

R8008

REED **INSTRUMENTS**

Portable Radiation Dosimeter



Instruction Manual

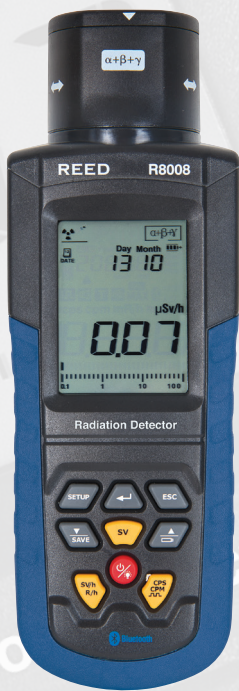


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Introduction

Thank you for purchasing your REED R8008 Portable Radiation Dosimeter. Please read the following instructions carefully before using your instrument. By following the steps outlined in this manual your meter will provide years of reliable service.

Product Quality

This product has been manufactured in an ISO 9001 facility and has been calibrated during the manufacturing process to meet stated product specifications.

Safety

Never attempt to repair or modify your instrument. Dismantling your product, other than for the purpose of replacing batteries, may cause damage that will not be covered under the manufacturer's warranty. Servicing should only be provided by an authorized service center.

Features

- Detects Alpha, Beta, Gamma, and X radiation
- Automatic selection of measurement range
- Average time and pulse counting functions
- Large backlit LCD display with bargraph indicator
- Accumulation of radiation detection values and conversions between different measurement units
- User-adjustable alarms (audio/visual indicators)
- Internal memory stores up to 4000 groups of data internally
- Bluetooth connectivity wirelessly streams data to computer via software
- Low battery indicator and auto shut off

Specifications

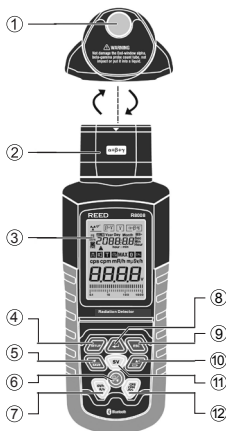
Measured Rays:	Alpha, Beta, Gamma, X
Radiation Dose Range:	0.0001 to 1000 μ Sv/h
Pulse Dose Rate Range:	0 to 4000cpm/cps
Accumulated Radiation Dose Value:	0.001 μ Sv to 9999Sv
Accumulated Pulse Dose Rate:	0 to 9999
Sensitivity:	When an environment background of energy is equal to 1Sv/h (Cobalt-60 ray), the pulses would equal 108 or 1000 CPM/mR/hr Alpha: From 4.0 MeV Beta: From 0.2 MeV Gamma: From 0.02 MeV X: From 0.02 MeV
Accuracy:	<10% (less than 500 μ Sv/h) <20% (less than 600 μ Sv/h)
Display:	Dual LCD
Backlit Display:	Yes
Digital Bargraph Indicator:	Yes
Adjustable Alarms:	Yes (Audible/Visual Indicators)
Average Time Function:	2 to 120 seconds
Natural Environment Reading:	0 to 0.2 μ Sv/h
Datalogging Capabilities:	Yes
Real-Time Clock and Date Stamp:	Yes
Internal Memory:	Yes (up to 4000 groups of data)
Auto Shut-Off:	Yes (after 10 minutes/off)
Low Battery Indicator:	Yes
Power Supply:	4 AA Batteries
PC Connectivity:	Yes (Wireless via Bluetooth)
Software:	Yes (Included)
Product Certifications:	CE
Operating Temperature:	32 to 122°F (0 to 50°C)
Storage Temperature:	14 to 140°F (-10 to 60°C)
Operating Humidity Range:	10 to 80%
Dimensions:	7.9 x 2.8 x 1.9" (200 x 70 x 45mm)
Weight:	7.3oz (206g)

Included

- Software CD
- Hard Carrying Case
- Batteries

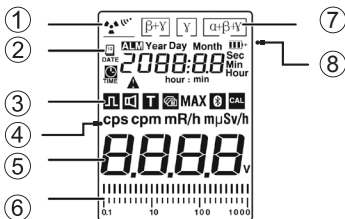
Instrument Description

1. Sensor Window of G.M. Geiger Counter Tube
2. Ray Selection Switch
3. LCD Display
4. Setup Button
5. Data Storage/Down Arrow
6. Power/Backlight Button
7. Unit Button
8. Enter Button
9. ESC Button
10. Battery/Up Arrow
11. Dose Button
12. Pulse Button



Display Description

1. Boot Nuclear Radiation Measuring Icon
2. Date/Time Icon
3. Setup Menu Indicators
4. Measuring Function Indicators
5. Measurement and Unit Indicator
6. Bar Measurement Reading
7. Ray Type Indicator
8. Battery Level Indicator



Software Installation

Install the included software by placing the supplied program disc in the PC's CD-ROM drive. If the installation program does not automatically start, open and browse the CD-ROM drive from your computer. Double click on the setup file and follow the on-screen prompts to install the software.

If your computer does not have a CD drive please visit www.reedinstruments.com/software to download the latest R8008 software.

Full specifications and operating system compatibility can be found on the product page at www.reedinstruments.com.

If you have specific questions related to your application and/or questions related to software setup and functionality please contact the nearest authorized distributor or customer service at info@reedinstruments.com or 1-877-849-2127.

Operating Instructions

The R8008 is intended to detect the radiation dose rate of $\alpha+\beta+\gamma$ and X-rays radiated from an object and not the physical quantity describing the radioactivity of an object/area.

Power ON/OFF

Press and hold the  button for 2 seconds to turn the meter on. It will beep and the LCD screen will activate indicating it has turned on. Press and hold the  button again to turn the meter off. Be sure to turn the meter off properly or loss of data may occur.

Ray Selection Switch

Rotate the ray selection either clockwise or counter clockwise to select the ray you wish to measure. Be careful when rotating the switch to avoid damage to the sensor.

Note: The meter will detect x-rays in any of the three positions selected below.

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The ray types you can measure are as follows:

- Gamma rays only as indicated by the γ symbol on the ray selection switch.
Note: With the switch in gamma rays position, an aluminium plate screens the counter tube window against alpha and beta rays.
- Gamma and Beta rays as indicated by the $\beta + \gamma$ symbols on the ray selection switch.

Note: With the switch in the gamma and beta rays position an aluminium foil now screens the counter tube window against alpha rays.

- Alpha, Beta and Gamma rays as indicated by the $\alpha + \beta + \gamma$ symbols on the ray selection switch.

Note: With the switch in the alpha, gamma and beta rays position the counter tube window is now open to all three types of rays.

Backlight

When the meter is on, press the  button to activate or deactivate the LCD backlight. The backlight will automatically turn off after 1 minute.

Unit Conversion for Dose Rate

When the meter is powered ON the default unit of measurement is set to $\mu\text{Sv/h}$. Press the $\frac{\text{Sv/h}}{\text{R/h}}$ button to convert the unit of measurement to mRem/h .

Note: The conversion is based on the formula: $10\mu\text{Sv/h} = 1\text{mRem/h}$.

Dose Accumulation Rate

The absorbed dose is the radiation energy absorbed per unit mass of human tissue and organs and is calculated in Sv or mSv.

1. Press the **SV** button to enter the infinite dose accumulation mode, and the icon " μSv " will appear on the display. This mode calculates the dose accumulation rate for no set amount of time.
2. To enter the timed dose accumulation mode press the **SV** button a second time.

Note: The default set time is 60 minutes. To modify the set time, refer to *Setting Timed Dose Accumulation*.

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3. Press the **SV** button a third time to stop the timed measurement and the accumulated value will appear on the LCD display.
4. Press the **SV** button again to return to infinite dose mode.

Note: At any time, you can press the **ESC** or UNIT buttons to exit the dose accumulation mode and resume normal operation.

Setting Dose Accumulation Time

1. While in dose accumulation time mode press and hold the **SV** button for 2 seconds.
2. The icons "μSv" and "min" will appear on the LCD display along with 060 (default set time) which indicates 60 minutes of set time.

Note: The maximum set time value that can be set is 999 minutes.

3. Make sure to start with the leftmost digit.
4. To toggle between digits press the **←** button to move to the next digit or press the **ESC** button to return to the previous digit.
5. When ready, press the **▲** and **▼** arrows to adjust the flashing digit.
6. Press the **←** button to confirm your selection and proceed to the next digit.
7. When the last digit has been selected and confirmed, the set time will no longer be flashing.

Note: The selected set time is automatically configured for pulse counting time.

8. Press the **←** button to begin measuring the dose accumulation for the set amount of time.
9. Throughout the measurement process, the "TIME" icon will blink on the LCD display.
10. The meter will beep when the set time is up and the accumulated dose value will appear on the screen.
11. At any time, you can press the **SV** button to pause the timer, and press it again to resume the measurement process. Press and hold the **SV** button to re-enter the timing setup mode if required.

Note: The instrument will exit the timed dose setup after approximately 15 seconds of inactivity.

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Pulse Counting

This meter can be used as a geiger counter, displaying received cumulative pulses on the LCD. In this mode the meter will only record received pulses and calculated pulses, which will not be converted to Sv.

1. Press the  button to activate "Pulse Counting" mode as indicated by cps (Pulse/Second) on the LCD display.
2. Press the  button again to switch from cps (Pulse/Second) to cpm (Pulse/Minute).
3. Press the  button a third time to resume "Pulse Counting" mode for no set amount of time while the  icon will appear on the LCD display.
4. Press the  button a fourth time to enter "Pulse Counting Time" mode. The  and  icons will appear on the LCD display.

Note: The default set time is 60 minutes. To modify the set time, refer to *Setting Dose Accumulation Time* for details.

5. Throughout the measurement process, the  icon will blink on the LCD display.
6. The meter will beep when the set time is up and the cumulative pulse count value will appear on the screen.

Note: The meter can only record up to 4000 pulses.

7. At any time, you can press the  button to end the timed pulse count.
8. Press the  button again to return to the CPS function.
9. Press the  button a fifth time to stop pulse counting and press it once more to return to "CPS Pulse Counting" mode.

Note: At any time, you can press the **ESC** or **UNIT** buttons to exit the "Dose Accumulation" mode and resume normal operation.

Data Storage

1. When taking a measurement, press the **SAVE** button to enter the data storage mode.
2. The data storage  icon will appear on the LCD display.

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3. A measurement will be saved every minute which can then be downloaded to the included software via Bluetooth when testing is completed.
4. The instrument can hold up to a maximum of 4000 groups of data.
Note: When the memory is full the meter will automatically record over the first measurements.
5. Press the **SAVE** button again to exit recording mode.

Bluetooth Recording Mode

When the meter's Bluetooth functionality is turned on, all measurements can be transmitted in real time through the software over Bluetooth. Refer to *Setting Bluetooth Data Transmission* for details.

Battery Life Indicator

1. To check on the meter's battery status, press the  button.
2. The meter will now indicate the remaining internal battery voltage
3. Press the **ESC** button to resume normal operation.

Setup Menu

You can adjust the following preferences in the Setup Menu:

- Date & Time
- Alarm Threshold
- Pulse Sound
- Average Measurement Time
- Bluetooth Data Transmission

Set Date

1. Press the **SETUP** button to enter the set up mode.
2. Press the ▲ and ▼ arrows to select "DATE".
3. Press the ← button to enter the Date Setup screen.
4. Press the ▲ and ▼ arrows to adjust the Year which is the first flashing value.
5. Press the ← button to proceed to the next value.
6. Repeat steps 4 and 5 to set the "Month" and "Day" values.
7. Press the **ESC** button to exit the Setup Menu and resume normal operation.

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Set Time

1. Press the **SETUP** button to enter the set up mode.
2. Press the ▲ and ▼ arrows to highlight the **T** icon.
3. Press the ← button to enter the "Time Setup" screen.
4. Press the ▲ and ▼ arrows to adjust the Hour digit which is the first flashing value.
5. Press the ← button to proceed to the next value.
6. Repeat steps 4 and 5 to set the "min" and "sec" values.
7. Press the **ESC** button to exit the setup menu and resume normal operation.

Setting Alarm Threshold

An alarm will sound when the measured value is greater than the Alarm Threshold. The default alarm is set at 205µSv/h. Follow the steps below to set the alarm threshold.

1. Press the **SETUP** button to enter the set up mode.
2. Press the ▲ and ▼ arrows to highlight the "ALM" icon.
3. Press the ← button to the "Alarm Threshold Setup" screen.
4. Make sure to start with the leftmost digit.
5. To toggle between digits press the enter button to move to the next digit or press the **ESC** button to return to the previous digit.
6. When ready, press the ▲ and ▼ arrows to adjust the flashing digit.
7. Press the ← button to confirm your selection and proceed to the next digit.
8. When the last digit has been selected and confirmed, press the **ESC** button to exit the setup menu and resume normal operation.

Enabling/Disabling Pulse Sound

When radiation is detected the meter will make a "ticking" sound. The stronger the radiation signal the faster the "ticking" sound will be. Follow the steps below to enable/disable the pulse sound.

1. Press the **SETUP** button to enter the set up mode.
2. Press the ▲ and ▼ arrows to highlight "🔊".
3. Press the ← button to enter the pulse sound setup screen.

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4. Press the ▲ and ▼ arrows to select either "ON" or "OFF".
5. Press the ← button to confirm the value.
6. Press the **ESC** button to exit the setup menu and resume normal operation.

Setting Average Measurement Time

The processing measurement time can be set from 8 to 120 seconds.

Note: An increase of radiation will automatically and proportionally reduce the average measurement time. When the time is set to 8 seconds and the radiation strength is more than 5μSv/h, the response time will be adjusted to 2 seconds. The factory default time is set to 30 seconds. Follow the steps below to set the average measurement time.

1. Press the **SETUP** button to enter the set up mode.
2. Press the ▲ and ▼ arrows to highlight the **T** icon.
3. Press the ← button to enter the average measurement time setup screen.
4. Make sure to start with the leftmost digit.
5. To toggle between digits press the ← button to move to the next digit or press the **ESC** button to return to the previous digit.
6. When ready, press the ▲ and ▼ arrows to adjust the flashing digit.
7. Press the ← button to confirm your selection and proceed to the next digit.
8. When the last digit has been selected and confirmed press the **ESC** button to exit the setup menu and resume normal operation.

Turning Bluetooth Data Transmission ON/OFF

1. Press the **SETUP** button to enter the set up mode.
2. Press the ▲ and ▼ arrows to highlight .
3. Press the ← button to enter the Bluetooth data transmission activation screen.
4. Press the ▲ and ▼ arrows to select either "ON" or "OFF".
5. Press the ← button to confirm the value.
6. Press the **ESC** button to exit the setup menu and resume normal operation.
7. The  icon will appear on the main screen confirming.

Battery Replacement

When the low battery icon appears on the LCD display, you will need to replace the batteries. Remove the battery cover using a Phillips head screwdriver, insert 4 x new "AA" batteries and secure the cover.

Accessories and Replacement Parts

- **CA-05A** Soft Carrying Case

Don't see your part listed here? For a complete list of all accessories and replacement parts visit your product page on www.reedinstruments.com.

Product Care

To keep your instrument in good working order we recommend the following:

- Store your product in a clean, dry place.
- Change the battery as needed.
- If your instrument isn't being used for a period of one month or longer please remove the battery.
- Clean your product and accessories with biodegradable cleaner. Do not spray the cleaner directly on the instrument. Use on external parts only.

Product Warranty

REED Instruments guarantees this instrument to be free of defects in material or workmanship for a period of one (1) year from date of shipment. During the warranty period, REED Instruments will repair or replace, at no charge, products or parts of a product that proves to be defective because of improper material or workmanship, under normal use and maintenance. REED Instruments total liability is limited to repair or replacement of the product. REED Instruments shall not be liable for damages to goods, property, or persons due to improper use or through attempts to utilize the instrument under conditions which exceed the designed capabilities. In order to begin the warranty service process, please contact us by phone at 1-877-849-2127 or by email at info@reedinstruments.com to discuss the claim and determine the appropriate steps to process the warranty.

Product Disposal and Recycling



Please follow local laws and regulations when disposing or recycling your instrument. Your product contains electronic components and must be disposed of separately from standard waste products.

Product Support

If you have any questions on your product, please contact your authorized REED distributor or REED Instruments Customer Service by phone at 1-877-849-2127 or by email at info@reedinstruments.com.

Please visit www.REEDINSTRUMENTS.com for the most up-to-date manuals, datasheets, product guides and software.

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