PCE INSTRUMENTS PCE-RAM 100 Geiger Counter

PCE INSTRUMENTS PCE-RAM 100 Geiger Counter User Manual

Contents

PCE INSTRUMENTS PCE-RAM 100 Geiger Counter

Specifications Technical
Insert technical specifications here.**Delivery Contents**
Insert delivery contents information here.

Product Usage Instructions

System Description
Describe the device and its key components.

Getting Started
Follow these steps to prepare the device for operation:

1. Ensure proper power supply.
2. Turn on the device using the designated power button.

Operation
Learn how to operate the device efficiently.

Measurement
Guidelines on how to perform measurements using the device.

Calibration
Information on calibrating the device for accurate results.

FAQ

- **Q: Where can I find safety information?**
  - A: Safety information is provided in the user manual under the “Safety Notes” section.
- **Q: How do I contact support?**

    - A: Contact details are available under the “Contact” section of the manual.
- **Q: How should I dispose of the product?**
    - A: Refer to the “Disposal” section for proper disposal guidelines.

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.

Specifications

Technical specifications

Handheld device

Model	**PCE-RAM 100**
Measured parameters	Radiation level Accumulated radiation dose level Pulses counted in a selectable period of time Pulses counted per minute and p er second
Radiation measurement	
Measurement range	Radiation0 µSv/h … 1500 µSv/h0 mrem/h … 150 mrem/h Accumulated radiatio n 0 µSv … 9.9 Sv0 mrem … 990000 mremAccumulation time duration: continu ous up to 269 days or 1 …. 24 h, user selectable Pulse counting: 0 … 9999999 pulses Pulse counting duration: 2 … 99999 sPulse counts per second (CPS): 0 … 167000 pulses Pulse counts per minute (CPM): 0 … 9999999 pulses
Resolution	0.1 µSv/h
Radiation types	α radiation from 4 MeV β radiation from 0.2 MeV γ radiation from 30 keV
Sensitivity	Gamma sensitivity Co60 (CPS/mrem/h) = 18 Gamma sensitivity Cs137 (CPS/ mrem/h) = 16
Accuracy	<10 %
Radiation units	µSv/h mrem/h
Accumulated radiation units	µSv mrem
Pulse counting units	Counts per second (CPS) Counts per minute (CPM)
Selection of shield	α + β + γ without shieldingβ + γ aluminium foil shield thickness: 0.1 mm γ aluminium foil shield thickness: 3 mm
Alert settings	User selectableThe alarm can be enabled selecting the parameter and setting t he value needed to generate the alarm, or can be disabled
Ticker sound	Generates a beep when a particle reaches the sensor This option is user select able

General	
Display	2.8-inch TFT colour display
Data logger	Internal SD card, 32 GB memory capacity / 10 million measuring points
Measurement mode	Real-time value modeHold value measurement modeMIN/MAX and average v alues measurement mode
Menu languages	English, German, French, Spanish, Italian, Dutch, Portuguese, Turkish, Polish, Russian, Chinese, Danish, Japanese
Interface	USB
Protection class	IP 52
Power supply	Internal: rechargeable LiPo battery (3.7 V / 2500 mAh) External: USB 5 VDC, 5 00 mA
Operating time	Approx. 24 h depending on display brightness and use of the data logger
Operating and storage conditi ons	Temperature: -20 … +65 °C / -4 … 149 °F Humidity: 10 … 95 % RH, non-conde nsing

Delivery contents

- 1 x Radiation meter PCE-RAM 100
- 1 x USB-C cable
- 1 x user manual
- 1 x service bag

System description

Device

1. Radiation sensor
2. Rotary switch for radiation filter
3. Display
4. Keypad
5. USB-C port

Function keys

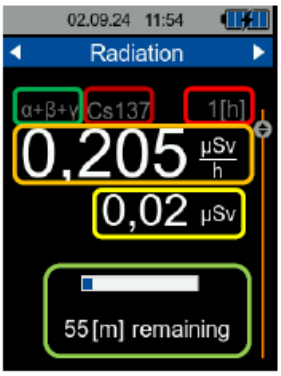
Key	Description	Function
⏻	ON/OFF	Turn meter on/off
MENU	MENU	Open main menu
⮌	BACK	Cancel, return, reset values
OK	OK	Confirm / value hold on/off
REC	REC	Open data logger dialogue
▲	UP	Navigate up / change between measurement, average and chart screen upwards
▼	DOWN	Navigate down / change between measurement, average and chart screen downwards
▶	RIGHT	Navigate right / change between measurement screen and pulse screen
◀	LEFT	Navigate left / change between measurement screen and pulse screen

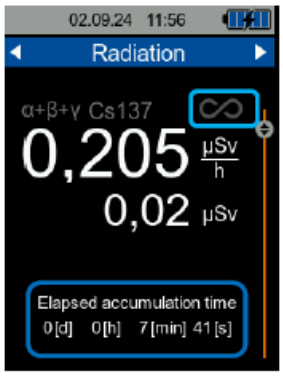
Display
With the navigation keys UP and DOWN, you can display three different screens:

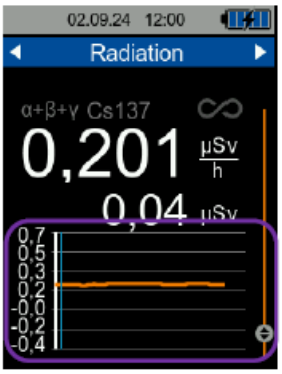
- Measurement screen
- Chart screen
- Average screen

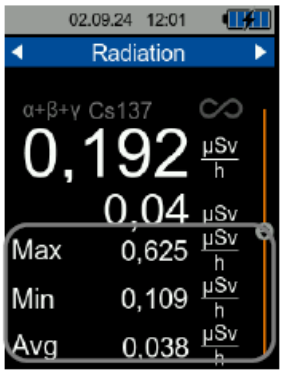
With the navigation keys LEFT and RIGHT, you can display the measurement screen or the pulse screen.

Measurement screen



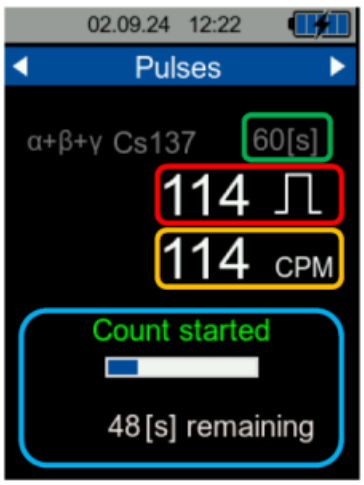


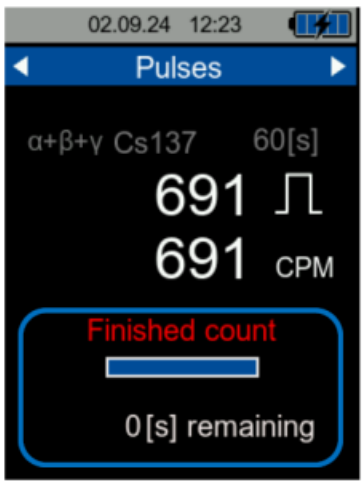




1. This indication shows the particles selected for measurement by the Geiger counter
2. Isotope used as a reference for the measurement calculation
3. Time used to calculate the radiation dose, in hours
4. Radiation measurement value and unit
5. Accumulated radiation measurement and unit
6. Remaining time to finish the calculation of the accumulated radiation dose
7. Chart showing radiation measurement values
8. Continuous measurement and storage indicator; duration of accumulated radiation measurement mode [see also 3.]
9. Shows the elapsed time since power on when continuous accumulated radiation mode is selected
10. Maximum, minimum and average value of the accumulated radiation measurement

Measurement pulse screen



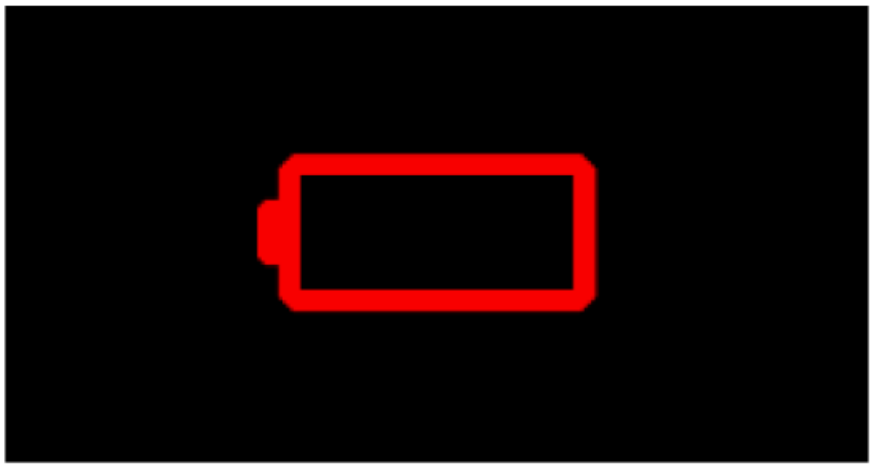


1. Period of time selected to measure the number of pulses [s]
2. Pulses counted in the period of time
3. Pulses received in counts per second or counts per minute
4. Count started time indication and dialogue showing the remaining time to finish the measurement
5. Count finished time indication

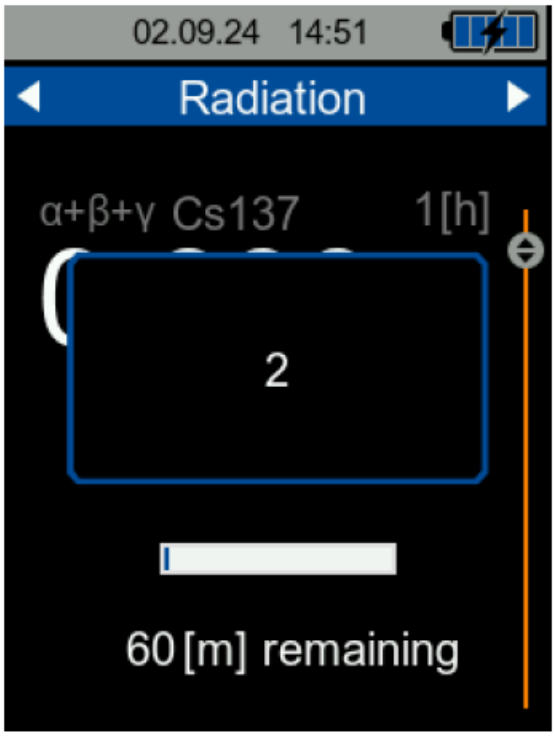
Getting started

Power supply
The PCE-RAM 100 radiation meter is powered by an internal rechargeable LiPo battery. With a fully charged battery, an operating time of approx. 8 hours is possible, depending on the brightness of the display and the use of the data logger. The battery is charged via the C-type USB socket at the bottom of the meter, using a suitable USB charger.

The current charge level of the battery is displayed in the status bar at the top right-hand side of the screen. As soon as the charge level of the battery is no longer sufficient for proper operation of the instrument, it switches off automatically and the screen shown below is displayed.



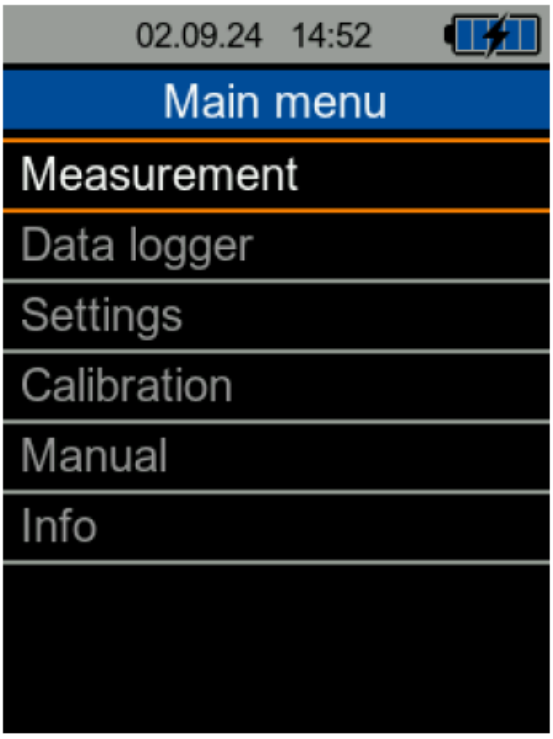
Power on/off
The meter is switched on by pressing the ON/OFF key. When the device is switched on, the start screen appears for approx. 1 second and then the device enters the measurement screen. To switch off the meter, press and hold the ON/OFF key. A dialogue with a countdown now appears on the display to announce that the instrument is about to power off.



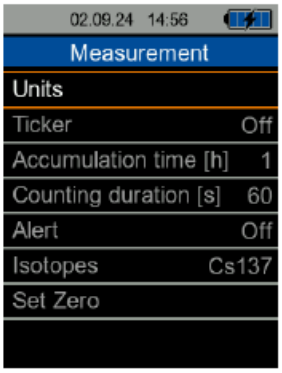
Operation

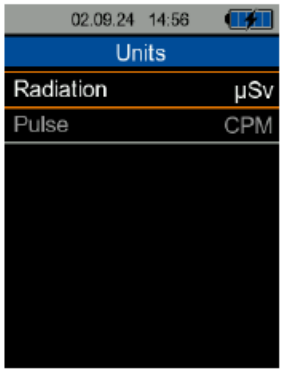
The main menu can be opened at any time by pressing the MENU key. The arrow keys are used to navigate between the menu items which can be activated with the OK key.
Submenus can be left with the BACK key. The main menu of the PCE-RAM 100 consists of the submenus Measurement, Data logger, Settings, Calibration, Manual and Info.

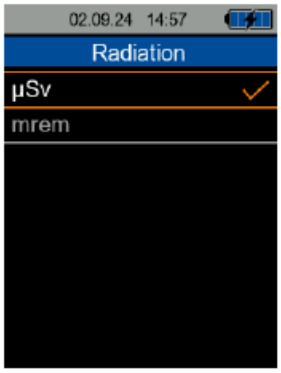
Main menu

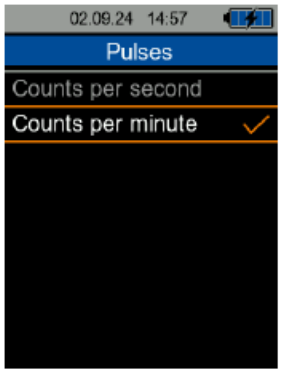


Measurement menu: Units
Selection of the units used for radiation and pulse measurement.

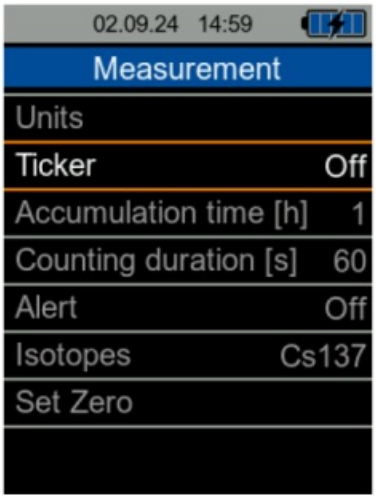


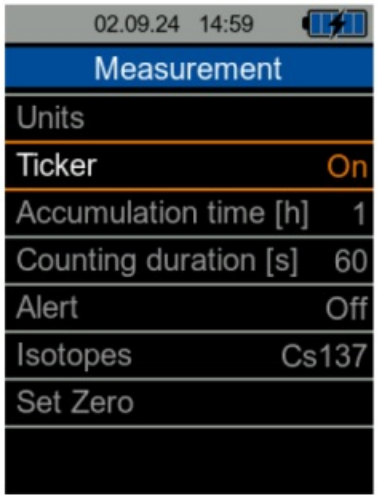




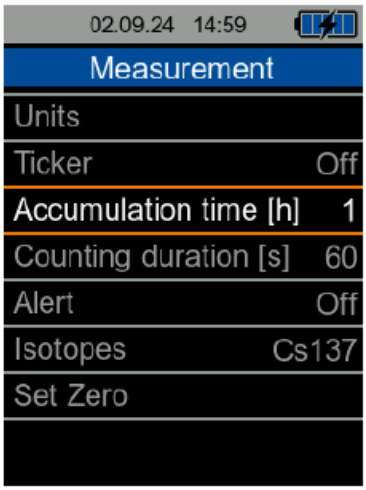


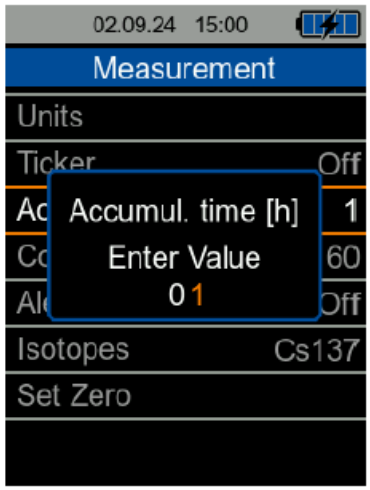
Measurement menu: Ticker
Used to enable or disable the ticker. If enabled, the ticker sounds when a particle reaches the sensor.

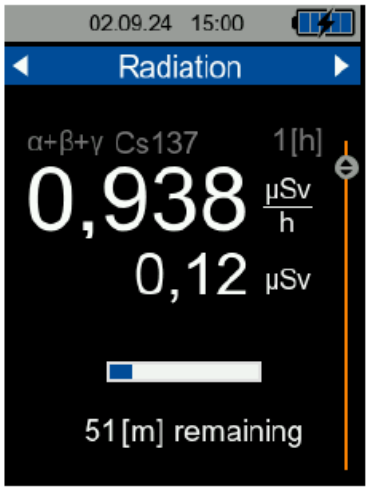




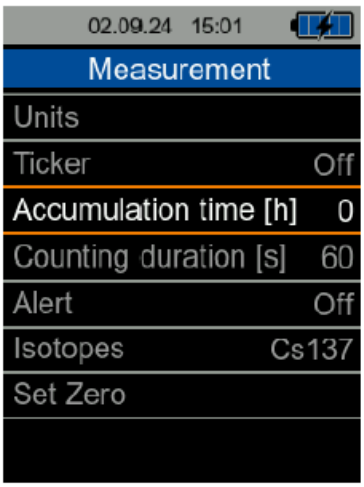
Measurement menu: Accumulation dose
Period of time used to calculate the accumulated radiation. The period of time can be set from 0 to 24 hours. On the measurement screen, the selected time, in minutes, appears at the bottom of the display.

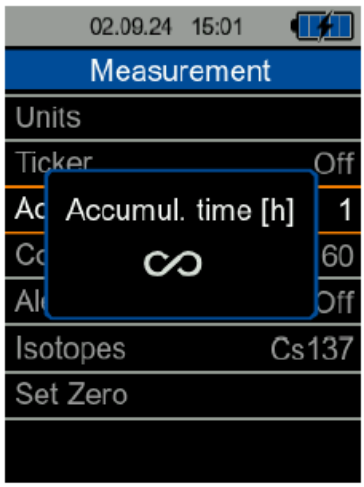


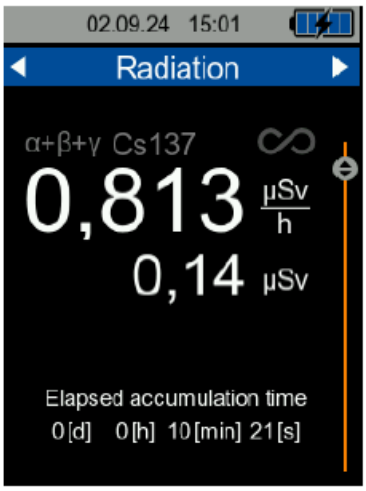




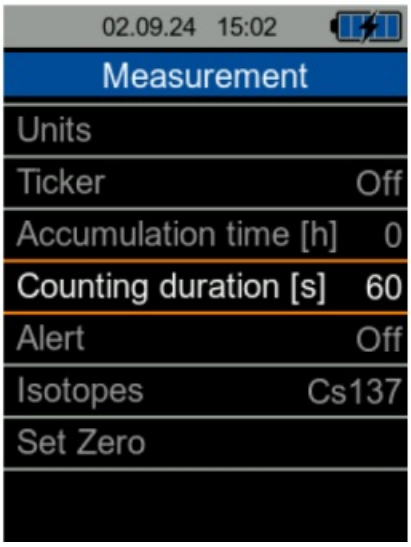
If the period of time is set to 0, there is no limit to the time used for the measurement of the accumulated radiation. An infinity symbol appears on the screen, and the accumulation time is set to 0. On the measurement screen, the elapsed time, in days, hours and minutes, appears at the bottom of the display.

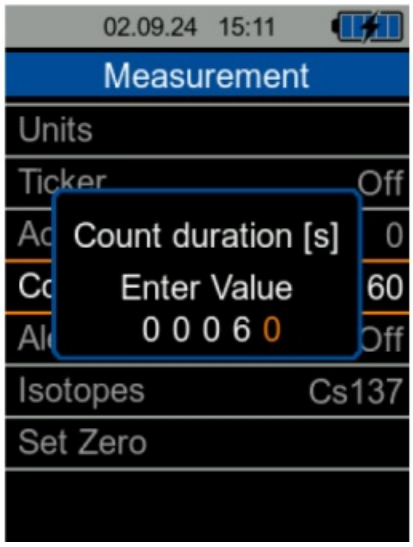




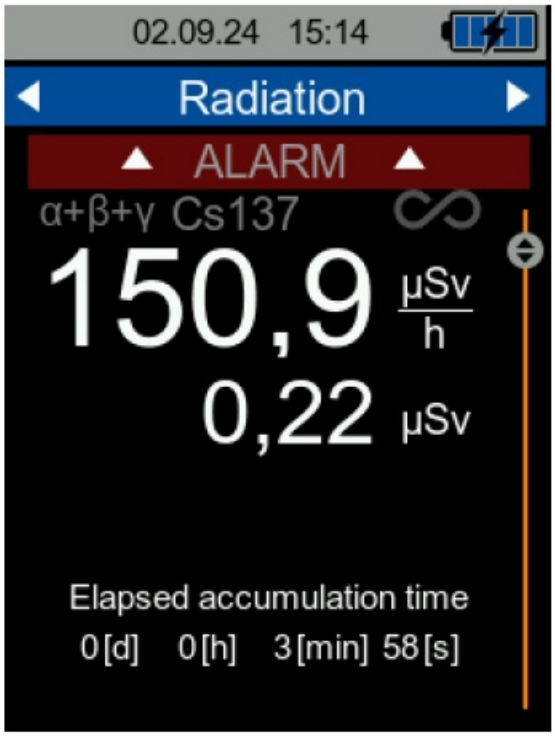


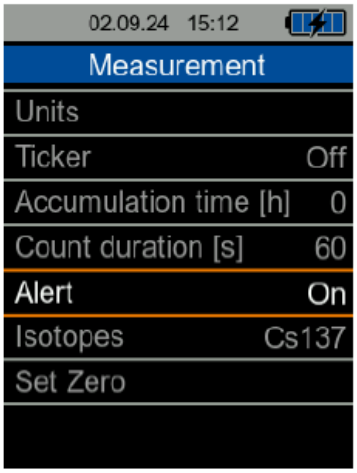
Measurement menu: Counting duration
Period of time used to calculate the accumulated received pulses. The value can be set from 0 to 99999 seconds.

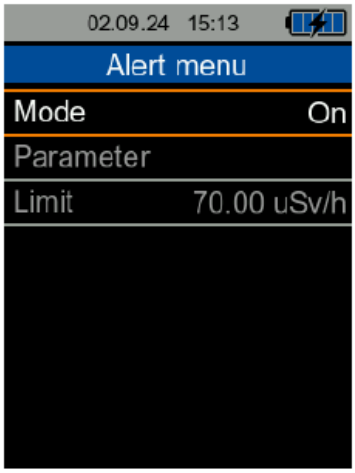


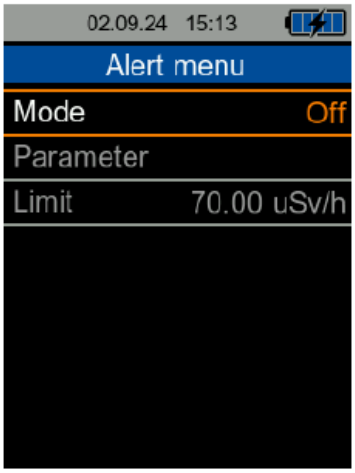


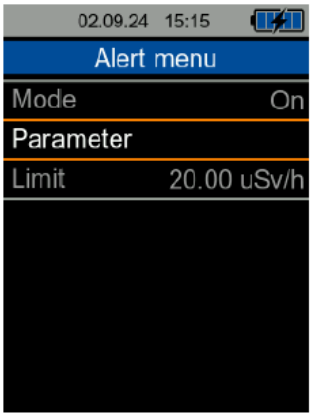
Measurement menu: Alert
Used to enable or disable the alert feature, set the alert mode and its limit values

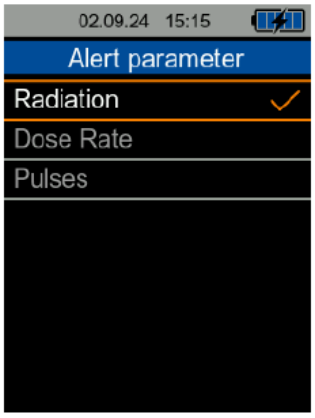


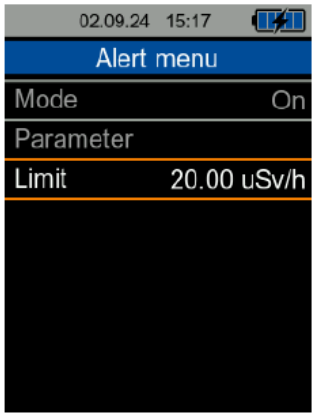


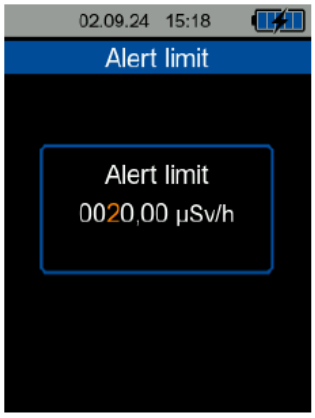




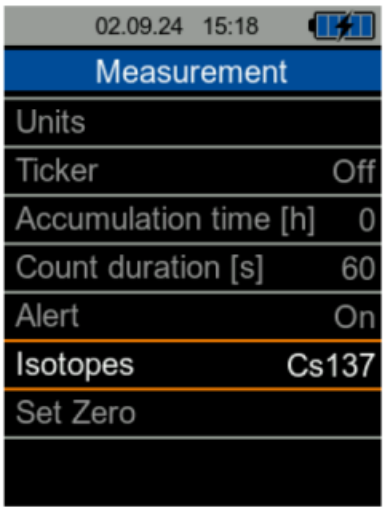


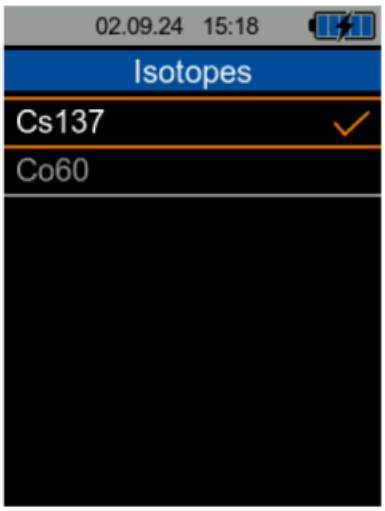






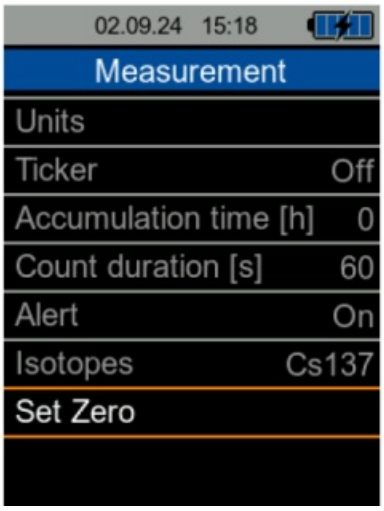
Measurement menu: Isotopes
Used to select the value of the sensitivity to calculate the radiation level. The selected isotope is then shown on screen.

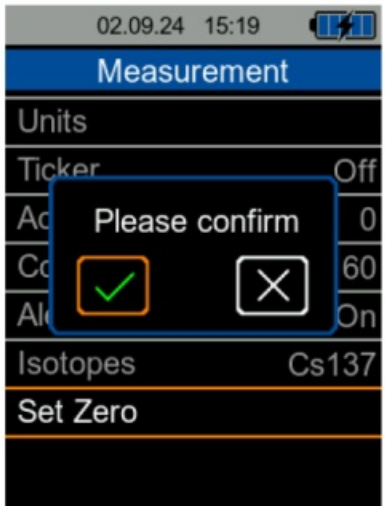




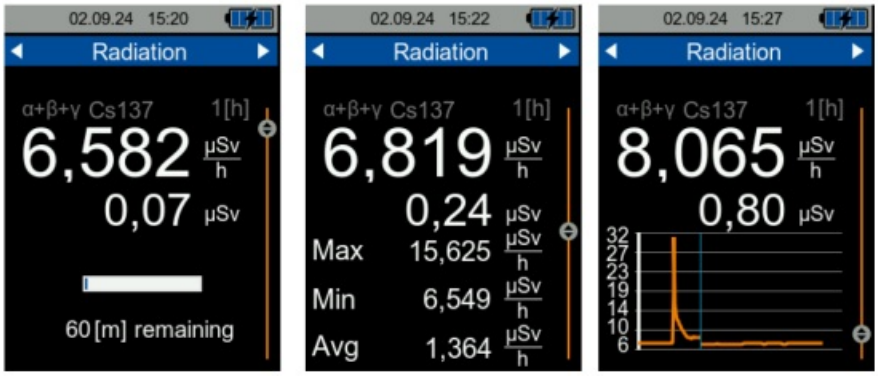
Measurement menu: Reset measurement
Reset the current measurement values:

- Radiation
- Accumulated radiation
- Pulses
- Accumulated pulses
- Maximum, minimum and average values
- Elapsed accumulation time
- Chart

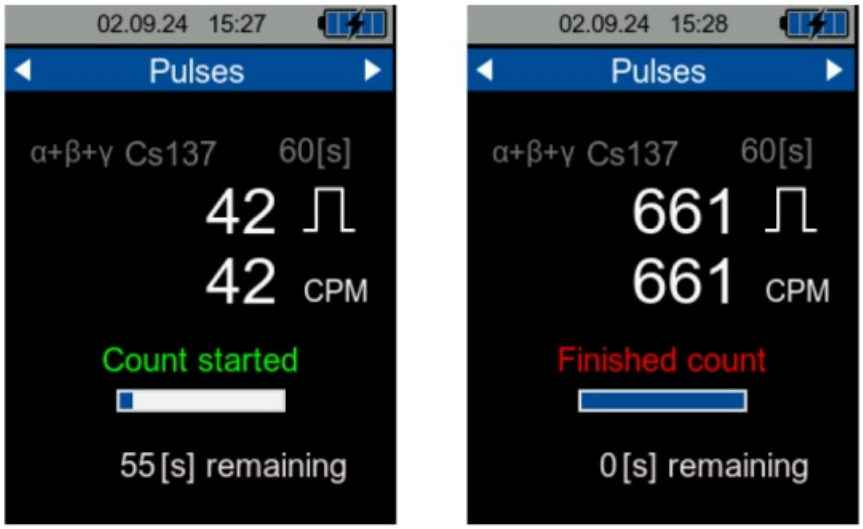




Measurement screens
Measured values are displayed on three different screens: the numerical screen, the statistical screen (maximum, minimum and average values) and the graphical screen. The screen can be changed using the navigation keys UP and DOWN. The following illustrations show the numerical, statistical and graphical screens.



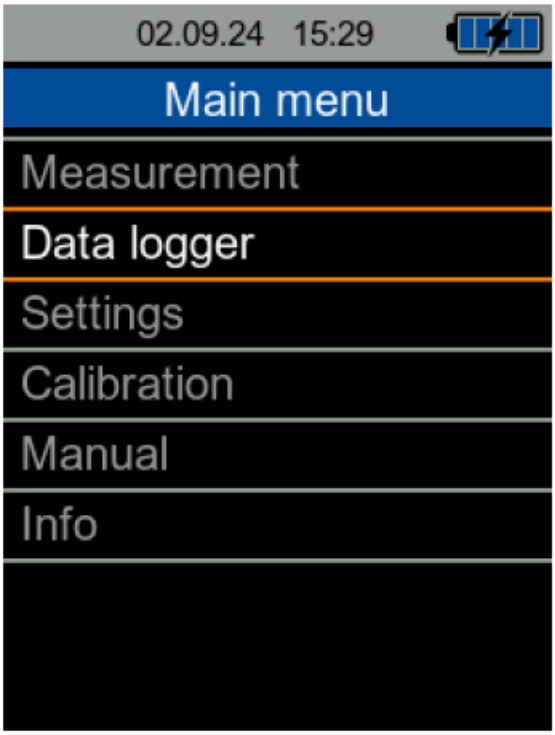
Using the navigation keys LEFT or RIGHT, you can switch between the radiation measurement screen and the pulse screen. The following illustrations show the pulse screen.



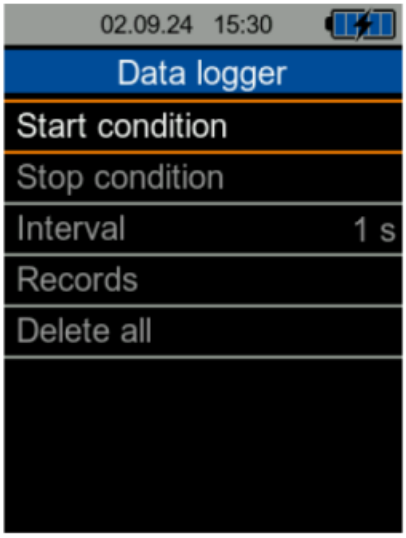
The following table shows the available formats of representation of the measured parameters.

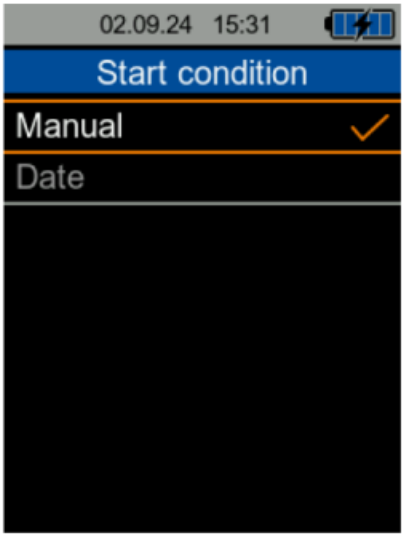
	Radiation	**Pulses**
Numerical	Radiation value, accumulated radiation value , radiation units, accumulated radiation units, selected sensor shield, selected isotope	Period of time selected to measure the number of pulses, pulses (particles) counted in the sele cted period of time, pulses counted in counts per second or counts per minute, count started time indication and di alogue showing the remaining time to finish the measurement, count finished time indication
Statistical	Maximum, minimum and average radiation v alue	
Graphical	Radiation value	

Data logger menu
The data logger of the instrument allows to record all measured parameters. The time period as well as the memory interval can be freely configured with the help of this menu.

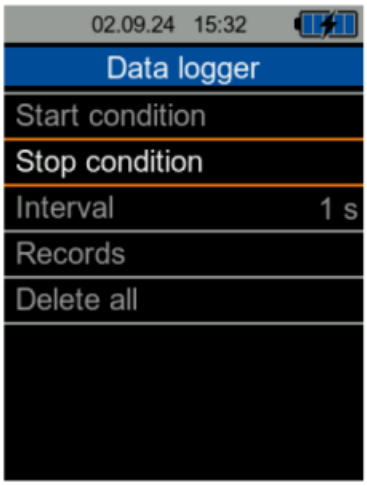


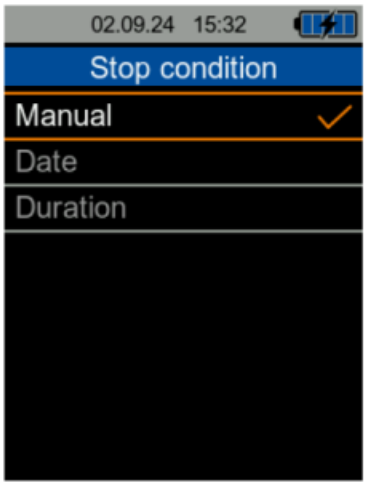
Data logger menu: Start condition
The data logger can be started either manually by pressing a key while you are in the data logger dialogue or automatically from a date that is set in this menu.



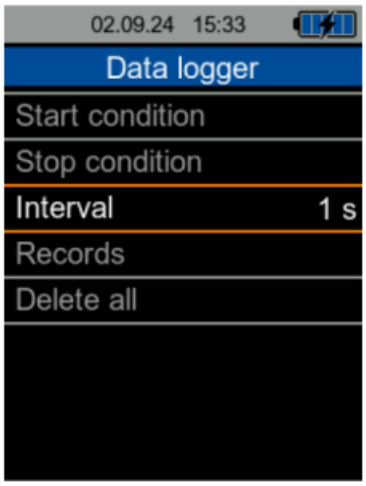


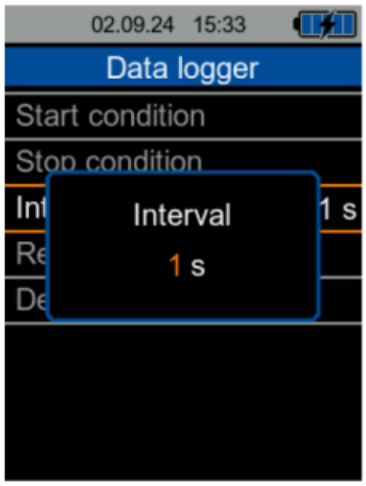
Data logger menu: Stop condition
Three different options are available for stopping the data logger. It can be stopped manually by pressing a key when you are in the data logger dialogue, on a certain date or after an adjustable time interval.



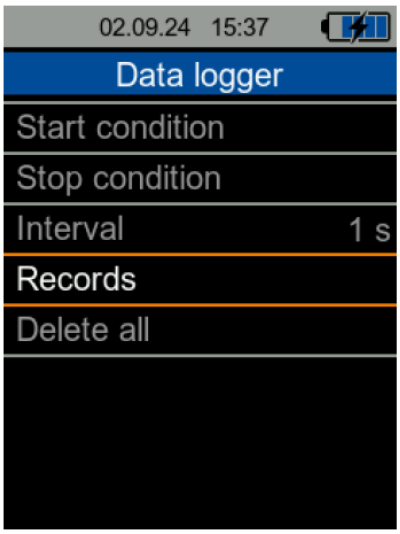


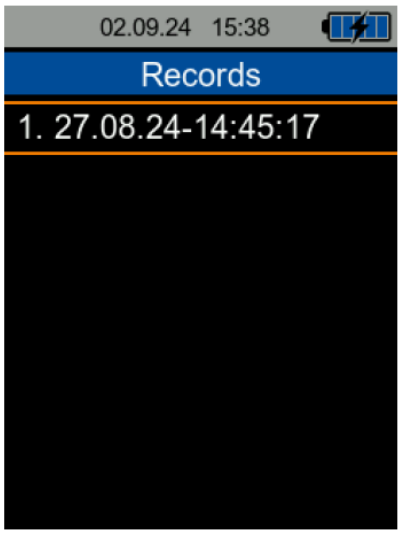
Data logger menu: Interval
The time interval for saving the measured values can be set to a value between 1 and 59 seconds via an input dialogue.

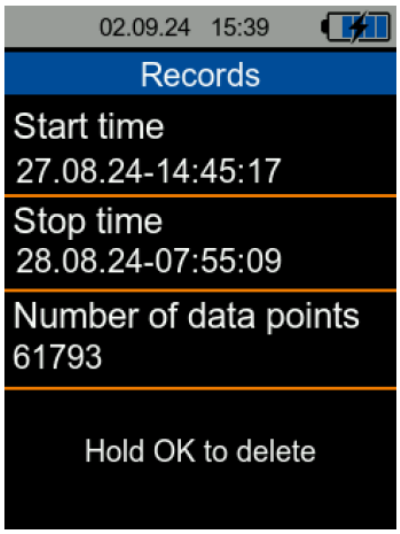




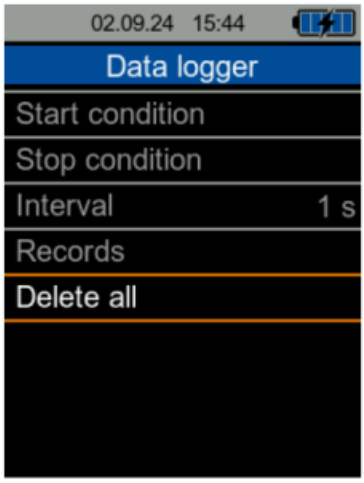
Data logger menu: Records
In this menu, all saved records are displayed and by selecting a record, information on the start and stop time as well as the number of saved data points are displayed. One data point reflects the one-time storage of all measured parameters.

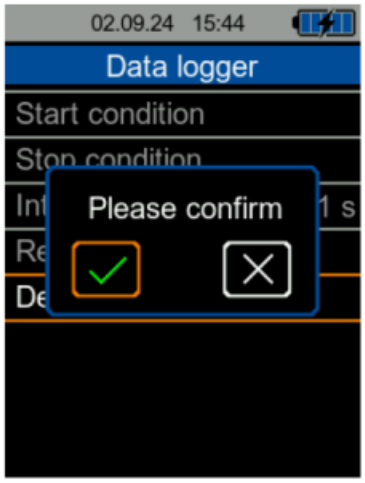




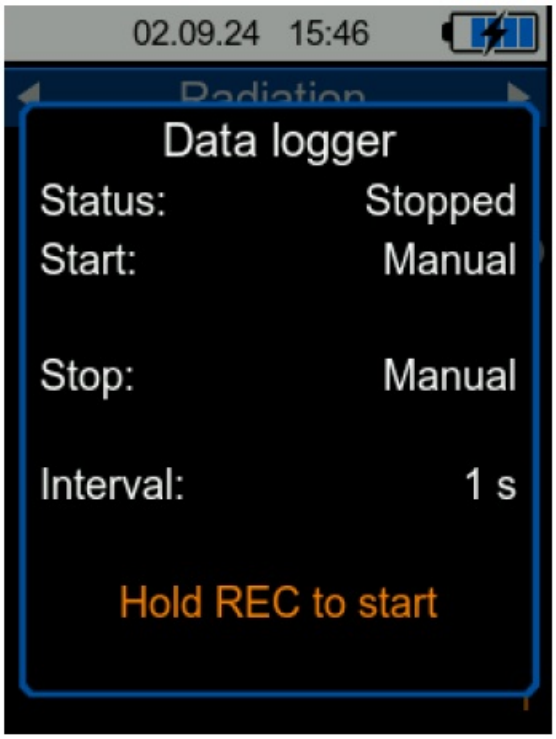


Data logger menu: Delete all
By selecting this menu item and confirming via the dialogue, all saved data records are deleted.

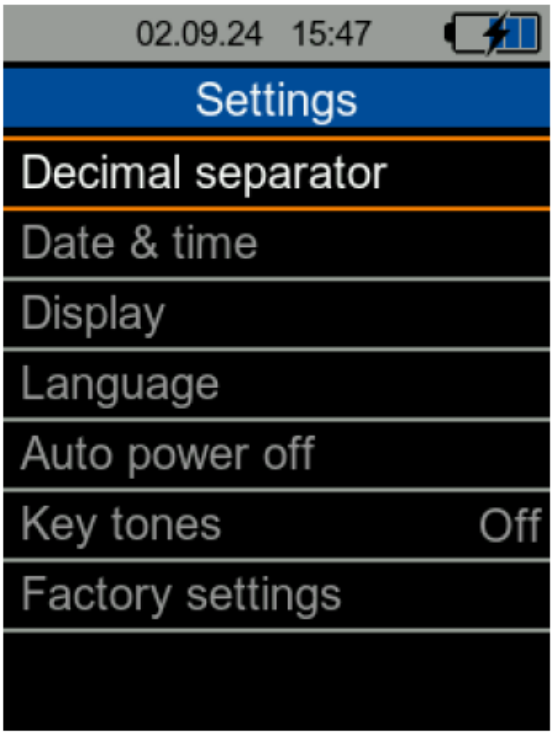




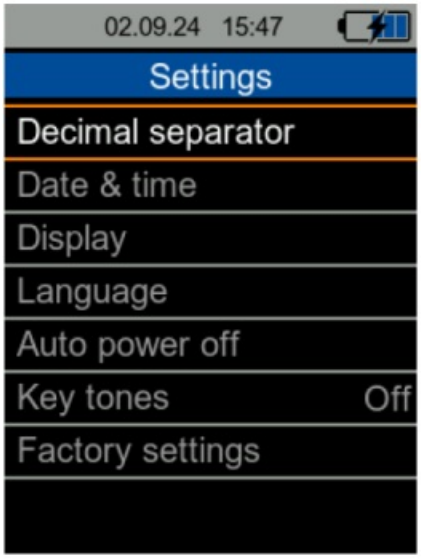
Data logger dialogue
The data logger dialogue can be opened in any screen via the REC key and shows the current settings as well as the status of the data logger. When the dialogue is open, a recording can be started or stopped at any time by pressing and holding OK. In addition, the data logger menu opens when the dialogue is open and the MENU key is pressed.

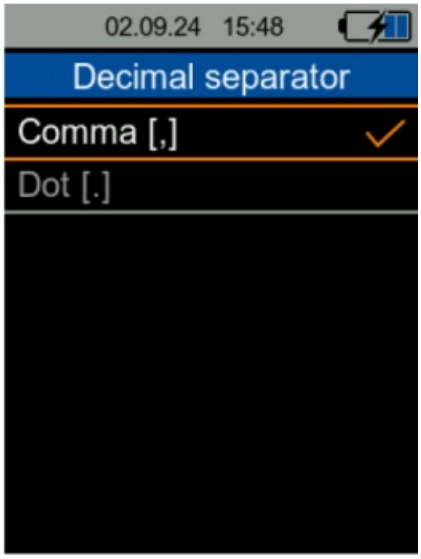


Settings menu
Settings menu screen

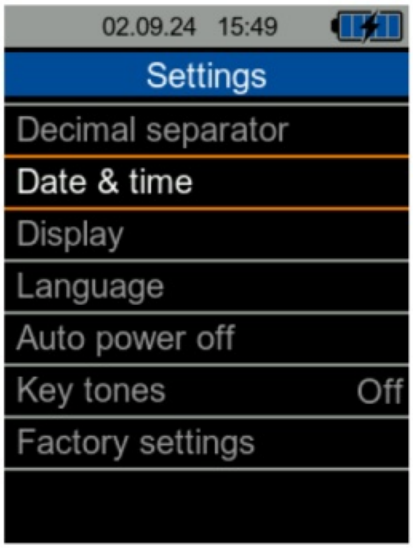


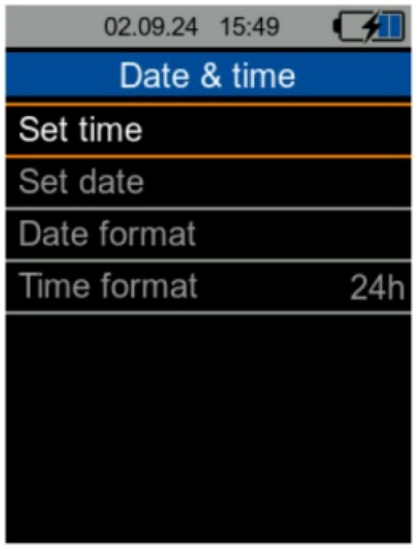
Settings menu: Decimal separator
Either a dot or a comma can be selected as the decimal separator for measured values.





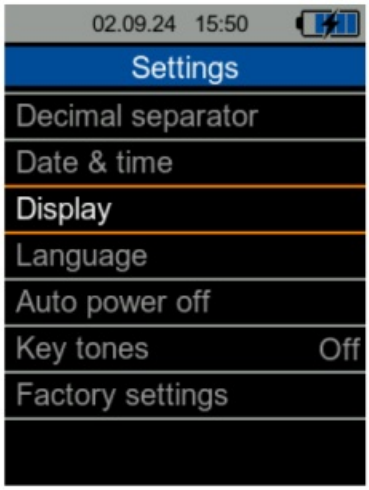
Settings menu: Date & time
The date and time can be set in this menu. In addition, the date and time format can be selected.

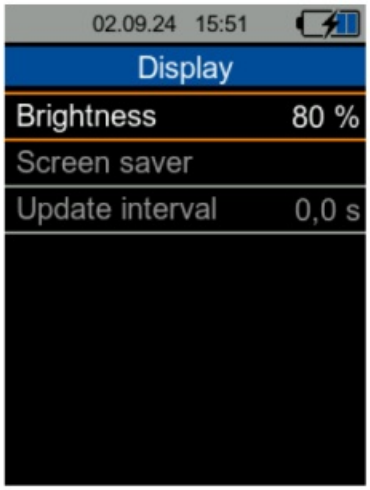




Settings menu: Display

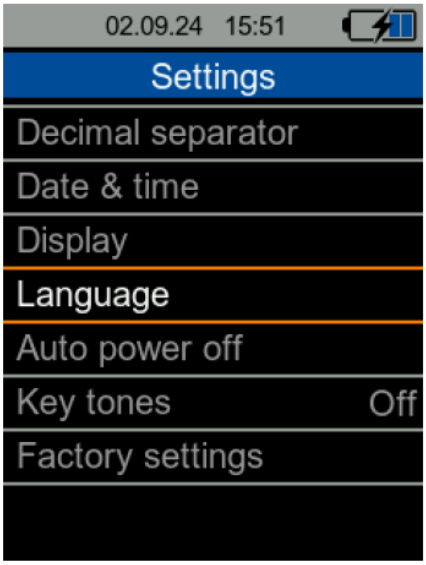
The display brightness can be adjusted between 50 and 100 %. In addition, an automatic dimming function can be activated. After the set time, the display is dimmed to a lower brightness to save power. Pressing any key resets the brightness to the originally set value.

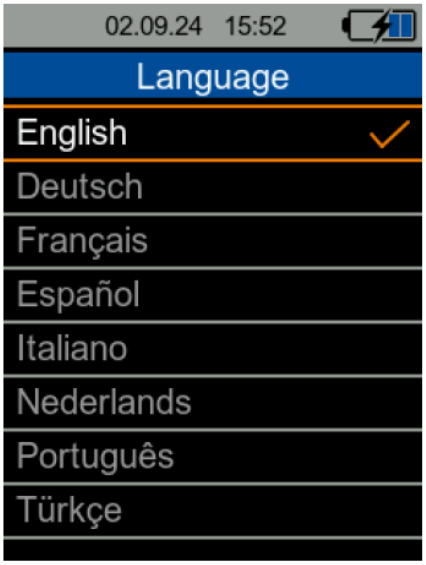


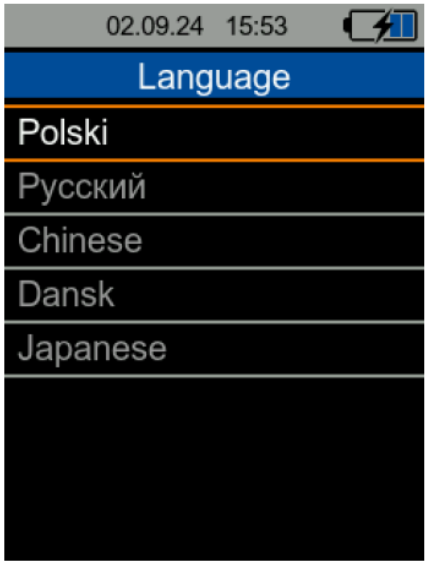


Settings menu: Language

The following menu languages are available: English, German, French, Spanish, Italian, Dutch, Portuguese, Turkish, Polish, Russian, Chinese, Japanese and Danish.

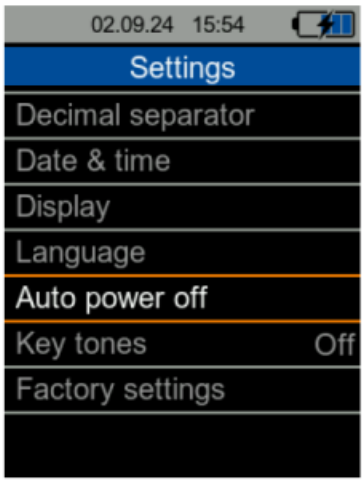


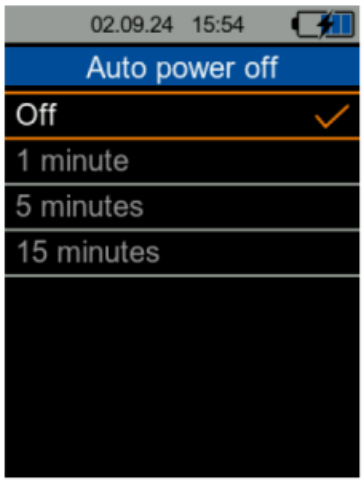




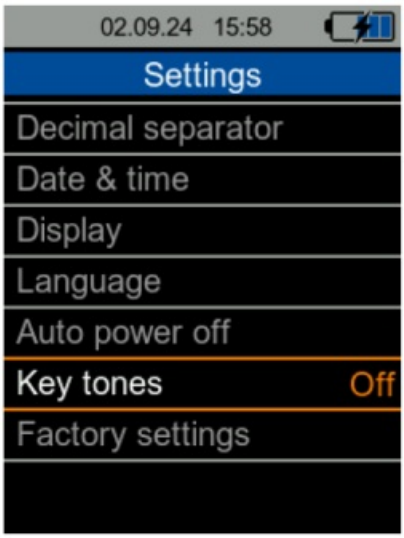
Settings menu: Auto power off
This option can be used to activate an automatic power-off function for the device. If enabled, the instrument switches off when no key has been pressed for a certain period of time. You can select 1 minute, 5 minutes or 15 minutes. In addition, automatic power-off can be completely deactivated.

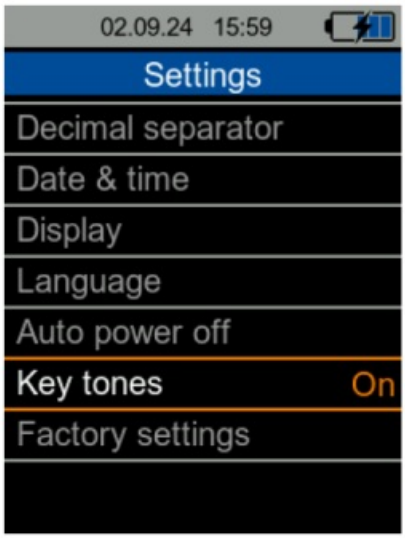
When no entries have been made for the time set in the auto power off option in the settings menu, the meter will turn off automatically to save energy. If you wish to use the meter again after auto power off, press the ON / OFF key to turn it back on.



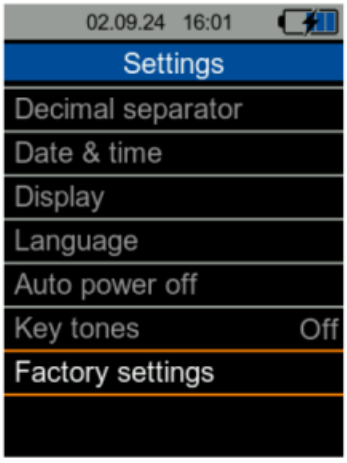


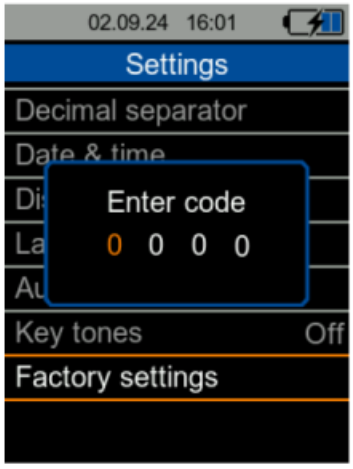
Settings menu: Key tones
This option enables or disables a tone generated by the device when a key is pressed.



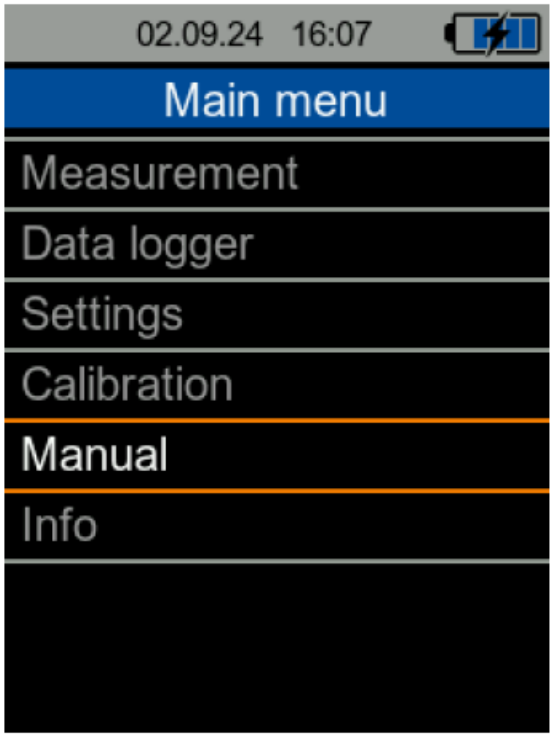


Settings menu: Factory **settings**
The factory settings option in the menu is password-protected. Please send the device to PCE Instruments for a factory reset. You will find our contact details at the end of the manual.

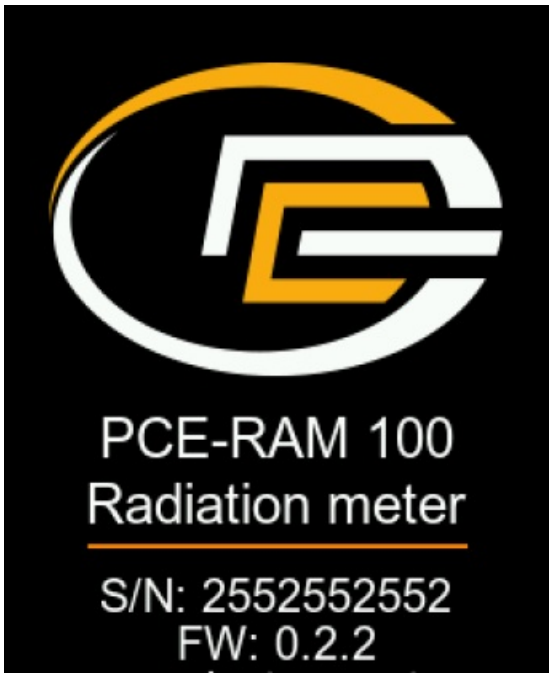




Manual
A QR code is displayed in this menu. The QR code can be scanned with an appropriate reader such as a mobile phone and leads directly to this user manual.



Info
This screen shows the instrument model name, serial number and firmware version.



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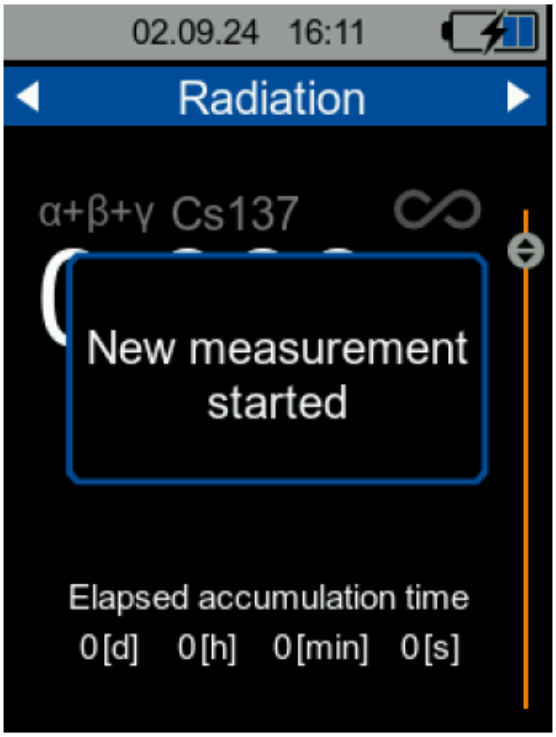
Measurement

Settings
Before starting a new measurement, select the following parameters: Unit of radiation (µSv/h or mrem/h)

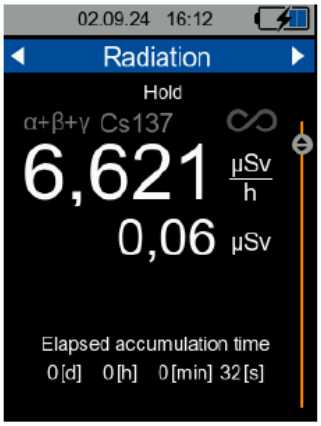
- Unit of the pulses (CPS or CPM).

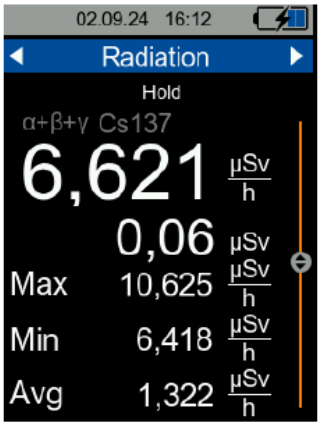
- Ticker on / off
- Accumulation time
- Counting duration
- Alert on / off
- Isotope

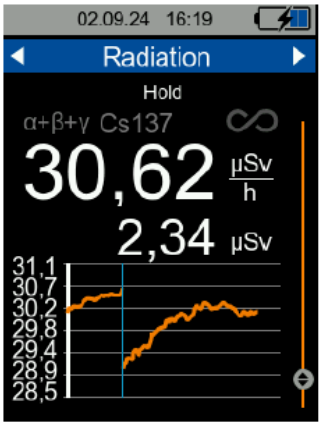
Zero adjustment
Press the BACK key for 2 seconds in any measurement screen to reset the measured value and start a new measurement. After pressing it, the following dialogue is shown on the screen:

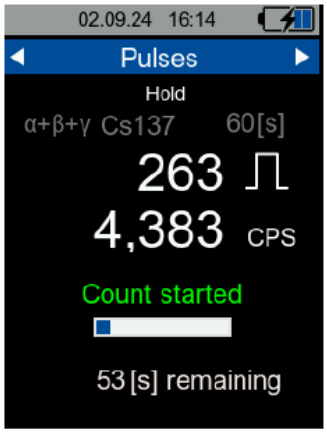


Hold measurement
Enabling or disabling to hold the current measurement values is possible by pressing the OK key for 1 second. This is possible in any measurement screen.
When the hold option is selected, “HOLD” is displayed at the top and central part of the screen. The measurement will then be stopped and the values of the last measurement are held on the screen.









Making a measurement
After setting all parameters, use the BACK key to return to the measurement screen.

Point the PCE-RAM 100 sensor toward the radiation source. On the measurement screen, you can see the values

of radiation and the accumulated radiation.

With the navigation keys UP or DOWN, you can display three different screens:

- Numerical screen
- Graphical screen
- Statistical screen

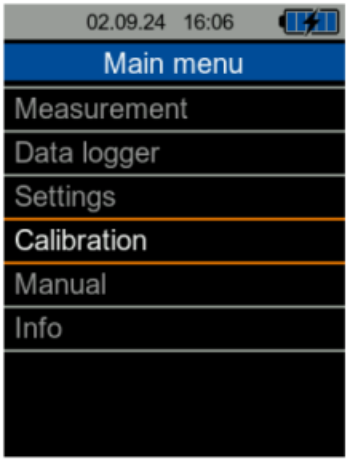
By navigating with the LEFT and RIGHT keys, you can display the measurement screen or the pulse screen.

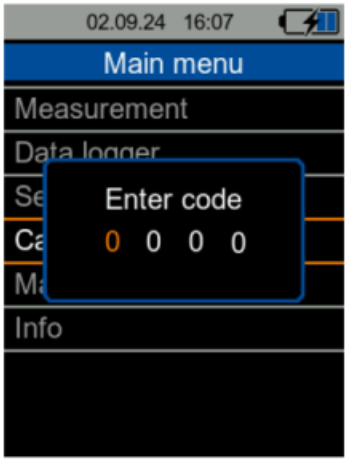
Press the BACK key for 2 seconds if a reset of all measurement values is needed.

Press the HOLD key for 1 second if you want to hold all measurement values.

Calibration

The calibration option in the menu is password-protected. If calibration is needed, please send the device to PCE Instruments. You will find our contact details at the end of the manual.





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.

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.

PCE Instruments contact information

United Kingdom

- PCE Instruments UK Ltd
- Trafford House
- Chester Rd, Old Trafford Manchester M32 0RS
- United Kingdom
- Tel: +44 (0) 161 464902 0
- Fax: +44 (0) 161 464902 9
- info@pce-instruments.co.uk
- www.pce-instruments.com/english

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

Documents / Resources

	PCE INSTRUMENTS PCE-RAM 100 Geiger Counter [pdf] User Manual PCE-RAM 100 Geiger Counter, PCE-RAM, 100 Geiger Counter, Geiger Counter, Counter

References

- Anasayfa - Cihazları
- France.fr : Explore France and its wonders - Explore France
- iberica.es
- Make an offer on the domain instruments.co.uk - Domains.co.uk
- Computer Instruments | Home
- Discover Italy: Official Tourism Website - Italia.it
- User Manual