

NEMA Standards Publication

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Occupancy Motion Sensors Standard

National Electrical Manufacturers Association



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FOREWORD

The purpose of this standard is to promote uniformity for the definition and measurement of characteristics relevant to the use and application of occupancy motion sensors. The standard is not intended to set performance levels.

In the preparation of this standard publication, input of users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the NEMA Wiring Device Section by contacting the:

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This is the first edition of this standard. It was developed from a former technical guide under the same designation.

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This standard was developed by the NEMA Wiring Device Section. Section approval of the guide does not necessarily imply that all section members voted for its approval or participated in its development. At the time it was approved, the NEMA Wiring Device Section was composed of the following members:

2D2C, Inc. — Kitchener, ON, Canada
BSafe Electrix — Manhasset, NY
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Technology Research Corporation — Clearwater, FL
Thomas & Bets Corp. — Memphis, TN
Tyco Electronics Corp — Harrisburg, PA
TyMac — Gilbert, AZ
Watt Stopper, Inc./Legrand — Santa Clara, CA

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Section 1 GENERAL

1.1 SCOPE

This standard publication covers the definition and measurement of field of view and coverage characteristics relevant to the use and application of vacancy and occupancy sensors using individual or any combination of passive infrared, ultrasonic, or microwave technology. These sensors are used in systems for control of lighting, heating, ventilating, and air conditioning (HVAC), and other devices.

1.2 DEFINITIONS

The definitions below apply to terms used in this guide publication or in manufacturers' specification sheets and product literature, or both. Where the terms are used in this guide publication or in a manufacturer's specification sheet or other product literature, the following definitions apply.

bypass: the means of forcing loads into "ON" or "OFF" condition by circumventing the device.

cell: a 3 foot by 3 foot section of the grid.

coverage area: the area in which the sensor can detect motion, comprised of the horizontal and vertical fields of view.

energy consumption: total consumption in milliwatts for 1 hour with the controlled load "ON" for 30 minutes and "OFF" for 30 minutes.

grid: the area in which the sensor is tested divided into 3 foot by 3 foot sections.

horizontal field of view: the area of coverage in a horizontal plane to the sensor while the sensor is mounted in the orientation recommended by the manufacturer. The height of the horizontal field is at a level of 36 ± 1 in. above the ground.

immunity to false activation: the ability to ignore external events which are not intended to activate the product.

initial trigger motion detection: the condition when the sensor is operating in an unoccupied coverage area.

line of sight coverage: the ability to detect motion when there is not any object(s) between the motion and sensor to obscure or to block the detection of motion.

maintained motion detection: the condition when the sensor is operating in an occupied coverage area.

major motion: movement of a person walking into or through an area.

measurement units:

- degrees for viewing angles
- feet (m) for distance
- feet and inches (m) for mounting height
- feet per second (m/s) for velocity
- square feet (m²) for coverage area

microwave: type of occupancy motion sensor that emits a low power microwave into the area being monitored. The frequency of this wave is between 1 GHz and 100 GHz. Changes in the