

ALARM SYSTEMS – INTRUSION AND HOLD-UP SYSTEMS –

Part 2-4: Intrusion detectors – Combined passive infrared / Microwave detectors

1 Scope

This part of the IEC 62642 is for combined passive infrared and 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 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 International 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 60529, *Degrees of protection provided by enclosures (IP Code)*

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 IEC 62642-1, as well as the following apply.

3.1 Terms and 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

3.1.5

microwave detector

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

3.1.6

passive infrared detector

detector of the broad-spectrum infrared radiation emitted by a human being

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3.1.7

simulated walk test target

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

3.1.8

standard walk test target

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

3.1.9

walk test

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

3.1.10

walk test attitude, crawling

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

3.1.11**walk test attitude, upright**

attitude that consists of the standard walk test target standing and walking with arms held at 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
PIR	passive infrared
EMC	electromagnetic compatibility
SWT	standard walk-test target
BDT	basic detection target
FOV	field of view

4 Functional requirements**4.1 Indication signals or messages**

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			
^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.			
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, eg 1 Intrusion, 2 Fault, 3 Masking.			
NOTE 2 When, in Table 1, an event may optionally generate signals or messages, they areas shown in this table.			

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4.2 Detection

4.2.1 Detection performance

The detector shall generate an intrusion signal or message when the standard or simulated walk-test target moves at velocities and attitudes specified in Table 3. For detection across the boundary the walk-test distance shall be 1,5 m either side of the boundary. For detection within the boundary the walk-test distance shall be 3,0 m.