DRAFT FOR DEVELOPMENT

DD CLC/TS 50131-4:2006

Alarm systems — Intrusion and hold-up systems —

Part 4: Warning devices

ICS 13.310

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National foreword

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This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application can be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the European organization responsible for its conversion to a European standard. A review of this publication will be initiated not later than 3 years after its publication by the European organization so that a decision can be taken on its status. Notification of the start of the review period will be made in an announcement in the appropriate issue of *Update Standards*.

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into a European Standard, to extend the life of the Technical Specification or to withdraw it. Comments should be sent to the Secretary of the responsible BSI Technical Committee at British Standards House, 389 Chiswick High Road, London W4 4AL.

The UK participation in its preparation was entrusted by Technical Committee GW/1, Electronic security systems, to Subcommittee GW/1/1, Alarm components.

A list of organizations represented on GW/1/1 can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Alarmanlagen - Einbruchmeldeanlagen - Teil 4: Signalgeber

This Technical Specification was approved by CENELEC on 2006-05-25.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

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Foreword

This Technical Specification was prepared by the Technical Committee CENELEC TC 79, Alarm systems.

The text of the draft was submitted to the formal vote and was approved by CENELEC as CLC/TS 50131-4 on 2006-05-25.

The following date was fixed:

– latest date by which the existence of the CLC/TS has to be announced at national level (doa) 2007-03-01

EN 50131 will consist of the following parts, under the general title "*Alarm systems – Intrusion and hold-up systems*":

Part 1 System requirements

Part 2-2 Requirements for passive infrared detectors

Part 2-3 Requirements for microwave detectors

Part 2-4 Requirements for combined passive infrared and microwave detectors

Part 2-5 Requirements for combined passive infrared and ultrasonic detectors

Part 2-6 Requirements for opening contacts (magnetic)

Part 2-7 Intrusion detectors - Glass break detectors acoustic

Part 3 Control and indicating equipment

Part 4 Warning devices

Part 5-3 Requirements for interconnections equipment using radio frequency techniques

Part 6 Power supplies

Part 7 Application guidelines

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1 Scope

This Technical Specification includes requirements for warning devices used in Intrusion and Hold up Alarm Systems installed in buildings. Four grades of warning device are described corresponding to each of the four security grades given in the European standard EN 50131-1. Requirements are also given for four environmental classes covering applications in internal and outdoor locations as specified in EN 50130-5.

2 Normative references

The following referenced documents are indispensable for the application of this document. 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	1995	Alarm systems – Part 4: Electromagnetic compatibility – Product family standard: Immunity requirements for components of fire, intruder and social alarm systems
EN 50130-5	1998	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	1997	Alarm systems – Intrusion systems – Part 6: Power supplies
EN 60065	2002	Audio, video and similar electronic apparatus – Safety requirements (IEC 60065:2001, mod)
EN 60068-1	1994	Environmental testing – Part 1 : General and guidance (IEC 60068-1:1988 + corrigendum October 1988 + A1:1992)
EN 60529 + corr. May	1991 1993	Degrees of protection provided by enclosures (IP codes) (IEC 60529:1989)
EN 60950-1	2006	Information technology equipment - Safety – Part 1: General requirements (IEC 60950-1:2005, mod)
EN 61000-6-3	2001	Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments (CISPR/IEC 61000-6-3:1996, mod.)
EN 61672-1	2003	Electroacoustics – Sound level meters – Part 1: Specifications (IEC 61672-1:2002)
EN 62262	2002	Degrees of protection provided by enclosure for electrical equipment against external mechanical impacts (IK codes) (IEC 62262:2002)

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3 Definitions and abbreviations

3.1 Definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
warning device
device that gives an audible alarm in response to a notification

NOTE A warning device may also provide alert indications.

3.1.2
external warning device
warning device designed to be located outside the supervised premises

3.1.3
internal warning device
warning device designed to be located within the supervised premises

3.1.4
enclosure
housing that contains the components, normally comprises a backplate and a cover

3.1.5
external power source
energy supply external to the I&HAS which may be non-continuous, e.g. mains supply

3.1.6
remote power source
electrical supply, which is not a part of the warning device, meeting the requirements of EN 50131-6

3.1.7
remotely powered warning device
warning device that does not incorporate its own power source

3.1.8
self powered warning device
warning device that incorporates its own power source

3.1.9
standby condition
period where a self powered warning device is powered from its internal storage device, whilst not notifying an alarm condition

3.1.10
storage device – failure
condition of the storage device where it is no longer able to power the warning device

3.1.11
storage device – low voltage
voltage specified by the warning device manufacturer which indicates that the storage device is nearly discharged

3.1.12
trigger command
notification signal or message passed to the warning device

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3.2 Abbreviations

For the purposes of this document, the following abbreviations are used:

CIE - Control and Indicating Equipment

EPS - external power source

I&HAS - Intrusion and Hold-up Alarm System(s)

WD - warning device

Int - internal warning device

Ext - external warning device

4 Requirements

4.1 Functional

4.1.1 Response

Depending upon the grade, warning devices shall have the functionality as defined in Table 1. Where a function is provided, the warning device shall operate in accordance with the requirements of Table 2.

Table 1 – Warning device functionality

Function	Self powered				Remotely powered			
	Grade				Grade			
	1	2	3	4	1	2	3	4
Trigger command	M	M	M	M	M	M	M	M
Tamper signal or message output	M	M	M	M	M	M	M	M
Fault signal or message output	O [b]	O [b]	M	M	O	O	O	O
Monitor of remote power [a]	M	M	M	M	O	O	O	O
Monitor integrity of trigger command interconnection	O	O	M	M	O	O	O	O
Local self test	O [b]	O [b]	M	M	O	O	O	O
Remote test input	O	O	O	M	O	O	O	O

[a] Remote power monitoring only applies to warning devices with a remote power source and an internal storage device, see Types X and Z as defined in Table 7.

[b] Mandatory for Type W devices as defined in Table 7.

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Table 2 – Warning device responses

	Self powered WD			Remote powered WD		
Event	**Sound Activation**	**Tamper signal or message**	**Fault signal or message [a]**	**Sound Activation**	**Tamper signal or message**	**Fault signal or message [a]**
Trigger Command	M	NP	NP	M	NP	NP
Tamper Event at the WD	O	M	NP	O	M	NP
Loss of remote power source	O [b]	O [b]	O [b]	N/A	O	O
Loss of trigger command interconnection integrity	O [b]	O [b]	O [b]	O	O	O
Local self test fail	NP	NP	M	NP	NP	M
Remote self test pass	NP	NP	M [c]	NP	NP	M [c]
Remote self test fail	NP	NP	M [c]	NP	NP	M [c]
Key M = Mandatory O = Optional NP = Not Permitted N/A = Not Applicable						

a The provision of a fault signal or message is not mandatory for all grades, see Table 1.

b At least one of these actions should occur at the warning device. For grade 3 and grade 4 warning devices, if the loss of trigger command integrity can be shown to be caused by a fault then a fault signal shall be generated, otherwise a tamper signal shall be generated.

c The response to a Remote test pass shall be different to the response to a Remote test fail.

4.1.2 Acoustic

A warning device shall produce a varying sound output, which is distinctive and likely to attract attention, with a mean acoustic output of no less than 100 dB(A) at 1 m from the mounting surface of the warning device throughout the manufacturers specified operating voltage range. Peak measurements shall be taken 1 m from the warning device at 30° intervals in the horizontal plane. Each individual reading shall not be less than 95 dB(A), and the mean acoustic output shall be calculated by the arithmetic sum of these values divided by the number of measurements. For surface mounted devices (e.g. wall mounted devices) this is required at angles between 15° and 165° to the surface, and for pole mounted devices it is for the full 360°.

NOTE 1 It is considered restrictive to define exact waveforms of acceptable alarm tones, therefore the only tests that can be applied are on the acoustic output level and that the tone is varying.

NOTE 2 Voice alarms are deemed to meet the requirements of a varying sound output.

NOTE 3 A warning device may also provide audible alert indications providing such indications are easily distinguishable from an alarm.

NOTE 4 The acoustic output of a warning device may be subject to variation depending on local or national requirements.

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4.1.3 Timing

A trigger command exceeding 400 ms shall be processed by the warning device.

A warning device shall commence sound activation within 1 s of receiving a valid trigger command to do so. It shall cease sound activation within 1 s of receiving a valid trigger command to do so.

NOTE 1 This instruction may be the cancellation of the trigger command.

The warning device shall sound between these signals.

The maximum time for which an audible warning device shall sound continuously is 15 min.

NOTE 2 Where applicable this requirement may be achieved by the CIE.

NOTE 3 The duration of the operational period of a warning device may be subject to variation depending on local or national requirements

A tamper signal or message shall be generated within 1 s of a tamper condition occurring.

There shall be a response to loss of remote power source or loss of trigger command interconnection integrity according to Tables 1 & 2, within 10 s of the fault occurring.

A response to local test fail according to Tables 1 & 2, shall occur within 10 s of detection of the fault.

4.2 Tamper

4.2.1 Protection

All component parts shall be housed in an enclosure meeting the impact requirements of the appropriate grade given in Table 3.

Provision shall be made to allow adequate fixing of the enclosure to the mounting surface.

Table 3 – Enclosure construction

Grade	1		2		3		4	
	Int	Ext	Int	Ext	Int	Ext	Int	Ext
Resistance to impact (IK rating according to EN 62262)	06	07	06	07	07	08	08	08

The cover of the enclosure shall be secured with one or more screws or bolts or alternatively by a mechanical lock. The cover of the enclosure shall be opened only with the use of one or more keys or suitable tools.

It shall not be possible to gain access to any electrical connections, or elements providing adjustment, without first generating a tamper signal or message.

It should not be possible to introduce a rod, as defined in Table 4, when the unit is mounted normally, such that the operation of the warning device could be adversely affected. Damage should not be caused that would be visible to a person of normal eyesight viewing at a distance of 2 m with the warning device illuminated at a level of 2 000 lx.

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Table 4 – Tool dimension for tamper detection

	Grade 1	Grade 2	Grade 3	Grade 4
Steel rod, diameter (± 0,05 mm)	2,5 mm	2,5 mm	1 mm	1 mm

4.2.2 Detection

The tamper detection requirements for warning devices relative to the security grade are given in Table 5.

Opening the warning device enclosure by normal means shall generate a tamper signal or message. The housing shall not permit the introduction of a tool of dimension as specified in Table 4 and type as specified in EN 60529, to defeat the tamper detection.

Attempts to remove the warning device from its mounting surface for a distance defined in Table 6 in a perpendicular direction shall generate a tamper signal or message according to Table 5.

It should not be possible to defeat the removal from mounting detection in grade 4 by sliding a 1 mm thick blade between the mounting surface and the warning device.

The warning device shall include means to detect penetration of the enclosure, which could cause mis-operation of the warning device, as specified in Table 5, when a hole of 4 mm is made in the enclosure.

Table 5 – Tamper detection

	Internal warning device				External warning device			
Security grade	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Opening by normal means	M	M	M	M	M	M	M	M
Removal from mounting	O	M [a]	M	M	O	M [a]	M	M
Detection of penetration of housing	O	O	O	O	O	O	O	M
Key O = Optional M = Mandatory								
[a] Wirefree only								

Table 6 – Removal from mounting

	Grade 1	Grade 2	Grade 3	Grade 4
Maximum distance before tamper detection	10 mm [a]	10 mm	5 mm	5 mm
[a] If removal from mounting detection is provided				

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4.3 Environmental

The environmental classification shall be as described in EN 50131-1. All the relevant environmental tests shall be carried out at the appropriate level for all security grades, as given in EN 50130-5.

The warning device shall meet the requirements of the relevant environmental class as specified by the manufacturer.

For operational tests, the warning device shall not generate unintentional activations, tamper, fault or other signals or messages, when subjected to the specified range of environmental conditions.

For endurance tests, the warning device shall continue to meet the requirements of this specification after being subjected to the specified range of environmental conditions.

See 5.9 for the relevant tests and severity.

4.4 EMC

For all grades of WD the WD shall not generate or be affected by the EMC conditions and severity levels defined in EN 50130-4 and EN 61000-6-3.

4.5 Safety

The warning device shall provide protection against electrical shock and consequential hazards by compliance with the requirements of EN 60950 or EN 60065.

4.6 Electrical

4.6.1 Connections

The means of electrical connection shall be appropriate for the physical size and current carrying capacity of the required conductors. The method of termination shall not damage the conductors.

Terminal blocks and other components utilised for connections shall be identifiable with numbers or other marks specified in the documentation

If external metal housings are used with a facility to connect to the equi-potential bonding, e.g. for the purpose of protection from lightning strikes, then there shall be the provision to clamp wires with a cross sectional area of 4 mm² to 16 mm².

4.6.2 Operating parameters

4.6.2.1 Voltage range

The warning device shall meet all the functional requirements when the supply voltage range lies between the manufacturers stated values.

4.6.2.2 Slow remote power source voltage rise

When the warning device is subject to a slow input voltage rise from zero of 1 Vs^{-1}, then it shall function normally when the supply voltage reaches the minimum operating voltage.

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