SLOVENSKI STANDARD
SIST EN 50131-2-8:2017

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Nadomešča:
SIST-TS CLC/TS 50131-2-8:2012

Alarmni sistemi - Sistemi za javljanje vloma in ropa - 2-8. del: Javljalniki vloma - Javljalniki udara

Alarm systems - Intrusion and hold-up systems - Part 2-8: Intrusion detectors - Shock detectors

Alarmanlagen - Einbruchmeldeanlagen - Teil 2-8: Anforderungen an Erschütterungsmelder

Systèmes d'alarme - Systèmes d'alarme contre l'intrusion et les hold-up - Partie 2-8: Détecteurs d'intrusion - Détecteurs de chocs

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13.320	Alarmni in opozorilni sistemi	Alarm and warning systems

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English Version

Alarm systems - Intrusion and hold-up systems - Part 2-8: Intrusion detectors - Shock detectors

Systèmes d'alarme - Systèmes d'alarme contre l'intrusion et les hold-up - Partie 2-8: Détecteurs d'intrusion - Détecteurs de chocs

Alarmanlagen - Einbruchmeldeanlagen - Teil 2-8: Anforderungen an Erschütterungsmelder

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 50131-2-8:2016) has been prepared by Technical Committee CLC/TC 79 “Alarm systems”, the secretariat of which is held by BSI.

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)	2017-10-03
latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2019-10-03

This document supersedes CLC/TS 50131-2-8:2012.

EN 50131-2-8:2016 includes the following significant technical changes with respect to CLC/TS 50131-2-8:2012:

— Changed state from Technical Specification into European Standard;

— Clarified wording wherever necessary to avoid misunderstanding and to optimize for reading;

— Refined the definition of "shock";

— Refined immunity requirements in 4.4.2, 4.4.3, 4.4.4, 4.4.5 and 4.4.6 and their corresponding test sub-clauses (6.7.2, etc.);

— Refined the detection of masking requirements in 4.6.5 and the corresponding test sub-clause 6.8.5;

— Refined the electrical requirements in 4.7 and subsequent sub-clauses and updated the corresponding test sub-clauses (6.9, etc.);

— Rephrased the Basic Detection Test Method in 6.3.2 and the Verification of detection performance in 6.4.2 and subsequent sub-clauses.

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.

Introduction

This document is a European Standard for shock detectors used as part of intrusion alarm systems installed in buildings. It includes four security grades and four environmental classes.

The purpose of a shock detector is to detect the shock or series of shocks due to a forcible attack through a physical barrier (for example doors or windows).

The shock detector has to provide the necessary range of signals or messages to be used by the rest of the intrusion and hold-up alarm system.

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

This European Standard is only concerned with the requirements and tests for the shock detectors. Other types of detectors are covered by other documents identified as in the EN 50131-2 series.

1 Scope

This European Standard is for Shock Detectors installed in buildings to detect the shock or series of shocks due to a forcible attack through a physical barrier (for example doors or windows).

It specifies four security Grades 1-4 (in accordance with EN 50131-1), specific or non-specific wired or wire-free detectors and uses environmental Classes I-IV (in accordance with EN 50130-5).

This European Standard does not include requirements for detectors intended to detect penetration attacks on safes and vaults for example by drilling, cutting or thermal lance.

This European Standard does not include requirements for shock detectors intended for use outdoors.

A detector needs to fulfil all the requirements of the specified grade.

Functions additional to the mandatory functions specified in this European 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 deal with requirements for compliance with regulatory directives, such as EMC-directive, low-voltage directive, etc., except that it specifies the equipment operating conditions for EMC-susceptibility testing as required by EN 50130-4.

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, hold up, CCTV, access control and social alarm systems*

EN 50130-5, *Alarm systems — Part 5: Environmental test methods*

EN 50131-1, *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 60068-2-75:2014, *Environmental testing — Part 2-75: Tests — Test Eh: Hammer tests (IEC 60068-2-75:2014)*

3 Terms, definitions and abbreviations

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

3.1 Terms and definitions

3.1.1
shock
sudden transient acceleration e.g. caused by a mechanical impact as a result of a forcible attack through a physical barrier

3.1.2
incorrect operation
physical condition that causes an inappropriate signal or message from a shock detector

3.1.3
masking
interference with the shock detector input capability, which prohibits the triggering of the shock detector (e.g. disabling the detector with an external magnet)

3.1.4
shock test
operational test, during which a shock detector is activated by using the standard triggering method in a controlled environment

3.1.5
shock detector
combination of one or more shock sensor(s) and an analyser, which provides signalling or messaging to the Intruder & Hold Up alarm system

3.1.6
shock sensor
element which detects the mechanical energy caused by sudden transient acceleration and which produces a signal for further analysis

3.1.7
analyser
physical unit or processing capabilities used to process the signal(s) produced by one or more shock sensor(s) and provides a signal or message to the intruder & Hold Up alarm system

3.1.8
mass inertia
physical underlying principle which is used for sensing a shock e.g. a weighted or piezo transducer sensor

3.1.9
gross attack
large single shock due to an impact on the supervised material, e.g. impact generated by a sledge hammer on a concrete surface

3.1.10
low shock integration attack
series of low level shocks, due to a number of impacts on the supervised material integrating over a certain time, e.g. impacts generated by chiselling on a concrete surface

3.1.11
standard immunity window
framed window, which is used for all immunity tests, where a framed window is required, according to A.1

3.2 Abbreviations

CIE Control & Indicating Equipment

EMC Electro Magnetic Compatibility

4 Functional requirements

4.1 General

A shock detector consists of one or more shock sensor and an analyser, which may either be in the same housing, or in separate housings. Furthermore the analyser can be integrated into another component of the Intruder & Hold Up alarm system (for example the CIE).

4.2 Event Processing

Shock detectors shall process the events in accordance with Table 1.

Table 1 — Events to be processed by Grade

Event	Grade			
	1	2	3	4
Intrusion	M	M	M	M
Tamper Detection	Op	M	M	M
Masking Detection				
Magnetic Masking	Op	Op	M	M
Detection of penetration of sensor housing	Op	Op	Op	M
Removal from the mounting surface [a]	Op	Op	M	M
Low Supply Voltage – wire free devices	M	M	M	M
Low Supply Voltage – wired devices	Op	Op	Op	M
Total Loss of Power Supply [b]	Op	M	M	M
Local self-test [c]	Op	Op	Op	M
Remote self-test [c]	Op	Op	Op	M

Key M = Mandatory, Op = Optional

[a] Mandatory for wire-free at grades 2, 3 and 4; mandatory for all surface mounted grade 3 and 4 types, optional for wired surface mounted grades 1 and 2. Not required for wired, sealed / potted and flush mounted types grade 3.

[b] Mandatory for wire-free at all grades. Only required if power is for normal local operation, e.g. purely switch based solutions do not fall under this requirement; however if signal processing (except if it is the CIE itself) is required to process the output of the sensor, such an event shall be generated. No generation of a message or signal is required when the condition is detected by the CIE due to system design, e.g. bus based systems.

[c] Only required if signal processing is used to generate any signal or message, e.g. purely mechanical based solutions do not fall under this requirement. No generation of a message or signal is required when the condition is detected by the CIE due to system design, e.g. bus based systems.

Shock detectors shall generate signals or messages in accordance with Table 2.

Table 2 — Generation of Signals or Messages

Event	Signals or Messages		
	Intrusion	**Tamper**	**Fault**
No Event	NP	NP	NP
Intrusion	M	NP	NP
Tamper	NP	M	NP
Masking*	M	Op	M
Removal from the mounting surface	NP	M	NP
Low Supply Voltage	Op	Op	M
Total Loss of Power Supply**	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			
* An independent signal or message may be provided instead.			
NOTE 1 This permits two methods of signalling a masking event: either by the intrusion signal and fault signal, or by a dedicated masking signal or message. Use of the intrusion signal and fault signal is preferable, as this requires fewer connections between CIE and shock detector. If multiple events overlap there will be some signal combinations that may be ambiguous. To overcome this ambiguity it is suggested that shock detectors should not signal 'intrusion' and 'fault' at the same time except to indicate masking. This implies that the shock detector should prioritise signals, e.g. 1 Intrusion, 2 Fault, 3 Masking.			
** Alternatively Total loss of Power Supply shall be determined by loss of communication with the shock detector.			
NOTE 2 When, in Table 1, an event may optionally generate signals or messages, they shall be as shown in this table.			
NOTE 3 It is accepted that a bus system may send out dedicated signals or messages and does not necessarily have to follow the mapping of Table 2, provided that all of the required events are signalled.			

4.3 Detection

4.3.1 Detection performance

4.3.1.1 General

The shock detector shall be designed to distinguish between environmental shocks and shocks resulting from a physical attack which may be intended to penetrate the structure. The means for achieving this may be adjustable to suit varying circumstances.

The operating parameters of the shock detector shall be verified as specified by the manufacturer.

The manufacturer shall clearly state in the product documentation, any special limitation concerning installation e.g. area of coverage etc.