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UL 3225

Outline of Investigation for Water Leak Detection Systems

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Summary of Topics

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INTRODUCTION

1 Scope

1.1 These requirements cover water sensing devices, signaling devices and water shutoff valves intended to automatically respond to flooding and water leakage situations caused from the water supply side in residential applications.

1.2 The intent of these requirements is to reduce property damage due to water leakage and overflow from appliances that are supplied with water and for the backup and overflow of drainage associated with the water supply line.

1.3 These requirements do not cover the following:

- a) Flooding due to storm water overflow and sump discharge backups.
- b) Water detection and emergency shutoff in commercial applications such as the protection of computer equipment rooms.

2 General

2.1 Components

2.1.1 Except as indicated in 2.1.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components used in the products covered by this standard.

2.1.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

2.1.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.1.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

2.2 Units of measurement

2.2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

2.2.2 Unless otherwise indicated, all voltage and current values mentioned in this standard are root-mean-square (rms).

2.3 Undated references

2.3.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

3 Glossary

3.1 For the purpose of this Standard, the following definitions apply.

3.2 CONTROL UNIT – That portion of the system that is designed to accept the input from the sensor, process the signals, annunciate trouble signals, process notifications and communicate actions for the shutoff valve.

3.3 WATER LEAK DETECTION SYSTEM – A system of products that is comprised of a sensor to detect water leaks, a shutoff valve that is automatically activated to close upon detection of water, and a communication and control system that is a discrete product or virtual.

3.4 WATER LEAK SENSOR – A mechanism that is designed to detect water. The sensor is either a unit that combines a power source and electrodes or have a separate power source and electrodes.

4 System Components

4.1 The minimum system components shall be comprised of a water detection device(s), control and indicating equipment and a water shutoff valve. The control and indicating equipment is permitted to be integral between the water detector and shutoff valve.

5 Installation and Operating Instructions

5.1 A copy of the installation and operating instructions and related schematic wiring diagrams and installation drawings shall be used as a guide in the examination and test of the product. For this purpose, a printed edition is not required.

5.2 Each water detection system shall be provided with the installation and operating instructions and shall include the following information:

- a) Wiring diagram of the system.
- b) List of compatible devices and the maximum number of devices the system can handle.
- c) Typical installation drawings and descriptions.
- d) Recommendation for a licensed professional plumber to install the shutoff valve.
- e) Contact local authorities for installation requirements.

- f) Description of each of the actions, ie alarm, trouble and what happens.
- g) Description of all notifications.
- h) Information on replacement batteries.
- i) Maximum water pressure rating.
- j) RF installation guidelines, minimum distance.
- k) Description of the operation, testing and maintenance procedures.
- l) Note to cycle the system at a minimum of once per month. The testing instructions shall include a description on how to wet each sensor in the system and to check that the valve completely closes.

5.3 The installation of the water shutoff valve shall not impair the operation of a home automatic fire protection sprinkler system. The instructions shall direct that the valve be installed in such a manner that it is downstream of the water meter and on the main domestic water line separate from the automatic sprinkler system.

5.4 The installation and operating instructions shall be in printed or electronic form.

6 Compatibility

6.1 The interconnection of the product with other products shall be evaluated for the purpose of operating as a coordinated system relative to the intended emergency signaling and without risk of fire, shock, or injury to persons.

6.2 The requirements of 6.1 apply to:

- a) Separate products connected to any circuit and by which the operating parts of the product are actuated for signaling and/or action and
- b) Separate or incorporated appliances or units by which signals are indicated or actions carried out.

6.3 Power circuits interconnecting products shall have compatible voltage and current ratings.

6.4 All equipment directly connected to the product by wired or wireless pathways shall be evaluated for the application.

CONSTRUCTION

ALL PRODUCTS

7 General

7.1 A product shall use materials that have been determined to comply with the requirements for the particular use, as indicated by the performance requirements of this standard.

7.2 Water detectors and system components for the control and indicating equipment shall meet the requirements of the Standard for Information Technology Equipment - Safety - Part 1: General Requirements, UL 60950-1 or the Standard for Audio, Video, and Similar Electronic Apparatus-Safety Requirements, UL 60065 or UL 62368-1, Standard for Audio/Video, Information and Communication Technology Equipment.

Exception No. 1: Products that meet all the requirements of UL 1023, UL 2017, UL 985 or UL 864 shall be considered as meeting the basic fire and shock requirements and batteries utilized in a product shall meet the construction requirements of UL 2054, Standard for Safety for Household and Commercial Batteries.

Exception No. 2: That portion of a water shutoff valve that is part of the control and indicating equipment that meet all the requirements of the Standard for Electrical Plumbing Accessories, UL 1951 or the Standard for Electrically Operated Valves, UL 429, shall be considered as meeting the basic fire and shock requirements.

7.3 Water shutoff valves shall meet the Standard for Electrically Operated Valves, UL 429. The shutoff valves shall be of the normally open type. The shutoff valve shall be equipped with a manual shutoff means.

PERFORMANCE

8 System and Event Performance

8.1 General

8.1.1 Systems shall be capable of meeting the following event parameters.

- a) When exposed to water, the water detector shall respond with a signal or message within 1 minute of exposure to water.
- b) A local audible alarm shall sound when water is detected. The local audible alarm shall either be near the source of the water detection or at a centralized location such as a home control unit. The audible alarm shall sound continuously for at least 30 seconds and repeat every 15 minutes for a continuous 30 seconds until the system is reset. The audible alarm shall comply with the audibility requirements in Section 11.
- c) The control and indication equipment shall trigger the closure of the automatic shutoff valve when water is detected.
- d) The shutoff valve shall fully close within 1-minute when water is applied to the sensor and the valve is triggered to close.

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