

© Copyright SEK Svensk Elstandard. Reproduction in any form without permission is prohibited.

Larmsystem – Inbrotts- och överfallslarm – Del 2-2: Fordringar på passiva IR-detektorer

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

Som svensk standard gäller europastandarden EN 50131-2-2:2021. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50131-2-2:2021.

Nationellt förord

Tidigare fastställd svensk standard SS-EN 50131-2-2, utgåva 2, 2018, gäller ej fr o m 2024-11-08.

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard

Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

English Version

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

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

Alarmanlagen - Einbruch- und Überfallmeldeanlagen - Teil
2-2: Anforderungen an Passiv-Infrarotmelder

This European Standard was approved by CENELEC on 2021-11-08. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword.....	5
Introduction.....	6
1 Scope	7
2 Normative references	7
3 Terms, definitions and abbreviations.....	7
3.1 Terms and definitions	7
3.2 Abbreviations	8
4 Functional requirements.....	8
4.1 Event processing	8
4.2 Detection.....	10
4.2.1 Detection performance	10
4.2.2 Indication of detection.....	11
4.3 Operational requirements	12
4.3.1 Time interval between intrusion signals or messages.....	12
4.3.2 Switch on delay	12
4.3.3 Self-tests.....	12
4.4 Immunity to incorrect operation	12
4.4.1 General	12
4.4.2 Immunity to turbulent warm air flow.....	12
4.4.3 Immunity to visible and near infrared radiation.....	12
4.5 Tamper security.....	13
4.5.1 General	13
4.5.2 Resistance to and detection of unauthorised access to components and means of adjustment	13
4.5.3 Detection of removal from the mounting surface.....	13
4.5.4 Resistance to, or detection of, re-orientation.....	13
4.5.5 Immunity to magnetic field interference.....	13
4.5.6 Detection of masking	14
4.6 Electrical requirements	14
4.6.1 General	14
4.6.2 Detector current consumption	14
4.6.3 Slow input voltage change and voltage range limits	14
4.6.4 Input voltage ripple	14
4.6.5 Input voltage step change	14
4.7 Environmental classification and conditions.....	15
4.7.1 Environmental classification	15
4.7.2 Immunity to environmental conditions	15
5 Marking, identification and documentation	15
5.1 Marking and/or identification.....	15
5.2 Documentation.....	15

6	Testing	16
6.1	General	16
6.2	General test conditions	16
6.2.1	Standard conditions for testing	16
6.2.2	General detection testing environment and procedures	16
6.2.3	Testing environment	16
6.2.4	Mounting height	16
6.2.5	Standard walk test target	17
6.2.6	Testing procedures	17
6.3	Basic detection test	17
6.3.1	General	17
6.3.2	Basic detection targets (BDT)	17
6.3.3	Basic Detection Test procedure	18
6.4	Walk testing	18
6.4.1	General walk test method	18
6.4.2	Verification of detection performance	18
6.4.3	Detection across and within the detection boundary	19
6.4.4	Verify the high-velocity detection performance for detectors with a coverage angle less than or equal to 180°	20
6.4.5	Verify the high-velocity detection performance for detectors with a coverage angle of greater than 180°	21
6.4.6	Verify the intermittent movement detection performance for detectors with a coverage angle less than or equal to 180°	21
6.4.7	Verify the intermittent movement detection performance for detectors with a coverage angle of greater than 180°	21
6.4.8	Verify the close-in detection performance for detectors with a coverage angle less than or equal to 180°	22
6.4.9	Detection of radial movement for detectors with a coverage angle of greater than 180°	22
6.5	Switch-on delay, time interval between signals and indication of detection	22
6.6	Self-tests	23
6.6.1	General	23
6.6.2	Application of the fault condition	23
6.6.3	Local self-test procedure	23
6.6.4	Remote self-test procedure	24
6.7	Immunity to incorrect operation	24
6.7.1	Immunity to turbulent warm air flow	24
6.7.2	Immunity to visible and near infrared radiation	24
6.8	Tamper security	25
6.8.1	Resistance to and detection of unauthorised access to the inside of the detector through covers and existing holes	25
6.8.2	Detection of removal from the mounting surface	25
6.8.3	Resistance to re-orientation of adjustable mountings	25
6.8.4	Immunity to magnetic field interference	25
6.8.5	Detection of detector masking	26
6.8.6	Immunity to False Masking Signals	27
6.9	Electrical tests	27

6.9.1	General	27
6.9.2	Detector current consumption	27
6.9.3	Slow input voltage change and input voltage range limits	28
6.9.4	Input voltage ripple	28
6.9.5	Input voltage step change	28
6.9.6	Total loss of power supply	28
6.10	Environmental classification and conditions	28
6.11	Marking, identification and documentation	30
6.11.1	Marking and/or identification	30
6.11.2	Documentation	30
Annex A (normative) Dimensions and requirements of the standardized test magnets		31
Annex B (normative) General testing matrix		34
Annex C (normative) Walk test diagrams		36
Annex D (normative) Procedure for calculation of the average temperature difference between the standard target and the background		44
Annex E (informative) Basic detection target for the basic test of detection capability		45
Annex F (informative) Equipment for walk test velocity control		46
Annex G (informative) Immunity to visible and near Infrared radiation - Notes on calibration of the light source		47
Annex H (informative) Example list of small tools		48
Annex I (informative) Test for resistance to re-orientation of adjustable mountings		49
Annex J (informative) Delta-T film adjustment lookup table		51
Annex K (informative) Immunity to turbulent warm air flow		52
Bibliography		53

European foreword

This document (EN 50131-2-2:2021) 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) 2022-11-08
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2024-11-08

This document supersedes EN 50131-2-2:2017 and all of its amendments and corrigenda (if any).

EN 50131-2-2:2021 includes the following significant technical changes with respect to EN 50131-2-2:2017:

- editorial changes and refinement of wording;
- removal of significant reduction of range requirements;
- addition of requirements, tests and corresponding Annexes throughout the overall standard, to support ceiling mounted detectors;

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*
- *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*

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Introduction

This document deals with passive infrared 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 analyse the resulting signals 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 version of the document contains limited requirements for Grade 4 detectors. Future revisions of the document are expected to include enhanced requirements for Grade 4 detectors.

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

1 Scope

This document is for passive infrared 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 document does not include requirements for detectors intended for use outdoors.

The purpose of the detector is to detect the broad spectrum infrared radiation emitted by an intruder, to analyse the resulting signals and to provide the necessary range of signals or messages to be used by the rest of the intrusion alarm system.

The grade-dependent requirements of this document apply and it is essential that a detector fulfils all the requirements of the specified grade.

Functions additional to the mandatory functions specified in this document can be included in the detector, providing they do not influence the correct operation of the mandatory functions.

Requirements for system interconnections are not included in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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, 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*