amplitude and extremely fast.



## TrueInrush

For load start-up tests, Inrush allows recording of half-period values over more than half an hour, and the signal waveform (three-phase voltages and currents). The 100 ms pre-trigger function is integrated.

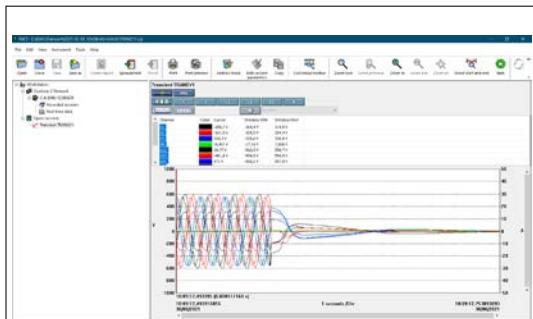


30 min

10 min

# Communication

## The PAT3 software module



The Power Analyser Transfer software processes the measurements taken with the Qualistar Class A.

- Device configuration: setup, recording, alarms
- Real-time visualisation
- Processing of all recorded data
- Automatic analysis of the voltage quality monitoring campaign (EN 50160, IEC/TS 62749, Power reports)
- Transfer of screen prints and transients
- Export of data to spreadsheet (Excel, .CSV)
- Export of data in graphical form under Windows™

## The web server

Qualistar Class A devices have embedded software for remote access. It can be controlled via VNC (remote machine control), which can be activated from a web browser (Chrome, Edge, Firefox, Qwant, etc.).

This allows you to use any PC or smartphone, whether it runs on iOS or Android...



## Communication

In addition to SD card and USB flash drive media, it is, of course, possible to retrieve measurements and communicate with the instrument from varying distances. USB, remote connections, Wi-Fi (direct or via server) or Ethernet (via RJ45), there is no limit to the accessibility of measurements.



### IRD Server/DataViewSync

All our computer networks are protected from external attacks. With access to our DataViewSync server, a single authorized outgoing IP address allows you to transmit your measurements worldwide.

### SCPI commands

With an integrated interface software layer, it is possible to control your instrument through your own software application. SCPI commands are available for all instrument functions.

### Data files in JSON format

Saved and formatted in JSON format, all records are accessible and usable with a third party and/or proprietary application.



# Functions & Measurements



## General

- Portable power quality analyser
- IEC 61000-4-30 Edition 3 Class A instrument for all functions  
Certification carried out in accordance with the requirements of IEC 62586.
- Measurement on all types of installations: three-phase, Aron, etc.
- Power grid monitoring with alarm settings
- 55 mm thick IP54 housing with prop
- IEC 61010 CAT IV 1000 V
- Configuration with PAT3 software or in embedded mode, for EN 50160 or IEC 62749 report
- Customization of parameters to be recorded, limits for monitoring, etc.
- Automatic analyses (✓ / ✗) directly on the instrument.



## Measurements

- All DC components taken into account
- Harmonics (amplitude and phase difference) from DC to 127th order
- Interharmonic subgroups from 0 to 126th order
- 2 power-line communication frequency monitoring
- Measurement of P, N, Q<sub>1</sub>, S and D power, total and per phase
- Measurement of energy, total and per phase, with energy valuation
- Internal GPS for precise UTC synchronization (NTP also)



## Communication

- External USB 2.0 flash drive supported (host instruments)
- USB 2.0 connection to a PC
- 100 Mbps Ethernet communication
- 802.11b/g Wi-Fi communication
- Web server for remote access via Wi-Fi and access point
- Saving and recording captures (images and data)
- Recording and exporting to PC
- Software for data retrieval and real-time communication with a PC



## Ergonomics

- Large 7-inch colour LCD touch screen (WVGA)
- Real-time display of waveforms (4 voltages and 4 currents)
- DC current sensor power supply
- 5 AC/DC voltage inputs, 50 Hz/60 Hz
- User-friendly, multilingual user interface
- Intuitive operation
- User profiles
- Fully multitasking instrument
- Automatic recognition of different current sensors
- Phase diagram display
- Waveforms with 512 samples per cycle, with Min/Max 2.5  $\mu$ s
- Real-time waveforms from 1 cycle displayed to 10/12 cycles displayed



## Calculations

- Calculation of K & FHL factors
- Calculation of voltages and deforming currents
- Calculation of the Power Displacement Factor  $\cos \varphi$  (DPF/PF<sub>1</sub>) and the Power Factor (PF)
- Calculation of motor parameters
- Calculation of Pst & Plt flickers, and moving Pst
- Calculation of imbalance (current and voltage)
- 10-minute duration inrush waveform
- Up to 30-minute RMS and peak inrush
- Captures hundreds of 2.5  $\mu$ s transients
- Captures 500 ns surge waves up to 12 kV
- Trend recordings
- No trend acquisition from 200 ms to 2 hours

## Magnetic mounting system



**PA40W-2**

The PA40W power supply with a charger is used to power the instrument when it is used for long periods of time, thus saving the instrument's internal battery. It can also be used to recharge this battery.

## Power supply accessories



**PA32ER**

The PA32ER power supply with a charger also allows direct connection with banana leads to a 1000 V AC or DC electrical network, between phases or phase-neutral.

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



C8 adapter



Li-ion battery



Li-ion battery load stand

# 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 A <sub>AC</sub>	0.005 A <sub>AC</sub> to 100 A <sub>AC</sub>	50 mA to 200 A <sub>AC</sub>	100 mA to 10 kA <sub>AC</sub> 1 A to 1300 A <sub>DC</sub>	1 A to 1000 A <sub>AC</sub> 1 A to 1300 A <sub>DC</sub>	100 mA to 10 kA <sub>AC</sub>	1 A to 1000 A <sub>AC</sub>	50 mA to 10 A <sub>AC/DC</sub> 100 mA to 100 A <sub>AC/DC</sub>	50 A to 3500 A <sub>AC</sub> 50 A to 5000 A <sub>DC</sub>
<b>Ø clamping / length</b>	Ø 20 mm	Ø 20 mm	Ø 16 mm	Ø 70 mm / 250 mm Ø 100 mm / 350 mm Ø 300 mm / 1000 mm	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	CAT III 600 V / 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 housing

A lead with an ESSAILEC plug allows tests to be carried out 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 the speed and simplicity of measurement with maximum safety for the user.



### Reeling Box

This practical magnetized winder equipped with the Multifix system allows you to adjust the length of your leads. It can be opened so that users can install banana-type leads for voltage measurements or MiniFlex MA194 flexible sensors for current measurements. It also provides a simple means of stowing your leads.

### Bag

All-terrain bag with waterproof bottom and shoulder strap (380 x 280 x 200 mm)



### with interior compartment

Internal locker-type bag for storage



## CA 8345

Inputs	5 voltage terminals / 4 current terminals
Voltage	from 5 V to 1000 V <sub>AC</sub> and V <sub>DC</sub> .
IEC 61000-4-30 (Ed 3)	Class A (Full)
Screen	7" colour touchscreen LCD: 800 x 480 (WVGA)
GPS clock	Yes, internal
Real-time mode	Yes
Sampling	Voltage 400 kSps / Current 200 kSps / Surge 2 MSps
Power mode	Yes
Energy mode	Yes
Imbalance mode	Direct, inverse or homopolar (multiple of the fundamental frequency)
Harmonic mode	from DC to rank 127
Interharmonic mode	from 1 to rank 126
Trend recording	> 900 parameters
Alarm mode (type / number)	52 / 20000
Power-line communication detection mode	Yes
Inrush capture (number)	100
Transient > 2.5µs (number)	No maximum (SD card)
Surges	Up to 12 kV, sampled every 500 ns
Motors	Mechanical power, efficiency, rotational speed, torque
Monitoring mode EN 50160, IEC 62749	On-board analysis, or via the PAT3 software module
USB communication	Yes
SD card	Accessible, external
Ethernet	Yes
Wi-Fi server & access point	Yes
Webserver	Yes
USB key port (Type A)	Yes
Battery cartridge	Li-ion - 5800 Ah
Security IEC 61010	CAT IV 1000V
Protection	IP54
Operating temperature	[+0 °C; +40 °C]
Environmental compliance	IEC 61557-12 & IEC 62586
Dimensions (H x W x D)	200 x 285 x 55 mm / 1.9 kg
Warranty	3 years

## CA 8345 supplied with

- Safety data sheet
- Certificate of verification
- Removable handle strap
- Set of insert rings
- USB A/B cable, length 1.80 m
- Multilingual quick start guide
- Set of 5 banana leads and crocodile clips
- 2 mm banana lead - crocodile clip
- 5 reeling boxes
- Magnetic hook
- SD memory card
- Carrying bag

## CA 8345 standard.....P01160657N

- PA40W-2 mains load block

## CA 8345-1000.....P01160658N

- PA32ER mains load block

## Accessories / Spare Parts

- 1000V STD PA32ER power supply ..... P01103076
- PA40W-2 mains adapter ..... P01102155
- C8 adapter ..... P01103077
- Bag ..... P01298083
- SD card ..... P01103078
- Magnetic hook ..... P01103079
- Hand strap ..... HX0122
- External battery charging base ..... P01102130
- Li-ion battery pack ..... P01296047
- C193 clamp ..... P01120323B
- MN93 clamp ..... P01120425B
- MINI94 clamp ..... P01106194
- MN93A clamp ..... P01120434B
- E94 clamp ..... P01120044
- E3N/E27 adapter ..... P01102081
- J93 clamp ..... P01120110
- Car charger ..... HX0061
- AmpFlex clamp® A193-450 mm ..... P01120526B
- AmpFlex clamp® A193-800 mm ..... P01120531B
- MiniFlex clamp MA194-250 mm ..... P01120593
- MiniFlex clamp MA194-350 mm ..... P01120592
- MiniFlex clamp MA194-1000 mm ..... P01120594
- 5 A housing ..... P01101959
- ESSAILEC housing ..... P01102131
- Reeling Box ..... P01102149
- Set of 5 banana leads and crocodile clips.... P01295483
- C7 mains cord ..... P01295174
- 2 mm banana plug - crocodile clip ..... P01295531



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