PCE Instruments PCE-MSM 4 Sound Level Meter User Manual

Contents

PCE Instruments

PCE Instruments PCE-MSM 4 Sound Level Meter

Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- The instrument may only be used if the environmental conditions (temperature, relative humidity, …) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- Do not expose the device to shocks or strong vibrations.
- The case should only be opened by qualified PCE Instruments personnel.
- Never use the instrument when your hands are wet.
- You must not make any technical changes to the device.
- The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- The device must only be used with accessories from PCE Instruments or equivalent.
- Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- Do not use the instrument in explosive atmospheres.
- The measurement range as stated in the specifications must not be exceeded under any circumstances.
- Non-observance of the safety notes can cause damage to the device and injuries to the user.

We do not assume liability for printing errors or any other mistakes in this manual. We expressly point to our

general guarantee terms which can be found in our general terms of business. If you have any questions please contact PCE Instruments. The contact details can be found at the end of this manual.

Specifications

Technical specifications

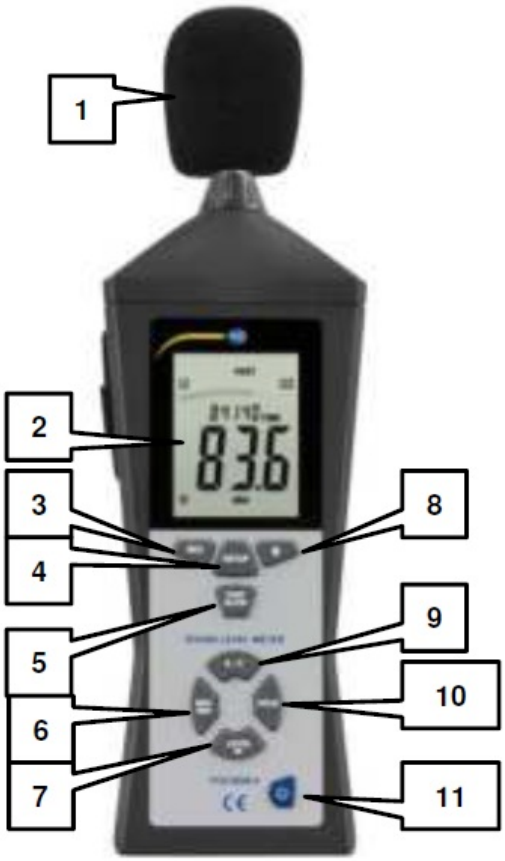
Measuring ranges	Lo: 30 … 80 dB Med: 50 … 100 dB Hi: 80 … 130 dB Auto: 30 … 130 dB
Accuracy	± 1.4 dB
Resolution	0.1 dB
Dynamic range	50 dB
Frequency range	31.5 Hz … 8 kHz
Frequency weighing	A/C
Sampling rate	FAST: 125 ms SLOW: 1 s
Standard	IEC 61672-1 class 2
Microphone	½ “ electret condenser microphone
Display	4 digit LCD
Display update rate	2 times/second
Functions	MIN/MAX hold, hold, automatic power-off
Interfaces	Analogue output (3.5 mm phone jack), USB
Power supply	1 x 9 V battery Mains adaptor 9 V DC (Jack: 3.5 mm outer Ø; 1.35 mm inner Ø)
Battery life	Approx. 30 hours
Operating conditions	0 … +40 °C, 10 … 90 % RH
Storing conditions	-10 … +60 °C, 10 … 75 % RH
Dimensions	278 x 76 x 50 mm
Weight	350 g

Delivery contents

- 1 x sound level meter PCE-MSM 4
- 1 x microphone wind screen
- 1 x screw driver
- 1 x USB cable
- 1 x 9 V battery
- 1 x instruction manual

System description

Device



1. Microphone wind screen
2. Display
3. “REC”-key
4. “SETUP”-key
5. “FAST/SLOW”-key
6. “MAX/MIN”-key
7. “LEVEL”-key
8. key
9. “A/C”-key
10. “HOLD”-key
11. “On/Off”-key

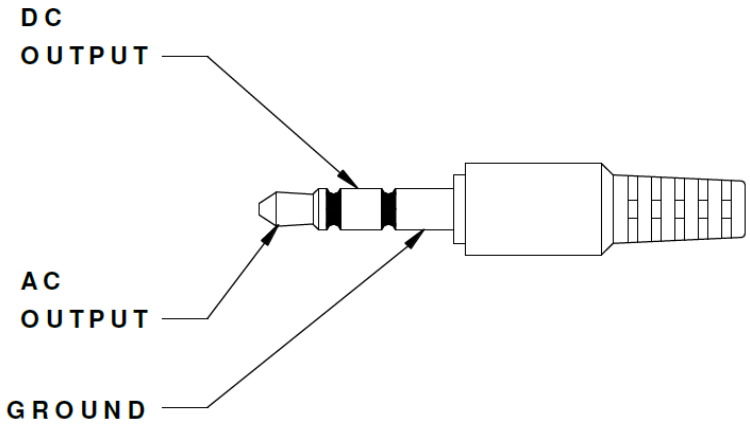
12. Connector for mains adaptor
13. USB interface
14. Analogue output
15. Calibration screw

Interfaces

Connector for mains adaptor (12)
Voltage: 9 V DC
Jack: outer Ø: 3.5 mm; inner Ø: 1.35 mm

USB interface (13)
Data rate: 9600 bps

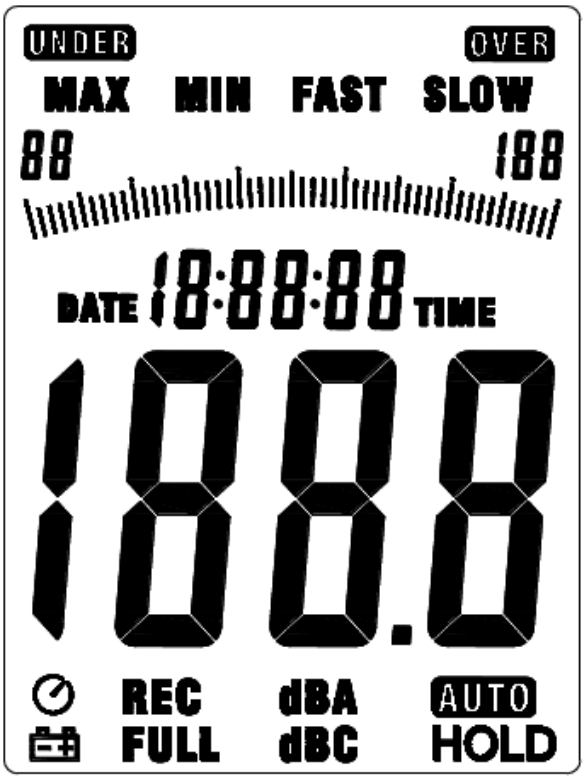
Analogue output (14)

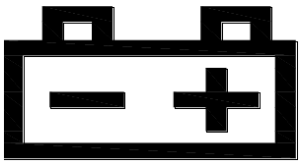


- **AC:** output voltage: 1 V RMS (corresponding to maximum value of the selected measuring range)
  Resistance: 100 Ω
- **DC:** output voltage: 10 mV/dB
  Resistance: 1 kΩ

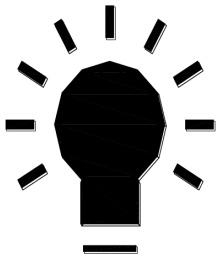
Potentiometer (15)
The potentiometer is used for calibrating the sound level meter in combination with a sound calibrator.

Display



Indication	Meaning
UNDER // OVER	Measuring range exceeded(OVER) or undercut (UNDER)
MAX // MIN	Maximum value (MAX) or minimal value (MIN) is frozen on the display
FAST // SLOW	Fast or slow sampling rate selected
88 – 188 and scale	Display of the selected measuring range
	Automatic power-off function is active
	Battery voltage is low
REC	Data transmission enabled
FULL	Internal memory is full
dBA	A weighing active
dBC	C weighing active
AUTO	Automatic measuring range selection
HOLD	Hold function is active

Function keys

Key	Function
REC (3)	Data transmission enabled/disabled
SETUP (4)	Activate/deactivate auto power-off function Press and hold before turning on the device to get to the date/time settin gs
FAST/SLOW (5)	Switch between fast and slow sampling rate
MAX/MIN (6)	Activate/deactivate max and min hold
LEVEL (7)	Switch between the different measuring ranges
 (8)	Activate/deactivate display backlight
A/C (9)	Switch between A and C weighing of the sound level
HOLD (10)	Freeze/unfreeze the current reading on the display
On/Off (11)	Turn the sound level meter on/off

Getting started

Insert the battery
To insert the battery, follow these steps:

1. Open the battery compartment on the back of the device.
2. Connect a 9V battery to the connector and place it in the battery compartment.
3. Close the battery compartment

If the battery voltage is low, an indication appears on the display. Please replace the battery when this happens.
Mains adaptor
If you want to use a mains adaptor, connect it to the power connector on the side of the device (12). Make sure that the output voltage of the mains adaptor is 9 V DC.
The jack of the mains adaptor has to have the following dimensions:

- Outer Ø: 3.5 mm
- Inner Ø: 1.35 mm

Operation

Measurement

To take a measurement, turn on the device by pressing the “On/Off” key. Once the device gets to the main screen, it measures the sound level continuously.
To select one of the available measuring ranges, press the “LEVEL” key. You can choose between the following options: Lo (30 … 80 dB), Med (50 … 100 dB), Hi (80 …130 dB), Auto (automatic measuring range selection).

Make your choice depending on the ambient sound level. If the ambient sound level falls below the selected measuring range, the display shows “UNDER”. If the ambient sound level exceeds the selected measuring range, the display shows “OVER”. To change the frequency weighing of the sound level measurements, press the “A/C” key. You
can switch between A-weighing and C-weighing. To change the sampling rate, press the “FAST/SLOW” key. You can switch between “FAST” (1 measurement / 125 ms) and “SLOW” (1 measurement / 1 s).

Further functions

MIN/MAX hold function

You can freeze the maximum and minimum values on the display. To do so, press the “MAX/MIN” key. Now, a “MAX” indication appears on the display, which means that the
maximum value (since the activation of the function) is shown on the display. Press the “MAX/MIN” key again to activate the MIN hold mode. Now, the display shows a “MIN” indication and the minimum value (since activation of the function) is shown on the display. Press the “MAX/MIN” key again to deactivate the function and to return to normal measuring mode.

Hold function

- You can freeze the current reading on the display at any time by pressing the “HOLD” key. To unfreeze it, press the “HOLD” key again.

Settings

Date and time settings

To change the date and time settings, follow these steps:

1. While holding down the “SETUP” button, turn the unit on. Release the “SETUP” button when the “TIME” icon appears on the display. Now you get to the date and time settings. The display shows the date.
2. Press the “SETUP” button to enter the minute settings. The display now shows “nn” and above that the set value. You can change the value by pressing the “LEVEL” button. Then press the “SETUP” button to go to the hour settings.
3. The display now shows “h-A” or “h-P” with the set value above. To change the value, press the “LEVEL” button. “h-A” stands for AM while “h-P” stands for PM. After that, press the “SETUP” button to go to the date setting.
4. Now you are in the day settings. The display shows “DATE – d –” and the set day afterwards. To change the value, press the “LEVEL” button. Then press the “SETUP” button to go to the month settings.
5. In the month settings, the display shows “DATE – H – ” and the set month. To change the value, press the “LEVEL” button. Then press the “SETUP” button to go to the year settings.
6. In the year settings, the display shows “DATE – Y – ” and after that the last two digits of the year. To change the value, press the “LEVEL” button.

Note: You can confirm and exit the settings at any time by pressing and holding the “HOLD” button.
To restore the date and time default settings, follow these steps:

1. While holding down the “SETUP” button, turn the unit on. Release the “SETUP” button when the “TIME” icon appears on the display. Now you get to the date and time settings. The display shows the date.
2. Press the “SETUP” button until the display shows “rSt”.
3. Press and hold the “HOLD” button to restore default settings.

Software

Install the USB drivers

To install the USB drivers, follow these steps:

1. Download the software: https://www.pce-instruments.com/english/download- win_4.htm and unzip the zip file.
2. Open the “USB Driver” folder. There are two different folders in it: “Windows_2K_XP_S2K3_Vista” and “Windows_7”.
3. Open the folder which matches your Windows version and run the “CP210xVCPInstaller.exe” file.
   If you do not know which Windows you are using go to the desktop, right-click on “My Computer” and select “Properties”. A new window appears where you can see your Windows version.
4. Click on “Install” in the software installer to start the installation.

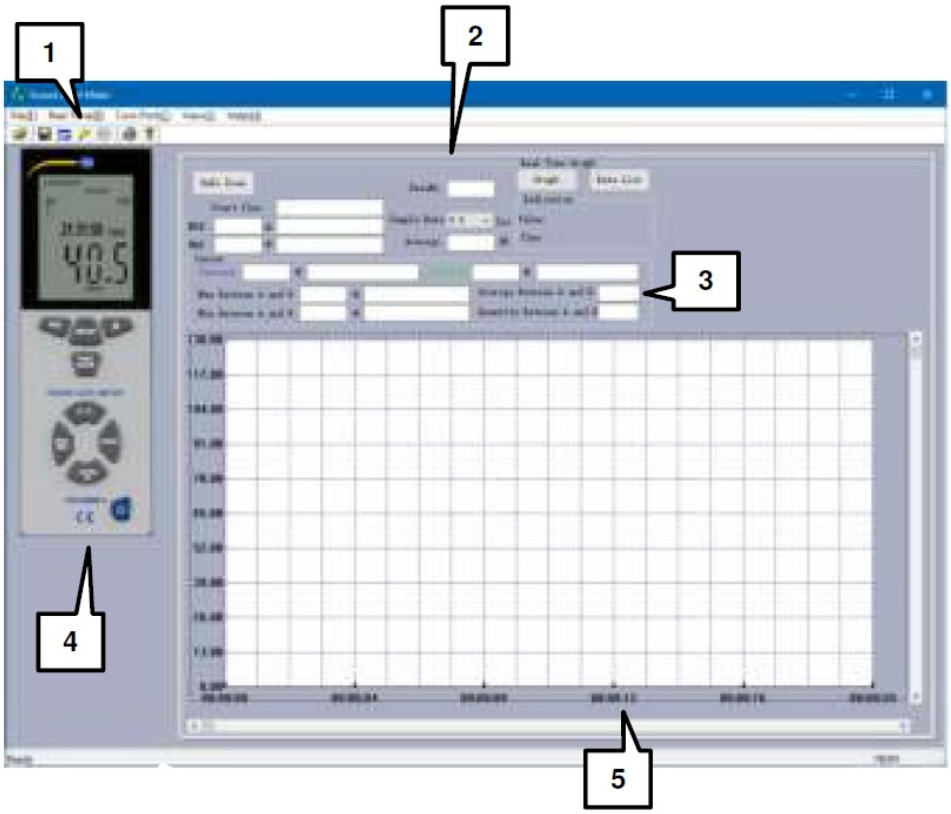
Install the software

To install the software, follow these steps:

1. Download the software: https://www.pce-instruments.com/english/download-win_4.htm and unpack the zip file.
2. Run the “setup.exe” file.
3. The software installer appears. Follow the instructions on the screen and install the software.

Software operation

Start the software. Now you get to the main screen:



1. Menu bar

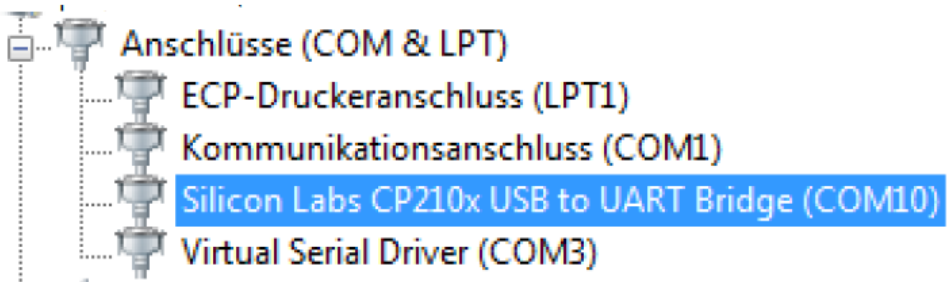
2. Real-time measurement information
3. Real-time display of the device
4. Device image
5. Real-time graph

Establish connection to the device
To let the software establish the connection automatically, follow these steps:

1. Make sure, that the device is connected to the PC.
2. Click on “COM Port(C)” in the menu bar and select “Auto(A)” the software now tries to establish the connection automatically.
3. Press the “REC” button on the device to enable data transmission. The real-time display becomes active.

You can also select the COM port manually:

1. Make sure, that the device is connected to the PC.
2. Open the Windows device manager and click on “Connections (COM & LPT)” to look for the proper COM port.



3. Click on “COM Port(C)” in the menu bar and select “Manual(M)”. Now you can type in the COM port number.
4. Press the “REC” button on the device to enable data transmission. The real-time display becomes active.

Start a real-time measurement
Adjust the settings:

1. Click on “Real Time(R)” in the menu bar and select “Setup(U)”.
2. The following window appears:

Here you can set the number of measurements (“The Group Number of Real-Time Record Data”) and the sampling rate (“Real-Time Sampling Rate”). The software
calculates the measuring duration, start and end time depending on the settings.

3. Click on “Start” to start the real-time measurement.

Start the real-time measurement:

1. Click on “Real Time(R)” in the menu bar and select “Run(R)” or click on the start symbol (lightning) below the menu bar. The real-time measurement starts with the last saved settings. The data is shown as a real-time graph. There is also additional information in the real-time measurement information display (2), such as MIN/MAX values and average value.
2. Click on “Real Time(R)” in the menu bar and select “Stop(S)” or click on the stop symbol below the menu bar to stop the real-time measurement.

Set markers
After taking a measurement, you can set markers and compare different measuring points to each other.
To do so, follow these steps:

1. Double-click at any point of the real-time graph.
2. The cursor now transforms into a violet vertical line. Move the line to the measuring point you want to compare. The measuring value and time appear in the marker indication (3) at “Cursor A”. Left-click on the measuring point in the graph to select it.
3. When you have set the first marker the cursor transforms into a green vertical line. Select the position of the second marker. The measuring value and time appear in the marker indication (3) at “Cursor B”. Left-click on the measuring point in the graph to select it.
4. Once both markers are set, the software shows the MIN/MAX and average values, as well as the number of measuring points between both markers.

Save data
To save the measured data, follow these steps:

1. Click on “File(F)” in the menu bar and select “Save as”.
2. A new window appears where you can set the saving path and file name.
3. Click on “Save” to save the data at the set location. The data is saved in *.txt format.

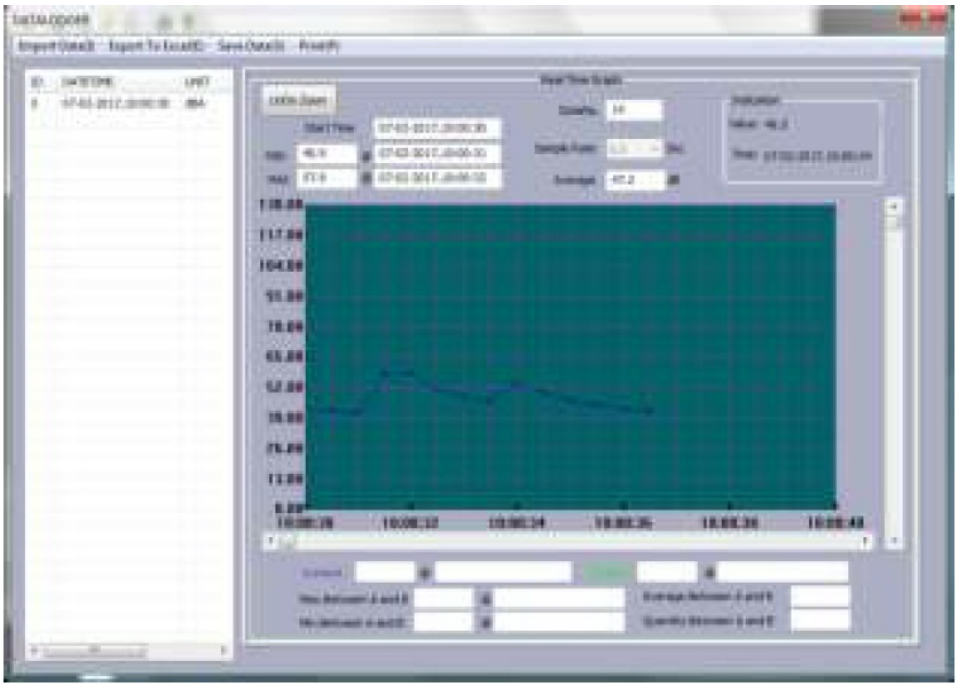
Export data to Excel
To export the data to Excel click on “File(F)” and select “Export To Excel(E)”. An Excel file with the measured data opens automatically.

Print data
To print the measured data, follow these steps:

1. Click on “File(F)” in the menu bar and select “Print Graph(G)” to print out the graph or select “Print Data(D)” to print out the measured data as table.
2. A new window appears where you can adjust the printing settings.
3. Click on “OK” to print out the data.

Load data
To load saved data, follow these steps:

1. Click on “File(F)” in the menu bar and select “Open”.
2. A new window appears where you can select the file to be opened. After that, click on “Open” to load the file.
3. The following window appears:



Here you can view the saved real-time graph. The file appears in the table on the left side of the window.
4. You can export the data to Excel, save the data and print it by using the menu bar of the window.
5. You can also set markers as described before.

Calibration

To perform a calibration, you need a suited sound level calibrator which has a ½ inch opening for microphones.
To calibrate the device, follow these steps:

1. Adjust the device to the following settings:
   Frequency weighing: A
   Sampling rate: FAST
   Measuring range: 50 … 100 dB
2. Put the end of the microphone in the ½ inch opening of the calibrator. Make sure that the output signal of the calibrator lies within the set measuring range (for example 94 dB @ 1 kHz).
3. Turn on the calibrator and use the potentiometer on the side of the sound level meter to adjust the displayed value to the output signal of the calibrator (for example 94.0 dB).

The sound level meter comes with a factory calibration. We recommend calibrating it once a year.

Warranty

You can read our warranty terms in our General Business Terms which you can find here: https: **//www.pce-instruments.com/english/terms**.

Disposal
For the disposal of batteries in the EU, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose. In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.
For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations. If you have any questions, please contact PCE Instruments.

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User manuals in various languages
(français, italiano, español, português, nederlands, türk, polski, русский,) can be downloaded here: www.pce-instruments.com

Documents / Resources

	PCE Instruments PCE-MSM 4 Sound Level Meter [pdf] User Manual PCE-MSM 4 Sound Level Meter, PCE-MSM 4, Sound Level Meter, Level Meter

References

- France.fr : Actualités, destinations et infos du tourisme en France
- iberica.es
- instruments.cn
- Computer Instruments | Home
- Discover Italy: Official Tourism Website - Italia.it
- N.E.E.D.S., (Nutritional Ecological Environmental Delivery System) specializes in providing products, information, and education
- PCEï¼ˆåŒ—äº¬ï¼‰ç§‘æŠ€æœ‰é™å…¬å¸
- Industrial Measurement Products and Solutions | PCE Instruments
- Improtek LTDA Distribuidor oficial de PCE Instruments | PCE Instruments
- PCE Deutschland GmbH Prüfgeräte vom Hersteller | PCE Instruments
- PCE Brookhuis B.V. | PCE Instruments
- PCE Americas Inc. : Test Instruments | PCE Instruments
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- PCE Teknik Cihazlar Paz. Tic. Ltd.Şti. | PCE Instruments
- PCE Americas Inc. : Test Instruments | PCE Instruments
- PCE Brookhuis B.V. is under construction
- PCE Deutschland GmbH Prüfgeräte vom Hersteller | PCE Instruments
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- PCE Brookhuis B.V. | PCE Instruments
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