X-SENSE

Make Invisible Risks Visible



User Manual

Radon Alarm

XR0A-SR

F800004000278 V1.0

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Note: Scan the QR code on the left to view the full digital manual (including appendix).

This user manual contains important information regarding the installation and operation of your radon alarm. Please take a few minutes to thoroughly read this manual, which should be saved for future reference. If you are installing the radon alarm for use by others, you must leave this manual—or a copy of it—with the end user.

1 Introduction

This device is a battery-powered, standalone radon alarm for domestic use. It is easy to use, accurately outputs radon data, and provides online-generated reports for convenient record-keeping.

⚠ WARNING

1. READ THE INSTRUCTIONS CAREFULLY BEFORE OPERATING OR SERVICING.
2. THIS PRODUCT IS INTENDED FOR USE IN ORDINARY INDOOR LOCATIONS OF FAMILY LIVING UNITS.
3. DO NOT DISASSEMBLE THE DEVICE YOURSELF. IT CONTAINS SENSITIVE COMPONENTS THAT HAVE BEEN CAREFULLY CALIBRATED BEFORE LEAVING THE FACTORY. DISASSEMBLY MAY LEAD TO DISTORTED DETECTION RESULTS!

What is Radon

Radon is a cancer-causing, radioactive gas.

You can't see radon. And you can't smell or taste it. But it may be a problem in your home. Radon is estimated to cause many thousands of deaths each year. That's because when you breathe air containing radon, you can get lung cancer.

Only smoking causes more lung cancer deaths. If you smoke and your home has high radon levels, your risk of lung cancer is particularly high.

Radon can be found everywhere.

Radon comes from the natural (radioactive) breakdown of uranium in soil, rock, and water, and gets into the air you breathe. Radon can be found everywhere. It can enter any type of building—homes, offices, and schools—and result in high indoor radon levels. However, you and your family are most likely to experience the greatest exposure at home, where you spend most of your time.

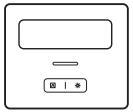
⚠ WARNING

1. Radon measurement can help assess the risk of lung cancers. The likelihood of lung cancer caused by radon primarily depends on:
   a. The radon levels in your home.
   b. The amount of time spent at home.
   c. Whether you're a smoker or have smoked in the past.
2. Smoking combined with radon exposure is a particularly serious health issue. If you smoke or have smoked in the past, the presence of radon significantly increases the risk of lung cancer. However, quitting smoking and reducing radon levels in your home can lower the risk of lung cancer.
3. Measurements can be taken at any time of the year. The longer the detection period, the more accurate the data. If the testing period is less than 72 hours, avoid testing during abnormal or severe weather conditions in the area. In case of severe weather during testing, retesting may be necessary.
4. Although some buildings react differently to seasonal changes,

measurements taken during continuous heating operation (day and night) are more likely to clearly describe the radon hazards.

2 Get to Know Your Device

2.1 What's Inside the Box



Radon Alarm
(Pre-installed removable AA battery × 3)



User Manual

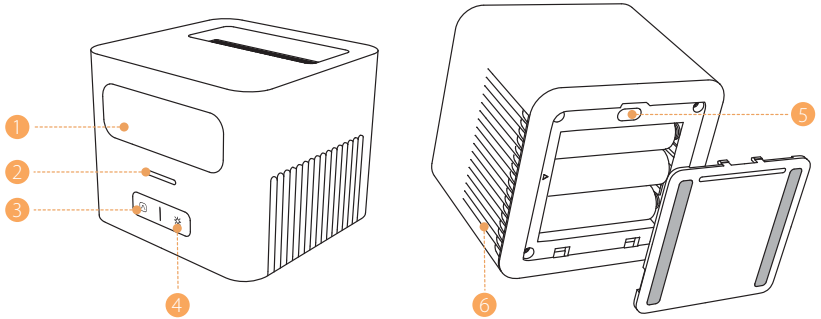


Date Sticker
(5 pieces; manually filled with the start time of detection)



Transparent Screen-Icon Sticker
(Apply to the back only; avoid side air intake area)

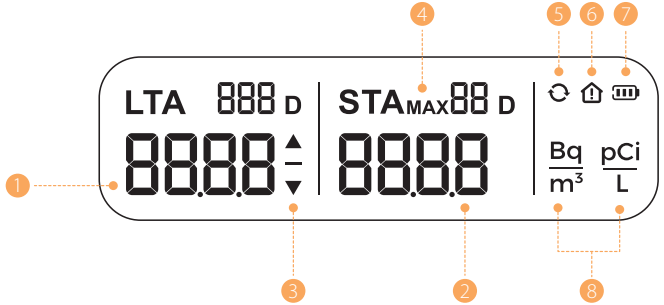
2.2 Understanding the Buttons and Screen Interface



1. **LCD:** Displays the device information.
2. **LED:** Flashes yellow periodically when the battery is low or there is a malfunction. For more details, please refer to **"Troubleshooting"**.
3. **Peak Level Button:** Click to view the maximum radon level within the recorded interval; during the peak level display period, press and hold the button for 3 seconds or more to clear the current peak level and start a new interval (only clears the peak value; other monitoring data will not be cleared).
4. **Backlight Button:** Click to illuminate the LCD backlight for 5 seconds (backlight cannot be activated once the device enters low battery mode).
5. **Reset Button:** Press and hold the button for 3 seconds or more to clear all data (return to factory settings), then the device will restart. Please proceed

with caution, and it is recommended to perform this action before starting a new detection cycle.

6 **Air Intake Area:** Where radon enters the devices. Do not block this area during monitoring.

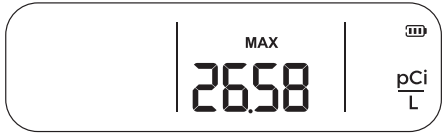


1 **Long-Term Average (the main data):** Displays the average value of all radon monitoring data since power on or data reset, used to determine whether further action is needed. The maximum duration for long-term monitoring is 999 days, starting from "000D" (Day). After 24 hours, it will display "001D" (Day). **The long-term average is updated every 24 hours.**

2 **Short-Term Average (the auxiliary data):** Reflects short-term variations over different intervals. A total of 4 intervals are displayed in a rolling manner, representing the average radon levels over the past 1/7/30/90 days (if the total detection days are insufficient, the corresponding short-term interval will not be displayed). **The short-term average is updated every hour except for the "01D" interval, while the other settings are updated every 24 hours.**

3 **Value Change Trend:** Indicates the recent fluctuations in radon concentration. "▲" represents a significant increase; "▼" represents a significant decrease; "–" represents no significant fluctuation.

4 **"Peak Level" Icon:** The icon will appear after clicking the "Peak Level" button, indicating that the displayed data is the maximum value for the recorded interval.



LCD Displays Peak Level

5 **"Testing" Icon:** Indicates that the device is performing radon detection. If this icon stops flashing, please restart the device or contact us.

6 **"Maintenance Recommended" Icon:** When this icon appears, it indicates that an excessive radon concentration has been detected.

7 **"Battery" Icon:** Indicates the current battery level of the device. When this icon ("▭" or "▭") appears, please replace the battery promptly.

8 **Measurement Units:** Switch the unit of the current radon data (pCi/L or Bq/m^3) by double-clicking the "Peak Level" button. In the United States, recommend to use the unit "pCi/L" while in Europe or Canada, the unit "Bq/m^3" is recommended.

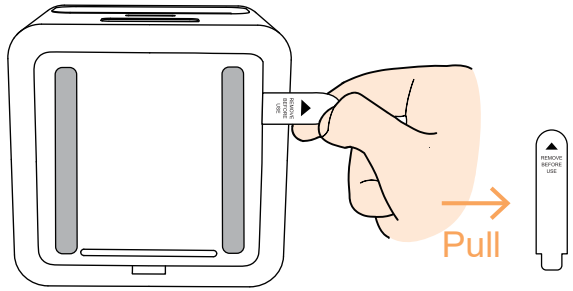
2.3 Technical Specifications

Power Supply	1.5 V (⎓) AA alkaline battery × 3 (replaceable)
Battery Life	2 years
Warranty Period	5 years
Sampling Method	Passive diffusion chamber
Measurement Method	Continuous alpha spectrometry
Detection Range	0–500 pCi/L 0–9999 Bq/m^3
Accuracy/Precision (95% Confidence)	< ± 10% @5.4 pCi/L (200 Bq/m^3) after 7 days
Sensor Sensitivity	1.25 cph (counts per hour) per 1 pCi/L (37 Bq/m^3)
Detection Stabilization Time	Reliable data is obtained within 4 to 24 hours (the higher the concentration, the faster the data is available). The longer the testing period, the more accurate the results. It is recommended to perform a single detection for at least 7 days.
Data Update Cycle	1 hour/24 hours (Short-term average and long-term average have different update cycles).
Operating Temperature	14–122°F (-10–50°C)
Operating Relative Humidity	≤ 85% RH (non-condensing)
Dimensions (unit excluding packaging)	3.23 × 3.15 × 2.79 inches (82 × 80 × 70.8 mm)
Weight (unit excluding packaging)	10.3 oz. (292 g)

3 How to Use Your Device

3.1 How to Power On/Off

Power On: After installing the battery or removing the insulating film, the device will automatically power on. The LCD will display all content (with backlight on), accompanied by flashing yellow during this period. Once powered on, the device will perform a self-check. The LCD will show "CAL" along with a continuously increasing value. During this process, the device will check its core components. If an issue is detected, the corresponding error code will be displayed (refer to **"Troubleshooting"** for more details). If no issues are found, the device will automatically enter standby mode and begin testing without any further setup required.



Remove the insulating film.



The device is self-testing.

After the first power-on or data reset, both the long-term average and short-term average will show "run", indicating that the device is testing for the first stable data. Based on the varying radon concentration in the environment, the first data will be displayed within 4–24 hours.

NOTE: In most household environments, the first reliable reading comes in 24 hours. Please be patient. The higher the radon concentration, the shorter the time for the first stable reading.



LCD After the First Power-On or Data Reset

Power Off: If the battery is removed or depleted, the device will automatically power off. At this point, all records will be temporarily saved. When the device is powered back on and completes the self-test, it will continue recording from the last saved data.

All data in the device can only be cleared by holding down the "Reset Button".

NOTE: It is not recommended to power off for more than 4 hours, as the detection data may become distorted. In such cases, a retest is required.

3.2 Where to Place

1. It is recommended to conduct measurements in the basement or on the lowest livable floor of the house, as radon primarily enters through these areas. Since radon is much heavier than air, it tends to accumulate in lower regions. However, you may also test any other frequently used area in the house.
2. If an area is still under construction but is intended to be used later as a workspace, game room, or additional bedroom, it is advisable to test in that area as well.
3. Additionally, if the heating system is not operating during the test, the results may be inaccurate. In such cases, it is recommended to perform the test while the heating system is running.

NOTE: Normally, home radon detectors generally do not have strict placement requirements. However, if you are concerned about placement or have specific preferences, you can scan the QR code below the manual's table of contents to access the full digital manual and refer to ***"Appendix 1: Installation Location Guidelines from AARST."***

Regardless of the choice, alarms shall be located no less than:

1. 3 feet (90 cm) from exterior doors, windows, or other potential openings to the outdoors.

2. 20 inches (50 cm) above the floor.
3. 1 foot (30 cm) from the exterior wall of the building.
4. 1 foot (30 cm) below the ceiling.
5. 4 inches (10 cm) from other test alarms and objects or surfaces located above or to the side of the alarm.

Another point to note is:

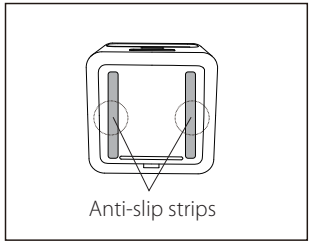
Improper location can affect the sensitive electronic components in this alarm. To avoid causing damage to the device, to provide optimum performance, **do not locate the radon alarm** in the following areas:

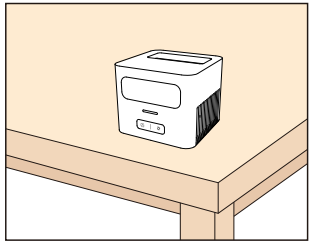
1. Inside closets, cabinets, sumps, crawl spaces, or nooks within the building foundation.
2. Near heat sources, such as on appliances, radiators, fireplaces, or in direct sunlight.
3. Near drafts caused by fans or heating and air conditioning vents or in enclosed areas of high air velocity, such as mechanical/furnace closets.
4. Within enclosed areas of high humidity exceeding 85%, such as bathrooms, laundry rooms, and kitchens that are isolated from large open areas by partitions or other enclosures.
5. Do not use outdoors.

NOTE: Avoid placing the radon alarm on or near objects that may produce radiation, such as natural stone (e.g., rock collections, granite counter tops, hearths, or slate pool tables).

Placement Instructions

The device is designed with anti-slip strips on the bottom, allowing it to be placed on a flat surface for stable testing. During testing, do not block the air intake area on the side of the device to ensure stable sampling.





NOTE: Ensure that the device remains stationary throughout the entire testing period.

3.3 How to Conduct a Test

1. Monitoring starts automatically after the device is powered on. Please be patient and wait for the first reading to appear (it will be available within 4–24 hours, typically around 24 hours).

*NOTE: Normally, home radon detectors do not have strict pre-test preparation requirements. However, if you are concerned, you can scan the QR code below the table of contents to access the full digital manual and refer to **"Appendix 2: Pre-test Preparation Guidelines from AARST".***

2. Radon gas has unstable characteristics, so short-term data may not accurately

reflect the actual radon concentration in the house. It is recommended that each monitoring cycle last at least 7 days, as the accuracy rises over time. If the monitoring interval exceeds 1 year, covering the entire heating season, rainy season, and so on, the monitoring data will be more precise, and you can get accurate yearly radon average results.

NOTE: Don't worry, the health threat posed by radon comes from long-term (several years) exposure to high concentrations of radon. High concentrations of radon do not pose an immediate health threat.

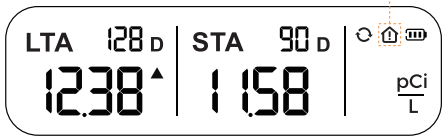
Recommended ≥ 7 Days



NOTE: Normally, home radon detectors do not have strict testing procedures. If you are concerned, you can scan the QR code below the table of contents to access the full digital manual and refer to ***"Appendix 3: Testing Method Guidelines from EPA".***

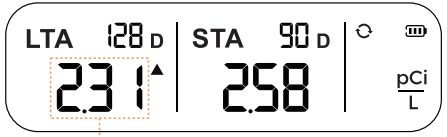
3.4 What the Test Result Means

"Maintenance Recommended" Icon



When the "Maintenance Recommended" icon (⌂!) appears and the LCD starts flashing, it indicates that the radon concentration exceeds the threshold and triggers the built-in alarm. You can take action yourself or consult local professionals or authorities to learn about how to reduce the concentration in your house.

NOTE: The flashing screen and the icon will automatically deactivate once radon levels drop, requiring no manual intervention.



Refer to this value and compare it with the table below.

However, due to varying testing habits, the device cannot cover all warning scenarios. If the "Maintenance Recommended" icon (⌂!) does not appear but

you are still concerned, you can check the long-term average and refer to the following table (the long-term average is meaningful only after at least 7-day monitoring, and the accuracy rises over time):

Monitoring Period	Concentration	Recommended Actions
Long-Term Average	≥4 pCi/L (150 Bq/m^3)	Maintenance required.
	2-4 pCi/L (75-150 Bq/m^3)	Consider maintenance.
	≤2 pCi/L (75 Bq/m^3)	No obvious problems found. It is recommended to continue monitoring or change the monitoring location. (When changing the location, please use the "Reset Button" to clear all data.)

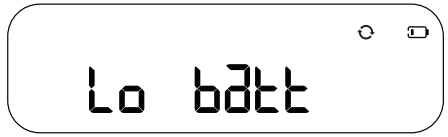
NOTE: Any exposure to radon carries some level of risk. There is no completely safe level of radon, and health risks still exist even when radon levels are below 4 pCi/L (150 Bq/m^3).

4 Other Features

4.1 Device Battery Status and Battery Replacement

Device Battery Status

When the LCD displays the "Lo batt" message, the LED indicator flashes yellow once every 60 seconds. Remove the old batteries and replace them with new ones.



Even if the device has not yet reached the low battery alarm state, it is still recommended to replace the batteries with fully charged ones before starting a new testing cycle to prevent the device from shutting down due to battery depletion during the testing. This is especially important during long-term tests, as extended interruptions could lead to data distortion.

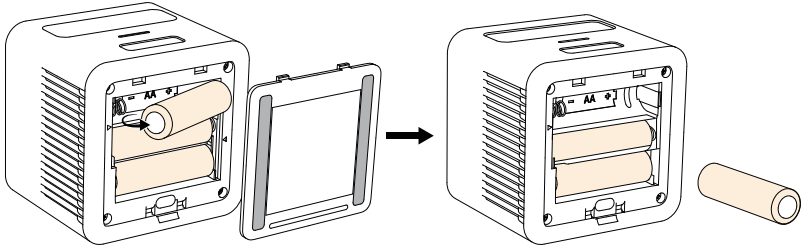
NOTES:

1. The device features a unique data continuity design. After a power outage or shutdown, the data will not be automatically cleared. Once the device is powered back on and restarted, it will continue recording from the previous data. However, please ensure that the power-off duration does not exceed 4 hours to maintain data accuracy.

2. Rechargeable batteries are not allowed, as they may negatively impact operation.

Battery Replacement

The device's battery compartment is located at the bottom. Please flip the device over and remove the battery cover (remember to read the precautions on the inside of the battery cover). After replacing the batteries, the device can be powered on and will perform a self-test.



⚠ WARNING

1. KEEP NEW OR OLD USED BATTERIES OUT OF REACH OF CHILDREN.
2. In the event of a battery leaking, do not allow the liquid to come into contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice immediately.
3. Do not mix alkaline, standard (carbon-zinc), or rechargeable (Ni-Cd; Ni-MH) batteries.
4. Different types of batteries or new and used old batteries are not to be mixed. Do not mix batteries of different manufacturers, capacities, or sizes.
5. Batteries must be inserted with the correct polarity. Replacement of a battery with an incorrect type can defeat the safeguard. There will be a risk of fire or explosion if a battery is replaced with an incorrect type.
6. CONSTANT EXPOSURE TO HIGH OR LOW TEMPERATURES OR HIGH HUMIDITY MAY REDUCE BATTERY LIFE.

7. Use only batteries specified in the marking. Use of a different battery may have a detrimental effect on alarm operation.

4.2 Report Generation Feature

You can open the web interface by scanning the QR code at the bottom of the device or manually entering the ***URL: https://radon.x-sense.com/report***
On this interface, follow the instructions to manually enter the relevant parameters and data, which will generate a PDF report that can be downloaded to your phone or PC.

NOTES:

1. Please save the data report promptly at the end of each testing cycle.

2. Please ensure the accuracy of the input information, as incorrect data will prevent the report from being generated.





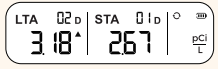
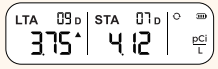
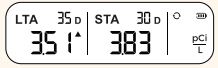
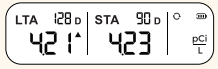
Verification Code

NOTE: The report interface requires a 4-digit verification code. To obtain the verification code, simultaneously press the Peak Level Button and the Backlight Button.

5 Troubleshooting

No.	LCD Indicator	Problem	Possible Causes	Solution
1	None.	The device cannot be powered on, and the LCD shows nothing.	The device isn't powering on properly.	Open the battery compartment and remove the battery insulating film; if the batteries run out, please replace them.
2		The LCD displays "Lo batt," and the LED flashes yellow once every 60 seconds.	The device has entered the low-battery mode.	Replace the batteries.
3		The LCD displays "Err 01", "Err 02", or "Err 03", and the LED flashes yellow twice every 60 seconds.	The device has entered the fault mode.	Restart the device. If the issue persists, please replace the device.
4		The LCD displays "End" along with a countdown in days, and the LED flashes yellow 3 times every 60 seconds.	The device has started a lifetime countdown.	Promptly record and save the detection data and replace the device once it reaches the end of its service life.
5		The LCD displays "End 00", no longer scrolls data, and does not respond to any operations.	The device has reached the end of its service life.	Replace the device.

6		The LCD displays "run" rather than the specific data.	The device has just powered on and is waiting to output the first stable data.	According to the different radon levels, the device will output the first stable data within 4-24 hours. Please wait patiently.
7	None.	The device has not displayed the "Maintenance Recommended" icon (⌂).	The radon concentration or testing duration has not yet reached the threshold.	Continue to test.
			Non-built-in standard warning threshold.	Refer to **"3.4 What the Test Result Means".**
8	None.	The backlight cannot be lit.	The device's battery is too low.	Replace the batteries.
			The button is not properly pressed.	Ensure the button has been properly pressed.

9	None.	After replacing the batteries, the device retains the previous data.	The data retention feature ensures that removing batteries will not erase the data.	If you need to erase the data, please press the Reset Button on the device.
10	   	The short-term average does not fully display all 4 measurement intervals.	The testing duration has not yet reached the required time for the next measurement interval level.	Continue to test: For example, when the device is first powered on, only the "01D" measurement interval is displayed. Once the testing time exceeds 7 days, both the "01D" and "07D" measurement intervals will be shown and scroll on the display, and so on.

6 Daily Maintenance

To keep your alarm in good working order, you should adhere to the following steps:

1. Vacuum the alarm cover once every three months to remove any accumulated dust.
2. Never use detergents or solvents to clean the alarm. Chemicals can permanently damage or temporarily contaminate the sensor.
3. Avoid spraying air fresheners, hair spray, paint, or other aerosols near the alarm.
4. Do not paint the unit. Paint may clog the openings to the sensing chamber and prevent the unit from operating properly.

⚠ WARNING

1. DO NOT TAMPER WITH THE APPARATUS, AS THERE IS A RISK OF ELECTRIC SHOCK OR MALFUNCTION.
2. USING THE DEVICE IN EXCESSIVELY HUMID ENVIRONMENTS MAY CAUSE INTERNAL SENSOR CONTAMINATION, LEADING TO IRREVERSIBLE DAMAGE.

7 Statement

The Limitations of Radon Measurement

There is uncertainty in any measurement result due to statistical variations and factors such as daily and seasonal changes in radon concentrations. These variations may be caused by changes in the weather, the operation of the dwelling, or possible interference with the required test conditions.

FCC Statement:

1. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including interference that may cause undesired operation.
2. Note: This equipment has been tested and found to comply with the limits for a Class B digital device. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.
3. Changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.
4. The distance between user and products should be no less than 20 cm.

Environmental Protection

Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with the Local Authority or retailer for recycling advice.



8 Manufacturer and Service Information

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