SLOVENSKI STANDARD
SIST EN 50131-2-7-1:2012

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Alarmni sistemi - Sistemi za javljanje vloma in ropa - 2-7-1. del: Zahteve za javljalnike vloma - Javljalniki loma stekla (akustični)

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

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

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)

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ICS:

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EUROPEAN STANDARD

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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)

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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.

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CENELEC

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

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Contents

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- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2015-08-13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	*Alarm systems — Part 4: Electromagnetic compatibility — Product family standard: Immunity requirements for components of fire, intruder and social alarm systems*
EN 50130-5	*Alarm systems — Part 5: Environmental test methods*
EN 50131-1:2006	*Alarm systems — Intrusion and hold-up systems — Part 1: System requirements*
EN 50131-6	*Alarm systems — Intrusion and hold-up systems — Part 6: Power supplies*
EN 60068-1:1994	*Environmental testing — Part 1: General and guidance (IEC 60068-1:1988 + A1:1992 + corrigendum Oct. 1988)*
EN 60529	*Degrees of protection provided by enclosures (IP code) (IEC 60529)*

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

3.1.4
incorrect operation
physical condition that causes an inappropriate signal or message from a detector

3.1.5
Basic Detection Test
test whose purpose is to verify the operation of a detector after conditioning

3.1.6
masking
interference with the detector input capability such as an introduction of a physical barrier (e.g. metal, plastic, paper or sprayed paints or lacquers in close proximity to the detector) or changing the characteristics of the monitored area (e.g. placing wet newspapers on the outside of the monitored glass pane)

3.1.7
standard immunity glass pane
glass pane to be used for all immunity tests, where a glass pane is needed, according to Annex B.

3.1.8
Reverberation Time 60
time taken for the volume of a single sound to decrease by 60 dB. Reverberation time (RT60) at a frequency of 4 kHz shall not be less than 0,5 s and no more than 1 s. If required, reverberation time may be adjusted by installing absorbent panels or surfaces in the room

3.2 Abbreviations

BTS – Basic Test Source.

EMC – Electromagnetic Compatibility.

RT60 – Reverberation time 60.

4 Functional Requirements

4.1 Event Processing

Detectors shall process the events shown in Table 1. Detectors shall generate signals or messages as shown in Table 2.

Table 1 — Events to be processed by Grade

Event	Grade			
	1	2	3	4
Intrusion	M	M	M	M
No Stimulus [a]	M	M	M	M
Masking	Op	Op	M	M
Tamper	Op	M	M	M
Low Supply Voltage	Op	Op	M	M
Total loss of power supply	Op	M	M	M
Local Self Test	Op	Op	M	M
Remote Self Test	Op	Op	Op	M

M = Mandatory
Op = Optional
[a] 'No Stimulus' is considered to be the quite condition, while no alarm generating stimulus for a detector at that time applies to the detector input capabilities.

Table 2 — Generation of Indication Signals or Messages

Event	Signals or Messages		
	Intrusion	Tamper	Fault
Intrusion	M	NP	NP
No Stimulus	NP	NP	NP
Masking[a]	M	Op	M
Tamper	NP	M	NP
Low Supply Voltage	Op	Op	M
Total loss of power supply[b]	M	Op	Op
Local Self Test Pass	NP	NP	NP
Local Self Test Fail	NP	NP	M
Remote Self Test Pass	M	NP	NP
Remote Self Test Fail	NP	NP	M
M = mandatory NP = Not permitted Op = Optional			
[a] An independent masking signal or message may be provided instead. [b] Alternatively Total loss of Power Supply shall be determined by loss of communication with the detector.			
This permits two methods of signalling a masking event: either by the intrusion signal and fault signal, or by a dedicated output. Use of the intrusion signal and fault signal is preferable, as this requires fewer connections between CIE and detector. If multiple events overlap there will be some signal combinations that may be ambiguous. To overcome this ambiguity it is suggested that detectors should not signal 'intrusion' and 'fault' at the same time except to indicate masking. This implies that the detector should prioritise signals, e.g. 1. Intrusion, 2 Fault, 3 Masking. When, in Table 1, an event may optionally generate signals or messages, they shall be as shown in Table 2.			

4.2 Operational requirements

4.2.1 Time interval between intrusion signals or messages

Wired detectors shall be able to provide an intrusion signal or message not more than 15 s after the end of the preceding intrusion signal or message.

Wire free detectors shall be able to provide an intrusion signal or message after the end of the preceding intrusion signal or message within the following times:

Grade 1 300 s

Grade 2 180 s

Grade 3 30 s

Grade 4 15 s

4.2.2 Switch on delay

The detector shall meet all functional requirements within 180 s of the power supply reaching its nominal voltage as specified by the manufacturer.

4.2.3 Self tests

4.2.3.1 Local self test

The detector shall automatically test itself at least once every 24 h according to the requirements of Tables 1 and 2. If normal operation of the detector is inhibited during a local self-test, the detector inhibition time shall be limited to a maximum of 30 s in any period of 2 h.

4.2.3.2 Remote self test

A detector shall process remote self tests and generate signals or messages in accordance with Tables 1 and 2 within 10 s of the remote self test signal being received, and shall return to normal operation within 30 s of the remote test signal being received.

4.3 Detection

4.3.1 Detection performance

4.3.1.1 General

The detector shall generate an intrusion signal or message when a simulated or real glass breakage according to the corresponding requirements of Table 3 is performed.

Table 3 — Performance test requirements

Requirement	Grade 1	Grade 2	Grade 3	Grade 4
Verification of detection performance	M	M	M	M
Performance test: hole drilling with diamond hole saw	Op	Op	Op	M
Performance test: Glass cutting	Op	Op	Op	M
M = Mandatory Op = Optional				

4.3.1.2 Verification of detection performance

This test will verify the detection performance of a glass breakage according to the supported conditions claimed by the manufacturer. It will verify the covering range including the maximum and minimum range as well as the performance of randomly chosen mounting locations of the detector, according to Annex B for different glass types and sizes claimed to be supported (types and dimensions) by the manufacturer. A number of standard glass types and sizes need to be passed by this test according to the corresponding test section.

4.3.1.3 Performance test for hole drilling with a diamond hole saw

This test will verify the detection performance by drilling a hole using a diamond hole saw on different glass types and dimensions according to the supported conditions claimed by the manufacturer and Annex B. It will verify if the detector is able to identify and signal the change of the integrity of the monitored side of the glass pane.

4.3.1.4 Performance test for Glass cutting

This test will verify the detection performance by cutting the glass using a standard glass cutter on different glass types and dimensions according to the supported conditions claimed by the

manufacturer and Annex B. It will verify if the detector is able to identify and signal the change of the integrity of the monitored side of the glass pane.

4.3.2 Indication of detection

Powered detectors at Grades 3 and 4 that include processing capabilities shall provide an indicator at the detector to indicate when an intrusion signal or message has been generated.

At Grades 3 and 4 this indicator shall be capable of being enabled and disabled remotely at Access Level 2.

4.4 Immunity to false alarm sources

4.4.1 General

The detector shall have sufficient immunity to false alarm sources if the following requirements have been met. No intrusion signal or message shall be generated as a result of the false alarm sources according to each individual test clause.

The tests for this clause will be performed on the standard immunity test glass pane as defined in section 3.1.7, wherever a glass pane is required.

4.4.2 Immunity to Small objects hitting the glass

The detector shall not generate an intrusion signal or message when small objects such as hail, sand, gravel etc. hit the outside of the monitored glass. The tests are described in 6.7.2.

4.4.3 Immunity to Soft objects hitting the glass

The detector shall not generate an intrusion signal or message when soft objects (e.g. a human fist) hit the outside of the monitored glass. The tests are described in 6.7.3.

4.4.4 Immunity to Hard objects hitting the glass

The detector shall not generate an intrusion signal or message when hard objects (e.g. handlebars of a bicycle) hit the outside of the monitored glass. The tests are described in 6.7.4.

4.4.5 Immunity to single frequency sound sources

The detector shall not generate an intrusion signal or message when various frequencies and levels of noise (like brakes of a lorry, etc.) are applied to the detector. The tests are described in 6.7.5.

4.4.6 Immunity to wide band noise

The detector shall not generate an intrusion signal or message when a wide band of frequencies at the same time, which are close to the frequency of a glass breakage (e.g. branches of a tree moving against the window) are applied to the detector. The tests are described in 6.7.6 and 6.7.7.

4.5 Tamper security

4.5.1 General

Tamper security requirements for each Grade of a detector are shown in Table 4.

Table 4 — Tamper security requirements

Requirement	Grade 1	Grade 2	Grade 3	Grade 4
Resistance to access to the inside of the detector	M	M	M	M
Detection of access to the inside of the detector	Op	M	M	M
Removal from the mounting surface	Op	M[a]	M	M
Detection of masking	Op	Op	M	M
Magnetic field Immunity	Op	M	M	M
Magnet type defined in Annex D		Type 1	Type 2	Type 2
Resistance to or detection of re-orientation [b]	Op	M	M	M
Applied torque		2 Nm	5 Nm	10 Nm
M = Mandatory Op = Optional				
[a] Required for wire free detectors only [b] Required for detectors mounted on brackets only				

4.5.2 Resistance to and detection of unauthorised access to the inside of the detector through covers and existing holes

All components and means of adjustment and access to mounting screws, which, when interfered with, could adversely affect the operation of the detector, shall be located within the detector housing. Such access shall require the use of an appropriate tool and depending on the Grade as specified in Table 4 shall generate a tamper signal or message before access can be gained.

It shall not be possible to gain access without generating a tamper signal or message or causing visible damage.

4.5.3 Detection of removal from the mounting surface

A tamper signal or message shall be generated if the detector is removed from its mounting surface, in accordance with Table 4.

4.5.4 Detection of masking

Means shall be provided to detect inhibition of the operation of the detector by masking according to the requirements of Table 4. Alternatively, the detector shall continue to operate normally.

In an I&HAS any masked detectors should prevent setting of the system.

The maximum response time for the masking detection device shall be 180 s. Masking shall be signalled according to the requirements of Table 2. The signals or messages shall remain for at least as long as the masking condition is present. A masking signal or message shall not be reset while the masking condition is still present. Alternatively the masking signal or message shall be generated again within 180 s of being reset if the masking condition is still present.

NOTE From a system design point of view it would be preferable for masked detectors to automatically reset after the masking condition is removed.

For detectors where detection of masking may be remotely disabled, the detection of masking shall operate when the I&HAS is unset; it is not required to operate when the I&HAS is set.