



**PCE-WP 21  
USER MANUAL**

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## 1. Description and applications

PCE-WP-21 is an electronic instrument used for measuring the moisture content of concrete. It is widely used for measuring the moisture content of concrete floors before painting or applying tiles, parquets, carpets, etc.

The final reading provided by this device is the average moisture level in a layer of concrete 50 mm thick. PCE-WP-21 measures the dielectric constant (SIC).

## 2. Technical data

Range	1.0 % - 8.0 %
Thickness of layer measured	About 50 mm
Display type	LCD
Accuracy	± 0.7 %
Resolution	0.1
Power	9V, (1 battery 6F22)
Battery life	About 5000 measurements
Low power indication	Yes
Size	165 x 80 x 33 mm device 270 x 180 x 55 mm case

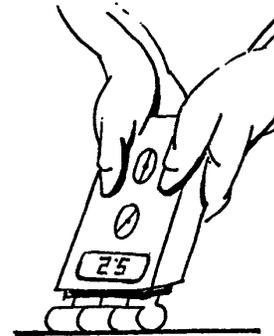


Fig. 1

## 3. Preparing the instrument

Before conducting any measurements, you should do the following:

- a) When measuring a lightweight type of concrete (density between 1.6 and 1.8 kg/dm<sup>3</sup>):
  - i. Set the switch to LIGHT CONCRETE.
  - ii. While holding the device in the air, press the POWER ON button (ON/OFF) and use the CALIBRATION knob to set the device to the value indicated below the LIGHT CONCRETE sign (-3.7).
- b) When measuring a normal type of concrete (density between 1.8 and 2.4 kg/dm<sup>3</sup>):
  - i. Set the switch to NORMAL CONCRETE.
  - ii. While holding the device in the air, press the POWER ON button (ON/OFF) and use the CALIBRATION knob to set the device to the value indicated below the NORMAL CONCRETE sign (-5.6).

## 4. Measurements

The measurements should be conducted in several places. These places should be flat, smooth and clean. The actual result of the measurements is the arithmetic average of all the measurements.

Hold the device as shown in Fig. 1. Use your right thumb to press the POWER ON button (ON/OFF). Press the electrodes hard against the concrete. Read the result. If the result is out of range (below 1% or above 8%), the measurement should be considered approximate. All results below 1% (for example: -1.2, 0.6) indicate only that the moisture content is below 1%. All results above 8% (for example: 8.3, 9.6) indicate only that the moisture content is above 8%. In both of these cases, the numbers displayed on the LCD CANNOT be considered as moisture content values.

## 5. Remarks

Besides the moisture content, the results are also influenced by:

- Bulk density of the concrete
- Graining and type of aggregate
- Use of admixtures
- Temperature of the concrete
- Value of the water-cement indicator (W/C)
- Water chemical constitution
- Salinity of the concrete (in case of old concrete)
- Smoothness of the surface

In case a very high accuracy of measurement is required, the device should be calibrated to compensate for the influence of the factors listed above. Such calibration should be done using the dry oven test.

During normal use it is enough to compensate only for the bulk density of the concrete.

The device cannot be used to measure the moisture content of concrete that is densely reinforced or contains admixtures that conduct electricity. The measurement should not be done closer than 50 mm from the nearest reinforcement.

The results of the measurement can be totally distorted by the occurrences of stray currents (for example: those coming from a malfunctioning electrical installation). The accuracy of the device can also be very low while measuring very fresh or recently dampened concrete. This is due to the interference from the very moist top layer of the concrete.

## 6. Changing the battery and storage

The device is equipped with a power level control circuit. When the power drops below the acceptable level, a LO BAT sign appears on the left side of the LCD. This indicates that the battery has expired and should be replaced with a new one.

To replace the battery, unscrew the screw on the back of the instrument and carefully remove the back panel.

Store the device in a dry place.

## 7. Terms and conditions

Please find PCE Instruments' general terms and conditions at <https://www.pce-instruments.com/english/terms#AGB>.