

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Alarm systems – Intrusion and hold-up systems –
Part 4: Warning devices
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IEC 62642-4:2010
Systèmes d'alarme – Systèmes d'alarme contre l'intrusion et les hold-up –
Partie 4: Dispositifs d'avertissement

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IEC 62642-4

Edition 1.0 2010-10

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Part 4: Warning devices (standards.iteh.ai)

Systèmes d'alarme – Systèmes d'alarme contre l'intrusion et les hold-up –
Partie 4: Dispositifs d'avertissement

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

W

ICS 13.320

ISBN 978-2-88912-199-1

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**ALARM SYSTEMS –
INTRUSION AND HOLD-UP SYSTEMS –**

Part 4: Warning devices

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International Standard IEC 62642-4 has been prepared by IEC technical committee 79: Alarm and electronic security systems.

This standard is based on EN 50131-4 (2009).

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

FDIS	Report on voting
79/308/FDIS	79/319/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 62642 series can be found, under the general title *Alarm systems – Intrusion and hold-up systems*, on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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INTRODUCTION

This part 4 of the IEC 62642 series of standard gives requirements for warning devices used in intrusion and hold-up alarm systems. The other parts of this series of standards are as follows:

- Part 1 System requirements
- Part 2-2 Intrusion detectors – Passive infrared detectors
- Part 2-3 Intrusion detectors – Microwave detectors
- Part 2-4 Intrusion detectors – Combined passive infrared / microwave detectors
- Part 2-5 Intrusion detectors – Combined passive infrared / ultrasonic detectors
- Part 2-6 Intrusion detectors – Opening contacts (magnetic)
- Part 2-71 Intrusion detectors – Glass break detectors – Acoustic
- Part 2-72 Intrusion detectors – Glass break detectors – Passive
- Part 2-73 Intrusion detectors – Glass break detectors – Active
- Part 3 Control and indicating equipment
- Part 4 Warning devices
- Part 5-3 Interconnections – Requirements for equipment using radio frequency techniques
- Part 6 Power supplies
- Part 7 Application guidelines
- Part 8 Security fog devices/systems

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ALARM SYSTEMS – INTRUSION AND HOLD-UP SYSTEMS –

Part 4: Warning devices

1 Scope

This part of the IEC 62642 includes requirements for warning devices used for notification 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 IEC 62642-1. Requirements are also given for four environmental classes covering applications in internal and outdoor locations as specified in IEC 62599-1.

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.

IEC 60065, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*
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IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60950-1, *Information technology equipment – Safety – Part 1: General requirements*

IEC 61000-6-3, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments*

IEC 61672-1, *Electroacoustics – Sound level meters – Part 1: Specifications*

IEC 62599-1, *Alarm systems – Part 1: Environmental test methods*

IEC 62599-2, *Alarm systems – Part 2: Electromagnetic compatibility – Immunity requirements for components of fire and security alarm systems*

IEC 62642-1, *Alarm systems – Intrusion and hold-up systems – Part 1: System requirements*

IEC 62642-6, *Alarm systems – Intrusion and hold-up systems – Part 6: Power supplies¹*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

¹ Under preparation.

3.1.1**audible alarm**

distinctive sound generated in response to an alarm condition

3.1.2**warning device**

device that gives an audible alarm in response to a notification

NOTE A warning device may also provide alert indications.

3.1.3**external warning device**

warning device designed to be located outside the supervised premises which gives an external audible alarm in response to a notification

3.1.4**internal warning device**

warning device designed to be located within the supervised premises which gives an internal audible alarm in response to a notification

3.1.5**enclosure**

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

3.1.6**external power source**

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

3.1.7**remote power source**

electrical supply, which is not a part of the warning device, meeting the requirements of IEC 62642-6

3.1.8**remotely powered warning device**

warning device that does not incorporate its own power source

3.1.9**self powered warning device**

warning device that incorporates its own power source

3.1.10**standby condition**

operational mode of a self powered warning device during which it is powered from its internal storage device, whilst not notifying an alarm condition

3.1.11**failure** (of the storage device)

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

3.1.12**low voltage** (of the storage device)

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

3.1.13**trigger command**

notification signal or message passed to the warning device

3.1.14

visible damage

damage that would be visible to a person of normal eyesight viewing at a distance of 2 m under an illumination level of 2 000 lx

3.2 Abbreviations

For the purposes of this document, the following abbreviations apply.

CIE	control and indicating equipment
EPS	external power source
I&HAS	intrusion and hold-up alarm system(s)
WD	warning device
IWD	internal warning device

4 General considerations

This standard considers two different categories of warning device, remotely powered and self powered devices.

Self powered warning devices are classified into one of four types, dependent upon the recharge characteristics of the storage device and the source of recharge power. These four types are defined in Table 8.

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5 Requirements

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5.1 Functional <https://standards.iteh.ai/catalog/standards/sist/d080bb49-25cf-476a-bbd0-25d6a58ef020/iec-62642-4-2010>

5.1.1 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	Op ^b	Op ^b	M	M	Op	Op	Op	Op
Monitor of remote power ^a	M	M	M	M	Op	Op	Op	Op
Monitor integrity of trigger command interconnection	Op	Op	M	M	Op	Op	Op	Op
Local self test	Op ^b	Op ^b	M	M	Op	Op	Op	Op
Remote test input	Op	Op	Op	M	Op	Op	Op	Op
Key Op Optional M Mandatory								
^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 8.								
^b Mandatory for type W devices as defined in Table 8.								

Table 2 – Warning device responses

Event	Self powered WD			Remote powered WD		
	Audible alarm	Tamper signal or message	Fault signal or message	Audible alarm	Tamper signal or message	Fault signal or message ^a
Trigger command	M	NP	NP	M	NP	NP
Tamper event at the WD	Op	M	NP	Op	M	NP
Loss of remote power source	Op ^b	Op ^b	Op ^b	N/A	Op	Op
Loss of trigger command interconnection integrity	Op ^c	Op ^c	Op ^c	Op	Op	Op
Local self test pass	NP	NP	NP	NP	NP	NP
Local self test fail	NP	NP	M ^a	NP	NP	M
Remote self test pass	NP	NP	M ^d	NP	NP	M ^d
Remote self test fail	NP	NP	M ^d	NP	NP	M ^d
Key M Mandatory Op 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 shall occur at the warning device. For grade 3 and grade 4 warning devices, if the loss of remote power source can be shown to be caused by a fault then a fault signal is generated, otherwise a tamper signal is generated.						
^c At least one of these actions shall 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 is generated, otherwise a tamper signal shall be generated.						
^d The response to a remote test pass is different from the response to a remote test fail.						

5.1.2 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 that defined in Table 3 at 1 m from the mounting surface of the warning device throughout the manufacturers specified operating voltage range. Peak acoustic output levels, taken at 30° intervals in the horizontal plane, shall not be below the minimum individual level defined in Table 3 at 1 m from the mounting surface. 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°.

Table 3 – Acoustic output levels

	Internal warning device	External warning device
Minimum mean acoustic output level	80 dB(A)	100 dB(A)
Minimum individual acoustic output level	75 dB(A)	95 dB(A)
<p>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.</p> <p>NOTE 2 Voice alarms are deemed to meet the requirements of a varying sound output.</p> <p>NOTE 3 A warning device may also provide audible alert indications providing such indications are easily distinguishable from an alarm.</p> <p>NOTE 4 The acoustic output (sound level and/or frequency) of a warning device may be subject to variation depending on local or national requirements.</p>		

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5.1.3 Timing

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

A warning device shall commence its audible alarm within 1 s of receiving a valid trigger command to do so. It shall cease its audible alarm within 1 s of receiving a valid 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 1 Where applicable this requirement may be achieved by the CIE.

NOTE 2 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 and 2, within 10 s of the fault occurring.

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

5.2 Tamper

5.2.1 Protection

All component parts shall be housed in an enclosure meeting the impact requirements of the appropriate grade given in Table 4.

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

Table 4 – Enclosure construction

Grade	Internal warning device				External warning device			
	1	2	3	4	1	2	3	4
Resistance to impact (IK rating according to IEC 62262)	06	06	07	08	07	07	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, without causing visible damage, to gain access to any electrical connections, or elements providing adjustment, without first generating a tamper signal or message.

When the unit is mounted normally, it shall not be possible, without causing visible damage, to introduce a tool, as defined in Table 5, such that the operation of the warning device could be adversely affected.

Table 5 – Tool dimension for tamper detection
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Dimensions in millimetres

	Grade 1	Grade 2	Grade 3	Grade 4
Steel rod, diameter ($\pm 0,05$ mm)	2,5	2,5	1	1
Flat bar dimensions ($\pm 0,05$ mm)	10 × 1 × 300	10 × 1 × 300	5 × 0,5 × 300	5 × 0,5 × 300

5.2.2 Detection

The tamper detection requirements for warning devices relative to the security grade are given in Table 6.

Opening the warning device enclosure by normal means shall generate a tamper signal or message. The enclosure shall not permit the introduction of a tool of dimension as specified in Table 5 and type as specified in IEC 60529, to defeat the tamper detection.

Attempts to remove the warning device from its mounting surface for a distance defined in Table 7 in a perpendicular direction shall generate a tamper signal or message according to Table 6.

It shall not be possible to defeat the removal from mounting detection by sliding a 25 mm × 1 mm × 300 mm blade, or by use of pliers (of thickness 5 mm and reach 150 mm), 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 6, when a hole of 4 mm is made in the enclosure.