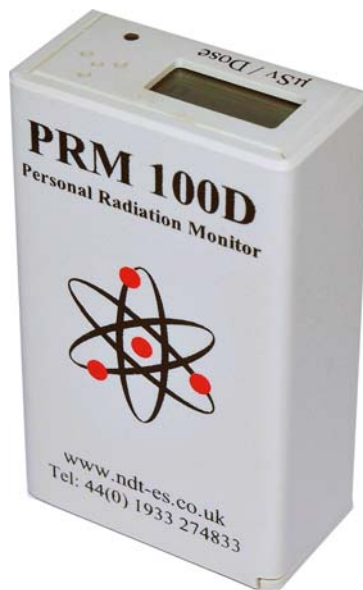


PRM100D PERSONAL RADIATION MONITOR

USER MANUAL



Directions For Use.

The unit is powered by a single CR2 3v lithium cell which will typically last approximately 12 months. The battery lifetime may be reduced with frequent use of the serial port connection or under high background radiation levels. The battery compartment may be accessed by sliding open the cover at one end of the unit. DO NOT DISASSEMBLE the unit further or expose live internal parts as a shock hazard exists inside. Use one CR2 3 volt lithium battery ensuring the battery is the correct way round as indicated on the PCB by the battery clips. The unit should beep twice as the battery is fitted to indicate it is working. Slide the battery cover back into place.

Operation

The unit is entirely automatic in use and will constantly monitor the surrounding radiation levels. The unit should be worn for personal protection clipped to a belt or shirt pocket.

The Personal Monitor is intended to warn individuals of potential gamma radiation exposure by emitting a loud beep or warble, and a flashing LED at a rate of approx once per 10 seconds for a 10µSv incident dose. Warning events will become more frequent at higher dose levels to a maximum of approximately 5 per

second. (An approx activity level in excess of 250 μ Sv). Frequent tones occurring more than once every couple of minutes indicates the presence of greater than background radiation, and if abnormal should be further investigated and the wearer should seek a place of safety .

The unit will emit the following tones :

- A 'beep' tone every 10 μ Sv accrued incident dose, provided that average dose in last 10 seconds is below 7.5 μ Sv. LED will also flash.
- A 'warble' tone every 10 μ Sv accrued incident dose, when average dose in last 10 seconds is above 7.5 μ Sv. LED will also flash.
- Three 'beep' tones in succession each minute if the battery is low. LED will remain lit.
- Six 'beep' tones in succession each minute if the unit has a fault. LED will remain lit.

Controls and Indicators.

LCD and Mode Switch

The LCD display may operate in one of two modes. The unit will continue to provide a beep every 10secs for a 10 μ Sv dose regardless of switch position. The mode switch is located inside the battery compartment.

In Dose Mode, the unit will record the total number of μ Sv/Hr the device has been exposed to since last reset, therefore if the unit has been in a 10 μ Sv field for 8 hours, the LCD will display 80 μ Sv on the screen. The dose can be reset to zero by momentarily switching the mode switch to 'Live' mode, then back again. Removal or replacment of the battery will also reset the dose total.

In Live Mode the LCD will operate as a basic survey meter, the LCD will show the current incident dose (averaged over approx 10 seconds) on the LCD. The unit has a range from 1 to 1000 μ Sv and will sound an alarm if 1000 μ Sv is exceeded and flash 1888 to 1111 on the LCD as an overrange indication. The reading is accurate to approx +/- 20%. Between 0-25 μ Sv the unit will measure in single μ Sv steps, 25-100 μ Sv will show in 5 μ Sv steps, and 100-1000 in 25 μ Sv steps.

LED

The unit has a red LED fitted to provide a visual indication when the unit beeps, this will flash during sounder operation.

The LED also serves to indicate low battery or the presence of a fault. In such cases the LED will remain constantly illuminated until the battery is replaced or the test button is pressed. See 'Fault Alarms' section for further information.

Test / Reset Button

The unit has a 'Test' / Reset button accessed though a small hole to the rear. To check basic operation this button can be pressed with a small blunt object such as a paper clip. To perform a system test hold the button in (approx 2 secs) until the unit is heard to beep, this indicates the basic test has passed. If the test does not pass (no beep is heard) see 'Fault Alarms' section for further information.

Performing a 'test' will reset any fault warnings (low battery, etc) present at the time of the test.

The test button does not perform a 100% test, the operation of the GM tube is confirmed by the unit beeping approx once every 30 minutes due to background radiation. If the unit has not beeped for some time test the units' reaction in a known dose field. If no activity is sensed for several hours, the unit will itself sound a warning alarm each minute.

The unit's microprocessor can also be reset via the Reset button. After the device is heard to beep once, continue to depress the button for a further five seconds. The unit will be heard to beep twice (during which the button should be released) indicating that the processor is reset.

Serial Port

The unit has an RS232 serial port for use with a PC which is accessed by sliding open the battery compartment cover. The RS232 port allows up to 240 hours (approx) of data logged hourly dose totals to be downloaded and recorded. This feature requires a separate cable and software which can be obtained from NDT Equipment Services Ltd as an accessory. Further details of how to use this feature is supplied with the cable and software.

Fault Alarms

If the unit requires attention the following will occur :

- Three 'beep' tones in succession each minute if the battery is low. LED will remain lit.
- Six 'beep' tones in succession each minute if the unit has a fault. LED will remain lit.

Press and hold the Test Button (as described earlier) for five seconds until a double beep is heard. This will reset the unit. If the alarm returns, replace the battery. If the fault is still present contact NDT Equipment Services Limited at Wellingborough for advice on returning the unit for repair.

Cautions and Warnings.

- **Frequent beeping / warbling of the unit indicates high incident dose. The wearer should move to a safe place.**
- **The device is for warning purposes only and is not intended to replace film badges or other safety precautions.**
- **Three or six beeps together, each minute, indicate that the unit may have a flat battery or internal fault. The red LED will remain lit.**
- **Leaving the unit in a high ambient dose area or connected to the serial port for long periods will reduce battery life.**
- **The LCD 'Live Dose' feature is not intended to replace a survey meter and serves only as an approximate indication of local incident dose.**
- **Fit only CR3 Lithium cells. Other batteries WILL NOT WORK and may damage the unit.**
- **DO NOT reverse battery polarity. The unit is protected, but batteries will rapidly discharge and may rupture if left in this state. Observe fitting polarity indicated inside the unit.**
- **Test the unit regularly by means of the 'Test' button accessed at the rear.**

- **DO NOT** get the unit wet or damp and do **NOT** immerse in water otherwise it will malfunction.
- **DO NOT** drop or impact the unit on a hard surface.
- **DO NOT** overheat the unit which has a normal operating range of -5 to+ 55deg C.
- **DO NOT** place the unit in direct sunlight or it may overheat.
- **DO NOT** disassemble the unit - this may expose the user to electric shock hazards, up to 650v at low current exists inside the unit.
- The unit should be recalibrated and tested annually.



END OF LIFE STATEMENT. Do not dispose of this unit in normal household waste. Take to a commercial waste recycling facility. Dispose of batteries responsibly.

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