



Approval Standard for Sprinkler Valve Supervisory Devices – Standard Security and Enhanced Security

Class Number 3135

December 2017

© 2017 by FM Approvals LLC. All rights reserved.

Foreword

The FM Approvals certification mark is intended to verify that the products and services described will meet FM Approvals' stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of Approval Standards is to present the criteria for FM Approval of various types of products and services, as guidance for FM Approvals personnel, manufacturers, users and authorities having jurisdiction.

Products submitted for certification by FM Approvals shall demonstrate that they meet the intent of the Approval Standard, and that quality control in manufacturing shall ensure a consistently uniform and reliable product. Approval Standards strive to be performance-oriented. They are intended to facilitate technological development.

For examining equipment, materials and services, Approval Standards:

- a) Must be useful to the ends of property conservation by preventing, limiting or not causing damage under the conditions stated by the Approval listing; and
- b) Must be readily identifiable.

Continuance of Approval and listing depends on compliance with the Master Agreement, satisfactory performance in the field, on successful re-examinations of equipment, materials, and services as appropriate, and on periodic follow-up audits of the manufacturing facility.

FM Approvals LLC reserves the right in its sole judgment to change or revise its standards, criteria, methods, or procedures.

TABLE OF CONTENTS

1 INTRODUCTION	1
1.1 Purpose.....	1
1.2 Scope.....	1
1.3 Basis for Requirements	1
1.4 Basis for Approval	1
1.5 Basis for Continued Approval	2
1.6 Effective Date	2
1.7 System of Units.....	2
1.8 Normative References.....	2
1.9 Terms and Definitions.....	2
2 GENERAL INFORMATION.....	3
2.1 Product Information.....	3
2.2 Approval Application Requirements	3
2.3 Requirements for Samples for Examination	3
3 GENERAL REQUIREMENTS.....	4
3.1 Review of Documentation	4
3.2 Physical or Structural Features	4
3.3 Markings	5
3.4 Manufacturer's Installation and Operation Instructions (as appropriate)	5
3.5 Calibration	6
4 PERFORMANCE REQUIREMENTS.....	6
4.1 Normal Operations.....	6
4.2 Environmental Conditioning.....	6
4.3 Endurance	7
4.4 Dielectric.....	7
4.5 Vibration	7
4.6 Enclosure Requirements (including polymeric housings)	8
4.7 Jarring	8
4.8 Signal Line Transient Tests	9
4.9 Protective Grounding/Bonding	9
4.10 Equipment Load Rating	9
4.11 Marking Requirements.....	10
4.12 Tamper Resistance – (Standard Security).....	10
4.13 Tamper Resistance – (Enhanced Security)	11
5 OPERATIONS REQUIREMENTS	11
5.1 Demonstrated Quality Control Program	11
5.2 Surveillance Audit	12
5.3 Installation Inspections	13
5.4 Manufacturer's Responsibilities	13
6 BIBLIOGRAPHY.....	13
APPENDIX B: Tolerance.....	14

1 INTRODUCTION

1.1 Purpose

- 1.1.1 This standard states Approval requirements for Standard and Enhanced security sprinkler valve supervisory devices.
- 1.1.2 Approval criteria may include, but are not limited to, performance requirements, marking requirements, examination of manufacturing facility(ies), audit of quality assurance procedures, and a follow-up program.

1.2 Scope

- 1.2.1 This standard is concerned with operation, performance and reliability of sprinkler valve supervisory devices. These supervisory devices are used to indicate the position status of a sprinkler shutoff valve and relay the status information to the local fire alarm panel. The requirements of this standard shall be used to measure and describe the performance, security and reliability of sprinkler valve supervisory devices in a controlled test environment.

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; in particular they are intended to correspond to those for sprinkler valve supervisory switches in ANSI/NFPA 72 National Fire Alarm & Signaling Code. Other national or international codes will be evaluated on a case by case basis.
- 1.3.2 The requirements of this standard reflect tests and practices used to examine characteristics of sprinkler valve supervisory devices for the purpose of obtaining Approval. Such products having characteristics not anticipated by this standard may be FM Approved if performance equal, or superior, to that required by this standard is demonstrated, or if the intent of the standard is met. Alternatively, products which meet all of the requirements identified in this Standard may not be FM Approved if other conditions which adversely affect performance exist or if the intent of this standard is not met.

1.4 Basis for Approval

Approval 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 by FM Approvals; 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 consistently produce the product which is examined and tested, and the marking procedures used to identify the product. These examinations may be repeated as part of FM Approvals' Surveillance Audit program.

1.5 Basis for Continued Approval

Continued Approval is based upon:

- production or availability of the product as currently FM Approved;
- the continued use of acceptable quality assurance procedures;
- satisfactory field experience;
- compliance with the terms stipulated in the Approval report;
- satisfactory re-examination of production samples for continued conformity to requirements; and
- satisfactory Surveillance Audits conducted as part of FM Approvals' product follow-up program.

Also, as a condition of retaining Approval, manufacturers may not change a product or service without prior authorization by FM Approvals.

1.6 Effective Date

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

The effective date of this standard is October 30, 2020 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 undated references, the latest edition of the referenced document (including any amendments) applies. For dated references, only the cited edition applies.

ANSI/NFPA 72 National Fire Alarm & Signaling Code

ANSI/NFPA 70 National Electrical Code

NEMA 250 Enclosures for Electrical Equipment

ANSI/IEC 60529 Degrees of Protection provided by Enclosures (IP Code)

ANSI/UL 864 Standard for Control Units and Accessories for Fire Alarm Systems

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

1.9 Terms and Definitions

For purposes of this standard, the following terms and definitions apply:

ASME – American Society of Mechanical Engineers

FACP – Fire Alarm Control Panel

NFPA – National Fire Protection Association

PIV – Post Indicator Valve

OS&Y – Outside Screw & Yoke Valve

Normal – normal position of monitor device, sprinkler valve open

Off-normal –indicates not normal position location, sprinkler valve partially or totally closed

2 GENERAL INFORMATION

2.1 Product Information

Supervisory devices are generally supplied as individual units for installation on sprinkler control valves. They are usually constructed of a housing, which contains the valve position sensing element. There are provisions for mounting the supervisory monitor to the valve, especially those that are designed for in-field installation. A method of communication to the Fire Alarm Control Panel must be specified in the installation manual. This is commonly hard wired (conventional initiating circuit or Signaling Line Circuit) or RF wireless.

Supervisory devices may be supplied to fit any sprinkler shutoff valves (standard and wall types) that limit the operation of any automatic sprinkler system or other fire extinguishing system(s).

2.2 Approval Application Requirements

To apply for an Approval examination, the manufacturer, or its authorized representative, should submit a request to information@fmaprovals.com.

The manufacturer shall provide the following preliminary information with any request for Approval consideration:

- a complete list of all models, types, sizes, and options for the products or services being submitted for Approval consideration;
- general assembly drawings, complete set of manufacturing drawings, materials list, anticipated marking format, piping and electrical schematics, nameplate format, brochures, sales literature, spec. sheets, installation, operation and maintenance procedures, etc. ; and
- the number and location of manufacturing facilities.

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 an Approval examination, the manufacturer shall submit samples for examination and testing based on the following:

- Samples shall include at least one complete functional unit. Certain tests may be performed on particular subassemblies or components if test conditions can be maintained as they would appear under operation of a complete unit.
- Detailed sample requirements to be determined by FM Approvals following review of preliminary information

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