SLOVENSKI STANDARD
oSIST prEN IEC 62386-306:2023

01-februar-2023

Digitalni naslovljivi vmesnik za razsvetljavo - 306. del: Posebne zahteve - Vhodne naprave - Senzor za splošno uporabo

Digital addressable lighting interface - Part 306: Particular requirements - Input devices - General purpose sensor

Ta slovenski standard je istoveten z: prEN IEC 62386-306:2022

ICS:

29.140.50	Instalacijski sistemi za razsvetljavo	Lighting installation systems
35.200	Vmesniška in povezovalna oprema	Interface and interconnection equipment

oSIST prEN IEC 62386-306:2023 en

34/991/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 62386-306 ED1**	
DATE OF CIRCULATION: **2022-12-09**	CLOSING DATE FOR VOTING: **2023-03-03**
SUPERSEDES DOCUMENTS: **34/895/NP, 34/917/RVN**	

IEC TC 34 : LIGHTING	
SECRETARIAT: United Kingdom	SECRETARY: Mr Petar Luzajic
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING **Attention IEC-CENELEC parallel voting** The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Digital addressable lighting interface - Part 306: Particular requirements - Input devices - General purpose sensor

PROPOSED STABILITY DATE: 2026

NOTE FROM TC/SC OFFICERS:

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 306: Particular requirements – Input devices – General purpose sensor

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62386-306 has been prepared by IEC technical committee 34: Lighting. It is an International Standard.

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

FDIS	Report on voting
-	-

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.

The language used for the development of this International Standard is English.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

This Part 306 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 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 a series. The IEC 62386 series specifies a bus system for control by digital signals of electronic lighting equipment. The IEC 62386-1xx 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. Parts 104 and 105 can be applied to control gear or control devices. Part 104 gives requirements for wireless and alternative wired system components. Part 105 describes firmware transfer. Part 150 gives requirements for an auxiliary power supply which can be stand-alone, or built-into control gear or control devices.

The IEC 62386-2xx series extends 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 IEC 62386-3xx series extends 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 62386-306 is intended to be used in conjunction with IEC 62386-101 and IEC 62386-103. The division 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 recognised.

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

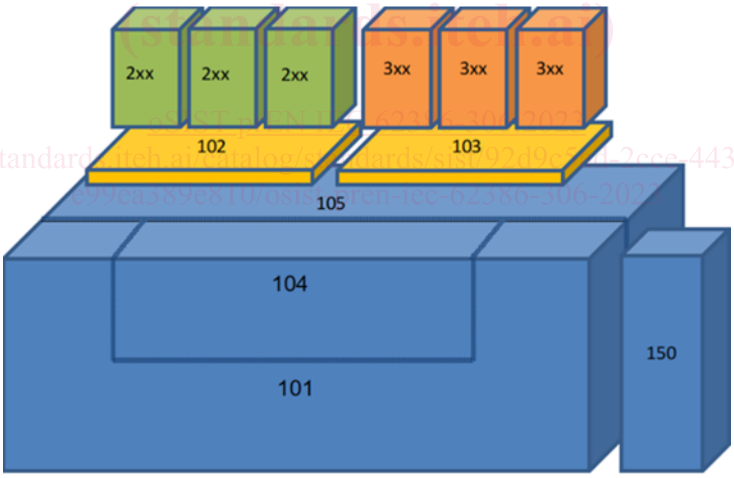

Figure 1 - IEC 62386 graphical overview

When this part of IEC 62386 refers to any of the clauses of the parts of the IEC 62386-1xx series, the extent to which such a clause is applicable is specified. The other parts also include additional requirements, as necessary.

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". Where a variable is referred by a bit number, bit 0 is the least significant bit.

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 306: Particular requirements – Input devices – General purpose sensor

1 Scope

This part of IEC 62386 is applicable to input devices that provide sensor information or measurements to the lighting control system.

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

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:–, *Digital addressable lighting interface – Part 101: General requirements – System components*

IEC 62386-103:–, *Digital addressable lighting interface – Part 103: General requirements – Control devices*

IEC 62386-333:2018, *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:

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

3.1
instance
measured value signal processing unit of an input device

[SOURCE: IEC 62386-101:–, 3.29, modified — addition of "measured value"]

3.2
strictly monotonic
either entirely increasing or decreasing without repeating values

3.3
measured value
value obtained by measurement of the input signal

Note 1 to entry: A sensor detecting a temperature of 26 degrees Celsius could have a measured value of 26.

3.4
unit of measurement
real scalar quantity, defined and adopted by convention, with which any other quantity of the same kind can be compared to express the ratio of the second quantity to the first one as a number

Note 1 to entry: A sensor detecting a temperature of 26 degrees Celsius would have a unit of measurement designated as degrees Celsius.

[SOURCE: IEC Electropedia, 112-01-14, modified – Note 2 to entry replaces source notes 2, 3 and 4 to entry]

3.5
quantity name
term designating a property of a phenomenon, body, or substance, where the property has a magnitude that can be expressed by means of a number and a reference

Note 1 to entry: A sensor detecting a temperature of 26 degrees Celsius would have a quantity name defined as temperature.

[SOURCE: IEC Electropedia, 112-01-01/112-01-02, modified — addition of quantity definition and notes to entry have been replaced]

4 General

4.1 General

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

4.2 Version number

In 4.2 of IEC 62386-103:–, “103” shall be replaced by “306”, “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 this case special attention should be paid with respect to the sensor(s) being used.

NOTE IEC 62386-103:– requires system components to have at least basic insulation.

5 Electrical specification

The requirements of IEC 62386-103:–, Clause 5 apply.

6 Interface power supply

The requirements of IEC 62386-103:–, Clause 6 apply.

7 Transmission protocol structure

The requirements of IEC 62386-103:–, Clause 7 apply.

NOTE Subclause 9.4 provides detailed event information applicable to instances.

8 Timing

The requirements of IEC 62386-103:–, Clause 8 apply.

9 Method of operation

9.1 General

The requirements of IEC 62386-103:–, Clause 9 apply, with the following restrictions and additions.

9.2 Instance type

The instance type (*“instanceType”*) shall be equal to 6.

9.3 Input signal and value

9.3.1 Input value

The measured input signal shall be scaled and an offset applied for bipolar inputs, with “*measuredValue*” containing the result with a precision of “*resolution*” bits. “*measuredValue*” shall be encoded in *“inputValue”* as described in IEC 62386-103.

NOTE 1 “*measuredValue*” has “*resolution*” bits, whereas “*inputValue*” has a multiple of 8 bits. For example if “*resolution*”=27 then “*measuredValue*” will be a 27-bit value and “*inputValue*” will be a 32-bit value.

The input signal shall be scaled by the variable “*magnitude*”:

$$\text{scaled input signal} = \text{input signal} / 10^{\text{“}magnitude\text{”}-127}$$

An offset, K, is added to the scaled input signal, depending on the range of the input signal (see 9.3.3). K shall be calculated as follows:

- For bipolar input signals: $K = 2^{\text{“}resolution\text{”}-1} - 1$,
- In all other cases: K = 0.

This gives:

$$\text{“}measuredValue\text{”} = \text{input signal} / 10^{\text{“}magnitude\text{”}-127} + K$$

The resulting “*measuredValue*” shall be a strictly monotonic function of the input signal. Units of measure are listed in A.1, and quantity names are listed in A.2.

NOTE 2 Measured value may be a relative value dependent on the quantity and unit of measure.

EXAMPLE The following example demonstrates the encoding: A sensor has “*resolution*” = 5, “*magnitude*” = 128 and measures input voltages that can extend to negative values. An input signal of -50 V is measured. Scaled input signal = $-50 / 10^{128-127} = -5$. Offset K = 15 is added to this, giving a “*measuredValue*” of 10 (01010b). This has a resolution of 5, so these 5 bits make up the top 5 bits of the 1-byte “*inputValue*” and are repeated in the 3 least significant bits of “*inputValue*”, resulting in 82 (01010010b). When encoding into a 9-bit measurement event (Table 1), this will be encoded as 512+165 (1010100101b) (Bit 9 = 1 indicating a measurement event.)