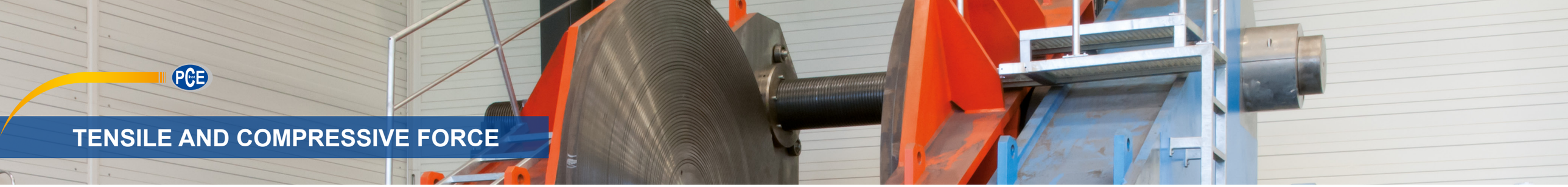
TENSILE AND COMPRESSIVE FORCE MEASUREMENT

PCE Instruments

Discover force gauges for industrial and many other applications



TENSILE AND COMPRESSIVE FORCE

FORCE MEASUREMENT 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.

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.






PCE Instruments

Location UK
PCE Instruments UK Ltd
Unit 11 Southpoint Business Park
Ensign Way, Southampton Hampshire
United Kingdom, SO31 4RF

Phone
+44 (0) 2380 987 030

Contact
info@pce-instruments.co.uk

Location USA
PCE Americas Inc.
711 Commerce Way, Suite 8
Jupiter, FL-33458
USA

Phone
+1-561-320-9162

Contact
info@pce-americas.com

DEVELOPMENT

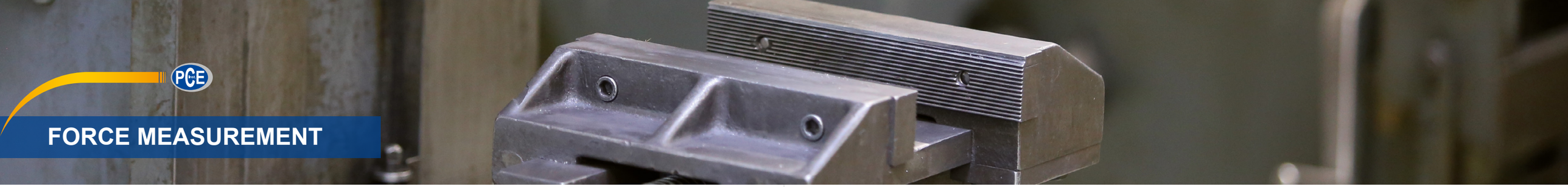
In order to develop modified test equipment in line with customers‘ specifications, proficient engineers and technicians cooperate closely with the customer.

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.



FORCE MEASUREMENT

FORCE GAUGE PCE-DFG N 500

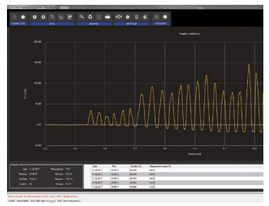
Digital force gauge for tensile and compressive force measurement up to 500 N

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 ±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



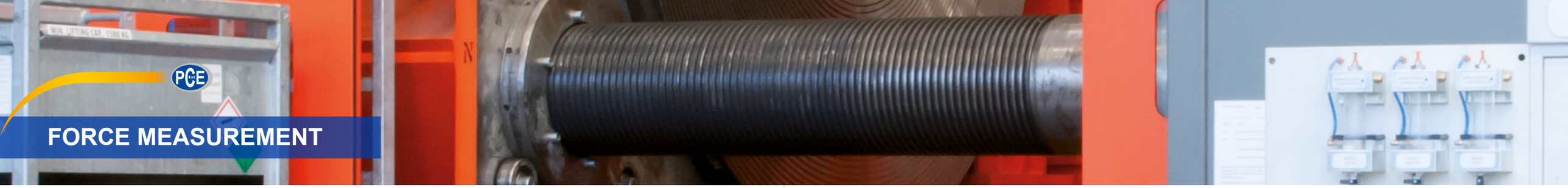
TECHNICAL SPECIFICATIONS

Measurement range	0 ... 500 N
Accuracy	±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	Order code	PCE-SJJ035
Holder for button and rivet testing	Order code	PCE-SJJ032
Clamping device for bristle testing	Order code	PCE-SJJ029
Clamping device for bristle testing	Order code	PCE-SJJ020
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
Clamping tool for tensile tests	Order code	PCE-SJJ08
Clamping device for tensile tests	Order code	PCE-SJJ07
Adaptor clamp for tensile tests	Order code	PCE-SJJ010
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
Motorised force test stand	Order code	PCE-MTS50
Force test stand	Order code	PCE-FTS50
Clamping device for test stand	Order code	PCE-SJJ03
Adaptor ring for tensile tests	Order code	PCE-SJJ02
Clamping device for test stand	Order code	PCE-SJJ024
Clamping device for test stand	Order code	PCE-SJJ015
Clamping jaw for test stand	Order code	PCE-SJJ13
Clamping jaw for test stand PCE-FTS50 and PCE-FM 50/200	Order code	PCE-SJJ05
Clamping jaw for test stand PCE-FTS50	Order code	PCE-SJJ011

Subject to change without notice



FORCE MEASUREMENT

FORCE GAUGE PCE-DFG N 10K

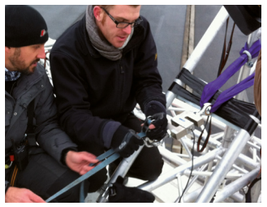
With external measuring cell and USB interface for connection to a PC

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 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
Mounting thread measuring cell up to 1000 N / 225 lbs 2500 ... 10000 N / 562 ... 2,248 lbs	 M10 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 switching output: 12 V / 50 mA
Protection class	IP 54
Operating and storage conditions	-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 :

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 principle 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

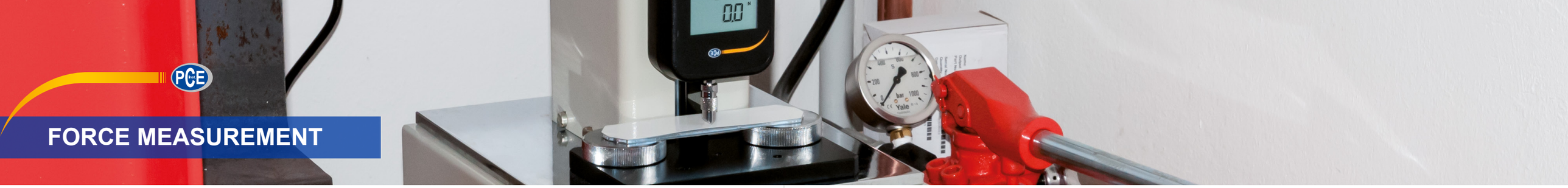
PCE-HFG 1K	0... 1000 N
PCE-HFG 2.5K	0... 2500 N
PCE-HFG 10K	0... 10000 N
PCE-HFG 25K	0... 25000 N

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



FORCE GAUGE PCE-FM 200

Force gauge for tensile force measurement and pressure force measurement up to 200 N

The force gauge PCE-FM 200 is a handheld device that measures up to 200 N. The force gauge can determine the units N, kg and lb. The scope of delivery of the PCE-FM 200 force gauge includes various adapters with different shapes. These can be screwed onto the device and thus offer the optimum solution for differently designed surfaces in the measurement of pressure and tension. In addition to the adapters, an extension rod is also supplied, which allows measurements in hard to reach places. The scope of delivery of the PCE-FM 200 force gauge includes flat head adapter, hook adapter, ball head adapter, chisel head adapter and a notched head adapter, whereby the hook adapter is used for tensile force measurements.

ISO cal option

- differently shaped measuring adapters
- downloadable evaluation software
- device for mounting on test stands
- peak measurement
- power supply via charging adapter
- delivery includes extension rod
- evaluation via USB interface
- fast display of measured value

APPLICATION

TECHNICAL SPECIFICATIONS

Measuring range	2 ... 200 N / 0.2 ... 20 kg / 0.4 ... 45 lbs
Resolution	0.1 N / 0.02 lbs
Pressure calibration	1 Mpa
Load cell	integrated load cell with M6 connection
Measuring range	1 ... 100% of the full scale
Measurement accuracy	±0.5%
Units	n, kg, lb
Display	LCD
Operating temperature	10 ... 30°C / 50 ... 86°F
Relative humidity	15 ... 80%
Working conditions	the device must not be located near sources of vibration or corrosive substances
Weight	1 kg / 2.2 lb

Further models :

PCE-FM 500N	Measurement range	5 ... 500 N
PCE-FM 50N	Measurement range	0.5 ... 50 N

Optional accessories

Double handle	order code	PCE-DHFG 500
Thread reducer	order code	PCE-SJJM10M6
Hand grip	order code	KG-LTS-20
Mounting adapter for test stand	order code	FG-ADP
Adapters for Pressure Tests	order code	PCE-SJJ01
Adapter Ring for Tensile Tests	order code	PCE-SJJ02
Clamping Device for Test Stand	order code	PCE-SJJ03
Adapter Stamp Round for Pressure Tests	order code	PCE-SJJ04
Clamp Jaw	order code	PCE-SJJ05
Adapter Clamps for Tensile Tests	order code	PCE-SJJ06
Clamping Device for Tensile Tests	order code	PCE-SJJ07
Clamping Tool for Tensile Tests	order code	PCE-SJJ08
Fork Holder for Tensile and Compression Tests	order code	PCE-SJJ09
Adapter Clamp For Tensile Tests	order code	PCE-SJJ010
Clamp Jaw for Teststand	order code	PCE-SJJ011
Tensioning Device for Tensile Tests	order code	PCE-SJJ012
Clamp Jaw for Test stand	order code	PCE-SJJ013
Clamping Device for Test Stand	order code	PCE-SJJ015
Universal Clamping Device	order code	PCE-SJJ017
Clamping Device for Testing Bristles	order code	PCE-SJJ020
Clamping Device for Test Stand	order code	PCE-SJJ024
Clamping Device for Testing Bristles	order code	PCE-SJJ029
Holder for Button and Rivet Testing	order code	PCE-SJJ032
Pliers for Trigger Tests	order code	PCE-SJJ035
Adapter Plate for Force Test Stand	order code	ADP-UNI
Force Test Stand	order code	PCE-FTS50
Force gauge test stand	order code	LTS-20

Subject to change without notice

FORCE MEASUREMENT

PENETROMETER PCE-PTR 200N

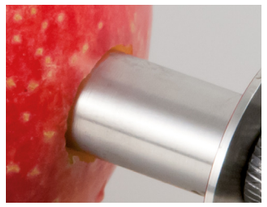
Penetrometer with integrated load cell / Measuring range 0 ... 200 N

The Penetrometer PCE-PTR 200N is a practical hand-held measuring device for checking the degree of ripeness of different types of fruit. In contrast to an analogue penetrometer, this digital measuring device offers a higher accuracy. With the Penetrometer you get valuable information about the optimal harvest time. In addition, quality can also be monitored during storage, transport and distribution. The Penetrometer has an internal measuring cell and is controlled by a microprocessor. This microprocessor enables a fast and accurate reading. The device is equipped with a mounting device for a test stand and can be mounted to it if one is available. This minimises errors by the user and allows serial measurements.

ISO cal option

- differently shaped measuring adapter
- downloadable evaluation software
- device for mounting on test stands
- peak measurement
- power supply via charging adapter
- delivery with extension rod
- evaluation via USB interface
- fast measured value display

APPLICATION



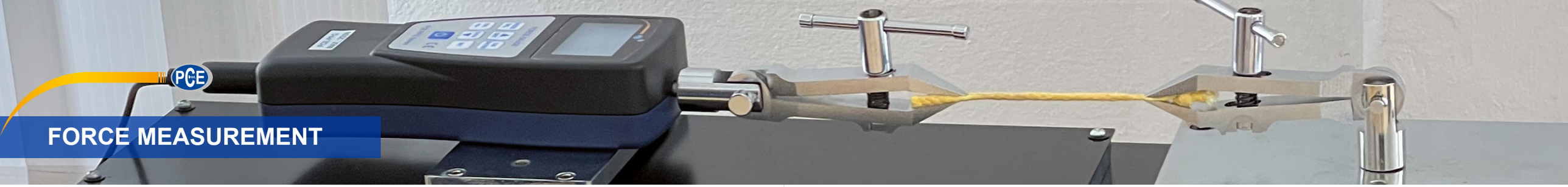
TECHNICAL SPECIFICATIONS

Measuring range	0 ... 200 N / 0 ... 45 lbs
Resolution	0.1 N / 0.02 lbs
Pressure calibration	1 Mpa
Load cell	Integrated load cell with M6 connection
Measuring range	1 ... 100% of the full scale
Measurement accuracy	± 0.5%
Units	n, kg, lb
Display	LCD
Operating temperature	10 ... 30°C / 50 ... 86°F
Relative humidity	15 ... 80% relative humidity
Working conditions	The device must not be located near sources of vibration or corrosive substances
Weight	1 kg / 2.2 lbs

Optional accessories

Mounting adapter for test stand	order code	FG-ADP
Adapter Plate for Force Test Stand	order code	ADP-UNI
Clamp Jaw for Teststand	order code	PCE-SJJ011
Clamp Jaw for Test stand	order code	PCE-SJJ013
Force Test Stand	order code	PCE-FTS50
Test Stand for Force Gauge	order code	PCE-MTS50

Subject to change without notice



FORCE MEASUREMENT

DYNAMOMETER PCE-PFG 200

With internal S load cell / Measuring range 0 ... 200 N

The PCE-PFG dynamometer is a handy, digital measuring device for measuring tensile and compressive forces. The force measuring device offers a sampling rate of 500 Hz and various measurement options such as real-time measurement (RT), maximum value measurement (PEAK), configurable average value acquisition (Average) and automatic measurement storage of up to 100 measurements. The measurement data and a statistical evaluation of the data stored in the force measuring device (MIN / MAX / average) are shown on the graphic display and can be transferred to a PC via the USB interface. In addition, the force measuring device offers a limit value function MIN / MAX, which can switch a multi-colored LED and switching contacts.

ISO cal option

- 4 measurement modes (real-time measurement / maximum value / average measurement / automatic memory measurement)
- internal memory for up to 100 measured values
- statistics evaluation (MIN / MAX / average)
- rotatable display
- alarm function with multi-colored LED (yellow / green / red) and switching contact output 2.85 V.
- USB B interface
- battery life up to 36 hours

APPLICATION

TECHNICAL SPECIFICATIONS

Measuring range	0 ... 200 N
Resolution	0.05 N
Accuracy	±0.3 % of the measuring range
Measurement units	N, kgF, lbF
Display	1.8" graphic display
Alarm modes	Below, Inside, Outside
Sampling rate	500 Hz
Memory	100 measurements
Power supply	lithium battery 3.7 V / 1500 mAh
Battery life	up to 36 hours
Power supply / USB charging adapter	5 V / 1 A
Outputs	interface: USB B Switching output / alarm modes: MD6 with 2.85 V if active
Protection class	IP 54
Operating and storage conditions	5 ... 45 °C 35 ... 65 % r.H. not condensing
Force application	M6 x 10 mm thread
Dimensions	189 x 707 x 34 mm
Weight	450 g

Further models :

PCE-PFG 20	Measurement range	0 ... 20 N
PCE-PFG 50	Measurement range	0 ... 50 N
PCE-PFG 100	Measutement range	0 ... 100 N
PCE-PFG 500	Measurement range	0 ... 500 N

Optional accessories

Hand grip	order code	KG-LTS-20
Mounting adapter for test stand	order code	FG-ADP
Adapters for Pressure Tests	order code	PCE-SJJ01
Adapter Ring for Tensile Tests	order code	PCE-SJJ02
Clamping Device for Test Stand	order code	PCE-SJJ03
Adapter Stamp Round for Pressure Tests PCE-SJJ04		order code
Clamp Jaw	order code	PCE-SJJ05
Adapter Clamps for Tensile Tests	order code	PCE-SJJ06
Clamping Device for Tensile Tests	order code	PCE-SJJ07
Clamping Tool for Tensile Tests	order code	PCE-SJJ08
Fork Holder for Tensile and Compression Tests	order code	PCE-SJJ09
Adapter Clamp For Tensile Tests	order code	PCE-SJJ010
Clamp Jaw for Teststand	order code	PCE-SJJ011
Tensioning Device for Tensile Tests	order code	PCE-SJJ012
Clamp Jaw for Test stand	order code	PCE-SJJ013
Clamping Device for Test Stand	order code	PCE-SJJ015
Universal Clamping Device	order code	PCE-SJJ017
Clamping Device for Testing Bristles	order code	PCE-SJJ020
Clamping Device for Test Stand	order code	PCE-SJJ024
Clamping Device for Testing Bristles	order code	PCE-SJJ029
Holder for Button and Rivet Testing	order code	PCE-SJJ032
Pliers for Trigger Tests	order code	PCE-SJJ035
Adapter Plate for Force Test Stand	order code	ADP-UNI
Force Test Stand	order code	PCE-FTS50
Force gauge test stand	order code	LTS-20

Subject to change without notice

FORCE MEASUREMENT

FORCE GAUGE PCE-PFG 2K

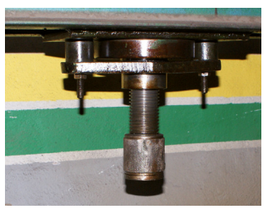
With internal S load cell / Measuring range 0 ... 2000 N

The PCE-PFG force measuring device is a handy, digital measuring device for measuring tensile and compressive forces. The force measuring device offers a sampling rate of 500 Hz and various measurement options such as real-time measurement (RT), maximum value measurement (PEAK), configurable average value acquisition (Average) and automatic measurement storage of up to 100 measurements. The measurement data and a statistical evaluation of the data stored in the force measuring device (MIN / MAX / average) are shown on the graphic display and can be transferred to a PC via the USB interface.

ISO cal option

- 4 measurement modes (real-time measurement / maximum value / average measurement / automatic memory measurement)
- internal memory for up to 100 measured values
- statistics evaluation (MIN / MAX / average)
- rotatable display
- alarm function with multi-colored LED (yellow / green / red) and switching contact output 2.85 V.
- USB B interface

APPLICATION



TECHNICAL SPECIFICATIONS

Measuring range	0 ... 2000 N
Resolution	0.5 N
Accuracy	±0.3 % of the measuring range
Measurement units	N, kgF, lbF
Display	1.8" graphic display
Alarm modes	Below, Inside, Outside
Sampling rate	500 Hz
Memory	100 measurements
Power supply	lithium battery 3.7 V / 1500 mAh
Battery life	up to 36 hours
Power supply / USB charging adapter	5 V / 1 A
Outputs	
interface: USB B	
	Switching output / alarm modes: MD6 with 2.85 V if active
Protection class	IP 54
Operating and storage conditions	5 ... 45 °C 35 ... 65 % r.H. not condensing
Dimensions of load cell	L 52 mm / H 72 mm / W 19 mm / M12 thread / 490 g (see technical drawing)
Cable length of load cell	approx. 1.8 m
Dimensions handset	189 x 707 x 34 mm
Weight handset	240 g

Subject to change without notice

TORQUE MEASUREMENT

TORQUE METER PCE-DFG N 100TW

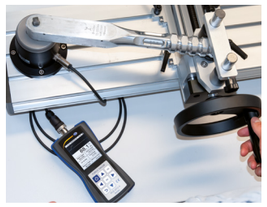
Torque meter up to 100 Nm / External torque transducer 1/2 " internal square

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

Subject to change without notice

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

Subject to change without notice

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/s²
Resolution	0.1 m/s²
Accuracy @ 160 Hz	±2 %
Frequency range	10 Hz ... 1 kHz 10 Hz ... 10 kHz
Measuring range	Velocity 0.00 ... 399.9 mm/s
Resolution	0.1 mm/s
Accuracy @ 160 Hz	±2 %
Frequency range	10 Hz ... 1 kHz
Measuring range	Displacement 0.000 ... 3.9 mm
Resolution	1 µm
Accuracy @ 160 Hz	±2 %
Frequency range	10 Hz ... 200 Hz
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

Subject to change without notice

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.

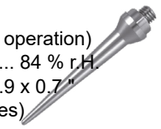
- measures speed, distance, acceleration
- keeps the value after every measurement
- easy to handle, powered by batteries
- wide frequency range
- automatic shut-down after 20 seconds of inactivity to protect battery life
- low battery indicator

APPLICATION

TECHNICAL SPECIFICATIONS

Parameter	Measuring Range	Frequency Range
Acceleration	0.01 ... 199.9 m/s² 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

Subject to change without notice

VIBRATION MEASUREMENT

VIBRATION METER PCE-VT 1300

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 measurement 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

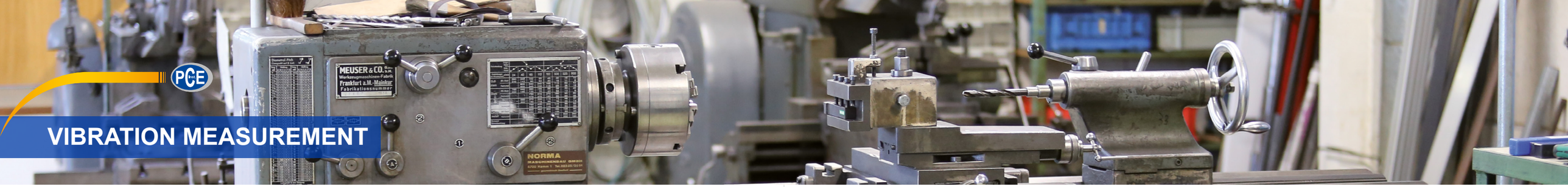
TECHNICAL SPECIFICATIONS

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 **acceleration**	High frequency: 1 ... 15 KHz (HI) Low frequency: 20 Hz ... 1 KHz (LO)	
Frequency range **speed**	Low frequency: 20 Hz ... 1 KHz (LO)	
Frequency range **path**	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 54 x 30 mm / 7.1 x 2.1 x 1.2 in	
Weight	Approx. 250 g / < 1 lb (without batteries)	

Further model:

PCE-VT 1300S 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/s², 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/s², 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

Subject to change without notice

VIBRATION MEASUREMENT

VIBRATION TEST INSTRUMENT PCE-TU 3

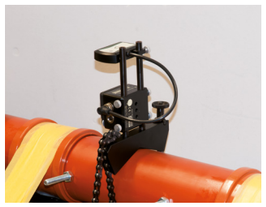
Vibration Test Instrument for optical alignment of shafts

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

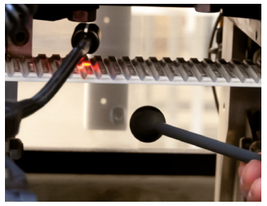
To measure the tension of V-belts or drive belts

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

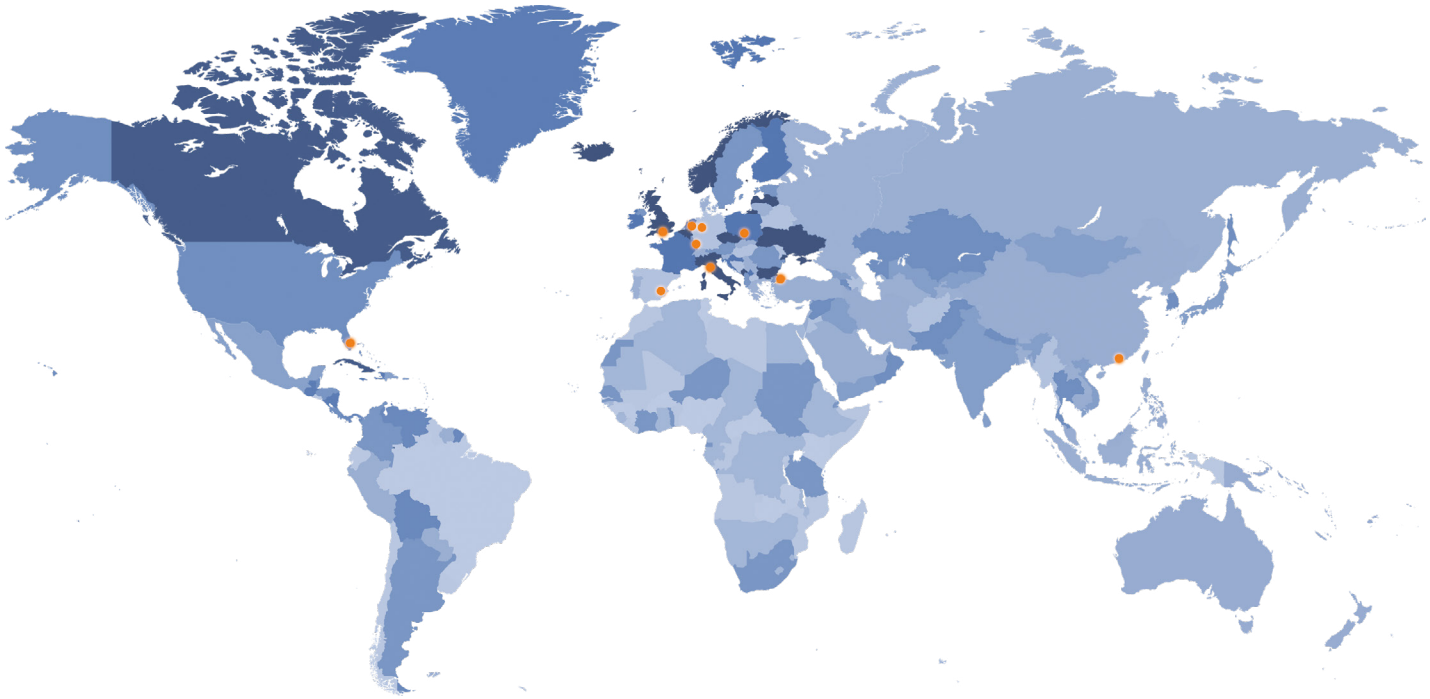


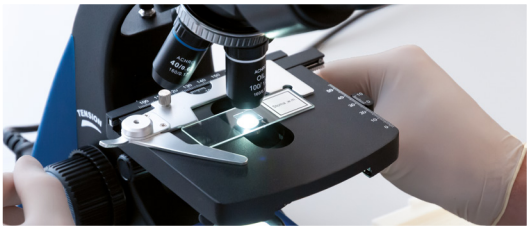
TECHNICAL SPECIFICATIONS

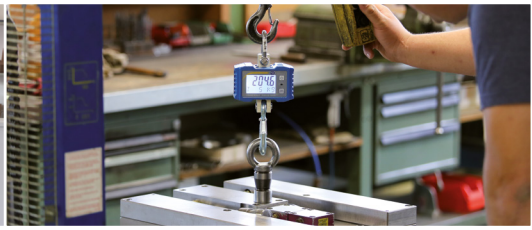
Measurement range	10 ... 900 Hz
Accuracy	±(1 % of rdg. + 4 digits)
Repeatability	±1 Hz
Resolution	< 100 Hz: 0.1 Hz > 100 Hz: 1 Hz
Belt length	max. 9.999 m
Belt mass	max. 9.999 kg/m
Memory	750 readings 15 folders, 50 measuring points/folder
Menu languages	English, German, Spanish, French, Italian, Dutch
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

COMPANY LOCATIONS







Contact

PCE Instruments UK Ltd.
Unit 11 Southpoint Business Park
Ensign Way, Southampton Hampshire
United Kingdom, SO31 4RF

+44 (0) 2380 987 030

info@pce-instruments.co.uk

www.pce-instruments.com

Germany	PCE Deutschland GmbH
Spain	PCE Iberica S.L.
USA	PCE Americas Inc.
UK	PCE Instruments UK Ltd.
France	PCE Instruments France EURL
Italy	PCE Italia s.r.l.
Hong Kong	PCE Instruments Hong Kong Ltd.
Turkey	PCE Teknik Cihazlar Ltd. Şti.
The Netherlands	PCE Brookhuis B.V.
Poland	PCE Instruments Polska Sp. z. o. o.