

Alarm systems - Intrusion and hold-up systems -- Part 2-4: Requirements for combined passive infrared and microwave detectors

Alarm systems - Intrusion and hold-up systems --
Part 2-4: Requirements for combined passive
infrared and microwave detectors

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

<p>Käesolev Eesti standard EVS-EN 50131-2-4:2008 sisaldab Euroopa standardi EN 50131-2-4:2008 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 20.02.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.12.2008.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 50131-2-4:2008 consists of the English text of the European standard EN 50131-2-4:2008.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 20.02.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 01.12.2008.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

ICS 13.310**Võtmesõnad:****Standardite reprodutseerimis- ja levitamisoigus kuulub Eesti Standardikeskusele**

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

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
 Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

English version

**Alarm systems -
Intrusion and hold-up systems -
Part 2-4: Requirements for combined passive infrared
and microwave detectors**

Systèmes d'alarme -
Systèmes d'alarme contre l'intrusion
et les hold-up -
Partie 2-4: Exigences pour détecteurs
combinés à infrarouges passifs
et à hyperfréquences

Alarmanlagen -
Einbruch- und Überfallmeldeanlagen -
Teil 2-4: Anforderungen
an Passiv-Infrarotdualmelder
und Mikrowellenmelder

This European Standard was approved by CENELEC on 2007-12-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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

Foreword

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

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50131-2-4 on 2007-12-01.

This European Standard supersedes CLC/TS 50131-2-4:2004.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2008-12-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2010-12-01

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 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 2–7–1 Intrusion detectors – Glass break detectors – Acoustic
- Part 2–7–2 Intrusion detectors – Glass break detectors – Passive
- Part 2–7–3 Intrusion detectors – Glass break detectors – Active
- 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
- Part 8 Security fog devices

Contents

Introduction	5
1 Scope	6
2 Normative references	6
3 Definitions and abbreviations	6
3.1 Definitions	6
3.2 Abbreviations	7
4 Functional requirements	8
4.1 Indication signals or messages	8
4.2 Detection	9
4.3 Operational requirements	10
4.4 Immunity of the individual technologies to incorrect operation	10
4.5 Tamper security	11
4.6 Electrical requirements	12
4.7 Environmental classification and conditions	13
5 Marking, identification and documentation	13
5.1 Marking and/or identification	13
5.2 Documentation	13
6 Testing	14
6.1 General test conditions	14
6.2 Basic detection test	15
6.3 Walk testing	16
6.4 Switch-on delay, time interval between signals and indication of detection	18
6.5 Self tests	18
6.6 Immunity of individual technologies to incorrect operation	18
6.7 Tamper security	19
6.8 Electrical tests	21
6.9 Environmental classification and conditions	22
6.10 Marking, identification and documentation	24
Annexes	
Annex A (normative) Dimensions & Requirements of the standardised Test Magnets	25
Annex B (normative) General testing matrix	28
Annex C (normative) Walk test diagrams	30
Annex D (normative) Procedure for calculation of the average temperature difference between the standard target and the background	33
Annex E (informative) Basic detection target for the basic test of detection capability	34
Annex F (informative) Equipment for walk test velocity control	35
Annex G (informative) Immunity to visible and near Infrared radiation - Notes on calibration of the light source	36
Annex H (informative) Immunity to microwave signal interference by fluorescent lights	37
Annex I (informative) Example list of small tools	38
Annex J (informative) Test for resistance to re-orientation of adjustable mountings	39

Figures

Figure A.1 — Test magnet - Magnet Type 1	26
Figure A.2 — Test magnet - Magnet Type 2	25
Figure C.1 — Detection across the boundary	30
Figure C.2 — Detection within the boundary	30
Figure C.3 — High velocity and intermittent movement	31
Figure C.4 — Close-in detection	31
Figure C.5 — Significant range reduction	32
Figure H.1 — Immunity to fluorescent lamp interference	37
Figure J.1 — Re-orientation test	39

Tables

Table 1 — Events to be processed by grade	8
Table 2 — Generation of signals or messages	8
Table 3 — General walk test velocity and attitude requirements	9
Table 4 — Tamper security requirements	12
Table 5 — Electrical requirements	12
Table 6 — Range of materials for masking tests	21
Table 7 — Operational tests	23
Table 8 — Endurance tests	23

Introduction

This standard deals with combined passive infrared and microwave detectors (to be referred to as the detector) used as part of intrusion alarm systems installed in buildings. It includes four security grades and four environmental classes.

The purpose of the detector is to detect the broad spectrum infrared radiation emitted by an intruder, to emit microwave radiation and analyse signals that are returned and to provide the necessary range of signals or messages to be used by the rest of the intrusion 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 detector. Other types of detector are covered by other documents identified as in EN 50131-2 series.

If a combined detector can be operated in each technology individually, it shall also meet the grade-dependant requirements of the standards having relevance to those technologies.

1 Scope

This standard is for combined passive infrared and microwave 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 standard does not include requirements for 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 influence the correct operation of the mandatory functions.

This European Standard does not apply to system interconnections.

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	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	Alarm systems - Intrusion and hold-up systems - Part 1: System requirements
EN 50131-6	Alarm systems - Intrusion systems - Part 6: Power supplies
EN 60068-1	Environmental testing – Part 1: General and guidance (IEC 60068-1)
EN 60068-2-52	Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution) (IEC 60068-2-52)
EN 60529	Degrees of protection provided by enclosures (IP code) (IEC 60529)

3 Definitions and abbreviations

For the purpose of this European Standard the following definitions and abbreviations apply in addition to those given in EN 50131-1.

3.1 Definitions

3.1.1

basic detection target

heat source and/or microwave reflector designed to verify the operation of a detector

3.1.2

combined passive infrared and microwave detector

detector of the broad-spectrum infrared emitted by a human being, with an active microwave emitter and detector installed in the same casing

3.1.3

incorrect operation

physical condition that causes an inappropriate signal from a detector

3.1.4

masking

interference with the detector input capability by the introduction of a physical barrier such as metal, plastic, paper or sprayed paints or lacquers in close proximity to the detector