IEC 62386-302

Edition 1.0 2017-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Digital addressable lighting interface –
Part 302: Particular requirements – Input devices – Absolute input devices

Interface d'éclairage adressable numérique –
Partie 302: Exigences particulières – Dispositifs d'entrée – Dispositifs d'entrée absolus

IEC 62386-302:2017-05(en-fr)

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.140.50; 29.140.99

ISBN 978-2-8322-4342-8

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FOREWORD

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International Standard IEC 62386-302 has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical committee 34: Lamps and related equipment.

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

FDIS	Report on voting
34C/1312/FDIS	34C/1332/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.

This Part 302 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 will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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- withdrawn,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

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.

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 62386-302 is intended to be used in conjunction with IEC 62386-101:2014, IEC 62386-101:2014/AMD1:—, IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—. 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.

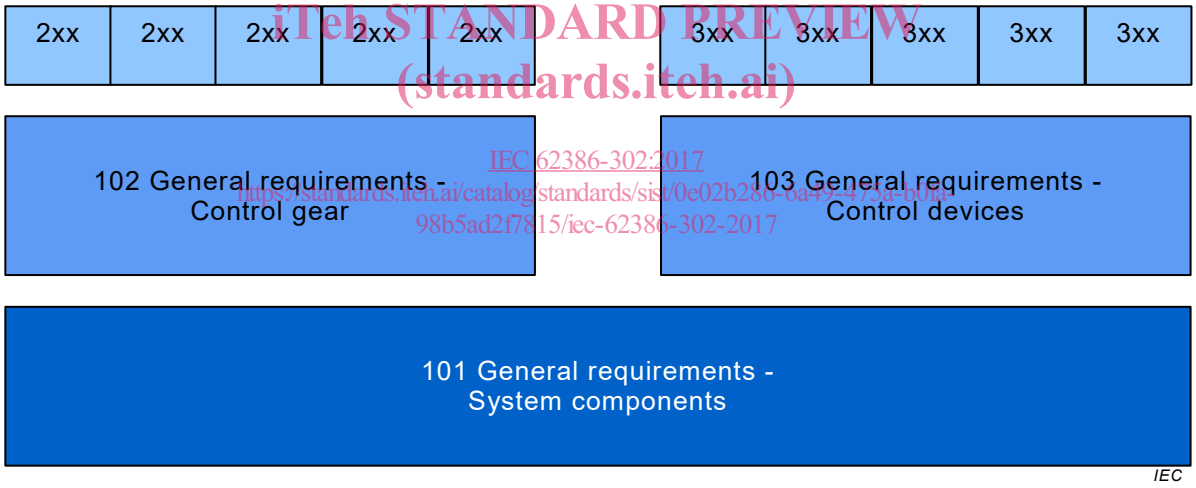

Figure 1 – IEC 62386 graphical overview

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; 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 control devices.

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”

DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 302: Particular requirements – Input devices – Absolute input devices

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 make the lighting control system sensitive to absolute input devices such as switches or sliders. An absolute input device always has a deterministic state, such as a position between start and end point.

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

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.

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

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

IEC 62386-333:—[3], *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:

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

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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.

3.1
instance
analogue or binary signal processing unit of an input device

[SOURCE: IEC 62386-101:2014, 3.29, modified — addition of “analogue or binary”]

3.2
analogue input
means for the environment to interact with the lighting control system and known to be represented by a specific value relative to the known upper and lower boundary

3.3
binary input
means for the environment to interact with the lighting control system and known to be in open or closed state

3.4
bouncing
tendency of any two contacts in an electronic device to generate multiple signals as the contacts close or open

3.5
debouncing
any kind of hardware device or software that ensures that only a single signal will be acted upon for a single opening or closing of a contact

3.6
slider
means for the end user to interact with a control lighting system and known to be in a specific position

3.7
strictly monotonic
either entirely increasing or decreasing without repeating values

Note 1 to entry: Function f defined on a subset of the real numbers with real values is called monotonically increasing, if for all x and y such that $x < y$ one has $f(x) < f(y)$, so f preserves the order. Likewise, a function is called monotonically decreasing if, whenever $x < y$, then $f(x) > f(y)$ so it reverses the order. For this document strictly monotonic is defined as either monotonically increasing or monotonically decreasing.

3.8
switch
means for the end user to interact with the lighting control system and known to be in open or closed state

4 General

4.1 General

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

4.2 Version number

In 4.2 of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, “103” shall be replaced by “302”, “version number” shall be replaced by “extended version number” and “*versionNumber*” shall be replaced by "*extendedVersionNumber*".

4.3 Insulation

According to IEC 61347-1 it might be required that the input device has at least supplementary insulation. This depends on the connected components. In case internal sliders or switches are used, the input device shall have at least supplementary insulation. In case of external connected components, it depends on the requirements imposed on these components.

NOTE IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:— requires system components to have at least basic insulation. Sliders and switches are intended to be safely operable by end users.

5 Electrical specification

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

6 Interface power supply

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

7 Transmission protocol structure

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

NOTE Subclause 9.3.3.2 provides detailed event information applicable to instances.

8 Timing

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

9 Method of operation

9.1 General

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

9.2 Instance type

The instance type (*"instanceType"*) shall be equal to 2.

9.3 Input signal and value

9.3.1 General

"inputValue" shall reflect the input signal as shown in Table 1.

Table 1 – Relation of input signal and "*inputValue*"

"inputValue"	Slider	Analogue input	Switch or binary input
0x00	Minimum position	Lower boundary value	Open contact
[0x01,2^"*resolution*" - 2] [a]	Position indication, linear between min. and max. position [a]	Linear [b] representation of the value between the upper and lower boundary	Closed contact [c]
[2^"*resolution*" - 1]	Maximum position	Upper boundary value	

[a] Only applicable if "*resolution*" ≥ 2.

[b] Unless specifically stated otherwise.

[c] The maximum value depends on the available positions of the switch with respect to the reported resolution.

A bouncing input signal shall be adequately debounced to ensure

- a single change of *"inputValue"*;
- a single "INPUT NOTIFICATION" event message.

9.3.2 Binary inputs

9.3.2.1 General

For binary inputs the manual/documentation shall clearly state the relationship between "*inputValue*" and the externally applied signal. At least the following parameters shall be specified:

- input signal range that shall be considered to represent an open contact;
- input signal range that shall be considered to represent a closed contact.

9.3.2.2 Switch input

For switch inputs the manual/documentation shall clearly state any particular requirements for the switches that can be connected.

A position change for a switch shall be considered as one action leading to one event at most.

9.3.3 Analogue inputs

9.3.3.1 General

For analogue inputs the manual/documentation shall clearly state the relationship between "*inputValue*" and the externally applied signal. At least the following parameters shall be specified:

- input signal that shall be considered to represent the "*inputValue*" (0);
- input signal that shall be considered to represent the "*inputValue*" ([2^"*resolution*" - 1]);
- the physical limits of the input signal that the analogue input can withstand.

Unless specifically stated otherwise the relationship between the input signal and "*inputValue*" shall be linear.

9.3.3.2 Slider input

For slider inputs the manual/documentation shall clearly state any particular requirements for the sliders that can be connected.