

NEMA SB 11-2011

Guide for Proper Use of System Smoke Detectors

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CONTENTS

Foreword	iii
SECTION 1 GENERAL.....	1
1.1 Scope	1
1.2 Purpose	1
1.3 Standards that Apply	1
1.4 Manufacturer's Publications	2
1.5 General Definitions.....	2
SECTION 2 HOW SMOKE DETECTORS WORK	8
2.1 Smoke Detector Sensor Technologies	8
2.2 How Ionization Smoke Detectors Work	8
2.3 How Photoelectric Smoke Detectors Work	9
2.4 How Photoelectric Light Obscuration Smoke Detectors Work.....	9
2.5 How Photoelectric Light Scattering Smoke Detectors Work.....	10
2.6 How Multi-Criteria Smoke Detectors Work	11
2.7 How Video Image Detection (VID) Works.....	12
2.8 Smoke Detector Design Considerations	13
2.9 Considerations in Selecting Detectors	13
2.10 Situations Where Other Types of Detectors May be Used	14
2.11 Smoke Detectors Have Limitations	14
SECTION 3 TYPICAL SYSTEM LAYOUT	15
3.1 Electrical Supervision	15
3.2 Class B Circuits	15
3.3 Class A Circuits	15
3.4 Addressable Sensor Wiring.....	17
3.5 Wireless Smoke Detection Systems	18
3.6 General Zoning Guidelines for Non-Addressable Smoke Detectors	18
3.7 Building Control Functions	19
3.8 Smoke Detector Installation	19
3.8.1 Wiring Installation Guidelines.....	19
3.8.2 Typical Wiring Techniques	19
3.8.3 Wireless Systems.....	23
3.9 Installation Do's and Don'ts.....	23
3.9.1 Do:.....	23
3.9.2 Don't:	24
3.10 Wiring and System Checkout.....	24
SECTION 4 PROPER DETECTOR PLACEMENT AND SPACING	25
4.1 Where to Place Detectors	25
4.2 Where Not to Place Detectors.....	28
4.3 Detector Spacing.....	30
4.3.1 General Spacing Guidelines	30
4.3.2 Special Spacing Problems	32
4.4 Detectors in Air Handling and Air Conditioning Systems	34
4.5 Detectors in Ceiling Plenum Areas, Including Other Spaces Used for Environmental Air	34
SECTION 5 TESTING AND MAINTENANCE AND SERVICE OF DETECTORS.....	35
5.1 General.....	35
5.2 Notification of Authorities	35

5.3	Typical Inspection, Test, and Maintenance Practices.....	35
5.4	Maintenance.....	35
5.5	Testing.....	35
SECTION 6 NUISANCE ALARMS.....		37
6.1	Effects of Location or Environment.....	37
6.1.1	Inspect Detector for Dirt and Review Maintenance.....	37
6.2	Effects of Other Systems on Alarm System Wiring.....	37
6.3	Next Steps.....	38
6.4	Maintain an Alarm Log.....	38
SECTION 7 RESPONSIBILITIES OF DETECTOR OWNERS AND INSTALLERS.....		40
7.1	Reasons for Nuisance Alarms.....	42
7.1.1	Miscellaneous Causes of Nuisance Alarms.....	43
7.1.2	What to Do About Nuisance Alarms.....	43
7.2	Where to Get Help if the Source of Nuisance Alarms Can't be Found.....	43

Foreword

Proper Use of Smoke Detectors

Studies have shown that in the United States, an early fire warning and use of 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, and for the reduction of property damage.

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/or 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 System Smoke Detectors* has been published by the National Electrical Manufacturers Association (NEMA) Fire Alarm Group of the Signaling Protection and Communication Section. This is known as 3-SB for the automatic fire detection and alarm industry.

This specific edition of the manual supersedes all prior versions of *Guide for Proper Use of System Smoke Detectors*.

About National Electrical Manufacturers Association (NEMA)

For more than 80 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 marketplaces and helps ensure public safety.

NEMA has headquarters in Rosslyn, Virginia, just south of Washington, D.C. With about 450 member companies, NEMA's members include large, medium, and small businesses. The organization's nine divisions include: Industrial Automation, Lighting Systems, Electronics, Security Imaging and Communications, Building Systems, Insulating Materials, Wire and Cable, Power Equipment, and the Medical Imaging & Technology Alliance. Within these nine divisions are product-specific sections. The Signaling Protection and Communication Section is one such section in the Electronics Division.

About NEMA Signaling Protection and Communication Section (3-SB)

The objective of this 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, inspection, and maintenance.

The section currently represents more than 40 U.S., UK, and Japanese manufacturers in support of the automatic fire detection and alarm industry, and the healthcare communications industry. Fire detection and alarm products include life safety and fire alarm systems, and devices that provide early warning of an impending or actual fire, heat, or gaseous hazard. The products detect, notify, and initiate control functions in case of hazard to lives or property.

For more information on NEMA and the Signaling Section, visit www.nema.org/prod/elec/sig/

This standards publication was developed by the NEMA Signaling Protection and Communication Section. At the time it was approved, the section was composed of the following members:

Air Products and Controls Inc.

Apollo Fire Detectors Ltd.
Bosch Security Systems
BRK Brands Inc./First Alert
Cooper Notification
Edwards A UTC Fire & Security Company
Evax Systems, Inc.
Federal Signal Corporation
Figaro USA, Inc.
Gentex Corporation
Harrington Signal, Inc.
Honeywell Life Safety
Potter Electric Signal Company, LLC
SDi LLC
Siemens Industry, Inc.
SimplexGrinnell LP
Valcom
Xtralis Inc.

Section 1 GENERAL

1.1 SCOPE

This manual is developed by the Signaling Protection and Communication Section. It provides technical information on basic fire alarm systems with a focus on early-warning smoke detection devices. This document covers smoke detectors connected to a control panel.

1.2 PURPOSE

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 may aid, delay, or prevent their operation are presented.

Fire protection engineers, mechanical and electrical engineers, fire service personnel, fire alarm designers and/or installers will find this guide's 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 (AHJs), should be followed. Importantly, NFPA 72 for installation of detectors and for testing of systems is a key element for the effectiveness of smoke detection systems.

1.3 STANDARDS THAT APPLY

There are many code writing groups that publish standards for the proper application, installation, and maintenance of automatic smoke detectors. The principal code writing bodies and applicable standards that should be reviewed before specifying or installing automatic smoke detectors are below:

International Code Council
500 New Jersey Avenue, NW
Washington, DC 20001

Local and state building officials are organized into a national code organization, the International Code Council (ICC), which writes model building codes that become law when adopted by local and state governments. These codes also specify smoke detector requirements based on building and occupancy type. Most local and state governments adopt versions of the following model codes:

International Building Code (IBC)

International Fire Code (IFC)

International Residential Code (IRC)

These codes are generally used throughout the United States and parts of Canada.

National Fire Protection Association (NFPA)
1 Batterymarch Park
Quincy, MA 02269