



Member of the FM Global Group

Examination Standard for Combustion Safeguards and Flame Sensing Systems

Class Number 7610

May 2021

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

TABLE OF CONTENTS

1. INTRODUCTION	1
1.1 Purpose	1
1.2 Scope	1
1.3 Basis for Requirements	1
1.4 Basis for Certification	2
1.5 Basis for Continued Certification	2
1.6 Effective Date	2
1.7 System of Units	2
1.8 Normative References	3
1.9 Terms and Definitions	3
2. GENERAL INFORMATION	4
2.1 Product Information	4
2.2 Certification Application Requirements	4
2.3 Requirements for Samples for Examination (as appropriate)	4
3. GENERAL REQUIREMENTS	5
3.1 Review of Documentation	5
3.2 Physical, Structural, and Operational Requirements	5
3.3 Markings	6
3.4 Manufacturer's Operation Instructions	6
3.5 Calibration	6
4. PERFORMANCE REQUIREMENTS	7
4.1 Examination of Sample(s)	7
4.2 Operating Characteristics—Combustion Safeguards	7
4.3 Operating Characteristics—Flame Sensing Systems	7
4.4 Timings	8
4.5 Durability	8
4.6 Voltage Variation	8
4.7 Electrical Insulation	9
4.8 Ambient Temperature Effects	9
4.9 Safety Related Operating Characteristics	9
5. OPERATIONS REQUIREMENTS	10
5.1 Demonstrated Quality Control Program	10
5.2 Surveillance Audit	11
5.3 Manufacturer's Responsibilities	11
5.4 Manufacturing and Production Tests	Error! Bookmark not defined.
6. BIBLIOGRAPHY	11

1. INTRODUCTION

1.1 Purpose

- 1.1.1 This standard states testing and certification criteria for combustion safeguards and flame sensing systems.
- 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 sets performance requirements for combustion safeguards and flame sensing systems used as safety controls for commercial and industrial heating equipment. They may be independent non- programmable or programmable.

Note: A programmable combustion safeguard is one that allows a limited selection of safety parameters such as purge, trial for ignition, and flame failure response time. Programmable logic controllers used for burner management are not included in this standard.

- 1.2.2 A combustion safeguard is a device intended to provide safe start, safe operation, and safe shutdown under normal or abnormal conditions. This device is used in conjunction with a flame sensing system.
- 1.2.3 A flame sensing system detects the presence and absence of flame. It may be of the flame rectification, infra-red, or ultra-violet type. Sensors may be capable of monitoring coal, gas, and/or oil flames, and are a primary component of a combustion control system.
- 1.2.4 The requirements of this standard shall be used to measure and describe the performance of combustion safeguards and flame sensing equipment in response to exposure from heat, cold, abnormalities, etc., under controlled laboratory conditions. The results of these controlled exposures shall not be used to describe or appraise actual exposure conditions since such conditions will vary widely.

1.3 Basis for Requirements

- 1.3.1 The requirements of this standard are based on experience, research and testing, or the standards of other national and international organizations. The advice of manufacturers, users, trade associations, and loss control specialists was also considered.
- 1.3.2 The requirements of this standard reflect tests and practices used to examine characteristics of the subject equipment for the purpose of obtaining Certification. Equipment 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 facilities and audit of quality control procedures is 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 agencies 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.