English



User Manual

PCE-EM 890 Environmental Tester

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Last change: 12 January 2021
v1.0

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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.

If you have any questions please contact PCE Instruments. The contact details can be found at the end of this manual.

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2 Specifications

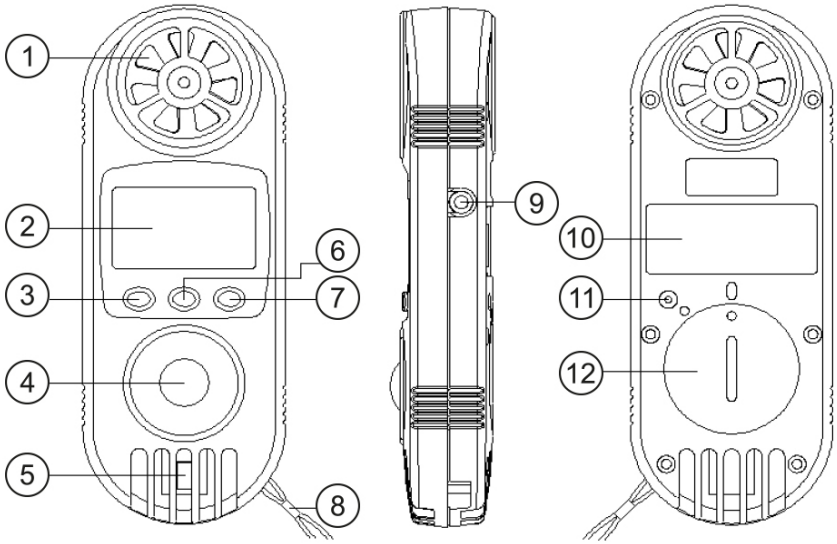
Measuring function	Measurement range	Resolution	Accuracy
Wind speed	80 ... 3937 ft/min	1 ft/min	±3 % of range
	0.4 ... 20 m/s	0.1 m/s	
	1.4 ... 72 km/h	0.1 km/h	
	0.9 ... 44.7 mph	0.1 mph	
	0.8 ... 38.8 knots	0.1 knots	
Air temperature	0 ... 50 °C	0.1 °C	±1.2 °C
Humidity	10 ... 95 % RH	0.1 % RH	<70 % RH: ±4 % RH
			>70 % RH: ±4 % of rdg. + 1.2 % RH
Barometric air pressure	10 ... 999.9 hPa	0.1 hPa	±1.5 hPa
	1000 ... 1100 hPa	1 hPa	±2 hPa
UV radiation	0 ....1999 µW/m²	0.1 µW/m²	±(4% of range + 2 digits)
290 ... 390 nm	2 ... 20 mW/m²	0.01 mW/m²	
External temperature (Pt1000 input)	-10 ... 70 °C	0.1 °C	±1.2 °C
Volume flow	0.024 ... 3600 cmm	0.001 cmm	
		0.01 cmm	
		0.1 cmm	
		1 cmm	
Dew point	-25.3 ... 49 °C	0.1 °C	
Wet bulb temperature	-5.4 ... 49 °C	0.1 °C	
Heat stress index	0 ... 100 °C	0.1 °C	±2 °C
Wind chill	-9.4 ... 44.2 °C	0.1 °C	±2 °C
Altitude above sea level	-2000 ... 9000 m	1 m	±15 m

General technical data of the climate/weather measuring device	
Display	LC display 8 mm digit height
Measurement functions	Wind speed / temperature
	Air humidity / temperature
	UV
	Air pressure
	Volume flow
	Dew point
	Wet bulb temperature
	Wind chill
	Heat stress index
	Altitude above sea level
	External temperature via Pt1000
Power supply	CR 2032 3 V battery
Power consumption	approx. 5 mA
Operating conditions	0 ... 50 °C / max. 80 % RH
Dimensions	120 x 45 x 20 mm
Weight	approx. 160 g

3 Delivery scope

1 x environmental tester PCE-EM 890
1 x CR2032 battery
1 x protective bag
1 x user manual

4 System description



① Vane
② LC display
③ Hold key (freeze display)
④ UV light sensor
⑤ Temperature / humidity sensor
⑥ Power key (On)
⑦ REC key (recording)
⑧ Hand strap
⑨ Pt1000 connection for external sensor
⑩ Brief description of key function
⑪ Pressure sensor barometer
⑫ Battery compartment

5 Measurement functions

Measuring function	Display text	Unit of measurement
Wind / air speed	AN	m/s, km/h, mph, Knot, FPM
Temperature		°C, °F
Volume flow	AirFL	CMM, CFM
Wind chill	CHiLL	°C, °F
Humidity	rH	% r. F.
Temperature		°C, °F
Dew point	dP	°C, °F
Wet bulb temperature	_Et	°C, °F
Heat index	HEAt	°C, °F
UV radiation (UVA)	U A	mW/cm², µW/cm², automatic
Air pressure	bAr	hPa (HPA), mmHg (mH9), inHg (inH9)
Altitude above sea level	HigH	m, Ft
External temperature via Pt1000	Pt	°C, °F

The units of measurement in brackets are the display representations that differ from the unit of measurement.

6 Operation

6.1 Preparation

Open the battery compartment on the back of the device by turning it slightly to the left and insert the CR 2032 3 V battery, observing correct polarity. Close the battery compartment.

6.2 Functions

6.2.1 Switch meter on / off

- Press the "Power" key to switch on the meter.
- To switch off the meter, press and hold the "Power" key until it switches off.

6.2.2 Display backlight

- Press and release the "Power" key when the meter is switched on.
- The display backlight switches on for 5 seconds.

6.2.3 Select measuring function

- Press and hold the "Hold" key when the meter is switched on.
- The display shows the measuring functions one after the other.
- Release the key as soon as the desired measuring function is displayed.

6.2.4 Select unit of measurement

- When the meter is switched on, press and hold the "REC" key until the display shows "Unit".
- Press the "Power" key repeatedly until the desired unit of measurement appears on the display.
- Confirm the selection with the "REC" key.
- If you have selected a measurement function with dual measurement, you can now change the unit of measurement for the second measurement function as described above.

6.2.5 Hold function

- Press and release the "Hold" key to freeze the current reading on the display.
- Press and release the "Hold" key again to return to normal measuring mode.
- The hold function is not available when the memory function is activated.

6.2.6 Rec. function

- Briefly press the "REC" key to save the maximum and minimum readings of the current measurement.
- To call up the max value, press and release the "REC" key.
- To call up the min value, press and release the "REC" key again.
- To exit the Rec function and delete the saved values, press and hold the "REC" key for more than 2 seconds.

6.2.7 Automatic power off

The tester powers off after approx. 10 minutes of inactivity to save battery power.
Automatic power off is not active in "REC" mode.

6.3 Measurement

6.3.1 Wind / air speed

- Switch on the tester and select the wind / air speed measurement function as described above.
- Select the desired units of measurement as described above.
- Hold the meter in such a way that the vane is placed in wind direction.
- Do not cover or enclose the openings of the temperature / humidity sensor. This will lead to incorrect measurement results.

6.3.2 Volume flow

- Switch on the meter and select the volume flow measurement function as described above.
- Select the desired unit of measurement as described above.
- Press the "Hold" key to set the opening cross-section.
- When the hold indicator is displayed, press and hold the "REC" key until "m-2" or "F-2" appears at the bottom of the display.
- Use the "Hold" and "Power" keys to increase or decrease the cross-section value.
- Press the "REC" key to confirm the entry.
- Hold the meter in such a way that the vane is placed in front of the discharge opening and read the value. To obtain a more accurate measurement result, measure at several points of the discharge opening and calculate the average of the measured values.

6.3.3 Wind chill

- Switch on the tester and select the wind chill measurement function as described above.
- Select the desired unit of measurement as described above.
- Hold the meter in such a way that the vane is placed in wind direction.
- Do not cover or enclose the openings of the temperature / humidity sensor. This will lead to incorrect measurement results.

6.3.4 Air humidity / temperature

- Switch on the tester and select the humidity / temperature measuring function as described above.
- Select the desired units of measurement as described above.
- Do not cover or enclose the openings of the temperature / humidity sensor. This will lead to incorrect measurement results.

6.3.5 Dew point

- Switch on the meter and select the dew point measurement function as described above.
- Select the desired unit of measurement as described above.
- Do not cover or enclose the openings of the temperature / humidity sensor. This will lead to incorrect measurement results.

6.3.6 Wet bulb temperature

- Power on the meter and select the wet bulb temperature measurement function as described above.
- Select the desired unit of measurement as described above.
- Do not cover or enclose the openings of the temperature / humidity sensor. This will lead to incorrect measurement results.

6.3.7 Heat index

- Power on the meter and select the heat index measurement function as described above.
- Select the desired unit of measurement as described above.
- Do not cover or enclose the openings of the temperature / humidity sensor. This will lead to incorrect measurement results.

6.3.8 UV radiation

- Power on the meter and select the UV radiation measurement function as described above.
- Do not cover or enclose the openings of the UV light sensor. This will lead to incorrect measurement results.
- The changeover from µW/cm² to mW/cm² is automatic.

6.3.9 Air pressure

- Power on the meter and select the air pressure measuring function as described above.
- Select the desired unit of measurement as described above.
- Do not cover or enclose the opening of the pressure sensor on the back of the unit. This will lead to incorrect measurement results.

Attention!
The actual air pressure depends on the weather-related atmospheric air pressure and the altitude above sea level. The unit is set to sea level when delivered. To adjust the altitude above sea level to your location, proceed as follows:

- With the air pressure measuring function selected, press the "Hold" key.
- When the hold indicator is displayed, press and hold the "REC" key until "m" or "F" appears at the bottom of the display.
- With the "Hold" and "Power" keys, you can increase or decrease the site altitude above sea level.
- Press the "REC" key to confirm the entry.

6.3.10 Altitude above sea level

- Power on the meter and select the measurement function for the altitude above sea level as described above.
- Select the desired unit of measurement as described above.
- Do not cover or enclose the opening of the pressure sensor on the back of the unit. This will lead to incorrect measurement results.

Attention!
The altitude measurement depends on the air pressure. The higher your location is above sea level, the lower the air pressure. For an accurate altitude measurement, it is therefore necessary to set the device accordingly. For an accurate setting, it is necessary to know the current altitude above sea level or the current air pressure.

6.3.10.1 Setting via "Altitude above sea level"

- With the altitude above sea level measurement function selected, press the "Hold" key.
- When the hold indicator is displayed, press and release the "REC" key. m" or "F" appears at the bottom of the display.
- With the "Hold" and "Power" keys, you can increase or decrease the current site altitude above sea level.
- Press the "REC" key to confirm the entry.

6.3.10.2 Setting via "Air pressure"

- With the altitude above sea level measurement function selected, press the "Hold" key.
- When the hold indicator is displayed, press and hold the "REC" key until "HPA", "mmHg" or "inHg" appears at the bottom of the display.
- Use the "Hold" and "Power" keys to increase or decrease the current air pressure value.
- Press the "REC" key to confirm the entry.

6.3.11 External temperature via Pt1000

- Connect the external Pt1000 sensor via the jack socket on the side of the unit.
- Power on the meter and select the measuring function external temperature via Pt1000, as described above.
- Select the desired unit of measurement as described above.

The Pt1000 connection is designed as a 2-pin 3.5 mm jack socket.

7 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.

8 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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