

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Digital addressable lighting interface –
Part 252: Particular requirements – Energy reporting (device type 51)**

**Interface d'éclairage adressable numérique –
Partie 252: Exigences particulières – Collecte des données d'énergie (type de
dispositif 51)**

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IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 252: Particular requirements – Energy reporting (device type 51)

FOREWORD

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

Draft	Report on voting
34/1020/FDIS	34/1041/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 252 of IEC 62386 is intended to be used in conjunction with:

- Part 101, which contains general requirements for system components;
- Part 102, which contains general requirements for control gear.

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- withdrawn,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
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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 first edition of IEC 62386-252 is intended to be used in conjunction with IEC 62386-101:2022 and IEC 62386-102:2022. 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.

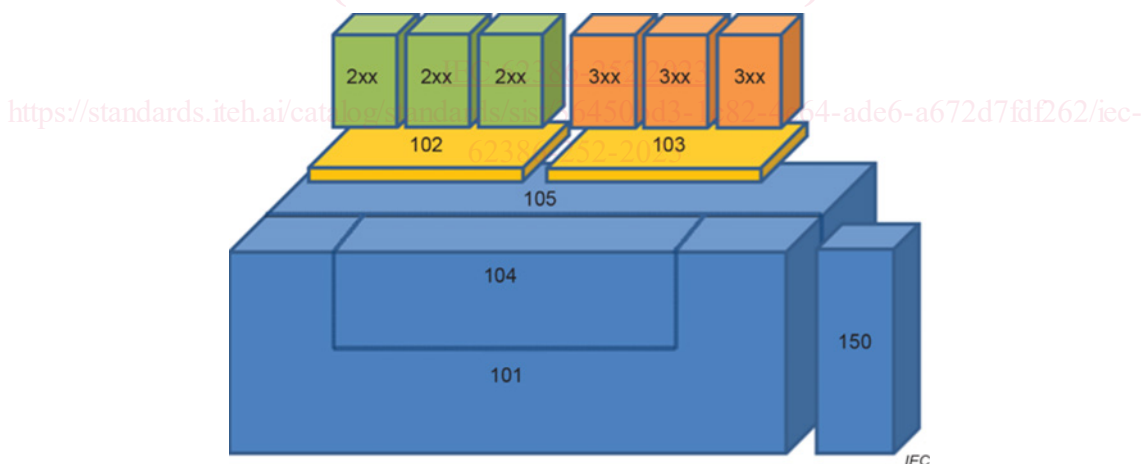


Figure 1 – IEC 62386 graphical overview

When this part of IEC 62386 refers to any of the clauses 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 XXXXXXXb 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 252: Particular requirements – Energy reporting (device type 51)

1 Scope

This part of IEC 62386 specifies the information related to energy reporting accessible through memory banks in control gear. This document builds on the digital addressable lighting interface as specified in the IEC 62386 series, by adding specific requirements for data exchange.

This document is only applicable to control gear complying with IEC 62386-102.

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 62386-102:2022, *Digital addressable lighting interface – Part 102: General requirements – Control gear*

[IEC 62386-252:2023](https://standards.iteh.ai/catalog/standards/sist/36450bd3-1c82-4e64-ade6-a672d7fd262/iec-62386-252-2023)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62386-102 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

active power

mean power over one period

Note 1 to entry: Active power is expressed in watt (W).

3.2

active energy

integral of power over a time interval

Note 1 to entry: Active energy is expressed in watt hour (Wh).

3.3 apparent power

product of the RMS voltage between the terminals of a two-terminal element or two-terminal circuit and the RMS electric current in the element or circuit

Note 1 to entry: Apparent power is expressed in volt ampere (VA).

[SOURCE: IEC 60050-131:2013, 131-11-41, modified – The notes to entry have been replaced by a new Note 1 to entry.]

3.4 apparent energy

integral of apparent power over a time interval

Note 1 to entry: Apparent energy is expressed in volt ampere hour (VAh)

3.5 load side power

power supplied to the lamps connected to the logical unit, including corresponding conversion losses

Note 1 to entry: Load side power is expressed in watt (W).

3.6 load side energy

integral of load side power over a time interval

Note 1 to entry: Load side energy is expressed in watt hour (Wh).

4 General

4.1 General

The requirements of IEC 62386-102:2022, Clause 4 apply, with the restrictions, changes and additions identified below.

4.2 Version number

In IEC 62386-102:2022, 4.2, "102" shall be replaced by "252", "version number" shall be replaced by "extended version number" and "*versionNumber*" shall be replaced by "*extendedVersionNumber*".

5 Electrical specification

The requirements of IEC 62386-102:2022, Clause 5 apply.

6 Bus power supply

The requirements of IEC 62386-102:2022, Clause 6 apply.

7 Transmission protocol structure

The requirements of IEC 62386-102:2022, Clause 7 apply.

8 Timing

The requirements of IEC 62386-102:2022, Clause 8 apply.

9 Method of operation

9.1 General

The requirements of IEC 62386-102:2022, Clause 9 apply with the following additions.

9.2 Memory banks

9.2.1 General

The requirements of IEC 62386-102:2022, 9.10 apply with the following additions and changes.

9.2.2 Accuracy of measurements

The accuracy of measurements for the values in the memory banks is determined by the manufacturer and is not specified in this document.

9.2.3 Rounding of measurement values

Measurement values shall be rounded to the nearest integer, with values ending in 0,5 rounded up.

9.2.4 Refresh rate of memory bank values

The minimum refresh rate of all memory bank values shall be one refresh cycle in 30 s. The minimum refresh rate shall be valid if the control gear is powered regardless of the status of "lampOn".

9.2.5 No overflow of counters

Counters shall not overflow. Their maximum value shall be MASK – 2, representing the given value or more.

9.2.6 Memory bank 202, active energy and power

Table 1 shows the memory bank 202 content. All locations shall be common for all logical units, such that a change to any location in one logical unit shall be reflected in the other logical units.

Table 1 – Memory bank 202, active energy and power

Address	Description	Default value (factory)	Reset value ^a	Memory type	Multi-output requirement ^e
0x00	Address of last accessible memory location	0x0F	No change	ROM	Ind ^f
0x01	Indicator byte	Manufacturer-specific	Manufacturer-specific	Manufacturer-specific	Ind ^f
0x02	Lock byte Lockable bytes in the memory bank shall be read-only while the lock byte has a value different from 0x55. Latching of the complete memory bank can be achieved by writing a value of 0xAA to this location. See IEC 62386-102:2022, 9.10.5.5.	0xFF	0xFF ^b	RAM-RW	Ind ^f
0x03	Version of the memory bank	0x01	No change	ROM	Ind ^f
0x04	ScaleFactorForActiveEnergy Scale factor for ActiveEnergy values in this memory bank, expressed as a power of 10 (scale factor = $10^{\text{ScaleFactorForActiveEnergy}} \times 1 \text{ Wh}$); for example: -3 denotes 1 mWh, +3 denotes 1 kWh Range of validity: [0, 6], [0xFA, 0xFF] ^c	Control gear dependent	No change	ROM	Ind ^f
0x05	ActiveEnergy (MSB)	0x00	No change	NVM-RO	Ind ^f
0x06	ActiveEnergy	0x00	No change	NVM-RO	Ind ^f
0x07	ActiveEnergy	0x00	No change	NVM-RO	Ind ^f
0x08	ActiveEnergy	0x00	No change	NVM-RO	Ind ^f
0x09	ActiveEnergy	0x00	No change	NVM-RO	Ind ^f
0x0A	ActiveEnergy (LSB) The total active energy input for the control gear. See Annex A. The scale factor is defined by ScaleFactorForActiveEnergy (0x04) Range of validity: [0, 0xFF FF FF FF FF FD] ,TMASK	0x00	No change	NVM-RO	Ind ^f
0x0B	ScaleFactorForActivePower Scale factor for ActivePower values in this memory bank, expressed as a power of 10 (scale factor = $10^{\text{ScaleFactorForActivePower}} \times 1 \text{ W}$); for example: -3 denotes 1 mW, +3 denotes 1 kW Range of validity: [0, 6], [0xFA, 0xFF] ^c	Control gear dependent	No change	ROM	Ind ^f
0x0C	ActivePower (MSB)	^d	No change	RAM-RO	Ind ^f
0x0D	ActivePower	^d	No change	RAM-RO	Ind ^f
0x0E	ActivePower	^d	No change	RAM-RO	Ind ^f