

## ELECTRICAL ENGINEERING AND ELECTRONICS INDUSTRY. 3-PHASE POWER METER

# PCE Instruments

Discover our new test instruments and their functions.





## CLAMP METER PCE-360

### Power-analyzing clamp meter with data logger functionality

The PCE-360 is a Single-Phase Power Meter or clamp meter with data logger functionality. This versatile power analyzer can take single-phase and three-phase power measurements both in real time and over an extended time period. The PCE-360 is used for the analysis of voltage (V), current (A), active power (kW), apparent power (kVA), reactive power (kVar), power factor

( $\cos \Phi$ ), phase angle ( $\Phi$ ), frequency (Hz), rotary field (UL > 50V), active energy (MWh), apparent energy (MVAh), reactive energy (MVarh), harmonics (1 ... 63 order, via software), and waveforms (via software). The meter's large and easy-to-read screen displays up to 10 measurements simultaneously. In manual mode, the device stores up to 99 measurements directly.

### ISO cal option

- ▶ for measurement in real time and over an extended time period up to 578 days @ 5 second sample rate
- ▶ includes clamps, clips, leads, PC software and data cable
- ▶ large, easy-to-read screen displays up to 10 measurements simultaneously
- ▶ stores up to 99 measurements directly in manual mode or up to 10,000,000 sets of measurements to the 4 GB internal memory in data logger mode
- ▶ battery-saving automatic shutdown after approximately 30 minutes of inactivity
- ▶ device comes factory calibrated - optional ISO calibration certificate available for an additional fee (see accessories for details)



### APPLICATION



## TECHNICAL SPECIFICATIONS

<b>AC Voltage measurement</b>	50...600.0 V True RMS value	<b>Apparent Power Energy measurement</b>	0 ... 9999 MVAh
Accuracy	±1.5 % of measured value	Accuracy	±1.5 % of measured value
Resolution	+10 digits / 0.1 V	Resolution	+20 digits
<b>AC Current measurement</b>	3 ... 999.9 A True RMS value	<b>Reactive Power Energy measurement</b>	0 ... 9999 MVarh
Accuracy	±1.5 % of measured value	Accuracy	±1.5 % of measured value
Resolution	+15 digits / 0.1 A	Resolution	+20 digits
<b>Active Power measurement P</b>	150 W... 999.9 kW	Max. current clamp opening	40 mm / 1.57"
Accuracy	±1.5 % of measured value	Data storage	50 records for manual storage
Resolution	+20 digits / 0.1 KW	4 GB SD card for data logging	(99 storage locations with 350,000 data records each)
<b>Apparent Power measurement S</b>	150 VA... 999.9 kVA	Data interface	serial via USB cable
Accuracy	±1.5 % of measured value	Display	illuminated LC display
Resolution	+20 digits / 0.1 KVA	Power supply	8 x 1.5 V type AA (Mignon)
<b>Reactive Power measurement Q</b>	150 VAR... 999.9 kVar	Dimensions	235 x 117 x 54 mm / 9.25 x 4.61 x 2.13"
Accuracy	±1.5 % of measured value	Weight	730 g / 1.61 lbs
Resolution	+20 digits / 0.1 KVar	Environmental conditions	max. 85% relative humidity / 0 ... +40 °C / 32 ... 104 °F
<b>Power Factor measurement</b>	0 ... +1 COS $\psi$	Protection class / standards	IP 30 / IEC 61 010, 600 V / CAT III
Accuracy	± 0.06		
Resolution	0.001		
<b>Phase angle measurement</b>	-90° .... +90° $\psi$		
Accuracy	± 3°		
Resolution	0.1		
<b>Frequency measurement (U &gt; 50V)</b>	40 ... 100 Hz		
Accuracy	±1 % of measured value +2 digits		
Resolution	0.1 Hz		
<b>Three Phase Sequence Detection (UL &gt; 50V)</b>	yes		
<b>Active Power Energy measurement</b>	0 ... 9999 MWh		
Accuracy	±1.5 % of measured value		
Resolution	+20 digits		



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## POWER ANALYSER PCE-830

### Measures power and analyses harmonics with memory

The PCE-830 Power Meter is used for measuring one to three phases of electrical quantities for alternating current (AC). This 3-Phase Power Meter also measures parameters such as voltage, current, frequency, harmonics, and power as well as indicating, according to standard EN50160, harmonic values, interharmonics, and asymmetrics. Interference, such as inter-

ruptions, 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. Up to 3 clips can be attached at the same time to the Power Meter. In data logger mode, it can save up to 17,470 readings (3 phases / 4 conductors), in a simpler set up (1 phase / 2 conduc-

### ISO cal option

- ▶ 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



### APPLICATION



## TECHNICAL SPECIFICATIONS

### Watts AC (50 Hz or 60 Hz, PF 0.5 up to 1)

Measurement ranges	resolution	accuracy
5.0 W to 999.9 W	0.1 W	$\pm 1\% \pm 0.8$ W
1.000 kW to 9.999 kW	0.001 kW	$\pm 1\% \pm 8$ W
10.00 kW to 99.99 kW	0.01 kW	$\pm 1\% \pm 80$ W
100.0 kW to 999.9 kW	0.1 kW	$\pm 1\% \pm 0.8$ kW
1,000 kW to 9,999 kW	1 kW	$\pm 1\% \pm 8$ kW

### Current AC (50 Hz or 60 Hz, auto range select, TRMS)

Measurement ranges	resolution	accuracy
0.04 A to 1 A	0.001 A	$\pm 0.5\% \pm 0.05$ A
0.4 A to 10.0 A	0.01 A	$\pm 0.5\% \pm 0.05$ A
4 A to 100.0 A	0.1 A	$\pm 1.0\% \pm 0.5$ A

### Voltage AC (50 Hz or 60 Hz, TRMS)

Measurement ranges	resolution	accuracy
20.0 V to 500.0 V	0.1 V	$\pm 0.5\% \pm 5$ digits
(measure between phase and neutral)		
20.0 V to 600.0 V	0.1 V	$\pm 0.5\% \pm 5$ digits
(measure between phase and neutral)		

### Harmonic distortion of AC voltage

Measurement ranges	resolution	accuracy
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 $\pm 2.0\%$

### Harmonics of AC current in %

Measurement ranges	resolution	accuracy
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 $\pm 1.0\%$

### Power Factor (PF)

Measurement ranges	resolution	accuracy
0.00 to 1.00	0.01	$\pm 0.04$

### Phase angle (Phi)

Measurement ranges	resolution	accuracy
0° to 180°	0.1°	$\pm 2^\circ$

### Total harmonic distortion

Measurement ranges	resolution	accuracy
0.0 to 20.0%	0.1%	$\pm 1\%$
20.0% to 100%	0.1%	$\pm 3\%$ of reading $\pm 5\%$
100% to 999.9%	0.1%	$\pm 10\%$ of reading $\pm 10\%$

### Total harmonic distortion

Measurement ranges	resolution	accuracy
0.0 to 20.0%	0.1%	$\pm 2\%$
20.0% to 100%	0.1%	$\pm 6\%$ of reading $\pm 1\%$
100% to 999.9%	0.1%	$\pm 10\%$ of reading $\pm 1\%$

### Maximum measurement of AC voltage and current

Measurement ranges	resolution	accuracy
50 Hz	19 $\mu$ S	$\pm 5\% \pm 30$ digits
60 Hz	16 $\mu$ S	$\pm 5\% \pm 30$ digits

### Peak value measurement of AC voltage and current

Measurement ranges	resolution	accuracy
1.00 to 99.99	0.01	$\pm 5\% \pm 30$ digits

### Frequency range in automatic mode

Measurement ranges	resolution	accuracy
45 Hz to 65 Hz	0.1 Hz	0.1 Hz
Memory readings		512 kB for a maximum 52,420 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 mm x 155 mm x 57 mm 10.1 in x 6.1 in x 2.2 in
Weight		1.16 kg / 2.56 lbs
Operating conditions		Max. 85% relative humidity -10 to 50°C / 14 to 122°F
Type of protection / standards		IEC 61010, 600 V/CAT III

### Model:

#### PCE-830-1

#### Amp clamp PCE-6801 (100A)

Electrical conductor pick-up	30 mm / 1.2 in diameter
Range selection	manual (1 A, 10 A, 100 A)
Dimensions	210 x 62 x 36 mm
Weight	200g

#### PCE-830-2

#### Amp clamp PCE-6802 (1000A)

Electrical conductor pick-up	55 mm / 2.2 in diameter
Range selection	manual (10 A, 100 A, 1,000 A)
Dimensions	244 x 97 x 46 mm
Weight	600g

#### PCE-830-3

#### Strommesszange PCE-3007 (3000A)

Electrical conductor pick-up	170 mm / 6.69 in diameter
Range selection	manuell (300A, 3000A)
Minimum radial curve	35 mm / 1.4 in
Length of electrical conductor	610 mm / 24.0 in Durchmesser
Diameter of electrical conductor	14 mm / 0.55 in
Dimensions (Box)	130 x 80 x 43 mm
Weight	410g



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## POWER ANALYSER PCE-PA 8000

### Real time measurement with registration in the SD card

With the ammeter with current clamps PCE-PA 8000, it is possible to measure and record the power in a single-phase and three-phase circuit. Long-term measurements can be carried out with the PCE-PA 8000 ammeter as well. The measuring data are stored on a plug-in SD card in XLS format. As a result, the measured data can be conveniently evaluated on the computer. The interval of the recording is freely selectable from 2 to 7200 seconds. The energy meter is

capable of performing energy measurements as well as determining the power factor and phase angle. The current clamps of the power analyser PCE-PA 8000 can be used for conductor diameters of up to 50 mm / 2 in. Thus, the meter is ideal for use in the power grid. Due to the large 3.7" display all the measurement values can be read off at a glance.

### ISO cal option

- ▶ 3-phase power analysis in 3-phase / 4-conductor, 3-phase / 3-conductor, 1-phase / 2-conductor, 1-phase / 3-conductor networks
- ▶ true RMS Measurement of current and voltage
- ▶ measurement of active, apparent and reactive power
- ▶ determination of phase angle and power factor
- ▶ measurement of active, apparent and reactive energy



### APPLICATION



## TECHNICAL SPECIFICATIONS

Display	3.7 "dot matrix LCD (320 * 240 pixels) with LED backlight	Power factor measuring range	0 ... 1
Measurable electrical variables	AC V, AC A, active power, apparent power, power factor, phase angle, mains frequency	Resolution	0.01
Voltage measuring ranges	10 V ... 600V AC, automatic range selection	Accuracy	± 0.04
Current measuring ranges	0.2 A ... 1200A AC, automatic / manual range selection	Phase angle measuring range	-180 ° ... 180 °
Safety standard	IEC1010CAT III 600V	Resolution	0.1 °
Input resistance	AC V 10 MOhm	Accuracy	± 1 °
Oper. freq. of current clamps	40 Hz ... 1 kHz	Frequency measuring range	45 Hz ... 65 Hz
Tested oper. freq. of c. clamps	45 Hz ... 65 Hz	Resolution	0.1 Hz
Overload protection	AC V 720 V RMS	Accuracy	0.1 Hz
AC A	1300A with current clamp		
Data storage	SD card	Further specifications online:	
Recording interval	2 ... 7200 seconds		
Data logger function	real-time storage on SD card		
Data output	via USB or RS232 depending on the connection cable		
Operating temperature	0 ° C ... 50 ° C / 32° F ... 122° F		
Ambient humidity	<80% RH		
Power supply	8 x 1.5 V AA batteries, 9V power supply		
Current consumption	meter: 300 mA DC current clamp: 34 mA DC		
Max. cable diameter	50 mm/ 1.9 in		
Weight	meter: 948 g / 2 lb (including batteries) clamp: 467 g / 1 lb (including cable)		
Dimensions	meter: 225 x 125 x 64 mm/ 8.8 in x 4.9 in x 2.5 in clamp: 210 mm x 64 mm x 33 mm / 8.2 in x 2.5 in x 1.2 in jaw: 86 mm / 3.3 in (outside)		
Voltage measurement (AC V)			
Measuring range	10 V ... 600 V (phase to neutral) 10 V ... 600 V (phase to phase)		
Resolution	0.1V		
Accuracy	± (0.5% + 0.5 V)		
Current measurement (AC A)			
Measuring range	20 A		
Resolution	0.001 A (<10 A) 0.01 A (= 10 A)		
Accuracy	± (0.5% + 0.1 A)		
Measuring range	200 A		
Resolution	0.01 A (<100 A) 0.1 A (= 100 A)		
Accuracy	± (0.5% + 0.5 A)		
Measuring range	1200 A		
Resolution	0.1 A (<1000 A) 1 A (= 1000 A)		
Accuracy	± (0.5 A + 5 A)		



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POWER ANALYZER PCE-PA 8300

3-phase / 3 current clamps / LCD graphic display / SD card memory

The PCE-PA 8300 is a Clamp Meter that features a durable enclosure, SD card memory, a LCD graphic display, as well as apparent, effective, and reactive power measurement. The easy-to-use PCE-PA 8300 Clamp Meter is the ideal tool for performing power and harmonics analysis as well as for measuring network capacity.

Set 2: Includes 3 flexible Rogowski coils for measurements up to 3000 AAC

ISO cal option

- ▶ voltage measurement range of 10 V ... 600 V AC
- ▶ current measurement range of 30 A 3000 AAC (Set 2)
- ▶ performance measurement range of 0 kW . 9.999 MW (VA/VAR)
- ▶ simultaneous display of harmonics and waveform
- ▶ graphic Phasor diagram
- ▶ captures transients including dip, swell, and outage



APPLICATION



TECHNICAL SPECIFICATIONS

General specifications

Display	3.7 in / 94.0 mm point-matrix LCD (320 * 240 pixel) with LED background lights
Safety standards	IEC1010CAT III 600V
Input resistance AC V	10 MOhm
Operating frequency of current clamp	40 Hz ... 1 kHz
Tested operating frequency of current clamp	45 Hz ... 65 Hz
Overload protection	AC V 720 V RMS AC A 1300 A w. current clamp
Data Storage	SD memory card
Refresh interval	1 second
Data logging function	logging with real-time speed on SD memory card
Record interval	2 ... 7200 seconds
Data output (only for live display )	per USB or RS232, depending on connection cable
Operating temperature	0° C ... +50° C / 32° F ... 122° F
Surrounding humidity	< 80 % RH
Voltage Supply	8 x 1.5 V AA batteries
Current Drain	9 V adapter Measurement Device: 300 mA DC current clamp: 34 mA DC
Maximum Wire Diameter	50 mm / 1.9 in
Weight	Measurement Device: 948 g / Current clamp: 467 g
Dimensions	Device: 225 mm x 125 mm x 64 mm Current clamp: 210 mm x 64 mm Clamp jaw: 86 mm (exterior)

Electrical specifications

Voltage Measurement (AC V)

Measurement Range	Resolution	Accuracy
10 V ... 600 V (phase to neutral)	0.1 V	±(0.5 % + 0.5 V)
10 V ... 600 V (phase to phase)	0.1 V	±(0.5 % + 0.5 V)

Depending on set choice:

Current measurement (AC A) Set 1

Measurement Range	Resolution	Accuracy
20 A	0.001 A (< 10 A) 0.01 A (≥ 10 A)	± (0.5 % + 0.1 A)
200 A	0.01 A (< 100 A) 0.1 A (≥ 100 A)	± (0.5 % + 0.5 A)
1200 A	0.1 A (< 1000 A) 1 A (≥ 1000 A)	± (0.5 A + 5 A)

Current measurement (AC A) Set 2

Measurement range	Resolution	Accuracy
30 A	0.001 A (< 10 A) 0.01 A (≥ 10 A)	±(0.5 % + 0.1 A)
300 A	0.01 A (< 10 A) 0.1 A (≥ 10 A)	±(0.5 % + 0.5 A)
3000 A	0.1 A (< 1000 A) 1 A (≥ 1000 A)	±(0.5 A + 5 A)

Effective power

Measurement range	Resolution	Accuracy
0 ... 9.999 KW	0.001 KW	±(1 % + 0.008 KW)
10 ... 99.99 KW	0.01 KW	±(1 % + 0.08 KW)
100 ... 999.9 KW	0.1 KW	±(1 % + 0.8 KW)
1 ... 9.999 MW	0.001 MW	±(1 % + 0.008 MW)

Apparent Power

Measurement range	Resolution	Accuracy
0 ... 9.999 KVA	0.001 KVA	±(1 % + 0.008 KVA)
10 ... 99.99 KVA	0.01 KVA	±(1 % + 0.08 KVA)
100 ... 999.9 KVA	0.1 KVA	±(1 % + 0.8 KVA)
1 ... 9.999 MVA	0.001 MVA	±(1 % + 0.008 MVA)

Reactive Power

Measurement range	Resolution	Accuracy
0 ... 9.999 KVAR	0.001 KVAR	±(1 % + 0.008 KVAR)
10 ... 99.99 KVAR	0.01 KVAR	±(1 % + 0.08 KVAR)
100 ... 999.9 KVAR	0.1 KVAR	±(1 % + 0.8 KVAR)
1 ... 9.999 MVAR	0.001 MVAR	±(1 % + 0.008 MVAR)

Active Energy

Measurement range	Resolution	Accuracy
0 ... 9.999 KWH	0.001 KWh	±(2 % + 0.008 KWh)
10.00 ... 99.99 KWH	0.01 KWh	±(2 % + 0.08 KWh)
100.0 ... 999.9 KWH	0.01 KWh	±(2 % + 0.8 KWh)
1 ... 9.999 MWH	0.001 MMh	±(2 % + 0.008 MWh)

Apparent Energy

Measurement range	Resolution	Accuracy
0 ... 9.999 KVARH	0.001 KVARh	±(2 % + 0.008 KVARh)
10.00 ... 99.99 KVARH	0.01 KVARh	±(2 % + 0.08 KVARh)
100.0 ... 999.9 KVARH	0.01 KVARh	±(2 % + 0.8 KVARh)
1 ... 9.999 MVARH	0.001 MVARh	±(2 % + 0.008 MVARh)

Further specifications online



Subject to change without notice



# POWER MEASUREMENT

## VOLTMETER PCE-GPA 50

### Current clamp up to 2000 A / TRMS measurement

The PCE-GPA 50 current clamp is used to measure the current of 1- or 3-phase loads. This clamp is especially characterized by its measuring range up to 2000 A. Another highlight is the graphic display of the current clamp. Here, in addition to the numerical measured values, the waveform of the phase can also be displayed by the current clamp. Likewise, the current clamp

can be used to measure voltages. As a result, the current clamp is able to calculate effective, apparent and reactive power with the help of the phase angle. In addition, the current clamp can measure other network parameters such as the energy, power factor and harmonic.

### ISO cal option

- ▶ graphic display
- ▶ data logger on Micro-SD card
- ▶ measurement for 1 and 3 phases
- ▶ temperature measurement with thermocouple
- ▶ voltage measurement 10V ... 600V AC RMS
- ▶ current measurement 5 ... 2000 A AC RMS
- ▶ current clamp opening 50 mm
- ▶ harmonic distortion up to the 50th order



### APPLICATION



## TECHNICAL SPECIFICATIONS

Type of measurement	Measuring range	Resolution	Accuracy
<b>AC voltage AC V</b>	10 ... 600V	0.1V	± (0.5% ... 3 digits)
	Peak to peak	0.1V	± (5% ... 30 digits)
<b>AC AC A</b>	5 ... 2000 A	< 100 A: 0.01 A	< 200 A: ± (1% + 0.5 A)
	Peak to peak	< 1000 A: 0.1 A	> 200 A: ± (1% + 5 A)
		> 1000 A: 1 A	± (5% + 30 digits)
<b>Power factor (PF)</b>	0 ... 1	0.001	± 0.04
<b>Phase angle</b>	-180° ... 180°	0.1°	± 1° x PF
<b>Frequency</b>	45 ... 65 Hz	0.1 Hz	± 0.2 Hz
<b>Active, blind &amp; apparent power</b>	0 ... 9,999 m (W / VA / VAR)	0.1 ... 0.001 M (W / VA / VAR)	± (1.5% + 20 digits)
<b>Harmonic AC V</b>	1 ... 20th order	0.1V	± (2% + 5 digits)
	21 ... 50 okay	0.1V	± (4% + 5 digits)
<b>Harmonic AC A</b>	1 ... 20th order	< 100 A: 0.01 A	± (2% + 5 digits)
<b>Alternating current</b>	< 1000 A: 0.1 A	> 1000 A: 1 A	± (4% + 5 digits)
<b>Harmonic AC V%</b>	1 ... 20th order	0.1%	± (2% + 10 digits)
	21 ... 50 okay	0.1%	± (4% + 20 digits)
<b>Absolute harmonic distortion</b>	0 ... 20%	0.1%	± (2% + 5 digits)
	20.1 ... 100%	0.1%	± (6% + 10 digits)
<b>Temperature type K thermocouple</b>	-100 ... 199.9°C / -148 ... 391.8°F	0.1°C / 0.18°F	± (1% + 1°C / 1.8°F)
	200 ... 1300°C / 392 ... 2372°F	1°C / 1.8°F	± (1% + 2°C / 3.6°F)
<b>Display</b>	Graphic LCD		
<b>AC V input impedance</b>	10 MOhm		
<b>Frequency range</b>	40 Hz ... 1 kHz		
<b>Current Probe</b>			
<b>Calibrated frequency</b>	45 ... 65 Hz		
<b>Current Probe</b>			
<b>Overload protection</b>	AC V: 720V RMS		
	AC A: 2100 A		
<b>Data storage</b>	Micro SD card		
<b>Refresh rate</b>	1 second		
<b>Display</b>			
<b>Storage rate</b>	2 ... 7200s		
<b>Data storage</b>			
<b>Storage format</b>	XLS		
<b>Interface</b>	Serial interface for live presentation to PC (SOFT-LUT-USB is required)		
<b>Power supply</b>	2 x 1.5V AA battery		
	9V / 800-mA power supply		
<b>Current consumption</b>	60-mA DC		
<b>Jaw Capacity</b>	50 mm		
<b>Operating conditions</b>	0 ... 50°C / 32 ... 122°F, max. 80% rh		
<b>Weight</b>	About 595 g / 1.3 lbs		
<b>Dimensions</b>	280 x 106 x 47 mm / 11 x 4.2 x 1.9 in		



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# POWER MEASUREMENT

## CURRENT CLAMP PCE-GPA 62

### Power and energy meter (real time) with data logger,

The Three-Phase Current Clamp (Graphic Power Quality Analyzer) PCE-GPA 62 is used for single-phase or three-phase measurements of the active, reactive and apparent power, power factor, phase angle, energy, voltage, current as well as peaks and harmonics up to 50<sup>o</sup> of the harmonic waveform. The Three-Phase Current Clamp PCE-GPA 62 comes with a built-

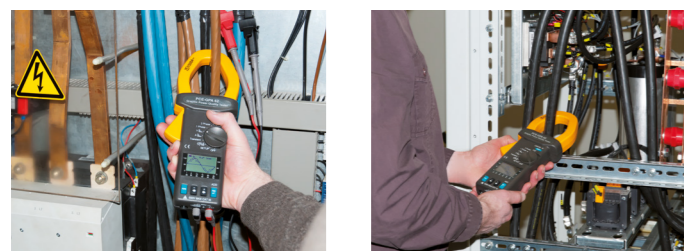
in graphic display to show network analyzer values. Measured values can be both recorded and transferred to a PC for further analysis. The Three-Phase Current Clamp PCE-GPA 62 is a professional handheld device to determine several parameters. Thanks to the backlight display, it is possible to get an accurate reading of measured values even with poor light conditions.

### ISO cal option

- ▶ real-time test, register and measurement of voltage and current (real effective)
- ▶ measures power factor and phase angle, frequency, energy, active, reactive and apparent power
- ▶ (single-phase or three-phase in symmetrical networks).
- ▶ max. conductor diameter: 55 mm / 2.2 in
- ▶ graphic display
- ▶ auto shut-off after 15 min. (this function may be disabled)
- ▶ optional ISO calibration



## APPLICATION



## TECHNICAL SPECIFICATIONS

<b>Voltage measurement</b>	4.0 ... 600.0 V RMS value ± 0.5% of the measured value ± 5 digits / 0.1 V	Max. clamp opening	55 mm / 2.2 in
<b>Voltage peaks (&gt; 10V)</b>	50 Hz - 60 Hz / ± 5% ± 50 digits	Range selection	Auto
<b>Current measurements</b>	4.0 ... 1500.0 A real ± 1% V. of the measured value ± 5 digits / 0.01 A	Overload indication	"OL = Overload
<b>Current peaks (&gt; 20A)</b>	50 Hz - 60 Hz / ± 5% ± 50 digits	Memory	50,000 readings
<b>Active power P</b>	10 W ... 9999 kW in 5 measurement ranges ± 1% of the value + 20 digits (>20 V y >20 A) ± 2% of the value + 40 digits (>20 V y >20 A)	Interface	USB
<b>Apparent power S</b>	0.1 W ... 1 kW according to the measurement range	Software and data cable	included in the delivery. They can be used with Win 2000, XP, ME
<b>Reactive power Q</b>	10 VA ... 9999 kVA in 5 measurement ranges ± 1% of the value + 20 digits (>20 V y >20 A) ± 2% of the value + 40 digits (>20 V y >20 A)	Display	graphic LCD display, 128 x 64 with backlight
<b>PF power factor</b>	0.1 VA ... 1 kVA according to the measurement range	Power supply	2x 1.5V AA batteries
<b>Phase angle</b>	10 VAr ... 9999 kVAr in 5 measurements ranges ± 1% of the value + 20 digits (>20 V y >20 A) ± 2% of the value + 40 digits (>20 V y >20 A)	Energy consumption	Approx. 10-mA
<b>Frequency measurement (U &gt; 50 V)</b>	0.000 ... 1.000 ± 0.04 (>20 V >20 A) / 0,001 ± 0.1 (>20 V >20 A) / 0,001	Dimensions	271 x 112 x 46 mm / 10.6 x 4.4 x 1.8 in
<b>Active energy</b>	-180 ... +180 / ±1 / 0,1 0 ... +360 / ±1 / 0,1	Weight	650 g / 1.4 lbs with batteries
<b>Apparent energy</b>	46 ... 65 Hz ±0.3 Hz / 0.1 Hz	Operating conditions	85% max. R.H. / -10 ... 50°C / 14 ... 122°F
<b>Reactive energy</b>	0 ... 999.999 kWh ± 1% of the value + 20 digits	Protection / Standards	CAT III 600 V / EN 61010-2-032
<b>Harmonics in the voltage (relative)</b>	0 ... 999.999 kVAh ± 1% of the value + 20 digits		
<b>Harmonics in the voltage (absolute)</b>	0 ... 999.999 kVarh ± 1% of the value + 20 digits		
<b>Harmonics in the current (relative)</b>	0 ... 999.999 kVarh ± 1% of the value + 20 digits		
<b>Harmonics in the current (absolute)</b>	1 - 20 th / ± 2% / 0.1% 21 - 50 th / ± 4% of the value ± 2% / 0.1%		
<b>Total harmonic distortion (THD-F)</b>	1 - 20 th / ± 2% / 0.1% 21 - 50 th / ± 4% of the value ± 0.5% / 0.1%		
	1 - 20 th / ± 2% of the value ± 0.4 A / 0.1 A 21 - 50 th / ± 4% of the value ± 0.4 A / 0.1 A		
	0.0 - 20% / 2% / 0.1% 20.1 - 100% / ± 6% of the value ± 1% / 0.1% 100.1 - 999.9 % / ± 10% of the value ± 1% / 0.1%		



Subject to change without notice



## POWER MEASUREMENT

### ELECTRICAL TESTER PCE-PCM 1

#### Three-phase power measurement / True RMS

PCE-PCM 1 is a multipurpose electrical tester or power analyzer used to measure alternating current (AC), voltage (TRMS) and frequency to determine active (kW), apparent (kVA) and reactive (kVAR) power as well as active energy (kWh) consumption. Both the phase angle and the power factor ( $\cos \phi$ ) are shown on the handheld power meter's large and easy-to-read backlit display.

The power analyzer aids in evaluating power and energy use in machines and electrical installations. The device's compact design allows for measurements to be taken in the field and on the go. Up to 99 measurement values can be saved to the internal memory of the power meter.

#### ISO cal option

- ▶ active power (kW)
- ▶ apparent power (kVA)
- ▶ reactive power (kVAR)
- ▶ power factor ( $\cos \phi$ )
- ▶ phase angle
- ▶ active energy counter (kWh)
- ▶ auto range selection
- ▶ voltage
- ▶ current (AC)
- ▶ true RMS
- ▶ frequency
- ▶ internal memory saves up to 99 measurement values
- ▶ minimum / maximum values



#### APPLICATION



### TECHNICAL SPECIFICATIONS

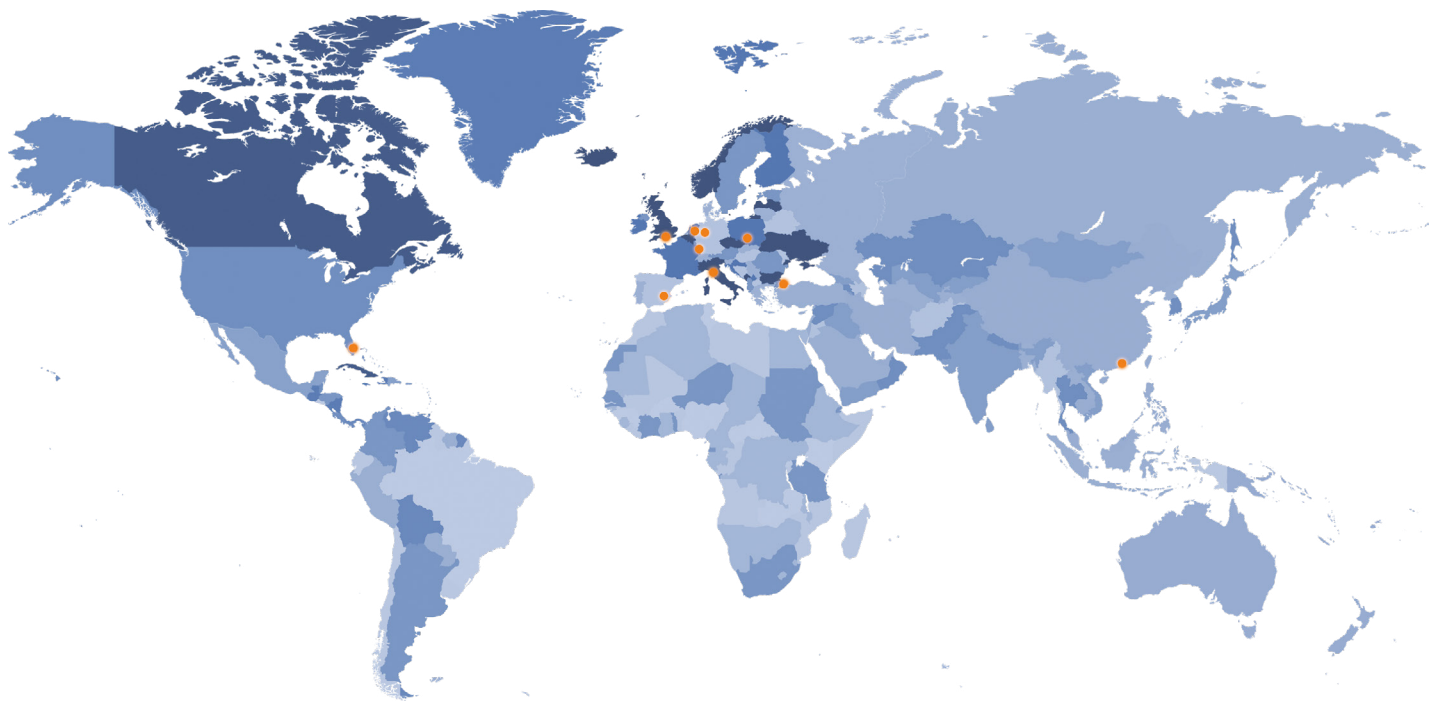
Voltage (AC / TRMS, 50 ... 200 Hz)	100 / 400 / 750V, $\pm$ (1.2% + 5 digits)
Current (AC / TRMS, 50 ... 200 Hz)	40 / 100 / 400 / 1000 A, $\pm$ (2.0% + 5 digits)
Active power measurement	4 ... 750 kW, $\pm$ (3.0% + 5 digits)
Apparent power measurement	4 ... 750 kVA, $\pm$ (3.0% + 5 digits)
Reactive power measurement	4 ... 750 kVAR, $\pm$ (3.0% + 5 digits)
Active energy (kWh counter)	1 ... 9999 kWh, $\pm$ (3.0% + 2 digits)
Power factor ( $\cos \phi$ ) (min. 10 A / 45V)	0.3 ... 1 inductive or capacitive / $\pm$ (0.02% + 2 digits)
Phase angle	0 ... 90°, $\pm$ 2.0°
Frequency	50 ... 200 Hz, $\pm$ (0.5% + 5 digits)
Internal memory	99 measurement values
Display	9999 values with bar graph and backlight
Power supply	1 x 9V battery
Dimensions	105 x 47 x 294 mm / 4.1 x 1.8 x 11.5 in
Weight	495 g / 1.1 lbs
Overvoltage category	CAT IV 600 V / CAT III 1000 V
See user manual for full details.	



Subject to change without notice



# COMPANY LOCATIONS



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