



Meet NFPA 520 Hz requirements for sleeping room applications



EXCEDER LED3 & SAFEPATH

How can organizations meet the NFPA 72 requirements? Eaton now offers two solutions: The Wheelock Exceder LED3 low frequency sounders and the SAFEPATH in-building emergency communications system.



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What organizations need to know about the 520 Hz sounder requirements for sleeping areas.

To awaken occupants, audible appliances provided in sleeping areas are now required to produce low frequency alarm signals.

In sleeping rooms, the National Fire Protection Association (NFPA) added requirements for CO low frequency alarm signals to be annunciated separately from fire alarm in the 2009 edition of NFPA 720, *Standard for Installation Carbon Monoxide (CO) Detection and Warning Equipment*.

Effective January 2015, NFPA 720 requires that audible alarms in sleeping rooms shall produce a low frequency T4 pattern to improve the effectiveness of waking up individuals when CO is detected. In the 2019 edition, requirements to address CO were moved to NFPA 72, *National Fire Alarm and Signaling Code*.

For fire detection, the NFPA first introduced low frequency requirements in the 2010 edition of NFPA 72 to wake up individuals in sleeping rooms. These requirements went into effect January 2014 for sleeping areas in new buildings.

In chapter 18, NFPA states that the alarm signal shall have a fundamental frequency of 520

Hz + 10 percent and that the notification appliance shall be listed for producing the low frequency waveform.

The low frequency signal can be produced by a listed stand-alone appliance or by a listed system consisting of a recorded waveform delivered through an amplifier and loudspeaker.

The sound pattern is different based upon the detected condition (fire or CO). Fire alarm applications require a T3 pattern while CO applications require a T4 pattern.

What type of facilities are required to comply with the new codes?

Areas intended for sleeping:

- Hotel/motel guest rooms
- College/university dorm rooms
- Assisted living facilities
- Apartment buildings

Areas that might reasonably be used for sleeping i.e. living room area of an apartment or condominium as it might have sleeping occupants

Occupancies like hospitals and nursing facilities are excluded since trained staff are responsible for waking patients.

Background

In 2006, The Fire Protection and Research Foundation (FPRF) was awarded a Fire Prevention and Safety Grant by the US Fire Administration to study the effectiveness of alarms for emergency notification of high risk groups. As a result, the FPRF found that a "square wave sound with a fundamental frequency in the lower ranges (i.e. 520 Hz) to be more effective than the current high pitched smoke alarm signal across a range of populations (children, older adults, sober young adults, alcohol impaired young adults and adults who are hard of hearing)."

In the 2009 edition of NFPA 720, the code states that audible appliances in sleeping areas are required to produce a low frequency alarm signal (T4) for CO detection. It also requires that audible (CO) alarm must be annunciated separately from a fire alarm, and audible and visual devices for CO cannot reference "Fire" on the face of the device. Combination units can only indicate "Fire" on the fire indicating device. Prior to 2009, NFPA 720 only referenced 1 and 2 family dwellings. In the 2012 edition, the code was expanded to include sleeping areas in commercial spaces.

The 2010 edition of NFPA 72 requires that sleeping rooms must have low frequency audible and high intensity strobes for fire notification. For audible messages, the preamble must be a 520 Hz sounder with T3 pattern.

In typical applications in sleeping areas, a FACP is monitoring both CO detectors and smoke detectors and must sound a distinctive 520 Hz signal based upon the event (T3 for Fire, T4 for CO), which has merged the requirement for 520 Hz sounders for the FACP providers.

NFPA 72 code went into effect January 1, 2014 for those states that have adopted the 2010 version of NFPA 72.

The solution

Wheelock Exceder LED3 Low Frequency Sounder Strobes and Sounders

As the industry's foremost developer in advanced technological solutions for fire, life safety and mass notification, Eaton has developed a single device to provide both T3 (fire) and T4 (CO) tones to meet NFPA 72 low frequency sounder codes for sleeping rooms.

The Exceder LED3 Low Frequency Sounder Strobes and Sounders feature multiple 520 Hz modes of operation.

- T3 (fire)
- T4 (CO)
- Continuous (coded)
- T3/T4 Sync Control

The 520 tone is generated within the appliance itself. When the selector switch is set for T3 or T4, the sound pattern is also generated within the appliance. When the selection switch is set to continuous, the product is listed for coded operations. The T3/T4 pattern or other pattern must be generated by the FACP according to the alarm condition sensed by the panel (fire or CO alarm).

When the device is set to T3/T4, the appliance can switch from T3 to T4 based upon the condition sensed by the FACP and passed to the Wheelock DSM Sync module.

Eaton offers low frequency sounder strobe models for both low (110) and high (177) candela settings, ideal for retrofits and new construction. This provides a simple retrofit for sleeping rooms. The Exceder LED3 Low Frequency Sounders and Sounder Strobes can replace an organization's existing appliances with a single/dual function device, using the same single pair of wires that are currently installed.



SAFEPATH In-building Emergency Communications System

When packaged together with SAFEPATH audio boosters and Wheelock speakers, Eaton's SAFEPATH SP40S, a multiuse system for emergency communications, paging, and voice evacuation, provides a complete solution, listed for sounding 520 Hertz (Hz) low frequency tones in sleeping room accommodations. SAFEPATH® system is now listed to UL 2017 (code 4), UL 864 (code 3) and the low frequency requirements of UL 464 (520 Hz), which enables the latest product offering from Eaton to meet NFPA low frequency tone requirements for sleeping areas.

For applications requiring verbal communications, Eaton's SAFEPATH system is designed to provide low frequency tones, followed by voice instructions with clear, intelligible messages broadcasted from Wheelock's high-fidelity EH and LSPK/LSPST3 speaker lines and S 8" speakers to help ensure that the complete message will be understood in order to direct people to safety.

SAFEPATH SYSTEM

Designed to provide low frequency tones, followed by voice instructions with clear, intelligible messages, SAFEPATH meet NFPA 72 sleeping room codes for 520 Hz tone requirements.

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