

## Corentium Pro Operating Instructions

---

### 1. Introduction

The Airthings Corentium Pro continuous radon monitor is designed to be easily operated by a mobile device as described in **Section 1.1** in conjunction with the Corentium Pro mobile app and online Dashboard.

#### 1.1. Equipment Required

In order to perform a radon test, at least one Corentium Pro radon monitor is required. In order to set up a radon test using Corentium Pro a mobile device, such as a smartphone or tablet with the Corentium Pro mobile app installed, is required. Additionally, Airthings recommends that Corentium Pro be placed on a tripod to ensure optimal airflow around the monitor, as well as to have the monitor set up at the appropriate height. Other equipment such as tamper-deterrent or tamper-evident equipment is optional and can be used at the discretion of the radon testing company.

#### 1.2. Scope of Document

Please note that the information contained in this document is for the operation of Corentium Pro and related software only. Measurement regulations and protocol, including the proper placement of the monitor, as well as measurement durations, radon report requirements, document and data retention, calibration schedules, quality assurance and quality control measure, and others, are beyond the scope of this document. It is the duty of the radon professional to become familiar with, and comply with all regulations and protocols for the location in which the radon test is taking place.

### 2. Corentium Pro Continuous Radon Monitor

#### 2.1. Hardware Description

Corentium Pro is a small, continuous radon monitor which detects radon by means of alpha spectrometry. It has 4 passive diffusion chambers with a time constant of 25 minutes, each equipped with a silicon photodiode.

Corentium Pro also contains Bluetooth wireless communications for operation, environmental sensors to measure temperature, humidity, and atmospheric pressure, as well as a motion sensor to help detect if the monitor was moved during the radon test.

## 2.2. Specifications

### A. General:

1. **Dimensions:** 5.5 x 5.5 x 1.2 inches (140 x 140 x 30 mm)
2. **Weight:** 10.6 ounces (300 grams) including batteries
3. **Power Supply:** 3 AA (LR06) alkaline batteries. ~ 15-month battery life

### B. Radon:

1. **Sampling Method:** 4 passive radon diffusion chambers
2. **Detection Method:** Alpha spectrometry
3. **Detector:** 4 silicon photodiodes
4. **Diffusion Time Constant:** 25 minutes
5. **Measurement Range:** ~ 0 to 2700 pCi/L (0 to 100 000 Bq/m<sup>3</sup>)
6. **Uncertainty After 24 Hours:**  $\sigma \sim 7\% \pm 0.15 \text{ pCi/L}$  ( $\sigma \sim 7\% \pm 5 \text{ Bq/m}^3$ )
7. **Uncertainty After 7 days:**  $\sigma \sim 5\% \pm 0.06 \text{ pCi/L}$  ( $\sigma \sim 5\% \pm 2 \text{ Bq/m}^3$ )

### C. Environmental Sensors:

#### 1. Temperature:

- a. **Range:** 39°F to 104°F (4°C to 40°C)
- b. **Resolution:** 0.36°F (0.2°C)
- c. **Accuracy:** Typical:  $\pm 1^\circ\text{F}$  (0.5°C), maximum:  $\pm 2^\circ\text{F}$  (1°C)

#### 2. Relative Humidity:

- a. **Range:** 5% to 85%
- b. **Resolution:** 0.5%
- c. **Accuracy:**  $\pm 4\%$  (ln 20% to 85% range)

#### 3. Air Pressure:

- a. **Range:** 14.77 inHg to 32.48 inHg (50.0 kPa to 150 kPa)
- b. **Resolution:** 0.018 inHg (0.06 kPa)
- c. **Accuracy:** 0.295 inHg ( $\pm 1 \text{ kPa}$ )

### D. Memory:

1. **Memory Type:** Non-volatile flash
2. **Capacity:** The internal memory stores 5 years of hourly datapoints. (~ 1 900 days of measurements; 5 datasets of one-year length, 177 datasets of 1-week length, 325 datasets of 2-day length)

### 2.3. Operating & Storage Conditions

Corentium Pro must not be used or stored outside of these operating and storage environmental conditions:

1. **Temperature:** 39°F to 104°F (4°C to 40°C)
2. **Humidity:** 5% to 85% non-condensing, relative humidity
3. **Air Pressure:** 14.77 inHg to 32.48 inHg (50 kPa to 110 kPa)

### 2.4. Usage Information

The radon sensors in Corentium Pro are made for inside use only. The monitor must be used with the operating and storage conditions described in **Section 2.3**.

**Note:** *Your local jurisdiction may require specific temperature and humidity ranges which differ from the operating and storage conditions and are necessary for producing a valid radon test.*

Avoid storing or using the monitor in environments with high humidity, extreme heat, or freezing conditions. Condensation can form on the monitor if it is moved from a warm location to a cold location or vice versa. If condensation forms on the monitor, remove the batteries and leave it in a dry environment for 2 hours. The monitor should not be used in environments with more than 85% relative humidity. The unit must not be exposed to direct sunlight for extended periods. Avoid subjecting the monitor to shocks, impacts, pressure, vibrations, dust, or moisture.

Only use alkaline AA (LR06) batteries. The batteries must not be exposed to fire or other extreme heat. The battery terminals must not be touched, and they must be kept free from dust, sand, liquids and other foreign objects.

Use a Kensington cable Lock (*often used for laptops*) for securing the instrument from theft, being moved during measurement, etc.

### 2.5. Storage Information

Store the Corentium Pro in its protective case, with batteries installed, in a location with low to normal relative humidity, in compliance with the operating and storage conditions described in **Section 2.3**, and avoid extreme temperatures.

1. **For Short-Term Storage:** Simply place the monitor in its protective case and store indoors.

2. **For Long-Term Storage:** Put fresh batteries into the monitor. Do not allow batteries to die in the monitor at any time! Place the monitor in its protective case and store indoors.
3. **Storing Corentium Pro in a vehicle is not recommended!** The monitor should only be kept in a vehicle for transportation and should never be stored in a vehicle due to the extreme conditions present in vehicles.

**Note:** Failure to follow these usage and storage requirements will void the warranty.

## 2.6. Status Lights

Corentium Pro has 4 status lights on the top of the device to quickly communicate information about the status of the monitor:

- **Flashing Green (Once every 5 seconds):** Normal operation, monitor is recording data.
- **Flashing Green (Once per second):** Radon test scheduled, monitor in delay period.
- **Flashing Green, Yellow, and Red (Sequentially):** Monitor rebooting and performing self-test.
- **Flashing Yellow:** Indicates a warning but is still operational. This usually means that the monitor needs to synchronize the date, time, and time zone. Connect to the monitor through the app to synchronize the time.
- **Flashing Red:** Error. Go to [help.airthings.com/pro](https://help.airthings.com/pro) and search for the keyword RED. If this does not solve the issue, go back to the search bar and type Pro-Technical Support Hours.
- **Blue Flash and Beep:** Bluetooth connection established.
- **Blue Flash (Once):** Bluetooth connection ended.
- **Continuous Blue:** USB connected.

## 3. Corentium Pro Software System

The Corentium Pro software system is comprised of two parts, the mobile app which runs on the user's mobile device and is used for initiating and concluding radon tests, and the online Dashboard which is the central hub for a radon testing company's operations.

For full details on how to use the online Dashboard and mobile app, including training videos, please visit [help.airthings.com/pro](https://help.airthings.com/pro) and search for "Videos - NEW Corentium Pro App & Pro Dashboard".

For additional help, or to contact our support team, please visit [help.airthings.com/pro](https://help.airthings.com/pro)

**Note:** the mobile app and Dashboard will be updated periodically with new features, bug fixes, and security updates.

### 3.1. Creating an Airthings Account

In order to use the mobile app and online Dashboard a user must create an Airthings account by visiting the website at [pro.airthings.com](https://pro.airthings.com) and clicking on the **Sign Up with Airthings** button. Follow the remaining prompts to create an account.

### 3.2. Creating a Radon Testing Company

Once a user logs in for the first time they will be prompted to set up their radon testing company by entering their company name, mailing address, phone number, and email address.

## 4. Using the Online Dashboard

The online Dashboard is the central hub for a radon testing company. Radon tests are uploaded from the mobile app to the Dashboard and can be accessed from any location through a modern web browser. This enables technicians to upload a radon test to the Dashboard while in the field, and the radon test can be analyzed from a remote location by a specialist so a radon report can be generated.

### 4.1. Logging Into the Online Dashboard

To log into the Dashboard open a web browser and go to [pro.airthings.com](https://pro.airthings.com) and enter in your login information from **Section 3.1**.

### 4.2. Adding or Changing Dataset Information in the Dashboard

To add or change information for a dataset, log into the Dashboard and click on the Datasets icon in the left menu. Locate the correct dataset either in the list, or in the search bar, and then either click on the dataset name, or the "... " menu and choose **Edit**. You will be brought into the dataset where you can add or change information regarding the test, such as the property information, customer information, or property owner information.

**Note:** Dataset measurement information cannot be edited. To remove hours from the start or end of the measurement, use the truncation feature while generating a radon report for the dataset.

### 4.3. Generating a Radon Report in the Dashboard

Once a radon test dataset has been uploaded to the Dashboard it can be accessed by clicking on the datasets icon in the left menu. A list of all datasets in the Dashboard is presented, and a specific dataset can be located using the search field. To generate a report click on the dataset name and then click on the **Generate Report** button at the top of the screen. Follow the prompts to set various options for the final radon report. These options will vary based on the information blocks that are included in the selected report template. These options can include information about motion events that occurred during the measurement, selecting a dynamic paragraph option (*dynamic paragraphs are typically used to inform the client of the recommended actions regarding the overall radon average*), and signing the report.

### 4.4. Managing Report Templates

For your convenience, we have included several ready-to-use report templates which can be used as is, duplicated, or customized to suit your needs!

To manage your templates, log into the Dashboard and click on the report templates icon in the left menu. To add a new template, click on the **Add a New Template** bar at the top of the page. Name the template, add a description, and then click on the green checkmark to start creating your template. In the dropdown menus on the right are information blocks which can be added to the template. These blocks can be added multiple times, and in any order you choose. Changes are saved as you make them. To see what your template will look like, click on the **Preview** button at the top of the page. Once all changes are complete, and the template is ready for use, click on the **Publish** button to make the template available for use in generating radon reports.

To modify the title or description of a template, from the main templates screen, click on the "..." menu to the right of the template and then choose **Edit Description**. Choose **Configure Template** to modify the blocks of an existing template. To duplicate a template choose **Duplicate Template**.

### 4.5. Managing Users of the Company

To add a user to the company, log into the Dashboard and click on the user management icon in the left menu, and then click on the **Add a User** bar at the top of the page. Enter the user's name, email address, and select whether they will have manager or employee privileges and click on the green checker to the right. Managers can add and remove users and monitors whereas employees are restricted from these operations. The user will receive an invitation link at the email address entered. The user must click on this invitation link and will be taken to a webpage to create their account.

To modify or delete a user click on the “...” menu to the right of their name and select **Edit** or **Delete**. In the edit page the user’s name and phone number can be modified. Additionally, professional certifications/licenses can be added or modified.

#### **4.6. Managing Monitors of the Company**

To add a monitor to the company, log into the Dashboard and click on the monitor management icon in the left menu, and then click on the **Add a Monitor** bar at the top of the page. Enter in a nickname for the monitor for easier identification of the monitor, and then enter the monitor’s serial number and click on the green checkmark to the right. Once a monitor is added to the company it must be confirmed in the mobile app when in proximity to the monitor. This is a safety feature to help ensure that only monitors belonging to the company can be added to the Dashboard.

#### **4.7. Modifying Company Information**

To modify company information, log into the Dashboard and click on the company profile icon in the left menu. The company name, mailing address, phone number, email address, and company logo can be modified. Additionally, company certifications/licenses can be added or modified.

## **5. Using the Mobile App**

### **5.1. Logging Into the Mobile App**

The first time the mobile app is opened a login screen is presented. Enter your login credentials which were created in **Section 3.1**.

### **5.2. Connecting to Corentium Pro**

To connect to a radon monitor, from the home screen of the app, simply tap on the monitor you wish to connect to. Monitors will be listed in one of four sections:

- 1. Pending Monitors**
- 2. Monitors in Range**
- 3. Monitors Out of Range**
- 4. Nearby Monitors Not Registered to This Company**

Monitors under section 1 are ones which have been added through the Dashboard and are awaiting confirmation to be added to the company. Simply tap on the monitors in this section to confirm adding them to the company. Monitors under section 2 are those which have been added to the company and are in bluetooth range and can be connected to. Monitors under section 3

are those which are registered to the company and have datasets cached on the mobile device, but are not nearby, and the cached dataset(s) have not been uploaded yet to the Dashboard. These cached datasets can still be accessed to generate a report even when the monitor is not in range. (*Please note that this is cached data only and does not allow for live, remote access to the monitor.*) Monitors under section 4 are nearby and are not accessible, either because they have not been added to the company through the Dashboard yet, or because they are registered to another company.

**Note:** *These sections will not be visible at all times. They will only be visible when there is at least one monitor which fits the criteria listed above.*

The proper monitor can be identified by the serial number on the monitor, which is also listed in the app. Additionally, the monitor can be identified by a custom nickname assigned to the monitor through the Dashboard. The monitor will beep once, and the blue light will flash once to confirm the connection and help you identify that you are connecting to the correct monitor.

The app will begin transferring the dataset information from the monitor to the mobile device. Recent datasets are stored locally on the mobile device.

### **5.3. Checking Monitor Details**

To check details of the monitor, such as the firmware version, date and time, calibration expiration date, or status of a monitor, connect to the monitor as described in **Section 5.2**. Once connected to the monitor, tap on the “i” button near the serial number at the top of the screen

### **5.4. Other Operations**

To log out of the app, from the home screen, tap on the gear icon at the top right corner of the screen, then tap on **Log Out**. You can also get help with the Corentium Pro software system by tapping on the Help button. The version number of the mobile app is located at the bottom of this screen.

## **6. Initiating a Radon Test**

Corentium Pro, like all radon testing devices, must be placed according to all radon testing protocols required by the jurisdiction where the radon test is taking place.

**Note:** *This information is not exhaustive, and does not contain any protocol or requirements for placement of the monitor. Please become familiar with, and comply with all regulations and requirements of your jurisdiction.*



## 6.1. Scheduling a Radon Test

To start a radon test, connect to a monitor as described in **Section 5.2**. If the monitor is available to use for a radon test, a green button that says **Start Test** will be seen at the bottom of the screen, tap on this button to begin the scheduling process.

Certain information is mandatory in order to schedule a radon test, and these fields are marked with an asterisk (\*). This mandatory information is:

1. **Dataset Name** (*Used to identify and differentiate different radon tests*)
2. **The Measurement Type** (*Initial, follow-up, duplicate, crosscheck, or post-mitigation*)
3. **Measurement Delay** (*The period where information is not recorded*)
4. **Measurement Duration** (*The period where information is recorded*)

All other information is optional and can be included at the discretion of each radon professional or radon testing company.

Airthings recommends using a minimum 4 hour delay for all radon tests, but a longer delay may be required in your local jurisdiction. Airthings recommends a minimum 48-hour measurement duration for all short-term radon tests. All short-term radon tests should terminate in 24-hour increments to better account for day-to-night fluctuations of indoor radon concentrations.

Once all information about the property has been entered in the various fields spread across several pages, as indicated at the top of the screen, tap the "Start" button at the bottom of the last scheduling page. The monitor will beep, and the lights will flash for approximately 45 seconds as the monitor reboots and performs self-tests. Once the monitor has rebooted, it will beep again, and if a delay was used, the green light will flash rapidly, once per second, to indicate that the radon test has been successfully scheduled. If no delay was scheduled the green light will flash once every 5 seconds to indicate that the monitor is currently recording information.

## 7. Concluding a Radon Test & Generating a Radon Report

### 7.1. Adding or Changing Dataset Information in the Mobile App

Information that was not added to a dataset when scheduling the radon test can be added after the test is complete by tapping on the **Add Information** button on the dataset. Additionally, any incorrect details for the dataset can be corrected at the same time. Information can only be added to the dataset or changed in the mobile app before the dataset is finalized. Once the dataset is

finalized, adding or changing any information must be performed through the Dashboard.

## 7.2. Finalizing a Dataset

Once a radon test is complete, connect to the monitor as described in **Section 5.2**. After the datasets have loaded, locate the proper dataset and tap on **Finalize Dataset**, here you can add any photos to the dataset, such as a building footprint diagram, or a photo showing that the monitor was indeed placed at the property. You can also add comments about deviations from protocol, such as the monitor being moved, or if it could not be placed according to protocol, and the reason for this placement. Additionally you can add comments about temporary conditions, such as extreme weather which may have affected the measurement, or temporary radon reduction measures in place.

Once the photos and comments are added, or if you wish to conclude the radon test with no added photos or comments, tap on the **Finalize Test** button at the bottom of the screen. This will begin uploading the dataset to the Dashboard. Once the dataset is uploaded, you will be taken back to the main screen of the monitor.

## 7.3. Viewing a Dataset

To view the information of a dataset, first finalize the dataset as described in **Section 7.2**. After the dataset has been finalized, a button will appear titled **View Dataset**. Tap this button to see the details of the radon test including the measurement information, and logged motion events if any occurred.

**Note:** *Your mobile device must be connected to the internet to view the dataset information.*

## 7.4. Generating a Radon Report in the Mobile App

To generate a radon report in the field, locate the correct dataset and tap on the **Generate Report** button. Follow the prompts to set various options for the final radon report. These options will vary based on the information blocks that are included in the selected report template. These options can include information about motion events that occurred during the measurement, selecting a dynamic paragraph option (*dynamic paragraphs are typically used to inform the client of the recommended actions regarding the overall radon average*), and signing the report.

**Note:** *Your mobile device must be connected to the internet to generate a radon report.*