



# Data Sheet

## 3- Phase-Power Meter

PCE-830 series

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EN

### 3 phases, measures power and analyses harmonics, with memory, interface and software

The PCE-830 power and harmonics analyser is used for measuring one to three phases of electrical quantities for alternating current (AC). This power and harmonics analyser also measures such parameters as voltage, current, frequency, harmonics and power as well as indicating, according to standard EN50160, harmonic values, interharmonics and asymmetries. Interferences, such as interruptions, leaks, overloads or transience (from 16 $\mu$ s), are detected with their corresponding values. The backlit LCD, with high resolution, can show up to 35 parameters simultaneously. It can have up to 3 clips attached at the same time. In the data logger mode, it can save up to 17,470 readings (3 phases / 4 conductors) and in a simpler set-up (1 phase / 2 conductors) it can save up to 52,400 readings, split into 85 groups. All this makes the PCE-830 power analyser the ideal instrument for taking measurements over long periods of time. Measurement values obtained can be sent to a computer and be processed with the analysis software which comes included. The device comes with everything needed to measure and analyse from the moment the device arrives.

- Analysis of a network of 3 phases/4 conductors, 3 phases/3 conductors, 1 phase/2 conductors, 1 phase/3 conductors
- Measures effective real value (V 123 and I 123)
- Measures active power (W, KW, MW, GW)
- Measures apparent and reactive power (KVA, KVAR)
- Power Factor (PF), phase angle ( $\Phi$ )
- Measures energy and work (Wh, KWh, KVARh, PFh)
- Measures current from 0.1mA to 3000A, allowing for the reserve power of a factory to be determined
- Large LCD that shows up to 35 parameters simultaneously (3P4W [=3 phases/4 conductors])
- CT conditions (1 to 600) and PT (1 to 3000) are programmable
- Indicates current wave forms and voltage overlap
- 512KB of memory with programmable intervals to save data every 2 to 3000 seconds, 17,470 readings using the system of 3 phases / 4 conductors)
- Indicates wave forms, efficiency parameters and harmonic distortion
- Backlit LCD with dot matrix
- Average power (AD in W, KW, MW)
- Maximum power (MD in W, KW, MW) with the programmable period
- Analysis of harmonic distortion up to a curvature of 99
- Indication of up to 50<sup>o</sup> form of harmonic wave
- Indication of the wave form with maximum value (1024 readings / period)
- Analysis of absolute distortion (%THD-F)
- Diagram of graphic equilibrium with parameters of a 3 phase system
- Detects up to 28 transients (time and cycles) with a programmable threshold (%)
- Relation of 3 phases of voltage or asymmetrical current (VUR)
- Factor of 3 phases of voltage and asymmetrical current (d0%, d2%)
- USB port (optically insulated)
- Integrated timer and calendar to record data
- Maximum diameter of the electrical conductor for the amp clamp: the PCE-6801 ~30mm, PCE-6802 ~55mm, PCE-3007 ~170mm

## Technical specifications

Measurement values	Measurement ranges / resolution / accuracy
PCE-830 + PCE-6801 <b>Watts AC</b> (50 or 60Hz, PF 0.5 up to 1)	5.0 to 999.9W / 0.1W / $\pm 1\%$ $\pm 0.8W$ 1,000 to 9,999kW / 0.001kW / $\pm 1\%$ $\pm 8W$ 10.00 to 99.99kW / 0.01kW / $\pm 1\%$ $\pm 80W$ 100.0 to 999.9kW / 0.1kW / $\pm 1\%$ $\pm 0.8kW$ 1,000 to 9,999kW / 1kW / $\pm 1\%$ $\pm 8kW$
PCE-830 + PCE-6802 Watts AC (50 or 60Hz, PF 0.5 up to 1)	5.0 to 999.9W / 0.1W / $\pm 1\%$ $\pm 0.8W$ 1,000 to 9,999kW / 0.001kW / $\pm 1\%$ $\pm 8W$ 10.00 to 99.99kW / 0.01kW / $\pm 1\%$ $\pm 80W$ 100.0 to 999.9kW / 0.1kW / $\pm 1\%$ $\pm 0.8kW$ 1,000 to 9,999kW / 1kW / $\pm 1\%$ $\pm 8kW$ 0.000 to 9.999MW / 0.001MW / $\pm 1\%$ $\pm 80kW$
PCE-830 + PCE-3007 Watts AC (50 or 60Hz, PF 0.5 up to 1)	10.0 to 999.9W / 0.1W / $\pm 1\%$ of measurement range 1,000 to 9,999kW / 0.001kW / $\pm 1\%$ of measurement range 10.00 to 99.99kW / 0.01kW / $\pm 1\%$ of measurement range 100.0 to 999.9kW / 0.1kW / $\pm 1\%$ of measurement range 1,000 to 9,999kW / 1kW / $\pm 1\%$ of measurement range
PCE-830 + PCE-6801 <b>Current AC</b> (50 or 60Hz, auto range select, TRMS)	0.04A to 1A / 0.001A / $\pm 0.5\%$ $\pm 0.05A$ 0.4A to 10.0A / 0.01A / $\pm 0.5\%$ $\pm 0.05A$ 4A to 100.0A / 0.1A / $\pm 1.0\%$ $\pm 0.5A$
PCE-830 + PCE-6802 <b>Current AC</b> (50 or 60Hz, auto range select, TRMS)	10.00A / 0.01A / 4A to 100.0A / 0.01A / $\pm 0.5\%$ $\pm 0.5A$ 40A to 1000.0A / 0.1A / $\pm 0.5\%$ $\pm 5A$
PCE-830 + PCE-3007 <b>Current AC</b> (50 or 60Hz, auto range select, TRMS)	0 to 300A / 0.1A / $\pm 1.0\%$ of measurement range 300.0 to 999.9A / 0.1A / $\pm 1.0\%$ of measurement range 1,000 to 3,000A / 1A / $\pm 1.0\%$ of measurement range
<b>Voltage AC</b> (50 or 60Hz, TRMS)	20.0 ... 500.0 V / 0,1 V / $\pm 0,5\%$ $\pm 5$ digits (grounded) 20.0 ... 600.0 V / 0,1 V / $\pm 0,5\%$ $\pm 5$ digits (phase to phase)
<b>Harmonic distortion</b> of AC voltage	1 to 20° / 0.1% / $\pm 1.0\%$ 21 to 49° / 0.1% / 4% of reading $\pm 2.0\%$ 50 to 99° / 0.1% / 6% of reading $\pm 2.0\%$
PCE-830 + PCE-6801 <b>Harmonics</b> of AC current in %	1 to 20° / 0.1% / $\pm 0.2\%$ of reading $\pm 1.0\%$ 11 to 20° / 0.1% / $\pm 2\%$ of reading $\pm 1.0\%$ 21 to 50° (A) / 0.1% / $\pm 5\%$ of reading $\pm 1.0\%$ 21 to 50° (mA) / 0.1% / $\pm 10\%$ of reading $\pm 1.0\%$ 51 to 99° / 0.1% / $\pm 35\%$ of reading $\pm 1.0\%$
PCE-830 + PCE-6802 <b>Harmonics</b> of AC current in %	1 to 10° / 0.1% / $\pm 2\%$ 21 to 49° / 0.1% / 4% of reading $\pm 2.0\%$ 50 to 99° / 0.1% / 6% of reading $\pm 2.0\%$

PCE-830 + PCE-3007 <b>Harmonics</b> of AC current in %	1 to 10° / 0.1% / ±2% 21 to 49° / 0.1% / ±6% 50 to 99° / 0.1% / ±10%
PCE-830 + PCE6801 / PCE-830 + PCE-6802 <b>Power Factor</b> (PF)	0.00 to 1.00 / 0.01 / ±0.04
PCE-830 + PCE3007 <b>Power Factor</b> (PF)	0.000 to 1,000 / 0.001 / ±0.04
PCE-830 + PCE6801 / PCE-830 + PCE-6802 <b>Phase angle</b> (Phi)	-180° to 180° / 0.1° / ±1°
PCE-830 + PCE3007 <b>Phase angle</b> (Phi)	0° to 180° / 0.1° / ±2°
PCE-830 + PCE-6801 <b>Total harmonic distortion</b>	0.0 to 20.0% / 0.1% / ±1% 20.0 to 100% / 0.1% / ±3% of reading ±5% 100 to 999.9% / 0.1% / ±10% of reading ±10%
PCE-830 + PCE-6802 <b>Total harmonic distortion</b>	0.0 to 20.0% / 0.1% / ±2% 20.0 to 100% / 0.1% / ±6% of reading ±1% 100 to 999.9% / 0.1% / ±10% of reading ±1%
PCE-830 + PCE-3007 <b>Total harmonic distortion</b>	0.0 to 20.0% / 0.1% / ±2% 20.0 to 100% / 0.1% / ±6% of reading ±1% 100 to 999.9% / 0.1% / ±10% of reading ±1%
<b>Maximum measurement</b> of AC voltage and current	50Hz / 19µS / ±5% ±30 digits 60Hz / 16µS / ±5% ±30 digits
<b>Peak value measurement</b> of AC voltage and current	1.00 to 99.99 / 0.01 / ±5% ±30 digits
<b>Frequency range</b> in automatic mode	45 to 65Hz / 0.1Hz / 0.1Hz
Memory	512kB for a maximum 52,420 readings taken by 1 phase / 2 conductors
Port	USB
Software and cable	included, for Windows 2000, XP, ME
Display	backlit LCD with dot matrix
Power	8 AA batteries(Mignon)
Dimensions	257 x 155 x 57mm
Weight	1,160g
Operating conditions	max. 85% relative humidity / -10 to 50°C
Type of protection / standards	IEC 61010, 600 V/CAT III



**Set 1:**  
**PCE-830 + PCE-6801 amp clamp (100A)**

- Electrical conductor pick-up: 30mm diameter
- Range selection: manual (1A, 10A, 100A)
- Dimensions: 210 x 62 x 36mm
- Weight: 200g



**Set 2:**  
**PCE-830 + PCE-6802 amp clamp (1000A)**

- Electrical conductor pick-up: 55mm diameter
- Range selection: manual (10A, 100A, 1,000A)
- Dimensions: 244 x 97 x 46mm
- Weight: 600g



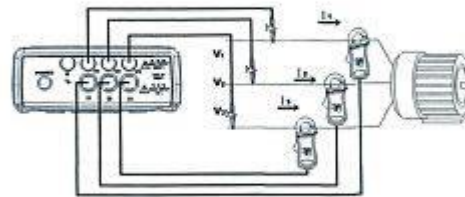
**Set 3:**  
**PCE-830 + PCE-3007 flexible amp clamp (3000A)**

- Electrical conductor pick-up: 170mm diameter
- Minimum radial curve : 35mm
- Length of electrical conductor: 610mm
- Diameter of electrical conductor: 14mm
- Dimensions (Box): 130 x 80 x 43mm
- Weight: 410g

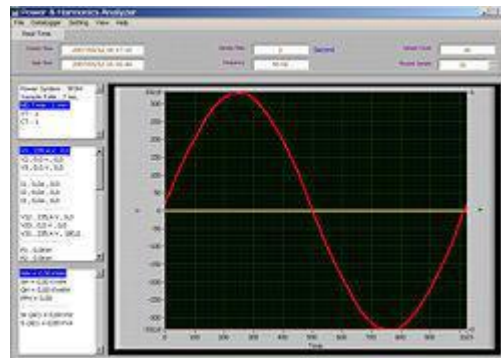
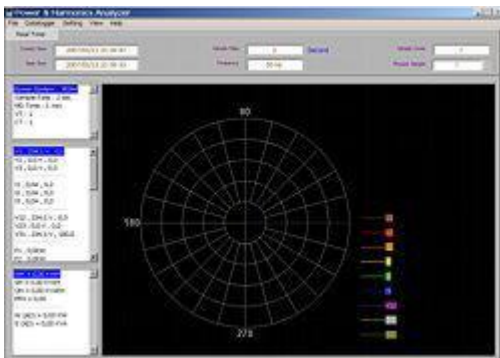
**Outline of the PCE-830**

Connecting the amp clamps to the PCE-830:

1. Turn on the device.
2. Push the "1f3f" key until "3P3W" appears on the display for 3 phases / 3 conductors.
3. Connect the 3 test cables from the voltage with L1, L2, L3 and the analyser. The amp clamps are connected, as seen in the image to the right, between the device and the circuit.
4. The results can then be seen on the display.



Examples of software and of the PCE-830 analyser



**Contents**

PCE-830 power analyser, 3 amp clamps - depending on the set ordered (PCE-6801, PCE-6802 or PCE-3007), 4 alligator clips, 4 safety test lines (3m long), 8 batteries, mains adaptor, carrying case, USB cable, software and user's manual

