RadiaCode

Z E R Ø

Radiation Detector

USER MANUAL

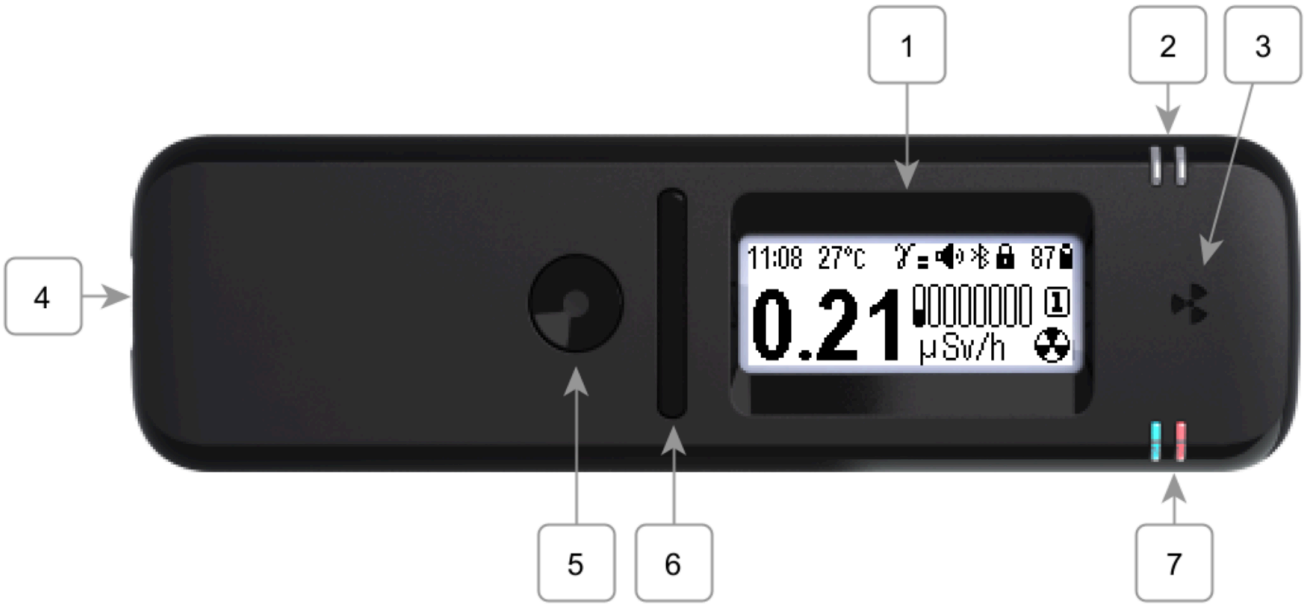
The developer continuously improves the firmware. Please use the latest version of the manual

RADIACODE LTD

Contents

Quick Start

Radiacode ZERO is a portable wide-range radiation detector and dosimeter for real-time radiation assessment. The device measures gamma and X-ray dose rate, accumulates dose, automatically logs measurements, and alerts you to radiation hazards.



Step 1: Unboxing and Charging

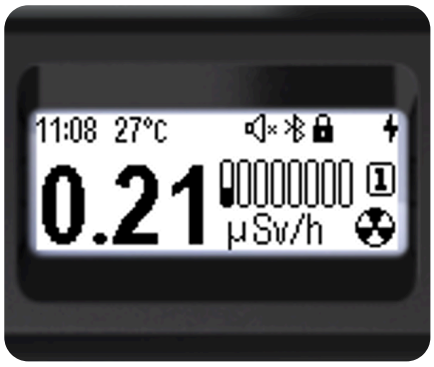
Remove the device from its packaging, verify its integrity, and check completeness. Connect a USB Type-C cable to a charger (5 V, 0.5 A or higher) or a computer USB port. Wait for a full charge — the blue indicator will turn off.

> If the device has been brought in from the cold, leave it in its packaging at room temperature for two hours before opening. Otherwise, moisture condensation may cause a malfunction.

Step 2: Power On

Press and hold the round button (3 seconds). The device will start in Monitor mode and begin estimating the dose rate.

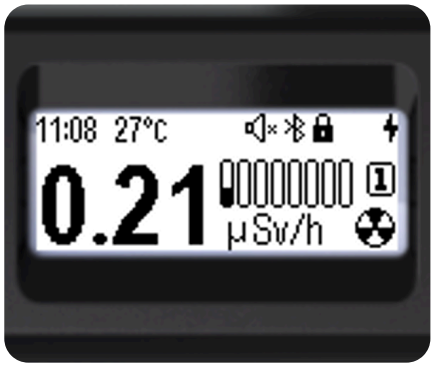
- Press and hold the round button until the device turns on (at least 3 seconds).
- On startup, the device will be in Monitor mode.
- Depending on settings, a startup sound, vibration, and backlight will be activated.



Step 3: Reading the Display

The screen shows the current dose rate estimate. While data is insufficient, the digits will be hatched. After a few seconds, the estimate becomes reliable.

- When data is insufficient, the digits are hatched with light diagonal stripes.
- When the estimate is reliable, the digits are fully filled in.



Step 4: Connecting to a Smartphone

Install the RadiaCode app from Google Play, the App Store, or the RadiaCode website at radiacode.com/downloads. Connect the device via Bluetooth for extended features: Google and OSM maps with GPS coordinates, charts, history, and external database storage.

Additionally recommended:

- Set the current time (Settings → Time)

- Select the menu language (Settings → Language)
- Configure the display backlight and orientation
- Configure sound, vibration, and LED signals
- Update the firmware

Safety

Important Warnings

Keep the device in places out of reach of children and pets.

Do not disassemble the device. Repairs must only be performed at authorized service centers.

Operating a malfunctioning device is unsafe. If a fault is detected, contact the manufacturer's service center.

Handling Precautions

Temperature. Avoid exposure below −20 °C or above +45 °C. Extreme temperatures reduce battery capacity, shorten battery life, and may degrade detector performance.

Moisture. Despite IP64 protection, avoid getting the device wet. Water ingress voids the manufacturer's warranty. If water gets on the device, wipe it with a dry cloth.

Condensation. If the device has been brought in from the cold, leave it in its packaging at room temperature for two hours before opening. Otherwise, moisture condensation may cause a malfunction.

Handling. Do not grip the device tightly; press the buttons gently. Handle with care — the display can crack or get scratched.

Impacts. Drops and rough handling may cause serious damage to the device's electronics.

EMI. Avoid strong electromagnetic fields and electrostatic discharge. Household electronics, cordless phones, and routers may interfere with the device.

Dust. Do not use or store the device in contaminated or dusty environments.

Heat. Avoid contact with hot objects and open flames. The battery may ignite if overheated.

Charging. Use only USB chargers rated at 5 V and at least 0.5 A, or a computer USB port. Do not use faulty chargers. Connect the USB cable carefully. Damage caused by improper

charging is not covered by the manufacturer's warranty.

Firmware update. Do not disconnect the device during a firmware update — interrupting the process may cause a malfunction that can be resolved by contacting the manufacturer's support.

Radioactive contamination. Avoid contaminating the device with radioactive materials. When working in potentially contaminated areas, place the device in a sealed bag.

About The Device

Technical Specs

Parameter	Value
Measured Quantity	H*(10) — Ambient dose equivalent rate
Units	Sv, rem, CPS / CPM
Detector	Plastic scintillator 14×14×14 mm with SiPM (temperature compensated)
Alarming	Vibration, LEDs, audible sound
Alarm thresholds	6 (2 each for CPS, dose rate, dose)
Type of radiation	Photons (gamma, X-ray)
Energy range (dose measurement)	100 keV — 3.0 MeV
Energy range (indication)*	30 keV — 3.0 MeV
Count rate range (Cs-137)	0 — 144 MCPS
Dose equivalent value	0.01 µSv/h — 9000 mSv/h
Dose rate accuracy	±20%
Accumulated dose	0—100 Sv, accuracy ±20%
Sensitivity Cs-137 (662 KeV)	16 CPS/(µSv/h)
Sensitivity Co-60 (1250 KeV)	8 CPS/(µSv/h)

Display update period	0.5 s
Memory	≈1000 hours (non-volatile)
Battery life	Up to 200 hours
Battery	Li-Pol 3.7 V, 1500 mAh
Charging: voltage / max current / time	5 V / 750 mA / ≈4 h
Max USB consumption	800 mA
Protection	IP64 (dust and splashing water)
Operating temperature	-20...+45 °C
Max humidity	85%
Wireless	BLE 5.2
Wired	USB 2.0+, Type-C
Display	Monochrome LCD 128×48, 34×13 mm, FSTN, Transflective, Positive
DImensions (W×H×D)	127×34×21 mm
Weight	76 g

** In the 30–100 keV range, the device detects radiation, but dose rate readings may deviate from actual values due to the detector's energy response characteristics. In other words, the device will detect the presence of radiation but will measure it with greater uncertainty than in the primary range of 100 keV — 3.0 MeV.*

System Requirements

Computer: Windows 8/10/11, 2 GB RAM or more, 1 GB free disk space, USB port, 1024×768 display or better.

Android: version 6.0 or higher.

iOS/macOS: iOS 17.0+ / macOS 14.0+ (Mac with Apple Silicon).

What Radiacode ZERO Can Do

Radiacode ZERO is a compact radiation detector and dosimeter based on a plastic tissue-equivalent scintillator with a silicon photomultiplier (SiPM) and temperature compensation. Thanks to adaptive data processing, the device provides fast response to changes in the radiation background and high reliability at high doses of ionizing radiation. The device is suitable for field work, inspection of various objects, and continuous monitoring.

With Radiacode ZERO, the following is always available:

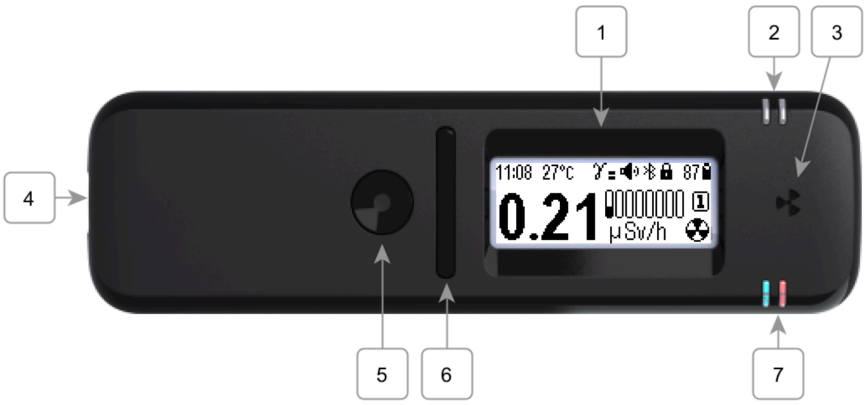
- Area survey and inspection of various objects and materials
- Continuous radiation monitoring
- Automatic data logging to device memory; time-stamped database
- Accumulated dose monitoring
- Radiation source search
- Radiation hazard and environment change alerts
- Standalone operation or paired with a smartphone/computer
- Wireless data transfer; processing in applications for iOS, Android, macOS, and Windows

Device Features:

- Fast response thanks to the plastic scintillator with SiPM and adaptive data processing
- Continuous estimation of dose rate, accumulated dose, and detector count rate on Range 1 — as long as the device is on. Estimation and data accumulation are independent of the display mode
- Wide measurement range thanks to two operating modes and a tissue-equivalent scintillator
- IP64 — dust and splash protection
- Extended battery life (up to 200 hours)
- 6 independent alarm thresholds (2 each for count rate, dose rate, and dose)
- Non-volatile memory for approximately 1000 hours of observations; transfer via USB and Bluetooth; external database storage

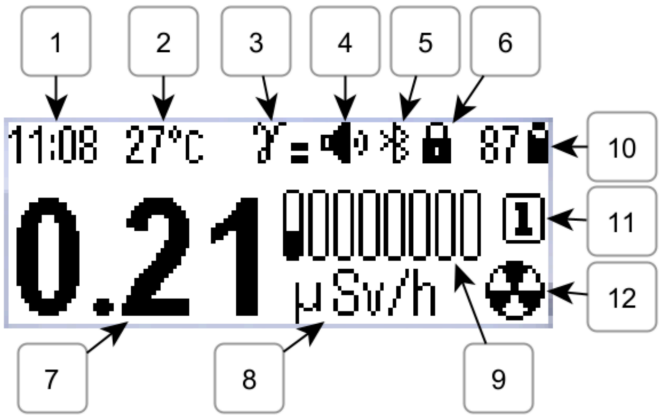
- GPS coordinate tagging and display on Google and OSM maps (with a smartphone)
- Apps for PC Windows and macOS, apps for Android and iOS
- Ongoing development; firmware updates
- Energy-efficient graphic display with backlight; adaptive screen orientation
- Audible, visual, and vibration alerts with smartphone mirroring

Device Components



1. LCD display
2. Ambient light sensor
3. Location of the radiation sensor, digital thermometer, and orientation sensor
4. USB Type-C port for charging and data exchange
5. Power/confirm button
6. Rocker buttons (up and down)
7. LED indicators: charging (blue); photon detection (green in normal conditions, red when an alarm threshold is exceeded)

Main Display Indicators



1. Current time set on the device
2. Current sensor temperature
3. Threshold exceedance indicator and threshold level
4. Sound indication status
5. External device connection status (Bluetooth, USB)
6. Key lock indicator

7. Current radiation level estimate
8. Radiation level units
9. Graphical dose rate indicator
10. Battery level and charging status
11. Operating range indicator (1 — pulse mode, 2 — current mode)
12. Selected display mode indicator

Controls and Display

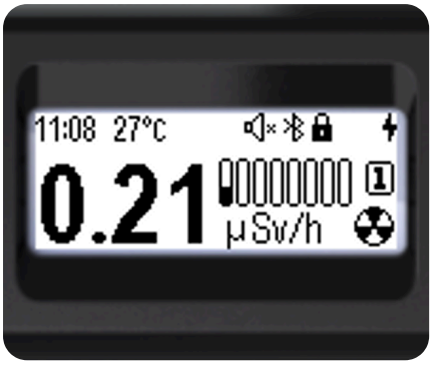
Display

Monochrome graphic LCD, 128×48 pixels, 34×13 mm, FSTN, Transflective, Positive

The display has a backlight for use in the dark. Automatic ambient light detection ("Auto" mode): the backlight activates only on a button press; in bright light (e.g. sunlight), the backlight will not turn on. The backlight has ten brightness levels. Screen orientation: Auto / Right / Left. Configured via the Settings menu.

The display is used to show: device status, graphical dose rate indicator, control menu, settings menu, Monitor mode (dose rate estimation), Dose mode (accumulated dose estimation), and Search mode (real-time data visualization). The status bar is at the top of the display. Its content depends on the selected display mode.

Menu Navigation



- Briefly press the round button to enter the menu.
- The name of the current menu item is shown at the top (e.g. "Monitor").
- Menu item icons are arranged vertically.
- The active item is highlighted in inverse — light on a dark background.

Seven items are available on the main menu level. Only three items are visible on screen at a time; the rest become accessible by scrolling with the rocker buttons. The menu is cyclic at all levels.

Cyclic navigation order when pressing the "down" button:

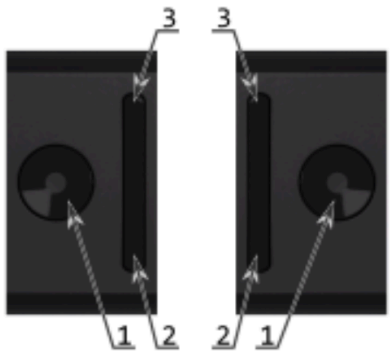
→ → → → →

To select an item — short press on the rocker buttons. To confirm — short press on the round button.

To exit submenus, use [< Back] or [<< Menu quit].

Buttons

Radiacode ZERO has an intuitive menu system and is operated using three buttons. Audible and vibration feedback assist in operation. Which rocker button is "up" and which is "down" depends on the screen orientation setting.



The device in the left hand and in the right hand:

1. Power/confirm button, round.

2. "Down" rocker button.

3. "Up" rocker button.

Two types of button presses: short and long (at least 3 seconds).

A long press of the round button [1] is used for: powering on, unlocking/locking the rocker buttons, confirming the alarm summary review, and certain settings screens.

A short press of the round button is used for: calling the menu, returning from the menu, confirming a selection, cycling through options, and dismissing alarms.

The rocker buttons auto-lock after 5, 10, 15, or 30 seconds of inactivity. With backlight duration set to 2 or 5 minutes, the rocker buttons lock after 30 seconds of inactivity. Unlock by long-pressing the round button. In Auto backlight mode, the backlight will not turn on in bright light. Lock again with a short press of the round button.

A short press of the rocker buttons [2, 3] is used for: navigating between menu items, setting numeric values, and additional options in various modes.

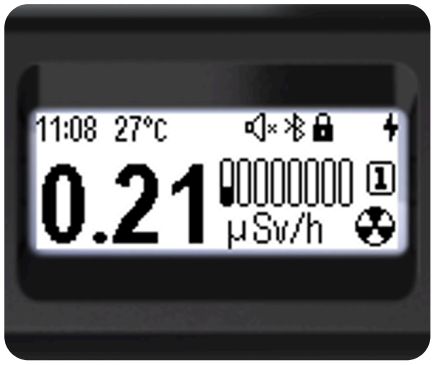
A long press of the rocker buttons [2, 3] serves different purposes in different contexts. In menus, a long press causes rapid scrolling through items. In display modes, a long press of the "up" rocker button toggles the audible indication on and off.

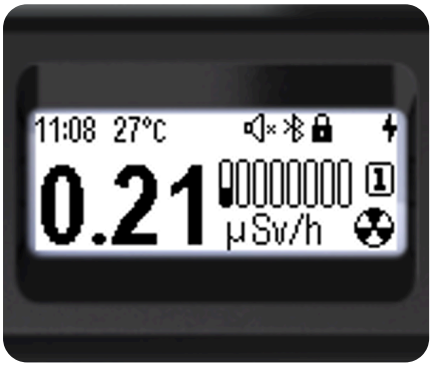
When navigating any menu level, the selected item is displayed in inverse — light on a dark background.

Every button press is accompanied by a short sound and vibration (if enabled). Button press sound and vibration can be disabled.

Power On and Off

- Press and hold the round button until the device turns on (at least 3 seconds).
- On startup, the device will be in Monitor mode.
- Depending on settings: startup sound, vibration, and backlight.

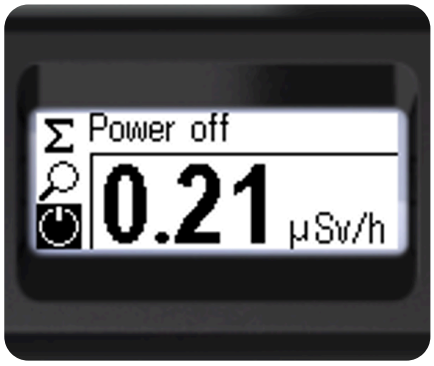




- To power off, briefly press the round button to bring up the menu.
- The lock icon indicates that the rocker buttons are locked. To unlock, press and hold the round button (3 s).

Lock icon:  - rocker buttons are locked.

- Using the rocker buttons, navigate to the Power off icon.
- A short press of the round button will power off the device.
- Depending on settings, a shutdown sound will play. The screen will turn off.

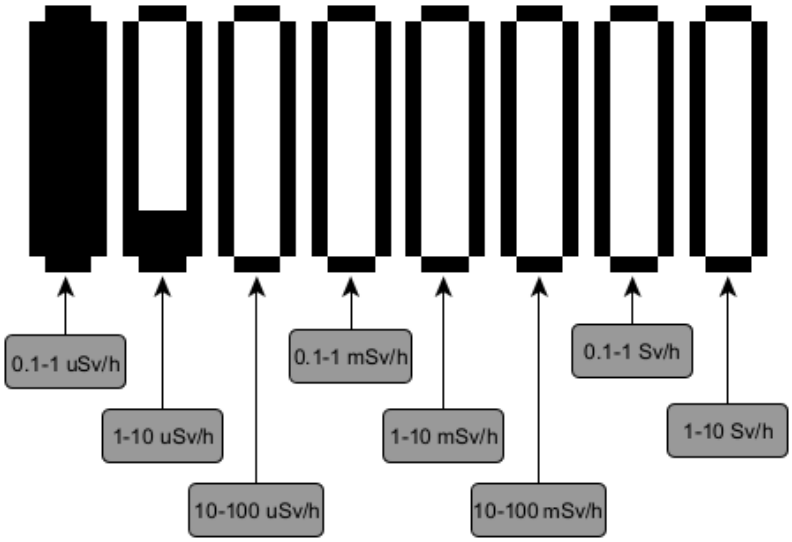


Power off icon: 

Icons & Symbols

Logarithmic Indicator

In all display modes except settings, a logarithmic indicator is shown. Each vertical bar represents the value (dose rate, dose, count rate) on a logarithmic scale. Adjacent bars differ by a factor of 10:



Status Bar Icons

Icon	Description
	100% to 90% charge, device running on battery
	Less than 90% charge
	Less than 80% charge
	Less than 70% charge

	Less than 60% charge
	Less than 50% charge
	Less than 40% charge
	Less than 30% charge
	Less than 20% charge
	Less than 10% charge — recharge required
	Charging in progress
	Fully charged, powered externally
	Rocker buttons locked
	USB connection established
	Bluetooth connection established
	All sounds off
	Sounds on

	Count rate Alarm 1
	Count rate Alarm 2
	Count rate out of scale
	Dose rate Alarm 1
	Dose rate Alarm 2
	Dose rate out of scale
	Dose Alarm 1
	Dose Alarm 2
	Dose out of scale
	Low temperature threshold alarm
	High temperature threshold alarm
	Pulse mode indicator
	Current mode indicator

Note: on Radiacode ZERO, the battery percentage is displayed next to the graphical battery icon.

Menu Icons

Icon	Item	Description
	**Settings**	Device settings menu
	**Monitor**	Current dose rate or count rate display
	**Dose**	Accumulated photon radiation dose (gamma and X-ray)
	**Search**	Search mode — count rate displayed as a graph
	**Power off**	Power off the device
	**Device info**	Serial number and firmware version

Indication: Sound, Vibration, LED

Radiacode ZERO has built-in sound and vibration sources for confirming button presses and indicating events and alarms. LED indication is provided for remote monitoring.

Sound may accompany:

- Power on and off
- Button press
- Bluetooth connection established
- Photon detection
- Alarm threshold exceedance
- Low battery warning
- Response to a "Find device" request

Vibration may accompany:

- Power on and off
- Button press
- Alarm threshold exceedance
- Response to a "Find device" request

LED indication:

- Battery charging — blue, continuous glow
- Photon detection in normal conditions — green flash
- Photon detection during alarm — red flash

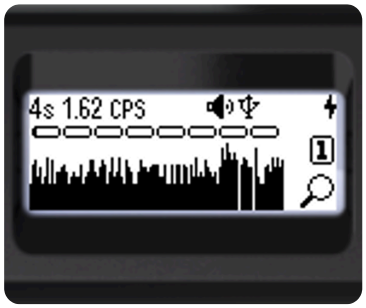
Signals can be toggled on/off by group:

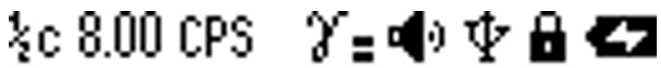
- All sounds
- Button press sound
- Photon detection sound
- All vibration types
- LED indication

Display Modes

Search

A graphical mode for rapidly locating a radiation source or an area with elevated radiation levels.





Status bar

- Averaging time per bar: ½, 1, 2, 4 seconds
- Current count rate value; units (CPS/CPM)
- Alarms; sound; connection; lock; battery

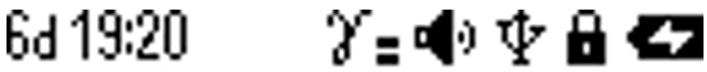
Lower area: graphical count rate display, search graph, range, mode icon.

Hotkeys:

- Short ▲ — increase averaging time
- Short ▼ — decrease averaging time
- Long ▼ — clear screen, start new search session
- Long ▲ — toggle sound on/off

Dose

Mode for displaying accumulated dose.



Status bar

- Time since dose accumulation started: days, hours, minutes
- Detector temperature; alarms; sound; connection; lock; battery

Lower area: dose value, graphical indicator, range number, units (Sv or rem), mode icon.

Hotkeys:

- Long ▼ — reset (zero) the accumulated dose
- Long ▲ — toggle sound on/off

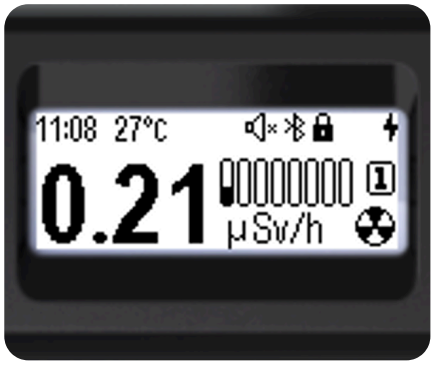
When a dose alarm threshold is exceeded:

“Alarm 1” —  ; “Alarm 2” —  ; “Out of scale” — 

Monitor

On startup, the device operates in this mode. All incoming data is accumulated and analyzed. When a change in the radiation environment is detected, the device starts a new accumulation interval. When no changes are detected, it continues averaging to improve estimate reliability.

- When data is insufficient, the digits are hatched with light diagonal stripes.
- When the estimate is reliable, the digits are fully filled in.

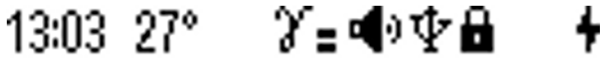


Two operating ranges:

Pulse mode (1): 0.1 µSv/h to 1 mSv/h. Data comes from the scintillator in individual flash detection mode, enabling estimation of low radiation levels and source searching. Energy sensitivity compensation uses a pre-programmed factory calibration function. Clicks and count rate are available — the device produces audible clicks on photon detection and displays CPS values.

Current mode (2): 1 mSv/h to 9 Sv/h. A different mechanism is used for real-time dose rate estimation based on an integral value. Clicks and detector count rate remain available, but the click tone is different in this mode. This mode is required for operation in high radiation fields.

Monitor mode screen



Status bar (top, left to right)

- Current time: hours, minutes
- Detector temperature
- Threshold exceedance indicator for dose rate, dose, and count rate
- Sound indication status
- Bluetooth or USB connection status
- Rocker button lock indicator
- Battery status

Lower area: dose rate or count rate value, graphical indicator, range number (1/2), units (Sv/h, rem/h or CPS/CPM), current display mode icon (Monitor).

Units can be selected via the menu: Sv/h or rem/h for dose rate display; CPS or CPM for count rate display.

The radiation intensity type (dose rate or count rate) can be selected via the menu or switched quickly using the device buttons.

Hotkeys:

- Short ▲ — toggle dose rate ↔ count rate (pulse mode only)
- Long ▲ — toggle sound indication on/off
- Short ▼ — toggle photon clicks on/off (pulse mode only)

When alarm thresholds are exceeded — pulsing icons appear:

Dose rate:

“Alarm 1” —  ; “Alarm 2” —  ; “Out of scale” — 

Count rate:

“Alarm 1” —  ; “Alarm 2” —  ; “Out of scale” — 

Modes Overview

Radiacode ZERO operates in a single mode — continuous data collection, accumulation, and analysis. At any time, one of the following display modes is available:

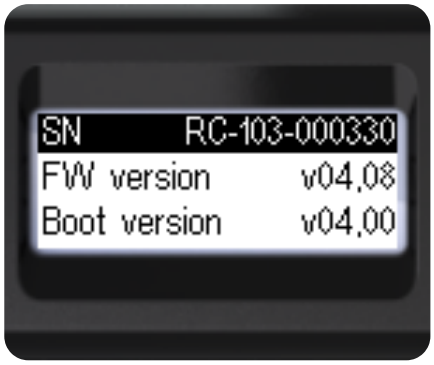
-  Monitor — dose rate and count rate estimation
-  Dose — accumulated dose estimation
-  Search — rapid source search

While operating, the device tracks all alarm threshold exceedances, alerting the user to radiation hazards or changes in the environment.

Device Info

Brief information: model, serial number, firmware version, bootloader version.

- Device model and serial number.
- Firmware version.
- Bootloader version.



Alarm System

How Alarms Work

Alarm sources: current count rate value, current dose rate value, and accumulated dose value. Three alarm thresholds are defined for each of these sources.

If the current count rate, dose rate, or dose value crosses any threshold from below, an Alarm Event is triggered: first threshold — Alarm 1; second threshold — Alarm 2; upper scale limit — Out of Scale.

The first and second threshold values for each source are set in the device settings and can be changed at the user's discretion. The third threshold — the upper scale limit — cannot be changed via the menu.

The device continuously checks current values against the thresholds. Exceeding any threshold puts the device into an Alarm State.

Each Alarm Source determines one of 4 states:

- Normal — value below the first threshold (no alarm)
- Alarm 1 — value above the first threshold but not above the second
- Alarm 2 — value above the second threshold but not above the third
- Out of Scale — value above the third threshold, beyond the measurement range

> Exceeding the upper count rate threshold causes unreliable dose rate estimation. In this case, the upper dose rate threshold is also considered exceeded.

When any alarm threshold is exceeded, the corresponding alert is activated. With vibration and sound enabled in settings, the device will vibrate and emit a siren sound. To stop the sound and vibration, briefly press the round button to acknowledge the alarm signal. The device will continue to indicate the threshold exceedance with a flashing icon. If the buttons were locked and the lock icon  was displayed, the full list of triggered alarms will appear in the top panel. The alarm panel can be cleared with a long press of the round button. To dismiss a dose alarm, reset the dose or change the corresponding alarm threshold.

Each Alarm Event has associated Alarm Signals: an audible signal and a vibration signal. Audible and vibration Alarm Signals can be independently enabled/disabled in Radiacode ZERO settings for each level of each alarm source. On an Alarm Event, the device activates

the signals permitted in settings. Playback can be stopped with a short press of the round button. On the next Alarm Event, the corresponding signal will sound again.

Alarm State indication includes:

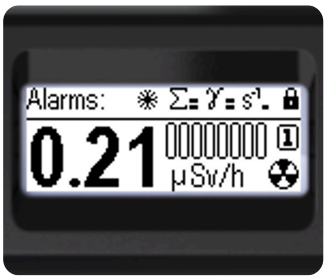
- Red LED flashes (Range 1 only)
- Alarm icons on the display status bar
- Unacknowledged alarm status line

Icon	Description
	Count rate Alarm 1
	Count rate Alarm 2
	Count rate out of scale
	Dose rate Alarm 1
	Dose rate Alarm 2
	Dose rate out of scale
	Dose Alarm 1
	Dose Alarm 2
	Dose out of scale

	Low temperature threshold alarm
	High temperature threshold alarm

LED signals can be toggled on/off in settings (Range 1 only).

Behavior when buttons are locked:



When the buttons are locked, the status bar shows "Alarms:" and icons of the maximum unacknowledged alarm levels since the buttons were locked. A long press of the round button acknowledges the alarms and unlocks the buttons.

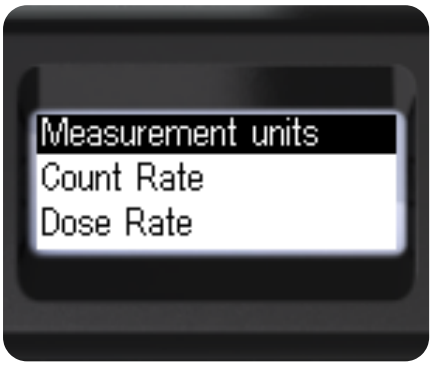
If Alarm Events occur while the menu is displayed, the alarm summary will be shown upon exiting the menu. The rocker buttons will then be locked.

If the rocker buttons are unlocked and a measurement display mode is active, the status bar shows the current alarm level icons for each source, cycling through them in sequence.

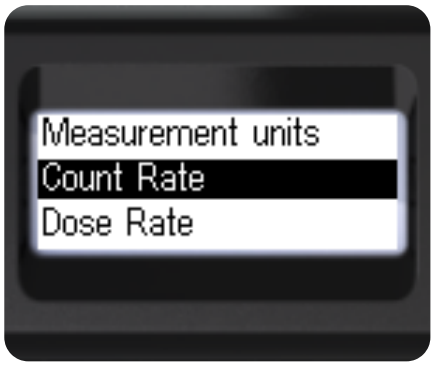
Thresholds Configuration

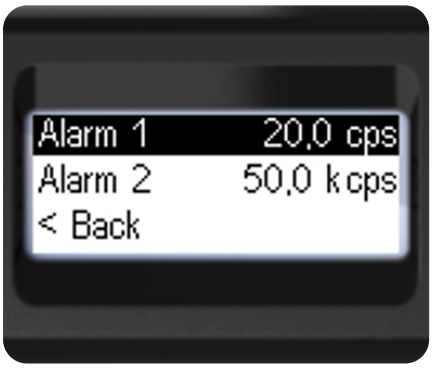
For each of the three quantities (count rate, dose rate, accumulated dose), two user-configurable alarm thresholds can be set. The procedure is the same for all.

Count Rate — Alarm Levels



Navigate to [Count Rate]. Enter the submenu.





Enter [Alarm 1]. Select a digit, change its value. Set all digits.

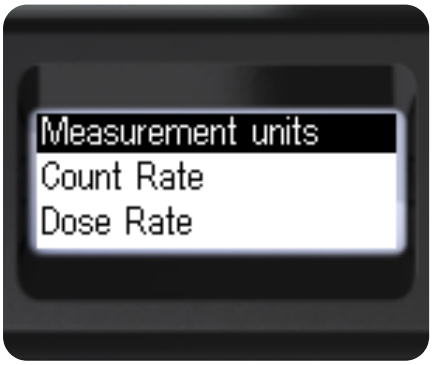
Select [Enter] or [Esc]. Long-press to confirm.

Navigate to [Alarm 2]. Same procedure.

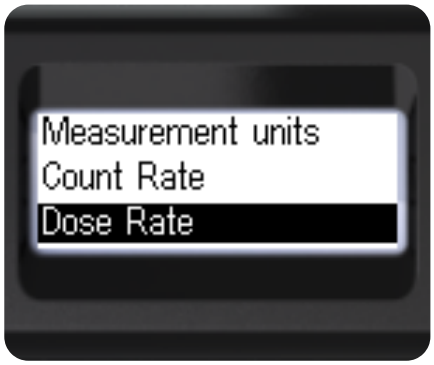
[Enter] or [Esc]. Long-press to confirm.

To go back: [< Back] or [<< Menu quit].

Dose Rate — Alarm Levels



Navigate to [Dose Rate]. Enter the submenu.



Enter [Alarm 1]. Select a digit, change its value.

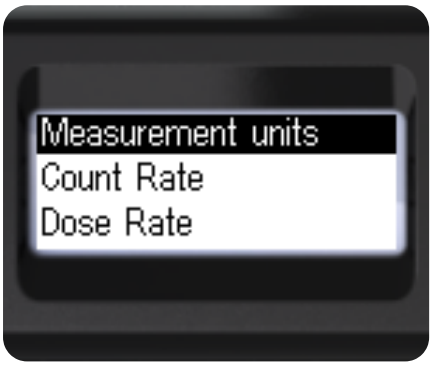
[Enter] or [Esc]. Long-press to confirm.

Navigate to [Alarm 2]. Set values.

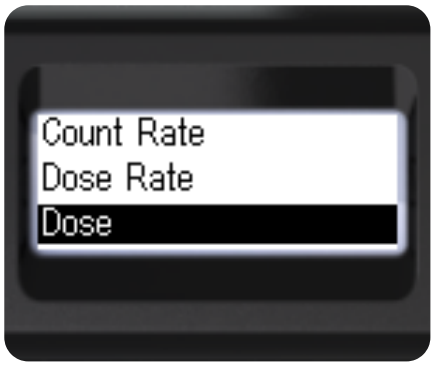
[Enter] or [Esc]. Confirm.

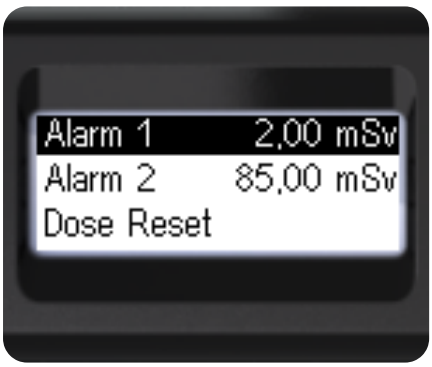
To go back: [< Back] or [<< Menu quit].

Dose — Alarm Levels



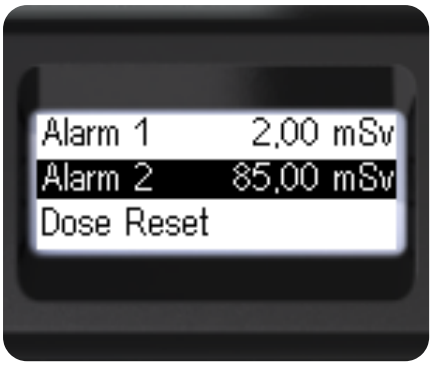
Navigate to [Dose]. Enter the submenu.





Enter [Alarm 1]. Select a digit, change its value.

[Enter] or [Esc]. Confirm.



Navigate to [Alarm 2]. Set values.

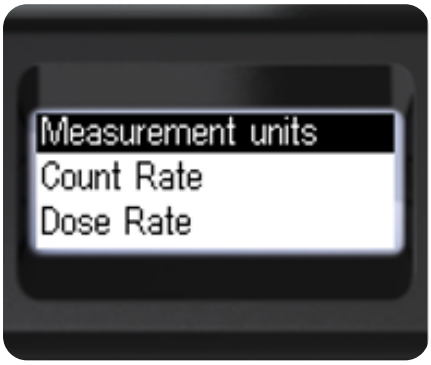
[Enter] or [Esc]. Confirm.

To go back: [< Back] or [<< Menu quit].

Settings

Signals - sound, vibration, LED

Combined interface: display, buttons, speaker, LEDs, vibration motor. Individual permissions are available for alarm sounds, button feedback, and clicks.

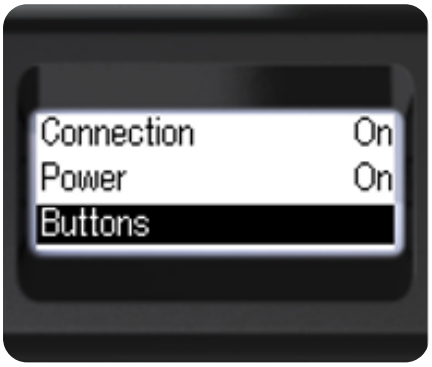


Navigate to [Signals]. Enter the submenu.

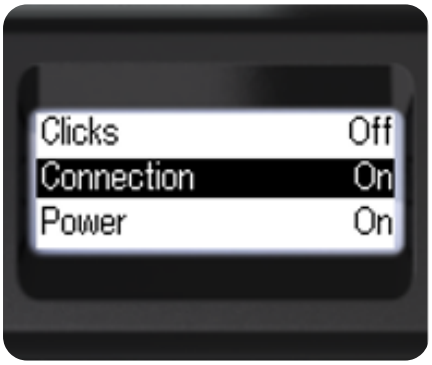
[Sound]: [On] — all permitted sounds, or [Off] — only device search and out-of-scale alerts remain.

[Vibro] and [Light]: [On] or [Off].

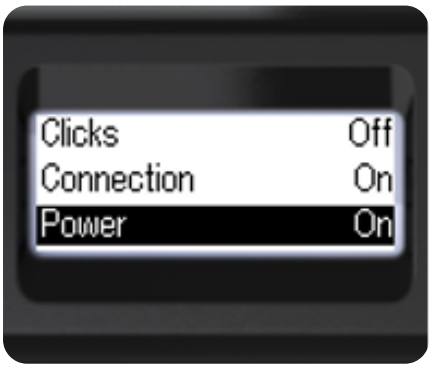
[Clicks] — gamma and X-ray photon detection. [On] or [Off].



[Buttons]: [Sound] or [Vibro] — select the feedback type.

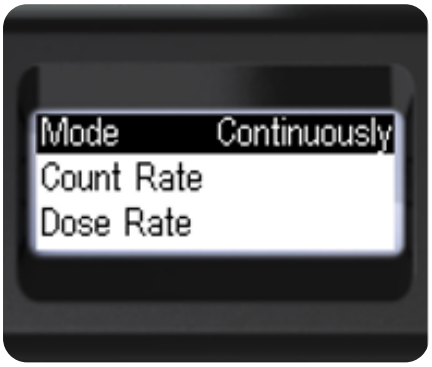


[Connection] — connect/disconnect signal. [On] or [Off].

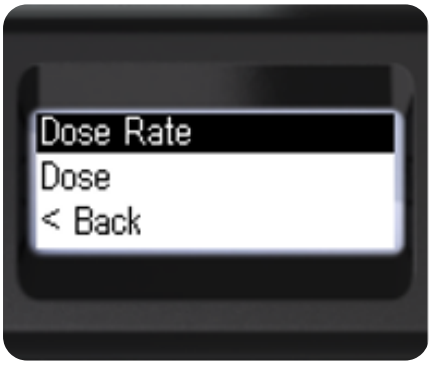


[Power] — power on/off signal. [On] or [Off].

To configure alarm signals: [Alarms]. Confirm.



Indication mode: [Once] or [Continuously].



Select a channel, e.g. [Dose Rate]. Confirm.

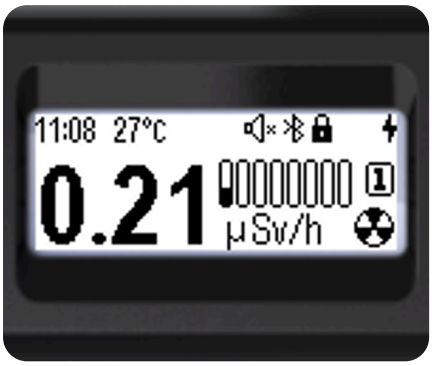
Select level: [Alarm 1] or [Alarm 2]. Confirm.

[Sound] or [Vibro]: [On] or [Off].

To go back: [< Back] or [<< Menu quit].

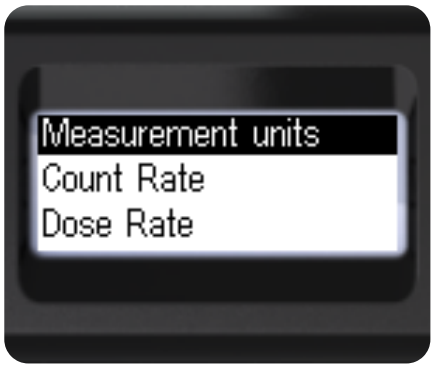
Settings Menu

All settings are accessed via the menu: round button → Settings .



Briefly press the round button to enter the menu.

Navigate to the Settings item. Confirm.



Use the rocker buttons to navigate to the desired item. Exit via [< Back] or [<< Menu quit].

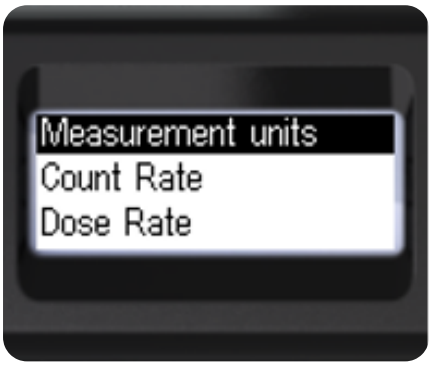
Display Settings

Backlight brightness: 0–9 (default 5). Lower levels reduce battery consumption.

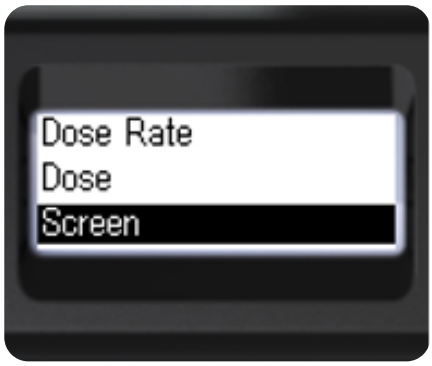
Duration: 5, 10, 15, 30 s and 2, 5 min.

Mode: Auto / By button / Never.

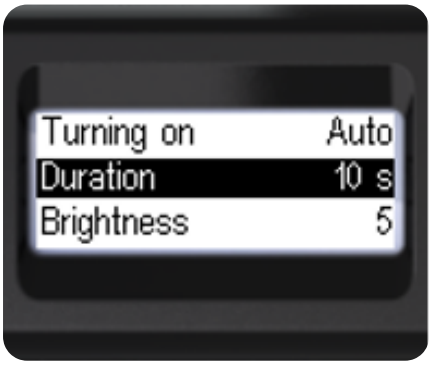
Orientation: Auto / Right / Left.



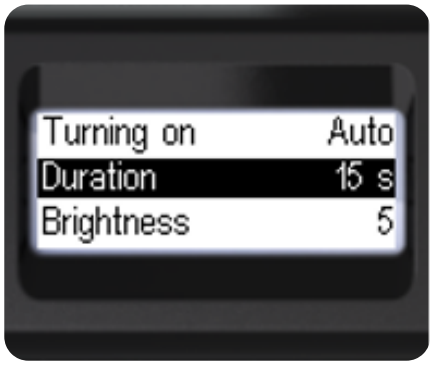
Navigate to [Screen]. Enter the submenu.

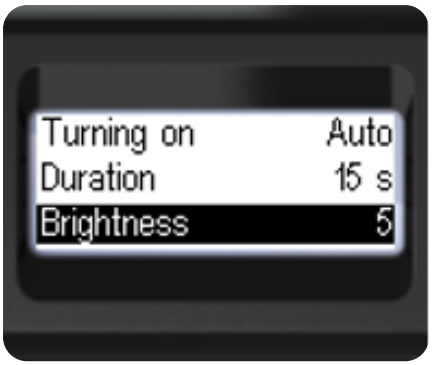


Enter [Backlight]. Select mode: [Auto], [Never], or [By button].



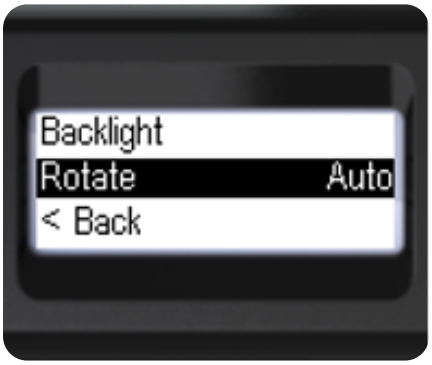
Select duration: 5, 10, 15, 30 sec or 2, 5 min.





Select backlight brightness from 0 to 9.

[< Back] to return.

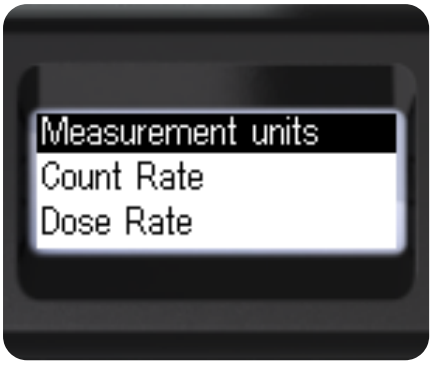


Navigate to [Rotate]. Select: [Auto], [Right], or [Left].

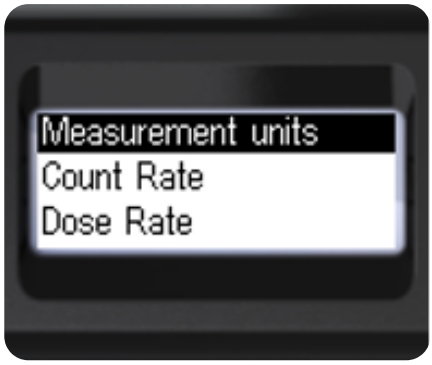
[< Back] to return.

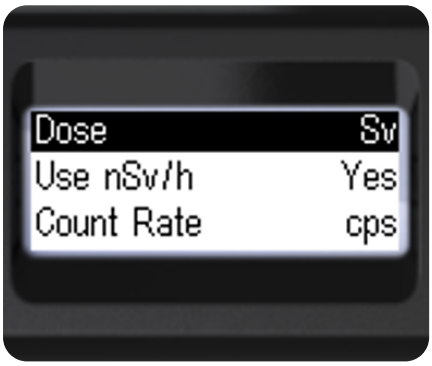
To go back: [< Back] or [<< Menu quit].

Measurement Units

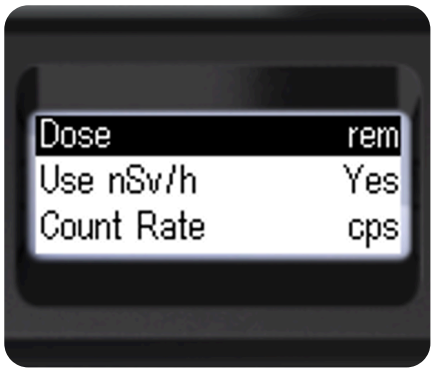


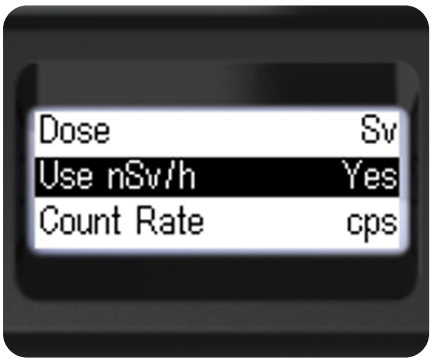
Navigate to [Measurement units]. Enter the submenu.



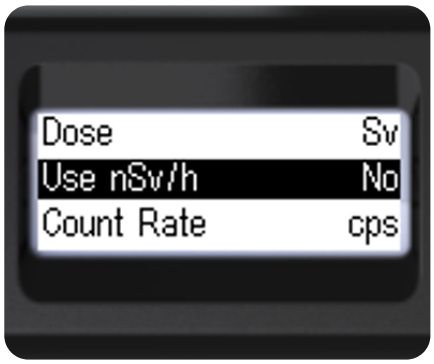


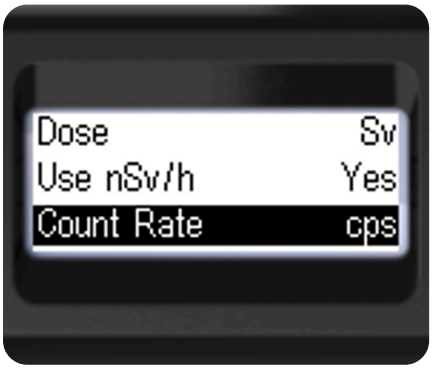
Select dose rate units: Sv — Sievert. Navigate to [Use nSv/h].



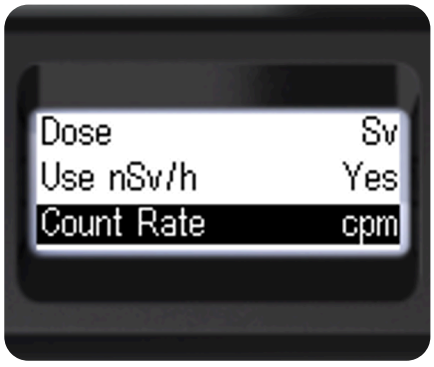


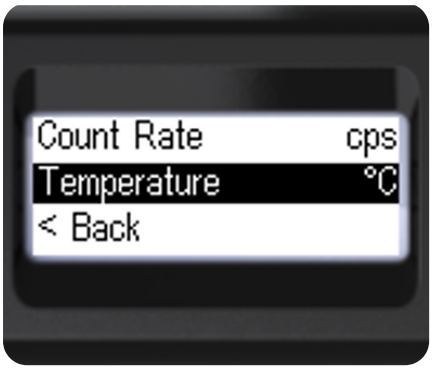
Select whether to use nSv/h when Sv is chosen: [Yes] or [No]. Navigate to [Count Rate].



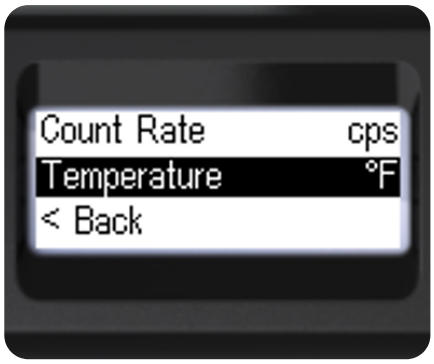


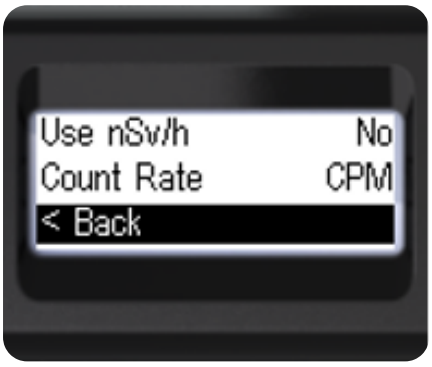
Select count rate units: CPS — Count Per Second or CPM — Count Per Minute.





Select temperature units: °C — Celsius or °F — Fahrenheit.

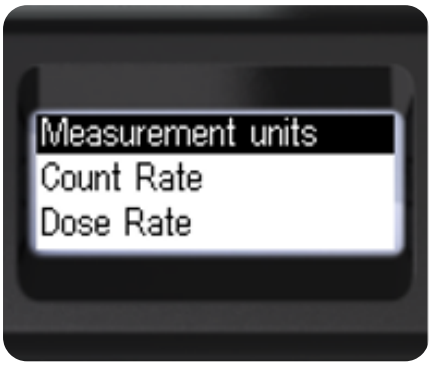




To go back: [< Back] or [<< Menu quit].

Time Settings

When connected to a smartphone or computer, the time is set automatically. Manual setting via the menu:



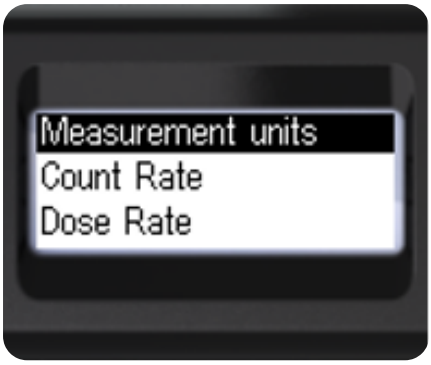
Navigate to [Time]. Confirm.

Select the input field. Change the value with the rocker buttons. For rapid changes, hold the button.

[Enter] or [Esc]. Long-press to confirm.

To go back: [< Back] or [<< Menu quit].

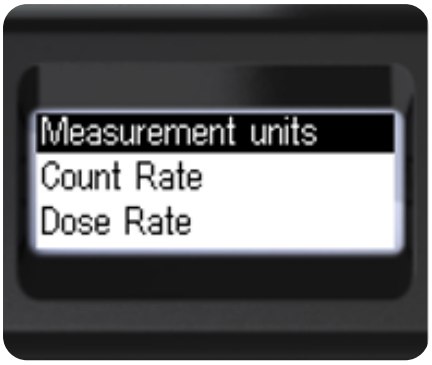
Bluetooth



Navigate to [Bluetooth]. Select [On] or [Off].

To go back: [< Back] or [<< Menu quit].

Factory Reset



Navigate to [Factory settings]. Confirm.

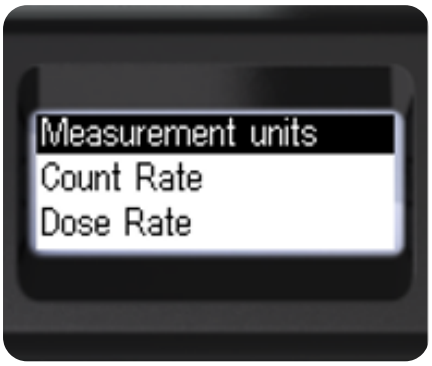
Select [Yes] or [No].

Long-press to confirm. If [Yes] — reset and return.

To go back: [< Back] or [<< Menu quit].

Menu Language

The device interface is available in English. Additional language support will be added in future firmware updates.



Navigate to [Language]. Select your preferred interface language.

To go back: [< Back] or [<< Menu quit].

Connect to Phone or PC

Smartphone

Install the RadiaCode app: Android — Google Play or the RadiaCode website at www.radiacode.com/downloads (APK); iOS — App Store.

Bluetooth connection: enable Bluetooth on the device (Settings → Bluetooth → On) and select the device in the app.

USB OTG connection (Android only): connect the device via a cable and adapter, then authorize the app.

Detailed app interface documentation is included with the app and available after installation.

With external power connected, the device can be reached via Bluetooth or USB regardless of whether it is on or off. This enables remote power on/off.

When connected to a smartphone or PC, accumulated data is transferred to the external device, and new incoming data is sent there directly without being stored in the built-in memory.

PC (Windows)

Install the RadiaCode application from the RadiaCode website at radiacode.com/downloads. Connect the device with a USB Type-C cable. It allows you to view data, control the device, and transfer measurement history. Detailed interface documentation is included with the application.

With external power connected, the device can be reached via USB regardless of whether it is on or off. This enables remote power on/off.

Maintenance

Battery Charging

Connect the USB cable to the USB Type-C connector ([4] in the overview) and to a charger (5 V, ≥0.5 A) or a computer USB port. Leave the device connected until charging is complete.

The blue [10] LED indicates charging is in progress. The charging icon is shown on the screen:  .

When complete, the blue indicator turns off and the icon changes to external power  .

The battery can be charged for a bit and charging can be interrupted at any charge level.

Monitor the charge level using the battery icons  , and the percentage displayed next to them updates in real time.

If the charge indicator  is empty — connect the device to a charger

To ensure correct charging conditions and extend battery life, charging is blocked when the device temperature is above +40 °C or below 0 °C.

For charging, use only USB chargers rated at 5 V and at least 0.5 A, or a computer USB port. Connecting to an incorrect power source may damage the device. Damage caused by improper charging is not covered by the manufacturer's warranty.

If the battery is fully discharged, the device may not respond to power-on attempts. The battery needs to be charged first. If the battery does not charge, connect the charging cable, then disconnect and reconnect it. The device will then be ready to use.

Firmware Update

The device is continuously improved. Firmware is updated regularly. The current version is shown via the “Device Info” menu.

Via iOS over Bluetooth:

- Download and install the RadiaCode app from the App Store or via the link
- Launch the app and grant it Bluetooth access
- In the Devices list, select your device and connect to it
- Once connected, open the Control Center — the button is in the upper-right corner of the screen
- If a firmware update is available for the device, the Update button in the Firmware section will become active. Press it to begin the update
- During the update, a red LED will glow on the device
- Wait for the process to complete. Do not close the app or turn off the device until the update is finished

Via Android over Bluetooth:

- Install RadiaCode from Google Play or via the link
- Launch → menu (button with three horizontal lines, top left) → Devices
- Select the Bluetooth interface and confirm by pressing [OK]
- After connecting, confirm the update. A red LED will glow during the update process

Via Android over USB OTG:

- Connect the device to the smartphone using a cable and adapter
- Allow the RadiaCode app to use the connected device
- Launch → menu → Devices → USB interface → [OK]
- Confirm the update and wait for it to complete

Via PC (Windows):

- Download and install RadiaCode from radiacode.com/downloads
- Connect the powered-on device via USB Type-C directly to the computer
- If an update is available, confirm and wait for completion

Do not power off the device or disconnect the USB cable until the process is fully complete! Interrupting the firmware update may render the device inoperable. Contact the manufacturer’s support for recovery.

Troubleshooting

Typical Malfunctions	Possible causes	Troubleshooting methods
The device does not turn on autonomously	Battery is discharged	Charge the battery
The device only works when connected to external power	Battery is defective	Contact support
The device vibrates and shows the icon 	Battery is discharged	Charge the battery
After disconnecting from the charger, the battery level is below 100%	Battery capacity has significantly decreased	Wait until the blue LED turns off
15 minutes after a full charge, the battery level is below 85%	Battery capacity has significantly decreased	Contact support service
The battery does not charge (the blue LED does not light up)	Temperature is above +40°C or below 0°C	Ensure the device is within the correct temperature range
The device does not turn on, vibrates continuously, and the blue LED is on	The device is in bootloader mode	Contact support service
The device works, but the monitor shows 0.00 CPS	The device is malfunctioning	Contact support service
"Device is not calibrated" at startup	Calibration data is missing in the device memory	Contact support service
The device shuts down without showing a low battery message	The device is affected by static electricity	Protect the device from exposure to static discharges

One dominant channel in a random part of the spectrum	The device is affected by static electricity	Turn the device off and on again. Protect the device from exposure to static discharges
Calibration coefficients a0 and a2 are zero	Calibration error	Perform a factory reset
"Hardware Error [1XX]"	Non-volatile memory error	Restart. If recurring - contact support
"Hardware Error [2XX]"	Bluetooth module error	Restart. If recurring - contact support
"Hardware Error [3XX]"	Acelerometer error	Restart. If recurring - contact support
"Hardware Error [4XX]"	Optical sensor error	Restart. If recurring - contact support
"Hardware Error [5XX]"	Thermometer error	Restart. If recurring - contact support
"Hardware Error [6XX]"	Option state error	Restart. If recurring - contact support

In case of malfunction, contact the manufacturer’s support. For any other issues, please report them to the support team.


RadiaCode