PCE Instruments
Condition Monitoring
Dear readers,

PCE Instruments is a leading supplier of first-class products and solutions in the field of measuring, control, weighing and laboratory technology. Founded 19 years ago, the company is directly represented in 11 countries; in nine other countries, PCE also cooperates with engineering firms or commercial agents as sales and service partners. The product portfolio covers a broad, diversified range, which includes a big number of the own PCE series products, developed and produced at its headquarter in Germany, which are sold under the trademark “PCE Instruments”.

Products, complete solutions and services – comprehensive know-how for the solution of your technical tasks. It may be for company or institutional teaching, research and development, for the industrial production with the purpose to increase efficiency and productivity, or for the general acquisition of measurement and weighing data for the economic evaluation of projects/products – PCE Instruments has the customized solution ready for you.

Our technicians and engineers are happy to answer your questions and provide consultation free of charge.

Sincerely yours,

Andreas Barth,
Managing director of the PCE Holding Ltd.
**Products and Services**

for a wide range of applications

The comprehensive product and service program of PCE Instruments offers you high precision and flexibility in all applications as well as outstanding quality and functionality. Below you may find an overview of the areas we work in.

**Measurement Technology**

The field of measurement technology covers a large number of innovative, mobile and stationary products for the determination of electrical, mechanical, biological, chemical and environmental parameters.

Measurement technology allows determination of quantitative and qualitative parameters in the scientific and technical field. The product range of PCE Instruments covers all measurement tasks from "A" to "Z".

**Weighing Technology**

PCE Instruments’ weighing technology includes a variety of possibilities in order to offer the customers the best solution to their weighing challenging tasks.

We have a wide standard range of high-quality, calibrated and verified scales. Our weighing technology can be found in the laboratory sector (analytical balances / precision balances) as well as in industry (roller scales / silo scales).

Another strong point is the development of individual weighing systems for special weighing tasks such as e.g. experimental tests or integration into existing systems.

**Control Systems**

The range of control systems covers the entire demand for sensors, display devices, controllers and paperless recorders. The measuring and control systems covers the complete demand for continuously applicable measurement technology. Here you will find solutions for measuring and controlling of the process variables: temperature, humidity, material moisture, pressure (absolute and relative), vibration, force and electrical energy. Standardized measuring and bus signals make it possible to provide the process variables cross-platform and plant-wide.

In addition to the individual products from the range of control technology, we also offer ready-to-connect and ready-to-use special solutions for your application.

**Development**

We offer both device series of our own trademark PCE Instruments, as well as modified test equipment according to customer requirements, which we design and manufacture especially for the customer.

Our skilled engineers and technicians work closely with the customer to clearly define the specifications, to ensure that the provided measurement technology, as minimum, meets and in the majority of cases exceeds the expectations.

If you want to implement a project, then just contact us; our firmware, software and mechanical engineers are there to help you with words and deeds.

**Production**

Each individual measuring device of PCE Productions- und Entwicklungsgesellschaft mbH is not only assembled in Germany but also calibrated and delivered with a corresponding certificate. Of course, the reference devices have a valid DAkkS calibration or comparable certificate. This ensures traceability to national or international standards. By this procedure it is provided that each meter complies with the specified specifications.

All production processes are controlled by the ISO 9001 certified quality management.

**Service**

Since 1999, the engineers at PCE have been providing quality services to the customers from all over the world. We can offer our customers solutions that are customized to their needs in terms of features, costs and time schedule. Thus, we ensure that our customers are not only provided with the necessary measuring equipment, but that they can also take advantage of professional services, as well as our technical advice before and after the sale.

If required, we also use our expertise to install, set up and test the measurement and test equipment.
The calibration of test equipment increases the precision and safety in your manufacturing process and thus helps to avoid extra work or even spoilage and rejects.

The calibration includes: function test of your measuring instruments, calibration according to standard specifications, minor repairs, detailed certificate according to ISO specifications, calibration label with calibration number and date of re-calibration.

PCE guarantees the complete return of your measuring instruments to national and international standards. Your in-house quality system sets the calibration interval. The test equipment management of PCE reminds you of the next calibration date.

All from one source.

If you order an article from this catalog or from our online shop with a calibration certificate, we will immediately send this meter to our calibration department.

► Pressure
► Flow
► Gas
► Gloss
► Force
► Mass
► Material thickness
► Material hardness
► Material conductivity
► Process signal
► Relative humidity
► Sound
► Layer thickness
► Vibration
► Temperature

You can immediately see by the following symbols:

ISO Calibration Certificate included
ISO Calibration Certificate optional

There the calibration certificate for this device is issued. Afterwards, the device including the calibration certificate will be sent to you at once.

For some meters we offer an optional calibration, for many testers an ISO calibration is already included.
Tachometer PCE-T236

For contact and non-contact rpm measurement

The PCE-T236 tachometer can be used for non-contact or mechanical contact measurement.

The handheld tachometer is particularly suitable for registering revolutions and speeds on rotating machines and systems (on conveyer belts, motors, belt drives ...). The measurement is either contactless with the help of a reflex mark, which is glued to the rotating part or by means of one of the included, attachable mechanical adapters, with a measuring tip or measuring wheel (see image).

The tachometer has a button for four selectable measuring ranges and for min./max. memory. In addition to its use in all branches of industry, this handheld tachometer is also used in operational and institutional research and development.

► the handset measures optically, non-contact via the provided reflection tape (600 mm)

► contact measurement of rpm via cone adapter (for stub shaft or center hole)

► contact measurement of m / min via surface gear

► the LCD automatically rotates 180 °

► measuring adapter is replaceable and available separately as a spare part

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Ranges</th>
<th>Resolution</th>
<th>Accuracy</th>
<th>Max. distance for optical measurement</th>
<th>Memory</th>
<th>Power supply</th>
<th>Operating temp. range</th>
<th>Housing</th>
<th>Rotations display</th>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 ... 99999 rpm (optical measurement)</td>
<td>0,5 ... 19999 rpm</td>
<td>± 0,05 % fs; ±1 digit</td>
<td>300 mm / 11.8 in</td>
<td>last value, Maximum, Minimum value</td>
<td>4 x 1,5 V AAA batteries (Mignon)</td>
<td>0 ... + 50 °C</td>
<td>ABS-plastic</td>
<td>LCD-Display, 5-digit, rotates automatically, depending on the type of speed measurement automatically</td>
<td>65 x 215 x 38 mm</td>
<td>300 g / &lt; 1 lb</td>
</tr>
<tr>
<td></td>
<td>0,5 ... 19999 rpm (contact measurement)</td>
<td>0,05 ... 1999 rpm</td>
<td>up to 99999 = 0,1 rpm; up to 99999 = 1,0 rpm</td>
<td>0,2 ... 6560 ft/min (contact measurement)</td>
<td>0,05 ... 999,9 = 0,1 rpm; up to 19,999 = 0,1 rpm</td>
<td>0,2 ... 6560 ft/min (contact measurement)</td>
<td>0,2 ... 6560 = 0,1 ft/min</td>
<td>LCD-Display, 5-digit, rotates automatically, depending on the type of speed measurement automatically</td>
<td>65 x 215 x 38 mm</td>
<td>300 g / &lt; 1 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0,2 ... 6560 ft/min (contact measurement)</td>
<td>0,05 ... 999,9 = 0,1 rpm; up to 19,999 = 0,1 rpm</td>
<td>up to 99999 = 0,1 m/min; up to 99999 = 1,0 m/min</td>
<td>0,2 ... 6560 = 0,1 ft/min</td>
<td>0,2 ... 6560 = 1 ft/min</td>
<td>0,2 ... 6560 = 0,1 ft/min</td>
<td>0,2 ... 6560 = 1 ft/min</td>
<td>LCD-Display, 5-digit, rotates automatically, depending on the type of speed measurement automatically</td>
<td>65 x 215 x 38 mm</td>
<td>300 g / &lt; 1 lb</td>
<td></td>
</tr>
</tbody>
</table>
Specifications

The combined tachometer stroboscope is a measuring device for use in maintenance, servicing and production. In addition to the stroboscopic function, the tachometer stroboscope also has an option to measure (via contact) rotational speeds and temperatures. Thus, the tachometer 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 one housing. The tachometer stroboscope has a measuring range of 0.5 ... 99.990 rpm, the IC circuit in conjunction with a bright red LED lamp ensures the device has low power consumption and is virtually maintenance-free.

The tachometer stroboscope is set via pushbuttons (for coarse and fine adjustment).

- powerful LEDs
- non-contact temperature measurement
- temp. measurement with sensor type K or PT 1000
- 5-digit 10 mm LCD display
- red stroboscope light

Software

RPM Measurement

Tachometer PCE-T 260 (6 in 1)

With Optical and Contact rpm and Temperature Measurement

Technical Data of Tachometer Stroboscope PCE-T 260 Optical

- Measuring range: 5 ... 99999 rpm
- Resolution: 0.5 rpm (<1000 rpm) 1 rpm (>1000 rpm)
- Accuracy: ±0.05 % + 1 digit
- Distance to the object: 50 ... 150 mm / 2 x 5.9 in, max. 300 mm / 12 in (depending on ambient light)
- Techn. Data of Tachometer Stroboscope PCE-T 260 Contact
- 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
- Techn. 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 digits
- Flash lamp: 3 x LED (red)
- Techn. Data of PCE-T 260 Temperature Type K
- Measuring range: -100 ... 1300°C / -148 ... 2372°F
- Resolution: 0.1°C
- Accuracy (device only): ±0.4% + 1°C / 1°F (-100 ... -50°C / -148 ... -58°F) ±0.4% + 0.5°C / 1°F (-50 ... 1300°C / -32°F ... 2372°F)
- Techn. Data of PCE-T 260 Temperature PT 1000
- Measuring range: -10 ... 70°C / 14 ... 158°F

Specifications

Resolution 0.1°C / 32°F
Accuracy (device only) ±1.2°C / 34°F
Techn. Data of PCE-T 260 Temperature IR
Measuring range -30 ... 300°C / -32 ... 581°F
Resolution 0.5°C / 33°F
Accuracy ±3% or ±3°C / ±3°F
Emissivity 0.95 fixed
Spectral range 6 ... 14 μm
Optical resolution 3:1
General Specifications of Tachometer Stroboscope PCE-T260
Display 5-digit LCD
Interface RS 232
Power supply 4 x 1.5V AA (UM-3) / DC 9V
Power consumption approx. 52 mA
Ambient conditions 0 ... 50°C / 122°F < 80 % RH.
Memory last value, Min, Max
Dimensions 207 x 67 x 39 mm / 8.1x2.6x1.5 in
Weight 255 g / < 1 lb without batteries
LED-Tachometer with the Range of 60 ... 99,990 Flashes

The PCE-LES 100 LED Tachometer combines LED technology with compact and accurate electronics, which controls the sequence and timing of flash over the entire measuring range. Due to the LED technology, lamp replacement is not needed anymore. The tachometer is ideal for non-contact rpm measurements and for observation of the working processes of the machinery and equipment, as well as their parts during condition monitoring, while the viewer gets a subjective impression that the object is stationary. Due to a very wide frequency range and user-adjustable flash length, the LED handheld stroboscope PCE-LES 100 can be used for a variety of purposes, where it is important to make very fast movements visible (e.g. vibration). The compact design and size of the device, and, thus, the possibility to carry it in a pocket enable you to have it at your disposal anytime you need.

- LED technology (no lamp replacement required)
- 60 to 99,990 flashes
- Pulse doubling and division possible
- 11-hour battery operation possible
- 2 super-bright LEDs (370 LUX @ 50 cm)

Specifications:

- **Range**: 60 ... 99,990 rpm
- **Display**: 5-digit LCD
- **Impulses/Flash Possibility**: of doubling and division / fine adjustment
- **Offset**: Yes, 360º
- **Accuracy**: 60 ... 17,300 ±1 LSD
  17,300 ... 99,990 ±0.009 %
- **Light source**: LED
- **Illuminance**: 370 lux (50 cm distance, 6000 FPS)
- **Battery**: 2 x AA batteries
- **Operating time**: 11 h
- **Ambient conditions**: -10 ... 50 ºC / 14 ... 122 ºF
- **Dimensions**: 124 x 71 x 33 mm / 4.9 x 2.8 x 1.3 in
- **Weight**: 173 g / < 1 lb

ISO 9001 certified option
Stethoscope PCE-S 42

For monitoring of bearings and motors

The vibration meter PCE-S 42 is used to monitor individual machine parts. With the vibration meter it is possible to carry out maintenance and repair tasks.

Also, its application facilitates the monitoring of sound phenomena in bearings and motors. In this way, it is possible to amplify the noises indicating that there is slight damage to the machine, which, if ignored, could result in severe impairments and damage to the machine.

The vibration meter is supplied with a headset that is perfect for use in a noisy environment due to its shape adapted to the human head. The large, padded ear cups are noise-suppressing and at the same time offer high wearing comfort. The vibration meter is mostly used to clearly determine the knocking and grinding sounds.

- frequency range: 30 Hz ... 150 KHz
- for preventive maintenance
- noise-suppressing headphones incl.
- simple operation – 32 volume levels
- two different measuring tips

Specifications:

- Frequency range: 30 Hz ... 150 KHz
- Operating temperature: -10 ... +40 °C
- Output volume: digitally adjustable (32 levels)
- Headphones: 32 Ω
- Power supply: 4 x 1.5 V AAA batteries
- Battery life: 30 h
- Dimensions: 220 x 35 x 35 mm
- Length of tips: 70 / 280 mm
Shock Logger PCE-VDL series

Shock logger with up to 2400 Hz

The data loggers PCE-VDL series are available in two versions. The data logger PCE-VDL 16I contains sensors for the following physical units: temperature, humidity, air pressure, light and 3-axis acceleration. The max. sampling rate of the acceleration sensor is 1600 Hz, the other sensors are sampled with max. 1 Hz.

- 3-axis acceleration up to 2400 Hz (Model PCE-VDL 24I)
- 3-axis acceleration up to 1600 Hz, temperature, humidity, air pressure and light (Model PCE-VDL 16I)
- 2GB SD memory card
- small design: 86.8 x 44.1 x 22.2

Specifications

<table>
<thead>
<tr>
<th>Model: PCE-VDL 16I (5 sensors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
</tr>
<tr>
<td>Measuring range: -20 … 65 °C / -4° F … 149° F</td>
</tr>
<tr>
<td>Accuracy: ± 0.2 °C / ± 36.8 °F</td>
</tr>
<tr>
<td>Resolution: 0.01 °C / 33.8 °F</td>
</tr>
<tr>
<td>Max. sampling rate: 1 Hz</td>
</tr>
<tr>
<td>Humidity</td>
</tr>
<tr>
<td>Measuring range: 0 ... 100% RH</td>
</tr>
<tr>
<td>Accuracy: ± 1.8% RH</td>
</tr>
<tr>
<td>Resolution: 0.04% RH</td>
</tr>
<tr>
<td>Max. sampling rate: 1 Hz</td>
</tr>
<tr>
<td>Air pressure</td>
</tr>
<tr>
<td>Measuring range: 10 … 2000 mbar</td>
</tr>
<tr>
<td>Accuracy: ± 2 mbar (750 ... 1100 mbar); otherwise ± 4 mbar</td>
</tr>
<tr>
<td>Resolution: 0.02 mbar</td>
</tr>
<tr>
<td>Max. sampling rate: 1 Hz</td>
</tr>
<tr>
<td>Light</td>
</tr>
<tr>
<td>Measuring range: 0.045 … 188,000 lux</td>
</tr>
<tr>
<td>Resolution: 0.045 lux</td>
</tr>
<tr>
<td>Max. sampling rate: 1 Hz</td>
</tr>
</tbody>
</table>

PCE-VDL 16I

The max. sampling rate of the acceleration sensor is 1600 Hz, the other sensors are sampled with max. 1 Hz.

- integrated sensors: temperature, humidity, air pressure and light
- 3-axis acceleration
- max. sampling rate: 1600 Hz

ISO cal option

PCE-VDL 24I

With the data logger PCE-VDL 24I the acceleration sensor is even delivered with a sampling rate of 2400 Hz.

- integrated sensor: 3-axis acceleration
- max. sampling rate: 2400 Hz

ISO cal option
Vibration Meter for Monitoring of Machines and Equipment

The vibration meter is ideal for maintenance staff to quickly inspect vibrating parts, machinery and equipment. This vibration meter indicates the vibration acceleration, the vibration velocity and the vibration displacement directly on the display. This allows you to quickly and reliably detect and track imbalances and developing bearing damage with the device. An integrated RS-232 interface allows the data to be transported directly from the vibration meter to the PC. Also, check the vibration behavior of your machines with this vibration meter and prevent damage (pinpoint the source of the unwanted vibrations). The vibration meter is usually used for individual assessment of vibration on machinery and equipment by means of vibration path, vibration velocity or vibration acceleration.

Specifications

- to determine vibration acceleration, vibration velocity and vibration displacement
- peak Hold
- ABS plastic housing
- low battery indicator
- incl. ISO calibration certificate

PCE-VT 2700 / PCE-VT 2700S

Vibration Measurement

Specifications

- Meas. range acceleration: 399.9 m/s² (Peak) / 1311 ft/s² (Peak)
- Meas. range velocity: 399.9 mm/s (RMS) / 15.75 in/s (RMS)
- Meas. range displacement: 3.9999 mm (Pk-Pk) or 158.0 mil (Pk-Pk) / 0.15 in (Pk-Pk) or 5.34 oz (Pk-Pk)
- Meas. range revolutions: 50 ... 99,900 rpm
- Resolution: 0.1 m/s² / 0.1 yd/s²
- Accuracy: ± 5% of reading + 2 digits
- Freq. range acceleration: 9 Hz ... 1 kHz (in 1 kHz mode) / 9 Hz ... 10 kHz (in 10 kHz mode)
- Freq. range velocity: 10 Hz ... 1 kHz
- Freq. range displacement: 10 Hz ... 1 kHz
- Display: 4-digit LCD, last measured value is shown
- Units: metric / imperial
- Interface: RS-232 port
- Power supply: 3 x 1.5 V batteries AAA / LR03
- Battery life: up to 5 hours of continuous operation
- Auto power off: after 5 minutes of inactivity (no key pressed)
- Low-battery indication: < 2.1 V
- Operating temperature: -5 °C ... +65 °C / +23 °F ... 131°F
- Operating RH: 95 % RH, non-condensing
- Enclosure: ABS plastic
- Dimensions: 142 x 77 x 40 mm / 5.6 x 3.0 x 1.6”
- Weight: 0.23 kg / 0.5 lb

PCE-VT 2700

The vibration meter is delivered ready to start with sensor tips (2 x 50 mm), touch sensor, magnetic plate, handle and a carrying case.

- Touch sensor on 1.5 m cable
- Nail probe 75 mm
- Magnetic adapter

PCE-VT 2700S

The vibration meter is delivered ready to start with a sensor tip (1 x 50 mm), handle and a carrying case.

- Handle with 1.5 m cable
- Nail probe 75 mm

ISO calibrated
Specifications

PCE-VMS 504

Wireless Vibration Monitoring System with External Vibration Sensors

The wireless vibration monitoring system PCE-VMS 504 measures vibration in an acceleration range up to 30 g and in a frequency range between 5 Hz and 10 kHz. The wireless vibration monitoring system uses external vibration sensors, which measure vibration on machines and transmit it wirelessly to a receiving unit. Due to their magnetic feet, these sensors can easily be docked to machines where they can measure not only the vibration but also the temperature between -20 and +120 °C. During the operation, the server socket / web communication sends measured parameters directly to the receiving unit of the wireless vibration monitoring system PCE-VMS 504, which uploads them directly to the server after data acquisition.

- wireless communication via ZigBee
- frequency range between 5 Hz and 10 kHz
- wireless piezo sensors
- temperature measurement up to 120 °C
- memory (receiving station) 128 MB

PCE-VMS 504 / PCE-VMS 501

Wireless Vibration Monitoring System with External Vibration Sensors

- great range
- expandable at any time
- transmitter IP 65 protected

PCE-VMS 504

- Wireless vibration monitoring system with external vibration sensors / for measuring acceleration, velocity, displacement and temperature / possible extension: up to 60 transmitters per base at max. 6 base stations (360 transmitters).

PCE-VMS 501

- Vibration sensor for measuring acceleration, velocity, displacement and temperature.
- transmission range approx. 100 m
- acceleration up to 300 m/s²
- waveform measuring distance approx. 512 kB

Vibration Measurement
Defecoscope PCE-USC 30

Coating Thickness Measurement by means of Eddy Current

The defecoscope PCE-USC 30 is used for nondestructive material testing. With the device, the surface defects and near-surface defects can be made visible. The eddy current test is an electrical method for the testing of electrically conductive materials. During the eddy current test, a probe subjected to alternating voltage is placed on an electrically conductive test piece. The magnetic field lines generated perpendicular to the surface of the workpiece induce circular, near-surface eddy currents, resulting in secondary magnetic fields in the test piece. The secondary fields counteract the primary fields and change them in terms of amplitude and phase measurably. Inhomogeneities and workpiece defects change the eddy current characteristics as well as permeability of the material and thus also the secondary fields. The eddy current tester PCE-USC 30 is designed for corresponding NDT material tests and can also be used for conductivity measurement and coating thickness determination.

Specifications

- Frequency range: 0.01 ... 16000 kHz
- Probe voltage supply: 0, 5, 1, 2, 4, 6V
- Signal phase shift: 0 ... 360 °
- Sampling frequency: 0 ... 10 kHz
- Duration of signal display: 0 / 0.5 / 1 / 2 / 3 / 4 seconds
- Alarm: circular, horizontal line, circular sector
- Display: color display (TFT)
- Display size: 4.3" (diagonal)
- Resolution display: 800 x 480 pixels
- Amplification adjustment: 0 ... 100 dB
- Filter: Lowpass filter (1 ... 4000 Hz), Highpass filter (1 ... 4000 Hz), band filter, differential filter, average filter
- Average interval between measurement errors: 4000 hours
- Power supply: 12 V battery
- Battery capacity: 4500 mAh
- Battery working time: > 8 hours (per charge)
- Operating temperature: -20 ... +45 ° C
- Weight: <0.9 kg
- Dimensions: 230 x 135 x 98 mm

► conductivity measurement of metals according to IACS
► 4.3" large color display (TFT)
► NDT testing of surfaces
► material sorting
► frequency range up to 3.5 MHz
Material Thickness Meter PCE-TG 50

**Ultrasonic Thickness Meter with the Range 1.2 ... 200 mm**

The thickness gauge PCE-TG 50 is a compact measuring device for metals, glass and homogeneous plastics. This material thickness gauge works with an external ultrasonic probe, which conducts ultrasonic waves into the material to be tested.

Different materials conduct ultrasound at different speeds, that is why you can select different ultrasonic speeds in the material thickness gauge. With the thickness gauge, you can determine the material thicknesses of metal, glass, plastics and other homogeneous materials within a few seconds.

An operation on the thickness gauge is easily done via seven buttons. The built-in calibration block allows this meter to be easily calibrated on-site. All measured values can be transferred to a PC with the optional software and analyzed. Furthermore, the software offers the possibility to export the data in Microsoft Excel.

- ultrasonic probe included
- adjustable sound velocity (for different materials)
- measures wall thicknesses from 1.2 to 200.00 mm
- steel block integrated for calibration
- software and interface cable (optional)

**Specifications**

- **Measuring range**: 1.2 ... 200 mm / 0.05 ... 7.87 inches (steel)
- **Accuracy**: ± 0.5% of v. Mw. ± 0.1 mm / ± 0.00393701 in
- **Resolution**: 0.1 mm / 0.001 in
- **Sound velocity**: 800 ... 9950 m / s / 2624.67 ... 32644.36 ft/s
- **Units**: mm / inch (switchable)
- **Power supply**: 3 x 1.5 V AAA batteries
- **Calibration block**: 5.0 mm / 0.2 in (integrated)
- **Data output**: RS-232 interface
- **Sensor frequency**: 5 MHz
- **Measuring surface**: Ø8 mm / 0.32 in
- **Display**: 4-digit LCD
- **Head**: Ø15.4 mm / 0.61 in
- **Operating conditions**: temperature: -10 ... +50 °C / +14 ... +122 °F
- **Humidity**: <80% RH
- **Material temperature**: 0 ... +50 °C / +32 ... +122 °F (perm.)
- **Material temperature**: +50 ... +85 °C / +122 ... 185 °F (for 5 minutes; then 30 minutes cooling below +50 °C / +122 °F)
- **Dimensions of the handheld device**: 142 x 77 x 40 mm / 5.6 x 3.1 x 1.6 in
- **Weight**: 265 g / 0.6 lb (with batteries and sensor)
Material Thickness Meter PCE-CT 100

**For ferrous and non-ferrous metals**

The PCE-CT 100 is a coating thickness measuring device and operates according to the magnetic inductive (ISO 2178) and the eddy current method (ISO 2360). These methods are used for non-destructive testing of materials. The device measures the thickness of magnetically neutral layers on magnetic or non-magnetic base material. The material thickness gauge is ideal for reliable on-site applications. With the external probe, the layer thickness can be quickly measured even in hard to reach places.

Designed for non-destructive, fast and accurate coating thickness measurement, the PCE-CT 100 is easy to use. Measured data can be easily transferred via USB cable to a PC.

The material thickness gauge is used in particular in the finishing industry, electroplating, shipbuilding and bridge construction, aircraft construction, machine and chemical industry.

- high resolution
- for ferrous and non-ferrous metals
- data transmission via USB
- non-destructive measurements
- including ISO calibration certificate

### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.1 μm or &lt;0.2% of the measured value</td>
</tr>
<tr>
<td>(for probes with a measuring range of up to</td>
<td>1500 μm / 1.5mm / 59 mil</td>
</tr>
<tr>
<td>1500 μm / 1.5mm / 59 mil)</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>high-resolution color display, backlit</td>
</tr>
<tr>
<td>User guidance</td>
<td>menu on the display: German, English, French, Italian, Spanish, Turkish, Czech, Chinese</td>
</tr>
<tr>
<td>Memory</td>
<td>direct mode: max. 1000 readings in Fe (type F) and nFe (type N) mode</td>
</tr>
<tr>
<td></td>
<td>file memory: max. 100,000 measured values</td>
</tr>
<tr>
<td>Calibration</td>
<td>factory calibration</td>
</tr>
<tr>
<td></td>
<td>zero (one-point calibration)</td>
</tr>
<tr>
<td></td>
<td>one-foil calibration (two-point calibration)</td>
</tr>
<tr>
<td></td>
<td>cal-through-coat calibration</td>
</tr>
<tr>
<td>Zero offset</td>
<td>addition of a constant value to the measured value</td>
</tr>
<tr>
<td>Statistic parameters</td>
<td>N, X, o, Max, Min, Cp, Cpk, Kvar</td>
</tr>
<tr>
<td>Online-statistics-display</td>
<td>X, o, Max, Min</td>
</tr>
<tr>
<td>Limits</td>
<td>adjustable with visual and audible signal</td>
</tr>
<tr>
<td>Interface</td>
<td>USB 2.0, Bluetooth 4.0</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>0 °C / -32 °F to +50 °C / +122 °F</td>
</tr>
<tr>
<td>Power supply</td>
<td>3 x mignon (AA) 1.5 V</td>
</tr>
<tr>
<td>Dimensions</td>
<td>163mm x 82mm x 40mm / 6.42 x 3.23 x 1.58&quot; (H x W x D)</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 290 g / 0.64 lb (including batteries)</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 52 (protection against dust and dripping water)</td>
</tr>
</tbody>
</table>

**Material Thickness Meter PCE-CT 100**

Material Thickness Meter PCE-CT 100
The Leeb hardness tester PCE-900 measures the hardness of nine different metals based on the Leeb rebound method. This means that an impact device hits a metallic surface and the intensity of the rebound is used as an indicator of material hardness. The hardness tester PCE-900 measures the metal hardness by 5 different hardness scales, including Rockwell, Vickers, Leeb, Brinell and Shore. In addition, for the measurements by the Rockwell scale, there is a distinction between Rockwell B and C.

As standard, the Leeb hardness tester PCE-900 comes with a type D impact device, which can be used for many measurements. Via the data interface, the measured values can be transmitted live to the PC. The delivery scope is completed by an ISO calibration certificate which traceably certifies the accuracy of the measuring device. This makes the PCE-900 Leeb hardness tester an important instrument in the field of material inspection during the goods control.

Specifications

- Measuring range: 200 ... 900 HL
- Measuring accuracy: ± 0.8% at HLD = 900
- Materials: 9 different materials
- Display: 12.5 mm / 0.5 in LCD with backlight
- Impact device: type D
- Memory: 50 sets of data
- Interface: RS-232
- Power supply: 4 x 1.5 V AAA batteries
- Ambient range: operating temperature: -10 ... 50 °C / 14 ... 122 °F, storage temperature: -30 ... 60 °C / -22 ... 140 °F, relative humidity: <90%
- Dimensions: 142 x 77 x 40 mm / 5.79 x 3.03 x 1.58 in
- Weight: measuring device: approx. 130 g / <1 lb, impact device: 75 g / <1 lb
- Cable length: approx. 1.2 m / 47 in
Metal Hardness Tester PCE-950

Leeb-hardness Tester with Data Storage and Software

The hardness tester PCE-950 can determine the hardness of 9 metals according to the Leeb method. In this dynamic hardness test method, a small carbide ball hits the test surface. The quotient of rebound and impact velocity is directly related to the material hardness and can be converted into standard hardness scales such as Vickers, Rockwell or Brinell by means of conversion factors.

The PCE-950 can measure materials such as steel, cast iron, aluminum, copper or bronze in the hardness scales HRC, HRB, HRA, HB, HV or HS. Thanks to the integrated impact device, and the compact, ergonomic design, the hardness tester can be used to quickly determine the hardness values and store the measured data. A capacitive data memory as well as the included software facilitate the documentation of the test results considerably. The hardness tester is therefore ideal for the goods receipt and exit control.

- Leeb-hardness tester for metallic materials
- measures all common hardness parameters
- integrated impact device
- measuring range 170 ... 960 HLD
- measurement possible in every position

### Specifications

<table>
<thead>
<tr>
<th>Steel and cast iron</th>
<th>HRC: 19.8 ... 68.5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HRB: 59.6 ... 99.6</td>
</tr>
<tr>
<td></td>
<td>HRA: 59.1 ... 95.8</td>
</tr>
<tr>
<td></td>
<td>HB: 80 ... 651</td>
</tr>
<tr>
<td></td>
<td>HV: 83 ... 976</td>
</tr>
<tr>
<td></td>
<td>HS: 32.2 ... 115</td>
</tr>
<tr>
<td>Hammered steel</td>
<td>HB: 143 ... 650</td>
</tr>
<tr>
<td>Cold rolled steel</td>
<td>HRC: 20.4 ... 67.1</td>
</tr>
<tr>
<td></td>
<td>HV: 80 ... 898</td>
</tr>
<tr>
<td>Stainless steel</td>
<td>HRCB: 23.8 ... 84.6</td>
</tr>
<tr>
<td></td>
<td>HB: 85 ... 655</td>
</tr>
<tr>
<td></td>
<td>HV: 85 ... 902</td>
</tr>
<tr>
<td>Gray cast iron</td>
<td>HB: 93 ... 334</td>
</tr>
<tr>
<td>Ductile cast iron</td>
<td>HB: 131 ... 387</td>
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<tr>
<td>Aluminum alloy</td>
<td>HRC: 23.8 ... 84.6</td>
</tr>
<tr>
<td></td>
<td>HB: 19 ... 164</td>
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<tr>
<td>Brass</td>
<td>HRC: 13.5 ... 95.3</td>
</tr>
<tr>
<td></td>
<td>HB: 40 ... 173</td>
</tr>
<tr>
<td>Bronze</td>
<td>HB: 60 ... 29</td>
</tr>
<tr>
<td>Forged Copper alloy</td>
<td>HB: 45 ... 315</td>
</tr>
<tr>
<td>Accuracy</td>
<td>± 6 HLD at 730 ... 790 HLD</td>
</tr>
<tr>
<td></td>
<td>± 10 HLD at 490 ... 570 HLD</td>
</tr>
<tr>
<td>Repeatability</td>
<td>6 HLD at 730 ... 790 HLD</td>
</tr>
<tr>
<td></td>
<td>10 HLD at 490 ... 570 HLD</td>
</tr>
<tr>
<td>Measuring range (total)</td>
<td>170 ... 960 HLD</td>
</tr>
<tr>
<td>Hardness scales</td>
<td>HL – Leeb</td>
</tr>
<tr>
<td></td>
<td>HB – Brinell</td>
</tr>
<tr>
<td></td>
<td>HRC – Rockwell C</td>
</tr>
<tr>
<td></td>
<td>HRB – Rockwell B</td>
</tr>
<tr>
<td></td>
<td>HRA – Rockwell A</td>
</tr>
<tr>
<td></td>
<td>HV – Vickers</td>
</tr>
<tr>
<td></td>
<td>HS – Shore</td>
</tr>
</tbody>
</table>

- Impact device: type D
- Measuring direction: 360°
- Display: 128 x 32 OLED
- Memory: 600 memory slots
- Power supply: Li-ion battery
- Operating time: approx. 50 h
- Interface: Mini USB
- Dimensions: 153 x 54 x 24 mm / 6.02 x 2.13 x 0.95 in
- Weight: approx. 250 g / < 1 lb

ISO9001 cal option
The UCI hardness tester PCE-3500 is used for the non-destructive hardness measurement of metallic components. The meter’s operation is based on the ultrasonic contact impedance method. The UCI procedure works as follows: a Vickers diamond on the test probe is stimulated by its self-resonance. By pressing the test probe, the oscillation frequency is damped depending on the hardness of the surface and depending on the modulus of elasticity of the workpiece and the contact surface. The hardness of the surface can be determined, on the basis of the resulting frequency shift, taking into account the material characteristics.

The UCI hardness meter works non-destructively: Though a microscopic indentation on the surface takes place, it is usually not visible. Due to the low penetration depth of the Vickers diamond, the device is particularly suitable for surface hardened components, which appear during nitriding or induction hardening. Typical applications include punching tools, presses, gears, turbine blades, camshafts or welds.

**Non-destructive Hardness Measurement**

- measurement according to the UCI method
- testing of HRC, HRB, HV, HB, MPa
- measuring direction 360 °
- with memory function by SD card
- adaptable to different test probes

**Specifications**

- **Measuring range**
  - 230 ... 940 HV
  - 20 ... 70 HRC
  - 90 ... 450 HB
  - 370 ... 1540 MPa

- **Measurement accuracy**
  - +/- 3% HV
  - +/- 1.5 HRC
  - +/- 3% HB

- **Probes**
  - 50 N UCI probe
  - (10 N, 98 N UCI probe optional)

- **Hardness scales**
  - HRC, HB, HV, HRB, HL, MPA

- **Materials**
  - UCI: steel (ferromagnetic)
  - Leeb: steel, cast iron, stainless steel, aluminum, bronze

- **Test specimen**
  - 136 ° Vickers diamond

- **Measurement direction**
  - 360 °

- **Minimum material thickness**
  - 1 mm (UCI probe only)

- **Display**
  - backlight, graphic, color LCD

- **Measuring functions**
  - single measurement, min/max/av. value, number of measurements, averaging, bar chart, standard deviation, coefficient of variation, Smart Mode (filters outliers)

- **Memory**
  - SD Card

- **Interface**
  - USB

- **Ambient conditions**
  - -20 ... + 40 ° C / -4 ... 104°F; 30 ... 80% RH

- **Power supply**
  - 6 V (3 x AA batteries)

- **Operating time**
  - approx. 10 hours

- **Dimensions**
  - 160 x 75 x 30 mm / 6.3 x 3 x 1.2 in

- **Protection class**
  - IP 54

- **Weight**
  - 300 g / < 1 lb (without probe)
Optical Inspection

PCE-VE 200 / PCE-VE 200-S

Video-Borescope for NDT Machine Diagnostics / Ø 4.5 mm/0.177 in or 3.7 mm/0.14 in

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 long camera tube makes it possible to use the video borescope so that in many cases 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 on 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 / 0.177 in or 3.7 mm / 0.14 in cable diameter
► 3.5 " display
► brightness adjustable on the camera head
► 2600 mAh battery
► SD card slot for micro SD card

Specifications
- Display: 3.5 " LCD
- Resolution: video function AVI (640 x 480), image function JPEG (1600 x 1200)
- Image rotation: 180 ° rotation and mirror function
- Freeze-function: yes
- Zoom: up to 4x
- Storage medium: Micro SD card
- Menu languages: German, English, Spanish, French, Russian, 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)
  - Relative humidity: probe and device 15 ... 90%
  - Fluid resistance: probe / device, machine / light oil, saline solution 6%, water, oil, dust, protection IP67
  - Intrusion protection: probe / device
  - Main unit: not under water

PCE-VE 200
- 4.5 mm / 0.177 in cable diameter
- 1 m cable length
- Images are 360° rotatable
- 7 " LC display

PCE-VE 200-S
- 3.7 mm / 0.14 in cable diameter
- 1 m cable length
- Images are 360° rotatable
- 7 " LC display.
PCE-VE 1000 / PCE-VE-2W3-HR

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.

► 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

Specifications

- Display: 7” LCD (800 x 480)
- Image resolution: 640 x 480 JPEG
- Video recording: 640 x 480 MPEG (with sound recording)
- Drop test: 1 m
- Power supply: Li-Ion battery
- Interface: USB
- Image and video memory: SD card (up to a maximum of 32 GB)
- AV output: NTSC / PAL
- Audio input: built-in microphone
- Brightness setting: adjustable in 10 steps on the main unit
- Running time per charge: 5 hours
- Charging time battery: 3 hours
- Charging temp.: +10 … +40 ° C / 50 … 104 °F
- Operating temp.: 0 … +60 ° C / 32 … 140 °F
- Storage temp.: 0 … +60 ° C / 32 … 140 °F
- Protection class: IP57
- Dimensions: 240 x 154 x 47 mm / 9.4 x 6 x 1.8 in
- Weight: 1.3 kg

PCE-VE 1000

Various cables connectable to the endoscope / large 7” LC display for accurate viewing / recording to SD card / images can be rotated 360° (in steps of 90°) / bright LEDs on the camera head / digital zoom.

► image and video recordings
► pictures are 360° rotatable

PCE-VE-2W3-HR

The endoscope cable PCE-VE-2W3-HR is a 3 m long endoscope cable. This push-cable has a camera head, moving in 2 directions. In addition to this function, the endoscope cable is equipped with the HighRes-function. This makes it possible to rotate the pictures at a 90° angle. The images can be viewed glare-free. The camera has a resolution of 640 x 480 pixels. The diameter is 6 mm. Furthermore, the cable is flexible.

► 2-way camera head with front camera
► 6 mm cable diameter
► 3 m cable length, 640 x 480 pixel resolution

Optical Inspection

A Versatile 2-way Inspection Instrument
Videoscope PCE-VE 800

With 4-way Camera Head Ø 2.8 mm / 0.11 in for Inspection of Machine Parts

The endoscope camera PCE-VE 800 has a 1.5 m long endoscope cable. Due to a diameter of only 2.8 mm, cavities with the smallest access can be viewed with the help of this endoscope. The camera head of the PCE-VE 800 endoscope camera is freely movable in 4 directions. Especially in the maintenance of engines, turbines, etc., the high-resolution display of the endoscope camera provides good insight into cavities and hard-to-reach areas. The movable camera has a resolution of 200,000 pixels. The field of view is 80 °, so that at a relatively short distance to the object to be examined still very large images can be produced with the endoscope camera. All the images can be saved as image or video. This helps to accurately document the damage of the components. The focus distance of a very small camera is between 5 and 50 mm.

The endoscope camera is supplied with a Li-Ion battery and can optionally be operated with a power adapter. Protection Class of the PCE-VE 800 camera cable is IP67.

Specifications

- 2.8 mm / 0.11 " camera head
- 1.5 m / 59 " endoscope cable
- 4-way camera
- 4.3 " monitor
- image and video memory

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable / head diameter</td>
<td>2.8 mm / 0.11 &quot;</td>
</tr>
<tr>
<td>Camera head movement direction</td>
<td>4-way</td>
</tr>
<tr>
<td>Length of camera head</td>
<td>9.8 mm / 0.4 &quot;</td>
</tr>
<tr>
<td>Material camera head</td>
<td>steel alloy</td>
</tr>
<tr>
<td>Material camera lens</td>
<td>glass</td>
</tr>
<tr>
<td>Angle</td>
<td>80 °</td>
</tr>
<tr>
<td>Direction of view</td>
<td>0 °</td>
</tr>
<tr>
<td>Focus range</td>
<td>5 ... 50 mm / 0.2 ... 2.0 &quot;</td>
</tr>
<tr>
<td>Image sensor</td>
<td>1/18 &quot; color</td>
</tr>
<tr>
<td>Resolution camera</td>
<td>200,000 pixels</td>
</tr>
<tr>
<td>Resolution images</td>
<td>1600 x 1200-pixel JPEG</td>
</tr>
<tr>
<td>Resolution videos</td>
<td>640 x 480-pixel AVI</td>
</tr>
<tr>
<td>Image refresh rate</td>
<td>30 Hz</td>
</tr>
<tr>
<td>Length of endoscope cable</td>
<td>1.5 m / 4.92 &quot;</td>
</tr>
<tr>
<td>Material endoscope cable</td>
<td>tungsten</td>
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<tr>
<td>Protection endoscope cable</td>
<td>IP67</td>
</tr>
<tr>
<td>Operating conditions</td>
<td>-20 ... 70 ° C / -4 ... 158 °F</td>
</tr>
<tr>
<td>15 ... 90 % RH</td>
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<tr>
<td>Display</td>
<td>LC 4.3 * 16: 9 display</td>
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<tr>
<td>Interface</td>
<td>Micro USB</td>
</tr>
<tr>
<td>Video output</td>
<td>TV output PAL / NTSC</td>
</tr>
<tr>
<td>Memory</td>
<td>SDHC memory card up to 32 GB</td>
</tr>
<tr>
<td>Power supply</td>
<td>Li-Ion battery 3000 mAh</td>
</tr>
<tr>
<td>Power adapter</td>
<td>5V</td>
</tr>
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</table>
Optical Inspection

High-Speed Camera PCE-HSC 1660

Slow motion camera up to 2420 shots per second

The slow-motion camera PCE-HSC 1660 is suitable for simple slow-motion recordings in industry and research. The slow-motion camera performs the filming at a refresh rate of 2420 shots per second. This slow-motion camera is characterized by its compact design and simple operation. The slow-motion camera is connected to the PC or laptop via USB 3.0. The supplied software recognizes the SloMo camera immediately and the recordings may be created straight after the driver installation. PCE-HSC 1660 can be mounted using a tripod thread.

Specifications

- USB 3.0 connection
- 1.3 megapixels
- maximum 2420 FPS
- 10 bit CMOS
- Plug and Play

Software

Table:

<table>
<thead>
<tr>
<th>Specifications</th>
<th>LED lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow-motion camera PCE-HSC 1660</td>
<td>6 x 3 W LED</td>
</tr>
<tr>
<td>CMOS</td>
<td>Power</td>
</tr>
<tr>
<td>1.3 megapixel</td>
<td>Filter</td>
</tr>
<tr>
<td>Max. resolution</td>
<td>5800 K frost filter</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>3200 K Amber filter</td>
</tr>
<tr>
<td>Max. recording rate</td>
<td>Dimmer function</td>
</tr>
<tr>
<td>2420 FPS</td>
<td>Power supply</td>
</tr>
<tr>
<td>Resolution / recording rate</td>
<td>power plug 100 ... 240 V AC</td>
</tr>
<tr>
<td>1280 x 1024/210 FPS</td>
<td>Output 12 V / 2 A</td>
</tr>
<tr>
<td>1024 x 1024/260 FPS</td>
<td>Battery</td>
</tr>
<tr>
<td>1024 x 2768/346 FPS</td>
<td>7.4 V @ 6000 mAh</td>
</tr>
<tr>
<td>640 x 480/625 FPS</td>
<td>Battery run-time</td>
</tr>
<tr>
<td>512x512 / 450 FPS</td>
<td>approx. 150 minutes</td>
</tr>
<tr>
<td>256x256 / 2420 FPS</td>
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</tr>
<tr>
<td>Pixel depth</td>
<td></td>
</tr>
<tr>
<td>10 bit CMOS</td>
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</tr>
<tr>
<td>Pixel size</td>
<td></td>
</tr>
<tr>
<td>4.8 μm per pixel</td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td></td>
</tr>
<tr>
<td>via connected PC</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
</tr>
<tr>
<td>via USB 3.0 port</td>
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</tr>
<tr>
<td>Interface</td>
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</tr>
<tr>
<td>USB 3.0</td>
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</tr>
<tr>
<td>Trigger</td>
<td></td>
</tr>
<tr>
<td>external</td>
<td></td>
</tr>
<tr>
<td>Lens mount</td>
<td>C-thread</td>
</tr>
<tr>
<td>Housing material</td>
<td></td>
</tr>
<tr>
<td>aluminum</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>80 x 74 x 40 mm / 3.1 x 2.9 x 1.6 in</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td></td>
</tr>
<tr>
<td>180 g / &lt; 1 lb (without lens)</td>
<td></td>
</tr>
<tr>
<td>Operating conditions</td>
<td></td>
</tr>
<tr>
<td>0 ... 40 °C / 32 ... 104 °F</td>
<td></td>
</tr>
<tr>
<td>max 80% RH</td>
<td></td>
</tr>
<tr>
<td>Storage conditions</td>
<td></td>
</tr>
<tr>
<td>-20 ... 60 °C / -4 ... 140 °F</td>
<td></td>
</tr>
<tr>
<td>max. 95% RH</td>
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</tbody>
</table>
The pressure meter PCE-PDA A100L is suitable for the measurement of the atmospheric pressure. This pressure meter records the pressure from absolute zero to 200 kPa. The pressure meter can be used for many mobile applications in industry and crafts. This professional pressure gauge can either be operated with batteries or rechargeable batteries. In battery mode, the USB interface allows charging of the inserted batteries.

The pressure meter PCE-PDA 100L is a reliable differential pressure gauge for pressure measurement of gases in the range of -100 to +200 kPa. The pressure meter PCE-PDA 100L has many different pressure measuring functions.

In addition, the maximum and minimum differential pressure can be displayed in the two-part graphic display.

### Specifications Absolute Pressure Meter PCE-PDA A100L

- **Measuring ranges**: 0 ... 200 kPa absolute
- **Resolution**: 0.01 kPa / 0.1 kPa
- **Accuracy**: <± 0.5% of the meas. range
- **Nominal pressure**: 200 kPa
- **Overpressure**: 200 kPa
- **Burst pressure**: 300 kPa
- **Media**: liquids / air / non-aggressive gases
- **Measuring rate**: 10 Hz
- **Measuring units**: Pa, hPa, kPa, MPa, mbar, bar, ATM, kg / cm², mmH₂O, cmH₂O, inH₂O, mmHg, inHg, Torr, PSI, PSF
- **Pressure type**: absolute pressure
- **Pressure connections**: 5 mm nipples for quick connectors
- **Max, Min and Hold function**: Yes
- **Datalogger**: 1024 memory slots
- **Display**: graphic LCD with backlight
- **Protection**: IP41
- **Power supply**: 2 x 1.5 V AA battery / 1.2 V NiMh battery
- **Current consumption**: 50 mA (with backlight)
- **Operating temperature**: 0 ... 50 °C / 32 ... 122°F
- **Storage temperature**: 10 ... 65 °C / 50 ... 131°F
- **Dimensions**: 145 x 85 x 35 mm / 5.7 x 3.3 x 1.4 in
- **Weight**: approx. 285 g / < 1 lb

### Specifications Differential Pressure Meter PCE-PDA 100L

- **Measuring ranges**: -100 ... 200 kPa relative (if neg. pressure connection open)
- **Resolution**: 1 / 10 Pa
- **Pressure type**: differential
- **Pressure connections**: 5 mm nipples for quick connectors
- **Max, Min and Hold function**: Yes
- **Datalogger**: 1024 memory slots
- **Display**: graphic LCD with backlight
- **Protection**: IP41
- **Power supply**: 2 x 1.5 V AA battery / 1.2 V NiMh battery
- **Current consumption**: 50 mA (with backlight)
- **Operating temperature**: 0 ... 50 °C / 32 ... 122°F
- **Storage temperature**: 10 ... 65 °C / 50 ... 131°F
- **Dimensions**: 145 x 85 x 35 mm / 5.7 x 3.3 x 1.4 in
- **Weight**: approx. 285 g / < 1 lb

### Pressure Measurement

- **Pressure range**: -100 ... 200 kPa
- **Resolution**: 1 / 10 Pa
- **Accuracy**: ±0.5 % of full scale
- **Nominal pressure**: 200 kPa
- **Overpressure**: 300 kPa
- **Media**: air
HVAC Meter with Pitot Tube PCE-PDA 10L

Data Logger for Air Speed and Volumetric Flow with Pitot Tube

The differential pressure meter of the PCE-PDA 10L is a reliable differential pressure meter for pressure measurement of gases in the range of ±20 kPa. The manometer has many different pressure measuring functions. This gives the user more than 16 units. Furthermore, the differential pressure meter measures in addition to the differential pressure, the temperature, flow velocity and volume flow. In addition, the maximum and minimum differential pressure can be displayed in the two-part graphic display. The resolution of the differential pressure can optionally be switched. The differential pressure gauge incorporates a high-precision mode that increases the resolution tenfold.

- graphic display with lighting
- measuring range pressure: ± 20 kPa
- datalogger and leak test
- high precision measuring mode
- units switchable (m/s, m³/s, Pa, kPa, ...)

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>0 … 50 °C / 32 … 122 °F</td>
</tr>
<tr>
<td>Resolution</td>
<td>±0.1°C / ±0.2 °F</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.5°C / ±0.2 °F</td>
</tr>
<tr>
<td>Range pressure</td>
<td>±20 kPa</td>
</tr>
<tr>
<td>Resolution</td>
<td>±0.005 kPa</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.5 % of final value</td>
</tr>
<tr>
<td>Nominal pressure</td>
<td>20 kPa</td>
</tr>
<tr>
<td>Overpressure</td>
<td>40 kPa</td>
</tr>
<tr>
<td>Burst pressure</td>
<td>100 kPa</td>
</tr>
<tr>
<td>Media</td>
<td>liquids, air</td>
</tr>
<tr>
<td>Measuring rate</td>
<td>10 Hz</td>
</tr>
<tr>
<td>Measurement units</td>
<td>Pa, mbar, kPa, MPa, mbar, bar, ATM, kg / cm², mmH₂O, cmH₂O, inH₂O, mmHg, inHg, Torr, PSI, PSF</td>
</tr>
<tr>
<td>Pressure</td>
<td>differential relative (if neg. pressure connection open)</td>
</tr>
<tr>
<td>Pressure connections</td>
<td>5 mm nipple for quick connectors</td>
</tr>
<tr>
<td>Max, Min, Hold function</td>
<td>Yes</td>
</tr>
<tr>
<td>Data logger</td>
<td>1024 memory slots</td>
</tr>
<tr>
<td>Display</td>
<td>Graphic LCD with backlight</td>
</tr>
<tr>
<td>Protection</td>
<td>IP41</td>
</tr>
<tr>
<td>Power supply</td>
<td>AA battery / NiMh battery / USB power</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>10 … 50 °C / 50 … 131 °F</td>
</tr>
<tr>
<td>Dimensions</td>
<td>145 x 85 x 35 mm / 5.7 x 3.3 x 1.4 in</td>
</tr>
<tr>
<td>Weight</td>
<td>about 285 g / &lt; 1 lb</td>
</tr>
</tbody>
</table>

Pitot Tube SR-305

- Pipe length: 300 mm / 11.81 "
  Pipe diameter: 4 mm / 0.16 "
- Head length: 65 mm / 2.56 "
  Head diameter: 4 mm / 0.16 "

Pitot Tube SR-483

- Pipe length: 483 mm / 19.02 "
  Pipe diameter: 8 mm / 0.32 "
- Head length: 130 mm / 5.12 "
  Head diameter: 8 mm / 0.32 "

Pitot Tube SR-795

- Pipe length: 795 mm / 31.30 "
  Pipe diameter: 8 mm / 0.32 "
- Head length: 130 mm / 5.12 "
  Head diameter: 8 mm / 0.32 "

ISO cal option
Flow Meter PCE-TDS 100H / PCE-TDS 100HS

For Determination of Flow Velocity [m/s] and Flow [m³/h]

The ultrasonic flow meter is required and finds its application during a control measurement or when the flow in a pipeline should be determined quickly and is therefore a portable / easy to install measuring system. The ultrasonic flowmeter works according to the transit-time difference method. The measuring principle of the flowmeter is quite simple. It takes less time to carry out the oblique measurements in a pipe with the flow than the measurements against the flow. The stronger the flow becomes, the longer time you need against it and the faster you get with it. The difference between the flow times with the flow or against it thus depends directly on the flow velocity. The flowmeter uses this effect to determine flow velocity and flow. In the process, electro-acoustic transducers (‘Piezo effect’) send and receive short ultrasonic pulses through the medium flowing in the pipe.

► ideal for retrofitting
► installation without process interruption
► easy mounting
► accurate and reliable
► no pressure loss

Specifications

| Measurement range (hh device) | -32 ... +32 m/s |
| Resolution               | 0.0001 m/s |
| Accuracy for DN > 50 mm / 1.9 in: | ± 3.5% of the measured value |
| Accuracy for DN < 50 mm / 1.9 in: | ± 1.0% of the measured value |
| Reproducibility         | ± 1.0% of reading |
| Media                   | All liquids with an impurity <5% and a flow > 0.03 m³/h |
| Flow units              | cubic meters [m³], liter [l], gallon [gal], imperial gallon (UK) [igl], million US gallons [mgl], cubic feet [cf], barrel (USA) [bar], imperial barrel (UK) [ib], oil barrel [ob] |
| Setting time per day [d], per hour [h], per minute [m], and per second [s] |
| Datalogger              | 1800 measuring points |
| Interface               | USB (for online measurement and reading out the internal memory) |
| Protection class        | IP 52 |
| Power supply            | 3 x AA NiMH batteries / 2100 mAh (at full charge 12 h run time) |
| Dimensions              | 214 x 104 x 40 mm / 8.4 x 4.1 x 1.6 in |
| Weight                  | 450 g / 1 lb |
| Temperature limit       | -30 ... 160 °C / -22 ... 320 °F |

PCE-TDS 100H

The transducers are located offset in the longitudinal direction on both sides of the measuring pipe. The nondestructive sensors are placed on the pipe and are attached, for example, by means of a cable tie. Within a short time, the display shows the flow velocity. The ultrasonic flowmeter can be used for measurement on metal pipes, plastic pipes or rubber pipes.

► for pipes from 50 mm ... 700 mm / 1.9 ... 27.5 in
► sensor dimensions: 60 x 45 x 45 mm / 2.4 x 1.8 x 1.8 in

PCE-TDS 100HS

The nondestructive sensors are placed on the pipe and attached, for example, by means of a cable tie. Within a short time, the display shows the flow velocity. The ultrasonic flowmeter can be used for measurement on metal, plastic- or rubber pipes.

► for pipe sizes 20 mm ... 100 mm / 0.8 ... 3.9 in
► sensor dimensions: 45 x 30 x 30 mm / 1.8 x 1.2 x 1.2 in

ISO calibrated
Wind Speed Alarm Controller PCE-WSAC 50

Displays current wind speed and average wind speed of the last 2 and 5 minutes

PCE-WSAC 50 is an airflow meter alarm controller that displays the current wind speed as well as the average wind speed of the last 2 and 5 minutes. A pre-alarm and full alarm can be activated based on preset values. If wind speeds are higher than the preset values, a pre-alarm is first applied before the full alarm is issued. Both alarms are delivered visually and audibly. If the pre-alarm is triggered, a yellow LED will flash on the front of the unit and a beep will periodically be emitted as a warning tone. If the full alarm is triggered, a red LED will flash on the front of the unit and a beep will continuously be emitted.

PCE-WSAC 50 allows measurement of the slightest wind movements. This airflow meter alarm controller is used for a variety of wind monitoring applications in industries such as construction, mining, renewable energy and manufacturing. If necessary, a relay can also be connected to the controller.

- pre-alarm and full alarm with visual and audible warnings
- measuring range: 0 ... 50 m/s / 0 ... 112 mph
- allows measurement of the slightest wind movements
- optional RS-485 modbus interface for data communication
- different sensors available

Specifications
- Power supply 115 V AC
  230 V AC
  24 V DC
- Supply voltage for sensors (output) 12 V DC
  24 V DC
- Measuring range 0 ... 50 m/s
- Measuring accuracy ±3 % of measuring range
- Signal input (selectable) 4 ... 20 mA
  0 ... 5 / 10 V
- Alarm relay 2 NO/NC relays with max. load of 220 V AC / 10 A
- Optional interface RS-485 modbus
- Operating temperature -20 ... +60 °C / -4 ... +140 °F
- Dimensions 197.5 x 90 x 45 mm / 7.7 x 3.5 x 1.7 ”
- Weight Approx. 400 g / 0.89 lb

Various models are available
Starting from

ISO calibrated
Digital Force Gauge PCE-DFG N 500

Force gauge for push and pull force measurement up to 500 N

The PCE-DFG N 500 is a digital force meter for precise measurements with a resolution of 0.1 N. The measured values are displayed on a large, illuminated, 180° rotatable display, a correct reading of the measured values is thus guaranteed at all times. The outstanding accuracy of ±0.1% FS is confirmed with the factory calibration certificate provided. In addition to the internal storage option of 100 measured values, a USB interface is available for data transmission. With the software, the measured values can be saved on a computer for later evaluation. Due to its robust housing, a sensible menu navigation and a simple operation via 8 keys, the digital force meter PCE-DFG N 500 is characterized by a high degree of user-friendliness. The power supply of the dynamometer is provided via batteries, which can be charged via an included charger and allow a continuous operation of the device during 10 hours.

Specifications

- Measuring range: 0 ... 500 N or 0 ... 112 lbs
- Accuracy: ± 0.1% of the measuring range
- Resolution: 0.1 N
- Measurement units: N, kg, lb, KPa
- Display: 2.8” TFT graphic display
- Alarm Modes: Inside, Outside, Crack, Shutdown
- Sampling rate: 6 ... 1600 Hz
- Storage: 100 measurements
- Power supply: NiMh battery 6V / 1600-mAh
- Battery operation: about 10 hours
- Charging adapter: 12V / 1A
- 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-receiving piece: 6 x 7 mm / .2 x .3 in
- Dimensions: 200 x 97 x 42 mm / 7.9 x 3.8 x 1.7 in
- Weight: 540 g / 1.2 lbs

ISO calibrated
Sound Level Meter PCE-428

Class II Sound level meter with octave filter / A, B, C, Z weightings

The sound level meter PCE-428 is an optimal sound level meter for measurements at work, construction sites, on the road, airports, etc. The sound level meter is a Class 2 device and is equipped with an octave band frequency filter. Optionally, the sound level meter PCE-428 can be upgraded with a 1/3 octave band filter. In addition to the numerical display of the measured value, a graph can show the course of the sound level. The sound level meter features different frequency weightings such as A, B, C and Z.

Furthermore, the sound meter can measure with the time weightings Fast, Slow, Pulse and Peak. The measuring range of the sound level meter ranges from 25 ... 136 dBa at a frequency of 20 Hz ... 12.5 kHz. The sound level meter can store 3 different measuring profiles. Here the user can decide which parameters the sound level meter should record. For example, you can choose between Laeq, LPeak, LAFmax, LAFmin etc.

- 1/1 octave band included
- 1/3 octave band optional
- accuracy class 2
- A, B, C & Z frequency weightings
- Fast, Slow, Pulse and Peak time weightings
Order

How to order a PCE product:

Contact

D-U-N-S Number: 217379209
1 London Road, Southampton, SO15 2AE.
Registered Office: Registered at: Companies House England
VAT No.: GB122579319
Company Reg. No.: 7717288
+44 (0) 2380 98703 0
+44 (0) 2380 98703 9
PCE Instruments UK Ltd
Units 11 Southpoint Business Park
Ensign Way, Southampton, Hampshire
United Kingdom, SO31 4RF
info@pce-instruments.com
www.pce-instruments.com/english

Purchasing conditions:
We sell exclusively under the following conditions whose most important points are summarized below. Other conditions requested by the client require our written approval. Our conditions of sale include all future transactions made by the client. To place an order (via letter, fax, the online store or telephone) you send us your mail address.

Offers:
Our offers are without commitment. We can modify products or technical specifications due to technical developments that occur with our products. Instructions of use must be adhered to by the person using the device. The information in our catalogue and online store serve to inform potential customers about our products. We cannot guarantee the accuracy of these descriptions. The information is written with good product knowledge but with the right to make errors and alterations.

Delivery terms:
Standard 1-5 working days (depending on location of our customer) excluding Saturdays, Sundays and official holidays. These indications are provisional because some of our products are manufactured at the time of purchase and may require more time to complete the order. Orders are normally processed immediately so we may have already packaged your order and made arrangements for it to be sent to you. In this case, we cannot always stop the order from being sent if a cancellation is requested by the customer. Delivery time begins once the product has left the warehouse until it has been received by the client.

Payment options:
Invoices are paid in a term of 10 days starting from the date of the invoice, including postage, packaging or insurance. In some cases a T/T prepayment is inevitable. We can add additional charges according to regular bank rates up to 8.00 Euros in the case of the customer not fulfilling the payment terms. During the year, product prices may change and therefore may vary in relation to the catalogue, the online store or when the order is being placed. Such charges do not exist for minimum orders. Due to negative experiences with some private customers in the past, we have put in place a cash-on-delivery system.

Shipping costs:
The shipping cost are depending on the location of our customer, the weight and the size of the parcel. Please ask for your complete shipping costs. If the customer wants, it is possible to pick up the parcel himself by his own carrier.

Transport and insurance:
When we send the goods that you have ordered (mail, train or freight forwarded) we have fulfilled our contract obligations, so the goods shall be shipped at the risk of the purchaser. If there is damage due to transport, please contact us immediately.

Packaging:
Packaging is undertaken by the manufacturer or PCE Instruments. Packaging expenses are at the cost of the purchaser.

Property right:
The property of the product shall not pass to the purchaser until we have received full payment for the product. According to the law, you are authorized to modify the device, but are not permitted to resell it at a later date.

Product claims:
The purchaser shall, within seven days after delivery, inform us of any missing or defective goods. The purchaser can inform us of other, less noticeable, defects in writing within the week of identifying the defect, up to a maximum of four weeks after receiving shipment of the product.

Warranty terms:
Our electronic and manual devices have a minimum of 12 months warranty against manufacturers defects. Any products that have not failed due to manufacturing defect can be repaired at the cost of the customer. Any goods which are subject to a warranty claim should be returned to us for repair. Upon inspection of the product PCE Instruments will repair, replace the defective unit or the order will be cancelled. Replacement components are not included, e.g. bulbs of pocket lamps.

Returns policy:
Any item may be returned for any reason within 14 days of the date of dispatch so long as it remains in a saleable condition. We will refund the price of the item and if the item is faulty the cost to return the goods. Any goods returned to us in unsuitable packaging will not receive a refund. It is the customer’s responsibility to ensure goods being returned arrive back to us in a saleable condition. We will charge for any damaged sustained in transit or whilst in your possession. It is NOT possible to give a refund for any certificates, because they contain the customers name and remain their property. You must contact PCE Instruments by phone or through the contact form that appears on our website, indicating that you want to return the product and add the order number and serial number. When we receive the return notification, we will process the refund informing you which address to ship the product. Carriage costs for the return of goods to PCE Instruments will be the responsibility of the customer. When PCE Instruments receives the product, which must include the original bill, and inspects its condition, if the product qualifies for a refund, we will refund the entire amount due through the same process as the customer made their payment.

Legislation:
For all legislation and business regarding the website and catalogue of PCE Instruments, will be applicable to European law, used for the resolution of all manner of conflicts or the use of our webpage, the European courts and tribunals.