

**Guide  
for  
Proper Use  
of  
System Smoke  
Detectors**

# Guide for Proper Use of System Smoke Detectors

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Published by the  
**National Electrical Manufacturers Association**  
Fire Alarm Group of the Signaling, Protection, and  
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**Setting Standards for Excellence**

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## FOREWORD

### Proper Use of Smoke Detectors

Studies have shown that, in the United States, the use of early warning fire and smoke detection systems has resulted in a significant reduction in overall fire deaths. The sooner a fire is detected, the better the chances are for the survival of lives in danger.

A potential problem with smoke detectors is unwanted (nuisance) alarms that can result in people being desensitized to the alarm system or, in severe cases, disconnecting the system. This is an industry-wide problem that in most cases is caused by improper application, installation, and maintenance of smoke detectors. It is hoped that the information in this guide will be used by those involved with the application, installation, and maintenance of automatic fire alarm systems to minimize these problems.

This *Guide for Proper Use of Systems Smoke Detectors* has been published by the National Electrical Manufacturers Association Fire Alarm Group (of the Signaling, Protection, and Communication Section 3-SB) for the automatic fire detection and alarm industry.

### About the National Electrical Manufacturers Association (NEMA):

For more than 70 years, the National Electrical Manufacturers Association has been developing standards for the electrical manufacturing industry and is one of the leading standards development organizations in the world. NEMA contributes to an orderly marketplace and helps ensure the public safety.

NEMA, with headquarters in Rosslyn, Virginia, has nearly 500 member companies, including large, medium, and small businesses. The organization is divided into eight divisions: Industrial Automation, Lighting Equipment, Electronics, Building Equipment, Insulating Materials, Wire and Cable, Power Equipment, and Diagnostic Imaging and Therapy Systems. Within these divisions are over 50 product-specific sections. The Signaling Section is one such section in the Electronics Division.

### About the NEMA Signaling, Protection, and Communication Section (3-SB):

The objective of the section is to be the principal source of technical, training, and educational materials essential for the specification and manufacture of reliable life safety products, their installation, performance, and inspection.

The section currently represents over 40 U.S., U.K., and Japanese 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 to property.

For more information on NEMA and the Signaling Section, go to <http://www.nema.org> and search for the "Signaling Section" or "Fire Alarm."

## **Disclaimer**

The standards or guidelines presented in a NEMA standards publication are considered technically sound at the time they are approved for publication. They are not a substitute for a product seller's or user's own judgment with respect to the particular product referenced in the standard or guideline, and NEMA does not undertake to guarantee the performance of any individual manufacturer's products by virtue of this standard or guide. Thus, NEMA expressly disclaims any responsibility for damages arising from the use, application, or reliance by others on the information contained in these standards or guidelines.

## **Introduction**

The purpose of this guide is to provide information concerning the proper application of smoke detectors used in conjunction with fire alarm systems. It outlines basic principles, which should be considered in the application of early warning fire and smoke detection devices. Operating characteristics of detectors and environmental factors, which may aid, delay, or prevent their operation are presented.

Fire protection engineers, mechanical and electrical engineers, fire service personnel, fire alarm designers, and installers will find the contents both educational and informative.

Though this information is based upon industry expertise and many years of experience, it is intended to be used only as a technical guide. The requirements of applicable codes and standards, as well as directives of the Authorities Having Jurisdiction (AHJ's) should be followed. In particular, NFPA72 for installation of detectors and for testing of systems are key elements in the effectiveness of smoke detection systems.