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Alarm systems - Intrusion and hold-up systems - Part 2-3: Intrusion detectors - Microwave detectors

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Systèmes d'alarme - Systèmes d'alarme contre l'intrusion et les hold-up - Partie 2-3: Détecteurs d'intrusion - Détecteurs à hyperfréquences

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**Alarm systems – Intrusion and hold-up systems –
Part 2-3: Intrusion detectors – Microwave detectors**

**Systèmes d'alarme – Systèmes d'alarme contre l'intrusion et les hold-up –
Partie 2-3: Détecteurs d'intrusion – Détecteurs à hyperfréquences**

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CONTENTS

FOREWORD.....	4
INTRODUCTION	6
1 Scope.....	7
2 Normative references.....	7
3 Terms, definitions and abbreviations.....	7
3.1 Terms and definitions	8
3.2 Abbreviations.....	8
4 Functional requirements.....	9
4.1 Event processing	9
4.2 Detection	10
4.3 Operational requirements.....	11
4.4 Immunity to incorrect operation.....	11
4.5 Tamper security	11
4.6 Electrical requirements	13
4.7 Environmental classification and conditions	14
5 Marking, identification and documentation.....	14
5.1 Marking and/or identification	14
5.2 Documentation.....	14
6 Testing.....	15
6.1 General test conditions.....	15
6.2 Basic detection test.....	16
6.3 Walk testing	16
6.4 Switch-on delay, time interval between signals and indication of detection	18
6.5 Self tests.....	19
6.6 Immunity to incorrect operation.....	19
6.7 Tamper security	19
6.8 Electrical tests	21
6.9 Environmental classification and conditions	23
6.10 Marking, identification and documentation	24
Annex A (normative) Dimensions and requirements of the standardised test magnets.....	25
Annex B (normative) General testing matrix	28
Annex C (informative) Walk test diagrams.....	29
Annex D (informative) Equipment for walk test velocity control	32
Annex E (informative) Immunity to microwave signal interference by fluorescent lights	33
Annex F (informative) Example list of small tools	34
Annex G (normative) Test for resistance to re-orientation of adjustable mountings	35
Bibliography.....	36
Figure A.1 – Test magnet – Magnet Type 1	26
Figure A.2 – Test magnet – Magnet Type 2	27
Figure C.1 – Detection across the boundary.....	29
Figure C.2 – Detection within the boundary	29
Figure C.3 – High velocity and intermittent movement	30
Figure C.4 – Close-in detection.....	30

Figure C.5 – Significant range reduction	31
Figure E.1 – Immunity to fluorescent lamp interference	33
Figure G.1 – Re-orientation test	35
Table 1 – Events to be processed by grade	9
Table 2 – Generation of signals or messages	9
Table 3 – General walk test velocity and attitude requirements.....	10
Table 4 – Tamper security requirements	13
Table 5 – Electrical requirements	13
Table 6 – Range of materials for masking tests	21
Table 7 – Operational tests.....	24
Table 8 – Endurance tests.....	24

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ALARM SYSTEMS –
INTRUSION AND HOLD-UP SYSTEMS –**
**Part 2-3: Intrusion detectors –
Microwave detectors**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62642-2-3 has been prepared by IEC technical committee 79: Alarm and electronic security systems.

This standard is based on EN 50131-2-3 (2008).

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

FDIS	Report on voting
79/322/FDIS	79/328/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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This Part 2-3 of the IEC 62642 series of standards gives requirements for microwave detectors. 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 Requirements for interconnections equipment using radio frequency techniques
- Part 6 Power supplies
- Part 7 Application guidelines
- Part 8 Security fog devices/systems

This standard deals with 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 a detector is to emit microwave radiation and analyse returned signals to detect an intruder 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 specification is only concerned with the requirements and tests for the detector. Other types of detector are covered by other documents identified as IEC 62642-2 series.

ALARM SYSTEMS – INTRUSION AND HOLD-UP SYSTEMS –

Part 2-3: Intrusion detectors – Microwave detectors

1 Scope

This part of the IEC 62642 is for microwave detectors installed in buildings and provides for security grades 1 to 4 (see IEC 62642-1), specific or non-specific wired or wire-free detectors, and uses environmental classes I to IV (see IEC 62599-1). This standard does not include requirements for microwave detectors intended for use outdoors.

A detector fulfils 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 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.

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

IEC 60068-2-52, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

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 supplies*

3 Terms, definitions and abbreviations

For the purposes of this document, the terms, definitions and abbreviations given in the IEC 62642-1, as well as the following apply.

3.1 Terms and definitions

3.1.1

basic detection target

microwave reflector designed to verify the operation of a detector

3.1.2

incorrect operation

physical condition that causes an inappropriate signal or message from a detector

3.1.3

masking

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

3.1.4

microwave detector

detector having an active microwave emitter and receiver installed in the same casing

3.1.5

simulated walk test target

non-human or synthetic microwave reflector designed to simulate the standard walk test target

3.1.6

standard walk test target

human being of standard weight and height clothed in close fitting clothing appropriate to the simulation of an intruder

3.1.7

walk test

operational test during which a detector is stimulated by the standard walk test target in a controlled environment

3.1.8

walk test attitude, crawling

crawling attitude that consists of the standard walk test target moving with hands and knees in contact with the floor

3.1.9

walk test attitude, upright

upright attitude that consists of the standard walk test target standing and walking with arms by the sides of the body. The standard walk test target begins and ends a traverse with feet together

3.2 Abbreviations

HDPE	high density polyethylene
EMC	electromagnetic compatibility
SWT	standard walk-test target
BDT	basic detection target
FOV	field of view

4 Functional requirements

4.1 Event processing

Detectors shall process the events shown in Table 1. Detectors shall generate signals or messages as shown in Table 2.

Table 1 – Events to be processed by grade

Event	Grade			
	1	2	3	4
Intrusion detection	M	M	M	M
Tamper detection	Op	M	M	M
Masking detection	Op	Op	M	M
Significant reduction of range	Op	Op	Op	M
Low supply voltage	Op	Op	M	M
Total loss of power supply	Op	M	M	M
Local self test	Op	Op	M	M
Remote self test	Op	Op	Op	M
M = Mandatory Op = Optional				

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 ^a	M	Op	M
Significant reduction of range ^a	M	Op	M
Low supply voltage	Op	Op	M
Total loss of power supply ^b	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 NOTE 1 This permits two methods of signalling a masking or reduction of range event: either by the intrusion signal and fault signal, or by a dedicated masking or reduction of range signal or message. Use of the intrusion signal and fault signal is preferable, as this requires fewer connections between CIE and detector. If multiple events overlap there will be some signal combinations that may be ambiguous. To overcome this ambiguity it is suggested that detectors should not signal 'intrusion' and 'fault' at the same time except to indicate masking. This implies that the detector should prioritise signals, e.g. 1 Intrusion, 2 Fault, 3 Masking. NOTE 2 When, in Table 1, an event may optionally generate signals or messages, they are 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. ^a An independent signal or message may be provided instead. ^b Alternatively total loss of power supply shall be determined by loss of communication with the detector.			