

NEMA SB 13-2020

Guide for Proper Use of Smoke Detectors in Duct Applications



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Foreword

Proper Use of Smoke Detectors in Duct Applications

The purpose of this guide is to provide much-needed information concerning the proper use of smoke detectors in duct applications. Fire protection engineers, mechanical and electrical engineers, fire alarm system designers, installers, and maintenance personnel should find the contents both educational and informative.

This information is intended as a technical guide, as distinct from a listing of mandatory requirements. This Guide for Proper Use of Smoke Detectors in Duct Applications has been published by the National Electrical Manufacturers Association Fire, Life Safety, Security and Emergency Communications Section, BS-SB for the automatic fire detection and alarm industry.

About the National Electrical Manufacturers Association (NEMA)

NEMA is the association of electrical equipment and medical imaging manufacturers headquartered in Rosslyn, Virginia, just outside of Washington, D.C. Its Member companies manufacture a diverse set of products, including power transmission and distribution equipment, lighting systems, factory automation and control systems, and medical diagnostic imaging systems. Worldwide annual sales of NEMA-scope products exceed \$120 billion. NEMA is divided into seven divisions: Building Systems, Building Infrastructure, Lighting Systems, Industrial Products & Systems, Utility Products & Systems, Transportation Systems, and Medical Imaging. Within these divisions are over 50 product-specific sections. The Fire, Life Safety, Security and Emergency Communication Section is one such section in the Building Systems Division.

Founded in 1926, the National Electrical Manufacturers Association has been developing Standards for the electrical manufacturing industry and is one of the leading Standards developing organizations in the world. Today NEMA contributes to the marketplace and helps ensure public safety.

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 represents manufacturers in support of the automatic fire detection and alarm industry and the healthcare communication 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.

Section 1 General

1.1 Scope

The NEMA Signaling Protection and Communication Section developed this guide. It provides technical information on basic fire alarm systems with a focus on early-warning smoke detection devices installed in duct applications. Duct-mounted smoke detectors are designed to provide a specific type of protection that cannot be duplicated by any other type of system. However, there has been a tendency to misapply these devices attempting to use them as a substitute for an early warning smoke detection system. This trend, coupled with new methods of detecting smoke in ducts, has prompted the Section to write this industry guide. Aspirated smoke detectors may also be listed for use in detecting smoke in ducts but are not addressed in this guide due to their specialty nature. Similarly, duct-mounted carbon monoxide detectors are also out of scope since they are not used to detect smoke.

1.2 Standards That Apply

There are several important documents that provide guidance concerning the performance, application, and installation of duct detectors:

American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE)

180 Technology
Parkway
Peachtree Corners, GA 30092

ASHRAE Handbook – HVAC Applications A54 – Fire and Smoke Management 2019

National Fire Protection Association (NFPA)

1 Batterymarch Park
Quincy, MA 02269

| | |
|----------|--|
| NFPA 101 | <i>Life Safety Code</i> |
| NFPA 72 | <i>National Fire Alarm and Signaling Code (2019)</i> |
| NFPA 90A | <i>Standard for the Installation of Air-Conditioning and Ventilating Systems</i> |
| NFPA 92 | <i>Standard for Smoke-Control Systems</i> |

Underwriters Laboratories Inc. (UL LLC)

333 Pfingsten Road
Northbrook, IL 60062

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|-------|---|
| UL 66 | <i>Smoke Detectors for Duct Application</i> |
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