



## TEST EQUIPMENT FOR MAINTENANCE AND SERVICE



# PCE Instruments

Discover our new test instruments and their functions.







## TESTING

### TEST INSTRUMENTS FROM GERMANY

#### Maintenance and Service

The company PCE Instruments based in Meschede-Freienohl in the German Sauerland region was founded in 1999 by three engineers. With more than 120 employees and several branches around the world, the company focuses on the development, production and distribution of high-performance and innovative products from the fields of measuring instruments, control systems, weighing equipment and laboratory technology.

PCE Instruments' wide range of products and services offers high precision and flexibility in any application as well as outstanding quality and functionality. The different fields can be seen in the overview.



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#### MEASURING INSTRUMENTS

The field of measuring instruments covers a multitude of innovative portable products as well as products for fixed installation that measure electrical, mechanical, biological and chemical parameters.

#### CONTROL SYSTEMS

The range of control systems covers the complete demand for sensors, displays, controllers and paperless recorders.

#### WEIGHING EQUIPMENT

The field of weighing equipment comprises a wide standard range of high-quality scales and balances that can be calibrated and/or verified for trade.

#### LABORATORY TECHNOLOGY

High-end analytical and laboratory devices have been developed for professional applications and in particular for use in laboratories.



#### DEVELOPMENT

In order to develop modified test equipment in line with customers' specifications, proficient engineers and technicians cooperate closely with the customer.

#### PRODUCTION

PCE Instruments manufactures industrial test instruments that help improving process analysis and optimisation.

#### CALIBRATION

Our DIN EN ISO 9001:2015 certified calibration laboratory verifies the measuring accuracy of our products. They calibrate pressure, hardness, force, material thickness, sound pressure, conductivity, redox, vibration acceleration and more.



# VIBRATION MEASUREMENT

## VIBRATION METER PCE-VT 3700 / PCE-VT 3700S

### Handy entry-level device for vibration monitoring of machines and systems

The vibration meter is ideal for maintenance workers to quickly check vibrating parts, machines and systems. This vibration meter shows the vibration acceleration, vibration velocity and vibration displacement directly on the display. You can use the device to quickly and reliably detect machine imbalances which can lead to, for example, bearing damage. The vibration meter is

equipped with a mode that allows a measurement according to ISO 10816-3 to be carried out. The vibration meter analyzes the measured values and automatically shows a good / bad evaluation on the display. The vibration meter is supplied with a sensor on a spiral cable, magnet adapter, service bag and batteries. The ISO factory certificate completes the scope of delivery.

### ISO cal option

- ▶ automatic ISO 10816-3 evaluation
- ▶ easy to handle
- ▶ for mobile vibration measurement
- ▶ colored graphic display
- ▶ peak-hold function
- ▶ incl. ISO calibration certificate



### APPLICATION



## TECHNICAL SPECIFICATIONS

Measuring range	Acceleration 0.0 ... 399.9 m/s <sup>2</sup> 0.1 m/s <sup>2</sup>
Resolution	±2 %
Accuracy @ 160 Hz	10 Hz ... 1 kHz
Frequency range	10 Hz ... 10 kHz
Measuring range	Velocity 0.00 ... 399.9 mm/s 0.1 mm/s
Resolution	±2 %
Accuracy @ 160 Hz	10 Hz ... 1 kHz
Frequency range	
Measuring range	Displacement 0.000 ... 3.9 mm 1 µm
Resolution	±2 %
Accuracy @ 160 Hz	10 Hz ... 200 Hz
Frequency range	
Measurement parameters	RMS, Peak, Peak-Peak Crest factor
Units	switchable metric / imperial
Display	3.5" LC display
Menu languages	English, German, French Spanish, Italian, Dutch Portuguese, Turkish, Polish Russian, Chinese, Japanese
Power supply	3 x 1.5 V AA batteries
Operating and storage conditions	-20 ... +65 °C / -4 ... 149 °F; 10 ... 95 % r.H.
Dimensions	150 x 80 x 38 mm / 5.9 x 3.1 x 1.5"
Weight	170 g / 6 oz
Sensor PCE-VT 3700	Sensor with spiral cable PCE-VT 3xxx SENSOR Magnet adapter PCE-VT VMH
Sensor PCE-VT 3700S	Sensor with spiral cable PCE-VT 3xxx SENSOR Magnet adapter PCE-VT VMH Needle sensor PCE-VT NP Handgrip PCE-VT 3xxx HANDLE
Technical data vibration sensor	
Resonance frequency	30 kHz
Transverse sensitivity	≤5 %
Destruction limit	5000 g (peak)
Operating and storage temperature	-20 ... +80 °C / -4 ... 176 °F; max. 95 % r.H.
Housing material	Stainless steel
Mounting thread	M5
Dimensions	16 x 36 mm / 0.6 x 1.4"
Weight (without cable)	35 g / 1.2 oz

### Optional accessories:

PCE-VT NP	Needle sensor for vibration meter
PCE-VT VMH	Magnet adapter
PCE-VT 3xxx HANDLE	Handgrip für vibration meter
PCE-VT 3700 CASE	Case with rigid foam insert
CAL-PCE-VT 3700	ISO-calibration for vibration meter
PCE-VT 3xxx SENSOR	Replacement sensor



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# VIBRATION MEASUREMENT

## VIBRATION ANALYZER PCE-VT 1100

### Measurement of acceleration, vibration velocity and displacement

The vibration analyzer is used as a hand-held measuring device for the individual assessment of vibrations on machines and systems. With the help of this vibration analyzer, the actual state can easily be determined on site. Thus, corresponding changes can be made directly on site after the measurement. Thereafter, the new condition can be assessed. Thus, the vibration analyzer

serves as a measuring device for a relative measurement on different machines. The vibration analyzer serves essentially as precautionary or preventive maintenance of production machines. Very often, the vibration analyzer is used to assess the state of smaller electric motors.

- ▶ measures speed, distance, acceleration
- ▶ keeps the value after every measurement
- ▶ easy to handle, powered by batteries
- ▶ wide frequency range
- ▶ automatic shut-down after 20 seconds of inactivity to protect battery life
- ▶ low battery indicator



## APPLICATION



## TECHNICAL SPECIFICATIONS

Parameter	Measuring Range	Frequency Range
Acceleration	0.01 ... 199.9 m/s <sup>2</sup> peak	10 Hz ... 1 kHz
Vibration speed	0.01 ... 199.9 mm/s rms	10 Hz ... 1 kHz
Displacement	0.001 ... 1.999 mm p-p	10 ... 500 Hz
Measurement accuracy	Acceleration: ≤ 3 % Vibration speed: ±5 %, ±2 Digits Displacement: +10/-20 % (10...20 Hz); ±5 % (20...1000 HZ)	

### General specifications

Display	LCD, Response time approx. 1 second
Power supply	2 x 6 V CR2032 button cell
Battery life	about 5 hours (in continuous operation)
Environmental conditions	0 ... +40 °C / 32 ... 104 °F, 0 ... 84 % r.H.
Dimensions	155 x 24 x 18.7 mm / 6.1 x 0.9 x 0.7 "
Weight	ca. 40 g / 1.4 oz (incl. batteries)

### Optional accessories::

Standard probe length 10mm	Order no.: PCE-VT-NF-10
Vibration Sensor length 45 mm	Order no.: PCE-VT-NF-45

### Further model:

PCE-VT 1100S	Vibration Sensor length 45 mm
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Subject to change without notice



# VIBRATION MEASUREMENT

## VIBRATION METER PCE-VT 1350

### Later analyzes thanks to data storage

The vibration meter is a measuring device for one-hand operation. This is made possible by the built-in acceleration sensor in the vibration meter. So that the measured values can be read from different angles on the vibration analyzer, the display can be rotated by the vibration meter in 0°, 90°, 180° and 270°. The display of the vibration meter is designed so that all measure-

ment parameters such as acceleration, speed and the way can be read. Another special feature of the vibration meter is the vibration evaluation according to ISO 10816-1. The vibration meter thus graphically shows directly on the display in which area the measured value is located.

### ISO cal option

- ▶ for fast vibration measurement
- ▶ display rotatable by 0°, 90°, 18° and 270°
- ▶ data storage for later analyzes
- ▶ carrying case included
- ▶ for mobile use
- ▶ graphic and numerical representation



## APPLICATION



## TECHNICAL SPECIFICATIONS

### Acceleration measurement function

Measuring range	Resolution	Accuracy
0.1 ... 199.9 m (655.8 ft) / s²	0.1 m (3.9 in) / s²	< 2 m (6.6 ft) / s² < ± 10 % > 2 m (6.6 ft) / s² < ± 5 %

### Measuring function speed

Measuring range	Resolution	Accuracy
0.1 ... 199.9 mm / s	0.1 mm / s	< 2 mm / s < ± 10 % > 2 mm / s < ± 5 %

### Measuring function way

Measuring range	Resolution	Accuracy
0.001 ... 1.999 mm	0.001 mm	< 0.02 mm < ± 10 % > 2 mm < ± 5 %

Sensor	Piezoelectric ceramics Accelerometer (shear type)
Sensor tip	10 mm / 0.4 in attachment
Frequency range <b>acceleration</b>	High frequency: 1 ... 15 KHz (HI) Low frequency: 20 Hz ... 1 KHz (LO)
Frequency range <b>speed</b>	Low frequency: 20 Hz ... 1 KHz (LO)
Frequency range <b>path</b>	Low frequency: 20 Hz ... 1 KHz (LO)
Display	2 in LCD
Update rate from the display	1 Hz
Maximum number of storage spaces	Approx. 100 measuring points
Maximum number of storage groups	7
Vibration assessment	According to ISO 10816-1
Power supply	2 x 1.5 V AAA batteries
Environmental conditions	0 ... 40 °C / 32 ... 104 °F, 30 ... 90 % RH
Dimensions	180 x 80 x 38 mm / 7.1 x 3.2 x 1.5 in
Weight	Approx. 250 g / < 1 lb (without batteries)

### Further model:

PCE-VT 1350S Vibration Sensor length 45 mm



Subject to change without notice



# VIBRATION MEASUREMENT

## VIBRATION METER PCE-VM 20

### Vibration meter for vibration measurement on machines

Rotating components in machines generally cause machine vibrations which can go over to the entire machine via mechanically coupled components. This creates a mixture of vibration with different frequencies. This machine vibration can have different effects some of which may be desired (e. g., in conveyors or vibrating sieves) – however, in most cases they are undesirable

and cause poor manufacturing qualities and increased wear of the machine. Increased wear and tear due to machine vibrations leads to reduced running times, higher failure rates and higher maintenance expenditure, i. e. to avoidable costs as a whole.

### ISO cal option

- ▶ real-time FFT analysis
- ▶ robust housing
- ▶ many vibration parameters
- ▶ integrated rechargeable LiPo battery
- ▶ direct evaluation of machine vibration in compliance with DIN ISO 10816



## APPLICATION



## TECHNICAL SPECIFICATIONS

Vibration acceleration	0 ... 200 m/s <sup>2</sup> , RMS and Peak-Peak
Vibration velocity	0 ... 200 mm/s, RMS
Vibration displacement	0 ... 2000 µm, Peak-Peak
Accuracy vibration	±5 %
Operating modes	vibration, temperature, revolutions
Darstellbare Messgrößen	Frequency Vibration acceleration vibration velocity vibration FFT spectrum
Units	metric, imperial mm/s <sup>2</sup> , mm/s, µm RPM und Hz
Interface	USB 2.0
Memory	4 GB micro SD card
Battery life	up to 8 h continuous operation
Battery type	lithium polymer
Display	128 x 160 pixel colour LCD
Environmental conditions	-10 ... +55 °C ≤ 80 % RH non-condensing
Dimensions	132 x 70 x 33 mm / 5.2 x 2.8 x 1.3 in (L x W x D)
Weight	approx. 150 g

**Handset:** must not be exposed to strong vibration, magnetic fields, corrosive media or dust

### Technical data of the vibration sensor

Sensitivity	100 mV/g
Frequency response (± 3 dB)	0.5 ... 15000 Hz
Frequency response (± 10 %)	2.0 ... 10000 Hz
Dynamic range	±50 g, peak
Power supply (IEPE)	18 ... 30 V DC
Constant current source	2 ... 10 mA
Spectral noise at 10 Hz	14 µg / √Hz
Spectral noise at 100 Hz	2.3 µg / √Hz
Spectral noise at 1000 Hz	2 µg / √Hz
Output impedance	< 100 Ω
Bias voltage	10 ... 14 V DC
Housing insulation	> 100 MΩ
Environmental conditions	-50 ... 121 °C / -58 ... 249.8 °F
Maximum impact protection	5000 g, peak
Resonant frequency	23,000 Hz
Housing material	316L stainless steel
Connection	2-pin MIL-C-5015
Protection class	IP 68
Weight	90 g / < 1 lb



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## VIBRATION MEASUREMENT

### VIBRATION TEST INSTRUMENT PCE-TU 3

#### Vibration Test Instrument for optical alignment of shafts

The PCE-TU 3 Vibration Meter is designed to check the shafts in machines and facilities and for the optical alignment of the shafts. This reduces machine downtime and prevents premature bearing failure. By means of the PCE-TU 3 Vibration Meter the relative position between two coupled machines, such as an engine and a pump, can be alternated to the point that the axis

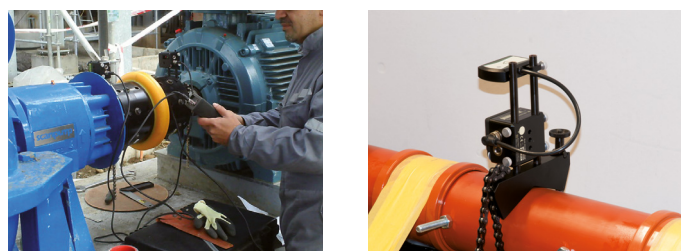
line of the shafts align during common operation. The measuring process with the PCE-TU 3 Vibration Meter is based on two laser probes, which measure the vertical and horizontal displacement and angular deviation. Other parameters, including the thermal expansion and tolerance, can be included into the measurement process of the PCE-TU 3 Vibration Meter.

#### ISO cal option

- ▶ measurement via soft foot possible
- ▶ integrated angulation's sensor
- ▶ two laser probes
- ▶ adjustable tolerance range
- ▶ measures plainness of surfaces
- ▶ USB and Bluetooth optional data transfer
- ▶ simulation of spacer disks possible
- ▶ 2 G internal data memory



#### APPLICATION



### TECHNICAL SPECIFICATIONS

Max. distance	10 m / 32.8 ft between sensors
Accuracy	±1 % + 0.01
Resolution	0.001 mm
Display resolution	0.01 or 0.001 mm
Sensor type	photo diodes 10 mm x 10 mm sensitive to position
Laser type	visible, red 635 ... 670 nm, < 1 mW
Angulation measurement	Resolution 0.1 °
Interfaces	USB standard, Bluetooth option
Data memory	2 GB
Operational temperature	-10 °C ... +55 °C 14 °F ... 131 °F
Power supply	NiMH batteries (rechargeable)
Enclosure	Silicon protection
Protection type	IP 65
Weight	7.5 kg / 16.5 lbs



Subject to change without notice



## BELT TENSION TESTING

### BELT-TENSION METER PCE-BTM 2000

#### To measure the tension of V-belts or drive belts

The PCE-BTM 2000 is a measuring instrument to determine the tension of V-belts or drive belts. Belt tension can only be measured when the belt is not in operation. A small impulse with the help of a beater is enough to make the belt vibrate. With a measuring probe and a sensor beam, the generated vibration frequency is determined. The belt tension is calculated on the

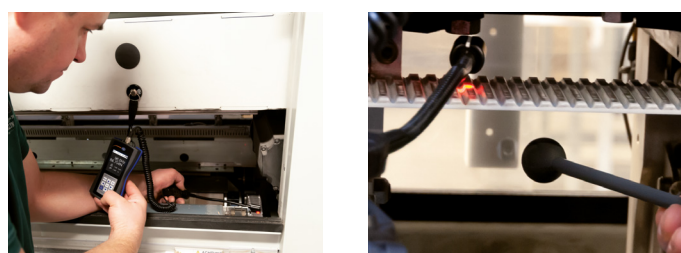
basis of the measuring data of the natural frequency as well as the belt mass and the length of the free belt span. It is not necessary to enter the belt mass and the belt length. The maximum service life of V-belts or drive belts can only be achieved with ideal tension.

#### ISO cal option

- ▶ measures vibration frequency of the belt
- ▶ intuitive operation
- ▶ calculation of belt tension (trum force)
- ▶ displays belt tension in N
- ▶ 6 menu languages
- ▶ memory for 750 readings
- ▶ sensor with gooseneck
- ▶ belt length and belt mass can be entered



#### APPLICATION



### TECHNICAL SPECIFICATIONS

Measurement range	10 ... 900 Hz
Accuracy	±(1 % of rdg. + 4 digits)
Repeatability	±1 Hz
Resolution	< 100 Hz: 0.1 Hz > 100 Hz: 1 Hz
Belt length	max. 9.999 m
Belt mass	max. 9.999 kg/m
Memory	750 readings 15 folders, 50 measuring points/folder
Menu languages	English, German, Spanish, French, Italian, Dutch
Power supply	3 x 1.5 V AAA battery
Operating conditions	0 ... 50 °C; max. 95 % RH
Storage conditions	-20 ... 65 °C; max. 95 % RH
Dimensions	150 x 80 x 38 mm
Weight	approx. 200 g incl. batteries



Subject to change without notice



## RPM MEASUREMENT

## TACHOMETER PCE-T 260

## For optical and contact rpm and temperature measurement

The combined tachometer-stroboscope is a measuring device for use in maintenance and production. In addition to the stroboscope function, the tachometer-stroboscope is also able to measure temperature by an infrared beam. Thus, the tachometer-stroboscope is ideal for testing the rotational speeds and temperatures of centrifuges, motors, fans and many other

machines and systems used in industry and research. The special feature is the combination of these measurement parameters in a single housing. The tachometer-stroboscope has a measuring range of 0.5 ... 99.990 rpm and the IC circuit in conjunction with a bright red LED lamp ensure the device has a low power consumption and is almost maintenance-free.

## ISO cal option

- ▶ easy to handle
- ▶ powerful LEDs
- ▶ non-contact temperature measurement
- ▶ temp. measurement with sensor K-type or Pt-1000 sensor
- ▶ robust ABS plastic housing
- ▶ 5-digit 10 mm LCD display
- ▶ last measured value, min / max memory
- ▶ red strobe light



## APPLICATION



## TECHNICAL SPECIFICATIONS

## Technical data of PCE-T 260 optical tachometer

Measuring range	5 ... 99999 rpm
Resolution	0.5 rpm (< 1000 rpm) 1 rpm (> 1000 rpm)
Accuracy	±0.05 % + 1 digit
Distance to the measuring object	50 ... 150 mm, max. 300 mm (depending on ambient light)

## Technical data of PCE-T 260 contact tachometer

Measuring range	0.5 ... 19999 rpm
Resolution	0.5 rpm (< 1000 rpm) 1 rpm (> 1000 rpm) 0.05 m/min (< 100 m/min) 0.1 m/min (> 100 m/min)
Accuracy	±0.05 % + 1 digit

## Technical data of PCE-T 260 stroboscope

Measuring range	100 ... 99990 FPM
Resolution	0.1 FPM (< 1000 FPM) 1 FPM (1000 ... 30000 FPM) 5 FPM (30000 ... 50000 FPM) 1 FPM (50000 ... 99990 FPM)
Accuracy	±0.1 % + 2 digit
Flash lamp	3 x LED (red)

## Technical data of PCE-T 260 temperature K-type

Measuring range	-100 ... 1300 °C / -148 ... 2372 °F
Resolution	0.1 °C
Accuracy (device only)	±0.4 % + 1 °C (-100 ... -50 °C) ±0.4 % + 0.5 °C (-50 ... 1300 °C)

## Technical data of PCE-T 260 temperature Pt 1000

Measuring range	-10 ... 70 °C
Resolution	0.1 °C
Accuracy (device only)	±1.2 °C

## Technical data of PCE-T 260 temperature IR

Measuring range	-30 ... 305 °C
Resolution	0.5 °C
Accuracy	±3 % or ± 3 °C
Emissivity	0.95 fixed
Spectral range	6 ... 14 µm
Optical resolution	3:1

## General specifications of PCE-T 260

Display	5-digit LCD
Interface	RS 232
Power supply	4 x 1.5 V AA (UM-3) / Adapter
Power consumption	approx. 52-mA
Environmental conditions	0 ... 50 °C < 80 % rH.
Memory	Last value, Min, Max
Dimensions	207 x 67 x 39 mm
Weight	255 g / without batteries

## Optional accessories:

Surface probe for thermometer	Order code	TF-101
Magnet-surface probe	Order code	TF-513
Air probe	Order code	TF-108
Crocodile clip	Order code	TF-109
Isolated surface probe	Order code	TF-102A
High-temperature surface probe	Order code	TF-110A
High-temperature probe (extra long)	Order code	TF-104B
High-temperature probe	Order code	TF-104A
High-temperature wire probe	Order code	TF-121
Flexible temperature probe	Order code	TF-500
Penetration	Order code	TF-106
Screw probe	Order code	TF-119
Compensation / thermo-couple 90 °C (l/m)	Order code	AGL-90
Compensation / thermo-couple 400 °C (l/m)	Order code	AGL-400
Compensation / thermo-couple 260 °C (l/m)	Order code	AGL-260
Reflectiontape 5 m	Order code	REFB



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## TACHOMETER PCE-T 238

## Tachometer for contact and non-contact measurement / for speeds up to 99,999 rpm

The tachometer PCE-T 238 is a battery-powered hand-held device that allows mobile use. The tachometer can perform a contact measurement as well as a non-contact measurement. It is also possible to perform a measurement of the surface velocity. The tachometer allows a measurement of up to 99,999 revolutions per minute. This range is possible for non-contact

measurements with the optical tachometer. With the contact measurement, values up to 19,999 revolutions per minute can be determined and the measurement of the surface speed offers the possibility of determining speeds of up to 1999.9 meters per minute. Such measurements can be started directly with the tachometer and do not require much preparation.

## ISO cal option

- ▶ non-contact measurement via a laser
- ▶ contact measurement of m/min via surface wheel
- ▶ robust ABS plastic housing
- ▶ with different rubberized measuring tips (cone shape and funnel shape)
- ▶ checking the speed of hard to reach components possible
- ▶ independent of rotation direction
- ▶ running speed



## APPLICATION



## TECHNICAL SPECIFICATIONS

Measuring range non-contact measurement	5 ... 99,999 RPM
Measuring range contact measurement	0.5 ... 19,999 RPM
Measuring range surface measurement	0.05 ... 1,999.9 m/min
Resolution RPM	At < 1,000 rpm: 0.1 At ≥ 1,000 rpm: 1
Resolution m/min	At < 100 m/min: 0.01 At ≥ 1000 m/min: 1
Display	LCD, size: 32 x 28 mm / 1.2 x 1.1 in, 5 digits
Measurement accuracy	±(0.1 % of rdg. + 1 digit) of fs.
Measuring distance for non-contact measurements	Typically 5 ... 150 cm / 2 ... 59 in
Laser	Class II, power: 1 mW
Operating conditions	0 ... 50 °C / 32 ... 122 °F, < 80 % RV
Memory	Last value, extreme values with recall function
Data interface	RS232
Power supply	4 x 1.5 V AAA batteries
Power consumption	Non-contact measurement: ca. DC 20 mA Contact measurement: ca. DC 9.5 mA
Dimensions	165 x 50 x 33 mm / 6.5 x 1.9 x 1.3 in
Weight	182 g / 6.4 oz (incl. batteries)



Subject to change without notice



## RPM MEASUREMENT

### STROBOSCOPE PCE-LES 100

#### LED-tachometer with a range of 60 ... 99.990 flashes

The PCE-LES 100 LED stroboscope combines LED technology with compact and accurate electronics which control the sequence and duration of flashes over the entire measuring range. Thanks to LED technology, the LED stroboscope does not require periodical bulbs. The LED handheld stroboscope is ideal for non-contact measurements and to visualize movements

on machinery and equipment, giving the viewer the impression that the object is stationary.

Due to its wide frequency range and the different flash durations, the handheld LED stroboscope can be used for a variety of purposes where it is important to make very fast movements visible.

#### ISO cal option

- ▶ handheld stroboscope with LED technology
- ▶ (no need to change light bulbs)
- ▶ 60 to 99,990 flashes
- ▶ possibility to multiply and divide frequency by two
- ▶ possibility to work with battery up to 11 h
- ▶ 2 bright LEDs (1400 lux @ 50 cm)
- ▶ one hand use
- ▶ power supply by standard batteries



### APPLICATION



### TECHNICAL SPECIFICATIONS

Range	60 ... 99,990 rpm 1 ... 1,666 Hz
Display	5-digit LCD
Impulses/flashes	Possibility of duplication and division/fine tuning
Offset	Yes, 360 °
Accuracy	
60 ... 17,300	±1 LSD
17,300 ... 99,990	±0.009 %
Light source	LED
Light intensity	1400 lux (50 cm distance, 6,000 FPM)
Battery	2 x AA batteries
Operating time	Brightness mode: 8 h, power saving mode: 11 h
Environmental conditions	-10 ... 50 °C / 14 ... 122 °F
Dimensions	124 x 71 x 33 mm / 4.9 x 2.8 x 1.3 in
Weight	173 g / < 1 lb



Subject to change without notice



## RPM MEASUREMENT

### STROBOSCOPE PCE-LES 102

#### LED-tachometer with a range of 60 ... 300.000 flashes

The PCE-LES 102 LED stroboscope combines LED technology with compact and accurate electronics which control the sequence and duration of flashes over the entire measuring range. Thanks to LED technology, the LED stroboscope does not require periodical bulbs. The LED handheld stroboscope is ideal for non-contact measurements and to visualize movements

on machinery and equipment, giving the viewer the impression that the object is stationary.

The LED handheld stroboscope can be used for a variety of purposes, where it is important to make very fast movements visible (e.g. vibration), due to its wide frequency range and the different lengths of flash.

#### ISO cal option

- ▶ 2 high-power LEDs
- ▶ flash frequency up to 300.000 FPM
- ▶ adjustable flash duration and phase shift
- ▶ 2.4 " TFT display
- ▶ automatic shutdown



### APPLICATION



### TECHNICAL SPECIFICATIONS

Technology	2 high-power LEDs
Color temperature	6,500 K
Illuminance	Min. 1,200 lux at 6,000 FPM (distance 30 cm)
Measuring range	60 ... 300,000 FPM
	1 ... 5,000 Hz
Resolution	60 ... 999.99 FPM: 0.01 FPM
	10,000 ... 300,000 FPM: 0.1 FPM
	1 ... 5,000 Hz: 0.01 Hz
Accuracy	0.001 % of rdg.
Phase shift	-359 ° ... 359 ° (Resolution 0.1°)
Battery	5,200 mAh, 12 V Rechargeable Li-Ion battery
Dimensions	(180 x 93 x 36 mm)
Operating conditions	0 ... 50 °C
Storage conditions	-20 ... 65 °C
	35 ... 85 % RH, non-condensing
Charging time	3 h
Power adaptor	Input: 100 ... 240 VAC; 50/60 Hz
	Output: 12 V; 3 A
Operating time	21 h at 6000 FPM
	36 h at 6000 FPM (display off)



Subject to change without notice



## RPM MEASUREMENT

## STROBOSCOPE PCE-LES 308

## Handheld tachometer stroboscope with 8 high-power LEDs

The stroboscope is ideally suited for the speed determination of rotating machines as well as for the visualization of faulty machine parts and assemblies. The stroboscope can generate static images by means of phase and equal speed periodic illumination of the components to be tested by means of flashes of light. This makes mistakes visible on the rotating or oscillating

component during the process. Thanks to the 13 hours operating time, compact design and size of the LED handheld stroboscope, you can always have it with you.

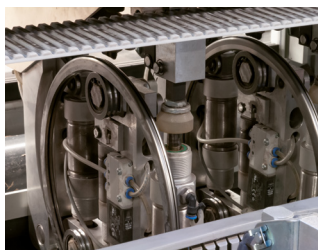
The stroboscope PCE-LES 308 is equipped with 8 high-power LEDs that generate a light intensity of 3100 lux at 6000 FPM at a distance of 30 cm / 11.8 in.

## ISO cal option

- ▶ 8 high-power LEDs
- ▶ flash frequency up to 300.000 FPM
- ▶ adjustable flash duration and phase shift
- ▶ 2.4 " TFT display
- ▶ automatic shutdown
- ▶ external measuring mode
- ▶ slow motion mode



## APPLICATION



## TECHNICAL SPECIFICATIONS

Technology	8 high-power LEDs
Color temperature	5,000 K
Illuminance	Min. 3,100 lux at 6,000 FPM (distance 30 cm)
Measuring range	60 ... 300,000 FPM
	1 ... 5,000 Hz
Resolution	60 ... 999.99 FPM: 0.01 FPM
	10,000 ... 300,000 FPM: 0.1 FPM
	1 ... 5,000 Hz: 0.01 Hz
Accuracy	0.001 % of rdg.
Phase shift	-359 ° ... 359 ° (Resolution 0.1 °)
In- and output	24 V Trigger In- and Output
Battery	Li-ion accu; 5200 mAh, 12 V
Operating conditions	0 ... 50 °C
Storage conditions	-20 ... 65 °C
	35 ... 85 % RH, non-condensing
Memory storage	750 measurements
Charging time	3 h
Power adaptor	Input: 100 ... 240 VAC; 50/60 Hz
	Output: 12 V; 3 A
Operating time	13 h at 6,000 FPM
	17 h at 6,000 FPM (display off)



Subject to change without notice



## MECHANICS STETHOSCOPE PCE-S 42

**Machine stethoscope to listen to bearings and motors / 32 sound levels**

The automotive-testing mechanics stethoscope PCE-S 42 is designed for listening to individual machine parts, which enables you to carry out maintenance and repair work using the machine stethoscope. The use of a machine stethoscope thus makes it easier to listen to sound phenomena in bearings and motors. This makes it possible to amplify noises that imply that the machine

is slightly damaged, which can cause severe impairments and damage to the machine if not observed. The machine stethoscope comes with headphones the shape of which is adapted to the human head and thus are perfectly suitable to be used in noisy environments. The big, padded earpieces have a noise-suppressing effect and at the same time offer wearing comfort.

- ▶ two different measuring tips
- ▶ non-stationary measuring device
- ▶ 32 volume levels
- ▶ headphones adapted to the human head
- ▶ for preventive maintenance and servicing
- ▶ noise-suppressing headphones



## APPLICATION



## TECHNICAL SPECIFICATIONS

Frequency range	30 Hz ... 15 KHz
Operating temperature	-10 ... +40 °C
Output volume	digitally adjustable (32 levels)
Headphones	32 Ω
Power supply	4 x AAA battery
Battery life	30 h
Dimensions	220 x 35 x 35 mm
Length sensors	70 / 280 mm



Subject to change without notice



## DATA LOGGER PCE-VDL 24I

## 3-axis acceleration up to 1600 Hz

The acceleration sensor of this 3-axis data logger has a sampling rate of 1600 Hz. The sensor measures the current acceleration (3 axes), for instance in case of a shock or vibration. The measurements are made in pre-set (selectable) time intervals. The data measured with the internal 3-axis acceleration sensor are saved to a 32 GB memory card. This makes the data logger perfectly

suitable to determine the acceleration for the purposes of fault diagnostics / stress test of components, machine monitoring, shock measurements and preventive maintenance in general.

## ISO cal option

- ▶ 3-axis acceleration up to 1600 Hz
- ▶ 32 GB SD memory card
- ▶ compact design: 86.8 x 44.1 x 22.2 mm
- ▶ country of origin Germany



## APPLICATION



## TECHNICAL SPECIFICATIONS

## Parameter 3-axis acceleration

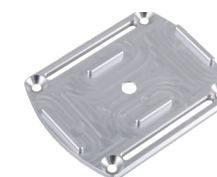
Measurement range	±16 g
Accuracy	±0.24 g
Sampling rate	1600 Hz ... 1 Hz

## General technical data of the 3-axis acceleration sensor

Memory capacity	2.5 readings per measurement, 3.2 billion readings with included 32 GB microSD memory card
Keys	start / stop of a measurement; data logger on / off
LED	Log: operating status Alarm: alarm indicator Charge: charging status USB: status of PC connection
Power supply	integrated rechargeable Li-Ion battery 3.7 V / 500 mAh The meter is charged via the USB interface.
Integrated sensors	3-axis acceleration
Interface	USB
PC software	free setup an evaluation software (Windows XP / Vista / 7 / 8 / 10 32 bit / 64 bit) to record and evaluate data
Operating conditions	temperature -20 ... +65 °C
Storage conditions	temperature +5 ... +45 °C (ideal storage conditions for battery) 10 ... 95 % RH, non-condensing
Standards	complies with EU regulation RoHS/WEEE
Weight	approx. 60 g
Dimensions (L x W x H)	87 x 44 x 23 mm

## Optional accessories:

Mounting plate	Order code PCE-VDL MNT
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Subject to change without notice



# TEMPERATURE MEASUREMENT

## INFRARED THERMOMETER PCE-670

### Mini handheld thermometer with large measuring range -33 ... 500 °C (-27.4 ... 932 °F)

Simple, handy handheld thermometer for non-contact measurement of surface temperature. The handheld thermometer has a display of the current temperature during the measurement. Within one second you get the surface temperature - the non-contact measuring method even from hot, dangerous or difficult to reach objects. The applications are virtually unlimited. Thus,

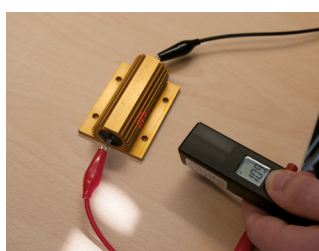
this handheld thermometer can be used in the control of heating and air conditioning systems, underfloor heating, for detecting hot spots on electrical systems, etc. The emission value of this handheld thermometer is set to 0.95 and thus covers 90 % of all temperature measurement tasks.

### ISO cal option

- ▶ IR temperature measuring range of -33 ... 500 °C / -27.4 ... 932 °F
- ▶ measured value display optionally in °C or °F
- ▶ automatic shutdown
- ▶ display of the current and maximum temperature
- ▶ last measurement is retained for 2 seconds
- ▶ measurement spot ratio 9 : 1
- ▶ easy to handle
- ▶ incl. battery and manual



## APPLICATION



## TECHNICAL SPECIFICATIONS

Temperature measurement range	-33 ... 500 °C / -27.4 ... 932 °F
Resolution	-9.9 ... 199.9 °C / 14.2 ... 391.8 °F : 0.1 °C / 0.18 °F < 10 °C / 50 °F : 1 °C / 1.8 °F > 200 °C / 392 °F : 1 °C / 1.8 °F
Accuracy	±2 % of rdg. or ±2 °C / 3.6 °F the greater value applies
Optical resolution	9 : 1
Emissivity	0.95 (fixed)
Laser	Circle laser Class 2 <1mW
Operating time	About 30 h
Operating conditions	0 ... 30 °C / 32 ... 86 °F, max. 90 % rh
Storage conditions	-10 ... 40 °C / 14 ... 104 °F, max. 65 % rh
Power supply	1.5 V AA battery
Display	LC display
Dimensions	150 x 25 x 27 mm / 5.9 x 1 x 1.1 in
Weight	About 74 g / < 1 lb



Subject to change without notice



# TEMPERATURE MEASUREMENT

## INFRARED THERMOMETER PCE-IRT 10

### Thermometer for permanent installation / 0 ... 600 °C (32 ... 1112 °F)

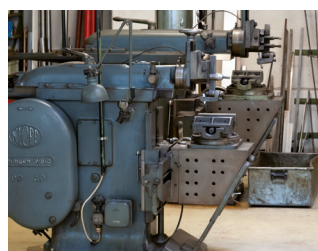
The thermometer has been developed for permanent installation. This thermometer has a 4 ... 20-mA output, which is scaled over the measuring range from 0 ... 600 °C / 32 ... 1112 °F. The emissivity is freely adjustable from 0.1 ... 1.000 on the thermometer. With a response time of just 150 ms, the thermometer is ideal for fast processes. The thermometer is supplied with

a supply voltage of 12 ... 24 V DC. The analog output signal can also be tapped here. The thermometer has an illuminated display for setting the emission value and the automatic hold function. The measured value is also continuously shown on this display. The thermometer is made of stainless steel and protected according to IP 65.

- ▶ measurements from 0 ... 600 °C / 32 ... 1112 °F
- ▶ including mounting bracket
- ▶ output signal: 4 ... 20-mA
- ▶ easy operation and assembly
- ▶ 150 ms response time
- ▶ 1 m / 3.3 ft connection cable



## APPLICATION



## TECHNICAL SPECIFICATIONS

Measuring range	0 ... 600 °C / 32 ... 1112 °F
Measurement accuracy	±1.5 °C / 2.7 °F or 1 % of the measured value, whichever is greater applies
Repeatability	±1 °C / 1.8 °F or 0.5 % of the measured value, the higher value applies
Optical resolution	20 : 1
Output signal	4 ... 20-mA
Spectral sensitivity	8 ... 14 µm
Emissivity	Adjustable 0.100 ... 1.000
Power supply	12 ... 24 V DC max. 20-mA
Burden	500 ohms
Protection class	IP 65
Material	Stainless steel
Operating temperature	0 ... 70 °C / 32 ... 158 °F
Relative humidity	10 ... 85 %
Measurement time	150 ms
Cable length	1 m / 3.3 ft
Display	LCD display
Dimensions	Ø 59.5 x 63.5 mm / 2.3 x 2.5 in
Weight	Approx. 200 g / < 1 lb



Subject to change without notice



# TEMPERATURE MEASUREMENT

## DIGITAL THERMOMETER PCE-895

### Cross laser thermometer for non-contact measurement tot 1600 °C

The Dual Laser Digital Thermometer PCE-895 is used for fast surface temperature measurement. The two laser points of the dual laser thermometer PCE-895 mark the exact measuring point and thus offer excellent assistance with the temperature measurement. Due to the cross laser function, the two laser spots indicate exactly how large the actual IR spot is. The emis-

sivity of the dual laser thermometer PCE-895 is adjustable in the range of 0.10 ... 1.0. Thus, the dual laser thermometer PCE-895 is suitable for almost all surfaces. The temperature measuring range extends from -35 ... 1600 °C / -31 ... 2912 °F. In addition to the IR function, a type K thermocouple can also be connected to the dual laser thermometer.

### ISO cal option

- ▶ non-contact temperature measurement
- ▶ 60 :1 optics
- ▶ temperature measurement up to 1600 °C / 2912 °F
- ▶ compact cross laser thermometer
- ▶ double laser shows the spot diameter
- ▶ adjustable emissivity
- ▶ adjustable emissivity
- ▶ alarm function



## APPLICATION



## TECHNICAL SPECIFICATIONS

### Infrared

Measuring range	-35 ... 1600 °C / -31 ... 2912 °F
Measuring accuracy (at 23 ... 25 °C ambient temperature)	-35 ... 0 °C / 0 °F: $\pm 2$ °C / 3.6 °F + 0.05*TOBJ 0 ... 1600 °C: $\pm 2$ % of rdg. or $\pm 2$ °C / 3.6 °F
Resolution	1 °C / 1.8 °F at 1000 ... 1600 °C / 1832 ... 2912 °F

### Thermocouple

Measuring range	Type K: -64 ... 1400 °C / -83 ... 2552 °F
Measuring accuracy (at 23 ... 25 °C ambient temperature)	$\pm 1$ % of rdg. or $\pm 1$ °C / 1.8 °F
Resolution	0.1 °C / 0.18 °F at -64 ... 999.9 °C / -83.2 ... 1831.8 °F

Emissivity	Adjustable 0.10 ... 1.0
Spectral range	8 ... 14 $\mu$ m
Response time	1 s
Optical resolution / measurement spot ratio	60 :1
Storage	Internal: 24 memory points External (micro-SD card): max. 8 GB supported

Interface	USB
Display	LCD illuminated
Power supply	2 x 1.5 V AA batteries
Operating time	Typical: 14 h Continuous: 10 h
Operating conditions	0 ... 50 °C / 32 ... 122 °F
Weight	ca. 400 g / 14.1 oz
Dimensions	203 x 176 x 89 mm / 7.9 x 6.9 x 3.5 in



Subject to change without notice



# THERMAL INSPECTION

## THERMAL IMAGER CAMERA PCE-TC 29

### For non-contact temperature measurement -20 °C ... +300 °C with integrated colour camera

PCE-TC 29 is a thermal imager camera used for visual inspection and non-contact IR temperature measurement. Ideal for industrial use in electrical, mechanical, and building installations (such as in the auditing of machines, engines, or heating, ventilation, and air conditioning (HVAC) systems), this affordable thermal imager captures and saves 60 x 60 pixel IR resolution

images to the included MicroSD memory card. Locate hot and cold spots with ease by using the thermal imager's picture-in-picture overlay capability. The imager's built-in color camera captures the real-life visual, while the integrated thermography camera acquires

### ISO cal option

- ▶ integrated color camera offers picture-in-picture overlay of real-life visual and infrared (IR) images
- ▶ user-friendly interface
- ▶ compact, lightweight design
- ▶ adjustable emissivity from 0.1 ... 1.0
- ▶ display of min / max measured values
- ▶ easy-to-read 2.5 " TFT color LCD screen
- ▶ different color palettes for viewing IR temperature signatures



## APPLICATION



## TECHNICAL SPECIFICATIONS

Display	2.5 " TFT color LCD screen
IR resolution	60 x 60 pixels
Color camera resolution	300,000 pixels
FOV	20 x 20 °
Thermal sensitivity	0.15 °C / 0.27 °F
Temperature measuring range temperature	-20 ... 300 °C / -4 ... 572 °F
Temperature measurement accuracy	±2 % or ±2 °C / 3.6 °F
Emissivity	Adjustable from 0.1 ... 1.0
Image acquisition frequency	6 Hz
Infrared spectral band	8 ... 14 µm
Mechanism of focus	Fixed focus
Color palettes	Iron, rainbow, rainbow (strong contrast), grey, grey-inverted
Picture-in-picture overlay increments	0 / 25 / 50 / 75 / 100 %
File format	.bmp
Data storage	MicroSD card memory
Power-saving automatic shutdown	Yes, after 12 minutes of inactivity
Operating temperature	-50 ... 40 °C / -58 ... 104 °F
Storage temperature	-20 ... 55 °C / -4 ... 131 °F
Operating and storage relative humidity (RH)	10 ... 80 % RH
Standard compliance	EN 61326-1: 2006
Overflow indication	High
Power supply	4 x AA batteries
Battery life	Approximately 6 hours of continuous use at full charge
Dimensions	223 x 88 x 65 mm / 8.78 x 3.47 x 2.56 in
Weight	310 g / < 1 lb



Subject to change without notice



## THERMAL IMAGER PCE-TC 30N

### For maintenance with a measuring range up to 450 °C

The PCE-TC 30N thermal imaging camera for preventive maintenance is the ideal tool for preventative maintenance. This thermal imaging camera is a must-have for electricians, fitters, or general maintenance personnel for trouble shooting and fault prevention on electrical equipment, electromechanical equipment, production process machinery, heating, ventilation, and air

conditioning systems, especially when working in harsh environments. The operator can use the PCE-TC 30N high-resolution thermal imaging camera for preventive maintenance, to detect evolving faults on machinery and equipment. The preventive maintenance and service is thus made easy.

### ISO cal option

- ▶ IR resolution: 160 x 120 pixels
- ▶ measuring range: -20 ... 450 °C / -4 ... 842 °F
- ▶ thermal sensitivity: 70 mK
- ▶ memory: 3 GB memory for more than 20,000 pictures
- ▶ 5 different color palettes
- ▶ hot and cold spot location
- ▶ picture in Picture function



### APPLICATION



## TECHNICAL SPECIFICATIONS

<b>Infrared sensor</b>	
Resolution	160 x 120 pixels
Wavelength	8 ... 14 µm
Thermal sensitivity	70 mk
Refresh rate	9 Hz
Field of view (FOV)	35 ° x 26 °
Focusing	Firm focus
Smallest distance	0.15 m / 5.9 in
Temperature range	-20 ... 450 °C / -4 ... 842 °F
Accuracy	±2 °C / 3.6 °F, ±2 % from 300 °C / 572 °C, ±5 %
Calibration of the measurement	Auto
Number of spots	1
Number of measuring ranges	1
Emissivity	Range: 0.01 ... 1.00
Color palettes	Rainbow, iron oxide red, cold color, black & white, white & black
<b>Other specifications</b>	
Picture in picture function	Adjustable 25 %, 50 %, 75 %, 100 %
Camera resolution	300,000 pixels
Screen	2.8 " TFT
Screen resolution	320 x 240 pixels
Image memory	Built-in SD card with 3 Gb for more than 20,000 images
Image format	JPG
Power supply battery	Built-in 18650 battery, about 2800-mAh
Power supply power supply	Primary: 100 ... 240 V AC 50/60 Hz Secondary: 5 V / 2 ADC
Interface	Micro USB for charging and memory readout on a PC
Operating time	Between 2 ... 3 hours
Menu languages	English, Chinese, Italian, German
Automatic shutdown	After 5, 20 minutes or disabled
Ambient temperature	0 ... 45 °C / 32 ... 113 °F
Storage conditions	-20 ... 60 °C / -4 ... 140 °F
Humidity	≤ 85 % RH (non-condensing)
Dimensions	96 x 72 x 226 mm / 3.8 x 4.1 x 8.9 in
Weight	389 g / < 1 lb



Subject to change without notice



## DIGITAL THERMOMETER PCE-TC 33N

## Measuring range up to 300 °C / Thermal sensitivity 70 mK

The infrared thermometer PCE-TC 33N is the ideal tool for repair work and prevention measures. This thermal imager is a must-have for electricians, fire fighters, locksmiths, or general service personnel for trouble shooting and fault prevention on electrical equipment, electromechanical equipment, production process machinery, heating, ventilation, and air conditioning systems,

especially when working in harsh environments. In preventative maintenance, the high-resolution PCE-TC 33N thermal imager is ideal for maintaining or repairing machinery or other equipment. At the heart of the PCE-TC 33N high-resolution thermography camera is an uncooled microbolometer (uncooled focal plane array) with a resolution of 220 x 160 pixels.

## ISO cal option

- ▶ IR resolution: 220 x 160 pixels
- ▶ measuring range: -20 ... 300 °C / -4 ... 572 °F
- ▶ thermal sensitivity: 70 mK
- ▶ memory: 3 GB memory for more than 20,000 pictures
- ▶ 5 different color palettes
- ▶ hot and cold point location
- ▶ picture in Picture function



## APPLICATION



## TECHNICAL SPECIFICATIONS

## Infrared sensor

Resolution	220 x 160 pixels
Wavelength	8 ... 14 µm
Thermal sensitivity	70 mK
Refresh rate	9 Hz
Field of view (FOV)	35 ° x 26 °
Focusing	Firm focus
Smallest distance	0.15 m / 5.9 in
Temperature range	-20 ... 300 °C / -4 ... 572 °F
Accuracy	±2 °C / 3.6 °F, ±2 %
Calibration of the measurement	Auto
Number of spots	1
Number of measuring ranges	1
Emissivity	Range: 0.01 ... 1.00
Color palettes	Rainbow, iron oxide red, cold color, black & white, white & black

## Other specifications

Picture in picture function	Adjustable 25 %, 50 %, 75 %, 100 %
Camera resolution	300,000 pixels
Screen	3.2 " TFT
Screen resolution	320 x 240 pixels
Image memory	Built-in SD card with 3 Gb for more than 20,000 images
Image format	JPG
Power supply battery	Built-in 18650 battery, about 2800-mAh
Power supply power supply	Primary: 100 ... 240 V AC 50/60 Hz Secondary: 5 V / 2 ADC
Interface	Micro USB for charging and memory readout on a PC
Operating time	Between 2 ... 3 hours
Menu languages	English, Chinese, Italian, German
Automatic shutdown	After 5, 20 minutes or disabled
Ambient temperature	0 ... 45 °C / 32 ... 113 °F
Storage conditions	-20 ... 60 °C / -4 ... 140 °F
Humidity	≤ 85 % RH (non-condensing)
Dimensions	90 x 103 x 223 mm / 3.5 x 4.1 x 8.8 in
Weight	424 g / < 1 lb



Subject to change without notice



## INSPECTION CAMERA PCE-VE 270HR

### Battery-operated inspection camera with 2.8 mm diameter

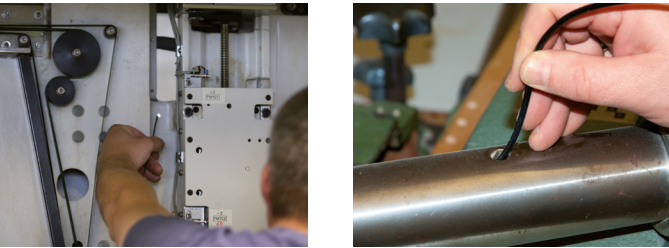
The inspection camera gives you new, visual insights into the interior of motors and systems. The inspection camera is the ideal tool for maintenance and repair in workshops or industrial companies. Optical analysis with an inspection camera has never been so easy. Guide the flexible cable through a hole or a cavity near the point to be inspected and look at everything

on the display at the inspection camera. Thanks to the flexible guidance, the low weight and the excellent optics, you can use this inspection camera to identify weak spots and problem areas very easily and early and thus take preventive measures without having to carry out complex disassembly first.

- ▶ 2 m / 6.56 ft cable length
- ▶ 2.8 mm / 0.11 in cable diameter
- ▶ storage function on micro SD card
- ▶ LED light
- ▶ 0 ° viewing angle
- ▶ miniature probe cable with 90° viewing angle option



### APPLICATION



## TECHNICAL SPECIFICATIONS

Cable length	2 m / 6.56 ft
Cable type	Flexible
Cable diameter	2.8 mm / 0.11 in
Protection class	IP 67
Field of view depth	5 ... 50 mm / 0.2 ... 1.98 in
Field of view	120 °
Perspective	0 °
Lighting	4 LEDs
Exposure	Automatically
Anti-reflection coating	Automatically
Image sensor	1/18 " CMOS
Camera resolution / image sensor	400 x 400 px
Display	5 " TFT screen
Interface	Micro USB, HDMI
Memory option	Image and video
Memory	Micro SD memory card (incl.)
Picture format	JPEG (400 x 400 Px)
Video format	MP4 (400 x 400 Px)
Video output	HDMI
Menu languages	German, English, Chinese, Spanish, Portuguese, French, Russian, Japanese, Korean
Operating and storage temperature	-10 ... 50 °C / 14 ... 122 °F
Power supply	3.7 V Li-ion battery, 5200-mAh
Battery life	Min. 6 h
Dimensions	200 x 130 x 58 mm / 7.9 x 5.1 x 2.3 inch
Weight	595 g / 1.3 lb

#### Optional accessories:

PCE-VE 270HR-PROBE Spare endoscope cable

PCE-VE 270HR-2,1-PROBE Endoscope cable extremely thin

PCE-VE 270HR-SV-PROBE Endoscope cable with lateral camera



Subject to change without notice



# INDUSTRIAL BORESCOPE PCE-VE 200 SERIES

## Videoborescope for NDT machine diagnostics / Ø 4.5 mm or Ø 3.7mm

The video borescope PCE-VE 200 is a nondestructive inspection camera. Thus, the video borescope is an ideal tool for diagnosing hard-to-reach areas. For example, the areas of mechanical engineering, plumbing and heating, and the entire construction / building industry are among the main application fields of the video borescope. Also, the video borescope is suitable for the use in the automotive industry. The fact that it has a one-meter camera tube makes it possible to use the video borescope in away that in manycases no

disassembly of machines or motors is necessary. There are bright LEDs on the camera head that can be controlled and adjusted by the user via the device. The LEDs have different levels of brightness, allowing for optimal illumination at the point of interest. It cannot lead to overexposures, which would cause that the image on the display becomes no longer recognizable, because the camera is dazzled.

- ▶ 4.5 mm or 3.7 mm cable diameter
- ▶ 3.5 " display
- ▶ brightness adjustable on the camera head
- ▶ 2600 mAh battery
- ▶ SD card slot for micro SD card



## APPLICATION



# TECHNICAL SPECIFICATIONS

Display	3.5 " LCD
Resolution	video function AVI (640 x 480)
Resolution	image function JPEG (1600 x 1200)
Image rotation	180 ° rotation and mirror function
Freezefunction	yes
Zoom	up to 4 x
Memory	Micro SD card
Menu languages	German

	English
	Spanish
	French
	Russian
	Japanese
	simplified Chinese
	traditional Chinese
Interfaces	Micro USB 2.0, TV output,
	Micro SD card slot
TV output	PAL
Power supply	Li-Ion battery
Battery capacity	2600 mAh
Operating conditions	-10 ... +40 °C, RH < 75 %

## Cable specifications

Cable diameter	4.5 mm / 0.177 in (PCE-VE 200)
	3.7 mm / 0.14 in (PCE-VE 200-S)
Image sensor	1/8 " CMOS chip
Resolution camera	640 x 480 pixels
Illumination of the cam.	6 white LEDs (intensity can be adjusted)
Field of view or angle	90 °
Field of view depth	15 mm / 0.59 in... 100 mm / 3.93 in
Camera tube length	1 m
Push-cable	semi-flexible (semi-rigid spiral)

## Operating temperature:

main unit / probe	in the air:	-10 ... +50 °C / +14 ... +122 °F
	in water:	+5 ... +50 °C / +41... +122 °F
Relative humidity	probe and device	15 ... 90 %
Fluid resistance	probe / device	machine / light oil, saline solution 5%
Intrusion protection	probe	water, oil, dust, protection IP67
	Main unit	rain in windy weather (battery compartment must be closed)
		not under water

Model	Diameter	Cable length
PCE-VE 200	4,5 mm	1 m
PCE-VE 200-S	3,7 mm	1 m
PCE-VE 200-S3	3,7 mm	3 m
PCE-VE 200UV	10 mm	1 m

## Otionales Zubehör:

PCE-VE 200-SCSV3	Camera cable with front and side camera 9 mm, length: 3 m
PCE-VE 200-SCSV1	Camera cable with front and side camera 9 mm, length: 1 m
PCE-VE 200-SCSV2	Camera cable with front and side camera 6 mm, length: 1 m
PCE-VE 200-SCUV	UV camera cable 10 mm length: 1 m
PCE-VE 200-SCS3	Camera cable 3.7 mm length: 3 m
PCE-VE 200-SCS1	Camera cable 3.7 mm length: 1 m
PCE-VE 200-SC	Spare camera cable 4,5 mm length: 1 m
PCE-VE 200-BAT	Spare battery



Subject to change without notice



## WIFI INSPECTION CAMERA PCE-VE 500N

## WiFi inspection camera for Android and iOS / camera head Ø 4.5 mm

The WiFi inspection camera can be connected to a tablet or smartphone using the Android or iOS app. The WiFi borescope impresses with its simple handling and its robust construction. With the flexible, metal braided borescope cable, examinations under adverse operating conditions are possible with the WiFi borescope. The cable and head diameter is only 4.5 mm. The

camera head of the WiFi borescope can be swiveled by 180°. This enables use in narrow cavities and visibility in almost all directions. 5 LEDs ensure that the areas and cavities to be examined are very well illuminated by the WiFi borescope. The brightness of the lighting can be adjusted in stages via the app. Images and videos can be saved in the WiFi borescope app.

- ▶ image transmission via WiFi
- ▶ for iOS and Android
- ▶ memory for pictures and videos via app
- ▶ movable camera head Ø 4.5 mm
- ▶ cable length 1 m (flexible)
- ▶ 5 LEDs with adjustable light intensity



## APPLICATION



## TECHNICAL SPECIFICATIONS

Cable length	1000 mm / 3 ft 3 "
Cable type	flexible, metal braided camera head swivels 180 °
Cable diameter	4.5 mm
Protection class	IP 67
Field of view depth	10 ... 100 mm
Field of view	90 °
Perspective	0 °
Lighting	5 LEDs dimmable via app
Exposure	automatic
Anti-reflection	automatic
Camera resolution / image sensor	1024 x 768 Px
Interface	USB-C charging socket 5 V / 1 A WIFI IEEE 802,11 b/g/n 2.4 GHz
Memory option	image and video
Memory	via iOS or Android device
Image format	JPEG (1024 x 768 Px)
Video format	MP4 (1024 x 768 Px)
Menu navigation	graphically in App
Operating and storage temperature	-10 ... +60 °C / 14 ... 140 °F (borescope cable) 0 ... 40 °C / 32 ... 104 °F (hand piece)
Power supply	3.7 V Li-Ion battery, 2600 mAh
Operating time	min. 4 h
Recharge time	2 h
Dimensions	207.5 x 35 x 50 mm / 8.1 x 1.3 x 1.9"
Weight	248 g / 8.7 oz



Subject to change without notice





# OPTICAL INSPECTION

## INSPECTION CAMERA PCE-VE 800N4

### 4-way camera head / data storage / diameter 2.8 mm

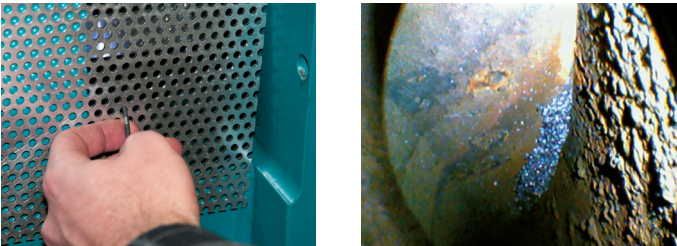
The inspection camera has a 1.5 m / 4.9 ft long borescope cable. With a diameter of only 2.8 mm, cavities with the smallest access can be viewed with the help of this inspection camera. The camera head of the inspection camera can move freely in 4 directions. Especially in the maintenance of engines, turbines, etc., the high-resolution display of the inspection camera offers

a good view of cavities and hard-to-reach places. The moveable camera has a resolution of 400 x 400 pixels. The field of view is 80°, which means that with a relatively short distance to the object to be inspected, very large images can still be taken with the inspection camera. All recordings of the inspection camera can be saved as an image or video.

- ▶ 2.8 mm camera head
- ▶ 1.5 m / 4.9 ft borescope cable
- ▶ 4-way camera
- ▶ 5 " monitor
- ▶ image and video memory
- ▶ IP 58 camera cable
- ▶ 400 x 400 pixel image resolution
- ▶ 5 ... 50 mm focus distance



## APPLICATION



## TECHNICAL SPECIFICATIONS

Cable / head diameter	2.8 mm
Direction of movement camera head	4-way
Length of camera head	8 mm
Bending radius	7 mm
Camera head material	Titanium alloy
Camera lens material	Glass
Perspective	80 °
Line of sight	0 °
Focus area	5 ... 50 mm
Image sensor	1/18 " color
Trigger	160000 pixels
Refresh rate	30 Hz
Borescope cable length	1.5 m / 4.9 ft
Borescope cable material	Tungsten
Degree of protection borescope cable	IP 58
Operating conditions	Main unit: 0 ... 45 °C / 32 ... 113 °F, 15 ... 90 % RH Cable: 0 ... 60 °C / 32 ... 140 °F
Display	LCD 5 " 16 : 9 display
Interface	Micro USB
Video output	HDMI
Memory	SDHC memory card up to 64 GB
Power supply	Li-Ion battery 3550 mAh 5 V power supply
Dimensions	33.5 x 14.5 x 8 cm
Weight	Approx. 700 g / 1.5 lbs



Subject to change without notice





OPTICAL INSPECTION

INDUSTRIAL BORESCOPE PCE-VE 1000

A Versatile 2-way Inspection Instrument

The endoscope PCE-VE 1000 is a versatile inspection instrument. Various endoscope cables with different properties can be connected to the endoscope. A particular advantage of the endoscope is the large display, which due to its dimensions and resolution offers the user the best possible overview of the surface to be inspected. The endoscope allows the recording of pictures and videos, whereby the videos are additionally stored with an audio recording.

The clear resolution is also good when via button pressing the images are stored on the SD card, inserted in the endoscope. When the SD card is read out on the computer, the recorded pictures and videos are clearly displayed. Due to the fact that the recordings are stored on an external mass storage device, it is even possible to choose which SD card is inserted into the endoscope.

ISO cal option

- ▶ various endoscope cables are selectable and are optionally available
- ▶ storage of images and videos
- ▶ 8 GB memory card incl.
- ▶ LED lighting
- ▶ large 7 " LC display



APPLICATION



TECHNICAL SPECIFICATIONS

Screen	7 "
LCD	800 x 480 pixels
Photo resolution / format	640 x 480 pixels / JPEG
Video resolution / format	640 x 480 pixels / MPEG(with sound)
Drop test	1 m / 3.3 ft fall
Power supply	Li - on battery
Interface	USB
Memory	Accommodates SD cards up to 32 GB
AV output	NTSC / PAL
Audio input	Built - in microphone
Brightness setting	Adjustable, 10 levels
Run time per battery charge	5 hours
Charging time battery	3 hours
Charging temperature	10 ... 40 °C / 50 ... 104 °F
Operating temperature	0 ... 60 °C / 32 ... 140 °F
Storage temperature	0 ... 60 °C / 32 ... 140 °F
Protection class	IP 57
Dimensions	240 x 154 x 47 mm / 9.4 x 6 x 1.8 in
Weight	1.3 kg / 2.9 lbs

Optional accessories:

Two-Way Articulating Camera Cable	PCE-VE-2W3-HR
Four-Way Articulating Camera Cable	PCE-VE-4W3-HR
Four-Way Articulating Camera Cable	PCE-VE-4W1-HR
Two-in-One Semi-Flexible Camera Cable	PCE-VE-2in1-N
Semi-rigid borescope cable HighRes	PCE-VE-N-SC1-HR
Semi-Flexible Camera Cable	PCE-VE-N-SC2
Semi-Flexible Camera Cable	PCE-VE-N-SC1
Semi-Flexible Camera Cable	PCE-VE-N-SC30
Flexible Camera Cable	PCE-VE-N-SC10
Flexible Borescope Cable	PCE-VE-N-SC2F
Camera probe	PCE-IVE 300-PROBE
Cable reel	PCE-VE-N-ROL
Waterproof Camera Cable	PCE-VE 380N-SC30
Semi-Flexible Camera Cables	PCE-VE-N-SCS
Magnetic Hook Attachment	MAG-H-VE-N
Guide Ball	GB-25-PCE-VE-N
Guide Ball	GB-15-PCE-VE-N
Cable Holder	HT-55-PCE-VE
Centering brush	PCE-VE-CB
Surveying Software	SOFT-M-VE-N



PCE-VE-2W3-HR



PCE-VE-N-SC2F



PCE-IVE 300-PROBE



PCE-VE-N-SC1-HR



Subject to change without notice



# OPTICAL INSPECTION

## INDUSTRIAL BORESCOPE PCE-PIC 20

### Inspection camera with 20 m (66 ft) push cable

The inspection camera of the PCE-PIC series is an ideal tool for any service technician who needs to visually inspect pipes and ducts. The inspection camera has a 23 mm / 0.9 in camera head, which is attached to a fiberglass push cable. The inspection camera is optimally suited for pipes and ducts DN 40 ... 150 mm / 1.6 ... 5.9 in. The camera of the inspection camera is water-

proof up to 20 m / 66 ft. To facilitate the search for damaged areas on canals and pipes, the inspection camera has an electronic meter counter. Recorded pictures and videos can be saved on an SD memory card via the inspection camera. For better documentation, comments can be added to the pictures and videos via the keyboard.

### ISO cal option

- ▶ 20 m / 66 ft push cable
- ▶ electronic meter counting
- ▶ 23 mm / 0.9 in camera head
- ▶ keyboard for comment input
- ▶ braked endoscope line
- ▶ 12x LED lighting
- ▶ waterproof up to 20 m / 66 ft
- ▶ IP66 Carrying Case
- ▶ 90 ° radius of curvature at min. Ø 45 mm



## APPLICATION



## TECHNICAL SPECIFICATIONS

Cable diameter / head diameter	23 mm / 0.9 in
Cable length	PCE-PIC 20 : 20 m / 66 ft
Sight depth	20 ... 100 cm
Perspective	120 °
Lighting	12 x LED (dimnable)
White balance	Automatically
Image sensor	1/3 " Sony CCD
	720 x 576 pixels
Display	7 " LC display
Interface	USB 2.0
Memory option	Video, photo and sound
Image memory	SD card up to 32 GB
Video output format	PAL 720 x 576 pixels
	NTSC 720 x 488 pixels
Menu navigation	Multilingual:
	German, English, French, Spanish, Italian, Portuguese, Japanese, Chinese, Russian
Length measurement	0 ... 20 m / 0 ... 66 ft
Data entry	By keyboard possible
Operating conditions	-10 ... 50 °C / 14 ... 122 °F, 30 ... 90 % rh
Storage conditions	-20 ... 60 °C / -4 ... 140 °F, 30 ... 90 % rh
Power supply	Power supply 110 V ... 240 V AC / 12 V / 1.2 A DC
	Li-Ion battery 7.4 / 5400-mAh
Protection class	Display: IP 66
	Camera head: waterproof up to 20 m / 66 ft
Dimensions	Complete: 55 x 43.5 x 34.5 cm
	Camera head: 23 x 45 mm / 0.9 x 1.8 in
	(total length: 150 mm / 5.9 in)
Weight	About 13 kg / 28.7 lbs
<b>Optional accessories</b>	
Self-leveling Camera Head	PCE-PIC-SCH
Camera Head with Transmitter	PCE-PIC-TCH
Locator for videoscope	PCE-VE-LOC



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## LEAK DETECTOR

### LEAK DETECTOR PCE-GA 10

#### Gas leak detector for flammable gases / Optical, acoustic and haptic alarm

The gas leak detector PCE-GA 10 is used to check for leaks in gas pipes and connections. This gas leak detector is suitable for many flammable gases. The gas leak detector has 5 LEDs that inform the gas intensity. In addition to the visual information, the gas leak detector has an audible and haptic alarm. This means that, depending on the level, the gas leak detector emits an alarm

tone and vibrates at the same time. The leak detector is therefore ideal for detecting sporadic gases. The gas leak detector is therefore of great help to employees who want to inspect plants during a plant tour or inspect engines, supply lines or gas lines. The gas leak detector is supplied with a rechargeable battery.



- ▶ LED display
- ▶ for flammable gases
- ▶ 500 mm sensor
- ▶ optical, acoustic and haptic alarm
- ▶ fast response time
- ▶ rechargeable battery

#### APPLICATION



### TECHNICAL SPECIFICATIONS

#### Testable gases

Acetaldehyde  
Ammonia  
Benzene  
Ethan  
Ethanol  
Ethylene  
Formaldehyde  
Hexane  
ISO-butane  
Methane  
Propane  
P-xylene  
Hydrogen sulfide  
Toluene  
Hydrogen

#### And compounds in which these gases occur

Measuring range (methane)	0 ... 10000 ppm
Sensitivity (methane)	< 50 ppm
Display stages	High: 100 / 400 / 700 / 1000 ppm Low: 1000 / 4000 / 7000 / 10000 ppm
Response time	< 2 s
Heating time	ca. 50 s
Alarm types	Optical, acoustic, haptic
Power supply	3.7 V Li-ion battery
Lifetime sensor	On average, 5 years
Sensor length	500 mm
Dimensions	211 x 70 x 45 mm / 8.3 x 2.7 x 1.7 in
Weight	ca. 400 g / < 1 lb



Subject to change without notice



## LEAK DETECTOR

### GAS DETECTOR PCE-GA 12

#### Gas flammable gas detector / Measured value display up to 10000 ppm

The gas detector PCE-GA 12 is a very easy-to-use measuring device. This gas detector detects combustible gases and emits a vibrating alarm as well as an audible alarm once a combustible gas has been detected by the gas detector. Thanks to the semi-rigid hose on the gas detection device, the sensor can be aligned in almost any position to reach even inaccessible places.

This makes the gas detection device an ideal measuring device for employees who want to detect sporadically escaping gases (testing of plants during a tour of the plant, checking engines and supply lines, testing gas supply lines). A manual setting of the gas detector is not necessary as the gas detector automatically calibrates.

- ▶ audible alarm with 85 dB
- ▶ rechargeable battery for mobile use
- ▶ automatic calibration
- ▶ measuring range up to 10000 ppm
- ▶ for the detection of combustible gases
- ▶ durability of the sensor about 5 years
- ▶ vibrating alarm when detecting gases
- ▶ sensor changeable



### APPLICATION



### TECHNICAL SPECIFICATIONS

Measuring range (only for methane)	At low concentration 0 ... 1000 ppm At high concentration 0 ... 10000 ppm
Acoustic alarm	Volume: 85 dB
Sensitivity	< 10 ppm (with methane)
Measuring interval	< 2 seconds
Display	Measurement of combustible gases on the LC display, bar graphs
Calibration	Automatically
Warming up	40 seconds
Battery	Polymer Li-ion battery 18500 3.7V
Power adapter	Primary side: 100 ... 240 V, 50/60 Hz, 0.2 A Secondary side: 5 V, 1 A
Automatic shutdown	Turns off if the battery capacity is too low by itself or after 10 minutes if not used.
Sensor durability	About 5 years (sensor is interchangeable)
Probe	Semi-rigid 400 mm / 16"
Weight	About 430 g / < 1 lb



Subject to change without notice



# CONDUCTIVITY MEASUREMENT

## CONDUCTIVITY TESTER FOR NFE METALS PCE-COM 20

### With wide measuring range of up to 112 % IACS or 65 MS/m

The conductivity tester for measuring the electrical conductivity of non-ferrous metals such as aluminium or copper belongs to the group of NDT devices. The conductivity tester is used in non-destructive material testing. By means of the eddy current measuring principle which has proven for this application, the electrical conductivity of metallic materials can be determined

quickly and precisely. With its operating frequency of 60 kHz, the conductivity tester has a wide measuring range of 0.51 ... 112 % IACS and reaches an accuracy of  $\pm 0.5$  % at 20 °C, with a resolution of up to 0.01 % IACS.

### ISO cal option

- ▶ user-friendly hand-held meter
- ▶ memory for up to 500 groups of measurements
- ▶ durable internal rechargeable battery
- ▶ lift-off and temperature compensation
- ▶ adjustable backlight
- ▶ for mobile use
- ▶ automatic calibration
- ▶ operating frequency of 60 kHz
- ▶ incl. 3 calibration plates (titanium 1.03 % IACS, bronze 8.11 % IACS and copper 100 % IACS)



## APPLICATION



## TECHNICAL SPECIFICATIONS

Operating frequency  
Conductivity measuring range

Conductivity resolution

Conductivity accuracy

Lift-off effect  
Temperature measuring range  
Temperature accuracy  
Automatic compensation

Operating conditions  
Display  
Menu languages  
Power supply  
Probe  
Memory  
Data interface  
Dimensions  
Weight

60 kHz, sine wave  
0.51 % IACS ... 112 % IACS  
0.3 MS/m ... 65 MS/m  
resistance 0.015388 ... 3.33333  $\Omega \cdot \text{mm}^2/\text{m}$   
0.01 % IACS (at < 51 % IACS)  
0.1 % IACS (at 51 % IACS ... 112 % IACS)  
 $\pm 0.5$  % at +20 °C / 68 °F  
 $\pm 1$  % at 0 ... +40 °C / 32 ... 104 °F  
probe compensation 0.5 mm  
0 ... +50 °C / 32 ... 122 °F  
 $\pm 0.5$  °C  
Automatic adjustment of conductivity result to the value at 20 °C / 68 °F  
0 ... 50 °C / 32 ... 122 °F, 0 ... 95 % RH  
LCD with backlight  
English, German, Chinese (simplified)  
internal rechargeable battery  
 $\varnothing$  14 mm /  $\approx$  0.55 in  
up to 500 groups of measurement values  
USB  
 $\approx$  220 x 95 x 35 mm / 8.66 x 3.74 x 1.38 in  
 $\approx$  415 g / 1 lb (with probe)

### Optional accessories:

Calibration standard for conductivity of titanium  
Calibration standard for conductivity of brass  
Calibration standard for conductivity of magnesium  
Calibration standard for conductivity of magnesium  
Calibration standard for conductivity of copper  
Calibration standard for conductivity of copper  
Calibration standard for conductivity of copper  
Calibration standard for conductivity of bronze  
Calibration standard for conductivity of bronze  
Calibration standard for conductivity of bronze  
Calibration standard for conductivity of aluminium  
Calibration standard for conductivity of aluminium  
Calibration standard for conductivity of aluminium

1.02 % IACS	Order code PCE-COM 20-CP1
21.02 % IACS	Order code PCE-COM 20-CP9
11.88 % IACS	Order code PCE-COM 20-CP11
31.88 % IACS	Order code PCE-COM 20-CP3
87.24 % IACS	Order code PCE-COM 20-CP10
60.69 % IACS	Order code PCE-COM 20-CP8
101.03 % IACS	Order code PCE-COM 20-CP13
8.47 % IACS	Order code PCE-COM 20-CP12
10.55 % IACS	Order code PCE-COM 20-CP5
15.24 % IACS	Order code PCE-COM 20-CP2
15.29 % IACS	Order code PCE-COM 20-CP7
32.07 % IACS	Order code PCE-COM 20-CP6
57.41 % IACS	Order code PCE-COM 20-CP4
41.21 % IACS	Order code PCE-COM 20-CP14



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## GAUSS METER

## ELECTROMAGNETIC FIELD GAUGE PCE-MFM 2400 SERIES

## Tesla and Gauss measurement for static magnetic fields

With a measuring range up to 2,400 mT, the electromagnetic field meter covers a wide range of measuring tasks. The electromagnetic field meter has an accuracy of 1 % which makes it a very precise meter. The electromagnetic field meter can be used, for instance, to test relays and permanent magnets for existing magnetic fields. It is therefore often used in production

processes or in quality control. With the backlight of the electromagnetic field meter, the measured values are always easy to read even under poor lighting conditions.

## ISO cal option

- ▶ very precise measurement technology
- ▶ measuring range up to 24,000 G and 2,400 mT
- ▶ transversal and axial sensor
- ▶ measures static magnetic fields
- ▶ automatic shutdown



## APPLICATION



## TECHNICAL SPECIFICATIONS

Measuring range	0... 200 mT 200... 2,400 mT 0 ... 2,000 G 2,000 ... 24,000 G
Accuracy	±1 % of rdg.
Resolution	0.01 mT 0.1 g
Measuring direction	Transversal
Magnetic field	Static (DC)
Unit	mT, G
Power supply	1 x 9 V block battery
Automatic shutdown	Automatic shutdown after 5 minutes in idle status
Modes	Hold mode, measurement mode
Display	Backlight, digital 4-digit display
Operating temperature	32 ... 122 °F, / 0 ... 50 °C
Storage temperature	-4 ... 122 °F / 20 ... 50 °C
Dimensions	185 x 97 x 40 mm / 7.28 x 3.82 x 1.57 in
Weight	0.68 lb, 310 g
Model	
<b>PCE-MFM 2400</b> Sensor	Hall sensor transversal, cable length approx. 3.28 ft., 1 m
<b>PCE-MFM 2400+</b> Sensor	Axial Hall sensor, cable length approx. 6.56 ft., 2 m



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## FLOW METER PCE-TDS 100H

## Ultrasonic method for homogeneous liquids

The PCE-TDS 100H is designed for quick and mobile measurements of flow rates within pipes. To make such a measurement, it is not necessary to enter the piping system directly. The ultrasonic flow meter works in line with the transit time difference method. This means that transducers send a directed ultrasonic signal through the pipe diagonally which is then reflected and

received by the transducer again. On the basis of the signal's transit time delay that occurs when a pre-defined medium passes through a pipe, the meter can determine the flow if the pipe diameter and material are known. The desired parameters must be set before making a measurement.

## ISO cal option

- ▶ ideal for retrofitting
- ▶ installation without process interruption
- ▶ easy assembly
- ▶ accurate and reliable
- ▶ no pressure loss
- ▶ maintenance-free, no moving parts
- ▶ wear-free
- ▶ portable device for control measurements
- ▶ incl. ISO calibration certificate
- ▶ 2 x sensor TDS-M1 included

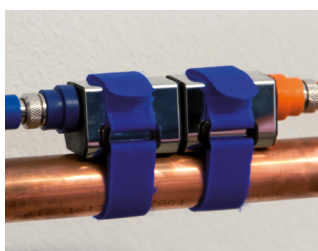


TDS-S1



TDS-M1

## APPLICATION



## TECHNICAL SPECIFICATIONS

Measurement range handheld unit -32 ... +32 m/s  
 Resolution 0.0001 m/s  
 Accuracy for DN ≥50 mm ±3.5 % of reading  
 for DN <50 mm ±1.0 % of reading  
 Reproducibility ±1.0 % of reading  
 Media All liquids with an impurity < 5 % and a flow > 0.03 m³/h

## Flow units

cubic metre [m³]  
 litre [l]  
 gallon (USA) [gal]  
 imperial gallon (UK) [igl]  
 million USA gallon [mgl]  
 cubic foot [cf]  
 barrel (USA) [bal]  
 imperial barrel (UK) [ib]  
 oil barrel [ob]  
 per day [d]  
 per hour [h] pro minute [m]  
 and per second [s]

## Time settings

Data logger 1800 measurements  
 Interface USB (for online measurement and readout of the internal memory)  
 Protection class IP 52

## Power supply

3 x AA rechargeable NiMH batteries / 2100 mAh  
 (at full charge, 12 h running time)  
 100 ... 240 V AC 50/60 Hz  
 Dimensions 214 x 104 x 40 mm  
 Weight 450 g

## Dimensions

Sensor (only PCE-TDS 100 H) nominal width DN 50 ... 700, 57 ... 720 mm  
 Temperature of liquid -30 ... 160 °C  
 Dimensions 50 x 45 x 45 mm  
 Weight 260 g

## Further models of the PCE-TDS 100 series:

**PCE-TDS 100HSH** 2 x sensor TDS-S1 nominal width DN 15 ... 100, 20 ... 108 mm  
 2 x sensor TDS-M1 nominal width DN 50 ... 700, 57 ... 720 mm  
**PCE-TDS 100HS** 2 x sensor TDS-S1 nominal width DN 15 ... 100, 20 ... 108 mm

## Optional accessories:

Standard transducers  
 temperature transducers  
 On-rail flow transducer  
 On-rail flow transducer transducers  
 Ultrasonic coupling gel

Order code TDS-M1 High-  
 Order code TDS-S1  
 Order code TDS-HS  
 Order code TDS-HM Flow  
 Order code TDS-L1  
 Order code TT-GEL



TDS-HS



TDS-HM



TDS-L1



Subject to change without notice



## FLOW METER PCE-TDS 100H+ INCL. TEMPERATURE DATALOGGER

## Determination of heat quantity and heat output

This is a portable handheld clamp-on ultrasonic flow meter used for non-invasive, unobstructed and highly accurate measurements of the flow velocity of liquids in metal, plastic and rubber pipes and tubes with a diameter of 57 ... 720 mm / approx. 2 ... 28 in. The heat flowmeter kit is ideal for use in the oil and gas, water and wastewater, chemical, food and beverage,

pharmaceutical, metals and mining, pulp and paper, power and heating, ventilation, air conditioning and refrigeration (HVACR) industries. This ultrasonic flow meter features user-friendly velcro-strap clamps that allow for quick and easy repositioning of the electroacoustic transducers.

## ISO cal option

- ▶ ideal for retrofitting
- ▶ installation without process interruption
- ▶ easy assembly
- ▶ accurate and reliable
- ▶ no pressure loss
- ▶ maintenance-free, no moving parts
- ▶ wear-free
- ▶ portable devices for control measurements



## APPLICATION



## TECHNICAL SPECIFICATIONS

Handheld measuring range -32 ... +32 m/s  
Resolution 0.0001 m/s, 0.00033 ft/s  
Accuracy for DN ≥ 50 mm: ±3.5 % of rdg.  
for DN < 50 mm: ±1.0 % of rdg.  
Reproducibility ±1.0 % of rdg.  
Media All liquids with an impurity < 5 % and a flow > 0.03 m³/h

## Flow units

Cubic meter [m³]  
Liter [l]  
Gallon (USA) [gal]  
Imperial gallon (UK) [igl]  
Million USA gallon [mgl]  
Cubic foot [cf]  
Barrel (USA) [bal]  
Imperial barrel (UK) [ib]  
Oil barrel [ob]  
per day [d]  
per hour [h]  
per minute [m]  
and per second [s]

## Time settings

Data logger 1800 measurements  
Interface USB (for online measurement and read out of the internal memory)  
Protection IP 52  
Power supply 3 x AA NiMH rechargeable battery / 2100 mAh (at full charge)  
12h running time  
100 ... 240 V AC 50/60 Hz

## Dimensions

214 x 104 x 40 mm /  
8.4 x 4.1 x 1.5 "

Weight  
Sensor

(only PCE-TDS 100 H) nominal width DN 50 ... 700,  
57 ... 720 mm / approx. 2 ... 28 "  
Temperature of liquid -30 ... 160 °C / -22 ... 320 °F  
Dimensions 50 x 45 x 45 mm / 1.9 x 1.7 x 1.7 "  
Weight 260 g / 9 oz

## Technical data evaluation software

- Units of power W, kW, MW, J/h, kJ/h, MJ/h, Btu/h, kBtu/h, MBtu/h
- Units of energy J, kJ, MJ, Wh, kWh, MWh, Btu, kBtu, MBtu
- Graphical representation of flow, flow temperature, return temperature, heat output and heat quantity
- Tabular representation of flow, flow temperature, return temperature, heat output and heat quantity
- Mobile and stationary measurement mode
- Real-time data logger with unlimited runtime (only limited by PC memory capacity)
- Data export function
- User-guided software operation with step-by-step instructions for device and software configuration

## Technical data temperature data logger PCE-T 330

Measuring range Type K thermocouple -200 ... +1370 °C  
Resolution 0.01 °C  
Accuracy\* ±(0.3 % of rdg. +0.40) °C\*  
Measuring range T-type thermocouple -200 ... +400 °C  
Resolution 0.01 °C  
Accuracy\* ±(0.3 % of rdg. +0.40) °C\*  
Measuring range J-type thermocouple -200 ... +1200 °C  
Resolution 0.01 °C  
Accuracy\* ±(0.3 % of rdg. +0.40) °C\*  
Measuring rate 2/s  
Operating temperature -10 ... +50 °C  
Storage temperature -20 ... +60 °C (without batteries)  
Power supply 3 x AAA batteries / 1.2 V rechargeable battery  
Battery life approx 190 h (without backlight, battery capacity 1200 mAh, ambient temperature 25 °C)  
Protection class IP52 (with protective cover and connected sensor)  
CE/EMC ROHS/td

## Optional accessories:

Standard transducers Order code TDS-M1  
High-temperature transducers Order code TDS-S1  
On-rail flow transducer Order code TDS-HS  
On-rail flow transducer Order code TDS-HM  
Flow transducers Order code TDS-L1  
Ultrasonic coupling gel Order code TT-GEL

## Further models of the PCE-TDS 100 series:

**PCE-TDS 100HSH+ 2 x sensor TDS-S1**  
nominal width DN 15 ... 100, 20 ... 108 mm  
**2 x sensor TDS-M1**  
nominal width DN 50 ... 700, 57 ... 720 mm  
**PCE-TDS 100HS+ 2 x sensor TDS-S1**  
nominal width DN 15 ... 100, 20 ... 108 mm



Subject to change without notice



# COATING THICKNESS MEASUREMENT

## COATING THICKNESS GAUGE PCE-CT 80

### Paint layer thickness gauge for Fe and NFe

The paint layer thickness gauge PCE-CT 80 is a measuring device for the non-destructive measurement of coatings (lacquers, paints, plastics ...) on steel / iron and non-ferrous metals. Thanks to the externally connected sensor on the PCE-CT 80 paint coating thickness gauge, even difficult-to-reach measuring locations can be easily reached.

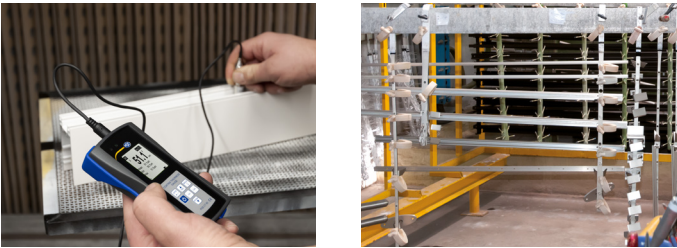
The menu navigation of the paint thickness gauge allows easy adjustment and setting to new parameters and makes this handy paint coating thickness gauge an indispensable tool for control measurements in production, workshop and quality assurance.

### ISO cal option

- ▶ for many materials such as iron, steel, aluminium, copper, brass and stainless steel
- ▶ measurements cannot be influenced by vibrations
- ▶ practical V-groove on the measuring heads
- ▶ internal data memory
- ▶ warning for measurements exceeding the measuring range
- ▶ wear-resistant, spring-mounted measuring head for precise measurement results
- ▶ incl. ISO laboratory calibration with certificate
- ▶ probe PCE-CT 80-FN1.5 included



### APPLICATION



## TECHNICAL SPECIFICATIONS

Measurement range	Fe: 0 ... 5000 µm / 0 ... 196.9 mils (depending on probe) NFe: 0 ... 3000 µm / 0 ... 118.1 mils (depending on probe)
Accuracy	±(2 % of rdg. + 1 µm / 0.039 mils)
Resolution	0.1 µm (< 100 µm) 1 µm (> 100 µm)
Measurable materials	Non-magnetic layers on steel, iron, ... Non-electrically conductive layers on aluminium, copper, ...
Min. radius of curvature convex	5 mm
Min. radius of curvature concave	25 mm
Min. measuring surface	Ø 17 mm
Min. layer thickness	0.2 mm (on magnetic materials) 0.05 mm (on non-magnetic materials)
Probe mode	Autom. mode with material detection (Fe + NFe) Magnetic mode (Fe) Eddy current mode (NFe)
Measurement modes	Single measurement Continuous measurement
Calibration	Multipoint calibration (1 ... 4 points for each group) zero point calibration
Units	µm, mm, mils
Data transfer	USB 2.0
Memory	One volatile measuring group (DIR mode) Four measuring groups with autom. storage and max. 2000 readings (GEN mode)
Statistical functions	Number of measured values, mean, minimum, maximum, standard deviation
Alarm	Display when the adjustable upper and lower alarm limits are exceeded
Operating time	Auto Power Off mode (3 min)
Power supply	3 x 1.5 V AAA batteries
Display	128 x 128 px LCD
Displayed information	Battery status / flaw detection
Operating conditions	0 ... 50 °C / 32 ... 122 °F 20 ... 90 % RH not condensing
Storage conditions	-10 ... 60 °C / 14 ... 140 °F 20 ... 90 % RH not condensing
Dimensions	143 x 71 x 37 mm / 5.6 x 2.8 x 1.5 in (L x W x H)
Weight	with sensor and batteries: approx. 271 g / <1 lb

### Optional accessories:

Probe	Order code	PCE-CT 80-FN0.5 Measurement range: Fe: 0 ... 500, NFe: 0 ... 500
Probe	Order code	PCE-CT 80-FN2 Measurement range: Fe: 0 ... 2000, NFe: 0 ... 2000
Probe	Order code	PCE-CT 80-FN2.5 Measurement range: Fe: 0 ... 2500, NFe: 0 ... 2500
Probe	Order code	PCE-CT 80-FN3 Measurement range: Fe: 0 ... 3000, NFe: 0 ... 3000
Probe	Order code	PCE-CT 80-F5N.3 Measurement range: Fe: 0 ... 5000, NFe: 0 ... 3000



Subject to change without notice



# THICKNESS MEASUREMENT

## COATING THICKNESS GAUGE PCE-CT 90

### Coating thicknesses on Fe and NFe metals

With its standard sensor, the thickness gauge can measure coating thicknesses of up to 60 mm on various metal surfaces. Massive steel profiles as well as thin metal sheets are suitable as substrates. The thickness gauge can even be used on perforated plates, expanded metal plates, textured plates and wire mesh if the mesh size matches the sensor. On these subst-

rates, the thickness gauge measures the thickness of coatings or plate-shaped linings. These coatings can consist of several layers. The PCE-CT 90 measures the distance from the coating surface to the surface of the metal substrate.

### ISO cal option

- ▶ measures construction and insulation materials on metal
- ▶ measuring range with standard sensor up to 60 mm
- ▶ automatic sensor detection
- ▶ zero point and one point calibration
- ▶ power supply 2 x 1.5 V AAA batteries
- ▶ for magnetic and non-magnetic metals



### APPLICATION



## TECHNICAL SPECIFICATIONS

Measurement range	depending on sensor (see list of sensors)
Accuracy	depending on sensor (see list of sensors)
Measurable materials	magnetic materials (iron, steel, ...) non-magnetic materials (paint, plastics, ceramics, ...)
Min. radius of curvature	0.3 ... 50 mm (depending on the sensor used)
Calibration	zero point calibration, one point calibration
Units	µm, mm, °C
Power supply	2 x 1.5 V AAA batteries (DC)
Display	graphical display
Operating conditions	-10 ... +40 °C 20 ... 98 % RH, non-condensing at 35 °C
Storage conditions	+5 ... +40 °C 80 % RH, non-condensing at 25 °C
Dimensions	136 x 75 x 32 mm
Weight	168 g

List of sensors			
Model	Measurement range	Accuracy	Measurement description
Fe-0.3*	0 ... 300 µm	±(3 % + 1 µm)	Paint, lacquer, galvanic coating
Fe-0.5*	0 ... 500 µm	±(3 % + 1 µm)	Paint, lacquer, galvanic coating
Fe-2*	0 ... 2000 µm	±(3 % + 2 µm)	Paint, lacquer
Fe-5*	0 ... 5000 µm	±(3 % + 2 µm)	Lacquer and thick coatings
NFe-2**	0 ... 2000 µm	±(3 % + 2 µm)	Anodic oxide layers, lacquer layers
M12***	0 ... 12 mm	±(3 % + 0,01 mm)	Thick coatings
M30***	0 ... 30 mm	±(3 % + 0,02 mm)	Thick coatings
M60***	0 ... 60 mm	±(3 % + 0,03 mm)	Thick coatings
DT	-50 ... +125 °C	±1 °C	Surface temperature
DTVR	Temperature: -50 ... 125 °C	±1 °C	Air temperature
	Humidity: 0 ... 100 %	±5 %	Relative humidity
	Dew point: -15 ... +40 °C	±2 °C	Dew point
DSH	1 ... 300 µm	±(3 % + 2 µm)	Roughness

\* Fe: only for ferromagnetic substrates  
 \*\* NFe: only for non-ferromagnetic substrates  
 \*\*\* Fe and NFe: for ferromagnetic and non-ferromagnetic substrates

Optional accessories:			
Coating thickness probe (Fe und NFe)	Order code	PCE-CT 90-M60	0 ... 60 mm
Coating thickness probe (Fe und NFe)	Order code	PCE-CT 90-M30	0 ... 30 mm
Coating thickness probe (Fe und NFe)	Order code	PCE-CT 90-M12	0 ... 12 mm
Coating thickness probe (Fe)	Order code	PCE-CT 90-Fe-2	0 ... 2000 µm



Subject to change without notice



# THICKNESS MEASUREMENT

## WALL THICKNESS GAUGE PCE-TG 300 WITH BLUETOOTH

### With a wide measuring range of up to 600 mm

The PCE-TG 300 is a wall thickness gauge with special probes for various applications. In general, the wall thicknesses of all homogeneous materials can be measured with the PCE-TG 300. For damping or scattering materials such as plastic or cast iron, a special probe is available. An angled 90 ° probe also enables measurements at hard-to-reach measuring positions. The speed

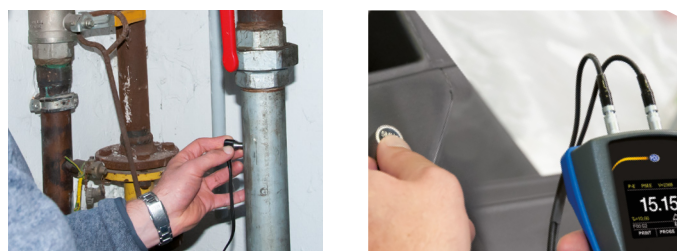
of sound can be set freely and thus adapted to a wide variety of materials. The measured values are displayed directly on the easy-to-read TFT colour display.

### ISO cal option

- ▶ wide measuring range
- ▶ various probes available
- ▶ battery operation
- ▶ fault and cavity detection
- ▶ internal measurement data memory
- ▶ printing via Bluetooth



## APPLICATION



## TECHNICAL SPECIFICATIONS

Measuring range	PE: pulse-echo mode 0.65 ... 600 mm (steel) EE: echo-echo mode 2.50 ... 60 mm
Accuracy	±0.04 mm H [mm] (< 10 mm); ±0.4 % H [mm] (> 10 mm) H refers to the material thickness of the workpiece
Resolution	0.1 mm / 0.01 mm / 0.001 mm (adjustable)
Measurable materials	Metals Plastics Ceramics Epoxy resin Glass and all homogeneous materials
Working modes	Pulse echo mode (fault and cavity detection) Echo-Echo mode (hiding layer thicknesses, e.g. lacquers)
Calibration	Sound velocity calibration Zero point calibration Two-point calibration
View mode	Normal mode, scan mode, difference mode
Units	mm / inch
Data transfer	Printing via Bluetooth / USB 2.0
Memory	Non-volatile memory with 100 data groups with 100 data sets each
Operating time	Continuous operation 100 h Automatic stand-by mode (adjustable) Automatic power off mode (adjustable)
Power supply	4 x AA battery 1.5 V
Display	320 x 240 pixel TFT LCD colour display with brightness adjustment
Operating conditions	0 ... 50 °C / 32 ... 122 °F, ≤ 80 % RH non condensing
Storage conditions	-20 ... 70 °C / -4 ... 158 °F, ≤ 80 % RH non-condensing
Dimensions	185 x 97 x 40 mm / 7.3 x 3.8 x 1.6 in
Weight	375 g / < 1 lb

### Specifications of the included probe P5EE

Frequency	5 MHz
Diameter	10 mm
Measurement range	P-E: 2 ... 600 mm, E-E: 2,5 ... 100 mm
Minimum pipe diameter	20 x 3 mm
Description	normal measurement and E-E test

### Specifications of the optional probes

#### NO2 (not suitable for curved materials)

Frequency / Ø	2.5 MHz / 14 mm
Measurement range	3 ... 40 mm (steel) 3 ... 300 mm (steel)
Description	For damping / scattering materials (plastics, cast iron)

#### NO5

Frequency / Ø	5 MHz / 10 mm
Measurement range	1 ... 600 mm (steel)
Minimum pipe diameter	20 x 3 mm
Description	normal measurement

#### NO5 / 90 °

Frequency / Ø	5 MHz / 10 mm
Measurement range	1 ... 600 mm (steel)
Minimum pipe diameter	20 x 3 mm
Description	normal measurement

#### NO7

Frequency / Ø	7 MHz / 6 mm
Measurement range	0.65 ... 200 mm (steel)
Minimum pipe diameter	15 x 2 mm
Description	for thin-walled or strongly curved pipes

#### HT5

Frequency / Ø	5 MHz / 12 mm
Measurement range	1 ... 600 mm (steel)
Minimum pipe diameter	30 mm
Description	for high temperatures (max. 300 °C)



Subject to change without notice



## THICKNESS MEASUREMENT

## COATING THICKNESS GAUGE PCE-CT 100

## Non-destructive, precise measurements on ferrous (Fe) &amp; non-ferrous (nFe) metal substrates

The coating thickness gauge PCE-CT 100 uses the magnetic induction (ISO 2178) and eddy current (ISO 2360) measurement methods. These methods are used for non-destructive material testing. The meter measures the thickness of magnetically neutral layers on magnetic or non-magnetic substrate materials.

With the external probe, quick and easy coating thickness measurements are possible even in hard-to-reach areas. Measured data can be transferred to a PC easily via a USB cable.

## ISO cal option

- ▶ high resolution
- ▶ compact and easy to use
- ▶ for ferrous and non-ferrous metals
- ▶ data transfer via USB
- ▶ non-destructive testing
- ▶ quick and precise



## APPLICATION



## TECHNICAL SPECIFICATIONS

Resolution	0.1 or < 0.2 % of rdg. (or probes with a measuring range of up to 1.5 mm / 1500 µm / 1.5 mm / 59 mil) 1 µm or < 0.2 % of rdg. (or probes with a measuring range of more than 1.5 mm / 1500 µm / 1.5 mm / 59 mil)
Display	high-resolution colour display with backlight
Menu languages	English, German, French, Italian, Spanish, Turkish, Czech, Chinese
Memory	direct mode: max. 1,000 measured values in Fe (Type F) and nFe (Type N) mode file memory: max. 100,000 measured values
Calibration	factory calibration zero (one-point calibration) one-foil calibration (two-point calibration) two-foil calibration cal-through-coat calibration
Zero offset	addition of a constant value to the measured value
Statistical parameters	N, $\bar{x}$ , $\sigma$ , Max, Min, Cp, Cpk, Kvar
On-screen statistics	$\bar{x}$ , $\sigma$ , Max, Min
Alarm limits	adjustable with visual and audible signal
Interfaces	USB 2.0, Bluetooth 4.0
Operating temperature	0 ... +50 °C
Power supply	3 x Mignon (AA) 1.5 V
Dimensions	approx. 163 x 82 x 40 mm / 6.42 x 3.23 x 1.58 in (H x W x D)
Weight	approx. 290 g (incl. batteries)
Protection class	IP 52 (protection against dust and dripping water)

**The probes are not included in the standard package!**  
**These must be ordered separately, depending on your application!**

## Optional accessories:

Angled probe	Order code PCE-CT 100 FN1.5R	Measurement range: 0 ... 1500 µm
Angled probe	Order code PCE-CT 100 F3.5	Measurement range: 0 ... 3.5 mm
Angled combined probe	Order code PCE-CT 100 FN1.5/90°	Measurement range: 0 ... 1500 µm
Angled probe	Order code PCE-CT 100 F10	Measurement range: 0 ... 10 mm
Angled probe	Order code PCE-CT 100 F1.5R	Measurement range: 0 ... 1500 µm
Angled combined probe	Order code PCE-CT 100 FN3.5	Measurement range: Fe: 0 ... 3.5 mm, NFe: 0 ... 3.0 mm
Combined probe	Order code PCE-CT 100 FN1.5	Measurement range: 0 ... 1500 µm
Probe	Order code PCE-CT 100 N1.5	Measurement range: 0 ... 1500 µm
Probe	Order code PCE-CT 100 F1.5	Measurement range: 0 ... 1500 µm
High-precision combined probe	Order code PCE-CT 100 FN0.2	Measurement range: 0 ... 200 µm



Subject to change without notice



# COATING THICKNESS MEASUREMENT

## COATING THICKNESS GAUGE PCE-CT 65

### For measuring the colour thickness on ferrous and non-ferrous metals

PCE-CT 65 is a coating thickness gauge that uses magnetic induction (ferrous) or eddy current (non-ferrous) to take non-destructive measurements of coating and dry film thickness (DFT) on metal substrates such as steel and aluminum. This thickness gauge is ideal for painted and powder-coated surface testing, automotive paint inspection, coated material testing,

and manufacturing quality control applications. The easy-to-use downloadable PC-compatible software included with this thickness gauge allows for detailed analysis of measurement results via computer. Measurement values are shown in a table and different working modes can be selected for data filtering.

### ISO cal option

- ▶ for ferrous and non-ferrous metals
- ▶ immediately ready to measure
- ▶ large measuring range
- ▶ measured value memory for up to 1500 measurements
- ▶ two measuring modes
- ▶ comfortable one-hand operation
- ▶ comes with storage case
- ▶ calibration plates for accuracy testing



### APPLICATION



## TECHNICAL SPECIFICATIONS

<b>Ferrous metals</b>	
Principle	Magnetic induction
Measuring range	0 ... 1350 µm / 0 ... 53.1 mils
Accuracy	0 ... 1000 µm: (±2.5 % ±2 µm) 1000 µm ... 1350 µm: ±3.5 % 0 ... 39.3 mils: (±2 % ±0.08 mils) 39.3 mils ... 53.1 mils: ±3.5 %
Resolution	0 ... 100 µm: 0.1 µm 100 µm ... 1000 µm: 1 µm in 1000 mm ... 1350 µm: 0.01 mm 0 ... 10 mils: 0.01 mils 10 mils ... 53.1 mils: 0 ... 1 mils
Smallest surface	Ø 7 mm / Ø 0.3 in
Min. curvature radius	1.5 mm / 0.05 in
Min. substrate thickness	0.5 mm / 0.02 in
<b>Non-ferrous metals</b>	
Principle	Eddy current
Measuring range	0 ... 1350 µm / 0 ... 53.1 mils
Accuracy	0 ... 1000 µm: (±2.5 % ±2 µm) 1000 µm ... 1350 µm: ±3.5 % 0 ... 39.3 mils: (±2 % ±0.08 mils) 39.3 mils ... 53.1 mils: ±3.5 %
Resolution	0 ... 100 µm: 0.1 µm 100 µm ... 1000 µm: 1 µm in 1000 mm ... 1350 µm: 0.01 mm 0 ... 10 mils: 0.01 mils 10 mils ... 53.1 mils: 0 ... 1 mils
Smallest surface	Ø 5 mm / Ø 0.2 in
Min. curvature radius	3 mm / 0.1 in
Min. substrate thickness	0.3 mm / 0.01 in
Units	µm, mils
Functions	Alarm function, display lighting, automatic shutdown, calibration, memory function
Memory option	30 storage groups with a capacity of 50 measurements each = 1500 measurements total
Interface	USB
Environmental conditions	0 ... 40 °C / 32 °F ... 104 °F, 20 % ... 90 % rh
Power supply	2 x 1.5 V AAA batteries



Subject to change without notice



# COATING THICKNESS MEASUREMENT

## COATING THICKNESS GAUGE PCE-CT 26FN

### For iron and non-ferrous substrates

The coating thickness gauge PCE-CT 26FN can measure non-destructive coatings (paints, plastics ...) on steel / iron and non-ferrous metals. The coating thickness gauge is ideally suited, for example, to detect accidental damage to the vehicle immediately. But also in the industrial sector, the PCE-CT 26FN coating thickness gauge is used for incoming and outgoing inspection in

order to be able to offer consistently consistent product qualities. The ergonomically shaped coating thickness gauge with integrated probe and very simple operation allows you to quickly determine measurement results with high accuracy.

### ISO cal option

- ▶ immediately ready to measure
- ▶ wear-resistant sensor
- ▶ V-groove for measurement on pipes
- ▶ one-handed operation
- ▶ ISO calibration optional
- ▶ incl. transport case



## APPLICATION



## TECHNICAL SPECIFICATIONS

Measuring range	0 ... 1250 µm (0 ... 49.2 mils)
Resolution	1 µm (0.039 mils)
Accuracy	±(3 % + 2 µm) or ± (3 % + 0.079 mils)
Smallest measuring surface	5 x 5 mm / 0.2 in x 0.2 in
Smallest radius of curvature	Convex: 3 mm (0.1 in) / concave: 50 mm (2 in)
Smallest thickness of the base material	Fe: at least 0.5 mm / 0.02 in NFe: at least 0.3 mm / 0.01 in
Display	OLED display
Ambient temperature	0 ... 50 °C / 32 ... 120 °F
Power supply	2 x AAA battery 1.5 V
Dimension	100 x 52 x 29 mm / 4 x 2 x 1.1 in
Weight	About 68 g / < 1 lb (without batteries)



Subject to change without notice



# COATING THICKNESS MEASUREMENT

## COATING THICKNESS GAUGE PCE-CT 24FN

### With statistics function / measuring range up to 1500 µm

The thickness gauge PCE-CT 24FN is a mobile device for the fast and precise determination of eg ink layer thicknesses. With this thickness gauge layer thickness measurements on ferrous and non-ferrous metals can be performed. The measured value is displayed directly on the LC display of the thickness gauge. Thanks to the built-in memory of the thickness gauge and the

advanced functions, statistics can be recorded. These statistics can be evaluated directly on the thickness gauge. When evaluating the recorded statistics in the thickness gauge, you can choose between a tabular and a graphical view. If the thickness gauge is not used, the meter will switch itself off automatically within the set time.

### ISO cal option

- ▶ data memory for later evaluations
- ▶ rechargeable batteries
- ▶ for ferrous and non-ferrous metals
- ▶ alarm when limit value exceeded
- ▶ statistics function for analyzing a test object
- ▶ alignment sensor for turning the display
- ▶ measuring range 0 ... 1500 µm
- ▶ graphic representation of the measured values



## APPLICATION



## TECHNICAL SPECIFICATIONS

Measuring range	0 ... 1500 µm / 0 ... 59 mil / 0 ... 1.5 mm
Resolution	0.1 µm (at <100 µm) 1 µm (at > 100 µm) 0.001 mm 0.1 mil
Accuracy	±5 µm (at < 150 µm) ±3 % + 1 µm (at > 150 µm)
Smallest diameter (Fe)	12 mm
Smallest thickness (Fe)	0.5 mm
Curve wheel. minute (Fe)	Convex. 2 mm; concave: 11 mm
Smallest diameter (nFe)	50
Smallest thickness (nFe)	0.5 mm
Storage	100 groups of 15 readings each
Display	2.25 inch LC display
Ambient temperature	0 ... 50 °C / 32 ... 122 °F
Power supply (batteries)	3 x 1.2V AA Ni-MH 800 mAh
Power supply (power supply)	Primary: 100 ... 240 V; 50/60 Hz; 0.45 A Secondary side: 5 V DC; 1 A
Dimensions	70.3 x 38.6 x 149.59 mm / 2.8 x 1.5 x 5.9 in
Weight	Approx. 136.9 g / < 1 lb with batteries



Subject to change without notice



# COATING THICKNESS MEASUREMENT

## COATING THICKNESS MEASURING DEVICE PCE-CT 22BT

### Coating Thickness Measuring Device with 5-point calibration

With this Coating Thickness Measuring Device, layer thicknesses on metallic surfaces can be reliably determined. The Coating Thickness Measuring Device has a measuring range of 1500 µm. This means that the Coating Thickness Measuring Device is used, for example, in a paint shop, for incoming goods inspection or for an expert. With the Bluetooth interface

on the Coating Thickness Measuring Device, all data can be transferred to a mobile iOS or Android device and exported as a CSV, PDF or TXT file. A live view with analysis of the measured values is also possible via the free app with the Coating Thickness Measuring Device.

### ISO cal option

- ▶ micro USB and Bluetooth interface
- ▶ calibration foils included
- ▶ adjustable alarm gene values
- ▶ backlit display
- ▶ data storage for up to 600 measured values
- ▶ measuring range up to 1500 µm



### APPLICATION



## TECHNICAL SPECIFICATIONS

Measurable substrates	Fe, NFe
probe	internal
measuring range	0... 1500 µm
resolution	0.1 µm (in the measuring range 0... 99.9 µm) 1 µm (in the measuring range 100... 1500 µm)
accuracy	±(1 µm + 2 % of the layer thickness)
units	µm, mil
Smallest curvature	convex 5 mm, concave 5 mm
Smallest measuring area	10 x 10 mm
Minimum thickness of the substrate	0.4 mm
interface	Bluetooth, micro USB
memory	10 groups with 60 measurements each
power supply	2 x 1.5 V AA batteries, 5 V USB interface
Environmental conditions	-10... 50 °C, 10... 85 % RH
Dimensions	126 x 69 x 35 mm (without sensor)
Weight	approx. 97 g (without batteries)



Subject to change without notice



# COATING THICKNESS MEASUREMENT

## COATING THICKNESS GAUGE PCE-CT 27FN

### F / N: also for non-ferrous metals / Measuring range: 0 ... 1250 $\mu\text{m}$

PCE-CT 27FN is a Coating Thickness Gauge that takes non-destructive measurements of nonmagnetic coating, insulating layer and dry film thickness (DFT) on metal substrates such as steel and aluminum.

Ideal for surface testing, automotive paint inspection, material testing and manufacturing quality control applications, this

Coating Thickness Gauge is designed to measure layers of paint, ink, plastic, chrome, copper, zinc, enamel, paper, glass, rubber and similar materials.

### ISO cal option

- ▶ F / N: also for non-ferrous metals
- ▶ immediately ready to measure
- ▶ large measuring range
- ▶ measuring head for precise measurement results
- ▶ practical V-groove on the measuring head
- ▶ external measuring probe
- ▶ measuring range: 0 ... 1250  $\mu\text{m}$



## APPLICATION



## TECHNICAL SPECIFICATIONS

Measuring range	0 ... 1250 $\mu\text{m}$ / 0 ... 50 mils
Accuracy	$\pm(2\% + 2\text{ } \mu\text{m})$ / $\pm(2\% + 0.1\text{ mils})$
Resolution	0.1 $\mu\text{m}$ / 0.1 mil
Operating temperatures	-10 °C... +50 °C / +14 °F ... +122 °F
Power	2 x 1.5 V batteries
Dimensions	166 mm x 68 mm x 30 mm 6.54 in x 2.68 in x 1.18 in
Weight	0.180 kg / 0.40 lb



Subject to change without notice



# FORCE MEASUREMENT

## FORCE GAUGE PCE-DFG N 500

### Digital force gauge for tensile and compressive force measurement up to 500 N

The PCE-DFG N 500 is a digital force gauge for tensile and compressive force measurement up to 500 N. It has a resolution of 0.1 N. The measured values are shown on a large display with backlight which is rotatable by 180°. Therefore, reading the measured values correctly is possible in any position and at any time. The outstanding accuracy of  $\pm 0.1\%$  f. s. is confirmed

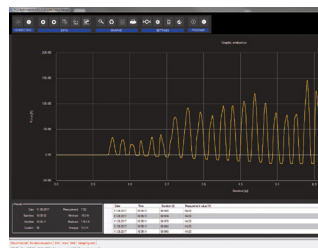
by the factory calibration certificate that comes with the meter. In addition to the internal memory with sufficient capacity for 100 readings, a USB interface is available for data transfer.

### ISO cal option

- ▶ tensile and compressive force measurement
- ▶ 1600 Hz sampling rate
- ▶ error limit 0.1 % of the measuring range
- ▶ PEAK function (MIN / MAX)
- ▶ limit value function
- ▶ various units of measurement
- ▶ automatic or manual storage
- ▶ graphical evaluation
- ▶ display with automatic orientation
- ▶ time / date
- ▶ control and evaluation software
- ▶ auto power off adjustable
- ▶ battery level indicator
- ▶ mains operation possible
- ▶ memory capacity for 100 measurements
- ▶ incl. ISO calibration certificate



### APPLICATION



## TECHNICAL SPECIFICATIONS

Measurement range	0 ... 500 N
Accuracy	$\pm 0.1\%$ of the measuring range
Resolution	0.1 N
Units	N, kg, lb, KPa
Display	2.8 " TFT graphical display
Alarm modes	inside, outside, crack, shutdown
Sampling rate	6 ... 1600 Hz
Memory	100 measurements, 8000 values each
Power supply	rechargeable NiMH battery 6 V / 1600 mAh
Battery life	approx. 10 h
Charging adaptor	12 V / 1 A
Outputs	Interface: USB
	Switching output: 12 V / 50 mA
Protection class	IP 54
Operating and storage conditions	-10 ... 50 °C / 14 ... 122 °F 5 ... 95 % RH non-condensing
Force absorption element	M6 x 7 mm
Dimensions	200 x 97 x 42 mm / 7.9 x 3.8 x 1.7 in
Weight	540 g / 1.2 lbs

### Optional accessories:

Clamp for peel-off tests  
Holder for button and rivet testing  
Clamping device for bristle testing  
Clamping device for bristle testing  
Universal clamping device  
Clamping device for tensile tests  
Fork holder for tensile & compr. tests  
Clamping tool for tensile tests  
Clamping device for tensile tests  
Adaptor clamp for tensile tests  
Adaptor clamp for tensile tests  
Round adaptor stamp for compr. tests  
Adaptor for compr. tests  
Motorised force test stand  
Force test stand  
Clamping device for test stand  
Adaptor ring for tensile tests  
Clamping device for test stand  
Clamping device for test stand  
Clamping jaw for test stand  
Clamping jaw for test stand PCE-FTS50  
and PCE-FM 50/200  
Clamping jaw for test stand PCE-FTS50

Order code PCE-SJJ035  
Order code PCE-SJJ032  
Order code PCE-SJJ029  
Order code PCE-SJJ020  
Order code PCE-SJJ017  
Order code PCE-SJJ012  
Order code PCE-SJJ09  
Order code PCE-SJJ08  
Order code PCE-SJJ07  
Order code PCE-SJJ010  
Order code PCE-SJJ06  
Order code PCE-SJJ04  
Order code PCE-SJJ01  
Order code PCE-MTS50  
Order code PCE-FTS50  
Order code PCE-SJJ03  
Order code PCE-SJJ02  
Order code PCE-SJJ024  
Order code PCE-SJJ015  
Order code PCE-SJJ13  
  
Order code PCE-SJJ05  
Order code PCE-SJJ011



Subject to change without notice



# FORCE MEASUREMENT

## FORCE GAUGE PCE-DFG N 10K

### With external measuring cell and USB interface for connection to a PC

The force gauge measures both tensile and compressive forces with a very high resolution. Tensile and compressive forces are often measured in test laboratories, for example to determine the yield strength, the pull-off force and the force required to actuate a push-button or switch. The force gauge is supplied with an external measuring cell. The PCE-DFG N 10K force

gauge can measure up to 10,000 N / 2,248 lbs. Models for 1,000 N / 225 lbs, 2,500 N / 562 lbs and 5,000 N / 1,124 lbs are also available. Various eyelets or hooks with M10 or M12 threads can be screwed into the measuring cells but other devices with the same thread can also be attached to the measuring cell.

### ISO cal option

- ▶ USB interface
- ▶ memory capacity for 100 measurements
- ▶ incl. ISO calibration certificate
- ▶ graphical display
- ▶ fast response time
- ▶ PC software



## APPLICATION



## TECHNICAL SPECIFICATIONS

Measurement range	0 ... 10,000 N / 0 ... 2,248 lbs
Resolution	5 N
Accuracy	±0.1 % of the measuring range
Units	N, kg, lb, KPa
Display	2.8 " TFT graphical display
Alarm modes	inside, outside, crack, shutdown
Sampling rate	6 ... 1600 Hz
Memory	100 measurements, 8000 values each
Power supply	rechargeable NiMH battery, 6 V / 1600 mAh
Battery life	approx. 10 h
Mains / charging adaptor	12 V / 1 A
Outputs	Interface: USB
Protection class	Switching output: 12 V / 50 mA
Operating and storage conditions	IP 54
	-10 ... 50 °C / 14 ... 122 °F
	5 ... 95 % RH non-condensing
Mounting thread measuring cell	
up to 1000 N / 225 lbs	M10
2500 ... 10000 N / 562 ... 2,248 lbs	M12
Dimensions	200 x 97 x 42 mm / 7.9 x 3.8 x 1.7
Weight	540 g / 1.2 lbs

### Optional accessories:

Universal clamping device	Order code	PCE-SJJ017
Clamping device for tensile tests	Order code	PCE-SJJ012
Fork holder for tensile & compr. tests	Order code	PCE-SJJ09
Adaptor clamp for tensile tests	Order code	PCE-SJJ06
Round adaptor stamp for compr. tests	Order code	PCE-SJJ04
Adaptor for compr. tests	Order code	PCE-SJJ01
Clamping device for test stand	Order code	PCE-SJJ015

### Further models of the PCE-DFG N series:

PCE-DFG N5	internal measuring	cell meas. range	0 ... 5 N
PCE-DFG N10	internal measuring	cell meas. range	0 ... 10 N
PCE-DFG N20	internal measuring	cell meas. range	0 ... 20 N
PCE-DFG N200	internal measuring	cell meas. range	0 ... 200 N
PCE-DFG N500	internal measuring	cell meas. range	0 ... 500 N
PCE-DFG N 1K	internal measuring	cell meas. range	0 ... 1000 N / 100 kg
PCE-DFG N 2,5K	internal measuring	cell meas. range	0 ... 2500 N / 250 kg
PCE-DFG N 5K	internal measuring	cell meas. range	0 ... 5000 N / 500 kg
PCE-DFG N 20K	internal measuring	cell meas. range	0 ... 20000 N / 2 t
PCE-DFG N 50K	internal measuring	cell meas. range	0 ... 50000 N / 5 t
PCE-DFG N 100K	internal measuring	cell meas. range	0 ... 100000 N / 10 t



Subject to change without notice



# FORCE MEASUREMENT

## FORCE GAUGE PCE-DFG-NF 1K

### Measurement of compressive forces with external load cell

The force gauge with an external load cell is designed for the measurement of compressive forces in hard-to-reach measuring locations. The pressure cell is connected to the force gauge by a sensor cable of approx. 3 m length and thanks to the small cell dimensions, it ensures versatile applications. The force gauge/load cell has several threaded holes at the bottom to enable

fixed installation. The force gauge can operate at a sampling rate of up to 1600 Hz. The sampled readings are displayed as an instantaneous value as well as in a graph showing the measurement curve directly in the force gauge.

### ISO cal option

- ▶ USB interface
- ▶ graphical display
- ▶ fast response time
- ▶ PC software
- ▶ incl. calibration
- ▶ memory for 100 measurements
- ▶ incl. ISO calibration certificate



## APPLICATION



## TECHNICAL SPECIFICATIONS

Measurement range	0 ... 1000 N
Resolution	0.1 N
Accuracy	±0.5 % of meas. range
Measurement units	N, kg, lb, kPa
Display	2.8 " TFT graphical display
Alarm modes	inside, outside, crack, shutdown
Sampling rate	6 ... 1600 Hz
Memory	100 measurements
Power supply	rechargeable NiMH battery, 6 V / 1600 mAh
Battery life	approx. 10 hours
Power adaptor / charging adaptor	12 V / 1 A
Outputs	interface: USB
Protection class	switching output: 12 V / 50 mA
Operating and storage conditions	IP 54
	-10 ... 50 °C
	5 ... 95 % RH, non-condensing
Dimensions load cell	Ø 20 mm / H 12 mm / M3 thread
	(see technical drawing)
Cable length pressure cell	approx. 3 m
Dimensions	200 x 97 x 42 mm
Weight	540 g

### Further models of the PCE-DFG NF series:

PCE-DFG NF 0,5K	Measurement range	0 ... 500 N
PCE-DFG NF 2K	Measurement range	0 ... 2000 N
PCE-DFG NF 5K	Measurement range	0 ... 5000 N
PCE-DFG NF 10K	Measurement range	0 ... 10000 N / 0 ... 10 kN
PCE-DFG NF 20K	Measurement range	0 ... 20000 N / 0 ... 20 kN
PCE-DFG NF 50K	Measurement range	0 ... 50000 N / 0 ... 50 kN



Subject to change without notice





## FORCE MEASUREMENT

### HYDRAULIC FORCE GAUGE PCE-HFG 10K

#### For the measurement of compression forces in mechanical systems

The hydraulic force transducer PCE HFG series is used for the absorption of static pressure forces and is made of stainless steel. The force transducer can measure forces over a long period of time due to its independence from power sources. With the integrated drag indicator the respective PEAK value is stored for later read out. The force transducer uses the measuring prin-

ciple of hydraulic transmission of forces. The forces applied to the plunger are transmitted to the dial gauge via the medium and are displayed on the Newton scale [N]. Due to the 27 mm ring opening, it is also possible to use the force transducer axially and to determine axial shaft forces, for example.

#### ISO cal option

- ▶ measurement of static pressure forces
- ▶ for stationary maintenance measurements and adjustment work
- ▶ independent of power sources
- ▶ analogue meter scale
- ▶ compact for small installation spaces
- ▶ pressure force display in Newton [N]
- ▶ stainless steel
- ▶ integrated drag indicators



### APPLICATION



### TECHNICAL SPECIFICATIONS

Measuring range	0 ... 10,000 N
Resolution	200 N
Measuring accuracy	±1.85% of the measuring range
Dimensions of the display	Ø55 mm
Mounting holes	2 x M6
Ambient conditions	0 ... 50 °C

#### Models of the PCE-HFG series:

##### Measured value: Force [N]

##### Measuring range

PCE-HFG 1K	0... 1000 N
PCE-HFG 2.5K	0... 2500 N
PCE-HFG 10K	0... 10000 N
PCE-HFG 25K	0... 25000 N

##### Resolution:

PCE-HFG 1K	20 N
PCE-HFG 2.5K	100 N
PCE-HFG 10K	200 N
PCE-HFG 25K	1000 N

Accuracy: ±(1.6 % pressure gauge + 0.25 % reading error) from measuring range

Temperature range:	0... 50 °C
weight:	1.6 kg
Mounting holes:	2 x M6
Inner diameter of the ring:	Ø 27 mm
Display dimensions:	Ø 55 mm



Subject to change without notice





# TORQUE MEASUREMENT

## TORQUE METER PCE-DFG N 100TW

### Torque meter up to 100 Nm / External torque transducer 1/2 " internal square

The torque wrench tester consists of a handheld measuring device and an external torque transducer. The torsion transducer is connected to the hand-held device via a 1.5 m / 4.9 ft long cable and thus enables installation in a test stand or direct assembly on a test bench.

The torque measuring device is delivered adjusted so that the

control measurements can be started immediately. A calibration certificate is optionally available for the torque measuring device. This certificate is a target / actual comparison on a traceable reference standard and thus serves as proof of the measurement accuracy. The measurement uncertainty of the torque measuring device is only 0.5 % of the measuring range.

### ISO cal option

- ▶ left / right torsion measurement
- ▶ error limit 0.5 % of the measuring range
- ▶ graphic display
- ▶ PC software
- ▶ PEAK / Hold function
- ▶ 1600 Hz sampling rate
- ▶ power adapter and battery operation possible
- ▶ the direction of rotation must be selected



## APPLICATION



## TECHNICAL SPECIFICATIONS

Measuring range	0 ... 100 Nm
Resolution	0.1 Nm
Accuracy	±0.5 % of the measuring range
Units of measurement	Nm, lbfft, kgfm
Torque sensor mount	1/2 " (12.5 x 12.5 mm) internal square
Torsion measurement	Left / Right
Display	2.8 " TFT graphic display
Alarm modes	Inside Outside
Sampling rate	6 ... 1600 Hz
Storage measurement points each	For 100 measurement series with 8,000
Power supply	NiMh battery, 6 V / 1600-mAh
Battery life	About 10 hours
Power supply / charging adapter	12 V / 1 A
Outputs	Interface: USB Switching output: 12 V / 50-mA
Protection class	IP 54
Operating and storage conditions	-10 ... 50 °C / 14 ... 122 °F 5 ... 95 % RH non-condensing
Torque transducer dimensions	H 85 mm / Ø 72 mm / Ø 104 mm (H 3.3 in / Ø 2.8 in / Ø 4.1 in) (see technical drawing)
Sensor cable length / td>	Approx. 1.5 m / 4.9 ft
Dimensions handset	200 x 97 x 42 mm / 7.9 x 3.8 x 1.7 in
Weight handset	540 g / 1.2 lbs
Weight of the torsion transducer	985 g / 2.2 lbs

### Further models of the PCE-DFG N TW series:

PCE-DFG N 50TW	Measuring range	0 ... 50 Nm
PCE-DFG N 10TW	Measuring range	0 ... 10 Nm
PCE-DFG N 5TW	Measuring range	0 ... 5 Nm



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# DATA LOGGER

## DATA LOGGER PCE-VDL 16I

### For the parameters temperature, relative humidity, air pressure, light and vibration

The mechanical engineering data logger PCE-VDL 16I from PCE Instruments measures and records the relevant parameters temperature, relative humidity, air pressure, light as well as 3-axis acceleration by means of a vibration sensor. This makes the data logger the ideal tool for monitoring machine vibration and at the same time measuring and recording important

environmental conditions of the equipment. Depending on the sampling rate, the data logger can record for several days. The recorded readings are saved to the internal 32 GB SD card and can be transferred to other media for evaluation where required.

### ISO cal option

- ▶ 3-axis acceleration up to 800 Hz
- ▶ measures temperature, humidity, air pressure and light
- ▶ 32 GB SD memory card
- ▶ compact design: 86.8 x 44.1 x 22.2 mm
- ▶ country of origin Germany



## APPLICATION



## TECHNICAL SPECIFICATIONS

Parameter	
Temperature measuring range	-20 ... +65 °C
Accuracy	±0.2 °C
Sampling rate	1 s ... 1800 s
Relative humidity measuring range	0 ... 100 % RH
Accuracy	±1.8 % RH
Sampling rate	1 s ... 1800 s
Air pressure measuring range	10 ... 2000 mbar
Accuracy	±2 mbar (within range 750 ... 1100 mbar) otherwise ±4 m bar
Sampling rate	1 s ... 1800 s
Light measuring range	0.045 ... 188,000 lux
Sampling rate	1 s ... 1800 s
3-axis acceleration measuring range	±16 g
Accuracy	±0.24 g
Sampling rate	800 Hz ... 1 Hz

### General technical data of the mini data logger PCE-VDL 16I

Memory capacity	2.5 readings per measurement, 3.2 billion readings with included 32 GB memory card
Keys	start / stop of a measurement; data logger on / off
LED	Log: operating status Alarm: alarm indicator Charge: charging status USB: status of PC connection
Power supply	integrated rechargeable Li-Ion battery 3.7 V / 500 mAh The meter is charged via the USB interface.
Integrated sensors	3-axis acceleration
Interface	USB
PC software	free setup and evaluation software (Windows XP / Vista / 7 / 8 / 10 32 bit / 64 bit) to record and evaluate data
Operating conditions	temperature -20 ... +65 °C
Storage conditions	temperature +5 ... +45 °C (ideal storage conditions for battery) 10 ... 95 % RH, non-condensing
Standards	complies with EU regulation RoHS/WEEE
Weight	approx. 60 g
Dimensions (L x W x H)	87 x 44 x 23 mm

### Optional accessories:

Mounting plate	Order code PCE-VDL MNT
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## MEASUREMENT DATA LOGGER

## MOISTURE METER PCE-DPM 3

## Data memory for approx. 50,000 measurement data

The moisture meter is a mobile testing device for monitoring the quality of compressed air on stationary and mobile compressed air generators. This moisture meter measures the temperature, the relative humidity, H<sub>2</sub>O and calculates the current dew point up to an ambient pressure of 20 bar. Thanks to the sintered cap, the moisture meter in the pressure lines is protected from dirt,

moisture and high flow speeds. This increases the service life of the moisture meter's sensors. The data memory of the moisture meter enables the course of the measurement parameters to be recorded in a pressure line. The data recorded by the moisture meter is permanently stored in the internal memory.

## ISO cal option

- ▶ data storage with CSV data export
- ▶ dew point, H<sub>2</sub>O, temperature, humidity measurement
- ▶ for inline measurement of pressure pipes
- ▶ battery operation for mobile use
- ▶ with G1 / 2" connection thread
- ▶ sensors protected with sintered filters



## APPLICATION



## TECHNICAL SPECIFICATIONS

**Measurement**

Measuring range  
Resolution  
Accuracy at 20°C / 68°F  
**Measurement**  
Measuring range  
Resolution  
Accuracy at 20°C / 68°F

**Temperature**

-10 ... 60 °C / 14 ... 140 °F  
0.01 °C / 0.018 °F  
-10 ... 50 °C / 14 ... 122 °F: ± 0.3 °C / 0.5 °F

**Relative humidity**

0 ... 100 %  
0.01 %  
< 5 %:  
±(0.025 % + 17.5 % of mv)  
> 5 %: ±(1 % + 5 % of mv)  
> 15 %: ±(2 % + 3 % of mv)

**Dew point\***

-50 ... 30 °C / -58 ... 86 °F  
0.01 °C / 0.018 °F  
-40 ... 20 °C / -40 ... 68 °F: ±2 °C / 3.6 °F  
-50 ... -40 °C / -58 ... -40 °F: ±2.5 °C / 4.5 °F

\*The accuracy of the dew point relates to an ambient temperature of 16 ... 25 °C / 61 ... 77 °F

**Measurement**

Measuring range  
Resolution  
Accuracy at 20°C / 68°F  
Environmental conditions

Response time at: 0.2 m / s, 1 bar,  
20°C / 68°F, 63% RH [90%]  
Data storage  
Adjustable storage rates

Adjustable recording time  
File format

Cable length

Thread

Thread length

Probe length

Probe width

Display

Power supply

Power supply power pack

Interface 7 mains connection

Weight

**H2O**

40 ... 20,000 ppm  
1 ppm  
±(7.3 ppm + 8.3 %)  
-10 ... 60 °C / 14 ... 140 °F  
0 ... 20 bar (absolute)  
0 ... 40 °C / 32 ... 104 °F: 20 s [120 s]  
-40 ... 0 °C / -40 ... 32 °F: 10 s [20 s]  
For approx. 50,000 measuring points

10 seconds

1, 5, 10, 20, minutes

1, 5, 12, 24, 48 hours

CSV

Approx. 1.5 m / 4.9 ft

G1 / 2"

1.2 cm

5.2 cm

1.2 cm

2.3" LCD

Battery 3.7 V DC, 3000-mAh

Primary: 100 ... 240 V AC, 0.25 A

Secondary: 5 V DC, 1 A

Micro USB

Approx. 610 g / 1.3 lbs



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# HARDNESS TESTING

## HARDNESS TESTER PCE-2000N

### Meter for metallic materials

The PCE-2000N hardness tester from PCE-Instruments uses the Leeb rebound method. This is a dynamic hardness test method in which a standardized test specimen, usually a hard metal ball, hits a test surface at a defined impact energy. The impact of the hard metal ball on the test surface results in a plastic deformation of the surface at the point of impact. This

deformation results in an energy loss which is proportional to the hardness of the workpiece and which can be determined by means of the ratio of rebound to impact velocity of the specimen.

### ISO cal option

- ▶ measures all common hardness parameters
- ▶ various other impactors as accessories
- ▶ measurement in different angles possible
- ▶ readings are saved to USB pen drive
- ▶ external impact device with 1.5 m cable
- ▶ wide measuring range
- ▶ 6 different hardness scales



### APPLICATION



## TECHNICAL SPECIFICATIONS

Measurement ranges	170 ... 960 HLD 17.9 ... 69.5 HRC 19 ... 683 HB 80 ... 1042 HV 30.6 ... 102.6 HS 59.1 ... 88 HRA 13.5 ... 101.7 HRB	Display resolution Data memory Data output Power supply Auto Power Off Operating conditions Storage conditions Dimensions Weight	128 x 64 pixel OLED 600 averages in 6 data groups USB pen drive 3 x AAA batteries after 12 min of inactivity +10 ... +50 °C, 20 ... 90 % RH -30 ... +60 °C 160 x 80 x 40 mm (H x W x D) Meter with batteries: approx. 300 g / <1 lb Impact device: approx. 75 g / <1 lb
Impact device included (optional impact devices) Cable length impact device Accuracy Repeatability	D (DC, D+15, C, G, DL) approx. 1.5 m ±0.5 % (@800 HLD) 0.8 % (@800 HLD)	Material Steel / cold-rolled steel	HRA 59.1 ... 85.8 HRC 20 ... 68.5 HRB 38.4 ... 99.6 HB 127 ... 651 HSD 32.2 ... 99.5 HV 83 ... 976
Hardness scales	HL (Leeb) HV (Vickers) HB (Brinell) HS (Shore) HRA (Rockwell A) HRB (Rockwell B) HRC (Rockwell C)	Alloyed tool steel	HRC 20.4 ... 67.1 HV 80 ... 898
Measurable materials	Steel Cast steel Alloy steel Stainless steel Grey cast iron Spheroidal Graphite iron Cast aluminium alloy Cu-zinc (brass) Copper-tin alloy Copper	Stainless steel   Grey cast iron Spheroidal graphite iron Cast aluminium  Brass  Bronze Copper	HRB 46.5 ... 101.7 HB 85 ... 655 HV 85 ... 802  HB 93 ... 334 HB 131 ... 387 HRB 23.8 ... 84.6 HB 19 ... 164  HRB 13.5 ... 95.3 HB 40 ... 173 HB 60 ... 290 HB 45 ... 315

### Optional accessories:

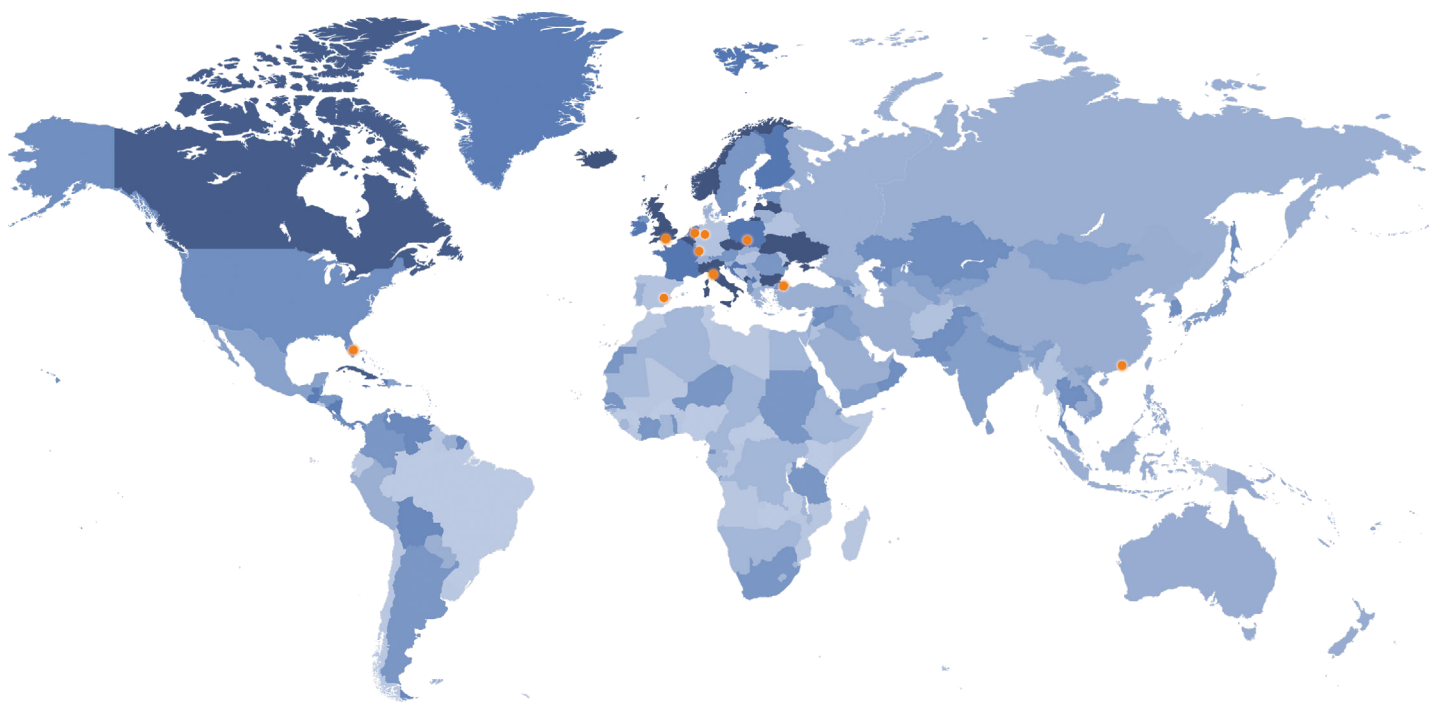
Impact device D	Order code	PCE-2000N Probe D
Impact device DC	Order code	PCE-2000N Probe DC
Impact device D+15	Order code	PCE-2000N Probe D+15
Impact device C	Order code	PCE-2000N Probe C
Impact device G	Order code	PCE-2000N Probe G
Impact device DL	Order code	PCE-2000N Probe DL



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