



Examination Standard for Radiant Energy-Sensing Fire Detectors for Automatic Fire Alarm Signaling

Class Number 3260

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Foreword

This standard is intended to verify that the products and services described will meet stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of this standard is to present the criteria for examination of various types of products and services.

Examination in accordance with this standard shall demonstrate compliance and verify that quality control in manufacturing shall ensure a consistent and reliable product.

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1 INTRODUCTION

1.1 Purpose

- 1.1.1 This standard states testing and certification requirements for radiant energy-sensing fire detectors used for automatic fire alarm signaling.
- 1.1.2 Testing and certification criteria may include, but are not limited to, performance requirements, marking requirements, examination of manufacturing facility(ies), audit of quality assurance procedures, and a surveillance program. Evaluation for environmental or hazardous location ratings will require additional examination per other standards such as FM Examination Standard 3600 – *Electrical Equipment for Use in Hazardous (Classified) Locations General Requirements*.

1.2 Scope

- 1.2.1 This standard sets performance requirements for radiant energy-sensing fire detectors for the protection of occupants, building space, structure, area, or object.

1.3 Basis for Requirements

- 1.3.1 The requirements of this standard are based on experience, research and testing, and/or the standards of other organizations. The advice of manufacturers, users, trade associations, jurisdictions, and loss control specialists was also considered.
- 1.3.2 The requirements of this standard reflect tests and practices used to examine characteristics of radiant energy-sensing fire detectors for the purpose of obtaining certification. Detectors having characteristics not anticipated by this standard may be certified if performance equal or superior to that required by this standard is demonstrated.

1.4 Basis for Certification

Certification is based upon satisfactory evaluation of the product and the manufacturer in the following major areas:

- 1.4.1 Examination and tests on production samples shall be performed to evaluate:
- the suitability of the product;
 - the performance of the product as specified by the manufacturer and required for certification; and, as far as practical,
 - the durability and reliability of the product.
- 1.4.2 An examination of the manufacturing facility(ies) and an audit of quality control procedures may be made to evaluate the manufacturer's ability to produce the product which is examined and tested, and the marking procedures used to identify the product. Subsequent surveillance may be required by the certification agency in accordance with the certification scheme to ensure ongoing compliance.

1.5 Basis for Continued Certification

The basis for continual certification may include, but is not limited to, the following based upon the certification scheme and requirements of the certification agency:

- production or availability of the product as currently certified;
- the continued use of acceptable quality assurance procedures;
- satisfactory field experience;
- compliance with the terms stipulated by the certification;
- satisfactory re-examination of production samples for continued conformity to requirements; and
- satisfactory surveillance audits conducted as part of the certification agency's product surveillance program.

1.6 Effective Date

The effective date of an examination standard mandates that all products tested for certification after the effective date shall satisfy the requirements of that standard. Products certified under a previous edition shall comply with the new version by the effective date or forfeit certification.

The effective date of this standard is eighteen (18) months after the publication date of the standard for compliance with all requirements.

1.7 System of Units

Units of measurement used in this Standard are United States (U.S.) customary units. These are followed by their arithmetic equivalents in International System (SI) units, enclosed in parentheses. The first value stated shall be regarded as the requirement. The converted equivalent value may be approximate. Conversion of U.S. customary units is in accordance with ANSI/IEEE/ASTM SI-10..

1.8 Normative References

The following referenced documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the cited edition applies.

ANSI/IEEE/ASTM SI 10 *American National Standard for Metric Practice*

ANSI/UL 50 *Enclosures for Electrical Equipment*

FM 3600 *Electrical Equipment For Use In Hazardous (Classified) Locations General Requirements*

ANSI/NFPA 72 *National Fire Alarm & Signaling Code*

2. GENERAL INFORMATION

2.1 Product Information

2.1.1 Radiant energy sensing detectors fall into two (2) general categories: flame detectors and spark/ember detectors, depending upon the source of radiant energy they are intended to detect and the ambient in which they are to be used. Flame detectors are intended to respond to the radiant emissions from a flame and are expected to operate in normally illuminated environments. Spark/ember detectors are intended to respond to embers in a fuel stream flowing past them within a sheet metal pneumatic conveyance duct, chute, conveyor, or other location of limited illumination.

2.1.2 All radiant energy sensing detectors have a limited field of view and rely on a line-of-sight transmission of radiant energy from the source to the detector. Radiant energy sensing detectors employ infrared, visible, and/or ultraviolet sensors or combinations of sensors, selected to match the radiant emissions expected from the source to be detected. Since each fuel emits a unique spectra, not all detectors are capable of detecting all fuels.

2.2 Certification Application Requirements

2.2.1. The manufacturer shall provide the following preliminary information with any request for certification consideration:

- a complete list of all models, types, sizes, and options for the products or services being submitted for certification consideration;
- brochures, sales literature, specification sheets, installation, operation and maintenance procedures; and
- the number and location of manufacturing facilities.

2.2.2. All documents shall identify the manufacturer's name, document number or other form of reference, title, date of last revision, and revision level. All documents shall be provided with English translation.

2.3 Requirements for Samples for Examination

2.3.1. Following authorization of a certification examination, the manufacturer shall submit samples for examination and testing based on the following:

- Sample requirements are to be determined by the certification agency.

2.3.2. Requirements for samples may vary depending on design features, results of prior or similar testing, and results of the foregoing tests.

2.3.3. The manufacturer shall submit samples representative of production. Any decision to use data generated utilizing prototypes is at the discretion of the certification agency.

2.3.4. General: for functional tests outlined below, the manufacturer shall provide at least four detectors which are deemed to be representative of the manufacturer's normal production with regard to construction and calibration. All four detectors will be subjected to the baseline, flame response sensitivity, and false alarm tests; the remainder of the tests will be spread over the four samples as outlined in Table 1.