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Alarm systems - Part 2: Requirements for intruder alarm systems - Section Two: Requirements for detectors - General

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Systèmes d'alarme. Deuxième partie: Prescriptions pour les systèmes d'alarme anti-intrusion. Section deux: Prescriptions pour les détecteurs - Généralités

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Systèmes d'alarme

Partie 2:
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Section deux – Prescriptions pour les détecteurs – Généralités

Alarm systems

Part 2:
Requirements for intruder alarm systems
Section Two – Requirements for detectors – General

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ALARM SYSTEMS

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FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by IEC Technical Committee No. 79: Alarm Systems.

The text of this standard is based on the following documents:

Six Months' Rule	Report on Voting
79(CO)6	79(CO)12

Full information on the voting for the approval of this standard can be found in the Voting Report indicated in the above table.

ALARM SYSTEMS

Part 2: Requirements for intruder alarm systems
Section Two – Requirements for detectors – General

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1. Scope

This standard specifies the general requirements for detectors for use in intruder alarm systems installed in buildings.

Additional requirements for each type of detector are given in the specific standard for that detector.

This standard and the standards for specific types of detector give the minimum requirements for the performance, installation and testing of detectors. Additional features may be incorporated provided that the performance and reliability of the detector are not adversely affected.

For detectors with enhanced performance, additional or more severe test procedures are specified.

This standard also defines those characteristics of the detector which are to be specified by the supplier, including operational requirements.

This standard shall be used in conjunction with the following IEC publications:

839-1-1: Alarm systems, Part 1: General requirements. Section One – General. (Under consideration.)
839-1-2 (1987): Section Two – Power units, test methods and performance criteria.
839-1-3 (1987): Section Three – Environmental testing.
839-2-1: Part 2: Requirements for intruder alarm systems. Section One – General. (Under consideration.)

2. Object

The object of this standard is to specify those requirements of detectors which ensure that they are compatible with other parts of the intruder alarm systems, with the aim of providing satisfactory performance in the detection of intruders whilst minimizing false operation due to environmental effects.

3. Reference documents

IEC Publications:

68: Basic environmental testing procedures.
68-1 (1982): Part 1: General and guidance.
160 (1963): Standard atmospheric conditions for test purposes.
271 (1974): List of basic terms, definitions and related mathematics for reliability.
300 (1984): Reliability and maintainability management.
364-4: Electrical installations of buildings, Part 4: Protection for safety.
529 (1976): Classification of degrees of protection provided by enclosures.
801: Electromagnetic compatibility for industrial-process measurement and control equipment.

4. Definitions

For the purpose of this standard the following definitions apply:

4.1 *Detector*

A device designed to generate an alarm condition in response to intrusion or attempted intrusion, or to deliberate action by the user.

4.2 *Sensor*

That part of a detector which senses a change in condition which could be caused by intrusion or attempted intrusion.

4.3 *Processor*

A device which processes the output from one or more sensors to determine whether an alarm condition should be generated.

5. General considerations

A detector may be a single integrated unit or may consist of one or more sensors connected to a signal processing unit.

The detection function includes all those parts of a system which determine whether or not an alarm condition is present.

6. Requirements

6.1 *Functional*

6.1.1 *Performance*

The detector shall perform as specified under the range of supply voltage and environmental conditions given in the specification.

When the detector generates an alarm condition, this shall be maintained for at least 1 s.

The environmental conditions apply only to the immediate vicinity of the detector when installed in a system. The detector shall meet its operational requirement within 60 s after power on.

6.1.2 *Range adjustment*

A control may be provided for adjusting the range of the detector.

If such a control is fitted and is normally accessible to the installation engineer, the adjustment shall not exceed a ratio of three to one between the maximum range and the minimum range.

The adjustment shall have calibrated positions which shall include the maximum and the minimum selectable values.

In addition, a preset adjustment may be included to initially set the maximum range of the detector. Once the initial adjustment has been made, it should not be easily alterable.

The control and the preset adjustment shall only be accessible following removal of the normal access panel.

6.1.3 *Radiation*

The detector shall comply with the relevant national regulations for frequency and power level of any radiation.

6.1.4 *Supply voltage*

The nominal voltage shall be 12 V d.c. unless otherwise specified by the supplier.

The detector shall meet the requirements of this standard within a supply voltage range of at least +25% to −15% of the nominal voltage.

An alarm or fault condition shall be generated if the power supply falls below that required to meet this standard.

6.1.5 *Tamper protection*

If tamper protection is fitted, it shall operate when the cover or any normal access panel is opened sufficiently to permit adjustment of the coverage of the detector or of the alignment of the detector.

It shall not be possible to overcome the tamper protection by normally available tools such as magnets, knives or screwdrivers.

6.2 *Environmental requirements*

The following represents the minimum environmental requirements for detectors.

6.2.1 *Dry heat*

The detector shall meet its operational requirements when subjected to a temperature of 40 °C for 16 h, as described in IEC Publication 839-1-3, Test A-1 (Severity 3).

6.2.2 *Cold*

The detector shall meet its operational requirements when subjected to a temperature of +5 °C for 16 h, as described in IEC Publication 839-1-3, Test A-2 (Severity 2).

6.2.3 *Vibration (sinusoidal)*

The detector shall meet its operational requirements when subjected to sinusoidal vibration, as described in IEC Publication 839-1-3, Test A-4 (Severity 1).

6.2.4 *Electrical spikes*

The detector shall meet its operational requirements when subjected to electrical spikes, as described in IEC Publication 839-1-3, Test A-9 (Severity 4).

6.2.5 *Electrostatic discharge*

The detector shall meet its operational requirements when subjected to electrostatic discharge, as described in IEC Publication 839-1-3, Test A-11 (Severity 3).

6.2.6 *Electromagnetic fields*

The detector shall meet its operational requirements when subjected to electromagnetic fields, as described in IEC Publication 839-1-3, Test A-13 (Severity 4).

6.2.7 *Impact*

The detector shall withstand impacts as described in IEC Publication 839-1-3, Test A-16 (Severity 1) and shall not change its coverage or setting as a result of the impacts.

6.3 *Electrical safety*

The detector shall meet the safety requirements of IEC Publication 364-4.

6.4 *Reliability*

The detector shall have a designed MTBF under normal operating conditions of at least 60 000 h, calculated in accordance with IEC Publications 271 and 300.

6.5 *Interface capability*

The detector shall provide a potential free, normally closed contact opening on alarm, unless otherwise specified by the manufacturer.

6.6 *Constructional features*

The housing of the detector shall meet the requirements of Class IP 41 as specified in IEC Publication 529.

Suitable means shall be provided to permit the detector to be securely fixed.

6.7 *Markings*

The detector shall be plainly and permanently marked with the manufacturer's name or symbol and model number.

If the design allows, then the detector shall be plainly and permanently marked with the following additional information:

- serial number;
- date of manufacture (codes may be used);
- electrical supply ratings, e.g. nominal voltage, current and frequency.

If the design does not allow the above, then the information shall be given in the accompanying specifications or packaging.

Terminals and leads shall be numbered, coloured or otherwise identifiable.