



# **Examination Standard for Remote Fire Watch Systems**

**Class Number 3270**

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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 transportable and fixed hot work robots which detect products of combustion in a specific location during and after hot work operations. Hot work robots notify facility operators upon detection of an incipient stage fire. These robots are an alternative to the use of human fire watch personnel.
- 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.

## 1.2 Scope

- 1.2.1** This standard describes performance requirements for hot work robots which detect products of combustion in a specific location during and after hot work operations. Hot work robots use a variety of fire and smoke detection technologies such as video image and infrared to notify facility operators upon detection of an incipient stage fire.
- 1.2.2** This standard employs test protocols that are tailored to the installation and operating instructions provided by the manufacturer. This information assists in defining the limits for the overall application and certified use of the product.
- 1.2.3** A typical hot work robot consists of detection, processing and communication functions which together will be examined as a system in accordance with the requirements in this standard.
- 1.2.4** These hot work robots are intended to be installed in accordance with the manufacturer's installation instructions and in accordance with The National Fire Alarm Code (ANSI/NFPA 72) and in a manner acceptable to the local Authority Having Jurisdiction (AHJ).
- 1.2.5** This standard does not address the issue of toxicity or out-gassing of materials when they are subjected to molten or other fire conditions resulting from hot work operations.

## 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/or loss control specialists was also considered.
- 1.3.2** The requirements of this standard reflect tests and practices used to examine characteristics of hot work robots for the purpose of obtaining certification. Hot work robots having characteristics not anticipated by this standard may be certified if performance is 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 facilities and audit of quality control procedures may be made to evaluate the manufacturer's ability to consistently 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 this certification standard mandates that all products tested for certification after the effective date shall satisfy the requirements of this standard.

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.

Two units (liter and bar), outside of but recognized by SI, are commonly used in international fire protection and are used in this Standard.

## **1.8 Normative References**

The following 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/IEC 60529 *Degrees of Protection provided by Enclosures (IP Code)*  
ANSI/NFPA 72 *National Fire Alarm and Signaling Code*  
ANSI/UL 268 6th Edition *Smoke Detectors for Fire Alarm Signaling Systems Dated August 14, 2009*  
FM3150 *Audible Notification Appliances for Automatic Fire Alarm Signaling*  
FM3155 *Public Mode Visible Signaling Appliances for Automatic Fire Alarm Signaling*  
NEMA 250 *Enclosures for Electrical Equipment*

## 1.9 Terms and Definitions

For purposes of this standard, the following terms apply:

***Fault signal***

Audible, visible or other type of output, different from the alarm signal, permitting, directly or indirectly, a warning or indication that the apparatus is not working satisfactorily.

***Field Of View***

The angular extent of what can be seen with an optical instrument or camera.

***Fire Watch***

A physical inspection conducted when a building's fire alarm, sprinkler or other suppression systems are hindered or temporarily out of service.

***Trouble condition***

An abnormal condition due to a fault in a portion of a system monitored for integrity.

***Hot Work Robot***

Any device suitable for monitoring for smoke and flame during a hot work operation.

***Hot work***

Any temporary or routine work (operation) involving open-flame, producing hot surfaces, and/or generating sparks or molten material of sufficient energy to ignite combustible, ignitable, and/or flammable materials. Examples of hot work operations include torch-applied roofing, pipe brazing, pipe soldering, arc and torch welding, radial-mechanical and torch cutting, grinding, and post-weld heating using a gas-fired burner or electrical resistance heater. For ignition-sensitive materials such as low-flash point ignitable liquids, flammable gas/vapor, and some combustible dusts, hot work may be expanded to include low-energy hot work ignition sources.

***Video Image Fire Detector (VIFD) for Automatic Fire Alarm Signaling***

A discrete, self contained automatic smoke and flame detection device intended to perform analysis of real time video images representative of smoke and flame as generated by accidental fire and over-heat conditions within the viewing area covered by the video camera. This detection principle typically requires a clear line-of-sight with the area being viewed by the camera and the detector can connect directly to the initiating or signaling line circuits of a fire alarm system. The detection principle might consider the plume, pattern, edge content, movement and colors associated with the smoke and flame signature(s).

***Video Image Fire Detection System (VIFDS) for Automatic Fire Alarm Signaling***

A combination of camera(s), processing equipment and interfaces that together can operate as an automatic smoke and flame detection system intended to perform analysis of real time video images representative of smoke as generated by accidental fire and over-heat conditions within the viewing area covered by the video camera(s). This detection system typically requires a clear line-of-sight with the area being viewed by the camera and often requires additional equipment (dedicated primary and secondary power systems) be provided as component of a fire alarm system. The detection principle might consider the plume, pattern, edge content, movement and colors associated with the smoke and flame signature(s).

***Sensitivity***

The sensitivity of a Video Image Fire Detector (VIFD) is the result of an engineering evaluation that includes the following parameters as specified by the manufacturer.

- Volume and Size of the smoke and fire signature required for detection
- Fuel Source(s)
- Field of View of the detector
- Minimum & Maximum detection range (fire source to the detector)