



NFPA 72, 2019 Edition

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Agenda

■ Summary of Changes to NFPA 72 – 2019 Edition:

- Global Change Relating to Carbon Monoxide (CO)
- Chapter 7: Documentation
- Chapter 10: Fundamentals
- Chapter 17: Initiating Devices
- Chapter 18: Notification Appliances
- Chapter 21: Emergency Control Function Interfaces
- Chapter 23: Protected Premises Alarm and Signaling Systems
- Chapter 24: Emergency Communication Systems
- Chapter 26: Supervising Station Alarm Systems
- Chapter 29: Alarms and Household Alarm Systems



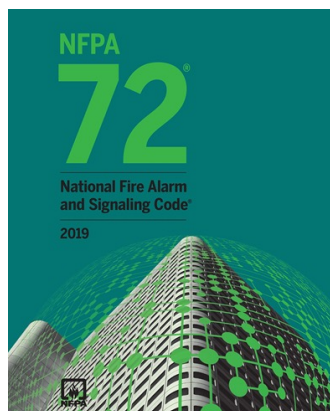
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Structure of changes

- Legislative text
 - ~~Red strike through~~ means text is being removed
 - Blue underline means text is being added or modified
 - Black text means no changes

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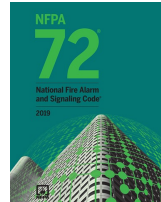
Summary of Changes NFPA 72[®] 2019 Edition



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Carbon Monoxide (CO) Global Change

- ❑ NFPA 720 *Standard for the Installation of Carbon Monoxide(CO) Detection and Warning Equipment*
- ❑ 2015 NFPA Standards Council approved a project to merge NFPA 720 into NFPA 72 as requirements were becoming similar
- ❑ Review 720 and merge applicable requirements into NFPA 72 for CO equipment and systems
- ❑ Each edition of NFPA 720 required updating of extracts from NFPA 72 and was very time consuming
- ❑ The scope and title of NFPA 72 was intentionally changed in 2010 to include CO as well as other signaling needs



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Chapter 7 - Documentation

7.2.1 Where documentation is required by the authority having jurisdiction, the following list shall represent the minimum documentation required for new ~~fire alarm systems, supervising station and shared communication equipment, and emergency communications systems, including new systems~~ and additions or alterations to existing systems.



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Chapter 7 - Documentation

7.7.2.3* All record documentation shall be stored in the documentation cabinet. [No record documentation shall be stored in the control unit.](#)

A.7.7.2.3 The intent is that paper [and/or electronic](#) documents should not be stored inside the control unit because control units are not typically approved for the storage of combustibile material.



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Chapter 10 - Fundamentals

10.4.4* [Unless otherwise permitted by the authority having jurisdiction, control unit displays, visible indicators, or controls shall be mounted such that the distance to the highest switch, lamp, or textual display does not exceed 6 ft \(1.8 m\) above the finished floor, and the lowest switch, lamp, or textual display shall not be less than 15 in. \(375 mm\) above the finished floor.](#)



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Chapter 10 - Fundamentals

10.4.4* Unless otherwise permitted by 10.4.6, in areas that are not continuously occupied, early warning fire detection ~~an automatic smoke detector~~ shall be provided at the location of each control unit(s), notification appliance circuit power extender(s), and supervising station transmitting equipment to provide notification of fire at that location by one of the following means:

- 1) An automatic smoke detector at the location of each control unit(s), notification appliance circuit power extender(s) and supervising station transmitting equipment.
- 2) An automatic heat detector where ambient conditions prohibit installation of an automatic smoke detector.

Exception: ~~Where ambient conditions prohibit installation of an automatic smoke detector, an automatic heat detector shall be permitted.~~



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Chapter 10 - Fundamentals

10.4.6 Smoke or heat detector(s) shall not be required to be installed at the location of dedicated function(s) fire alarm control unit(s) that are not required to provide local or supervising station notification signals.



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Chapter 10 - Fundamentals

10.6.5.2.2* The system circuit disconnecting means shall be permanently identified as to its purpose. ~~Methods for marking shall be permitted to include, but not be limited to, one of the following and marked as a fire alarm system and/or a signaling system.~~

- 1) ~~"FIRE ALARM" for fire alarm systems~~
- 2) ~~"EMERGENCY COMMUNICATIONS" for emergency communications systems~~
- 3) ~~"FIRE ALARM/ECS" for combination fire alarm and emergency communications systems~~

A.10.6.5.2.2 Marking can include one of the following:

- 1) "FIRE ALARM" for fire alarm systems
- 2) "EMERGENCY COMMUNICATIONS" for emergency communications systems
- 3) "FIRE ALARM/ECS" for combination fire alarm and emergency communications systems
- 4) "CARBON MONOXIDE" for carbon monoxide detection systems.

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Chapter 10 - Fundamentals



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Chapter 17 – Initiating Devices

17.12 Carbon Monoxide Detectors

17.12.1 Where required by other governing laws, codes, or standards, carbon monoxide detectors shall be installed in accordance with the following:

- 1) On the ceiling in the same room as permanently installed fuel-burning appliances, and
- 2) * Centrally located on every habitable level and in every HVAC zone of the building, and
- 3) Outside of each separate dwelling unit, guest room, and guest suite sleeping area within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel, and
- 4) Other locations where required by applicable laws, codes, or standards, or
- 5) A performance-based design in accordance with Section 17.3



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Chapter 17 – Initiating Devices

17.12.2 Carbon monoxide detectors shall meet the following requirements:

- 1) Carbon monoxide detectors shall be listed in accordance with applicable standards, such as ANSI/UL 2075, *Gas and Vapor Detectors and Sensors*
- 2) Carbon monoxide detectors shall be set to respond to the sensitivity limits specified in ANSI/UL 2034, *Standard for Single and Multiple Station Carbon Monoxide Alarms*.

17.2.3 All carbon monoxide detectors shall be located and mounted so that accidental operation will not be caused by jarring or vibration.

17.2.4 The location of carbon monoxide detectors shall be based on an evaluation of potential ambient sources and flows of carbon monoxide, moisture, temperature, dust, or fumes and of electrical or mechanical influences to minimize nuisance alarms.



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Chapter 17 – Initiating Devices

17.7.3.6 Air Sampling–Type Smoke Detector.

17.7.3.6.1 General.

17.7.3.6.1.1* In the absence of specific performance-based design criteria, each sampling port of an air sampling–type smoke detector shall be treated as a spot-type smoke detector for the purpose of location and spacing in accordance with 17.7.3.

17.7.3.6.1.2 Air sampling–type smoke detectors shall produce trouble signals if the airflow is outside the manufacturer’s specified range.

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Chapter 17 – Initiating Devices

17.7.3.6.1.3 If provided, atmospheric contaminant filtration shall be listed for use with the detector and installed and maintained in accordance with the air sampling–type smoke detector manufacturer’s published instructions.

17.7.3.6.2 Pipe Network.

17.7.3.6.2.1 Maximum air sample transport time from the farthest sampling port to the detector shall not exceed 120 seconds.



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Chapter 17 – Initiating Devices

[17.7.3.6.2.2](#) Sampling pipe networks shall be designed on the basis of, and shall be supported by, computer-based fluid dynamics design calculations to ensure required performance.

[17.7.3.6.2.3](#) The sampling pipe network design calculations shall include pressure, volumetric flow, and alarm sensitivity at each sampling port.

[17.7.3.6.2.4](#) Software applications for the design of pipe networks shall be listed for use with the manufacturer's equipment.



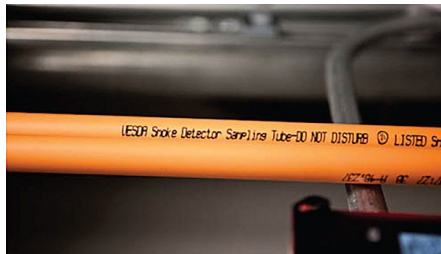
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Chapter 17 – Initiating Devices

[17.7.3.6.2.5](#) Sampling system piping shall be conspicuously identified as “SMOKE DETECTOR SAMPLING TUBE — DO NOT DISTURB,” as follows:

- 1) At changes in direction or branches of piping
- 2) At each side of penetrations of walls, floors, or other barriers
- 3) At intervals on piping that provide visibility within the space, but no greater than 20 ft (6.1 m)

[17.7.3.6.2.6*](#) Sampling ports shall be identified as such.



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Chapter 17 – Initiating Devices

17.7.3.6.2.7* If provided, test ports at the end (most remote location) of a pipe run installed in the pipe network solely for the purpose of validating consistency in performance (also referred to as benchmark test points) shall be included in the design calculations and allowed, but not required, to comply with the requirements of 17.7.3.6.2.

17.7.3.6.2.8 If the piping and fittings are painted, the painting shall be performed in accordance with the air sampling-type smoke detector manufacturer's published instructions.

17.7.3.6.2.9* Pipe network materials, sizing, and installation shall be in accordance with the manufacturer's published requirements and suitable for use in the environment in which they are installed.



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Chapter 17 – Initiating Devices

17.7.3.6.2.10 Where used, capillary tubing shall be sized and affixed in accordance with the manufacturer's published instructions and computer-based design calculations.

17.7.3.6.3 Installation and Spacing.

17.7.3.6.3.1* Air sampling pipe network fittings shall be installed air-tight and permanently affixed.

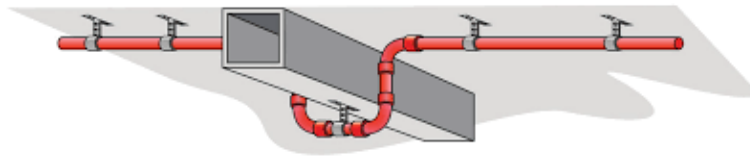


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Chapter 17 – Initiating Devices

[17.7.3.6.3.2](#) Sampled air shall be exhausted to a lessor or equal pressure zone. The pressure differential between the sampled air and detector exhaust shall not exceed the manufacturer's published instructions.

[17.7.3.6.3.3*](#) Supports for sampling pipe shall be in accordance with the air sampling-type smoke detector manufacturer's published instructions.



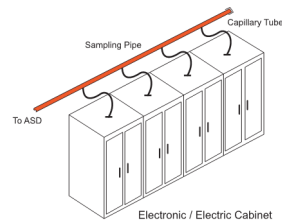
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Chapter 17 – Initiating Devices

[17.7.3.6.4.1](#) Air Duct Applications.

- A. [The air sampling system shall be listed for air duct applications and shall be installed in accordance with the manufacturer's published instructions.](#)
- B. [The inlet and exhaust sections of pipe that are installed inside the air duct shall be air-tight and shall exhaust the sampled air in accordance with the manufacturer's published instructions.](#)

[17.7.3.6.4.2*](#) Electrical Cabinet Applications. For protection of cabinets containing electrical equipment, the air sampling ports shall be located in the main airflow at the exhaust vents, downstream of the airflow distribution path, or in accordance with the manufacturer's published instructions.



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Chapter 18 – Notification Appliances

[18.4.3.1](#) Where a carbon monoxide detector or alarm is required by other codes or standards or by the authority having jurisdiction and where an audible signal is required, a distinctive signal pattern shall be required that is different from a fire evacuation signal.

[18.4.3.2](#) Where an audible signal is required, the carbon monoxide signal shall be a four-pulse temporal pattern and comply with the following:

- 1) [Signals shall be a pattern consisting of four cycles of 100 milliseconds \$\pm\$ 10 percent "on" and 100 milliseconds \$\pm\$ 10 percent "off," followed by 5 seconds \$\pm\$ 10 percent "off," as demonstrated in Figure 18.4.3.2.](#)
- 2) [After the initial 4 minutes of the carbon monoxide signal, the 5-second "off" time shall be permitted to be changed to 60 seconds \$\pm\$ 10 percent.](#)
- 3) [The alarm signal shall be repeated in compliance with 18.4.3.2\(1\) and 18.4.3.2\(2\) until the alarm resets or the alarm signal is manually silenced.](#)

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Chapter 18 – Notification Appliances

[18.4.3.3](#) The signal shall be synchronized within a notification zone of a protected premises.

[18.4.3.4](#) The audible signal of carbon monoxide alarms and systems installed to meet the requirements of Chapter 29 shall not be required to be synchronized.



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Chapter 18 – Notification Appliances

18.5.3.2 The maximum light pulse duration shall be 20 milliseconds ~~with a maximum duty cycle of 40 percent~~, except as permitted in 18.5.3.3.

Exception: Lights used to meet the requirements of 18.5.5.5 shall be permitted to be listed and labeled to have pulse durations up to 100 milliseconds.

18.5.3.3* Light pulse durations greater than 20 milliseconds, but not greater than 100 milliseconds, shall be permitted where the alerting capability of the visual notification appliance is demonstrated to be equal to or greater than visual notification appliances with a 20-millisecond pulse duration.



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Chapter 18 – Notification Appliances

A.18.5.3.3 Research indicates that equivalent indirect alerting is obtained between 0.1 milliseconds to 20 milliseconds. Testing above 20 milliseconds indicates that the effective candela must be increased to obtain equivalent alerting capability to that of shorter light pulse durations of 20 milliseconds or less.

Table A.18.5.3.3 Visual Notification Appliance Rating Multipliers for Equivalent Alerting Capability

Rated Light Pulse Duration (milliseconds)	Rating Multiplier
20	1.00
25	1.22
50	2.20
75	3.00
100	3.67

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Chapter 23 – Protected Premises Alarm and Signaling Systems

Chapter 23 Protected Premises ~~Fire Alarm~~ and Signaling Systems

23.1.1* The application, installation, and performance of ~~fire alarm~~ and signaling systems within protected premises shall comply with the requirements of this chapter.

A.23.1.1 Chapter23 is intended ~~that fire-to cover~~ alarm and signaling systems and their components ~~used for mass notification applications be covered by Chapter23~~, such as fire alarm, mass notification, carbon monoxide, and other signaling systems.



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Chapter 23 – Protected Premises Alarm and Signaling Systems

23.3.3.1* Building ~~Fire Alarm~~ and Signaling Systems.

Protected premises ~~fire alarm~~ systems that serve the ~~general fire~~ alarm and signaling needs of a building or buildings shall include one or more of the following systems or functions:

- 4) ~~Activation~~ Actuation of fire suppression systems
- 5) ~~Activation~~ Actuation of emergency control functions
- 6) ~~Activation~~ Actuation of fire alarm notification appliances
- 7) In-building fire emergency voice/alarm communications
- 8) Automatic carbon monoxide alarm and supervisory signal initiation
- 9) Actuation of carbon monoxide notification appliances
- 10) Guard's tour supervisory service
- 11) Process monitoring supervisory systems
- 12) ~~Activation~~ Actuation of off-premises signals

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Chapter 23 – Protected Premises Alarm and Signaling Systems

23.8.4.9* Carbon Monoxide Detector Signals. ~~Signals~~ Unless otherwise permitted by 23.8.4.9.1, signals from carbon monoxide detectors and carbon monoxide detection systems transmitted to a fire alarm system shall be indicated as a carbon monoxide alarm signal.

~~Exception: When in accordance with the emergency response plan, evacuation plan, fire safety plan, or similar documentation, signals from carbon monoxide detectors and carbon monoxide detection systems transmitted to a fire alarm system shall be permitted to be supervisory signals.~~

23.8.4.9.1 When in accordance with the emergency response plan, evacuation plan, fire safety plan, or similar documentation, signals from carbon monoxide detectors and carbon monoxide detection systems transmitted to a fire alarm system shall be permitted to be supervisory signals.

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Chapter 23 – Protected Premises Alarm and Signaling Systems

23.8.6.1.2 Except as permitted in 23.8.6.1.3, occupant notification of carbon monoxide systems shall be throughout the protected premises.

23.8.6.1.3 Where carbon monoxide alarm signals are transmitted to a constantly attended on-site location or off-premises location in accordance with this chapter, selective public mode occupant notification shall be permitted to be limited to the notification zone encompassing the area where the carbon monoxide alarm signal was initiated.

23.8.6.3.3* The boundaries of carbon monoxide alarm notification zones shall be coincident with the area where the alarm initiation originated and other signaling zones in accordance with the building's emergency response plan.

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Chapter 23 – Protected Premises Alarm and Signaling Systems

[3.3.34 Building System Information Unit \(BSIU\)](#). A computer-based electronic device that is intended to display building information and execute system control functions, including fire system information display and control.

[23.8.4.2 Building System Information Unit \(BSIU\)](#).

[23.8.4.2.1*](#) A building system information unit (BSIU) shall be listed to product safety standard ANSI/UL 60950, *Information Technology Equipment - Part 1: General Requirements*, or ANSI/UL 62368-1 *Audio/Video, Information and Communication Technology Equipment - Part 1: Safety Requirements*, or equivalent.

[23.8.4.2.2](#) Where a BSIU provides control of the fire alarm system, the requirements in 23.8.4.2.2.1 through 23.8.4.2.2.4 shall also apply.

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Chapter 23 – Protected Premises Alarm and Signaling Systems

[23.8.4.2.2.1](#) A fire alarm control unit (FACU) controlling the fire alarm system shall be located within the same room as the BSIU.

[23.8.4.2.2.*](#) The BSIU shall not be permitted to perform fire alarm system control features that cannot be accomplished by the FACU within the room.

[A.23.8.4.2.2.2](#) When the BSIU is not available to control the fire alarm system, the FACU within the room must be able to perform all the necessary controls of the fire alarm system without relying on the BSIU.



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Chapter 23 – Protected Premises Alarm and Signaling Systems

[23.8.4.2.2.3](#) The communication path from the FACU and the BSIU shall meet the requirements of 23.8.4.4.1 through 23.8.4.4.3

[23.8.4.2.2.4](#) The application software for the BSIU shall be listed to ANSI/UL 864, *Control Units and Accessories for Fire Alarm System*



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