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NUCARE, INC.

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# USER MANUAL

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RADTAG™ RT1 & RT2

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## RADTAG™ RT1 & RT2

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## CHAPTER 1. INTRODUCTION

**RadTag™ RT Series** is a pioneering solution for the safe, efficient transport and quality assurance of radiopharmaceuticals and other radiation-sensitive materials.

Traditional workflows depend on manual radiation checks before and after shipment, while temperature logging and reporting are already automated. **RadTag™ closes this gap** by integrating radiation and temperature monitoring in a single disposable unit—automating QA and simplifying logistics.

**Built for real-world radiopharmaceutical logistics**, it ensures consistent, traceable, and automated quality control throughout the cold chain. Paired with **VisionCore™**, NuCare's cloud-based data platform, users can monitor data, access reports, and verify compliance anytime, anywhere.

With performance validated for regulatory QA workflows and a cost comparable to premium temperature-only loggers, **RadTag™ sets a new standard for automation and reliability in radiopharmaceutical transport.**



Figure 1. RadTag™ RT1 & RT2 series

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## 1.1 IMPORTANT SAFETY INFORMATION

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The RadTag™ device is designed for safe use in radiopharmaceutical and radioactive material transport. Please read the following safety notes before operation.

### GENERAL SAFETY

- RadTag™ contains no hazardous radioactive source.
- Do not attempt to disassemble, modify, or repair the device.
- Protect the device from mechanical shock, crushing, or puncture.

### BATTERY SAFETY

- The device contains a sealed lithium battery.
- Do not expose to fire, incinerate, or attempt to recharge.
- Store within the non-condensing temperature range (0 °C to +40 °C)
- Dispose of the device in accordance with local electronic waste and battery disposal regulations.

### ENVIRONMENTAL SAFETY

- Avoid immersing the device in liquids. RadTag is IP65 rated depending on the model, but prolonged exposure should be avoided.
- When used with dry ice (RT2), allow the device to **defrost at room temperature** before pressing the button to ensure normal operation.

### OPERATIONAL SAFETY

- Once stopped, the device cannot be restarted. Only recorded data may be retrieved.
- Do not obstruct or tamper with the marked **radiation sensor location**, as this may affect calibration accuracy.
- Handle with clean gloves when used in controlled environments to avoid contamination.

### REGULATORY COMPLIANCE

- RadTag™ is CE, FCC, RoHS, KC, EN12830, and ISO17052 certified.
- Always follow institutional and regulatory guidelines for the transport of radioactive and temperature-sensitive materials.

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## 1.2 NOTIFICATION OF COPYRIGHT

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The software is protected by copyright laws and international treaty. You must treat the software like any other copyrighted material. Copyright laws prohibit making additional copies of the software for any reason other than specifically described in this manual. You may not copy the written materials accompanying the product without prior written consent from NuCare Inc.

## CHAPTER 2. HOW TO USE RADTAG™

This chapter introduces the RadTag™ device layout and explains the key components you will interact with during daily operation.

### 2.1 TYPICAL WORKFLOW WITH RADTAG™

RadTag™ is a monitoring device for radioactive material transportation, providing continuous logging and integrity checks. A common application is the shipment of radiopharmaceuticals from production sites to hospitals or nuclear medicine facilities, as shown in figure 2.

1. Production
  - Radiopharmaceuticals are manufactured under controlled conditions.
2. Packaging
  - The RadTag™ is placed inside the radiopharmaceutical package before shipment.
3. Transportation
  - During transit, RadTag™ automatically logs radiation exposure and temperature data.
  - The device functions continuously without user intervention.
4. Integrity Check
  - Upon arrival at the destination, connect RadTag™ to a PC via USB.
  - Download logged data via VisionCore™ or access the PDF/CSV file directly for quick printing.
  - Review the data to confirm transport conditions and verify product integrity.

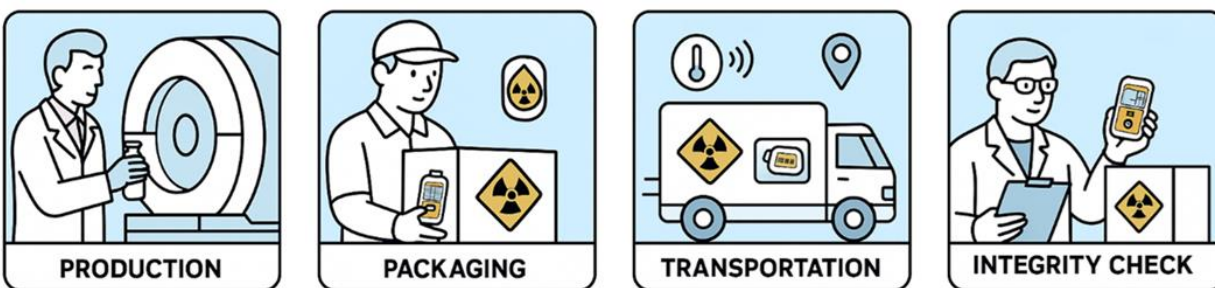


Figure 2. A common application of the transportation of radiopharmaceuticals

## 2.2 DEVICE LAYOUT

The RadTag™ device is designed for simple operation and reliable performance. The following illustrations show the front and back views of the unit, with key components indexed.

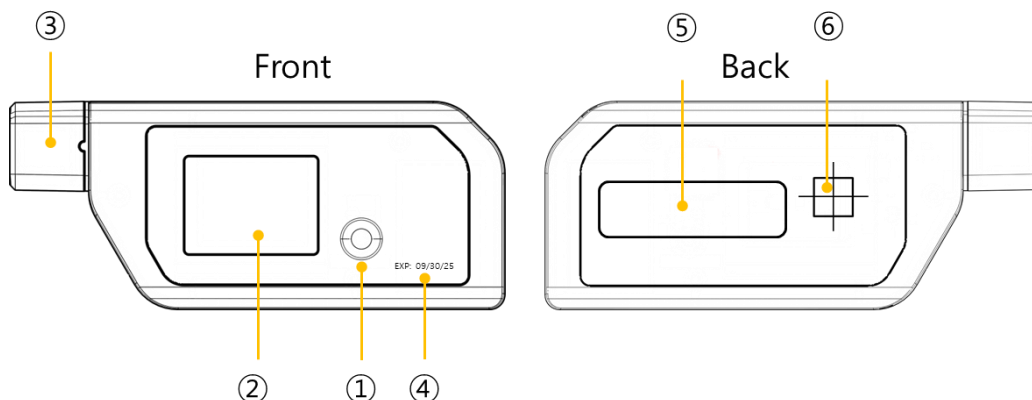


Figure 3. Device Layout

|                 |                             |
|-----------------|-----------------------------|
| ① Power Button  | ② LCD screen                |
| ③ USB & USB cap | ④ Shelf Life                |
| ⑤ Bar-code      | ⑥ Radiation Sensor Location |

## 2.3 MAIN COMPONENTS

- Power Button – single multi-function button used to start/stop logging, mark events, and scroll through display information.
- LCD Display – shows device status, measurement results, and warning messages. Symbols and icons are used to simplify interpretation.
- USB Connector & Cap – Used for data download, device configuration, and print results. The USB cap ensures IP-rated sealing against dust and moisture.
- Shelf Life Indicator (Label) – Marking that indicates the product shelf life (2 years from manufacturing date)
- Bar Code Label – Provides a unique device identifier for tracking and archiving purposes.
- Radiation Sensor Location – Reference point indicating the position of the internal radiation detector. This marking is provided for calibration and informational purposes only; no user action is required at this location.



### ***SPECIAL NOTE – RT2 MODEL DRY ICE USE***

When RadTag™ RT2 model is used inside a dry ice package ( $\leq -80\text{ }^{\circ}\text{C}$ ), the device may become unresponsive immediately upon removal. This is due to temporary freezing of the button mechanism.

- After removal, allow the device to defrost at room temperature for several minutes before attempting to press the power button.
- The device will automatically resume normal button function once defrosted.
- Data integrity is not affected during this period; logging continues as configured.

## 2.4 LCD INTERFACE

The integrated LCD interface provides real-time information about device status, environmental conditions, and alarms. The display symbols are shown in Figure 4.

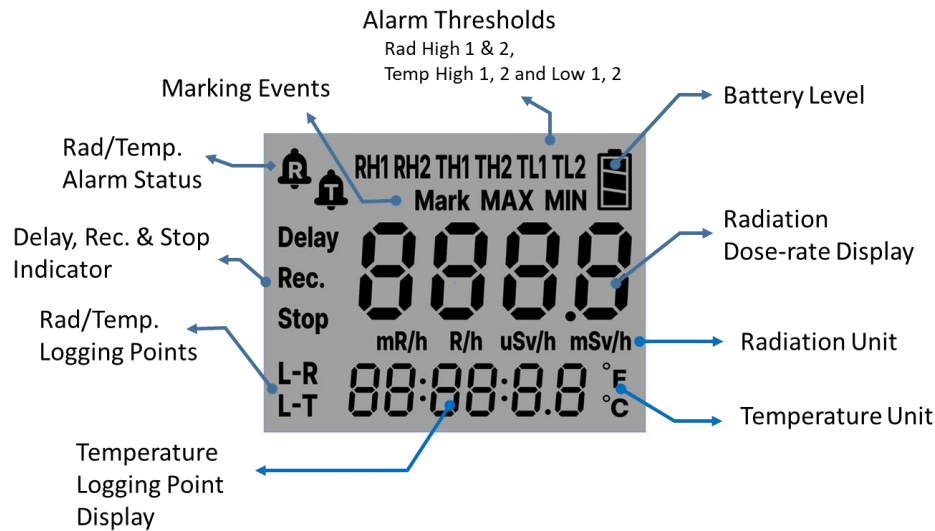


Figure 4. LCD Interface

### ***Display Elements (Figure 4)***

- **RH1 / RH2** – Radiation high alarm thresholds (level 1 and level 2).
- **TH1 / TH2** – Temperature high alarm thresholds (level 1 and level 2).
- **TL1 / TL2** – Temperature low alarm thresholds (level 1 and level 2).
- **Battery Icon** – Indicates remaining battery level.
- **Alarm Symbol** – Appears when any alarm threshold is exceeded.

- **Delay / Rec. / Stop** – Shows whether logging is pending (Delay), active (Rec.), or ended (Stop).
- **Mark** – Event marker; appears when the operator double-clicks the power button.
- **MAX / MIN** – Displays maximum and minimum recorded values.
- **Radiation Dose Rate** – Real-time dose rate in the selected unit ( $\mu\text{Sv/h}$ ,  $\text{mSv/h}$ ,  $\text{mR/h}$ , or  $\text{R/h}$ ).
- **Temperature** – Current temperature in  $^{\circ}\text{C}$  or  $^{\circ}\text{F}$ .
- **Logging Point Display (L-R / L-T)** – Indicates logged data point count.
- **Time Display** – Shows elapsed time or recording status.

## 2.5 OPERATION INSTRUCTIONS

The RadTag™ device is operated with a single multi-function power button. The LCD display automatically enters sleep mode to conserve battery; however, all logging and monitoring functions continue in the background.

### 1. WAKING THE DISPLAY

- **Single press** → wakes the LCD to show status. At first-time use, the device will display Stop-mode by default.

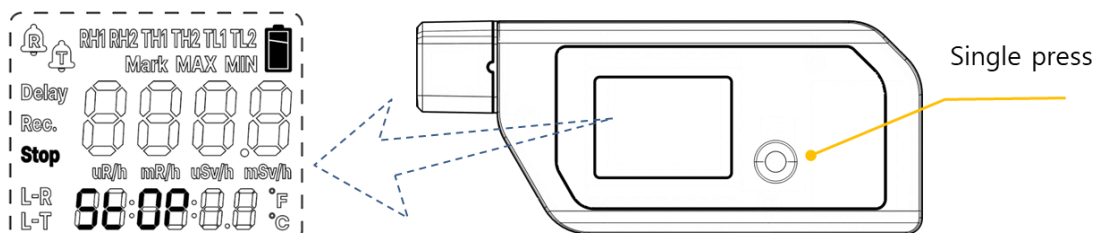


Figure 5. Waking the display LCD

### 2. STARTING THE DEVICE

- **Hold button for 5 seconds** → Device enters **start sequence**.
  - If a **start delay** is configured (e.g., 10 minutes), the device will enter **Delay Mode**.
  - In Delay Mode:
    - **Single press** → Bypass the delay and start measurement immediately.
    - **Double press** → Cancel start and return to Stop Mode.
- Once started, the device enters Recording Mode.

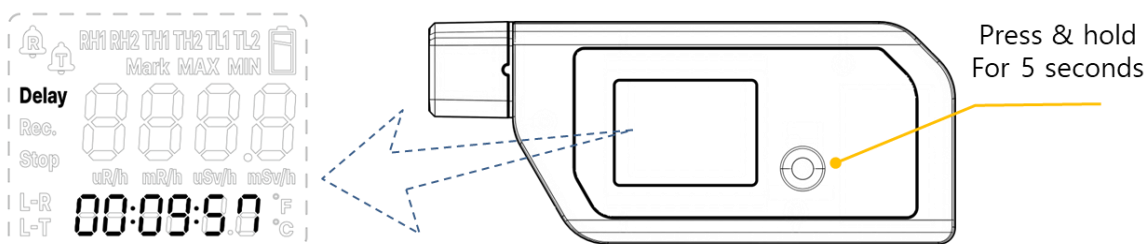


Figure 6. Starting the device

### 3. DURING RECORDING

- **Single press** → Scroll through measured parameters 1-9 in turn as shown in Figure 8.
- **Double press** → Insert an **event mark** into the log as shown in Figure 9.

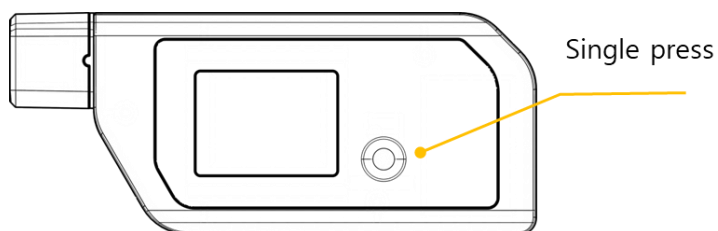


Figure 7. Parameters display during recording



Figure 8. Parameters and Logging information

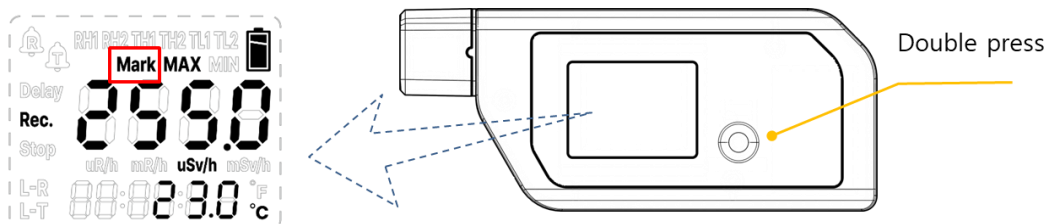


Figure 9. Marking the event

#### 4. ALARM INDICATORS ON LCD

- Bell symbols turn on when any alarm condition is met and remains on (latched)
- R: radiation alarm (dose rate exceeded the RH1 or RH2)
- T: temperature alarm (out of range, TH1-TL1 or TH2-TL2)



Figure 10. Alarm indicators

## 5. PAUSE MODE

- **Hold button for 2 seconds** → Enter **Pause Mode**.
- **Single press** → Resume measurement.

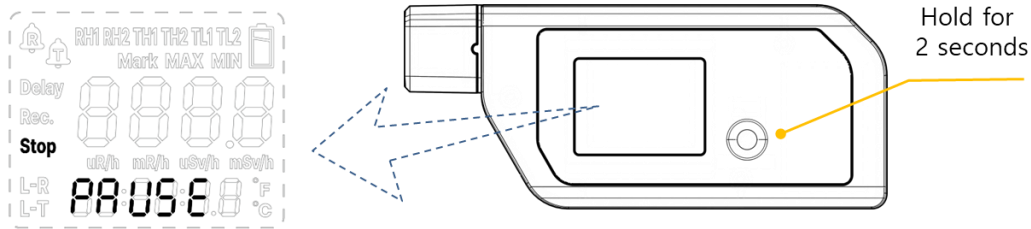


Figure 11. Pause mode

## 6. STOPPING THE DEVICE

- **Hold button for 5 seconds** from the “Pause” mode → Stop measurement, save data, return to Stop Mode.

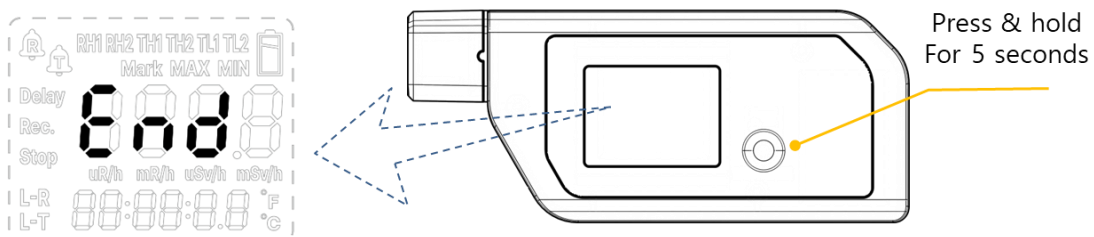


Figure 12. Stopping the device



**Important Note:** Once the device is stopped, it cannot be restarted. Its operational life is complete. Only the recorded information can be retrieved via **VisionCore™ software** (USB/Bluetooth/LTE, depending on model) or exported as an **auto PDF/CSV report**.

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## 2.6 DOWNLOAD LOGGING DATA

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The RadTag™ stores measurement data in internal memory. Data can be retrieved via a USB connection in two ways:

### Connect via USB

1. Connect the device to a PC by plugging in with its **USB port**.
2. The device will be recognized automatically.

### Method 1 – Using VisionCore™ Software (refer to the details in Chapter 3)

- Launch **VisionCore™** on your PC.
- Select **Connect Device** to establish communication.
- Click **Download Logs** to transfer measurement data.
- Logs are stored in the software archive, where you can analyze, export, or generate reports.

### Method 2 – Direct Print (USB Mass Storage Mode)

- When connected via USB, the RadTag™ can also act as a storage device.
- The internal log file appears as a document (e.g., TXT, CSV, or PDF depending on configuration).
- You may directly open and print this file without VisionCore™.
- This option is convenient for quick reporting but does not allow advanced analysis or multi-device management.

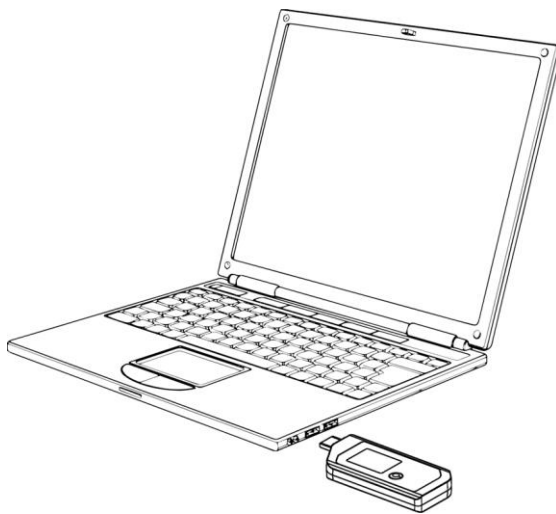


Figure 12. Connect via USB

## Example of PDF logging data print out

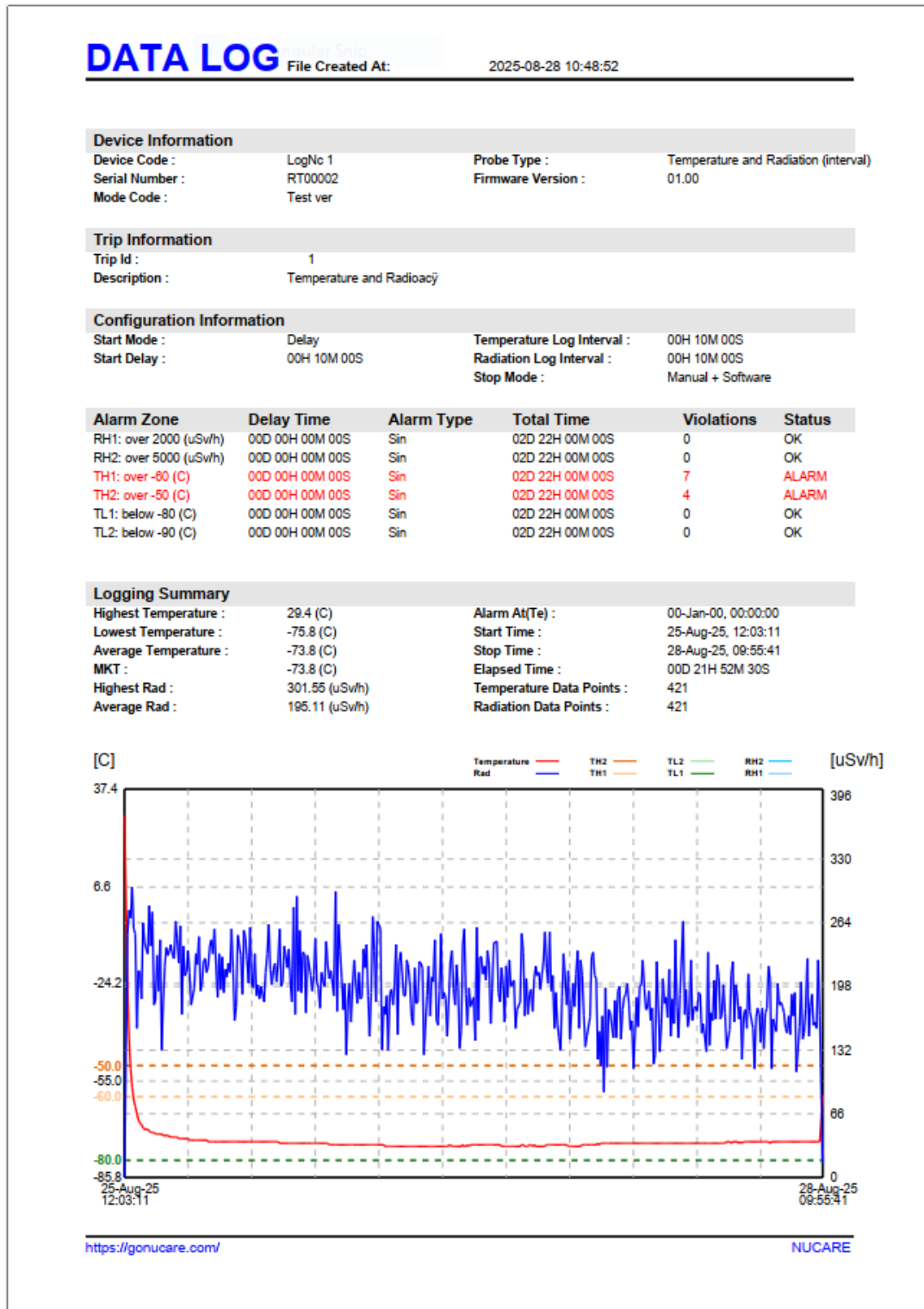


Figure 13. Example Printout

## CHAPTER 3. VISIONCORE™ SOFTWARE

VisionCore™ is the companion software for all RadTag™ devices. It allows users to configure logging parameters, download and archive trip data, and generate automatic PDF/CSV reports for compliance and analysis. Designed for both senders and receivers, it provides a simple interface to review radiation and temperature history, manage multiple devices, and ensure shipment integrity.

### 3.1 DOWNLOADING VISIONCORE™

1. Open an Internet browser (e.g., Internet Explorer, Firefox, Chrome).
2. In the address bar, type: **http://www.gonucare.com/Radtag.html**
3. In the input box, type in password “gonucare”.
4. Click the **VisionCore™ SW** link (see *Figure 14*).

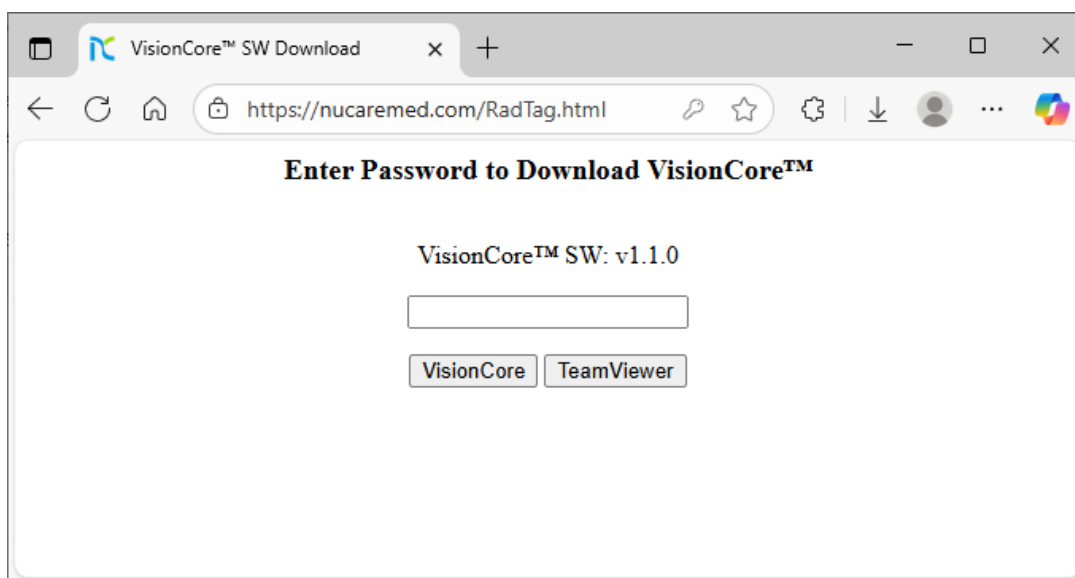


Figure 14. VisionCore™ SW download page

5. When prompted, save the **VisionCore™ SW Installer** file to your PC (see *Figure 15*).

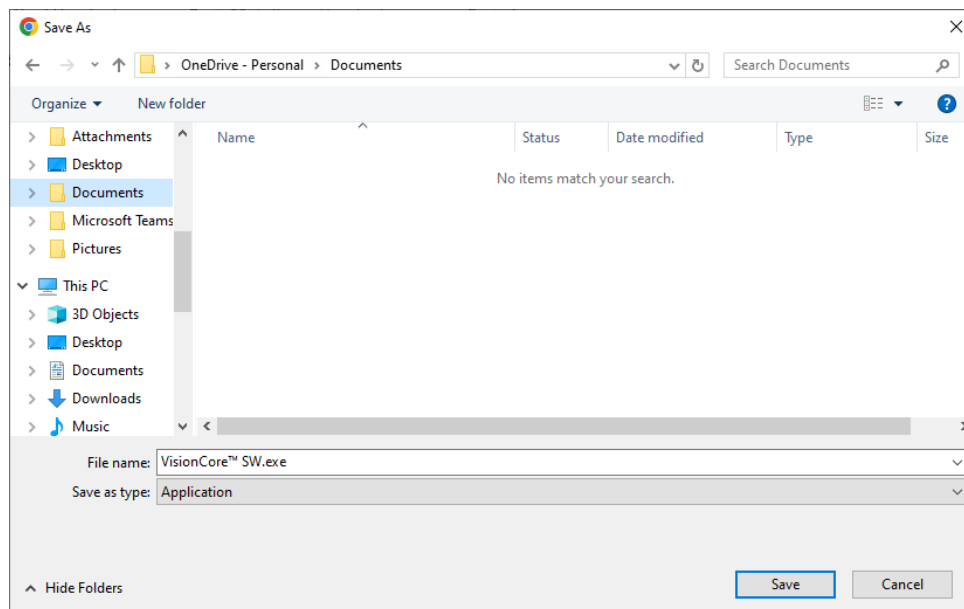


Figure 15. Save VisionCore™ Installer

### 3.2 INSTALLING VISIONCORE™ SOFTWARE

Installing VisionCore™ on the PC is straightforward using the automated installer.

1. Navigate to the folder where the **VisionCore™ SW Installer** was saved.
2. Double-click **VisionCore™ Setup.exe**.
3. Follow the on-screen prompts in the **InstallShield Wizard** (*see Figure 16*).
4. When installation is complete, a desktop shortcut will be created and the software will be available from the Windows Start Menu.

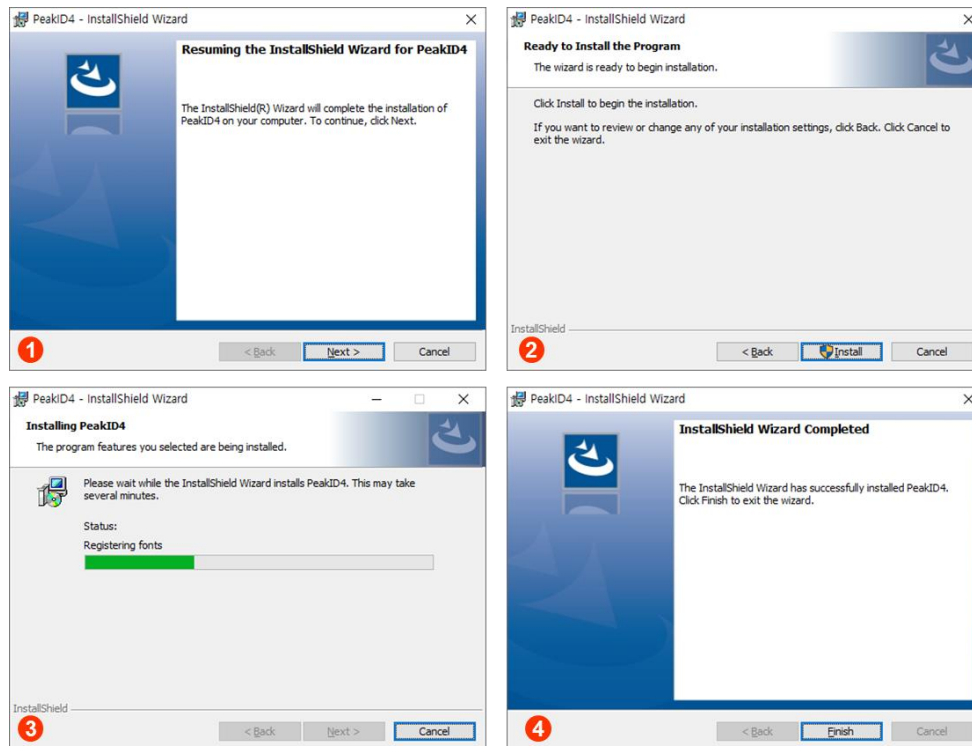


Figure 16 InstallShield Wizard for VisionCore™ (initial screen)

### 3.3 MAIN SCREEN

VisionCore™ Software provides users with a clear and easy-to-use interface for configuring devices, viewing results, and generating reports. The main screen of the application is shown in Figure 17.

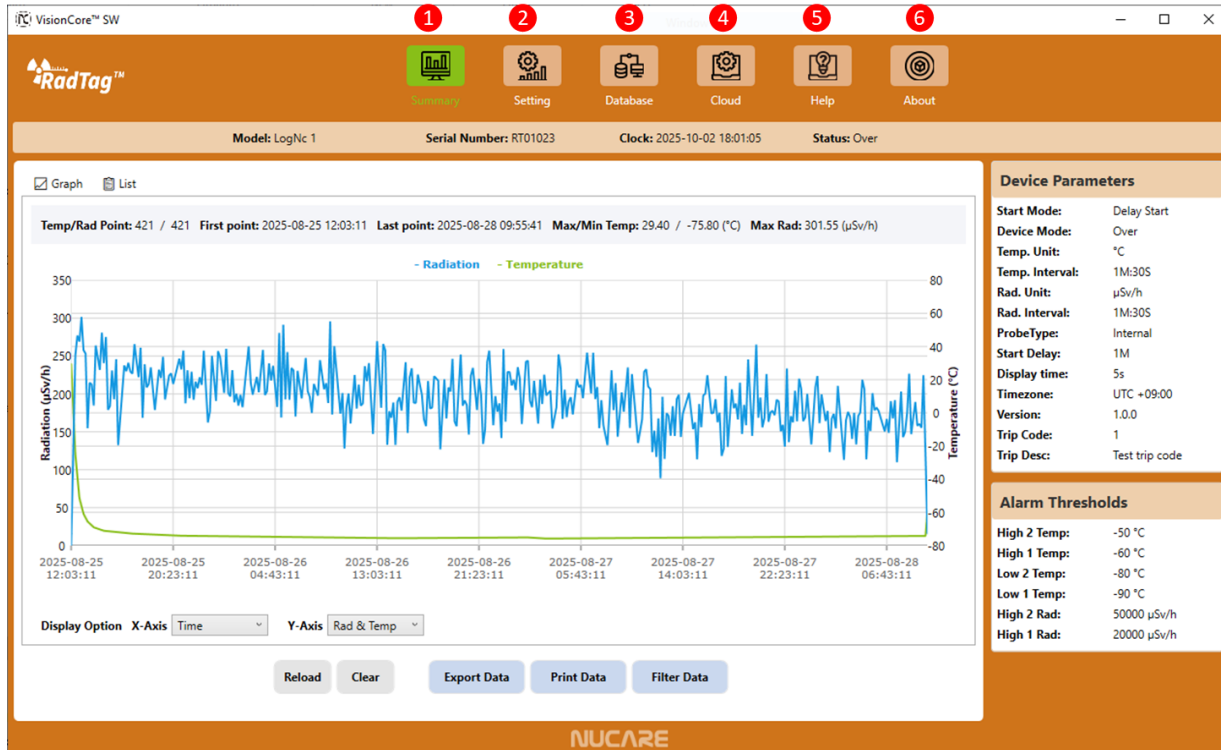


Figure 17. Main screen

|   | Menu     | Description                                                                                               |
|---|----------|-----------------------------------------------------------------------------------------------------------|
| 1 | Summary  | Displays the main dashboard with graphs and data lists of radiation and temperature history.              |
| 2 | Setting  | Opens device configuration options, including logging intervals, alarm thresholds, and measurement units. |
| 3 | Database | Provides access to archived trip data for storage, search, and export.                                    |
| 4 | Cloud    | Data cloud center to upload data to cloud                                                                 |
| 5 | Help     | Opens the user guidance and support information for the software.                                         |
| 6 | About    | Shows software version, license, and developer information.                                               |

### 3.4 SUMMARY SCREEN

The **Summary** menu is the main dashboard of VisionCore™ Software. It provides a complete overview of device status and recorded trip data. The screen is divided into five key sections:

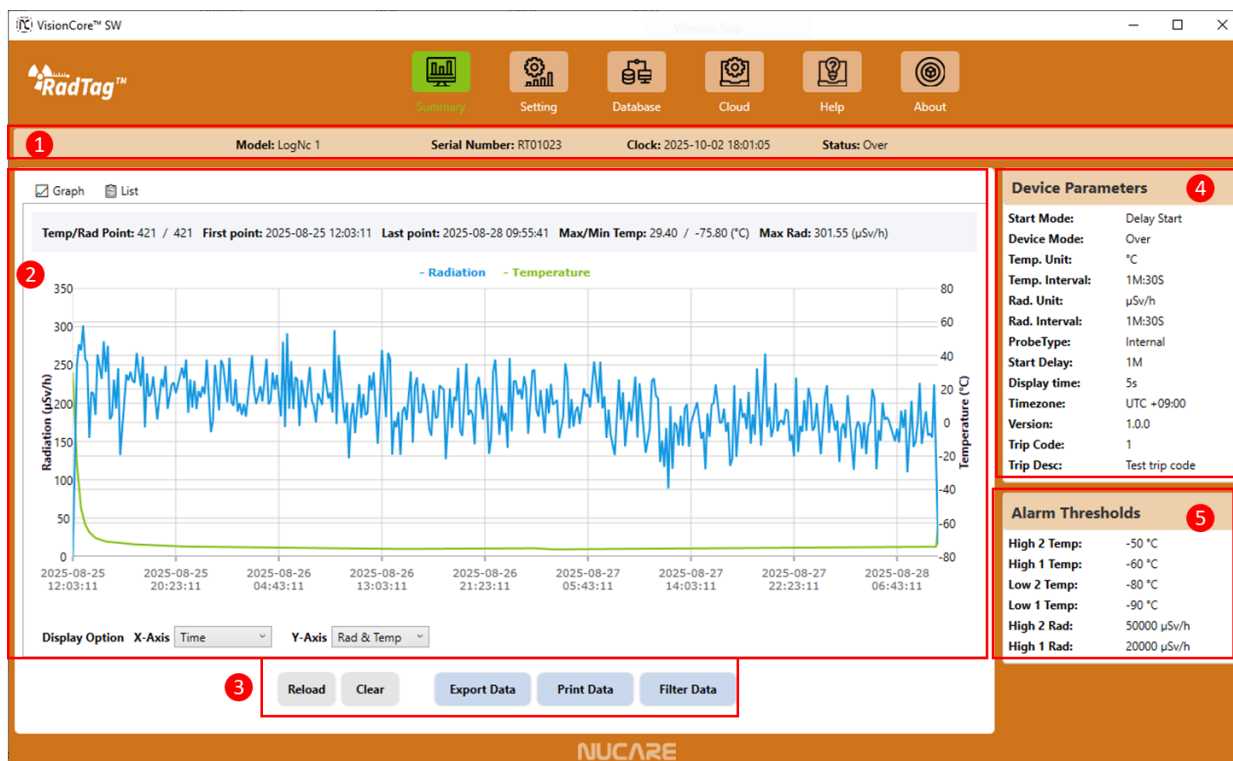


Figure 18. Summary screen

#### 1. Device Information

- Shows basic device details such as model, serial number, date/time, and status

#### 2. Graph Area

Users can toggle between two display modes:

- **Graph View (Figure 19)** – Displays radiation and temperature trends over time in a visual chart.
  - *Blue line:* Radiation ( $\mu\text{Sv/h}$ )
  - *Green line:* Temperature ( $^{\circ}\text{C}$ )
  - X-axis: Time; Y-axis: Radiation dose rate and Temperature values.

- **List View (Figure 20)** – Displays the same data in a **text/table format**, showing precise, time-stamped values for detailed review.

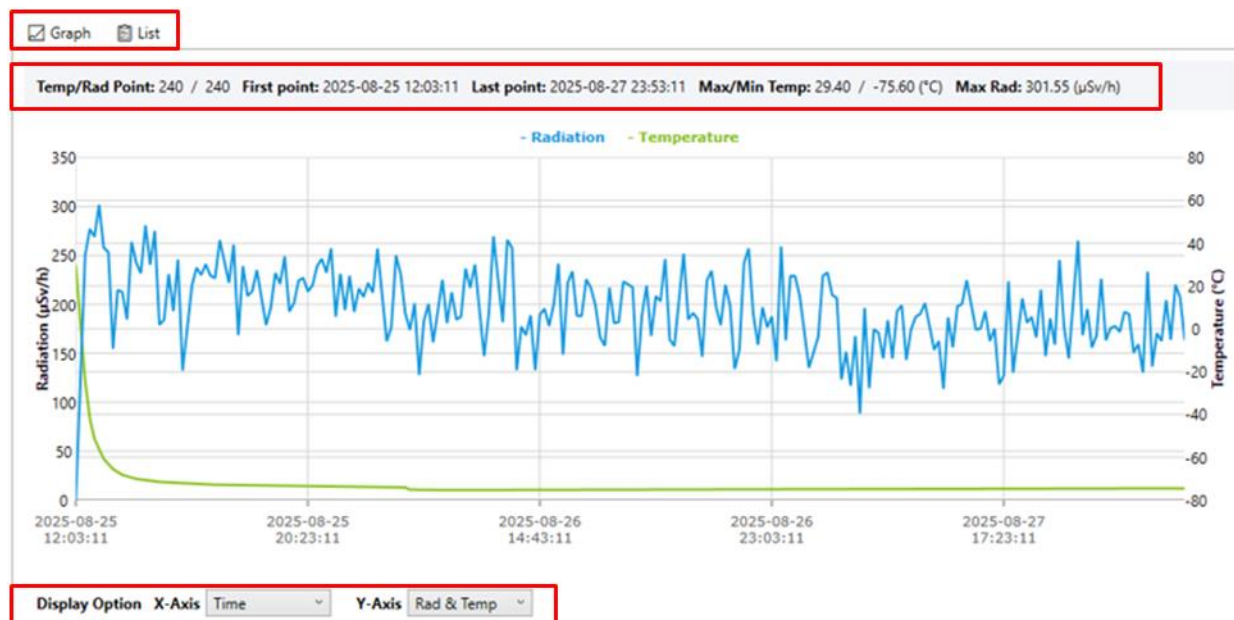


Figure 19. Graph of data log points

At the top of the Graph/List area, VisionCore™ displays key measurement results for quick reference:

- **Temp/Rad Logging Points** – Number of temperature and radiation records stored.
- **First Log** – Timestamp of the first recorded data point.
- **Last Log** – Timestamp of the last recorded data point.
- **Maximum / Minimum Temperature** – Highest and lowest recorded temperatures.
- **Maximum Radiation** – Peak radiation dose rate recorded during the trip.

These parameters allow users to quickly verify the overall transport conditions without needing to scroll through all data points.

The **Display Options** allow users to customize how logged data is shown in the Graph View (*Figure 19*).

- **X-Axis Selection**
  - **Time** – Displays data points along a time scale (absolute timestamp of each log).
  - **Index** – Displays data points in sequence (log number order), useful for quick checks without reference to clock time.
- **Y-Axis Selection**
  - **Temperature Only** – Shows only the temperature curve.

- **Radiation Only** – Shows only the radiation curve.
- **Both** – Displays both temperature and radiation curves on the same chart for direct comparison.

This flexibility allows operators to quickly switch between **time-based analysis** and **point-by-point review**, depending on the transport or compliance requirement.

Graph **List**

| No. | Time                | Temperature (°C) | Radiation (μSv/h) |
|-----|---------------------|------------------|-------------------|
| 0   | 2025-08-25 12:03:11 | 29.40            | 0.00              |
| 1   | 2025-08-25 12:13:11 | 3.20             | 130.70            |
| 2   | 2025-08-25 12:23:11 | -24.30           | 250.54            |
| 3   | 2025-08-25 12:33:11 | -41.60           | 277.01            |
| 4   | 2025-08-25 12:43:11 | -51.30           | 269.10            |
| 5   | 2025-08-25 12:53:11 | -57.00           | 301.55            |
| 6   | 2025-08-25 13:03:11 | -60.80           | 257.93            |
| 7   | 2025-08-25 13:13:11 | -62.90           | 253.25            |
| 8   | 2025-08-25 13:23:11 | -65.50           | 154.80            |
| 9   | 2025-08-25 13:33:11 | -67.10           | 214.69            |
| 10  | 2025-08-25 13:43:11 | -68.20           | 212.55            |
| 11  | 2025-08-25 13:53:11 | -69.00           | 184.70            |
| 12  | 2025-08-25 14:03:11 | -69.60           | 263.83            |
| 13  | 2025-08-25 14:13:11 | -70.10           | 242.59            |

Figure 20. Data point on list table

### 3. Data Management Functions

The **Data Management Functions** provide operators with quick tools to handle and process recorded data (see **Figure 21**). There are five functions:

1. **Reload** – Refreshes the chart and data list with the latest recorded information from the connected device.
2. **Clear** – Removes the current graph or list from the screen without deleting the underlying data.
3. **Export Data** – Saves the logged data in multiple formats (see **Figure 22**):
  - **PDF** – Generates a formatted report including graphs, parameters, and alarms for compliance records.
  - **XLS** – Exports data into Microsoft Excel for extended analysis.
  - **TXT** – Provides raw data in plain text for flexible processing (see **Figure 23**).
4. **Print Data** – Generates a **PDF report** (see **Figure 24**) containing graph, list, and parameter summary for regulatory and quality documentation.

5. **Filter Data** – Allows users to select a specific time range or data subset for focused review. (see Figure 25)

These functions allow efficient handling of large datasets and ensure data can be exported and reported in the required format. Once filtering is complete, the software automatically refreshes the **chart, data table, and parameter summary** to display only the selected interval



Figure 21. Data management functions



Figure 22. Export Data

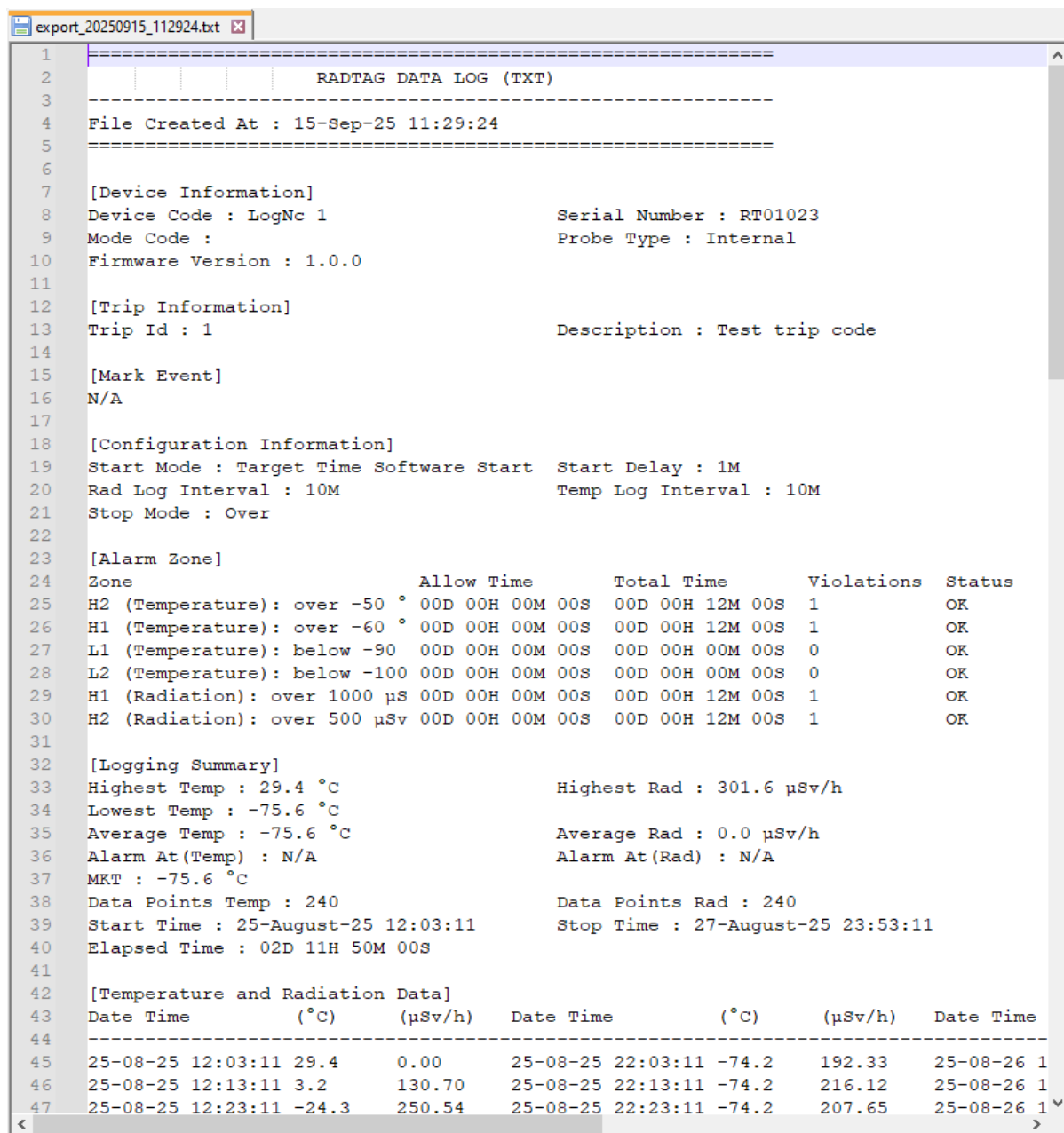


Figure 23. Export Data as TXT format

## RADTAG DATA LOG

File Created At: 15-Sep-25 11:28:26



### Device Information

Device Code : LogNc 1  
 Mode Code :  
 Firmware Version : 1.0.0

Serial Number : RT01023  
 Probe Type : Internal

### Trip Information

Trip Id: 1  
 Description: Test trip code

### Mark Event

N/A

### Configuration Information

Start Mode : Target Time Software Start  
 Start Delay : 1M  
 Device Mode : Over

Temp Log Interval : 10M  
 Rad Log Interval : 10M

| Zone                            | Allow Time      | Total Time      | Violations | Status |
|---------------------------------|-----------------|-----------------|------------|--------|
| H2 (Temperature): over -50 °C   | 00D 00H 00M 00S | 00D 00H 12M 00S | 1          | OK     |
| H1 (Temperature): over -60 °C   | 00D 00H 00M 00S | 00D 00H 12M 00S | 1          | OK     |
| L1 (Temperature): below -90 °C  | 00D 00H 00M 00S | 00D 00H 00M 00S | 0          | OK     |
| L2 (Temperature): below -100 °C | 00D 00H 00M 00S | 00D 00H 00M 00S | 0          | OK     |
| H1 (Radiation): over 1000 µSv/h | 00D 00H 00M 00S | 00D 00H 12M 00S | 1          | OK     |
| H2 (Radiation): over 500 µSv/h  | 00D 00H 00M 00S | 00D 00H 12M 00S | 1          | OK     |

### Logging Summary

Highest Temp : 29.4 °C  
 Lowest Temp : -75.6 °C  
 Average Temp : -75.6 °C  
 Alarm At(Temp) : N/A  
 MKT : -75.6 °C  
 Data Points Temp : 240  
 Start Time : 25-08-25 12:03:11  
 Elapsed Time : 02D 11H 50M 00S

Highest Rad : 301.6 µSv/h  
 Average Rad : 0.0 µSv/h  
 Alarm At(Rad) : N/A  
 Data Points Rad : 240  
 Stop Time : 27-08-25 23:53:11

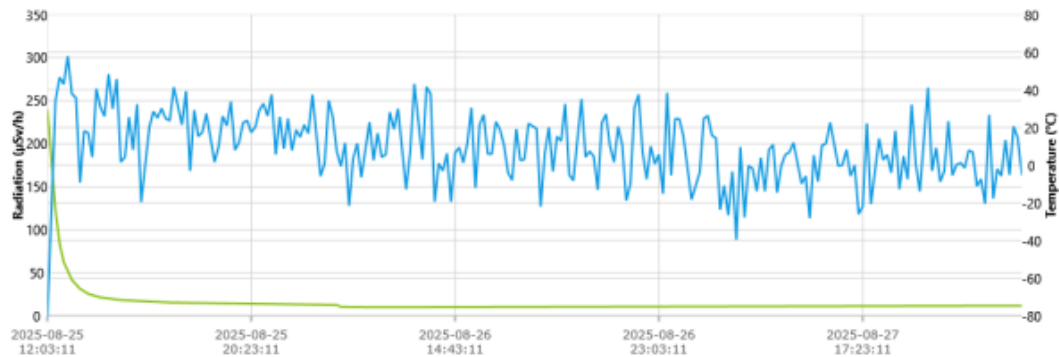


Figure 24. Example PDF File Printout

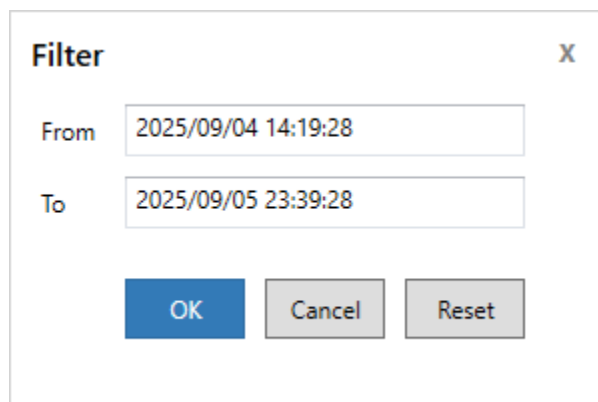
A screenshot of a 'Filter' dialog box. The dialog has a title bar with the word 'Filter' and a close button (X). Inside, there are two text input fields: 'From' with the value '2025/09/04 14:19:28' and 'To' with the value '2025/09/05 23:39:28'. At the bottom, there are three buttons: 'OK' (blue), 'Cancel' (grey), and 'Reset' (grey).

Figure 25. Filter Dialog

#### 4. Device Parameters

The **Device Parameters** section displays key configuration and status information for the connected RadTag™ unit.

- **Start Mode** – Defines how the logger begins recording (immediate or delayed).
- **Device Mode** – Indicates the current operational status (Stop, Delay, Recording, Pause).
- **Temp. Unit** – Selected temperature unit (°C or °F).
- **Temp. Interval** – Interval between successive temperature data points.
- **Rad. Unit** – Selected radiation unit (μSv/h, mSv/h, mR/h, R/h).
- **Rad. Interval** – Interval between successive radiation data points.
- **Start Delay** – Configured delay time between activation and the first recorded data point.
- **Timezone** – Time zone assigned to the device for accurate timestamping.
- **Version** – Firmware version of the device.
- **Trip Code** – User-defined code to identify the trip or shipment.
- **Trip Description** – User-defined description of the trip code.

#### 5. Alarm Thresholds

The **Alarm Thresholds** section shows the configured safety limits for temperature and radiation.

- **High 2 Temp** – Upper temperature threshold 2.
- **High 1 Temp** – Upper temperature threshold 1.
- **Low 2 Temp** – Lower temperature threshold 2.
- **Low 1 Temp** – Lower temperature threshold 1.
- **High 2 Rad** – Upper radiation threshold 2.

- **High 1 Rad** – Upper radiation threshold 1.

These thresholds are used to trigger alarms during transport, ensuring that operators and receivers can verify whether a shipment remained within specified safety conditions.

## 3.5 SETTING

The **Setting Menu** allows users to configure RadTag™ device parameters before operation. It contains two tabs:

- **General Tab** – Used to define logging intervals, trip information, device time, and report format. (see Figure 26)
- **Alarm Tab** – Used to configure upper and lower thresholds for temperature and radiation alarms. (see Figure 27)

### 1. General Setting: Meaning of Parameters

The **General Tab** provides the following configurable parameters:

- **Temperature Logging Interval** – Sets the time interval between two successive temperature data points. *Minimum interval: 30 seconds.*
- **Radiation Interval Factor** – Defines the multiplier for radiation measurement frequency. Available factors: 1, 2, 3, 4, 5, 8, 10.
- **Radiation Logging Interval** – Automatically calculated based on the **Radiation Interval Factor** and the **Temperature Logging Interval**.
- **Start Mode** – Determines how and when the device begins logging. Five options are available:
  - **Delay Start** – Disconnect from PC → press device button → device starts logging after the configured delay time.
  - **Normal Start** – Disconnect from PC → press device button → device starts logging immediately (no delay).
  - **Software Start** – Disconnect from PC → device starts logging immediately.
  - **Delay Software Start** – Disconnect from PC → device starts logging after the configured delay time.
  - **Target Time Software Start** – Device begins logging at a specific time set by the user.
- **Timing Start Time** – Defines the exact start time. Only available if *Target Time Software Start* mode is selected.
- **Start Delay** – Defines a delay period before the first data point is recorded. Available in *Delay Start* and *Delay Software Start* modes.

- **Trip Code** – User-entered numeric code for shipment or trip identification.
- **Trip Description** – User-entered descriptive text associated with the Trip Code.
- **Maximum Duration Capacity** – The maximum logging duration, automatically calculated based on selected intervals.
- **Logging Duration (D)** – Defines the actual logging duration for the trip.
- **Device Time** – Sets the internal clock of the device, synchronized with the PC.
- **Temperature Unit** – Selects °C or °F.
- **Radiation Unit** – Selects  $\mu\text{Sv/h}$  or  $\mu\text{R/h}$ .
- **Device Name** – User-defined name for the logger (e.g., “LogNC 1”).
- **Report Format** – Determines the automatic report output when the device is connected to a PC: either CSV only or CSV+PDF.

The screenshot displays the VisionCore™ SW RadTag™ General Setting Screen. The interface is organized into several sections:

- Navigation Bar:** Includes icons for Summary, Setting (active), Database, Cloud, Help, and About.
- Header Information:** Model: LogNc 1, Serial Number: RT01023, Clock: 2025-10-02 18:01:05, Status: Over.
- General Tab:**
  - Temperature Logging Interval:** 0 H 10 M 10 S
  - Radiation Interval Factor:** 1
  - Radiation Logging Interval:** 0 H 10 M 10 S
  - Start Mode:** Delay Start
  - Timing Start Time:** 2025/10/02 15:17:41
  - Start Delay Time:** 0 D 0 H 5 M
  - Trip Code:** 1
  - Trip Description:** Test trip code
  - Maximum Duration Capacity:** 86D:10H:20M:20S
  - Logging Duration (D):** 86
  - Device Time:** 2025/10/02 15:18:01
  - Temperature Unit:** °C
  - Radiation Unit:**  $\mu\text{Sv/h}$
  - Device Name:** LogNc 1
  - Report Format:** PDF & CSV
- Device Parameters:**
  - Start Mode: Delay Start
  - Device Mode: Over
  - Temp. Unit: °C
  - Temp. Interval: 1M:30S
  - Rad. Unit:  $\mu\text{Sv/h}$
  - Rad. Interval: 1M:30S
  - ProbeType: Internal
  - Start Delay: 1M
  - Display time: 5s
  - Timezone: UTC +09:00
  - Version: 1.0.0
  - Trip Code: 1
  - Trip Desc: Test trip code
- Alarm Thresholds:**
  - High 2 Temp: -50 °C
  - High 1 Temp: -60 °C
  - Low 2 Temp: -80 °C
  - Low 1 Temp: -90 °C
  - High 2 Rad: 50000  $\mu\text{Sv/h}$
  - High 1 Rad: 20000  $\mu\text{Sv/h}$

Buttons at the bottom right include "Load Default" and "Send Parameter". The NUCARE logo is visible at the bottom center.

Figure 26. General Setting Screen

## 2. Alarms Tab: Alarm Threshold Setup

The **Alarm Tab** (see Figure 27) is used to configure upper and lower threshold limits for both temperature and radiation. These thresholds define the conditions under which alarms will be triggered during shipment monitoring.

### Temperature Alarm Thresholds

- **TH1 Temperature** – First high alarm threshold for temperature (upper limit, level 1).
- **TH2 Temperature** – Second high alarm threshold for temperature (upper limit, level 2).
- **TL1 Temperature** – First low alarm threshold for temperature (lower limit, level 1).
- **TL2 Temperature** – Second low alarm threshold for temperature (lower limit, level 2).

### Radiation Alarm Thresholds

- **RH1 Radiation** – First high alarm threshold for radiation (upper limit, level 1).
- **RH2 Radiation** – Second high alarm threshold for radiation (upper limit, level 2).

Once configured, any recorded value exceeding these thresholds will activate the corresponding alarm indicator on the device and in the software report.

| Alarm Zone                                               | Value | Delay Time     |
|----------------------------------------------------------|-------|----------------|
| <input checked="" type="checkbox"/> H2 Temperature (°C)  | 70    | 00 H 00 M 00 S |
| <input checked="" type="checkbox"/> H1 Temperature (°C)  | 50    | 00 H 00 M 00 S |
| <input checked="" type="checkbox"/> L1 Temperature (°C)  | -30   | 00 H 00 M 00 S |
| <input checked="" type="checkbox"/> L2 Temperature (°C)  | -80   | 00 H 00 M 00 S |
| <input checked="" type="checkbox"/> H2 Radiation (μSv/h) | 2000  | 00 H 00 M 00 S |
| <input checked="" type="checkbox"/> H1 Radiation (μSv/h) | 1000  | 00 H 00 M 00 S |

Device Parameters:

- Start Mode: Delay Start
- Device Mode: Over
- Temp. Unit: °C
- Temp. Interval: 1M:30S
- Rad. Unit: μSv/h
- Rad. Interval: 1M:30S
- ProbeType: Internal
- Start Delay: 1M
- Display time: 5s
- Timezone: UTC +09:00
- Version: 1.0.0
- Trip Code: 1
- Trip Desc: Test trip code

Alarm Thresholds:

- High 2 Temp: -50 °C
- High 1 Temp: -60 °C
- Low 2 Temp: -80 °C
- Low 1 Temp: -90 °C
- High 2 Rad: 50000 μSv/h
- High 1 Rad: 20000 μSv/h

Buttons: Load Default, Send Parameter

Figure 27. Alarms setting screen

### 3. Send Parameters

After entering all desired parameters in the **General** or **Alarm** tab, click the **Send Parameter** button to apply the settings to the connected device

#### *4. Restoring Factory Default Parameters*

To reset the device to its factory default parameters:

- Click the **Load Default** button in the Setting Menu.
- Click the **Send Parameter** button to apply the default settings to the connected device.

This ensures that all parameters return to the manufacturer's standard configuration.

---

### 3.6 DATABASE

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#### **ACCESSING THE DATABASE**

Click **Database** on the toolbar to query historical data (*see Figure 29*).

When you access the Database for the first time, the table will automatically display the data points of the device that is currently connected to the Vision™ software. If no device is connected, the table will remain empty.

When data is downloaded from the logger, it is **automatically saved to the database** in the program installation folder:

#### **Default Path:**

C:\Program Files (x86)\Nucare\VisionCore\Database\DeviceSNS\HHHHMMDD\_HHMMSS

Here, **HHHHMMDD HHMMSS** represents the date and time stamp of the download session, ensuring each trip is uniquely stored for traceability and compliance.

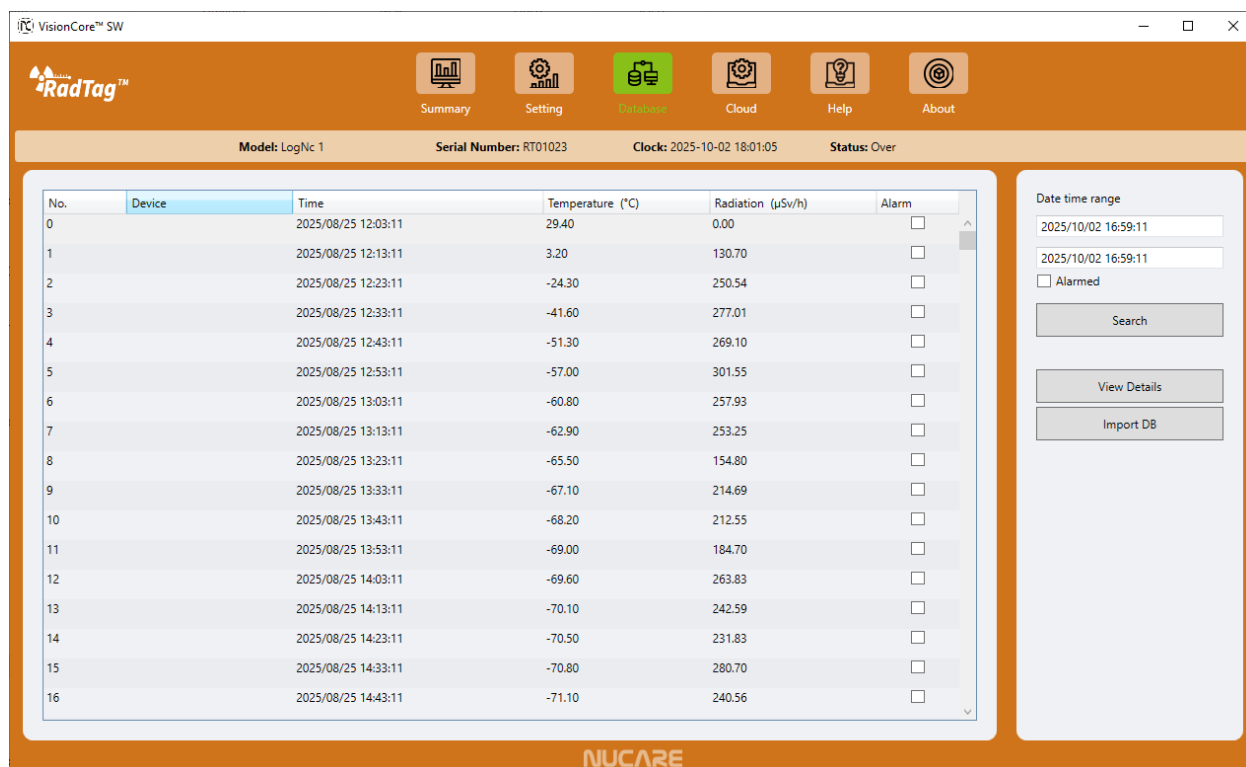


Figure 29. Database screen

### 1. Import DB

To view historical device data stored in the database (see Figure 30):

1. Click **Import DB**.
2. Select the device and the folder containing the database files.
3. Choose the **Event** database file.
4. Click **Open** to load the file.

The selected records will then be displayed in the Database table for review and analysis.

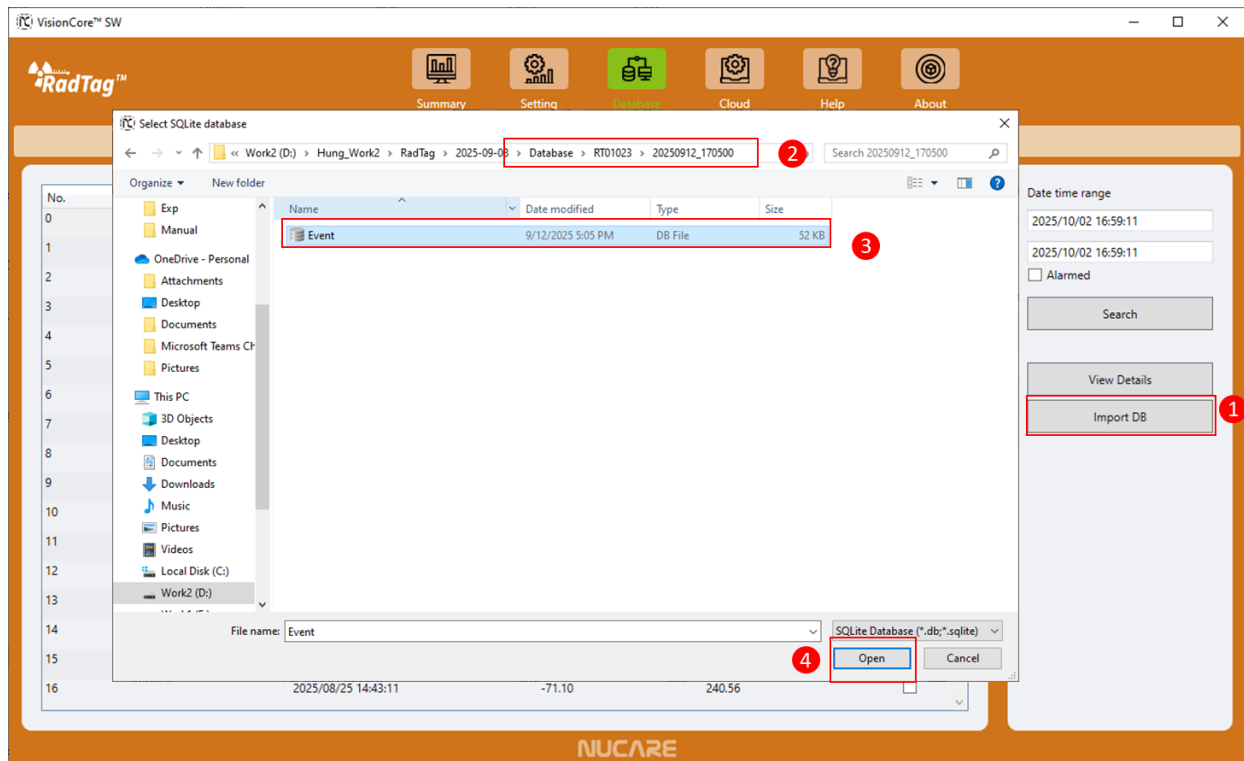


Figure 30. Import DB button

## 2. Open the DB

The **View Details** button allows users to examine any selected dataset in greater depth.

- When a record is highlighted in the **Database** table and **View Details** is pressed, the software opens the **Graph View** screen.
- The display and functions are identical to those described in the **Summary Menu main screen** (see Section 3.4).
- Users can toggle between **Graph** and **List** views, apply **Display Options (X/Y axes)**, and use the **Data Management Functions** (Reload, Export, Print, Filter) to analyze the dataset.

This feature provides a convenient way to switch from a **tabular overview of historical data** to a **graphical analysis mode** without reconnecting the device.

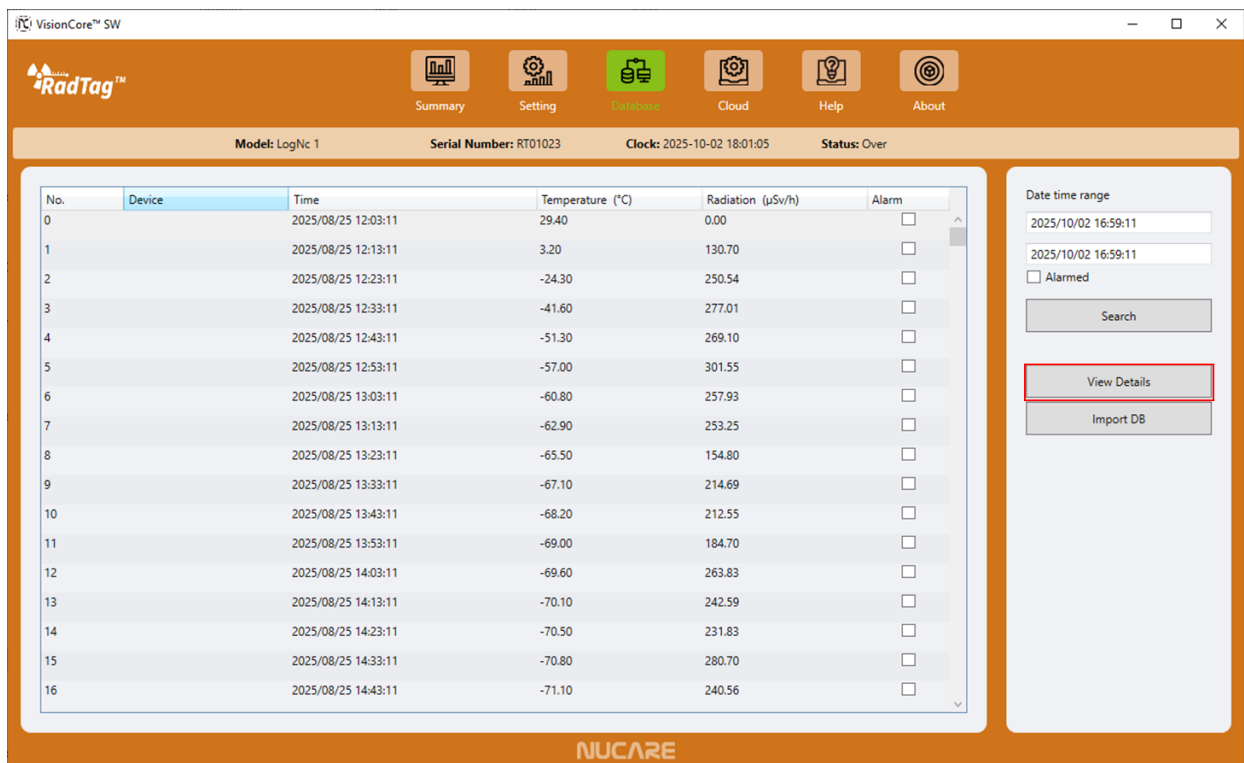


Figure 31. View Details button

### 3. Search function

The **Search** function allows users to filter records by a specific time range.

- Enter the desired **Start Time** and **End Time** in the fields provided.
- Click **OK** to confirm.
- VisionCore™ will then filter the database and display only the records within the selected time range.

This feature is useful for reviewing data from a particular transport phase (e.g., customs inspection, storage period) without scrolling through the entire dataset.

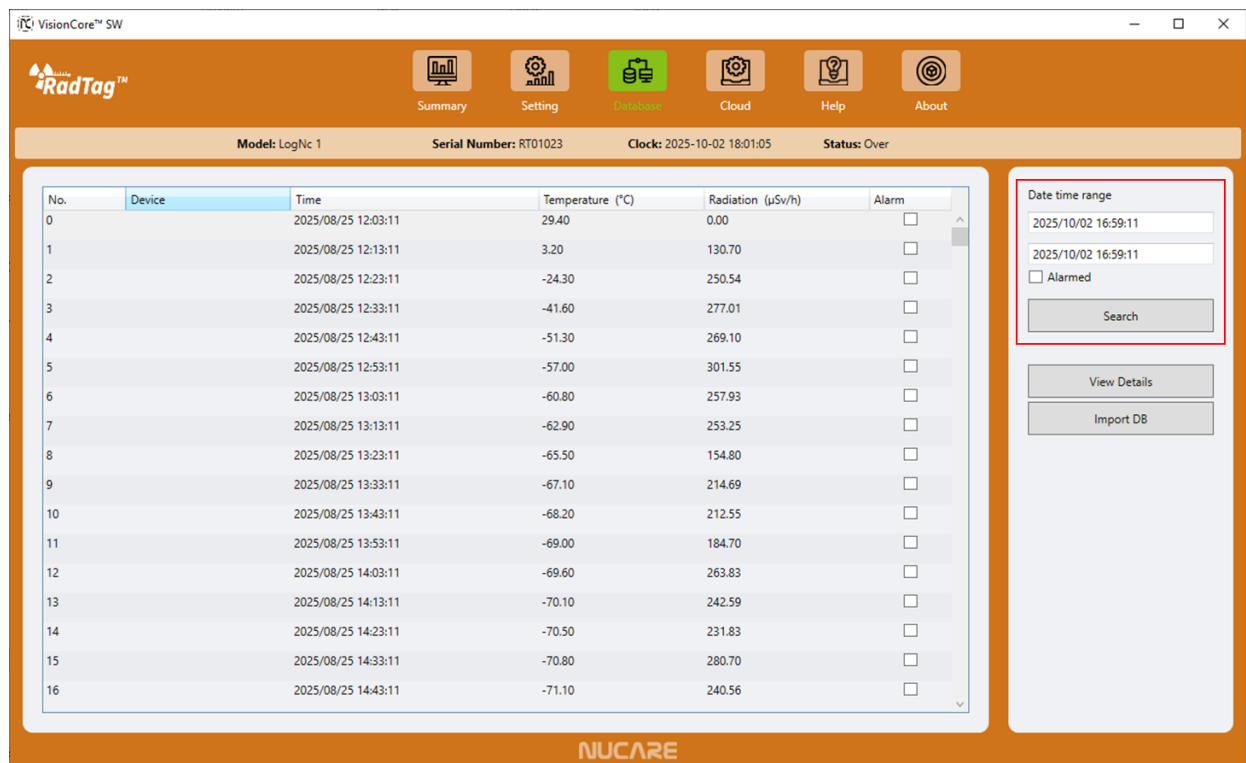


Figure 33. Search function

### 3.7 UPLOAD DB TO CLOUD

The VisionCore™ PC version also includes a feature to upload local databases directly to VisionCore™ Cloud, enabling users to back up data, share shipment records, and synchronize reports across multiple devices or facilities.

Click **Cloud** on the toolbar to open the **Upload Data to Cloud**.

- Upload measurement records (temperature, radiation, and alarm status) from local databases to the cloud.
- Monitor, search, and manage historical data anytime, anywhere.

The **Cloud Login** window will appear, allowing the user to enter the username and password provided by the manufacturer (see Figure 34). After entering the credentials, click **Login** to proceed. If the information is correct, the system will advance to the **Upload Data to Cloud** screen.

**Note:** User credentials (username and password) are created and managed by your organization's administrator — typically the radiopharmaceutical or radioactive material producer. Use the credentials provided by your administrator to access the NuCare Cloud Service.

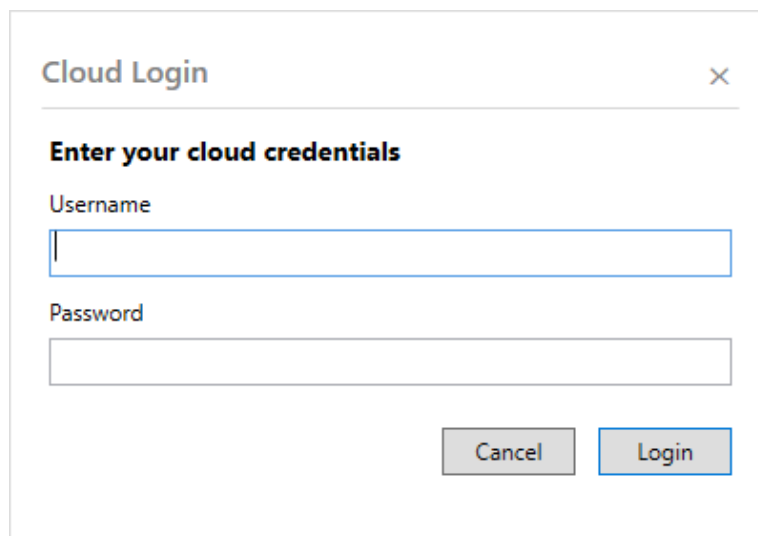
A screenshot of the 'Cloud Login' dialog box. The dialog has a title bar with 'Cloud Login' and a close button (X). Below the title bar, the text 'Enter your cloud credentials' is displayed. There are two input fields: 'Username' and 'Password'. The 'Username' field is currently empty and has a blue border. The 'Password' field is also empty. At the bottom right of the dialog, there are two buttons: 'Cancel' and 'Login'.

Figure 34: Cloud login dialog

**Note:** The serial number can be found on the device label.

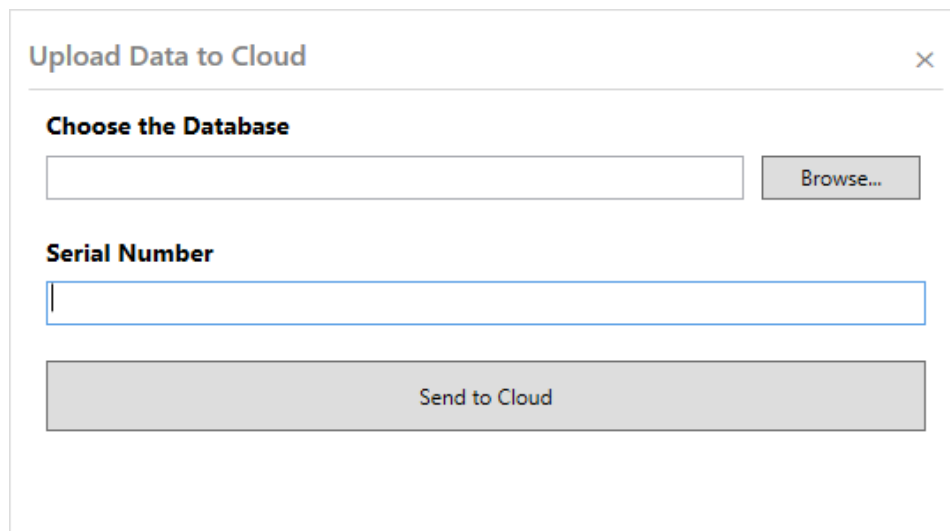


Figure 35: Upload data to cloud screen

In Upload Data to Cloud screen:

1. **Choose the Database:** Select the device and the folder containing the database files.
2. **Serial Number:** Enter serial number of RadTag™ device
3. **Send to Cloud:** Click this button to upload data. Once completed, a message “Upload Success” will be displayed and data becomes available on VisionCore™ Cloud Website described in Chapter 4.

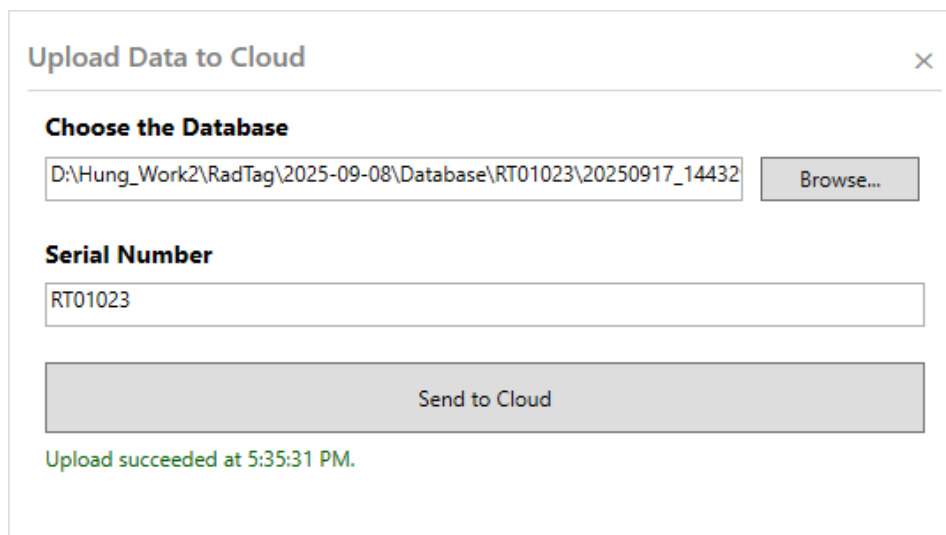


Figure 36. Upload Success” will be displayed

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### 3.8 HELP

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Click **Help** on the toolbar to open the **User Manual**.

- The manual provides detailed instructions on device operation, software functions, and troubleshooting.

It can be used as a quick reference guide while operating VisionCore™.

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### 3.9 ABOUT

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Click **About** on the toolbar to display information about the software and manufacturer.

- Software Information – Version number, build date, and license details of RadTag™ VisionCore™.
- Manufacturer Contact – Company name, website, and support email for technical assistance.

This section provides users with the necessary details for version tracking and for contacting the manufacturer when support is required.

## CHAPTER 4. VISIONCORE™ CLOUD

### 4.1. OVERVIEW

**VisionCore™ Cloud** is NuCare's secure, cloud-based data platform that delivers real-time visibility and effortless quality assurance for RadTag™ devices. It automatically collects and uploads radiation and temperature data, allowing users to monitor shipments, review trends, and access regulatory reports anytime, anywhere.

Functionally similar to the VisionCore™ PC version, it provides the same monitoring and reporting capabilities while simplifying user login and database management through centralized, web-based access—eliminating the need for local installation or maintenance.

### 4.2. LOGIN-GENERAL USERS

The following procedure describes how to log in to the **VisionCore™ Cloud** system:

1. Open your web browser and navigate to:  
<http://223.171.63.82:3000/login>
2. The VisionCore™ Cloud login screen will appear.
3. Enter your **Username** and **Password**.

**Note:** User credentials (username and password) are created and managed by your organization's administrator — typically the radiopharmaceutical or radioactive material producer. Use the credentials provided by your administrator to access the NuCare Cloud Service.

4. Click **Sign In** to access the VisionCore™ Cloud system.

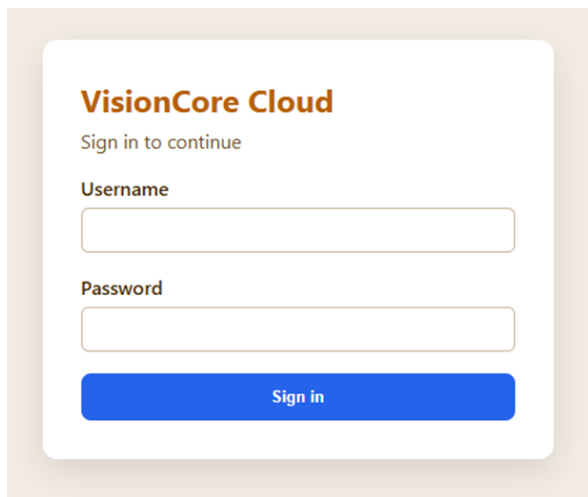


Figure 37: Cloud Web login screen

After logging in, you will see the Registered Devices page. This section lists all devices associated with your account information, including data upload history, serial numbers, and event logs.

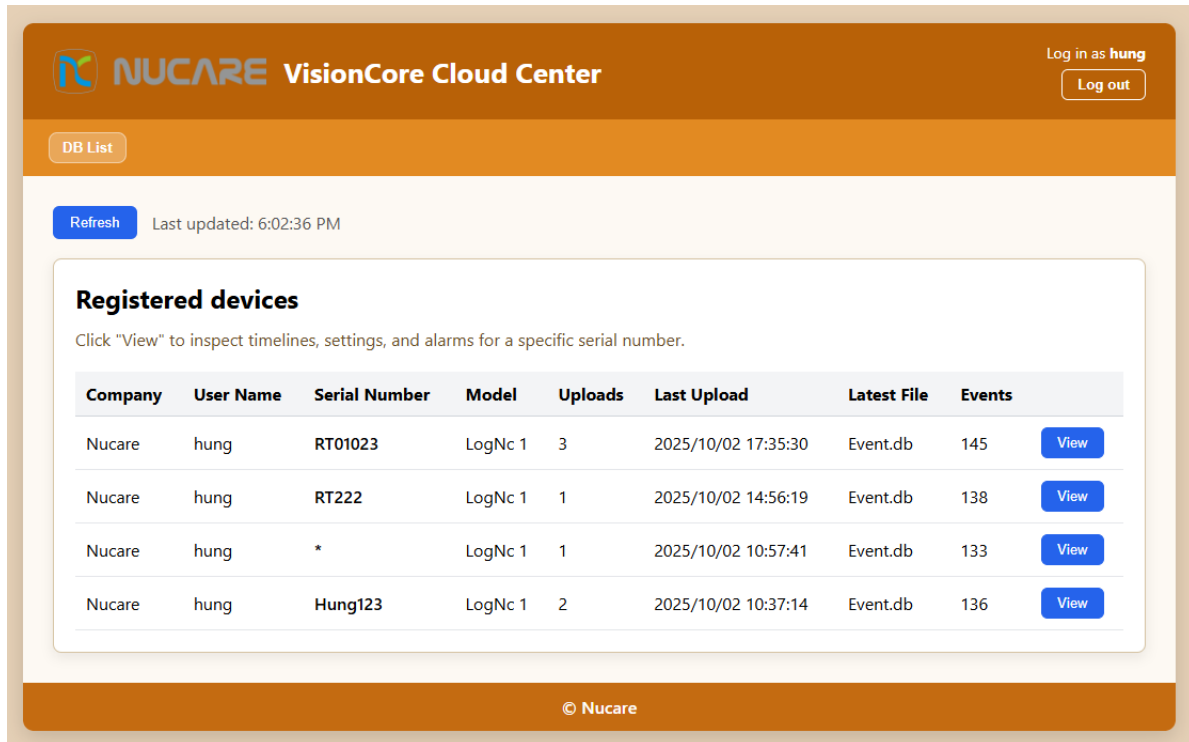


Figure 38: Cloud Web login screen

For the same device with an identical serial number, all uploaded data will be automatically merged to ensure users can monitor and control data over time.

|   | Menu          | Description                                                                  |
|---|---------------|------------------------------------------------------------------------------|
| 1 | Company       | Displays the company name associated with the registered device.             |
| 2 | User          | User account                                                                 |
| 3 | Serial Number | Radtag device serial number                                                  |
| 4 | Model         | Model device                                                                 |
| 5 | Uploads       | Displays the total number of data uploads sent from the device to the cloud. |
| 6 | Last Upload   | Shows the date and time when the latest data upload occurred.                |
| 7 | Lastest File  | Displays the most recently uploaded data file (e.g., Event.db).              |
| 8 | Events        | Indicate total number of recorded events contained in the uploaded file.     |

### 4.3 LOGIN-ADMINISTRATOR

Administrators (e.g., radiopharmaceutical or radioactive material producers) are granted Super Admin privileges by Nucare.

They are responsible for creating, assigning, and managing user accounts within their organization. Use your administrator credentials to log in and configure user access, device registration, and cloud service settings.

- **User management**

To open the User Management panel, click the “User Management” tab in the main menu, as shown in Figure 39.

Administrators can add new users, edit user information, or remove existing users as required. Each user must be assigned the appropriate access privileges before they can log in to the Nucare Cloud Service.

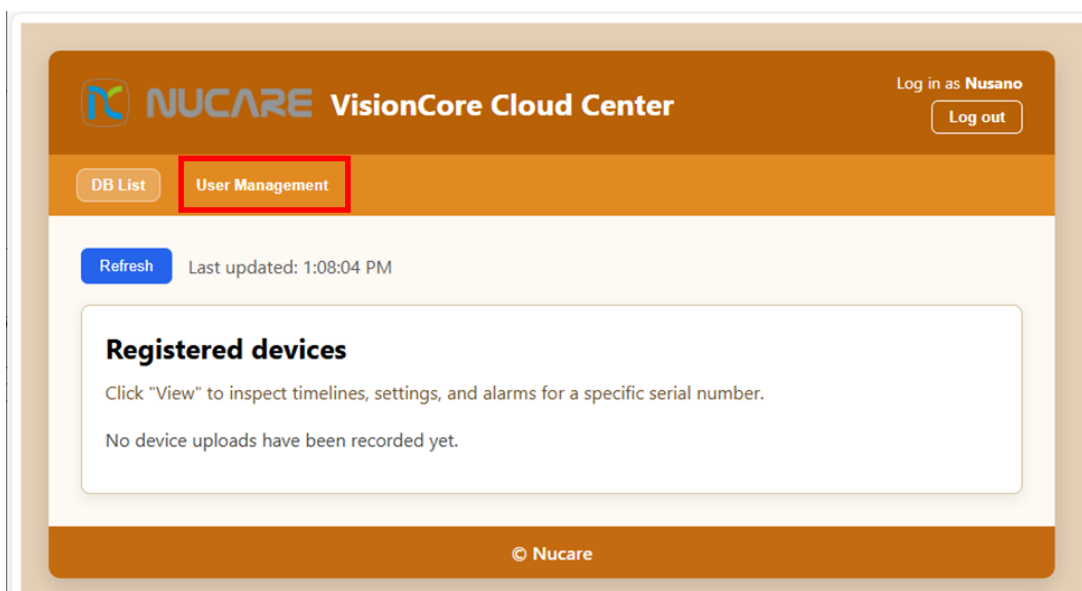


Figure 39. User management tool access

- **Add/Edit/Delete new users**

Click the “User” tab as shown in Figure 40.

Enter and assign a username and password for the new user, then inform the user of their login credentials.

Repeat this process for each additional user you wish to register.

Manage RadTag Cloud user accounts

Log out

Device uploads

Users

### Create a new user

Provide credentials for the new account.

Passwords must be at least 6 characters long.

Username

Password

Re-enter password

Email (optional)

Company (optional)

Phone (optional)

Address (optional)

Create user

### Registered users

Refresh

| Username | Email           | Company | Phone        | Address                    | Created             | Actions |
|----------|-----------------|---------|--------------|----------------------------|---------------------|---------|
| Nusano   | info@nusano.com | Nusano  | +14242709600 | West Valley City, Ut 84120 | 2025/11/04 11:52:15 | Edit    |
| user1    | info@nusano.com | Nusano  | +14242709600 | West Valley City, Ut 84120 | 2025/11/04 11:58:41 | Edit    |

Figure 40. Create a new user

## 4.4. LOGGING SUMMARY

To view detailed information of a specific device, click the “View” button to display the device’s historical data, event logs, and configuration settings, allowing users to analyze measurements, monitor alarms, and export data for reporting.

Logging summary page is divided into four sections.

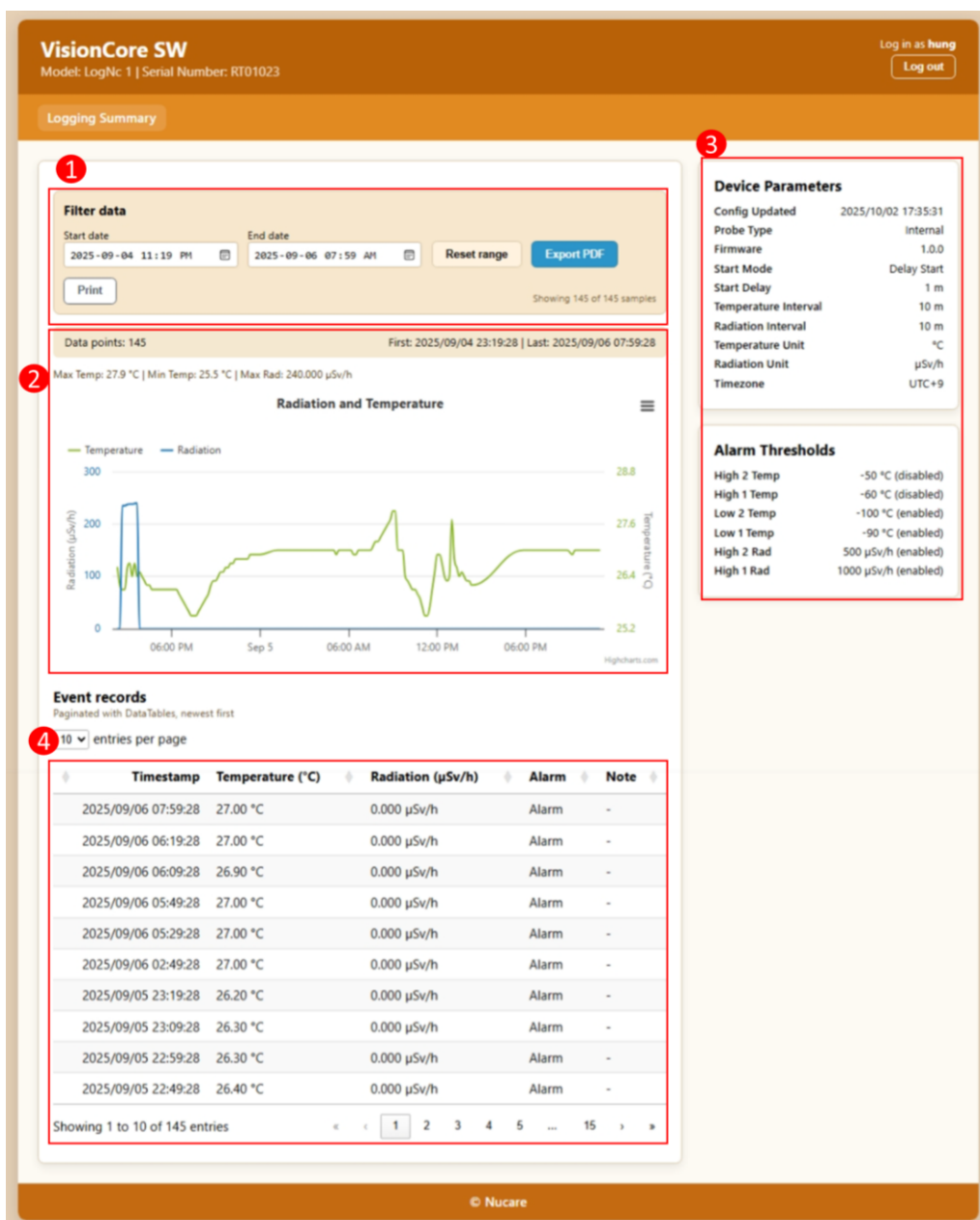


Figure 41: Logging summary page

## 1. Filter Data

The **Filter Data** feature in VisionCore™ allows users to specify a particular period of time to display only the relevant database records. By setting a start and end date, users can quickly narrow down data to specific shipment periods or QA intervals. This helps reduce loading time, improves search efficiency, and makes it easier to review or export only the records needed for analysis or reporting.

- **Start Date / End Date** – Defines the time period for data display. Only records within the selected range will be shown.
  - **Export PDF** – Generates a PDF report of the filtered data for documentation or sharing.
  - **Reset Range** – Clears the selected start and end dates, displaying all available records again.
  - **Print** – Sends the filtered data view directly to a connected printer for hard-copy records.
- Figure 42** shows an example of a **PDF report** generated through the *Export PDF* function. The report includes radiation and temperature data, timestamps, and summary statistics for the selected period.

### RADTAG DATA LOG

File Created At: 2025/10/13 17:18:50

#### Device Information

|                          |                         |
|--------------------------|-------------------------|
| Device Code : LogNo.1    | Serial Number : RT01023 |
| Mode Code : -            | Probe Type : Internal   |
| Firmware Version : 1.0.0 | Mark Event : N/A        |

#### Trip Information

|                  |                              |
|------------------|------------------------------|
| Trip Id : 1      | Description : Test trip code |
| Mark Event : N/A |                              |

#### Configuration Information

|                          |                          |
|--------------------------|--------------------------|
| Start Mode : Delay Start | Temp Log Interval : 10 m |
| Start Delay : 1 m        | Rad Log Interval : 10 m  |
| Device Mode : -          | Timezone : UTC+9         |

#### Alarm Configuration

| Zone           | Threshold                 | Status   |
|----------------|---------------------------|----------|
| H2 Radiation   | 500 $\mu$ Sv/h (enabled)  | Enabled  |
| H1 Radiation   | 1000 $\mu$ Sv/h (enabled) | Enabled  |
| H2 Temperature | -50 °C (disabled)         | Disabled |
| L1 Temperature | -90 °C (enabled)          | Enabled  |
| L2 Temperature | -100 °C (enabled)         | Enabled  |
| H1 Temperature | -60 °C (disabled)         | Disabled |

#### Logging Summary

|                                  |                                  |
|----------------------------------|----------------------------------|
| Highest Temp : 27.9 °C           | Highest Rad : 240.000 $\mu$ Sv/h |
| Lowest Temp : 25.5 °C            | Average Rad : 11.462 $\mu$ Sv/h  |
| Average Temp : 26.6 °C           | Alarm At (Rad) : N/A             |
| Data Points Temp : 145           | Data Points Rad : 145            |
| Start Time : 2025/09/04 23:19:28 | Stop Time : 2025/09/06 07:59:28  |
| Elapsed Time : 01D 08H 40M 00S   | Alarm At (Temp) : N/A            |

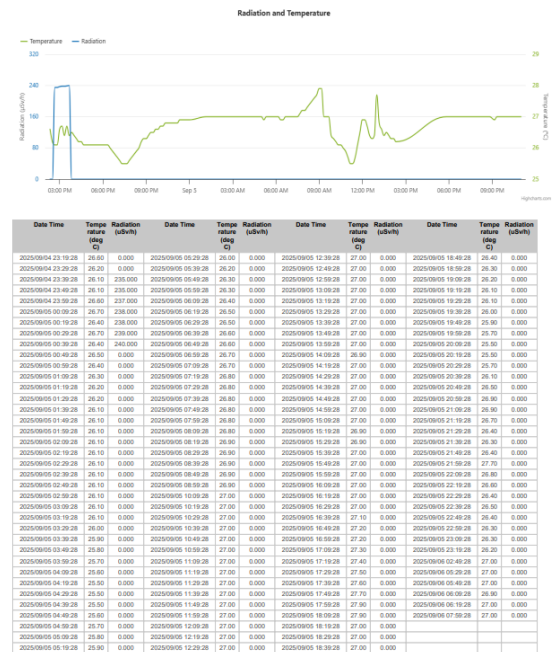


Figure 42: PDF Report Example

## 2. Graph Area

This section will display radiation and temperature trends over time in a visual chart.

- *Dark blue line:* Radiation ( $\mu$ Sv/h)
- *Green line:* Temperature (°C)

- X-axis: Time; Y-axis: Radiation dose rate and Temperature values.

### **3. Configuration Settings and Alarm Threshold**

This section provides a summary of the device parameters and alarm thresholds for the uploaded RadTag device. For detailed descriptions of each parameter, refer to Chapter 3.

### **4. Event Records**

This section displays the list of recorded data samples collected from the device. The records are shown in a tabular format and are sorted by timestamp, with the most recent entries displayed first.

#### **Entries per page:**

- Allows the user to select how many records to display per page (options: 5, 10, 25, or 50 entries).

#### **Table Columns:**

- Timestamp: The exact time the measurement was recorded.
- Temperature (°C): The measured temperature value.
- Radiation (μSv/h): The measured radiation level.
- Alarm: Indicates whether an alarm condition was active at the time.
- Note: Optional comments or additional information.

#### **Pagination controls:**

- Use the arrow buttons to move to the next or previous page.
- Click a page number to jump directly to that page.

**Event records**

Paginated with DataTables, newest first

10 entries per page

| Timestamp           | Temperature (°C) | Radiation (μSv/h) | Alarm | Note |
|---------------------|------------------|-------------------|-------|------|
| 2025/09/04 23:19:28 | 26.60 °C         | 0.000 μSv/h       | Alarm | -    |
| 2025/09/04 23:29:28 | 26.20 °C         | 0.000 μSv/h       | Alarm | -    |
| 2025/09/04 23:39:28 | 26.10 °C         | 235.000 μSv/h     | Alarm | -    |
| 2025/09/04 23:49:28 | 26.10 °C         | 235.000 μSv/h     | Alarm | -    |
| 2025/09/04 23:59:28 | 26.60 °C         | 237.000 μSv/h     | Alarm | -    |
| 2025/09/05 00:09:28 | 26.70 °C         | 238.000 μSv/h     | Alarm | -    |
| 2025/09/05 00:19:28 | 26.40 °C         | 238.000 μSv/h     | Alarm | -    |
| 2025/09/05 00:29:28 | 26.70 °C         | 239.000 μSv/h     | Alarm | -    |
| 2025/09/05 00:39:28 | 26.40 °C         | 240.000 μSv/h     | Alarm | -    |
| 2025/09/05 00:49:28 | 26.50 °C         | 0.000 μSv/h       | Alarm | -    |

Showing 1 to 10 of 145 entries

« ‹ 1 2 3 4 5 ... 15 › »

Figure 43: Event Records screen

## CHAPTER 5. REMINDER AND USEFUL TIPS

- Always verify device parameters (logging interval, units, alarm thresholds) in the Setting Menu before deployment.
- Use a Trip Code and Trip Description for every shipment to ensure clear traceability in the database.
- During shipment, the LCD may enter sleep mode to save power — press the button once to wake the display.
- Remember: once a device is stopped, it cannot be restarted. Only the stored data can be retrieved.
- When using RT2 with dry ice, allow time for the device to defrost before pressing the button.
- Export data in the format most suitable for your workflow: PDF for reports, XLS for extended analysis, TXT for raw records.
- Use the Filter Data function to focus on critical periods (e.g., customs checks or handovers).
- Back up the Database folder regularly to avoid data loss (default path: C:\Program Files (x86)\Nucare\RadTag™ Application\Database).
- For any uncertainty, consult the built-in Help Menu or contact the manufacturer via the About Menu.

## APPENDIX-I: SPECIFICATIONS

| Models               | RadTag™ RT1                             | RadTag™ RT2                             | RadTag™ ART                             |
|----------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|
| Temp. Range          | -30°C ~ +70°C                           | -80°C ~ +70°C                           | -80°C ~ +70°C                           |
| Temp. Accuracy       | -30°C ~ +70°C : ±0.5°C                  | -30°C ~ +70°C : ±0.5°C<br>others : ±1°C | -30°C ~ +70°C : ±0.5°C<br>others : ±1°C |
| Rad. Dose rate range | 10uSv/h~100mSv/h                        | 10uSv/h~100mSv/h                        | 10uSv/h~100mSv/h                        |
| Energy Response      | 100keV ~ 3MeV                           | 100keV ~ 3MeV                           | 100keV ~ 3MeV                           |
| Logging Capacity     | 18,000 points                           | 18,000 points                           | 18,000 points                           |
| Logging Interval     | 30s – 24h                               | 30s – 24h                               | 30s – 24h                               |
| Data Interface       | USB                                     | USB                                     | BT, IoT SIM                             |
| IP rate              | IP65                                    | IP65                                    | IP67                                    |
| Report Format        | Auto PDF report, CSV                    | Auto PDF report, CSV                    | Auto PDF report, CSV                    |
| Shelf Life           | 2 years                                 | 2 years                                 | 2 years                                 |
| Runtime              | 120 days interval: 10m                  | 120 days interval: 10m                  | 360 days interval: 10m                  |
| Certification        | CE, FCC, RoHS, KC,<br>EN12830, ISO17052 | CE, FCC, RoHS, KC,<br>EN12830, ISO17052 | CE, FCC, RoHS, KC,<br>EN12830, ISO17052 |
| Dimension            | 105x42x9.7 mm                           | 105x42x9.7 mm                           | 105x42x9.7 mm                           |
| Weight               | 36 g                                    | 36 g                                    | 55g                                     |
| Software             | VisionCore™                             | VisionCore™                             | VisionCore™                             |
| Mark                 | Unlimited                               | Unlimited                               | Unlimited                               |
| Alarm                | Rad: 2 highs<br>Temp: 2 lows/highs      | Rad: 2 highs<br>Temp: 2 lows/highs      | Rad: 2 highs<br>Temp: 2 lows/highs      |

## APPENDIX-II: FACTORY DEFAULT PARAMETERS

| Privilege | Parameter                  | Factory default | Note                 |
|-----------|----------------------------|-----------------|----------------------|
| General   | Temp. Logging Interval     | 10 min          | Factory Default      |
|           | Radiation interval factor  | 1               | Factory Default      |
|           | Radiation Logging Interval | 10 min          | Factory Default      |
|           | Start Mode                 | Delay Start     | Factory Default      |
|           | Start Delay Time           | 5 min           | Factory Default      |
|           | Trip Code                  | 1               | Application-Specific |
|           | Trip Description           | One way         | User-Defined         |
|           | Device Time                | Current time    |                      |
|           | Temperature Unit           | °C              | Factory Default      |
|           | Radiation Unit             | uSv/h           | Factory Default      |
|           | Device Name                | RadTag          |                      |
|           | Report Format              | PDF & CSV       | Factory Default      |
| Alarm     | H2 Temperature             | 70 °C           | Factory Default      |
|           | H1 Temperature             | 50 °C           | Factory Default      |
|           | L1 Temperature             | -30 °C          | Factory Default      |
|           | L2 Temperature             | -80 °C          | Factory Default      |
|           | H2 Radiation               | 2 mSv/h         | Factory Default      |
|           | H1 Radiation               | 1 mSv/h         | Factory Default      |
|           | Delay time format          | 00H00M00S       | Factory Default      |