NEMA BS 30003-2022

Applications Guide for
Carbon Monoxide Alarms and Detectors

Published by:

National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209

www.nema.org

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Foreword

The purpose of this guide is to provide information concerning the proper use of carbon monoxide (CO) alarms and detectors. It covers the major technologies used for CO detection, the differences between CO alarms and CO detectors, combination devices, and CO device reliability, effectiveness, and limited life.

This guide was developed by NEMA's Fire, Life Safety, Security and Emergency Communication Section (NEMA BS-SB). Some material herein was extracted from NFPA 720-2015 *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment.* NEMA extends its thanks to the National Fire Protection Association (NFPA) for granting permission to extract this material.

About NEMA BS-SB

The objective of NEMA BS-SB is to serve as the primary source of technical, training, and educational materials essential for the specification, application, and manufacturing of reliable life safety products, as well as their installation, performance, and inspection.

NEMA BS-SB currently represents 21 manufacturers in support of the automatic fire detection and alarm industry and the health care communications industry. Fire detection and alarm products include life safety/fire alarm systems and devices that provide early warning of an impending or actual fire or gaseous hazard. The products detect, notify, and initiate control functions in case of hazard to life or property. For more information on life safety, go to www.lifefiresafety.org.

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1 Scope and Purpose

1.1 Scope

This guide covers carbon monoxide (CO) detection devices, including single- and multiple-station CO alarms and system-connected CO detectors and sensors connected to a control unit. CO detection devices used in ventilated spaces, such as enclosed parking garages, are not included but are addressed by the Occupational Safety & Health Administration (OSHA) and the Environmental Protection Agency (EPA).

1.2 Purpose

The purpose of this document is to provide guidance on the proper application, installation, location, performance, inspection, testing, and maintenance of CO detection devices. It outlines basic principles that should be considered in the application of early warning CO detection devices. Operating characteristics of devices and environmental factors that may aid, deter, or prevent their operation are identified.

Fire protection engineers, mechanical and electrical engineers, fire service personnel, building code officials, fire alarm designers, and installers will find the contents educational and useful.

This document is based on many years of industry expertise, and it is intended to be used only as a technical guide. Applicable codes and standards, as well as directives of the Authorities Having Jurisdiction (AHJs), must be followed in all cases.

2 Referenced Standards and Codes

2.1 Installation Standards

From the National Fire Protection Association (NFPA):

NFPA 720 *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment:* The requirements in NFPA 720 have been incorporated into NFPA 72.

NFPA 72-2022 *National Fire Alarm and Signaling Code:* The standard covers the application, installation, location, performance, inspection, testing, and maintenance of fire alarm systems, supervising station alarm systems, public emergency alarm reporting systems, fire warning equipment, emergency communications systems (ECS), carbon monoxide detection equipment, and their components.

2.2 Product Standards

The following American National Standards Institute (ANSI)/Underwriters Laboratories (UL) standards apply to CO alarms and detectors:

UL 2034 *Single and Multiple Station Carbon Monoxide Alarms, Fourth Edition* is the product standard that covers self-contained, electrically operated single- and multiple-station CO alarms intended for protection in ordinary indoor locations of dwelling units, including recreational vehicles, mobile homes, and recreational boats with enclosed accommodation spaces and cockpit areas.

The UL 2034 standard is for life safety, not monitoring of low levels of chronic CO. It is designed to alarm before a normal, healthy adult feels symptoms so that action can be taken before the effects of CO become debilitating.