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Applications Guide: Carborn Monoxide Alarms and Detectors

National Electrical Manufacturers Association

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Applications Guide
Carbon Monoxide Alarms and Detectors

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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 Signaling Protection and Communications Section (NEMA 3SB). Some material herein was extracted from NFPA 720-2012, *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 3SB
The objective of NEMA 3SB is to serve as the primary source of technical, training, and educational materials essential for the specification, application, and manufacture of reliable life safety products, as well as their installation, performance, and inspection.

NEMA 3SB 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.lifesafetysolutionsonline.org.

About the National Electrical Manufacturers Association (NEMA)
Founded in 1926 and headquartered near Washington, D.C., NEMA represents 400-plus member companies that manufacture products used in the generation, transmission and distribution, control, and end use of electricity. These products are used in utility, industrial, commercial, institutional, and residential applications. The association's Medical Imaging & Technology Alliance (MITA) Division represents manufacturers of cutting-edge medical diagnostic imaging equipment, including MRI, CT, x-ray, and ultrasound products. Worldwide sales of NEMA-scope products exceed $140 billion. In addition to its headquarters in Rosslyn, Virginia, NEMA has offices in Beijing and Mexico City.

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Senior Technical Director, Operations
National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209
www.nema.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.

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.

This document is based on industry expertise and many years of experience, 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.

2 REFERENCED STANDARDS

2.1 INSTALLATION STANDARDS

From the National Fire Protection Association (NFPA):

NFPA 720-2012, *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment:* The standard covers the proper application, installation, and maintenance of CO-detection devices. The 2012 edition of the standard is primarily concerned with life safety, not with protection of property, public health, or worker safety. It covers the selection, design, application, installation, location, performance, inspection, testing, and maintenance of CO-detection and warning equipment in buildings and structures.

NFPA 72-2010, *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, and emergency communications systems (ECS), and their components.

2.2 PRODUCT STANDARDS

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

ANSI/UL 2034, *Single and Multiple Station Carbon Monoxide Alarms,* 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.

ANSI/UL 2075, *Gas and Vapor Detectors and Sensors,* is the product standard for CO detectors connected to a control unit via conductors or low-power radio frequency (wireless) signal for operation as part of a gas detection, emergency signaling, or CO-detection system.