

# **CT007-F**

# **User's Manual**

Environmental Instruments Canada Inc.  
<http://www.eic.nu>

July 2018

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# 1 Introduction

The CT007-F is a small radiation contamination detector. It responds to alpha, beta and gamma radiation. The CT007-F uses a plastic scintillator and solid state photomultipliers to detect radiation.

The CT007-F can be used alone or in conjunction with the *GammaGuard* app, available on the Google Play Store and iOS App Store. It wirelessly connects to smartphones via Bluetooth, so that you can log the data and it interprets the data for you.

## 2 Device Overview



Figure 2.1 CT007-F Front Face Plate

An overview of the front and back is given in Figure 2.1 and 2.2. The CT007-F controls include:

1. OLED Screen – displays readings in units of CPM, uSv/h or mRem/h, and detector information;



Figure 2.2 CT007-F Back

2. Buzzer – each beep represents a detected count. You can enable or disable the “count tone” through the settings on the GammaGuard App. It also beeps if the battery is low;
3. Button – short press (up to 2 seconds) to toggle the screens and long press (2 to 9 seconds) to turn on/off the device;
4. LED – lights up when the device is first powered up (batteries inserted);
5. Alpha/Beta Shield – the shield blocks alpha and beta. Have the shield on the window when measuring gamma only;

6. Battery Door – see “Battery Change” section for changing batteries;

7. Sensor Window – detects alpha/beta through the window without the shield blocking, by sliding the shield towards the battery door.

**⚠ Important: Don't poke anything through the window. It will damage the Mylar. Keep the shield on and cover the window for storage and/or carrying.**

### 3 Basic Operation

Basic operation of the CT007-F is outlined in the following steps.

1. Power unit on by long pressing (2 to 9 seconds) the button on the front face plate.

In a few seconds, the indicator light will illuminate for one second and the display will start showing the readings.

2. The CT007-F detector is now operating! By short pressing (up to 2 seconds), toggle the screens for different measurement unit readings.

The detector will now automatically start radiation detection. The OLED screen has 4 screen displays:

- 1) Counts per minute (CPM)
- 2) Dose Rate (uSv/h or mRem/h)
- 3) Total Counts and Total Dose (C, uSv or mRem)
- 4) Device Information (name, mac address, version number & battery percentage)

Individual screens can be disabled from the app.

## 4 App Usage

The CT007-F can be wirelessly connected to *GammaGuard* app, via Bluetooth Low Energy to:

- View detailed and interpreted detector data
- Switch measurement modes between “gamma mode” and “contamination mode”
- Set alarms for elevated levels
- Change device settings, such as the conversion factor, enabling device count tone or device alarm
- Log your data with GPS coordinates
- Keep your detectors updated

GammaGuard is available on both Android and iOS system. For iOS users, simply search “GammaGuard” on App Store to install *GammaGuard* app. However, due to a bug on Google Play Store, there is no result for “GammaGuard” search. Android phones users please either go to [www.gammawatch.com](http://www.gammawatch.com) and follow the link on home page to direct to our GammaGuard link on Play Store, or open your phone browser and type in <https://play.google.com/store/apps/details?id=nu.eic.gammaGuard>.

Find the app with the following app icon, seen Figure 4.1. Click and install the “GammaGuard” app on your smartphone.



Figure 4.1 App Icon

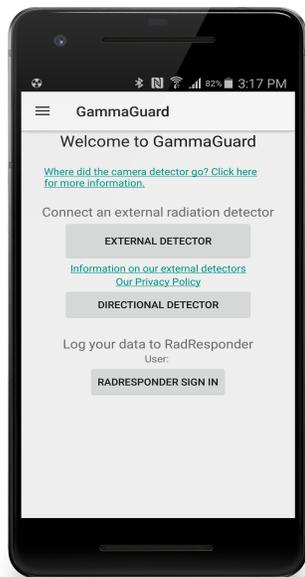


Figure 4.2 Detector Type Select

Click the *GammaGuard* app icon. It shows the welcome screen as in Figure 4.2 and lets you choose to connect to either the camera detector or an external detector. For CT007-F, select “External Detector”.

It will direct the user to the “Detector Scan” screen. All nearby Bluetooth Low Energy devices will be listed. Choose the one called “CT-F-##”, where ## is the unit number for the detector.

During connection, your unit’s firmware will be checked to see if an update is required. If so, this process will be done automatically, and will take several minutes. Upon connecting, the local display on CT007-F will be turned off automatically and user will use the phone UI as display screens. Short pressing the button will turn the local display on while it’s connected to the smartphone.

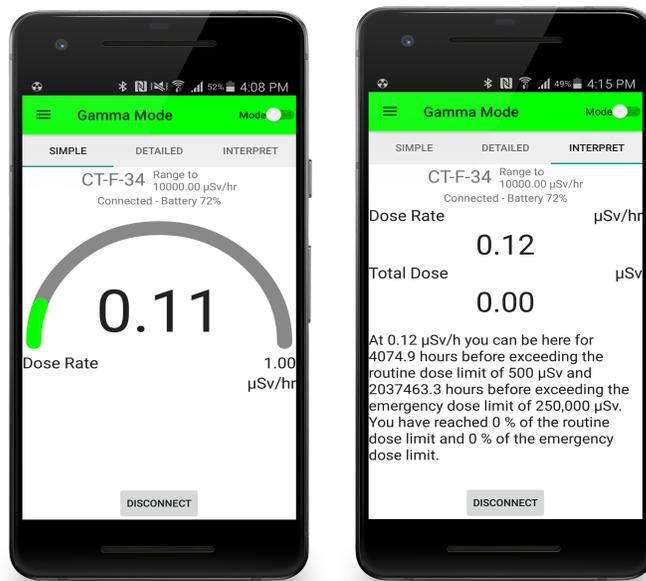


Figure 4.3 “SIMPLE” & “INTERPRET” Screens in Gamma mode

After a successful connection, a screen like the left figure in Figure 4.3 will show up. This is the default screen. It

displays the dose rate level in a simple gauge. By swiping the screen, you can toggle the display between “SIMPLE”, “DETAILED” and “INTERPRET” screens. The “INTERPRET” screen interprets the current dose rate for non-technical users.

There is a mode toggle switch at the top right corner on the status bar, to switch between Gamma mode and Contamination mode. Depending on the detection purposes, use gamma mode to measure gamma levels and switch to contamination mode when doing contamination measurements.

Gamma mode is the default mode and it displays and interprets data in dose rate and total dose. On the other hand, contamination mode uses counts and counts per minute as its measurement and interpretation base units. The alarm levels will be adjusted according to the current operation modes.

When you tap the menu icon on the top left corner, it brings up the menu bar, seen as the left figure in Figure 4.4. Click “Settings” under “External”. The password prompt will display. If you hit “Cancel” or enter the wrong password, you only have access to user settings. If you enter the correct password, you also have access to administrator settings. Be careful with these. The default password is 1234.

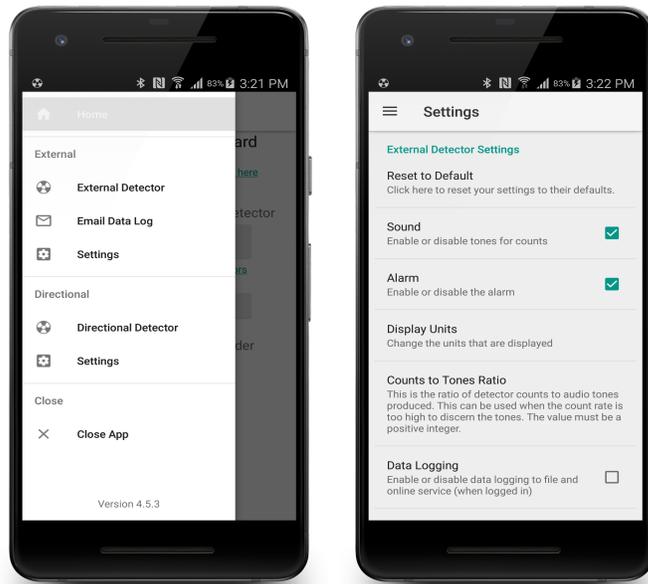


Figure 4.4 Menu Bar and Setting Screen

## 5 Changing Batteries

The CT007-F uses two AAA batteries. The battery replacement processes are:

- 1) Make sure the Alpha/Beta shield is pushed all the way to the top of the case where it won't block battery door for opening or closing (see Figure 5.1);
- 2) Unscrew the battery door screw (see Figure 5.1);
- 3) Open the battery door;
- 4) Replace two AAA batteries;
- 5) Close the battery door;
- 6) Drive the battery door screw back in, being careful not to over tighten;

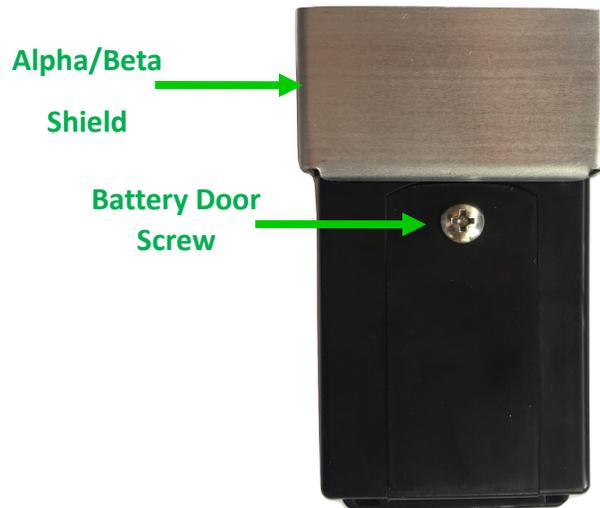


Figure 5.1 Back View of the Case

The following steps are recommended, if the Alpha/Beta shield is going to be taken off or blocks the way of the battery door:

- 1) Pull the Alpha/Beta shield off the case (see Figure 5.2);
- 2) Unscrew the battery door screw;
- 3) Open the battery door;
- 4) Replace two AAA batteries;
- 5) Close the battery door;
- 6) Drive the battery door screw back in being careful not to over tighten;

7) Push the Alpha/Beta shield back on the case (see Figure 5.3) with the assistance of the ramps on the sides of the sensor window\*.

\*Note: For relocating the shield, using the ramps for guiding the shield, make sure the dimples are ahead of the ramps.

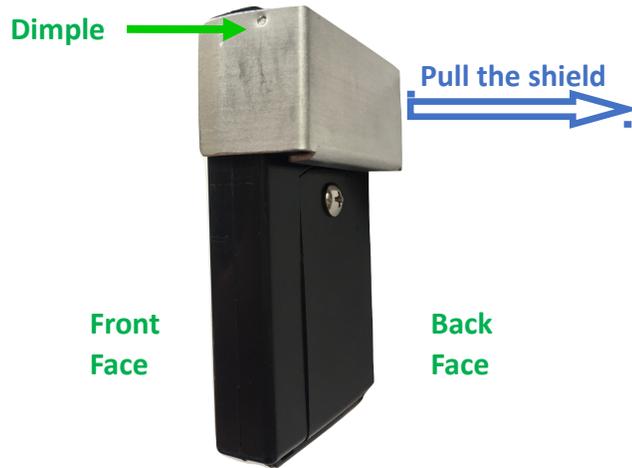


Figure 5.2 Side View of the Case

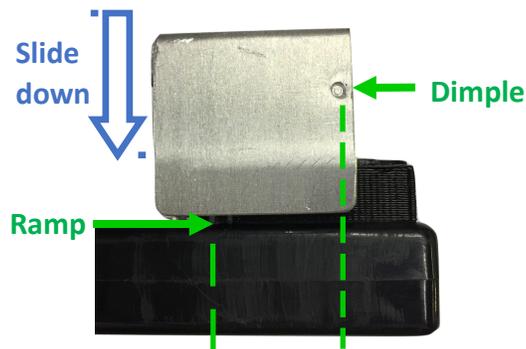


Figure 5.3 Slide the shield back on the case

## **6 Other Useful Information**

### **6.1 Data Logging**

By checking “Data Logging” in settings, measurement data will be written into a CSV file, “dataLog-ExtDetector.csv” in a folder called “GammaGuard” in local storage. The data will be logged each “Logging Interval”.

### **6.2 Data Share by Email**

Clicking “Email Data Log” will direct you to an email composition window, where the current data log file has been attached. Once the recipient email address is entered, the email can be sent out.

Note: If you don’t have an email account logged in on your smartphone, it will require you to enter the email account and password.

### **6.3 Demonstration Video**

For video demonstrations, please search YouTube for “SHTF Radiation Contamination Detector”.

## 6.4 One Year Limited Warranty

This limited warranty applies to CT007 series radiation detectors, purchased from Environmental Instruments Canada Inc.

This covers defects in material or workmanship under normal use for a period of one year after receipt of the product.

During this one year period, EIC Inc. will repair or replace the product at no charge.

*\*Exclusions:*

*This warranty does not cover damages caused by abuse, neglect, or misuse. This includes damage from drops, impacts, or any penetrations through the sensor screen. It will also be rendered void if the product has been repaired or altered by anyone other than EIC Inc.*

To obtain this warranty service, please contact us at: [admin@eic.nu](mailto:admin@eic.nu).

# 7 Support and Contact

## 7.1 Troubleshooting/FAQ

If you have any troubles or questions, please visit our troubleshooting and frequently asked question pages on our GammaWatch website:

<http://www.gammawatch.com/trouble-shooting/>

<http://www.gammawatch.com/frequently-asked-questions/>

## 7.2 Contact Us

If you are not satisfied with the answers on our website or you need further assistance and technical supports, please don't hesitate to contact us.

<b>Phone</b>	+1(306) 974-6055
<b>Online Contact Form</b>	<a href="http://www.gammawatch.com/contact-us/">http://www.gammawatch.com/contact-us/</a>
<b>E-mail</b>	<a href="mailto:admin@eic.nu">admin@eic.nu</a>
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