

How & When To Use Temporal Pattern

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*By Fire Professionals
For Fire Professionals*

Communications is critical when a fire breaks out in a building of any kind. If the fire alarm system is not properly designed for the task at hand, the occupants can perish, as well as responding firefighters. How the fire alarm communicates using the relatively new temporal pattern is integral to the task of saving lives. Whether you use it is determined by a number of factors that fire technicians must know.

Traditionally, as most fire techs are aware, there are two distinct ways in which to deal with the occupants of a building in a fire situation. You can either evacuate an entire building or you can do a partial evacuation. In some instances, in fact, management may elect to relocate people, moving them from a potentially unsafe area to another--although the latter relates more to large structures.

For example, in high rises... the sheer number of floors and the high volume of people often preclude the immediate evacuation of a facility. Smaller buildings, however, usually involve complete evacuation.

There appears to be a question in the mind of some fire protection professionals as to what form audible notification must take where relocation or selective evacuation vs. full building evacuation is practiced. The solution to this question, however, is well documented and easy to find in NFPA 72, National Fire Alarm Code, published by National Fire Protection Association, Quincy, Mass.



Audible notification appliances should comply with ANSI S3.41 for Temporal Pattern.

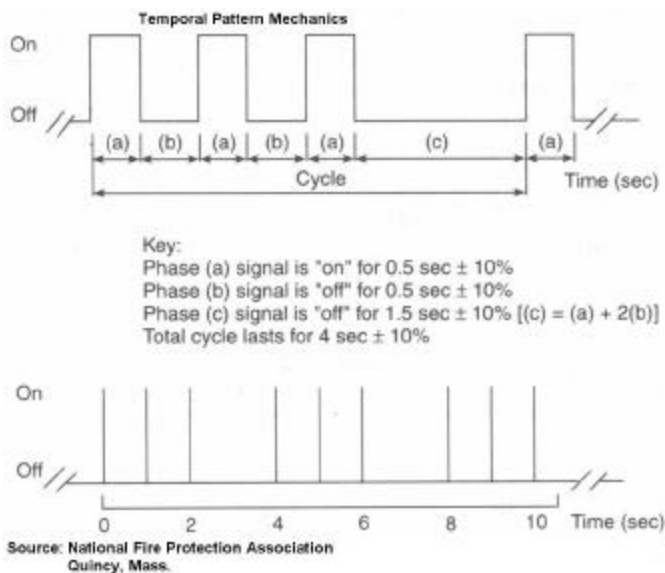
Temporal vs. Voice Evac

The quick answer to this question is as follows:

- When the objective is to fully evacuate an entire building, you must use *Temporal Pattern*.
- When the objective is to partially evacuate or relocate people, you must use *Voice Evacuation*.

According to The Moore-Wilson Signaling Report; Hughes Associates Inc., Baltimore, Maryland; Vol. 9, No. 6, pp9, “[In a] small building fire alarm notification ... must use the American National Standard Evacuation Signal because management intends that everyone should evacuate when a fire occurs.”

The American National Standard Evacuation Signal, better known as the “Temporal Pattern,” utilizes a three-pulse temporal pattern in accordance with the ANSI S3.41, Audible Emergency Evacuation Signal, standard, established and effective on July 1, 1996. As specified by ANSI S3.41, this is a three-pulse pattern consisting of a tonal sequence of 0.5 seconds ON and 0.5 seconds OFF, lasting for three successive cycles. Between these three pulse cycles there must be 1.5 seconds of silence. According to Section A-3-7.2(a), NFPA 72, 1996 Edition, this sequence must be repeated no less than 180 seconds.



The Temporal Pattern consists of three pulses and a silent period, as shown in the graph above. It is used when evacuating entire buildings and is better defined in ANSI S3.41, developed by American National Standards Institute.

Bells and chimes can also be used to create a temporal pattern. According to the same section, a single-stroke bell or chime must sound 1 second pulses with a 2 second period of silence between every third pulse.

Voice evacuation systems, commonly referenced by the name Emergency Voice Communication Systems by NFPA, differ in that they seek to inform the occupants where they must go and what they must do during a fire situation. Most of the time these systems involved audible commands, both pre-recorded and real time.

In a large, multiple-floor, high-rise building, for example, it is customary to install speakers with strobes as notification appliances. The speakers are connected to a zoned audio amplifier, which allows management or firefighters to target specific areas of the building when sending voice commands.

The objective in this instance is either to evacuate specific areas of the facility while allowing the occupants in other areas to either remain where they are or to route them to safe areas within the building.

Last but not least, according to The Moore-Wilson Signaling Report, when a voice evacuation system is unable to transmit voice commands, real-time or recorded, as specified in Section 3-8.4.1.3.5.3.1[a] of NFPA 72, the fire alarm system must issue the temporal pattern as specified in Section 3-8.4.1.3.5.3.2, NFPA 72, 1999 Edition.

ABOUT THE AUTHOR

Al Colombo is a technical writer in the electronic security and fire protection markets. For more than 20 years now he has provided technical direction for security dealers and fire alarm technicians. Al is especially known for his Fire Side Chat column in *Security Sales & Integration* (SSI) magazine and Kinks & Hints in *Security Distributing & Marketing* magazine, formerly published between 1987 and 2001.

