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Methods of measurement and declaration of the detection range of detectors – Passive infrared detectors for major and minor motion detection

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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METHODS OF MEASUREMENT AND DECLARATION OF THE DETECTION RANGE OF DETECTORS –

Passive infrared detectors for major and minor motion detection

FOREWORD

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 60730-1 edition 1.1 contains the first edition (2020-06) [documents 23B/1319/FDIS and 23B/1320/RVD] and its amendment 1 (2025-05) [documents 23B/1491/CDV and 23B/1509A/RVC].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 63180 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
23B/1319/FDIS	23B/1320/RVD

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

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

The committee has decided that the contents of this document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

Passive infrared detectors are an important element in an energy efficient building. They allow for switching on and off and for controlling loads in order to achieve an optimum degree of comfort and energy efficiency.

The detectors covered in this document are motion detectors using passive infrared (PIR) technology in electronic control devices and appliance switches whether stand-alone (direct control of one or more applications) or as part of home and building electronic systems or building automation control systems (HBES/BACS) or similar. In the case of HBES/BACS, the resulting action depends on the programming of the relevant HBES/BACS.

The purpose of these detectors is to detect the movement of persons.

Detectors linked to a system may also be assigned other tasks: state reporting, power consumption, event reporting, scenarios, etc. These additional functions are not part of this document.

In order to achieve the energy efficiency targets and comfort, the detectors should operate accurately. In addition, the detection area will need to be provided with sufficient accuracy in order to allow integrators to choose the correct detectors for the needed action.

This document provides a methodology and test procedures for a manufacturer to declare and verify the detection performance of these devices with respect to the detection area.

INTRODUCTION to Amendment 1

This amendment includes the following significant technical changes with respect to the base edition:

a) improvement of general tolerances for the test environment and test equipment;
b) definition of the rotating point of the test arm;
c) addition of the recommended mounting heights for performing the tests;
d) addition of acceleration and deceleration speeds for scaled dummies;
e) modification of the pre-conditioning test at minimum and maximum declared ambient temperature with new performance criteria;
f) addition of an alternative test procedure for large tangential major motion detection areas.

METHODS OF MEASUREMENT AND DECLARATION OF THE DETECTION RANGE OF DETECTORS –

Passive infrared detectors for major and minor motion detection

1 Scope

This document provides a methodology and test procedures to be able to declare and verify the detection area for motion detectors using passive infrared technology in electronic control devices and appliance switches, whether stand-alone (direct control of one or more applications) or as part of home and building electronic systems or building automation control systems (HBES/BACS) or similar.

It also provides a uniform way to present the test results.

The purpose of these detectors is to detect the major and minor movements of persons.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
infrared
IR
optical radiation for which the wavelengths in vacuum are longer than those for visible radiation, that is approximately between 780 nm and 1 mm

[SOURCE: IEC 60050-731:1991, 731-01-05]

3.2
passive infrared detector
electronic detector that measures infrared (IR) light radiating from humans in its field of view

3.3
motion detector
unit detecting motion that can be part of an electronic control device or an appliance switch

Note 1 to entry: "Electronic control device" is used as a general term to cover electronic switches, HBES/BACS switches and electronic extension units.

3.4
major motion
movement of a person walking into an area or walking within an area