

SMOKE ALARMS

PART I

IN GENERAL

- All smoke alarms must be approved by a Nationally Recognized Testing Laboratory.
- Smoke alarms shall be installed not less than 3 feet horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a required smoke alarm.
- Smoke alarms shall not be installed in the following locations unless this would prevent placement of a required smoke alarm.
 - Ionization smoke alarms shall not be installed less than 20 feet horizontally from a permanently installed cooking appliance.
 - Ionization smoke alarms with an alarm-silencing switch shall not be installed less than 10 feet horizontally from a permanently installed cooking appliance.
 - Photoelectric smoke alarms shall not be installed less than 6 feet horizontally from a permanently installed cooking appliance.”

You must follow the manufacturer’s instructions for the particular type of smoke alarm that you are installing. You will also need to know whether you are using an ionization type or a photoelectric type of smoke alarm.

1. **Ionization smoke alarms** are generally more responsive to flaming fires.
How they work: Ionization-type smoke alarms have a small amount of radioactive material between two electrically charged plates, which ionizes the air and causes current to flow between the plates. When smoke enters the chamber, it disrupts the flow of ions, thus reducing the flow of current and activating the alarm
2. **Photoelectric smoke alarms** are generally more responsive to fires that begin with a long period of smoldering (called “smoldering fires”).
How they work: Photoelectric-type alarms aim a light source into a sensing chamber at an angle away from the sensor. Smoke enters the chamber, reflecting light onto the light sensor; triggering the alarm.

Many smoke alarms are a combination of the two types and as such may be permitted in locations otherwise not permitted in Section R314.3 of the IRC (2015 Edition). Check your manufacturer’s instructions.

Smoke alarms must be kept at least 3’ from appliances or vents that push the smoke away from the smoke alarm. This would include air supply vents, ceiling fans, etc.

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SMOKE ALARM REQUIREMENTS

PART II

NEW DWELLING UNITS

- **In new dwelling units.** Smoke alarms are required in every sleeping area, in the hallway or corridor outside of the sleeping area(s), and on every level. These must also comply with the placement requirements above regarding air vents, kitchens and bathrooms. Smoke alarms must be hardwired with battery back-up and must be electrically interconnected so that activation of any one smoke alarm will activate all smoke alarms.

CARBON MONOXIDE DETECTOR REQUIREMENTS NEW DWELLING UNITS

- Carbon monoxide detectors must be listed in accordance with UL 2034. Combination carbon monoxide and smoke alarms must be listed in accordance with UL 2034 and UL 217.
- Carbon monoxide detectors are required in all new dwellings that rely on the combustion of fossil fuel for heat, ventilation, hot water, or clothes dryer operations. They are also required where the dwelling has a fireplace of any type, and/or an attached garage that communicates with the dwelling unit.
- The CO detector may be an independent detector or part of a combination smoke/CO type. It must be hardwired with a battery back-up.
- The detector may be installed outside of the sleeping areas or within 25' of each fossil burning appliance, fireplace, or entrance to an attached garage.
- In addition to the requirements above; where a fossil fuel burning appliance or fireplace is located within a sleeping area or its attached bathroom, a carbon monoxide alarm must be located inside the sleeping area.

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SMOKE ALARM REQUIREMENTS PART III RENTAL UNITS

These regulations apply to buildings with 6 dwelling units or less. The regulations for rental units do not apply to apartment complexes.

- In all rental units smoke alarms must be hardwired with battery back-up and be interconnected. Wireless remote interconnection is acceptable provided the smoke alarms are hardwired and approved by a recognized testing lab such as UL, and be listed and approved for sale, installation, and use in Maryland by the Office of the State Fire Marshal.

Single Family Home

- A hardwired smoke detector with a battery backup must be located in the corridor or hallway outside of the sleeping area(s).
- If the home has a basement, a hardwired smoke alarm with a battery backup must be located in the basement, and must be interconnected to the smoke alarm(s) outside of the sleeping area(s).

Homes with 2 or 3 Apartments

- A hardwired smoke alarm with a battery backup must be located in the corridor or hallway outside of the sleeping area(s).
- If the home has a basement, a hardwired smoke alarm with a battery backup must be located in the basement and it must be interconnected to the smoke alarm on the first floor.

Homes with 4-6 Apartments

- A hardwired smoke alarm with battery backup must be located in the corridor or hallway outside of sleeping area(s) in each unit.
- No smoke detector is required in the basement of homes with 4-6 apartments.

CARBON MONOXIDE DETECTOR REQUIREMENTS RENTAL UNITS

Carbon monoxide alarms must be located in the common area outside of sleeping area(s).
These may be hardwired, battery operated, or plug-in type

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SMOKE ALARM REQUIREMENTS
PART IV
EXISTING DWELLING UNITS

PLACEMENT

- Where alterations or repairs do not require a permit, updated placement of smoke alarms is not required.
- When alterations, repairs, or additions requiring a Building or Electrical permit occur for an existing dwelling, smoke alarm placement shall meet the placement requirements of a new dwelling.

- Alterations or repairs that do not require permits are as follows:
 - Repairs to existing appliances
 - Installations or repairs compliant with Part 112.1 of the current edition of the Baltimore County Building Code for Building permits.
- Where alterations, repairs, or additions requiring a permit occur, or where one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms as required for new dwellings.

Exceptions:

- Installation, alteration, or repairs of plumbing or mechanical systems (including installation of new or replacement HVAC equipment) are exempt from the requirements of this section.
- Electrical and other work on the exterior surfaces of dwellings, such as the replacement of roofing or siding, the addition or replacement of windows or doors, or the addition of a porch, deck, swimming pool, etc. are exempt from the requirements of this section.
- Electrical service installations, modifications or upgrades; installation of Solar PV systems; and generator installations are exempt from the requirements of this section.

WIRING METHODS

- **Alterations, repairs, or additions involving opened walls or ceilings.** When smoke alarms are required to be installed in an existing dwelling; and the walls or ceilings in the rooms where the smoke alarms are required are opened as part of the alteration, repair or addition, the smoke alarms must be hard wired with battery backup. When more than one smoke alarm is required, the smoke alarms must be interconnected so that activation of one smoke alarm will activate all the smoke alarms. Where interconnection of the smoke alarms would require further opening of walls not involved in the alteration, repair or addition, wireless interconnection will be permitted.
- **Alteration, repairs, or additions not involving opened walls or ceilings.** When smoke alarms are required to be installed in an existing dwelling as a result of permits obtained for alterations, repairs, or additions; and the existing walls or ceilings in the rooms where the smoke alarms are required are not opened or accessible as a part of, or during the alteration, repair, or addition, smoke alarms are permitted to be battery operated. If battery operated smoke alarms are permitted, only sealed, tamper resistant units incorporating a silence/hush button and using long-life batteries may be used.

CARBON MONOXIDE DETECTOR REQUIREMENTS EXISTING DWELLING UNITS

PLACEMENT

- **Alterations or repairs not requiring a permit.** When alterations or repairs do not require a permit, updated placement of carbon monoxide alarms is not required.
- **Alterations, repairs, or additions requiring a permit.** When alterations, repairs, or additions requiring a permit occur for an existing dwelling, carbon monoxide alarm placement shall meet the placement requirements of a new dwelling.
- **Alterations or repairs requiring a permit.** When alterations, repairs, or additions requiring a permit occur; or where one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with carbon monoxide alarms as required for new dwellings.
 - Installation, alteration, or repairs of plumbing or mechanical systems (including the installation of new or replacement HVAC system) are exempt from the requirements of this section.
 - Electrical and other work on the **exterior surfaces** of dwellings, such as the replacement of roofing or siding, the addition or replacement of windows or doors, or the addition of a porch or deck, are exempt from the requirements of this section.

- Electrical **service** installations, modifications or upgrades, installation of Solar PV systems, and generator installations are exempt from the requirements of this section.

WIRING METHODS

- **Alterations, repairs, or additions involving opened walls or ceilings.** When carbon monoxide alarms are required to be installed in a dwelling; and the walls or ceilings in the rooms where the carbon monoxide alarms are required are opened as part of the alteration, repair or addition, the CO alarms must be hard wired with battery backup.
- **Alteration, repairs, or additions not involving opened walls or ceilings.** When CO alarms are required to be installed because of permits obtained for alterations, repairs, or additions; and the existing walls or ceilings where the CO alarms are required are not opened or accessible as a part of, or during the alteration, repair, or addition, CO alarms are permitted to be battery operated.