

CT007-N

User's Manual

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

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1 Introduction

CT007-N (NanoNuke) is a very small, yet highly sensitive radiation detector that fits into the smallest pocket, without pinching the wearer. It can connect to a smartphone via Bluetooth Low Energy (BLE). When connected to a phone, our GammaGuard app provides a rich user interface (UI). The user only interacts with the phone and NanoNuke remains ergonomically out of the way in the user's pocket or at a remote location. This is ideal for covertly checking an area for radiation. The GammaGuard app can run in the background and alerts the user of elevated radiation levels.

The GammaGuard app also allows for time and date stamped data logging with GPS coordinates. The data can be logged to a file on the phone and it can (optionally) be logged to web based databases, such as RadResponder, facilitating informed coordinated incident response.

Two NanoNukes can be connected to GammaGuard at the same time and can be used as a directional radiation detector (patent pending). Prior to NanoNuke, specialized equipment that was large, bulky, complex, fragile and expensive was required to get directional information.

The NanoNuke has a small local display and can be used without a phone. It uses novel technology and is 20 to 200

times more sensitive than Geiger tube based instruments of similar size.

2 Device Overview

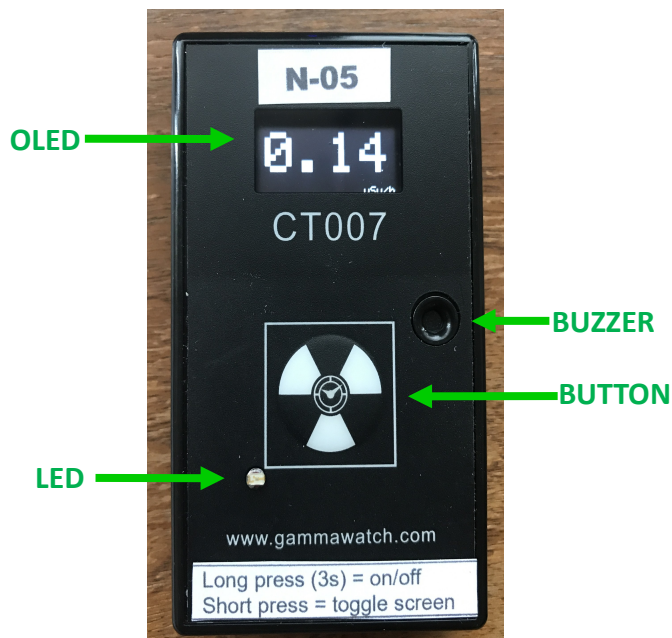


Figure 2.1 CT007-N Front Face Plate

An overview of the front face is given in Figure 2.1. The CT007-N controls include:

1. OLED Screen – displays readings in units of CPM, $\mu\text{Sv/h}$ or mRem/h , and detector information;
2. Buzzer – each beep represents a detected count. You can enable or disable the “count tone” through the settings on 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 (battery inserted).

3 Basic Operation

Basic operation of the CT007-N 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-N 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-N can be wirelessly connected to *GammaGuard*, via Bluetooth Low Energy to:

- View detailed and interpreted detector data
- 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 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

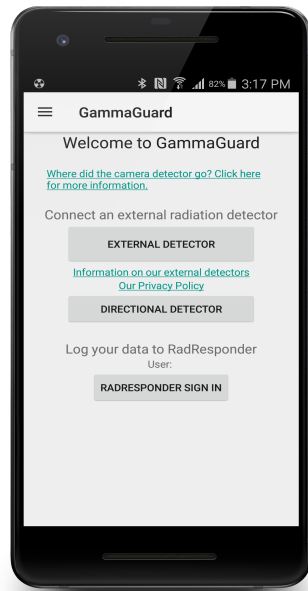


Figure 4.2 Detector Type Select

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-N, 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-N-##”, where ## is the unit number for the N 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-N will be turned off automatically and user will use the phone UI as display screens. Short press 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. “Contamination Mode” for the CT007-N just switches the unit from dose rate to CPM. The CT007-N does not detect alpha and beta contamination.

Gamma mode is the default mode and it displays and interprets data in dose rate and total dose.

When you click 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.

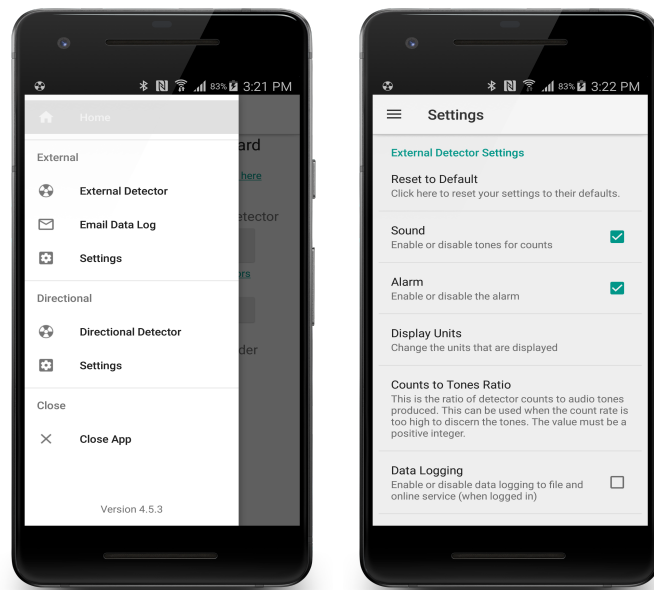


Figure 4.4 Menu Bar and Setting Screen

5 Changing Batteries

The CT007-N uses two AAA batteries. Follow these steps to replace the batteries:

- 1) Unscrew the battery door screw;
- 2) Open the battery door;
- 3) Replace two AAA batteries;
- 4) Close the battery door, make sure the hinge catches;
- 5) Drive the battery door screw back in.

6 Other Useful Information

6.1 Data Logging

By checking “Data Logging” in settings, the next available 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 One Year Limited Warranty

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

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.

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.

Phone	+1(306) 974-6055
Online Contact Form	http://www.gammawatch.com/contact-us/
E-mail	admin@eic.nu
Facebook Group	CT007 Users Group
Address	202-135 Robin Cres. Saskatoon, SK S7L 6M3, Canada