QUARTA

Radiation Detector
RADEX RD1212

User Guide

Thank you for purchasing RADEX RD1212 - Radiation Detector. This guide is intended to assist you in learning the device functions.

RADEX RD1212 - Radiation Detector is designed to evaluate background radioactivity levels of the environment around you as well as check radioactivity of materials and products.

The device has the following capabilities:

- measures radioactivity
- stores measurement results in memory
- data transfer to PC
- self-testing
- Time and Date functions
- audible alarm
- vibration alarm
- integrated flashlight
- multilingual (Eng, De, Fr, Rus, Jp)

Please note that this device uses statistical probability function to calculate radiation values. Even in identical circumstances, two identical devices may show varying results.

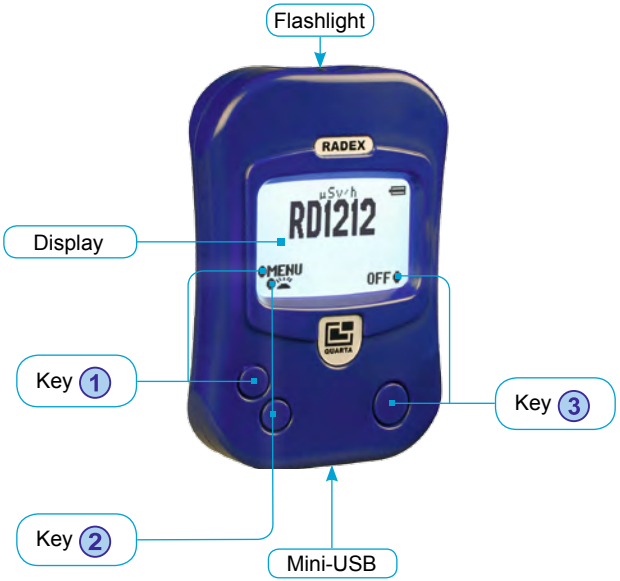
The results obtained with the help of this device should not be used as official and conclusive. This device has not been evaluated by any governmental body.

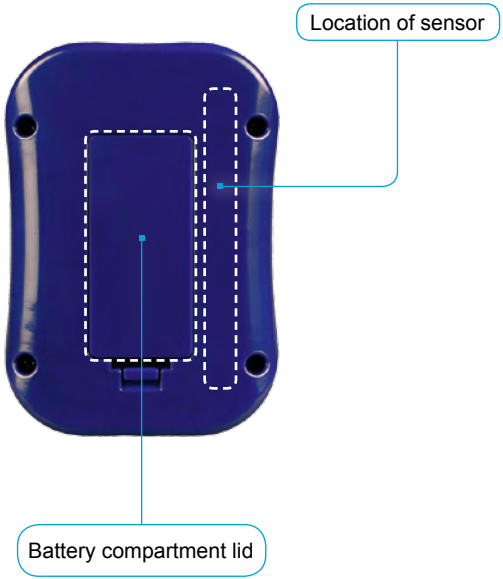
Symbols used in this Guide

- selection indicator
- function is Selected
- sequence of actions
- note

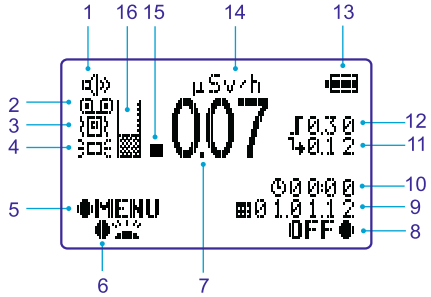
Contents

DEVICE APPEARANCE





DISPLAY LAYOUT



1. Audible alarm
2. Data collection
3. Vibration On/Off
4. Backlight
5. Key function (1)
6. Key function (2)
7. Measurement result
8. Key function (3)
9. Date
10. Time
11. Background Radiation value

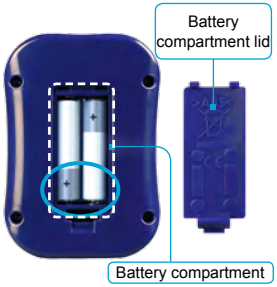
Icons 1-4, 11 and 12 are displayed when the device is turned On.

12. Alarm threshold
13. Battery charge indicator
    - high
    - low (battery should be replaced)
14. Unit of measurement: micro Sievert per hour
15. Blinking indicated detection of a quantum
16. Indicator of the number of measurement cycles
    - 1 cycle
    - 10 cycles and more

PREPARATION FOR OPERATION

Inserting batteries

1. Open the battery compartment lid.
2. Insert two batteries ("AAA" size).
3. Close the battery compartment.



Please remove the batteries if the device is not going to be used for more than a few weeks.

Switching the device ON/OFF

To switch the device ON

Press (3).

To switch the device OFF

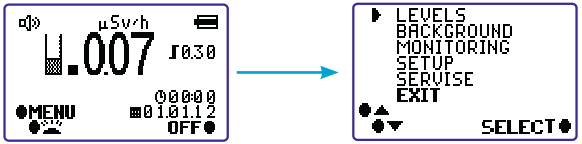
Press and hold (3) for a few seconds.

Result

The first measurement result will appear on display in about 10 seconds.

Navigation Menu

- from the Main screen press (1). The Main Menu will be displayed.

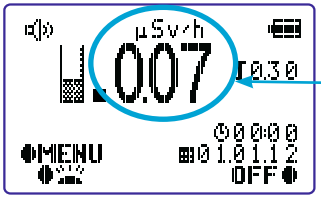


- use buttons (1) and (2) to scroll the cursor ▸ next to desired function. Use button (3), to Select.
- move the cursor ▸ to the desired function and Select it by pressing (3). A tick mark ✓ will Appear/Disappear next to the desired function.
- After 30 seconds of inactivity the device will revert to Main Screen.

DEVICE OPERATION

Measurements

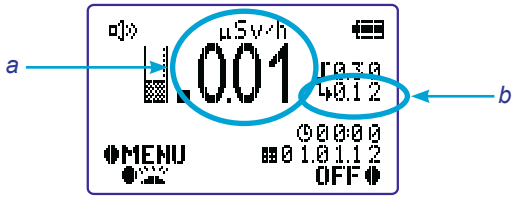
Measurement begins when the device is turned On. The first result will appear on display after 10 seconds.



> *To enhance reliability of the measured result, it is advisable to wait until the device completes not less than 10 measurement cycles.*

Measurements with Background Function

While taking measurements with Background Function, two radiation values are displayed simultanesously:



a - excess over (*b*).

b - value of background radiation.

To take measurements with Background Function it is necessary to first measure the Background Radiation.

1. Select ***menu*** ➔ ***background*** ➔ ***background***.
2. A list of 5 measurement points will be displayed.
3. Select measurement point in open site (refer to page 10).
4. Press (1), a measurement cycle will be initiated. At the end of the cycle a list of points/locations with the results of measurement will appear of the display screen.
5. Repeat items 3 and 4 above for the remaining points.
6. Press (3), a menu will be displayed on the screen, a tick symbol ✓ will appear next to item ***on***.

> *Number of measurement points can be reduced down to one point, to do so press key (3) after any measurement cycle. Please note this reduces the reliability of measurements.*

If Background radiation was measured earlier, you may proceed with measuring current radiation (in excess of background).

1. Enter ***menu*** ➔ ***background***.
2. Move ▶ to ***on*** position and press (3).

Completion of measurement with account of background.

1. Select ***menu*** ➔ ***background***.
2. Move ▶ to ***OFF*** position and press (3).

Self-testing

During operaton of the device, Self-Testing is performed on continuous basis. If a malfunction is detected, an **ERROR** message will be displayed on screen.

DATA TRANSFER TO PC

PC requirements

- operating system Windows XP or later version
- availability of USB port

RadexRead software is available on the CD (included in this package) or as a download at http://www.quarta-rad.ru or at http://quartarad.com.

1. Insert CD into CD drive.

2. Select Install **RadexRead**.
3. Follow the prompts of the installation Wizard to install **RadexRead** application.

Operation with RadexRead program

RadexRead allows you to perform the following functions:

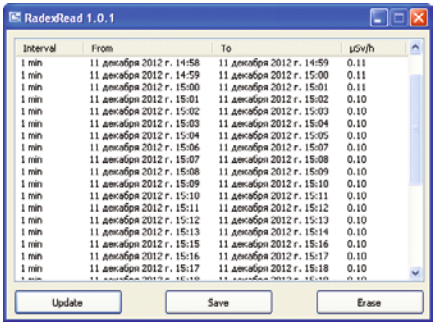
- view measurement results stored in memory
- save results in TXT and CSV formats
- delete measurement results from the device memory

Connecting the device to PC

1. Turn On the device.
2. Connect the device to PC using USB cable.

Data browsing

Start RadexRead program, a window with measurement results will appear on the screen.



Saving results in a file

1. Start RadexRead program
2. Select **SAVE**, a dialog box will open
3. Select path to save the file.
4. Enter filename.
5. Select a file format in which the measurement results will be stored.
6. Click **SAVE**.

Deleting data from PC memory

1. Start RadexRead program.
2. click **DELETE**.

SETUP

Threshold

This function allows to set dose power level value which will trigger an alarm (Audible or Vibration).

Turning ON Alarm function

1. Select ***menu*** ➔ ***levels***.
2. Move ▶ to ***on*** position and press (3).

Turning OFF Alarm function

1. Select ***menu*** ➔ ***levels***.
2. Move ▶ to ***off*** position and press (3).

Setting threshold level to trigger an alarm

1. Select ***menu*** ➔ ***levels***.
2. Move ▶ to a numerical value and press (3).
3. By pressing (1) or (2) set desired value and press (3).

Data collection

This function allows to store in the device memory results measured at pre-set intervals, as assigned by the user.

Data memory allocated to data recording function is limited. Newer results will overlay older results. Increasing the Recording Interval increases the number of data points that can be stored in memory.

Results are saved to memory during the powerdown cycle.

Recording Interval	Maximum recording time
1 minute	3 hours
5 minutes	15 hours
10 minutes	30 hours
30 minutes	90 hours
1 hour	180 hours
2 hours	15 days
4 hours	30 days
6 hours	45 days
12 hours	90 days
24 hours	180 days

Measurement results can be transferred to PC.

Turning On **data collection** function

1. Select ***menu*** ➔ ***monitoring***.
2. Move ▶ to ***on*** position and press (3).

Turning OFF **data collection** function

1. Select ***menu*** ➔ ***monitoring***.
2. Move ▶ to ***off*** position and press (3).

Setting of recording period

1. Select ***menu*** ➔ ***monitoring***.
2. Move ▶ to ***recording period*** and press (3).
3. By moving ▶ select ***recording period*** and press (3), a tick ✓ symbol will appear next to the selected value.

Audible alarm

Selecting this function allows the audible alarm to respond to registration of a quantum.

In case a threshold function is ON, the audible alarm is issued only when registered value exceeds the threshold level.

Switching ON **audible alarm**

1. Select ***menu*** ➔ ***setup***.
2. Move ▶ to ***audio*** and press (3), a tick ✓ symbol will appear next to item ***audio***.

Switching OFF **audible alarm**

1. Select ***menu*** ➔ ***setup***.
2. Move ▶ to **audio** and press (3), a tick ✓ symbol next to item **audio** will disappear.

Vibration Signal

Turning ON this function allows the vibration signal to respond to registration of a quantum.

In case a threshold function is turned ON, the vibration signal is issued when registered value exceeds the threshold level.

Switching ON **vibration alarm**

1. Select ***menu*** ➔ ***setup***.
2. Move ▶ to ***vibra-call*** and press (3), a tick ✓ symbol will appear next to ***vibra-call***.

Switching OFF **vibration alarm**

1. Select ***menu*** ➔ ***setup***.
2. Move ▶ to ***vibra-call*** and press (3), a tick ✓ symbol next to item ***vibra-call*** will disappear.

Backlight

This function activates backlight of the display for 7 seconds, when any key is pressed.

Turning ON **backlight** function

1. Select ***menu*** ➔ ***setup***.
2. Move ▶ to ***backlight*** and press (3), a tick ✓ symbol will appear next to ***backlight***.

Turning OFF **backlight** function

1. Select ***menu*** ➔ ***setup***.
2. Move ▶ to ***backlight*** and press (3), a tick ✓ symbol next to ***backlight*** will disappear.

Time and date

When batterie are removed, the Time and Date settings will re-set after 40 hours.

Setting TIME

1. Select ***menu*** ➔ ***setup*** ➔ ***time and date***.
2. Move ▶ to the first line (time) and press (3).
3. Use (1) or (2) to set hours and press (3).
4. Use (1) or (2) to set minutes and press (3).

Setting DATE

1. Select ***menu*** ➔ ***setup*** ➔ ***time and date***.
2. Move ▶ to the second line (date) and press (3).
3. Use (1) or (2) to set day and press (3).
4. Use (1) or (2) to set month and press (3).
5. Use (1) or (2) to set year and press (3).

Language

Language Selection

1. ***menu*** ➔ ***setup*** ➔ ***language.***
2. Move ▶ to selected language and press (3), a tick ✔ symbol will appear next to selected ***language***.

FLASHLIGHT

To turn the flashlight ON/OFF, press (2) and hold for a few seconds.

TECHNICAL SPECIFICATION

Dose power indication, range of	µSv/h	0,05 to 999
Energy range of registered: Gamma radiation X-radiation Beta-radiation	MeV	 0,1 to 1,25 0,03 to 3,0 0,4 to 3,5
Error, *where P – dose power in µSv/h*	%	± (15+6/P)
Alarm threshold (in increments of 0.05)	µSv/h	0,05 to 1,2
Measurement time	sec	10
Reading indication		continuous
Batteries («AAA»)	pcs	2
Uninterrupted operation time (about)	h	~ 300
Temperature range (max humidity 85% at 25C)	°C	-18 to +45
Device dimensions	mm	97x68x24
Weight (without batteries)	kg	0,08

* At factory settings, with normal background conditions, without use of flashlight.

Factory settings

Threshold	-	0,30 µSv/h
Audible alarm	-	on
Date collection	-	off
Vibration signal	-	off
Backlight	-	off

RECOMMENDATIONS ON SURVEYING OBJECTS

Search of radioactivity source location

1. Disable the threshold function.
2. Switch ON the audible alarm and/or Vibration signal functions
3. Move the device over probable location of the radioactivity source. When doing so pay attention not only to measurement indications but also to frequency of signals. The signals' frequency will increase as the source is approached and respectively decrease as the source is moved away from.

Performing radioactivity survey of living and public buildings

1. Perform radiation background measurements on the open site near the surveyed building in 5 locations.
2. Perform measurements inside the building.
3. If the registered radiation inside a building exceeds radiation at the open site by more than 0.2 mSv/h, this may indicate presence of unfavourable radiation environment.

OPERATIONAL RESTRICTIONS

- Do not subject the device to high temperatures
- Avoid prolonged exposure to direct sunlight
- Do not attempt to disassemble and repair the device
- Avoid impacts to the device
- Protect the device from liquids
- Do not place the device into microwave oven
- Do not carry on examination/survey in the presence of operating air ionizers/ozonizers
- If you do not plan to use the device for more than a month, remove batteries