USER MANUAL

RADON DETECTOR

PCE-RD 75

ENGLISH

User manuals in various languages (français, italiano, español, português, nederlands, türk, polski) can be found via our product search on:
www.pce-instruments.com

PRODUCT INTRODUCTION

PCE-RD 75 radon detector is a high precision radon concentration monitoring and alarm instrument, used to monitor alpha ionizing radiation from the decay of radon. Independently developed high-precision radon pulse ionization chamber sensors. Historical data can be viewed locally, or the device can be connected to the computer to view the PDF data report in the device USB drive. Our radon detectors communicate with your computer via the USB flash drive protocol, so you don't need to install any additional software on your computer. Use 2.1 inch high resolution capacitive touch color screen, UI interface is easy to operate. When the detection value exceeds the alarm threshold, an alarm can be issued to remind the user to ventilate in time.

WHERE IT CAN BE USED

- Used for environmental radon monitoring in mines, basements and poorly ventilated residential buildings.
- Investigation and evaluation of radon concentration in soil at construction site.
- It can be used for mineral resource exploration, engineering geological exploration, environmental radon concentration monitoring in related departments of nuclear industry, and radiation detection of radon concentration in geological investigation.

LIMITS ON RADON CONCENTRATION

The concentration limit for radon in the civil built environment varies from country to country (our equipment defaults to 148Bq/m³), but the following basic standards are generally used.

China standards	≤ 150Bq/m³
United States (EPA) standards	≤ 4pCi/L (Or ≤ 148Bq/m³)
(WHO) recommended standards	≤ 100Bq/m³ , Corrective action is strongly recommended at levels greater than 300Bq/m³
European (EURATOM) standards	≤ 300Bq/m³

The simplest way to reduce indoor radon concentration is to increase indoor ventilation. When the radon concentration exceeds 4pCi/L(148 Bq/m³), ventilate for at least 10 minutes or more.

FEATURES

- Self-developed high precision radon pulse ionization chamber sensor.
- 2.1 inch 480*480 resolution HD capacitive touch screen, UI menu operation is convenient.
- The radon concentration monitoring value is updated every 10 minutes, the average value of the last hour is displayed in real time, and the cumulative average is recorded.
- Radon concentration alarm threshold and alpha particle tone can be set, and sound switch can be controlled.
- The measurement starts automatically after the boot, and you can also manually re-test.
- After shutting down or restarting the measurement, the data will be automatically saved, and the corresponding PDF data report can be obtained by connecting the computer.
- The device can be connected to the computer to view the PDF report in the USB flash drive, and record up to 508 days of historical data.
- Automatic energy saving control function, there is no operation within 1 minute, and the system automatically enters the ECO mode.
- In the screen sleep state, enter the low power mode, but can still perform normal data monitoring, data recording and radon concentration alarm.
- Self-check sensor fault prompt function.
- With a calendar clock function, the clock runs normally after shutdown.

PARAMETERS

- Sensor: High precision radon ionization chamber sensor
- Range: 2Bq/m³ ... 20kBq/m³
- Precision: ±10%
- Reliable data to measure time: 1hour
- Battery operating time: About 12 days (Screen sleep)
- Charging: USB TYPE-C (Green light when charging)
- Charging time: about 6 hours when shutdown
- Alarm: Ring for 20 seconds every 10 minutes after the limit is exceeded
- Operating range: -10 ... 45°C
  RH <80% (out-of-range operating error increases)
- Size: Diameter 81mm, high 130mm, 320g

BUTTON

Power Button: Long press to turn on or off the device, short press to turn off or wake up the screen

OPERATION INSTRUCTION

(1) Boot up
Long press the Power button for 3 seconds, the green light first, and then the screen light up. The first boot will display the date and clock Settings, followed by a boot animation and a device initialization of about 7 seconds. After the initialization is complete, the Measurement screen is displayed.

(2) Shutdown
1- Long press the Power button for 3 seconds and then the shutdown confirmation screen will pop up. Click to complete the shutdown, and swipe right to cancel the shutdown.
2- Long press the Power button for 10 seconds to force the shutdown.

(3) Back to upper menu
Click the virtual floating button to return to the previous menu (long press to drag), or swipe right to exit (except for some important confirmation and measurement interfaces using the " X„ button)

(4) Measurement data switching
Click the arc button at the bottom of the „Measurement" interface to switch between „Cumulative average value", „12-hour value", „24-hour value", „48-hour value", „96-hour value" and „Cumulative peak value" to view different types of monitoring data. The default value is Cumulative Average. If you do not perform any operation within 50 seconds, the system automatically switches to Cumulative Average.

(5) Retest
Click the „Retest" icon in the main menu. After confirmation, the data initialization interface will be displayed.

(6) Sound setting
1- Alarm tone Settings: Click the „Alarm" icon in the main menu to turn the alarm tone off or on.
2- Click the „Settings" icon in the main menu -> „ECO" -> The „Volume" submenu can also set the alarm tone on or off.

(7) Screen brightness settings
1- The screen brightness can be changed by sliding the brightness control bar at the bottom of the main menu interface (the default brightness is 80%, and the brightness can be adjusted from 1% to 100%).
2- Click on the „Settings" icon in the main menu -> "ECO" -> „Brightness" -> Slide the brightness control bar to adjust the screen brightness, and click the „OK" button.
(Note: If you swipe right to exit, the screen brightness will return to the original brightness)

(8) Lock screen
The „Lock" icon in the main menu can lock the screen. After the lock screen, the display interface will automatically switch to „measurement interface", and the lock screen icon will be displayed in the upper left corner. When the screen is clicked again, the unlock confirmation interface will pop up.

(9) Viewing device information
Tap the „About“ icon in the main menu, then swipe to the bottom. The device name, product model, serial number, and version number of the device are displayed in detail.

(10) Unit settings
Click the „Settings“ icon in the main menu, -> „Unit“ -> Enter the unit setting page, slide up and down to select the display units radon gas (Bq/m³, pCi/L) respectively, and click „Confirm“ to set successfully.

(11) Alarm setting
1- Radon concentration exceedance threshold: click the „Settings“ icon in the main menu -> „Alarm“ -> „ Alarm Line“ -> Slide to select the value to be set (including 70Bq/m³, 100Bq/m³, 148Bq/m³, 200Bq/m³, 300Bq/m³, 400Bq/m³, 600Bq/m³, 800Bq/m³ multi-level optional).
2- A particle sound (off by default) : Click the „Settings“ icon in the main menu -> „Alert“ -> Click on Open (the slider shows gray for closed, orange for open)

(12) Sleep settings
Click the „Settings“ icon in the main menu -> „ECO“-> „Sleep“ -> Swipe to select the value to be set. The default is „10 minutes“ (including 1 minute, 2 minutes, 5 minutes, 10 minutes, 15 days, multiple options). Sleep mode can reduce energy consumption (without affecting data monitoring) and can be woken up by touching the display, inserting USB and pressing the power button.

(13) Real-time clock settings
Click the „Settings“ icon in the main menu -> „Date &Time“ -> Set the year and month, click „NEXT“ -> Swipe select hour, minute, second, click OK -> Follow the prompts to change the time setting.

(14) View PDF report
Connect the device to the USB interface of the computer through the data cable, and the prompt box „Create PDF file, please wait“ pops up on the screen. The maximum build time is around 25 seconds (the wait time depends on the amount of data). After creating the PDF. Users can view the historical data in PDF format in the U disk through the computer side.
Each time the radon meter is turned on, a new PDF file is automatically generated on the USB flash drive inside the device, which can store up to 3 PDF files. If it is full, the new file overwrites the old one.
Note: After each measurement is completed, it is recommended to copy the PDF file in time to prevent data from being overwritten.

NOTE

(1) When the battery power is too low, please charge it in time to ensure the normal monitoring of the test equipment
(2) Avoid large vibration affecting the detection accuracy.
(3) When a radon detector is contaminated with a high concentration of radon, it absorbs the residual radon. Depending on the radon concentration, it takes 24 hours and up to 3.8 days to return to normal. Therefore, it is recommended to wait 24 to 48 hours after high radon concentrations have been measured before reading the measurements.
(4) The internal temperature of the device will increase when the battery is charged, so the measured temperature data is the local temperature of the internal cavity of the device, not the ambient temperature.

Q&A

Q1:If the battery level is too low, the device will automatically shut down. Will record data be lost?
A1: Plug in the power supply to charge the device, so that the device can start normally. Connect to the computer to view the historical data before the power failure.

Q2:When the device is connected to the computer, it cannot view the data of the U disk. How to operate?
A2:Refresh the computer and wait for a moment to check whether the USB data line is normal.

Q3:Measurement interface appears „fault“ words, how to solve?
A3:Please email us or contact our sales staff.

Q4:Alpha particles turn on, but why can‘t you hear them?
A4:If mute mode is enabled, the particle alert will also be turned off.

Q5:What does a flashing red light mean?
A5: The red light and the buzzer work at the same time, and the red light will blink when the buzzer has an alarm sound or particle sound.

Q6:What does the flashing blue light mean?
A6: Whenever the ionization discharge caused by radon decay occurs in the ionization chamber, the blue light flashes once, and the radon concentration can be measured by the flicker frequency of the blue light.

ABOUT RADON

Radon is a dangerous radioactive gas with a half-life of 3.82 days. It is colorless, odorless and tasteless, and cannot be detected by human senses alone The density of radon is eight times that of air, and it is easy to accumulate high concentration of radon in basements, mines and poorly ventilated houses. After people breathe in the body, the particles of radon decay can cause internal radiation to the human respiratory system and cause lung cancer.
Radon is one of the 19 major carcinogens listed by the World Health Organization (WHO) and is the second leading cause of human lung cancer after cigarettes.
The International Agency for Research on Cancer (IARC) considers radon and its daughters to be carcinogenic to humans.
The United States Environmental Protection Agency (EPA) has declared that radon levels below 150 Bq/m3 (4 pCi/L) pose little health risk.
Published risk comparison reports indicate that a radon concentration of 1,000 Bq/m3 (30 pCi/l) results in a cumulative risk that is approximately the same as smoking two packs of cigarettes per day.
Radon is mainly found in soil, while natural building materials are the most important source of indoor radon. The simplest way to reduce indoor radon concentrations is to enhance indoor ventilation.

SAFETY TIPS

The equipment is not waterproof, precision instruments can not fall and severe vibration, so as to avoid damage.

DISPOSAL

For the disposal of batteries in the EU, the (EU) 2023/1542 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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