

**Alarm systems - Intrusion and hold-up systems - Part 2-7-1: Intrusion detectors - Glass break detectors (acoustic)**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

|                                                                                                                     |                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| See Eesti standard EVS-EN 50131-2-7-1:2012 sisaldab Euroopa standardi EN 50131-2-7-1:2012 ingliskeelset teksti.     | This Estonian standard EVS-EN 50131-2-7-1:2012 consists of the English text of the European standard EN 50131-2-7-1:2012.          |
| Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.                                                  | This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation. |
| Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 14.09.2012. | Date of Availability of the European standard is 14.09.2012.                                                                       |
| Standard on kättesaadav Eesti Standardikeskusest.                                                                   | The standard is available from the Estonian Centre for Standardisation.                                                            |

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 13.320

### Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:  
Aru 10, 10317 Tallinn, Eesti; [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

### The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:  
Aru 10, 10317 Tallinn, Estonia; [www.evs.ee](http://www.evs.ee); phone 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

English version

**Alarm systems -  
Intrusion and hold-up systems -  
Part 2-7-1: Intrusion detectors -  
Glass break detectors (acoustic)**

Systèmes d'alarme -  
Systèmes d'alarme contre l'intrusion et les  
hold-up -  
Partie 2-7-1: Détecteurs d'intrusion -  
Détecteurs bris de glace (acoustiques)

Alarmanlagen -  
Einbruch- und Überfallmeldeanlagen -  
Teil 2-7-1: Einbruchmelder -  
Glasbruchmelder (Akustisch)

This European Standard was approved by CENELEC on 2012-08-13. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Contents

|                                                                                                                                  |    |
|----------------------------------------------------------------------------------------------------------------------------------|----|
| Foreword.....                                                                                                                    | 5  |
| 1 Scope .....                                                                                                                    | 6  |
| 2 Normative references .....                                                                                                     | 6  |
| 3 Terms, definitions and abbreviations .....                                                                                     | 6  |
| 3.1 Terms and definitions.....                                                                                                   | 6  |
| 3.2 Abbreviations .....                                                                                                          | 7  |
| 4 Functional Requirements .....                                                                                                  | 7  |
| 4.1 Event Processing.....                                                                                                        | 7  |
| 4.2 Operational requirements .....                                                                                               | 8  |
| 4.2.1 Time interval between intrusion signals or messages.....                                                                   | 8  |
| 4.2.2 Switch on delay.....                                                                                                       | 9  |
| 4.2.3 Self tests .....                                                                                                           | 9  |
| 4.3 Detection .....                                                                                                              | 9  |
| 4.3.1 Detection performance .....                                                                                                | 9  |
| 4.3.2 Indication of detection.....                                                                                               | 10 |
| 4.4 Immunity to false alarm sources .....                                                                                        | 10 |
| 4.4.1 General .....                                                                                                              | 10 |
| 4.4.2 Immunity to Small objects hitting the glass.....                                                                           | 10 |
| 4.4.3 Immunity to Soft objects hitting the glass .....                                                                           | 10 |
| 4.4.4 Immunity to Hard objects hitting the glass.....                                                                            | 10 |
| 4.4.5 Immunity to single frequency sound sources .....                                                                           | 10 |
| 4.4.6 Immunity to wide band noise .....                                                                                          | 10 |
| 4.5 Tamper security .....                                                                                                        | 10 |
| 4.5.1 General .....                                                                                                              | 10 |
| 4.5.2 Resistance to and detection of unauthorised access to the inside of the detector<br>through covers and existing holes..... | 11 |
| 4.5.3 Detection of removal from the mounting surface.....                                                                        | 11 |
| 4.5.4 Detection of masking .....                                                                                                 | 11 |
| 4.5.5 Immunity to magnetic field interference.....                                                                               | 12 |
| 4.5.6 Resistance to, or detection of, re-orientation.....                                                                        | 12 |
| 4.6 Electrical requirements .....                                                                                                | 12 |

|       |                                                                                   |    |
|-------|-----------------------------------------------------------------------------------|----|
| 4.6.1 | General .....                                                                     | 12 |
| 4.6.2 | Detector current consumption .....                                                | 12 |
| 4.6.3 | Slow input voltage rise and voltage range limits .....                            | 12 |
| 4.6.4 | Input voltage ripple .....                                                        | 12 |
| 4.6.5 | Input voltage step change .....                                                   | 12 |
| 4.7   | Environmental classification and conditions .....                                 | 12 |
| 4.7.1 | Environmental classification .....                                                | 12 |
| 4.7.2 | Immunity to environmental conditions .....                                        | 13 |
| 5     | Marking, identification and documentation .....                                   | 13 |
| 5.1   | Marking and/or identification .....                                               | 13 |
| 5.2   | Documentation .....                                                               | 13 |
| 6     | Testing .....                                                                     | 13 |
| 6.1   | General .....                                                                     | 13 |
| 6.2   | General test conditions .....                                                     | 14 |
| 6.2.1 | Standard laboratory conditions for testing .....                                  | 14 |
| 6.2.2 | General detection testing environment and procedures .....                        | 14 |
| 6.3   | Basic Detection Test .....                                                        | 15 |
| 6.3.1 | General .....                                                                     | 15 |
| 6.3.2 | Basic Test Source .....                                                           | 15 |
| 6.3.3 | Basic Detection Test Method .....                                                 | 15 |
| 6.4   | Performance tests .....                                                           | 15 |
| 6.4.1 | General .....                                                                     | 15 |
| 6.4.2 | Verification of detection performance .....                                       | 16 |
| 6.4.3 | Hole drilling with a diamond hole saw .....                                       | 17 |
| 6.4.4 | Glass cutting .....                                                               | 17 |
| 6.5   | Switch-on delay, time interval between signals, and indication of detection ..... | 17 |
| 6.6   | Fault condition signals or messages: self tests .....                             | 18 |
| 6.7   | Tests of immunity to false alarm sources .....                                    | 18 |
| 6.7.1 | General .....                                                                     | 18 |
| 6.7.2 | Immunity to Small objects hitting the glass .....                                 | 19 |
| 6.7.3 | Immunity to Soft objects hitting the glass .....                                  | 19 |
| 6.7.4 | Immunity to Hard objects hitting the glass .....                                  | 20 |
| 6.7.5 | Immunity to single frequency sound sources .....                                  | 20 |

|                       |                                                                                                         |    |
|-----------------------|---------------------------------------------------------------------------------------------------------|----|
| 6.7.6                 | Immunity to wide band noise based using Flat steel rulers.....                                          | 20 |
| 6.7.7                 | Immunity to wide band noise based using ICs .....                                                       | 21 |
| 6.8                   | Tamper security .....                                                                                   | 21 |
| 6.8.1                 | General .....                                                                                           | 21 |
| 6.8.2                 | Prevention of unauthorised access to the inside of the detector through covers and existing holes ..... | 21 |
| 6.8.3                 | Detection of removal from the mounting surface.....                                                     | 21 |
| 6.8.4                 | Resistance to or detection of re-orientation of adjustable mountings .....                              | 21 |
| 6.8.5                 | Resistance to magnetic field interference.....                                                          | 22 |
| 6.8.6                 | Detection of masking .....                                                                              | 22 |
| 6.9                   | Electrical tests.....                                                                                   | 23 |
| 6.9.1                 | General .....                                                                                           | 23 |
| 6.9.2                 | Detector current consumption .....                                                                      | 23 |
| 6.9.3                 | Slow input voltage change and input voltage range limits.....                                           | 24 |
| 6.9.4                 | Input voltage ripple .....                                                                              | 24 |
| 6.9.5                 | Input voltage step change .....                                                                         | 24 |
| 6.9.6                 | Total loss of power supply .....                                                                        | 25 |
| 6.10                  | Environmental classification and conditions .....                                                       | 25 |
| 6.11                  | Marking, identification and documentation .....                                                         | 26 |
| 6.11.1                | Marking and/or identification.....                                                                      | 26 |
| 6.11.2                | Documentation .....                                                                                     | 26 |
| Annex A (informative) | Example of the setup of the test room.....                                                              | 27 |
| Annex B (normative)   | Catalogue of standard glass types .....                                                                 | 28 |
| Annex C (normative)   | List of small tools suitable for testing immunity of casing to attack.....                              | 29 |
| Annex D (normative)   | Dimensions & Requirements of a standard test magnet.....                                                | 30 |
| Annex E (normative)   | Immunity test: Small objects hit sensitivity .....                                                      | 33 |
| Annex F (normative)   | Immunity test: Soft objects hit sensitivity .....                                                       | 34 |
| Annex G (normative)   | Immunity test: Hard objects hit sensitivity .....                                                       | 35 |
| Annex H (normative)   | General testing matrix .....                                                                            | 36 |
| Annex I (normative)   | Immunity test: Noise sensitivity.....                                                                   | 38 |
| Annex J (normative)   | Performance test setup and alternative performance test setup .....                                     | 39 |
| Annex K (informative) | Manipulation test: Resistance to re-orientation of adjustable mountings .....                           | 42 |

## Foreword

This document (EN 50131-2-7-1:2012) has been prepared by CLC/TC 79 "Alarm systems".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-08-13
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2015-08-13

This document supersedes CLC/TS 50131-2-7-1:2009.

This European standard provides for security Grades 1 to 4 (see EN 50131-1) passive acoustic glass break detectors installed in buildings, and uses environmental classes I to IV (see EN 50130-5).

The purpose of a detector is to detect the acoustic energy exclusively emitted by the physical destruction of a glass pane, which allows intrusion to the monitored area for example in doors, windows or enclosures and to provide the necessary range of signals or messages to be used by the rest of the intruder alarm system.

Functions additional to the mandatory functions specified in this standard may be included in the detector, providing they do not adversely influence the correct operation of the mandatory functions.

The number and scope of these signals or messages may be more comprehensive for systems that are specified at the higher Grades.

This standard is only concerned with the requirements and tests for the detector. Other types of detectors are covered by other documents identified as TS / EN 50131-2-x.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

## 1 Scope

This European Standard is for passive acoustic glass break detectors installed in buildings and provides for security Grades 1 to 4 (see EN 50131-1), specific or non-specific wired or wire-free detectors, and uses environmental classes I to IV (see EN 50130-5). This European Standard does not include requirements for passive acoustic glass break detectors intended for use outdoors.

A detector shall fulfil all the requirements of the specified Grade.

Functions additional to the mandatory functions specified in this standard may be included in the detector, providing they do not adversely influence the correct operation of the mandatory functions.

This European Standard does not apply to system interconnections.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

|                 |                                                                                                                                                                         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN 50130-4      | <i>Alarm systems — Part 4: Electromagnetic compatibility — Product family standard: Immunity requirements for components of fire, intruder and social alarm systems</i> |
| EN 50130-5      | <i>Alarm systems — Part 5: Environmental test methods</i>                                                                                                               |
| EN 50131-1:2006 | <i>Alarm systems — Intrusion and hold-up systems — Part 1: System requirements</i>                                                                                      |
| EN 50131-6      | <i>Alarm systems — Intrusion and hold-up systems — Part 6: Power supplies</i>                                                                                           |
| EN 60068-1:1994 | <i>Environmental testing — Part 1: General and guidance (IEC 60068-1:1988 + A1:1992 + corrigendum Oct. 1988 )</i>                                                       |
| EN 60529        | <i>Degrees of protection provided by enclosures (IP code) (IEC 60529)</i>                                                                                               |

## 3 Terms, definitions and abbreviations

For the purposes of this document, the following terms, definitions and abbreviations given in EN 50131-1:2006 and the following apply.

### 3.1 Terms and definitions

#### 3.1.1

##### **glass breakage**

physical destruction of a glass pane, which allows intrusion to the monitored area, for example in doors, windows or enclosures

#### 3.1.2

##### **passive acoustic glass break detector**

detector that is mounted in the area to be monitored, which detects an airborne acoustic event created by a glass breakage

#### 3.1.3

##### **Basic Test Source**

signal simulator designed to verify the basic function of the detector