RADION smoke

RFSM-A

BOSCH

en Installation Guide

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1 Introduction

This document contains information that a trained installer needs to install the RADION smoke detector. It supplements *the B810 System Reference Guide* (P/N: F.01U.261.834) contained inside the B810 wireless receiver packaging.

1.1 About documentation

Copyright
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Trademarks
All hardware and software product names used in this document are likely to be registered trademarks and must be treated accordingly.

Notifications
This document uses Notices, Cautions, and Warnings to draw your attention to important information.

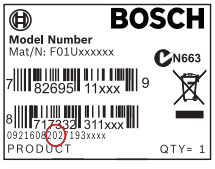
Notice!
These include important notes for successful operation and programming of equipment, or indicate a risk of damage to the equipment or environment.

Caution!
These indicate a hazardous situation which, if not avoided, could result in minor or moderate injury.

Warning!
These indicate a hazardous situation which, if not avoided, could result in death or serious injury.

1.2 Bosch Security Systems, Inc. product manufacturing dates

Use the serial number located on the product label and refer to the Bosch Security Systems, Inc. website at http://www.boschsecurity.com/datecodes/.
The following image shows an example of a product label and highlights where to find the manufacturing date within the serial number.



2 System overview

The RFSM-A smoke detector is designed to be used as a standalone smoke detector. The RFSM-A includes a built-in sounder for alarm alerts and a visual status LED.

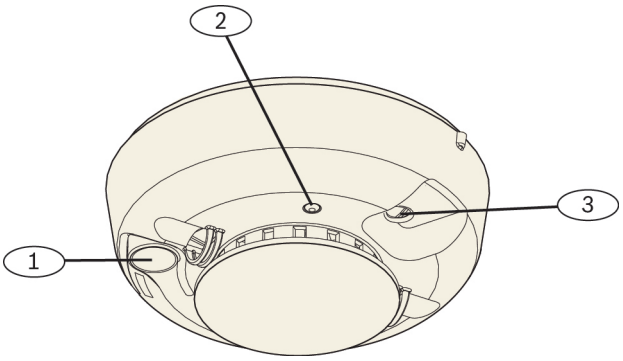


Figure 2.1: Detector features

Callout – Description
1 – Test/silence button
2 – LED
3 – Sounder vent

Under normal (non-alarm) conditions, the LED flashes once every 8 seconds while the sensor monitors the surrounding conditions. When the RFSM-A detects smoke, the LED changes from flashing to on and the built-in sounder produces a loud continuous tone.
The RFSM-A uses two 3-volt lithium batteries, which are included with the sensor.
The RFSM-A also provides the following features:

- Self-diagnostic monitor sensor sensitivity and operational status.
- A tamper switch triggers a tamper signal transmission when the detector is removed from its mounting base.
- A replaceable optical chamber provides easy maintenance when required.

Internal signal outputs

When the smoke sensor is listed with a transmitter, it provides the following signals for interfacing:

- Alarm
- Alarm restore
- Low battery
- Maintenance alert
- Tamper

Specifications

Detector dimensions	14.2 cm x 6.1 cm (5.6 in. x 2.4 in.)
Base dimensions	13.7 cm x 1.17 cm (5.4 in. x 0.46 in.)
Operating temperature	4 to 38°C (40 to 100°F)
Storage temperature	-34 to 60°C (-30 to 140°F)
Maximum relative humidity	90% non-condensing
Voltage	3 VDC

Current draw	Standby: 45 uA Alarm: 70 mA
Power source	Two 3-volt lithium batteries of the same type, Sanyo CR123A, Panasonic CR123A, Duracell DL123A,
Battery life	1 year minimum
Sensitivity	0.14 +/- 0.04 dB/m (0.97 – 2.99%/ft obscuration)
Drift compensation adjustment	1.64%/m (0.5%/ft.) max.
Low battery chirp	1 every 45 +/- 2 seconds
Sounder	85 dBA at 3m continuous
RFI immunity	20 V/m minimum; 0-1000 MHz
Compatibility	To be used with B810 wireless receiver for UL approved applications

3 Installation

To determine the proper detector installation location, refer to the *Installation guidelines* in this chapter. To install the detector, perform the following procedure:

1. Remove the sensor from the mounting base by turning the sensor counterclockwise about 15 degrees. The sensor should snap off of the mounting base.

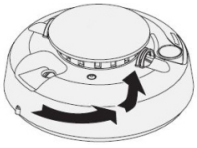


Figure 3.1: Removing the sensor from the mounting base

2. Slide the battery compartment cover away from the detector to unsnap it and lift off.

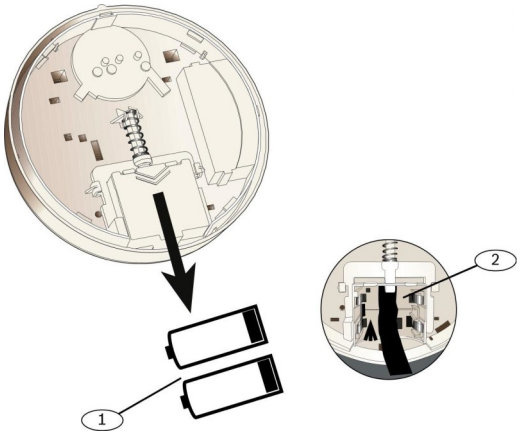


Figure 3.2: Battery install

Callout – Description
1 – Batteries 3VDC, Lithium (Duracell DL123A, Panasonic CR123A, or Sanyo CR123A)
2 – Battery compartment

3. Observing proper polarity, insert the two 3V lithium batteries into the battery compartment on top of the battery removal ribbon. Flip the ribbon over the top of the batteries and replace the battery compartment cover.
4. Remove the red plastic cover from the detector. The detector is shipped with the cover for protection against dust on construction sites.
5. Using the two screws and anchors provided, mount the base.
6. To attach the detector to the mounting base, do the following:

– Line up the raised alignment tab on the lip of the sensor with the arrow on the mounting base.
– Insert the sensor into the base and turn clockwise approximately 15 degrees. It should snap firmly into place.

Notice!
The detector cannot be attached to the mounting base if there are no batteries installed

Test the RFSM-A. See *Smoke test* and *Sensitivity test* for more information.

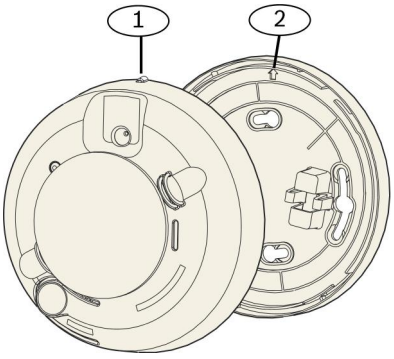


Figure 3.3: Detector to base alignment

Callout – Description
1 – Alignment tab
2 – Alignment arrow

3.1 Installation guidelines

Use the following guidelines to choose an appropriate sensor location.

- Do not mount a smoke sensor to a drop ceiling tile; mount it to a metal runner.
- Mount all smoke sensors within 30 m (100 feet) of the wireless receiver.
- Install a minimum of two smoke sensors in any household, no matter how small.
- Put a smoke sensor in every bedroom or in the hallway outside of every bedroom area. A minimum of two smoke sensors are required in homes with two bedroom areas.
- Put a smoke sensor on every level of a multilevel residence.
- Install basement sensors on the ceiling as close to the center of the room (*Figure 3.5*) as possible. If this is not practical, install the sensor on the ceiling no closer than 10 cm (4 inches) from any wall or corner.

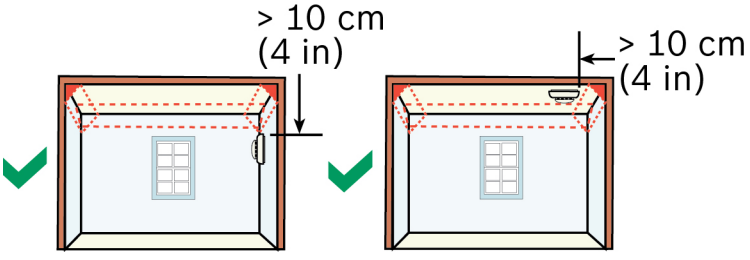


Figure 3.4: Detector mounting locations

- If ceiling mounting is not practical, install the sensor on an inside wall between 10 and 15 cm (4 and 6 inches) from the ceiling.
- Put smoke sensors at both ends of a bedroom hallway if the hallway is more than 9 m (30 feet) long. Large rooms that are over 84 square meters (900 square feet) require more than one sensor.
- Areas with rough ceilings or short, transom-type walls coming down from the ceiling require additional sensors.
- Install second-floor smoke sensors on the ceiling at the top of the first-to-second floor stairwell. Be sure no door or other obstruction blocks the path of smoke to the sensor.
- In rooms with sloped, peaked, or gabled ceilings, install smoke sensors within 0.9 m (3 feet) measured down on the slant from the highest point of the ceiling.

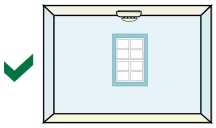


Figure 3.5: Best location

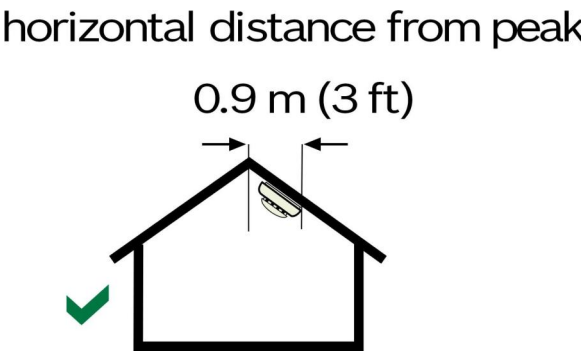


Figure 3.6: Sloped, peaked, or gabled ceiling detector locations

Notice!
Regulations pertaining to smoke sensor installations vary. For more information, contact your local fire department or local authority having jurisdiction.

Avoid installing in the following locations:

- In or near areas where combustion particles are normally present such as: kitchens; in garages with vehicle exhaust; near furnaces, hot water heaters, or gas space heaters.
- On the ceiling in rooms next to kitchens where there is no transom between the kitchen and these rooms.
- In damp or very humid areas, or next to bathrooms with showers. Install sensors at least 1.5 m (5 feet) away from bathrooms.
- In very cold or very hot area.
- In dusty, dirty, or insect infested areas.
- Near fresh air inlets or returns or excessively draft areas. Air conditioners, heater, fans, and fresh air intakes and returns can drive smoke away from the sensor.
- In dead air spaces at the top of a peaked ceiling or wall/ ceiling intersection. Dead air may prevent smoke from reaching a sensor.
- Near flourescent light fixtures. Install sensors at least 3 m (10 feet) away from flourescent light fixtures.

4 Device testing

4.1 Smoke test

Smoke detectors should be tested annually using canned aerosol simulated smoke (Smoke! in a can, GE part number SM- 200). Refer to the manufacturers instruction on the can.

Caution!
To avoid a fire department dispatch, contact the central monitoring station or put the system into sensor test mode before activating the sensor using this method

The LED should remain on while the detector provides a continuous tone. The detector automatically resets when smoke is no longer present. A detector that fails to activate with the smoke test may require cleaning. If the sensor still fails to activate after cleaning, return the unit to Bosch for repair.

4.2 Sensitivity test

The sensor includes a sensitivity level test mode that lets you check the sensitivity using the test button and the LED as follows:
Press and hold the test/silence button for 4 seconds, and then release it. The LED flashes one to nine times.

Notice!
Holding the test/silence button for 12 seconds or longer generates an alarm signal, and is sent to the central station. Do not hold the test/silence button longer than 4 seconds.

Count the number of LED flashes and use *Table 4.1* to determine the status of the sensor sensitivity and what action, if any, to take.

Flashes	Detector condition/action
1	Self-diagnostics failure. Return detector for service/replacement.
2 – 3	Detector is becoming insensitive. Clean the sensor (see *Maintenance* on page 2) and retest. If error persists, replace the sensor.
4 – 7	Detector is within normal sensitivity range.
8 – 9	Detector is becoming too sensitive. Verify that the smoke chamber is snapped down securely. Clean the Detector (see the chapter on *Maintenance* for more information) and retest.

Table 4.1: Detector sensitivity

4.3 Test/silence

The test/silence button (*Figure 2.1*) performs the following three functions:
- **Testing** - Press the test/silence button for 4 seconds. The sensor does a sounder test and a sensitivity test.
- **Silence alarm** - Press to silence the sounder during an alarm. After a few minutes, the sounder and alarm resume if smoke is still present.

– **Silence trouble chirp** - Press to silence a trouble chirp. The trouble chirp resumes after 24 hours if the trouble condition is not corrected.

4.4 LED

The LED on the sensor (*Figure 2.1*) indicates the status of the sensor as follows:

– **Flashing** – Flashes every 8 sec to indicate normal operation.
– **On** – Detects smoke, sending an alarm.
– **Off** – Trouble. Maintenance is required.

5 Maintenance

To maintain the sensor, you may need to replace the batteries or clean the sensor and replace the optical chamber.

5.1 Battery replacement

The sensor is powered by two 3 VDC, lithium batteries. The required batteries are available where other batteries are sold.
Battery life is a minimum of 1 year and varies depending on how often the sensor is tested. When batteries are low, the sensor extinguishes its LED and chirps every 45 seconds until the batteries are exhausted. Replace both batteries immediately with Panasonic CR123A, Sanyo CR123A, or Duracell DL123A batteries only. The low battery trouble chirps can be silenced for 24 hours by pushing the test/silence button (*Figure 2.1*). Always test the sensor after replacing the batteries.

Caution!
Dispose of used batteries according to the manufacturer's instructions and/or local government authorities. Batteries can explode or cause burns if disassembled, recharged, or exposed to fire or high temper-ature. Keep away from children.

5.2 Cleaning

Clean the detector cover with a dry or damp cloth as needed to keep it free from dust and dirt. Clean the detector interior at least once a year and replace the optical chamber. Use only GE model number 211 optical chambers for replacement.
To clean the detector, perform the following:

Removal

1. Remove the sensor from the mounting base. See *Figure 3.1*.
2. Remove the batteries (*Figure 3.2*).
3. Slide a slotted screwdriver in the slot on the sensor cap (*Figure 5.1*) and gently push down to pry the cap off.

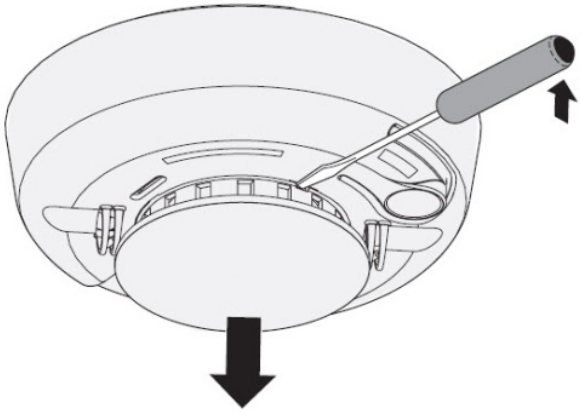


Figure 5.1: Remove the detector cap

4. Squeeze the existing optical chamber where indicated (*Figure 5.2*) and pull it up and away from the sensor.

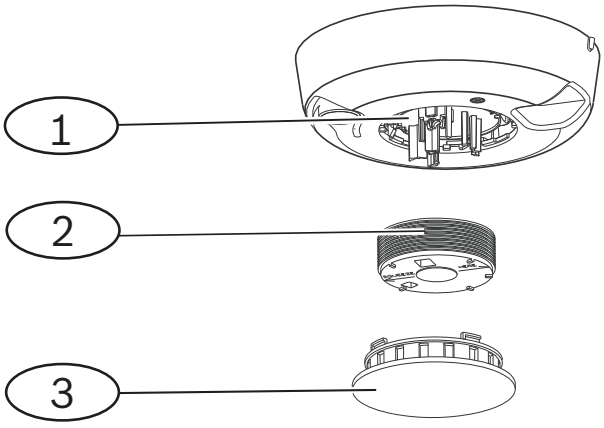


Figure 5.2: Detector parts

Callout – Description
1 – Optical base
2 – Optical chamber
3 – Alarm cap

Replacement

1. Blow out or use a soft-bristled brush to remove dust and dirt from the smoke chamber base.
2. Align the new optical chamber with the base by using the “squeeze here” arrows text on the optical chamber as a reference point, and line up with the tabs on the optical base.
3. Snap down into place.
4. To attach the sensor cap, line the cap up with the sensor, press the cap onto the sensor, and turn clockwise approximately 15 degrees. It should snap firmly into place.
5. Observing the proper polarity, install the batteries and the battery cover. The base will not fit properly if the batteries are not installed.
6. Attach the sensor to the mounting base.
7. Test the sensor sensitivity. See *Sensitivity test* for more information.

6 Limitations of smoke detectors

Smoke sensors are very reliable, but may not work under all conditions. No smoke sensor provides total protection of life or property. Smoke sensors are not a substitute for life insurance.

Smoke sensors require a source of power to work. This smoke sensor will not operate and the alarm will not sound if the sensor is not installed properly.

Smoke sensors may not be heard. A sound sleeper or someone who has taken drugs or alcohol may not awaken if the sensor is installed outside a bedroom. Closed or partially closed doors and distance can block sound. This sensor is not designed for the hearing impaired.

Smoke sensors may not always activate and provide warning early enough. Smoke sensors only activate when enough smoke reaches the sensor. If a fire starts in a chimney, wall, roof, on the other side of closed doors, or on a different level of the property enough smoke may not reach the sensor for it to alarm.

Smoke sensors are a significant help in reducing loss, injury and even death. However, no matter how good a detection device is, nothing works perfectly under every circumstance and you cannot expect a smoke sensor to ensure that you will never suffer any damage or injury.

7 Planning for emergencies

The purpose of an early warning smoke sensor is to detect the presence of fire in its early stages and sound an alarm giving the occupants time to exit the premises safely.

Avoid fire hazards

No detection device can protect life in all situations. Therefore, safeguards should be taken to avoid potentially dangerous situations as follows:

- **Do not** smoke in bed.
- **Do not** leave children home alone.
- **Never** clean with flammable liquids such as gasoline.
- Properly store materials. Use general good housekeeping techniques to keep your home neat and tidy. A cluttered basement, attic, or other storage area is an open invitation to fire.
- Use combustible materials and electrical appliances carefully and only for their intended uses.
- **Do not** overload electrical outlets.
- **Do not** store explosive and/or fast burning materials in your home.
- Even after proper precautions have been taken, fires can start. **Be prepared**.

In case of fire

In the event of a fire, perform the following:

- Leave immediately. Don’t stop to pack or search for valuables.
- In heavy smoke, hold your breath and stay low, crawl if necessary. The clearest air is usually near the floor.
- If you have to go through a closed door, carefully feel the door and doorknob to see if undue heat is present. If they seem cool, brace your foot against the bottom of the door with your hip against the door and one hand against the top edge. Open it slightly. If a rush of hot air is felt, slam the door quickly and latch it. Unvented fire tends to build up considerable pressure. Be sure all members of the household realize and understand this danger.
- Use your neighbor’s phone or a street fire alarm box to call the fire department. The job of extinguishing the fire should be left to the professionals.

Be prepared

Practice the following steps to prepare you and your family in the event of a fire:

- Perform fire drills regularly. Use them to assure recognition of an alarm signal.
- Draw a floor plan and show two exits from each room. It is important that children be instructed carefully, because they tend to hide in times of crisis.
- Establish one meeting place outside the home. Insist that everyone meet there during an alarm. This will eliminate the tragedy of someone reentering the house for a missing member who is actually safe.
- If you have children and/or physically challenged people residing in your household, use window decals to help emergency personnel identify the sleeping quarters of these individuals.

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