Seedseeker

Radiation Source Finder for ^{125}I

User Manual

CareWise
EXPERIENCE & EXPERTISE

Contents

1. Introduction and Overview

The Seedseeker has been designed to be a basic radiation sources finder, in preparatory tasks. It is for use in Nuclear Medicine departments for the detection of ^{125}I seeds. It is designed with simplicity in mind and single hand use.

2. System Specifications

Dimensions	170 (H) x 88 (L) x 72 (W) mm
Mass	223 g
Power Requirements	2 x AA Batteries (1.5 V each)
Sensitivity	^{125}I is approximately 18,500 CPS/MBq at 25 mm, 1,950 CPS/MBq at 100mm, and 250 CPS/MBq at 300 mm
FWHM Resolution	~180 mm at 100 mm from source (No collimation)
Background Count Rate	2-4 CPS for ^{125}I
Detector Operating Voltages	SiPM based detector – 40 V
Default Discrimination Window Settings	Discrimination Window: 58.6 mV - 330 mV
Lower and Upper Detection Limits	Upper limit: 20,000 CPS (Over range)
Detector Energy (Gamma)	Optimised for ^{125}I (35 keV)

3. Important Safety Information

Care must be taken when handling this sensitive piece of electronic equipment. Rough handling and improper storage can lead to premature failure of the components contained within.

Important! Servicing must be undertaken by trained Care Wise personnel or authorised representatives ONLY.

4. Environmental Information

Important Note: This equipment is for INDOOR USE ONLY

Operating Altitude	Up to 2,000 m
Operating Temperature Range	+15 to +40 °C
Operating Humidity	Up to 95% RH
Pollution Degree	2 – Standard Office/Laboratory

5. Shipping and Unpacking

When shipped, the packaging will contain the following items:

- Main Seedseeker Unit
- 2x AA Batteries
- Supplementary documentation

When unpacking and installing the instrument, the following procedure should be followed:

1. Remove the small screw from the base of the handle using a Philips screwdriver.

2. Slide the battery cover down to access the battery compartment.
3. Install 2 x AA batteries (Note correct orientation) replace the battery cover and screw.

6. Switching the Instrument On

To turn on the instrument, simply press and release the Trigger.

To turn off the instrument, press the Trigger for > 1 second and release.

7. User Interface

7.1 Status Bar

The device shows a status bar at the top of the screen. The left side of the bar shows icons for each screen, with the current screen highlighted in orange. It also shows icons for the current sound setting and current battery level. The battery icon will turn red when the battery level is low.

7.2 Navigation Bar

The device shows a bar at the bottom of the screen to assist with navigation. The bar shows three labels. Each label describes the function of the three buttons below the screen. These labels will dynamically update as the screens change and the button's functions change.

8. Ratemeter Screen

The Ratemeter screen is the default display of the device. The device will return to this screen when powering on. By default it shows the current Counts Per Second (CPS) detected in the centre of the screen. The minimum and maximum values detected during the current usage period are displayed along the bottom of the screen. These will be reset when the screen is changed or the unit is restarted.

If the **Background Comp.** setting (See **10. Settings**) has been enabled, the stored background reading will be displayed in the top left of the screen (BG). The current CPS in the centre of the screen will be the detected CPS with the background reading subtracted. If the background reading is greater than the detected CPS, 0 CPS will be displayed.

Pressing Next will change to the Finder Screen.

9. Finder Screen

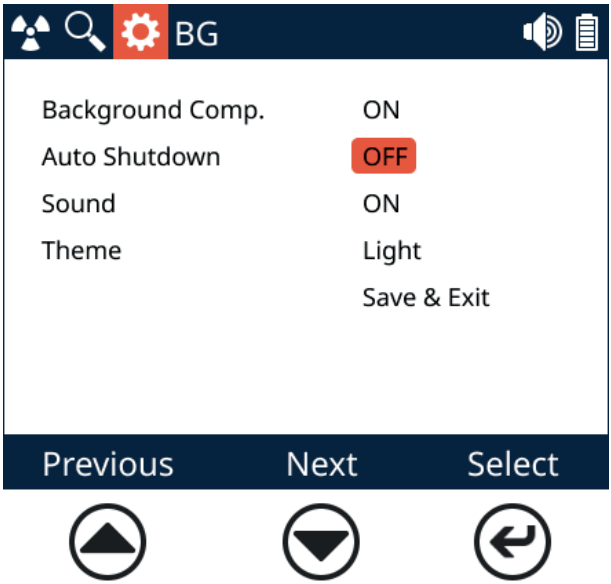
This Finder screen displays a graph to visualise the current radiation level detected and is proportional to the measured count rate. The screen also displays the Counts Per Second (CPS) as well as the minimum and maximum values detected during the current usage period. These will be reset when the screen is changed or the unit is restarted.

If the **Background Comp.** setting (See **10. Settings**) has been enabled, the stored background reading will be displayed in the top left of the screen (BG). The current CPS in the centre of the screen will be the detected CPS with the background reading subtracted. If the background reading is greater than the detected CPS, 0 CPS will be displayed.

Pressing Previous will change to the Finder Screen.

Pressing Next will change to the Settings Screen.

10. Settings



The Settings screen contains multiple user-facing settings that can be changed.

The Enter key must be pressed to change any settings.

Pressing previous and next changes the highlighted setting.

Each setting changes the following:

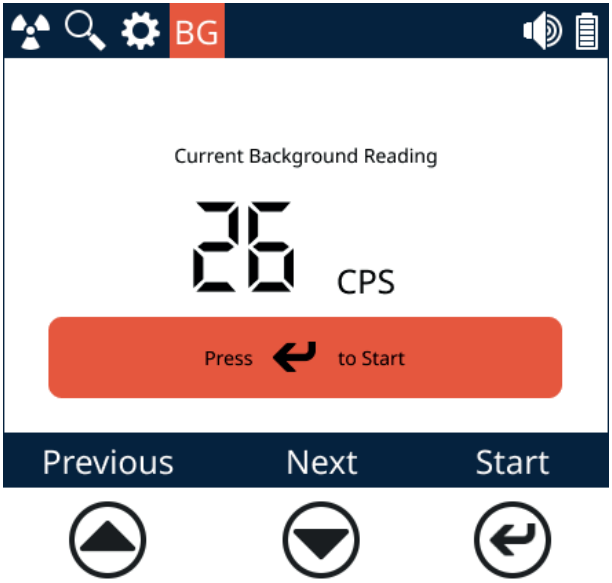
Background Comp.	This setting toggles the Background screen as well as the Background CPS Subtraction functionality. Once enabled, the "BG" icon will appear in the status bar, and a new "Background" screen can be accessed (See **11. Background Screen**)
Auto Shutdown	This setting toggles the unit's auto shutdown feature. When enabled, if the device doesn't detect motion for 5 minutes, it will shutdown. The trigger must be pressed to restart the device.
Sound	This setting toggles the sound output of the device.
Theme	This setting changes the theme of the device to be either Dark or Light.

Figure 1. Light Theme

Figure 2. Dark Theme

Selecting 'Save and Exit' allows the screen to be changed again using the ▲ and ▼ keys.

11. Background Screen



This Background screen BG only appears if the **Background Comp.** setting is enabled. The screen displays the last recorded background reading, as well as a progress bar. The "Enter" button can be pressed to begin taking a new background reading. The progress bar will update as the reading takes place over a period of 10 seconds. Once the reading has been taken, the previous reading is overwritten. The background reading is subtracted from the number of Counts Per Second (CPS) currently detected by the unit. If the background reading is greater than the current CPS reading, then the display will show 0 CPS.

11. Cleaning and Decontamination

Should the Seedseeker require cleaning or decontamination, the instrument must first be powered down and batteries removed.

Surfaces can then be cleaned using an appropriate cleaning agent (e.g. alcohol-based wipes, isopropyl alcohol or a suitable detergent-based cleaner). Concentrated solvents (e.g. Acetone or Methanol) should NOT be used.

In the event of potential radioactive contamination, materials such as LabLogic's LabClean™ or Bind-It™ can be employed.

Important! The instrument must not be immersed in water or any liquid to clean.

Important! All surfaces must be thoroughly dry before the instrument can be reconnected and powered on.

12. Basic Instrument Care

The Seedseeker does not require any intervention from users to keep the instrument in good working order. The following good practice guidelines will however help with trouble-free use of the instrument.

1. The detector is very fragile; take care not to knock the unit.
2. The Seedseeker should have an annual preventative maintenance by a Care Wise-certified engineer.

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