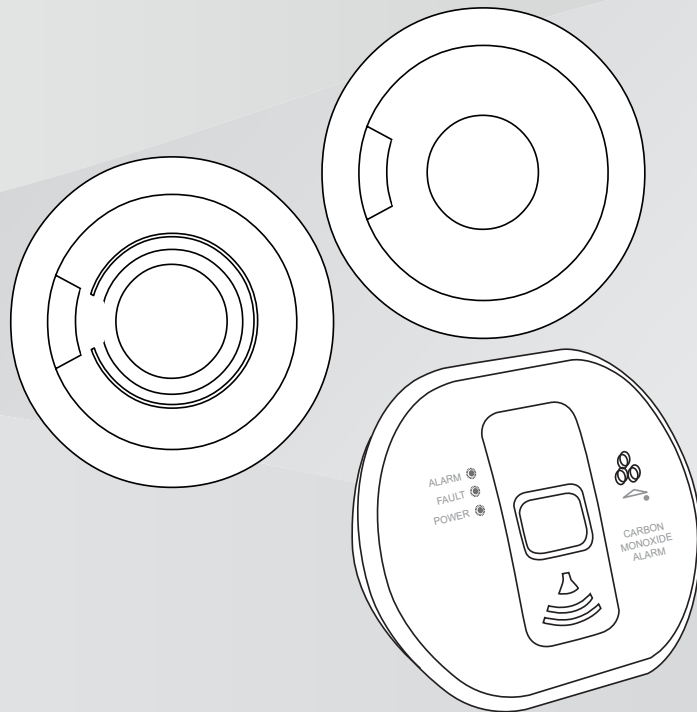




**BOSCH**

# **RADION Life Safety**

RFSM2-A, RFHT-A, RFCO-A



en

Installation manual



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# 1 Introduction

This document describes the RADION Life Safety portfolio that includes Smoke, Heat, and CO detectors. The RADION Smoke and Heat detectors monitor the area for indications of fire. The RADION CO detectors monitor the area for dangerous amounts of Carbon Monoxide. All of the detectors have a built in sounder and transmit alarm and supervisory messages to the connected RADION wireless receiver and control panel.

## 1.1 About documentation

### Copyright

This document is the intellectual property of Bosch Security Systems B.V. and is protected by copyright. All rights reserved.

### Trademarks

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

### Manufacturing dates

For product manufacturing dates, go to <http://www.boschsecurity.com/datecodes/> and refer to the serial number located on the product label.

### 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.

---

## 2 System overview

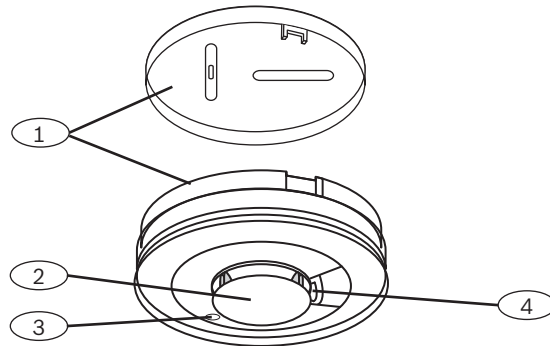
The detectors described in this manual are connected to a RADION wireless system with a control panel. These detectors have built-in sounders for alarm alerts and visual status LEDs. Each detector contains an RF module that transmits detector information to the supporting control panel for communication and monitoring.

### Smoke detector

This smoke detector includes a photoelectric sensor that senses low energy smoke particles. The detector is sensitive to all domestic fire types but is especially sensitive to smoldering fires and is ideal for bedrooms and children's rooms. The RFSM2-A smoke detector also includes a fixed and rate-of-rise heat sensor for fire detection.

The detector performs a self-check regularly to ensure optimal performance. Fault detection is indicated by a combination of LED flashes and sound beeps. The detector has an "End of Life" indicator (audible and visual) that notifies the user when the detector needs to be replaced.

### RFSM2-A



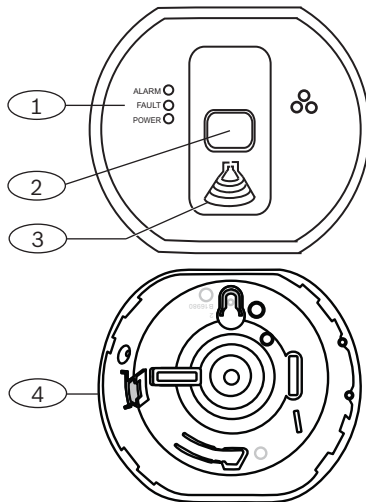
Callout - Description
1 - Mounting plate
2 - Test/Silence button
3 - LED
4 - Sounder

### CO detector

#### RFCO-A

This carbon monoxide detector includes a 10 year electrochemical sensor that senses the presence of toxic carbon monoxide gases. A red LED flashes when carbon monoxide is detected. When higher levels are detected, the alarm sounds.

The detector performs a self-check regularly to ensure optimal performance. Fault detection is indicated by a combination of LED flashes and sound beeps. The detector has an "End of Life" indicator (audible and visual) that notifies the user when the detector needs to be replaced.

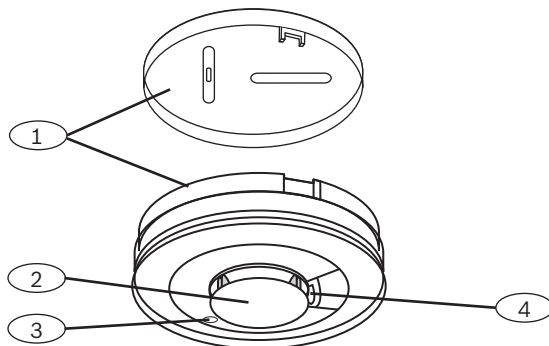


Callout - Description
1 - LEDs
2 - Test/Silence button
3 - Sounder
4 - Mounting plate

**Heat detector**

**RFHT-A**

This heat detector senses a rise in temperature caused by fire. Ideal installation locations for this detector include kitchens and other areas where there is normally some level of smoke or fumes and where smoke alarms might be subjected to false alarms due to an excessively dirty environment.



Callout - Description
1 - Mounting plate
2 - Test/Silence button
3 - LED
4 - Sounder

### 3 Specifications

#### Smoke and heat detectors (RFSM2-A/RFHT-A)

Power	2 - 3V CR123A Lithium Batteries (replaceable)
Smoke sensitivity	1.95%-4% OBS/Ft
Sensor types	Photoelectric - (RFSM2-A only) Fixed temperature and rate-of-rise
Operating temperature	4.4°C to 38°C (40°F to 100°F)
Humidity range	0% to 93% R.H. (non-condensing)
Audible alarm	>85dB(A) at 3m (10ft) minimum
Heat sensor fixed rating	57°C +/- 2°C (135°F +/- 4°F)
Heat sensor rate of rise	8.3C (15°F) / minute, > 40C (104°F)
Dimensions	115 mm (4.5 in) x 59 mm (2.3 in)
Weight	205 g (0.45 lbs)

#### CO detectors (RFCO-A)

Power	2 alkaline AAA type batteries
Operating temperature	4.4°C to 38°C (40°F to 100°F)
Humidity range	0% to 93% R.H. (non-condensing)
Audible alarm	85 dB(A) at 3m (10ft) minimum
Dimensions	120 mm (4.7 in) x 105 mm (4.1 in) x 45 mm (1.77 in)
Weight	172 g (0.38 lbs)

## 4 Limitations of smoke, heat and CO detectors

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

Detectors require power to work. These detectors will not operate or alarm (sound) if they are not installed properly.

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

Detectors may not always activate and provide warning early enough. Detectors activate when smoke or carbon monoxide reach the detector. If a fire starts in a chimney, wall, roof, closed doors, or on a different level of the property enough smoke may not reach the detector for it to alarm.

Detectors are useful in reducing loss, injury and even death. However, nothing works perfectly under every circumstance and you cannot expect a detector to ensure that you will never suffer any damage or injury.

### Limitations of Heat Alarms

The following are situations where a heat alarm may not be effective:

- Fires where the victim is directly exposed to flame for example; clothes catching fire while cooking.
- Fires where the heat is prevented from reaching the heat alarm due to a closed door or other obstruction.
- Incendiary fires where the fire grows so rapidly that an occupant's exit is blocked even with properly located heat alarms.

### Planning for emergencies

The purpose of an early warning detector is to detect the presence of fire or carbon monoxide and sound an alarm giving occupants time to exit the premises safely.

Avoid the following fire hazards:

- 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.
- Be prepared. Fires can start at any time.

In case of fire:

- Leave immediately. Do not stop for any reason.
- Hold your breath in heavy smoke and stay low, crawl if necessary. The clearest air is usually near the floor.
- Carefully feel a closed door and doorknob for heat before opening it. If the door and doorknob 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 fires create pressure. Be sure all household members realize and understand this danger.



- Use your neighbor's phone or a street fire alarm box to call the fire department. Extinguishing the fire should be left to the professionals.

**Prevention actions**

- Perform fire drills regularly.
- Draw floor plans with two exits from each room. It is important that children be instructed carefully, because they might become frightened and hide during an emergency situation.
- Establish one meeting place outside the home where everyone can meet during an alarm. This eliminates the tragedy of someone reentering the house for a missing member who is already safe.
- Use window decals to help emergency personnel find sleeping locations of children or physically challenged people.

## 5 Smoke and heat detector installation

### 5.1 Smoke and heat detector installation locations

Install smoke detectors in the following areas:

- bedrooms
- living area(s)
- all floors of a building, including basements
- every 6.4 m (21 ft) of hallways and rooms
- within 3 m (10 ft) of all bedroom doors

Install heat detectors in the following areas:

- kitchens
- garages
- other places where smoke detectors are unsuitable

#### 5.1.1 Locations to avoid

Do not place smoke detectors in the following areas:

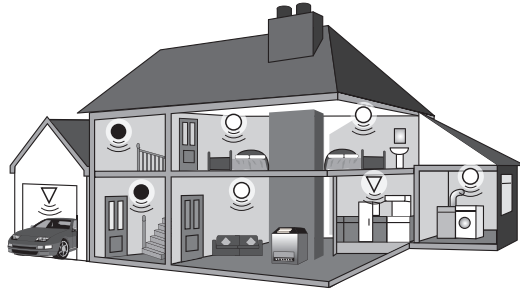
- Rooms where steam, condensation, normal smoke or fumes may trigger an alarm (e.g. bathrooms, kitchens, garages). Keep at least 6 m (20 ft) away from sources of normal smoke/fumes.
- Very dusty or dirty areas as dust build-up in the chamber can impair performance (e.g. garages). It can also block the insect screen mesh and prevent smoke from entering the smoke detector chamber. If a smoke detector is installed in an environment exposed to construction dust and dirt, cover the detector.
- Insect infested areas. Small insects in the smoke detector chamber may cause intermittent false alarms.
- Areas where the normal temperature can exceed 100°F (38.7°C) or go below 40°F (4.4°C).
- Surfaces that are normally warmer or colder than the rest of the room (e.g. attic hatches). Temperature differences might stop smoke from reaching the detector.
- Adjacent to or above heaters or air conditioning vents, windows, wall vents etc.

Install smoke detectors in locations at least:

- 1 m (39 in) from dimmer controlled lights and wiring as some dimmers can cause interference.
- 1.5 m (59 in) away from fluorescent light fittings as electrical noise and/ or flickering may affect the detector.

#### 5.1.2 Multi-story building

For buildings with more than one floor, install at least one detector on each level as shown below.



For minimum protection

- - Smoke Alarm on each story
- ☉ - in each sleeping area
- every 6.4 m (21 ft) of hallways and rooms
- within 3.0 m (10 ft) of all bedroom doors

For recommended protection (in addition to the above):

- ☉ - Smoke Alarms in every room (except kitchens and bathrooms)
- ▽☉ - Heat Alarms located in kitchens, garages etc. within 5.3 m (17 ft) of potential fire sources

**Figure 5.1:** Smoke and heat detector locations

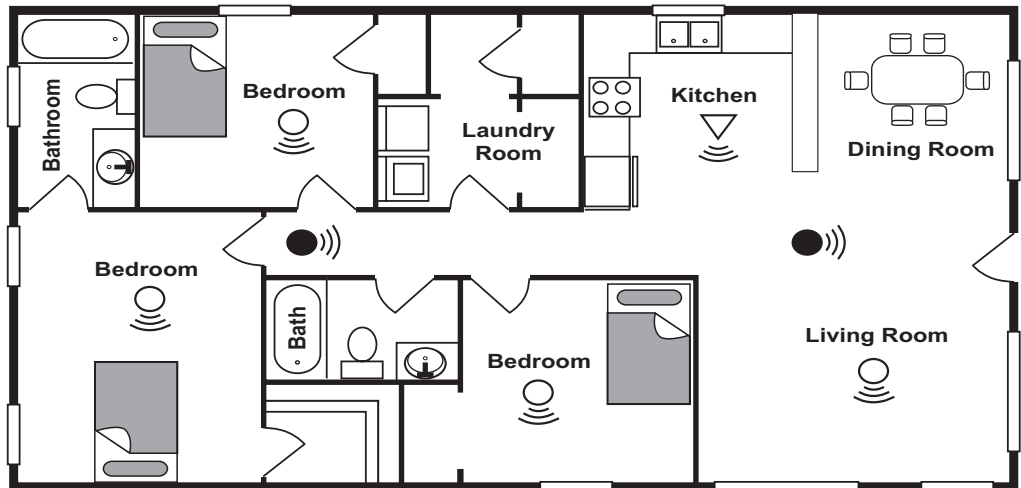
### 5.1.3

#### Single story building

Install the first smoke detector in a corridor or hallway between the sleeping and living areas. Place the detector as near to the living area as possible. The alarm must be loud enough to wake a person sleeping in a bedroom.

In buildings with more than one sleeping area, install:

- smoke detectors between each sleeping area and the living area
- heat detectors in the kitchen and garage



**Figure 5.2:** Sample detector placement

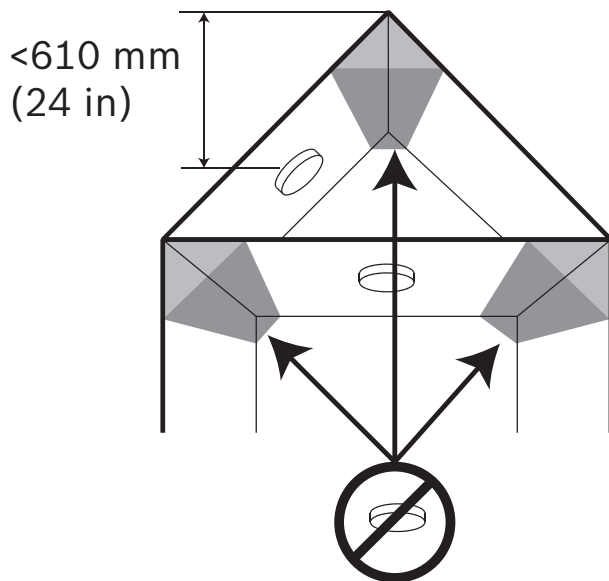
### 5.1.4

#### Ceiling mounting

A recommended installation location for smoke detectors is a central ceiling location. Mount away from corners.

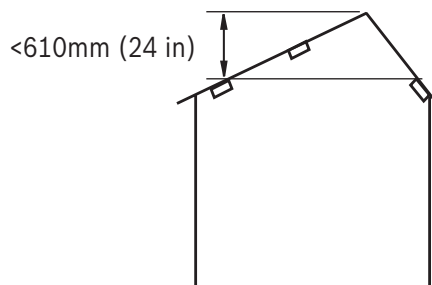
- At least 305 mm (12 in) from walls and corners.
- At least 305 mm (12 in) from any light fixture or object that might block smoke from detection.

- Within 610 mm (24 in) of the peak (measured vertically) on sloping or peaked ceilings.



**Figure 5.3:** Detector location for slope/peak ceilings

Flat ceilings have a height less than 610 mm (24 in):



**Figure 5.4:** Flat ceiling definition

### 5.1.5

#### Wall mounting

If ceiling mounting is not possible because of closely spaced beams, obstructions or ceiling material issues, then mount the smoke detector on a wall.

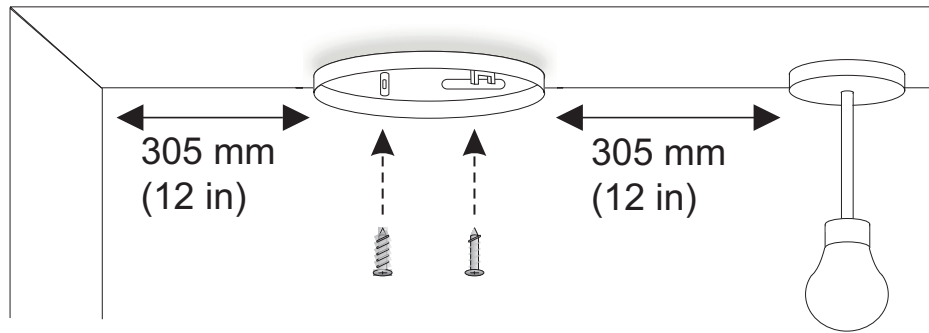
A correct smoke detector mounting on a wall must adhere to the following:

- top of the detection element is between 150 mm (6 in) and 305 mm (12 in) below the ceiling
- bottom of the detection element is above the level of any door openings

## 5.2

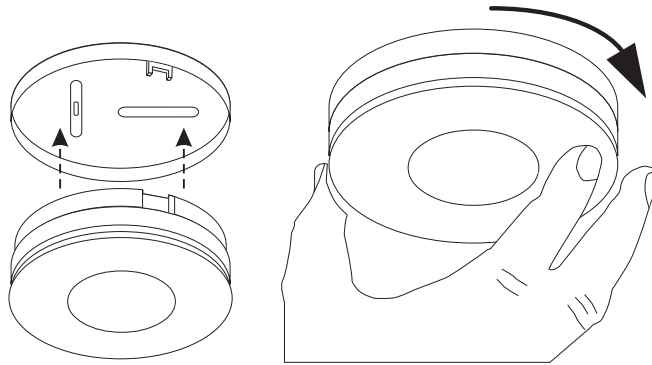
### Installation procedure

1. Select a location preferably on a ceiling or if not possible, a wall location.
2. Remove the mounting plate from the detector.
3. Place the mounting plate on the ceiling or wall where you want to mount the detector. With a pencil, mark the location of the 2 screw holes.



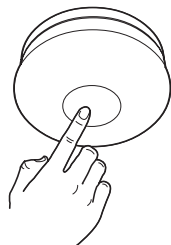
**Figure 5.5:** Mounting location

4. Use a 5.0 mm (13/64 inch) drill bit to drill holes through the center of the marked locations.
5. Push the plastic screw anchors into the drilled holes.
6. Screw the mounting plate to the ceiling or wall.
7. Pull the battery tab to power the detector.
8. Align the detector on the mounting plate and twist clockwise to attach and power the detector.



**Figure 5.6:** Attach and power the detector

9. Press the Test/Silence button on the detector to make sure the detector operates correctly.



**Figure 5.7:** Test detector

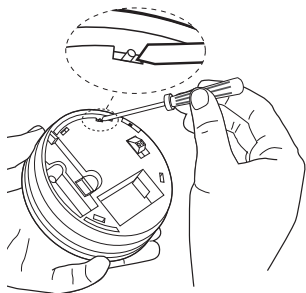
**Refer to**

- *Smoke and heat detector installation locations, page 10*
- *Ceiling mounting, page 11*
- *Wall mounting, page 12*

### 5.3 Tamper proofing the detector

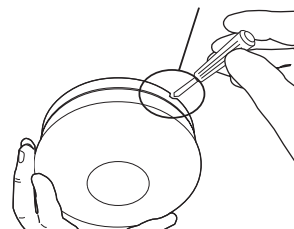
Tamper proofing prevents unauthorized removal of the detector from the detector's mounted location.

1. Break off the pillar on the base of the detector.



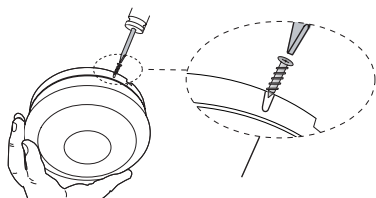
**Figure 5.8:** Break pillar from detector

2. Use a small screwdriver to release the catch (push towards mounting surface), then twist off the detector to remove the detector from the mounting plate.



**Figure 5.9:** Remove detector from mounting plate

3. If additional tamper proofing is required, align a self-tapping screw with the u-shaped recessed area on the side of the mounting plate. Use a No. 2 or 4 self-tapping screw 2 mm - 3 mm (1/8 in) diameter x 6 mm - 8mm (1/4 in) long (not supplied).
4. Tighten the screw to lock the detector on the mounting plate.



**Figure 5.10:** Lock detector on mounting plate

## 6 CO detector installation

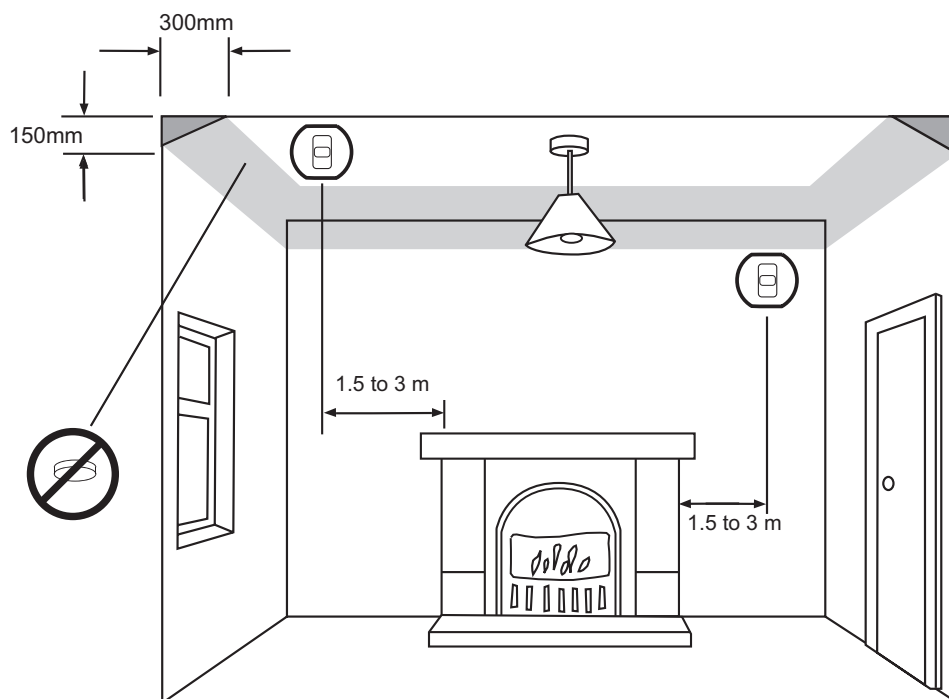
### 6.1 CO detector Installation locations

Consider the following locations when installing CO detectors:

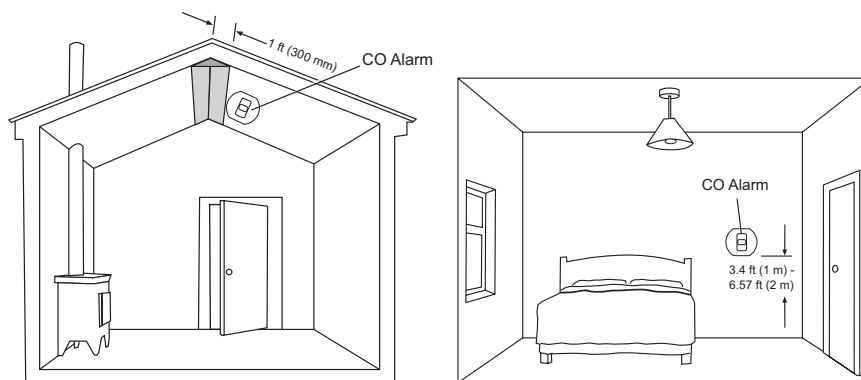
- rooms containing a fuel burning appliance
- rooms where occupants spend a considerable amount of time
- bedrooms
- rooms near an attached garage

If the number of CO detectors to place is limited, make sure to install in:

- rooms that have fuel burning appliances where people sleep
- rooms with a flue-less or open-flued appliance
- one room apartments as far away as possible from the cooking appliance, but near to sleeping areas.
- rooms not normally used (e.g. furnace/boiler room). Place just outside of the room so that the alarm can be heard.



**Figure 6.1:** Installation locations for CO detectors



**Figure 6.2:** Installation locations for CO detectors

## 6.2

### Locations to avoid

Do not place CO detectors in the following locations:

- within 1m (3ft) of a cooking appliance
- directly above a sink or in a damp, humid, or dusty area
- in a drafty location
- in an enclosed space
- where it could be obstructed
- near solvent fumes or air fresheners

## 6.3

### Installation procedure



#### Notice!

The CO detector with the mounting plate attached can stand on a flat surface without mounting.

1. Remove the mounting plate from the detector.
2. Place the mounting plate on the ceiling or wall where you want to mount the detector and mark the location of the 2 screw holes.
3. Use a 5.0 mm (13/64 in) drill bit to drill holes through the center of the marked locations.

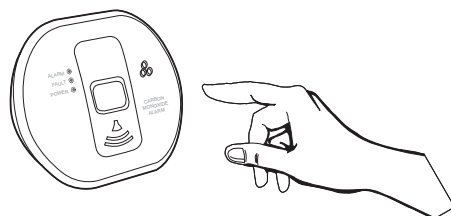


4. Push the plastic screw anchors into the drilled holes.
5. Screw the mounting plate to the ceiling.
6. Pull the battery tab to power the detector.
7. Align the detector on the mounting plate and twist clockwise to attach. The red, amber, and green lights immediately flash in sequence.



**Figure 6.3:** Detach detector

8. After 15 seconds, press the test button to make sure the detector operates correctly.



**Figure 6.4:** Test detector

## 7 Enrollment

### 7.1 Programming wireless points in the control panel

Configure the RADION points to establish communication between the RADION system and the control panel. This can be accomplished by using one of two methods:

- Using Remote Programming Software (RPS) on a supported laptop computer, or
- Compatible keypad devices to enable your points

A “point” can be a detection device, or a group of devices connected to your security system. The first step to enable communication is to verify that the RADION transmitter is programmed into the control panel. This is achieved by configuring a point source index as wireless.

RFID programming from a supported keypad is achieved by:

- Through the point source/RFID menu options, or
- Enroll point RFID for wireless points - which uses the “Auto-Learn” methodology.

The preferred method of entering in the RFID number would be to enter it in manually through the keypad - point source/RFID, or RPS. Doing so gives you greater control and security, while reducing the risk of incomplete RFID programming.

The workflow listed below is a generic representation of the programming/enablement process. Refer to the Points Menu Parameters section inside the Keypad Installer Menu chapter of the compatible Bosch control panel Installation and System Reference Guides, or Points - Point Assignments in RPS Help File for more information.

#### Point source/RFID programming

A point’s source gives a description as to the physical location of the point for installation and service personnel:

1. Using either RPS, or a supported keypad, access the Program Menu, and select the **Points** menu option.
2. Select the **Source** menu.
3. Select the point source of the device you are programming.
4. Change the point source to the “wireless.”
5. Save changes.
6. Select the **RFID** menu to edit the RFID of each RADION device.
7. Enter in the unique RFID as it appears on the RFID sticker in the illustration below. ID’s beginning with a zero may not display in the keypad UI, or RPS
8. Save changes and exit the menu.

The control panel is enabled to receive wireless communication information from the RADION transmitter.

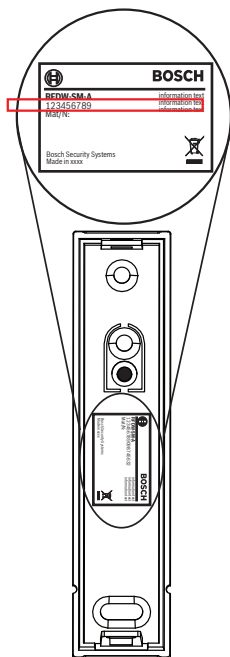


Figure 7.1: RFID sticker example

### Point indexes

Point indexes determine how points operate/respond to circumstances within a system:

1. Using either RPS, or a supported keypad, access the **Program Menu**, and select the **Points** menu.
2. Select the point source of the device you are programming and select the wireless device type. Ensure that it matches that of the physical device you are enrolling.
3. Assign the attributes of the point index (how the device will respond to various circumstances).
4. Save changes and exit the menu.

### Signal strength test (for repeaters)

1. From the keypad, access the **Wireless Menu**, and select **Diagnostics**.
2. Select **RF Repeaters**.
3. Select **Signal** and choose the repeater. Various sub-categories display including:
  - Signal Strength
  - Level
  - Margin
4. Exit the menu.

## 7.2

### Enroll point RF ID for wireless points (Auto-learn mode)

A second option exists whereby new devices are discovered on the system. This option is referred to as the “Auto Learn Mode” option. Auto Learn Mode is the process through which the control panel identifies and enrolls new device RF ID’s that appear within the system. This is achieved by the following:

- Keyfobs - when the keyfob buttons are pressed, then released.
- Motion detectors - when the battery is inserted, or if coverage pattern is disturbed by someone walking through the coverage pattern field.

**Notice!**

The Auto Learn mode option is not recommended as the preferred method of entering in the RF ID's due to the potential of the RADION system picking up the first available RF ID it detects. For optimal results, manually enter in the RF ID's through the supported keypad, or via RPS.

**Enrolling a wireless point RF ID**

Using a supported keypad, enroll the RF ID through the Wireless menu option. Use the **Wireless** menu to add, replace, remove, and diagnose points and repeaters.

Perform the following to enroll in the RF ID:

1. From the keypad, access the **Wireless Menu**, and select the **Points** menu option. If adding a repeater, select the **Repeater** menu option.
2. Select the option for enrolling a point RFID.
3. When asked, select the point source you are enrolling).
4. Initiate activity for the desired device (walk through the coverage pattern if enrolling a motion detector, or press the button on the keyfob if enrolling a keyfob, open the door or window if enrolling a contact). By doing so, the control panel recognizes the first RFID it comes in contact with.
5. When the keypad or RPS shows Point Enrolled, exit out of the application.
6. Verify the RFID displayed on the keypad matches the RFID sticker that appears on the activated device.

## 8 Operation

### 8.1 Smoke and heat detectors

#### Power the detector

To power the detector:

1. Remove the detector from the mounting plate.
2. Pull the battery tab. The red LED, and then the yellow LED flash once.
3. Attach the detector to the base.

#### Weekly button test

Press and hold the test button. The red LED flashes rapidly and the detector makes a sound.

#### Sensing fire

As soon as the detector senses smoke or high temperature, the alarm sounds and the red LED rapidly flashes.

#### 8.1.1 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

Press and hold the test button. The red LED flashes rapidly and the detector makes a sound.

#### 8.1.2 Test/Silence button

#### Silence nuisance alarms

Smoke detectors may activate by other elements, e.g. dust, insects, cooking fumes, and cause a nuisance alarm. Use the Test/Silence button (test button) to control nuisance alarms.

- Press the test button to automatically put the detector into a reduced sensitivity condition, which silences the detector for 10 minutes. The red LED flashes every 8 seconds. The detector resets to normal sensitivity at the end of the silence period (10 minutes).

If there are frequent nuisance alarms, try to identify the reason why these alarms occur. For example, cooking fumes. If possible, re-locate the detector away from any source of fumes or use a heat detector for cooking areas instead of a smoke or smoke and heat detector.

### 8.2 CO detectors

#### Power the detector

To power the detector:

1. Remove the detector from the mounting plate.
2. Pull the battery tab. The red, amber, and green lights immediately flash in sequence.
3. Attach the detector to the base.



**Notice!**

Wait 15 seconds after connecting the power before testing.

**Weekly button test**

Press the test button. The green (power) LED flashes and the detector sounds.

**8.2.1**

**CO detector alarm response**

The following table shows how the detector responds to CO detection. The ppm values shown in the table are for example only.

CO gas level	Red light	Horn/Sounder
0 < ppm < 30 ppm	OFF (unless previous alarm occurred)	OFF
> 50 ppm	1 flash every 3 secs	on within 60-240 mins (typically 90 mins)
> 110 ppm	2 flashes every 3 secs	on within 10-50 mins (typically 30 mins)
> 250 ppm	3 flashes every 3 secs	on within 4-15 mins (typically 9 mins)

Alarm indicators	
Pre-Alarm	Red LED flash only
CO Alarm	Red LED flash and sounder
Faults	Yellow LED flash and emit sound(s)



**Notice!**

The CO detector may go into alarm if the release of cigarette smoke, aerosols, cooking with gas, or automobile exhaust is near the detector's location.

**Memory**

The CO detector memory saves information about any previously detected CO alarms. The following are the memory operation modes:

- memory indication for a 24 hour period after alarm
- memory recall on demand

**Memory recall on demand**

To review the memory status (after the initial 24 hour period):

- Press and hold the test button. See the following table for memory indicators.

CO gas	Red light responses	
	24 Hours	On Demand (Button press)
ppm > 70 ppm	1 flashes every 50 sec	1 flash
ppm > 150 ppm	2 flashes every 50 sec	2 flashes
ppm > 400 ppm	4 flashes every 50 sec	4 flashes
Ppm > 750	4 flshes every 50 sec	4 flashes

### Reset memory

To reset the detector memory:

1. Cover the detector sounder with a cloth to quiet the alarm during the reset.
2. Press and hold the test button until the red LED stops and the green LED starts flashing.



### Notice!

Turning the detector off resets the memory.

### Symptoms of carbon monoxide poisoning

Concentration of CO in air *(ppm)	Inhalation time (approx.) and symptoms developed
35	The maximum allowable concentration for continuous exposure in any 8 hour period according to OSHA**.
150	Slight headache after 1.5 hours
200	Slight headache, fatigue, dizziness, nausea after 2-3 hours.
400	Frontal headaches within 1-2 hours, life threatening after 3 hours, also maximum parts per million in flue gas (on free air basis) according to US Environmental Protection Agency.
800	Dizziness, nausea and convulsions within 45 minutes. Unconsciousness within 2 hours. Death within 2-3 hours.
1600	Headache, dizziness and nausea within 20 minutes. Death within 1 hour.
3200	Headache, dizziness and nausea within 5-10 minutes. Death within 25-30 minutes.
6400	Headache, dizziness and nausea within 1-2 minutes. Death within 10-15 minutes.

12800	Death within 1-3 minutes.
* ppm = parts per million	
** OSHA Occupational Safety & Health Association	

The following symptoms may be related to CARBON MONOXIDE POISONING and should be discussed with ALL members of the household:

- Mild exposure: Headaches, running nose, sore eyes, often described as “flu-like” symptoms.
- Medium exposure: Dizziness, drowsiness, vomiting.
- Extreme exposure: Unconsciousness, brain damage, death.



**Warning!**

Carbon monoxide poisoning

Many cases of reported CARBON MONOXIDE POISONING indicate that while victims are aware they are not well, they become so disoriented they are unable to save themselves by either exiting the building or calling for assistance.

**8.2.2 Test/Silence (CO detector)**



**Notice!**

At CO levels above 300 ppm, you cannot silence the detector.

To silence the detector:

- Press the Test/Silence button (test button).

The red LED continues to flash. If detectable CO is still present, the detector will sound again within 4 minutes. You can only silence the detector once during an actual CO incident.

**8.2.3 Monitoring (CO detector)**

The detector automatically monitors its status and updates every 50 seconds.

- Press the test button to see the detector status.
- If the detector is indicating a Sensor Fault, press the test button to silence the detector for 24 hours. You can only silence the detector once for a fault.

The table below shows the status response to monitoring:

<b>Monitoring summary</b>					
<b>Status result</b>	<b>Red LED(alarm)</b>	<b>Amber LED (fault)</b>	<b>Green LED (power)</b>	<b>Sounder</b>	<b>Action</b>
Standby	No visual or audible indication if unit is OK				
Unit OK (Button test)	OFF	OFF	ON	Low to high sound	
Low Battery	OFF	1 flash	OFF	1 sound	Replace batteries or replace



					detector if replace by date has past
Sensor Fault	OFF	2 flashes	OFF	2 sound	Replace detector
End of Life (EOL )	OFF	3 flashes	OFF	3 sound	Replace detector

## 9 Device testing

### 9.1 Manually testing smoke and heat detectors

Test your detectors after installation as well as weekly to make sure the detectors are operating.

- Press and hold the test button until the detector emits a sound and the red LED flashes.
- Release the button to silence the test alarm.
- Repeat this procedure for all detectors in the system.

**Caution!**

Do not test with flame as it will damage the detector and could cause a fire. If you test with smoke, the detector will send an alarm message to the panel and alert the monitoring central station, which may call the fire department.

**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

### 9.2 Manually testing CO detectors

Frequent testing of the system is required. Test CO detectors:

- after installation
  - once a week by pressing the test button
  - after prolonged absence from the building
  - After significant home remodeling work or projects
1. Press and hold the test button. The green (power) LED flashes and the detector sounds one time.
  2. Press the test button to silence the alarm and stop the test. The red light will continue to flash.

**Yearly CO detector test with CO test kit**

You can test the CO detector with carbon monoxide using a commercial test kit (canned CO).

1. Prepare the test as instructed by the CO test kit.
2. Press the test button. The detector's alarm sounds to confirm that the detector is operating correctly by detecting CO.
3. Press the test button to silence the alarm. If CO is still present, the red LED and sounder will activate again after 4 minutes.

The alarm can only be silenced once during a CO occurrence. At levels > 250 ppm CO, the alarm cannot be silenced.

If the alarms are indicating a fault, pressing the test button will silence the beeps for a 24 hour period. This is for your convenience and can only be done once.

**Notice!**

If you test with CO, the detector will send an alarm message to the panel and alert the monitoring central station, which may call the fire department.

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## 10 Maintenance

### 10.1 Replacing smoke and heat detector batteries

**Warning!**

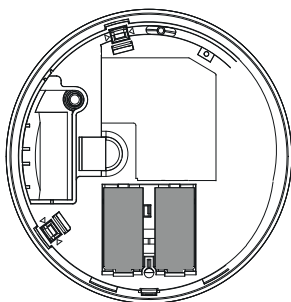
Risk of fire or explosion

Use only Panasonic CR123A batteries for replacement. Use of another battery may negatively impact detector operation, and may present a risk of fire or explosion.

Replace detector batteries when:

- the detector makes an intermittent sound and the yellow LED flashes once every 48 seconds
- no alarm sound is made during a test

After you replace the battery, press the test button to make sure that the detector is operating.



**Figure 10.1:** Battery location in detector

**Warning!**

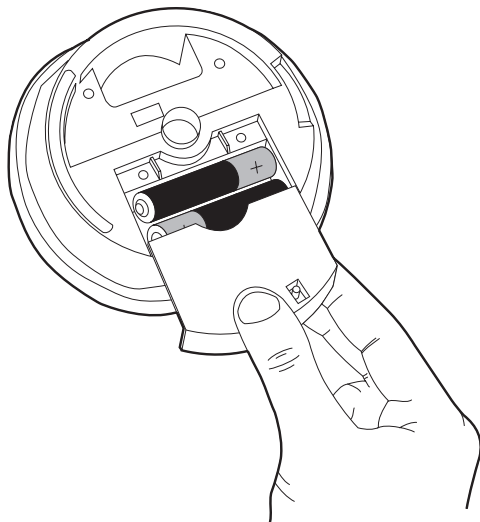
Risk of fire or chemical burn

The battery may present a fire or chemical burn hazard if mishandled. Do not recharge, disassemble, heat above 100°C (212°F) or dispose of in a fire.

### 10.2 Replacing CO detector batteries

To replace the batteries in a CO detector:

1. Refer to the “replace by” date on the label. If the “replace by” date has not passed, replace the batteries. If the detector has been installed for 10 or more years, replace the detector.
2. Remove the detector from the mounting plate.
3. Remove the battery cover.
4. Insert the new batteries in the correct orientation as shown on the base.
5. Replace the battery cover.
6. Place the detector on the mounting plate, which automatically powers the detector.
7. Test the detector (after 15 seconds) to make sure that the detector is operating.



**Figure 10.2:** Battery location for CO detector



**Notice!**

Use only Duracell alkaline MN2400BK AAA size batteries.

## 10.3

### Cleaning

**Smoke and heat detectors**

Clean your detectors regularly. When cleaning detectors:

- Use a soft bristle brush or the brush attachment of a vacuum cleaner to remove dust and cobwebs from the slots.
- Wipe the cover with a damp cloth and dry thoroughly.
- Remove any insects or cobwebs near the detectors.

**CO detectors**

Clean the outside case by wiping with a clean damp cloth. When cleaning CO detectors:

- Do not use any cleaning products, bleaches, detergents or polishes, including any product in aerosol cans.
- Do not spray air fresheners, hair spray, paint or other aerosols near the CO detector. Do not place air fresheners near the detector.
- Do not allow water or dust to contaminate the detector.
- Do not open the CO detector.



**Notice!**

Do not paint the detectors (smoke, heat or CO detectors).

### 10.3.1

#### Smoke chamber self-test

The smoke chamber in the smoke detector runs an automatic test every 16 seconds to monitor if the chamber is degraded.

- Clean the detector when it emits a sound 2 times every 48 seconds and the yellow LEDs flash at the same time. Refer to *Cleaning, page 29* for more information.

# 11 Troubleshooting

## 11.1 Smoke and heat detectors

### Nuisance alarms

The detector alarm sounds without any presence of smoke or fire.

- Press the test button on the smoke detector to silence the detector for 10 minutes.
- Paint, steam and other fumes may cause nuisance alarms. Make sure that fumes cannot accidentally put the detector into alarm. Install heat detectors in kitchens, or install detectors away from fume sources.
- Make sure contamination, such as cobwebs or dust is not near or attached to the detector. Clean the detector regularly.

### Low battery

RFSM2-A/RFHT-A - The detector emits a sound with a yellow LED flash every 48 seconds. Replace the batteries or replace the detector if the “replace by” date has expired.

### Contaminated chamber

RFSM2-A - The detector alarm sounds without any presence of smoke or fire.

- Press the test button to silence the detector for 10 minutes.
- The detector alarm occurs a second time after silencing.
- Press the test button within 4 minutes of the second detector alarm. The detector may compensate for chamber contamination, which typically solves the problem.
- The detector alarm occurs a third time after silencing.
- Press the test button within 4 minutes of the third detector alarm to disable the detector for 8 hours. The detector continues to emit 2 short sounds (1 second apart) every 10 minutes. If the contamination clears, the detector returns to normal operation. If not, replace the detector.

### Faulty smoke chamber

The detector emits 2 short sounds with 2 yellow LED flashes every 48 seconds.

- Replace the detector.
- If you cannot replace the detector immediately, press the test button to silence the detector and stop the yellow LED flashes for 12 hours. Repeat until you replace the alarm.

### Detector fails to emit a sound when the test button is pressed

- Check the age of the unit. See the “replace by” label on the detector.
- Replace the batteries.

### LED and sounder indicators

#### RFSM2-A/RFHT-A

Operation	Description	Corrective action
Power up	Red LED flashes once. Yellow LED flashes once. Built-in sounder is off.	Remove the battery tab during installation, or insert batteries.
Normal operation	LED's are off. The built-in sounder is off.	No action required.
Fire detection	Red LED flashes rapidly.	Evacuate the building

Operation	Description	Corrective action
	Yellow LED is off. Built-in sounder emits an intermittent high pitch "beep."	
Low battery	Red LED is off. Yellow LED flashes once every 48 seconds. Built-in sounder emits a high pitch "beep" with every LED flash.	Replace battery.
Faulty smoke and/or heat sensor	Red LED is off. Yellow LED flashes two times every 48 seconds. Built-in sounder emits two high pitch "beeps" along with the yellow LED.	Replace detector
End of life	Red LED is off. Yellow LED flashes three times. Built-in sounder emits three high pitch "beeps" along with the yellow LED.	Replace detector.
Silence alarm	Red LED flashes once every 8 seconds. Yellow LED is off. Built-in sounder is off for 10 minutes.	Press and release the test button.
Silence end of life indication (up to 30 days)	Red LED is off. Yellow LED is off for 72 hours. Built-in sounder is off for 72 hours.	Press and release the test button.
Dusty smoke chamber	Red LED is off. Yellow LED flashes four times every 48 seconds. Built-in sounder emits four high pitch "beeps" when the test button is pressed.	Press the test button to activate "beeps."
Test mode	Red LED flashes rapidly. Yellow LED is off. Built-in sounder emits a "beep."	Press the test button to de-activate test mode.

## 11.2

### CO detectors



#### Notice!

If a CO detector alarm occurs, follow procedures and leave the building immediately until it is determined that the alarm is a nuisance alarm.

#### Detector fails to emit a sound when the test button is pressed

- Wait 15 seconds after connecting the power before testing.



- Press and hold the test button for at least 5 seconds.
- Make sure the detector attachment to the mounting plate is correct.
- Replace the batteries where applicable.
- Replace the detector.

**Alarm occurs for no apparent reason**

- Leave the building immediately until it is determined that the alarm is a nuisance alarm.
- Make sure that there are no fuel burning appliances nearby that may be leaking CO.
- Make sure that there are no smoke or fumes in the area of the detector.
- Make sure that there is no outdoor source of CO nearby.
- Make sure that there is no source of hydrogen, such as batteries re-charging.
- Press the test/hush button to silence the alarm.
- Replace the device.

**LED and sounder indicators**

**RFCO-A**

Operation	Description	Corrective action
Normal operation	LED's are off. The built-in sounder is off.	No action required.
Button test	Red and yellow LED's are off. Green LED is on.	No action required.
	Built-in sounder increases in volume to a full sound.	
Low battery	Red LED is off. Yellow LED flashes once. Green LED is off. Built-in sounder emits a high pitch "beep."	Replace battery.
Detector fault	Red LED is off. Yellow LED flashes two times. Green LED is off. Built-in sounder emits two high pitch "beeps."	Replace detector.
End of life	Red LED is off. Yellow LED flashes three times. Green LED is off. Built-in sounder emits three high pitch "beeps."	Replace detector.







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