IEC 62386-303

Edition 1.1 2024-04
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

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Digital addressable lighting interface –
Part 303: Particular requirements – Input devices – Occupancy sensor

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DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 303: Particular requirements – Input devices – Occupancy sensor

FOREWORD

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

IEC 62386-303 edition 1.1 contains the fifth edition (2017-05) [documents 34C/1313/FDIS and 34C/1333/RVD] and its amendment 1 (2024-04) [documents 34/1013/CDV and 34/1078A/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 62386-303 has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical committee 34: Lamps and related equipment.

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

This Part 303 of IEC 62386 is intended to be used in conjunction with:

- Part 101, which contains general requirements for system components;
- Part 103, which contains general requirements for control devices.

A list of all parts in the IEC 62386 series, published under the general title: *Digital addressable lighting interface*, can be found on the IEC website.

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- withdrawn, or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.

IMPORTANT – The *'colour inside'* logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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INTRODUCTION

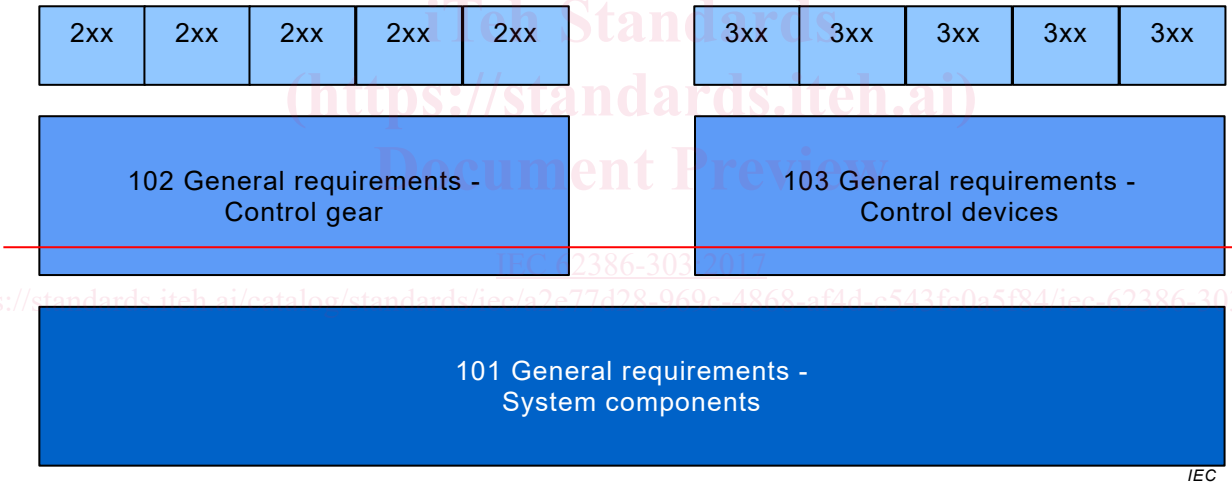
IEC 62386 contains several parts, referred to as series. The 1xx series includes the basic specifications. Part 101 contains general requirements for system components, Part 102 extends this information with general requirements for control gear and Part 103 extends it further with general requirements for control devices.

The 2xx parts extend the general requirements for control gear with lamp specific extensions (mainly for backward compatibility with Edition 1 of IEC 62386) and with control gear specific features.

The 3xx parts extend the general requirements for control devices with input device specific extensions describing the instance types as well as some common features that can be combined with multiple instance types.

This first edition of IEC 62386-303 is to be used in conjunction with ~~IEC 62386-101:2014, IEC 62386-101:2014/AMD1:—~~ IEC 62386-101:2022, ~~IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—~~ IEC 62386-103:2022. The division of IEC 62386 into separately published parts provides for ease of future amendments and revisions. Additional requirements will be added as and when a need for them is recognized.

The setup of the standards is graphically represented in Figure 1 below.



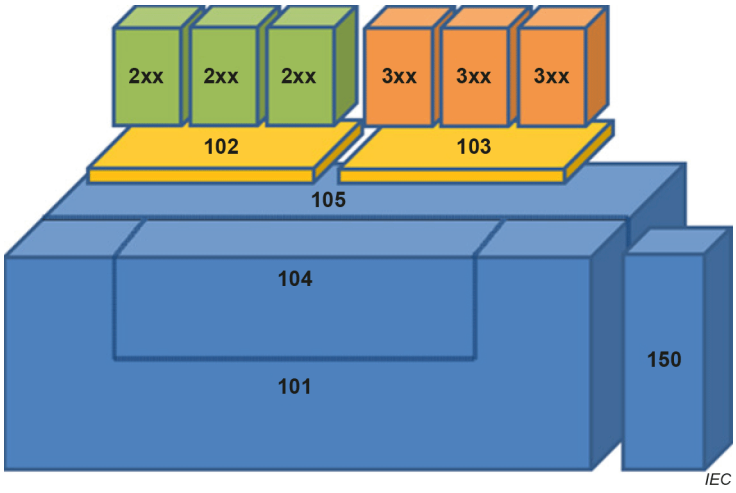


Figure 1 – IEC 62386 graphical overview

This document, and the other parts that make up the IEC 62386-300 series, in referring to any of the clauses of IEC 62386-1XX, specifies the extent to which such a clause is applicable; the parts also include additional requirements, as necessary.

Where the requirements of any of the clauses of IEC 62386-1XX are referred to in this document by the sentence “The requirements of IEC 62386-1XX, Clause “n” apply”, this sentence is to be interpreted as meaning that all requirements of the clause in question of Part 1XX apply, except any which are clearly inapplicable.

The standardization of the control interface for control devices is intended to achieve compatible co-existence and multi-master operation between electronic control gear and lighting control devices, below the level of building management systems. This document describes a method of implementing occupancy sensors.

All numbers used in this document are decimal numbers unless otherwise noted. Hexadecimal numbers are given in the format 0xVV, where VV is the value. Binary numbers are given in the format XXXXXXXXb or in the format XXXX XXXX, where X is 0 or 1; “x” in binary numbers means “don't care”.

The following typographic expressions are used:

Variables: *“variableName”* or *“variableName[3:0]”*, giving only bits 3 to 0 of *“variableName”*.

Range of values: [lowest, highest]

Command: “COMMAND NAME”

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DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 303: Particular requirements – Input devices – Occupancy sensor

1 Scope

~~This part of IEC 62386 specifies a bus system for control by digital signals of electronic lighting equipment which is in line with the requirements of IEC 61347, with the addition of DC supplies.~~

~~This document is only applicable to IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:— input devices that deliver occupancy information to the lighting control system through movement or presence sensing.~~

~~NOTE Requirements for testing individual products during production are not included.~~

This part of IEC 62386 is applicable to input devices that provide occupancy information to the lighting control system through movement or presence sensing.

This document is only applicable to input devices complying with IEC 62386-103:2022.

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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.

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IEC 62386-101:~~2014~~2022, *Digital addressable lighting interface – Part 101: General requirements – System components*
~~IEC 62386-101:2014/AMD1:—~~[1]

IEC 62386-103:~~2014~~2022, *Digital addressable lighting interface – Part 103: General requirements – Control devices*
~~IEC 62386-103:2014/AMD1:—~~[2]

IEC 62386-333:~~—~~[3]2018, *Digital addressable lighting interface – Part 333: Particular requirements for control devices – Manual configuration (feature type 33)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62386-101 and IEC 62386-103 and the following apply.

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

~~1 Under preparation. Stage at the time of publication: IEC ACDV 62386-101/AMD1:2017.~~

~~2 Under preparation. Stage at the time of publication: IEC ACDV 62386-103/AMD1:2017.~~

~~3 Under preparation. Stage at the time of publication: IEC CCDV 62386-333:2017.~~

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

3.1
instance
movement or presence input signal processing unit of an input device

[SOURCE: IEC 62386-101:~~2014~~2022, 3.29, modified – "movement or presence input" added]

3.2
movement sensor
instance based on movement detection only where occupancy is implied by movement and vacancy is concluded from the absence of movement during a specified amount of time

Note 1 to entry: Movement sensing is typically done using a passive infra-red detector combined with Fresnel optics.

3.3
presence sensor
instance based on means other than only movement detection where occupancy and vacancy can be concluded immediately and where, in some cases, movement can also be detected

Note 1 to entry: Presence sensing may be implemented using for example camera based systems.

4 General

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4.1 General

The requirements of ~~IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—~~ IEC 62386-103:2022, Clause 4 apply, with the restrictions, changes and additions identified below.

4.2 Version number

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In 4.2 of ~~IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—~~ IEC 62386-103:2022, "103" shall be replaced by "303", "version number" shall be replaced by "extended version number" and "*versionNumber*" shall be replaced by "*extendedVersionNumber*".

4.3 Insulation

According to ~~IEC 61347-1~~ applicable safety standards, it ~~might~~ can be required that the input device has at least supplementary insulation to accessible parts. This depends on the connected components. In this case special attention should be paid with respect to the sensor(s) being used.

NOTE ~~IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—~~ IEC 62386-103:2022 requires system components to have at least basic insulation.

5 Electrical specification

The requirements of ~~IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—~~ IEC 62386-103:2022, Clause 5 apply.

6 Interface power supply

The requirements of ~~IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—~~ IEC 62386-103:2022 IEC 62386-103:2022, Clause 6 apply.

7 Transmission protocol structure

The requirements of ~~IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—~~ IEC 62386-103:2022, Clause 7 apply.

NOTE Subclause 9.4 provides detailed event information applicable to instances.

8 Timing

The requirements of ~~IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—~~ IEC 62386-103:2022, Clause 8 apply.

9 Method of operation

9.1 General

The requirements of ~~IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—~~ IEC 62386-103:2022, Clause 9 apply, with the following restrictions and additions.

9.2 Instance type

The instance type (*"instanceType"*) shall be equal to 3.

9.3 Input signal and value

9.3.1 General

The input *"resolution"* shall be equal to 2.

NOTE 1 A *"resolution"* of 2 implies that *"inputValue"* is a single byte variable with possible values limited to 0x00, 0x55, 0xAA and 0xFF.

NOTE 2 Since *"inputValue"* is a single byte variable, the instance will answer NO to "QUERY INPUT VALUE LATCH".

"inputValue" shall reflect the occupancy state in the area covered by the sensor, as shown in Table 1.

Table 1 – Meaning of *"inputValue"*

"inputValue"	Area state	Movement
0x00	Vacant	No
0x55	Vacant	Yes
0xAA	Occupied	No
0xFF	Occupied	Yes

9.3.2 Input signal mapping for movement sensors

For movement sensors, the input signal shall directly map onto movement (only). Depending on the type of sensor used, it is possible that a very short pulse can be produced only when movement is first detected, or a longer signal can be produced whilst movement continues to be detected. In any case, the instance shall change "*inputValue*" to 0xFF immediately if movement is detected, remaining in this state for at least 1 s, thus reporting an occupied area state as well. See Figure 2.

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NOTE 1 This means that an instance receiving a rapid succession of movement signals which are less than 1 s apart, will remain in the occupied and movement state, and will create a movement event only at the time it entered this state.

A movement sensor shall support a hold timer, with timeout value T_{hold}~~, which shall be (re)started each time movement is detected~~. A transition of *"inputValue"* to 0x00 shall only take place at the moment the hold timer expires or is cancelled. In such a case the "vacant" trigger shall be generated. (Re)starting the hold timer means: "discard any remaining hold time and start timing a new hold time period".

While the area is occupied, the *"inputValue"* shall change between 0xFF and 0xAA depending on momentary movement detection only.

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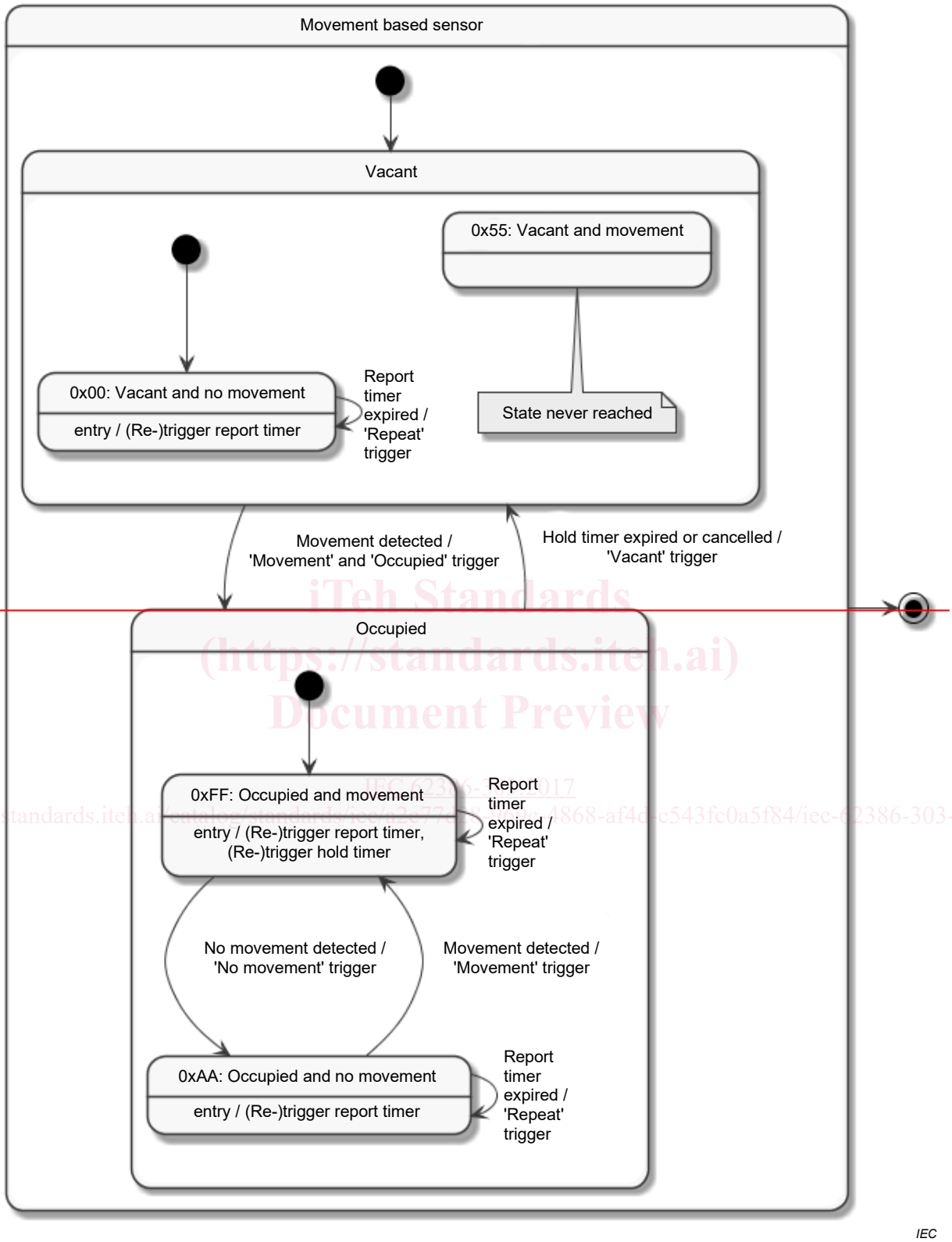

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