



User Manual

PCE-MPC 20 / PCE-MPC 30 Particle Counter



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1 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.

2 Measurement functions

2.1 PCE-MPC 30

The device counts particles in different sizes and measures dust exposure as mass concentration PM 2.5 and PM 10. Furthermore, a measurement of formaldehyde exposure is integrated.

2.2 PCE-MPC 20

The device counts particles in different sizes and measures dust exposure as mass concentration PM 2.5 and PM 10.

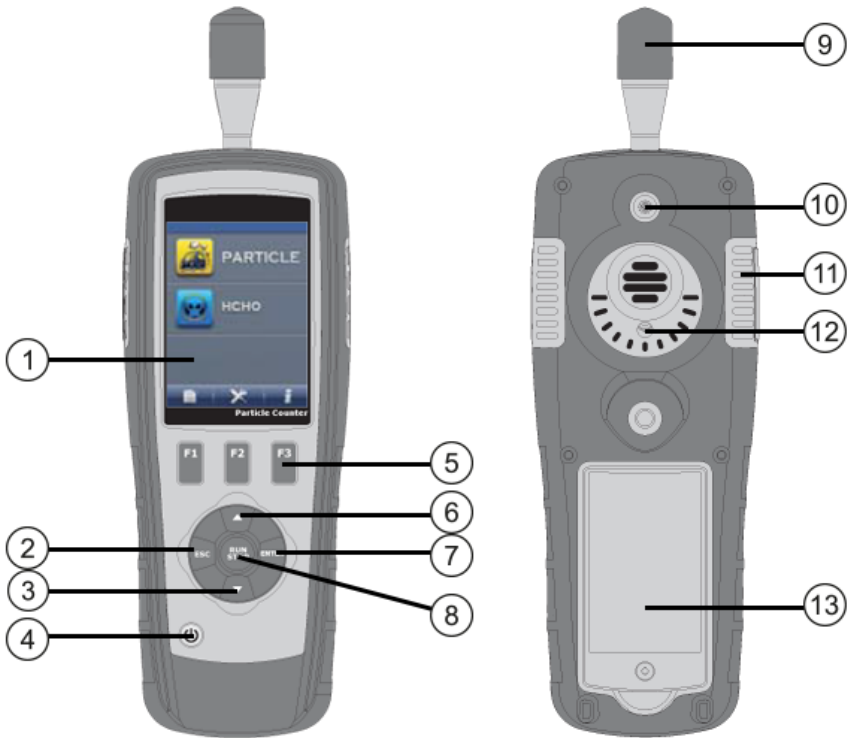
3 Specifications

Specifications	Explanations
Mass concentration	
Channels	PM 2.5 + PM 10
Measurement range	0 ... 2000 µg/m ³
Resolution	1µg/m ³
Particle counter	
Channels	0.3, 2.5, 10
Flow rate	2.83 l/min
Counting efficiency	50 % at 0.3 µm / 100 % at >4.5 µm
Coincidence error	<5 % at 70629400 particles per m ³
Data storage	5000 data sets (with SD card)
Counting mode	cumulative, differential, concentration
Air temperature and humidity	
Air temperature	0 ... 50 °C / 32 ... 122 °F
Accuracy	±1 °C / 1.8 °F at +10 ... +40 °C / 50 ... 104 °F, otherwise ±2 °C / 3.6 °F
Dew point temperature	0 ... 50 °C / 32 ... 122 °F
Accuracy	±1 °C / 1.8 °F at +10 ... +40 °C / 50 ... 104 °F, otherwise ±2 °C / 3.6 °F
Relative humidity	0 ... 100 % RH
Accuracy	±3.5 % at 20 ... 80 % RH, otherwise ±5 %
HCHO formaldehyde (PCE-MPC 30 only)	
Measurement range	0.01 ... 5 ppm
Accuracy	±5 % of measurement range
Resolution	0.01 ppm
General	
Operating conditions	0 ... 50 °C / 32 ... 122 °F, 10 ... 90 % RH
Storage conditions	-10 ... 60 °C / 14 ... 140 °F, 10 ... 90 % RH
Display	2.8 " 320 x 240 pixel LCD
Power supply battery	7.4 V, 1200 mAh, 8.88 Wh
Battery life	approx. 4 h
Battery charging time	approx. 2 h
Power supply plug-in mains adaptor	Primary 100 ... 240 V AC, 50 / 60 Hz, 0.6 A Secondary 9 V DC 1500 mA
Dimensions	240 x 75 x 57 mm / 9.4 x 3 x 2.2 in
Weight	570 g / 1.3 lbs

4 Delivery scope

- 1 x PCE-MPC 20 or PCE-MPC 30
- 1 x zero filter
- 1 x battery
- 1 x plug-in mains adaptor
- 1 x mini USB cable
- 1 x mini tripod
- 1 x hard case
- 1 x user manual

5 System description



- | | |
|--|---------------------------------|
| ① Display | ⑧ "RUN / STOP" key |
| ② "ESC" key | ⑨ Air inlet nozzle |
| ③ ▼ key | ⑩ Temperature/humidity sensor |
| ④ ON/OFF key  | ⑪ USB socket / 9 V DC input |
| ⑤ Function keys | ⑫ HCHO sensor (PCE-MPC 30 only) |
| ⑥ ▲ key | ⑬ Battery compartment |
| ⑦ ENTER" key | |

6 Operation

6.1 Preparation

6.1.1 Insert battery

- Open the battery compartment cover on the back of the meter.
- Insert the battery at the top first, with the terminals facing the front of the meter, and press the bottom of the battery into the compartment, using light pressure.
- Close the compartment and fasten the locking screw.

6.1.2 Insert SD card

A micro SD card can be inserted into the meter to expand the memory.

- Open the battery compartment cover on the back of the meter.
- Remove the battery.
- Slide the SD card holder slightly towards the top of the instrument.
- Flip open the holder and insert a micro SD card into the holder with the contacts facing down.
- Fold the holder and push it slightly towards the bottom of the meter to lock it.

6.1.3 Zero measurement

Make a zero measurement with the zero filter before the measurement.

- Unscrew the air inlet nozzle at the top of the instrument.
- Screw on the zero filter.
- Perform a measurement in cumulative measurement mode.
- Repeat the measurement until all three channels show zero. The system cleans itself automatically when measuring with the zero filter.
- Unscrew the zero filter and screw the air inlet nozzle back on.

6.2 Switch the meter on / off

- To switch on the instrument, press and hold the ON / OFF key until the start-up screen is visible.
- To switch off the meter, press and hold the ON / OFF key until the screen darkens.

6.3 Description of the icons

 PARTICLE	Particle measurement
 HCHO	Formaldehyde measurement (PCE-MPC 30 only)
	Memory
	System settings
	Internal help

Icon	Description	Icon	Description
	Cumulative mode		Measurement running
	Concentration mode		Measurement pause
	Differential mode		Formaldehyde measurement (PCE-MPC 30 only)

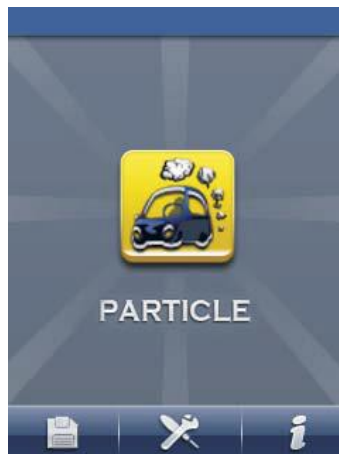
6.4 Measurement parameter selection

When using the PCE-MPC 30, you can use the ▲ and ▼ keys to select between the measurement parameters particles and formaldehyde.

With the PCE-MPC 20, only the particle measurement parameter is available. Press the "ENTER" key to call up the measurement parameter.



PCE-MPC 30



PCE-MPC 20

6.5 Particle measurement

After calling up the particle measurement parameter, you can start the dust measurement with the "RUN / STOP" key. After the set measuring time and measuring intervals have elapsed, the measurement ends automatically. You can stop the measurement at any time with the "RUN / STOP" key. The display shows the date and time in the upper area, the settings and measured values of the dust measurement in the middle area and the measured values of the temperature and humidity measurement in the lower area.



6.5.1 Settings for particle measurement

- Press the "F3" key while in the "particle measurement" menu item to enter the settings menu.
- Use the arrow keys to navigate and confirm your selection with the "ENTER" key.
- Press the ESC key to exit the function.

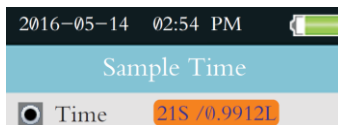
The following functions can be set / changed

Sample Time (sampling duration)
Start Delay
Ambient Temp. / % RH
Sample Cycle (sampling cycle)
Masscon / Particle (mass concentration / particle)
Sample Mode
Interval
Level Indication (reference channel colour indicator)

6.5.2 Sampling duration

Here you can change the duration of the sampling. Furthermore, the flow rate for the set duration of sampling is displayed.

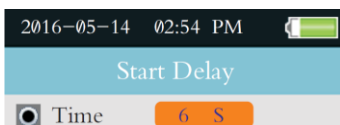
- Navigate to the menu item "Sample Time" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Press the "ENTER" key again to enter change mode.
- Use the ▲ and ▼ keys to set the measurement duration.
- Press the "ESC" key to save the entry and return to the overview.



6.5.3 Start delay

Here you can set the start delay time.

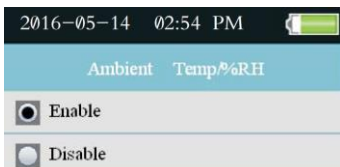
- Navigate to the menu item "Start Delay" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Press the "ENTER" key again to enter change mode.
- Use the ▲ and ▼ keys to set the measurement duration.
- Press the "ESC" key to save the entry and return to the overview.



6.5.4 Temperature / humidity

Here you can select whether the temperature and humidity values are to be shown on the display or not.

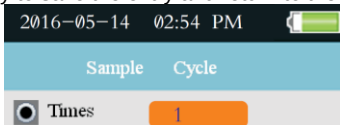
- Navigate to the menu item "Ambient Temp./%RH" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to select.
- Press the "ESC" key to save the entry and return to the overview.



6.5.5 Sample cycle

Here you can select the frequency of sampling during a measurement process.

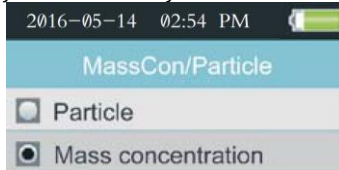
- Navigate to the menu item "Sample Cycle" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Press the "ENTER" key again to enter change mode.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key to save the entry and return to the overview.



6.5.6 Mass concentration / particles

Here you can choose between mass concentration and particle counting.

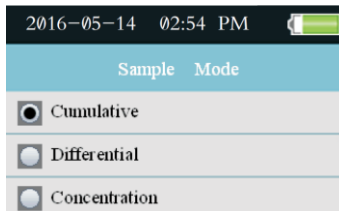
- Use the ▲ and ▼ keys to navigate to the menu item "MassCon/Particle".
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key to save the entry and return to the overview.



6.5.7 Sample mode

Here you can choose between the sample modes Cumulative, Differential and Concentration. This menu item is only available if under item 6.5.6 the option Particles is set.

- Navigate to the menu item "Sample Mode" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to select.
- Press the "ESC" key to save the entry and return to the overview.



6.5.7.1 Explanation of sample modes

- Cumulative & differential:
 - ➔ The recorded particle counts are summed up per channel (cumulative); starting from the largest channel.
 - ➔ In differential mode, the absolute particle counts per channel are found.
 - ➔ Example:

Channel [µm]	Cumulative particle count [PK]	Particle count differential [PD]	Calculation
0.3	1060	1000	= [PK,60]+[PD,1000]=[PK,1060]
2.5	60	50	= [PK,10]+[PD,50]=[PK,60]
10.0	10	10	---

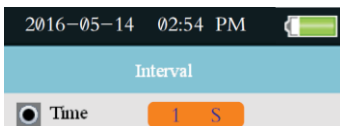
Concentration:

- ➔ Here you can find the average numbers of the respective particles per channel; also called particle density.

6.5.8 Interval

Here you can set the time between the sample cycles set as described in chapter 6.5.5.

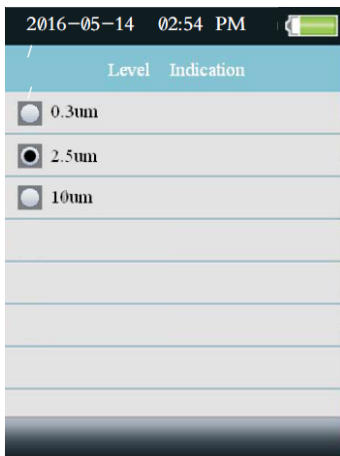
- Navigate to the menu item "Interval" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Press the "ENTER" key again to enter change mode.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key to save the entry and return to the overview.



6.5.9 Reference channel colour indicator (Level Indication)

Here you select the reference channel for the colour alarm indicator.

- Use the ▲ and ▼ keys to navigate to the menu item "Level display".
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key to save the entry and return to the overview.
-



Limit values of the colour indicator:

	Particle			Mass concentration	
	0.3 μm	2.5 μm	10 μm	pm 2.5	pm 10
Green	<100000	<545	<68	<35	<70
Yellow	<250000	<1235	<170	<75	<150
Orange	<500000	<2470	<340	<115	<230
Red	<667500	<3300	<454	<150	<300
Purple	<1000000	<4950	<680	<250	<500
Dark red	≥ 1000000	≥ 4950	≥ 680	≥ 500	≥ 500

6.6 Formaldehyde measurement (HCHO) (PCE-MPC 30 only)

After calling up the formaldehyde measurement parameter, the instrument starts measuring directly after the start delay time has elapsed. You can stop or start the measurement at any time by pressing the "RUN / STOP" key. The display shows the date and time as well as the icons for the current device status in the upper area and all measured temperature and humidity values are shown below. The main area shows the formaldehyde reading. The lower area shows the difference value (between min. and max.), the average value as well as the max. and min. values.



6.6.1 Settings for the formaldehyde measurement

- Press the "F3" key while in the "formaldehyde measurement" menu item to access the settings menu.
- Use the arrow keys to navigate and confirm your selection with the "ENTER" key.
- Press the ESC key to exit the function.

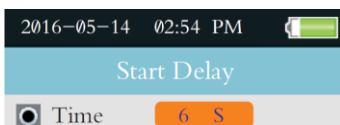
The following functions can be set / changed

Start Delay
HCHO Alarm
Max / Min
Average / Dif (differential)
Ambient Temp. / %RH
Dewpoint / Wetbulb
Unit (ppm/mg/m ³)

6.6.2 Start delay

Here you can set the start delay time.

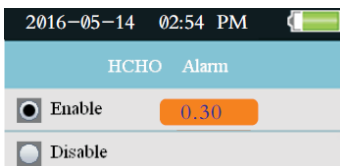
- Navigate to the menu item "Start Delay" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Press the "ENTER" key again to enter change mode.
- Use the ▲ and ▼ keys to set the measurement duration.
- Press the "ESC" key to save the entry and return to the overview.



6.6.3 Formaldehyde HCHO Alarm

Here you can enable or disable the alarm and change the alarm limit value.

- Use the ▲ and ▼ keys to navigate to the menu item "HCHO Alarm".
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to make a selection.
- Confirm your entry with the "ENTER" key.
- After confirming "Enable", you can change the limit value with the ▲ and ▼ keys.
- Press the "ESC" key to save the entry and return to the overview.



6.6.4 Max./Min. values

Here you can select whether the max. and min. values are to be shown on the display or not.

- Navigate to the menu item "Max / Min" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key to save the entry and return to the overview.



6.6.5 Mean / differential

Here you can choose whether the mean value (average of the measured values) and the differential value (difference between min. and max. value) should be shown on the display or not.

- Proceed according to the instructions as described in 6.6.4.

6.6.6 Ambient temperature / humidity

Here you can select whether the temperature and relative humidity should be shown on the display or not.

- Proceed according to the instructions as described in 6.6.4.

6.6.7 Dew point / wet bulb

Here you can select whether the dew point and wet bulb temperature should be shown on the display or not.

- Proceed according to the instructions as described in 6.6.4.

6.6.8 Units (ppm / mg/m³)

Here you can choose between the units ppm and mg/m³.

- Proceed according to the instructions as described in 6.6.4.

7 Data storage

The internal memory or an SD card memory is available for saving the data.

The measured values during particle measurement are automatically saved after each measurement process. To save the measured values during formaldehyde measurement, press the "F1" key. Automatic storage is not available for formaldehyde measurement.

You can view the saved records, internal and SD card, with the file browser on the unit.

You can view and save the data sets on the SD card on the PC via USB cable.

7.1 File Browser

- Switch on the unit or press the "ESC" key repeatedly while it is switched on until you are in the start screen.
- On the PCE-MPC 30, you can use the ▲ and ▼ keys to select between the particle measurement and formaldehyde measurement memory areas.
- With the PCE-MPC 20, only the particle measurement memory area is available.
- Press the "F1" key to open the file browser.
- In the file browser, you can select the data records saved in the internal memory or on the SD card, depending on the selection in the system settings.
- Use the ▲ and ▼ keys to select the data record and confirm your selection with the "ENTER" key.
- By pressing the "F1" key and confirming the security prompt, you can delete the selected record.
- Press the "ESC" key to return to the overview.
- By pressing the "F1" key and confirming the security prompt, you can delete all data records.

7.2 PC / USB

Only the data saved on the SD card can be viewed / transferred via the USB cable. During USB connection, the operating functions of the meter are disabled.

- Connect the USB cable to the meter and the PC.
- The display shows a USB pen drive icon to confirm the connection.
- A USB drive is displayed on the PC.
- Click on the USB drive and open the corresponding folder / file.

8 System settings

Here you can make / change the basic settings of the instrument.

- Switch on the meter or press the "ESC" key repeatedly while it is switched on until you see the start screen.
- Press the "F2" key to open the settings menu.

The following setting options are available.

Date/Time	Set time and date
Language	Set language
Auto Power Off	Set automatic power off time
Display timeout	Set automatic power off time of the display
Alarm	Enable/disable alarm
Memory status	Call up the memory capacity / space left of the memory card
Factory Setting	Reset the meter to factory settings
Units (°C/°F)	Selection between the temperature units
Version	Firmware version

8.1 Date/Time

- Navigate to the menu item "Date / Time" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to change the date format.
- Confirm your entry with the "ENTER" key.
- Continue in this way until the last entry item.
- Press the "ESC" key to return to the menu overview.

8.2 Language

Choose between English, French, German or Spanish.

- Navigate to the menu item "Language" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to select.
- Press the "ESC" key to save the entry and return to the overview.

8.3 Auto Power Off

Choose between the options deactivate, 3, 15 or 60 min to determine whether or after what time the meter should switch off in case of inactivity.

- Navigate to the menu item "Auto Power Off". with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key to save the entry and return to the overview.

8.4 Display timeout

Choose between the options deactivated, 90 s, 2 or 4 min to determine whether or after what time the screen display switches off. The screen is switched on again with the next keystroke.

- Use the ▲ and ▼ keys to navigate to the menu item "Display timeout".
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key to save the entry and return to the overview.

8.5 Alarm

Select between the options Alarm on or off.

- Navigate to the menu item "Alarm" with the ▲ and ▼ keys.
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key to save the entry and return to the overview.

8.6 Memory status

Select between the options internal memory or SD memory card. Furthermore, the current memory status is displayed.

- Use the ▲ and ▼ keys to navigate to the menu item "Memory status".
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key to save the entry and return to the overview.

8.6.1 Format SD card

- Press the "F1" key in the memory status window.
- Confirm the security prompt with the "F1" key.

8.7 Factory setting

Here, the meter can be reset to its factory settings.

- Use the ▲ and ▼ keys to navigate to the menu item "Factory Setting".
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key.
- If "YES" is selected ("F1" key), the meter is reset to its factory settings without a confirmation prompt and returns to the overview.
- Pressing the "F3" key returns you to the overview without formatting.

8.8 Units (°C / °F)

Choose between the temperature unit options °C and °F.

- Use the ▲ and ▼ keys to navigate to the menu item "Units (°C / °F)".
- Confirm the selection with the "ENTER" key.
- Use the ▲ and ▼ keys to make a selection.
- Press the "ESC" key to save the entry and return to the overview.

9 Internal help

Here, you can view notes on key assignment and device use.

- Switch on the instrument or press the "ESC" key repeatedly while it is switched on until you see the start screen.
- Press the "F3" key to access the notes.
- Use the "F1" and "F3" keys to scroll through the help section.
- Press the "ESC" key to exit the internal help section.

10 Contact

If you have any questions, suggestions or technical problems, please do not hesitate to contact us. You will find the relevant contact information at the end of this user manual.

11 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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