IEC 62386-102

Edition 3.0 2022-11

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Digital addressable lighting interface – Part 102: General requirements – Control gear

Interface d'éclairage adressable numérique – Partie 102: Exigences générales – Appareillages de commande

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DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 102: General requirements – Control gear

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IEC 62386-102 has been prepared by IEC technical committee 34: Lighting. It is an International Standard.

This third edition cancels and replaces the second edition published in 2014 and Amendment 1:2018. This edition constitutes a technical revision.

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

- the scope has been updated;
- references have been updated;
- memory bank reading of multi-byte values has been added;
- memory bank 0 and common memory bank requirements have been updated;
- reserved memory banks have been updated;

- non-volatile memory (NVM) save time has been added, and SAVE PERSISTENT VARIABLES removed;
- version number has been updated;
- bus unit configuration has been added.

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

Draft	Report on voting
34/948/FDIS	34/989/RVD

Full information on the voting for its approval 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 was drafted in accordance with 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 102 of IEC 62386 is intended to be used in conjunction with Part 101, which contains general requirements for the relevant product type (system), and with the appropriate Part 2xx (particular requirements for control gear) containing clauses to supplement or modify the corresponding clauses in Part 101 and Part 102 in order to provide the relevant requirements for each type of product.

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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.

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- withdrawn,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

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INTRODUCTION

IEC 62386 contains several parts, referred to as 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. Part 104 and Part 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 third edition of IEC 62386-102 is intended to be used in conjunction with IEC 62386-101 and with the various parts that make up the IEC 62386-2xx series for control gear, and can be used together with IEC 62386-103 for control devices. 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.

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

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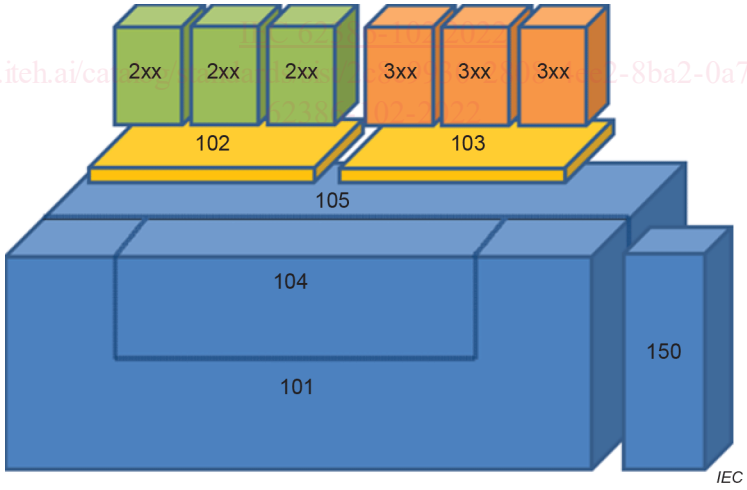

Figure 1 – IEC 62386 graphical overview

When this part of IEC 62386 refers to any of the clauses of the other 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 and "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 102: General requirements – Control gear

1 Scope

This part of IEC 62386 is applicable to control gear for control by digital signals of electronic lighting equipment.

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 62386-101:2022, *Digital addressable lighting interface – Part 101: General requirements – System components*

IEC 62386-103:2022, *Digital addressable lighting interface – Part 103: General requirements – Control devices*

IEC 62386-2xx (all parts), *Digital addressable lighting interface – Part 2xx: Particular requirements for control gear*

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3 Terms and definitions

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

ISO and IEC maintain terminology 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
actual level
value representing the current light output

3.2
arc power
power supplied to the light sources (lamps)

3.3
broadcast
type of address used to simultaneously address all control gear in the system

3.4
broadcast unaddressed
type of address used to simultaneously address all control gear in the system that have no short address

3.5
DAPC
direct arc power control
method to directly control the light output

3.6
DTR
data transfer register
multipurpose register used to exchange data

3.7
group address
type of address used to address a group of control gear in the system all at once

3.8
GTIN
global trade item number
number used for the unique identification of trade items worldwide

Note 1 to entry: For further information see http://en.wikipedia.org/wiki/GTIN.

Note 2 to entry: The global trade item number is comprised of a GS1 or U.P.C. company prefix followed by an item reference number and a check digit. It is described in the "GS1 General Specifications" (see [1]).

3.9
identification
temporary state used during commissioning that allows the installer to identify particular control gear

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3.10
level
8-bit value

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3.11
MASK
value with all binary digits set to 1

Note 1 to entry: This means that an 8-bit backward frame of MASK is a value of 0xFF, and a multi-byte memory location of 24 bits containing MASK is a value of 0xFFFFFF.

3.12
NO
answer to a query where no backward frame is sent

Note 1 to entry: If a query is asked where the answer is NO, there will be no response, such that the sender of the query will conclude "no backward frame" following IEC 62386-101:2022, 8.2.5.

Note 2 to entry: The answer NO could also be triggered by a missed query.

3.13
NVM
non-volatile memory
non-volatile read/write memory, the content of which can be changed and will not be lost due to a power cycle

3.14
NVM-RO
NVM that cannot be written using any command

3.15
NVM-RW
NVM that can be modified using one or more commands

3.16
opcode
operation code
part of a forward frame that identifies the command to be executed

3.17
operating mode
set of states identified by a number in the range [0,255], characterised by a collection of variables and memory settings, and used to select a set of functionalities to be exhibited by a control gear, including its required reaction to commands

Note 1 to entry: Control gear can support more than one operating mode.

3.18
PHM
physical minimum level
level corresponding to the minimum light output the control gear can operate at

3.19
RAM
volatile read/write memory, the content of which can be changed and will be lost due to a power cycle

3.20
RAM-RO
RAM that cannot be written using any command

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3.21
RAM-RW
RAM that can be modified using one or more commands

IEC 62386-102:2022
https://standards.iteh.ai/catalog/standards/sist/2c8c9930-2808-4ee2-8ba2-0a79d065c56d/iec-62386-102-2022

3.22
random address
random 24-bit number generated by the control gear on request during system initialisation

Note 1 to entry: Clause A.1 provides an example of how the search and random addresses are used.

3.23
reset state
state in which all NVM variables of the control gear have their reset value, except those that are marked "no change" or are otherwise explicitly excluded

3.24
ROM
non-volatile read-only memory, the content of which is fixed

Note 1 to entry: In this document read-only is meant from a system perspective. A ROM variable may actually be implemented in NVM, but this document does not provide any mechanism to change its value.

3.25
scene
configurable preset level

3.26
search address
24-bit number used to identify an individual control gear in the system during initialisation

Note 1 to entry: Clause A.1 provides an example of how the search and random addresses are used.