

SLOVENSKI STANDARD
SIST EN IEC 62386-103:2023**01-februar-2023****Nadomešča:****SIST EN 62386-103:2015****SIST EN 62386-103:2015/A1:2019**

Digitalni naslovljivi vmesnik za razsvetljavo - 103. del: Splošne zahteve - Krmilne naprave (IEC 62386-103:2022)

Digital addressable lighting interface - Part 103: General requirements - Control devices (IEC 62386-103:2022)

Digital adressierbare Schnittstelle für die Beleuchtung - Teil 103: Allgemeine Anforderungen - Steuergeräte (IEC 62386-103:2022)

Interface d'éclairage adressable numérique - Partie 103: Exigences générales - Dispositifs de commande (IEC 62386-103:2022)

Ta slovenski standard je istoveten z: EN IEC 62386-103:2022**ICS:**

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

SIST EN IEC 62386-103:2023**en**

EUROPEAN STANDARD

EN IEC 62386-103

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2022

ICS 29.140.50; 29.140.99

Supersedes EN 62386-103:2014;
EN 62386-103:2014/A1:2018

English Version

**Digital addressable lighting interface - Part 103: General
requirements - Control devices
(IEC 62386-103:2022)**Interface d'éclairage adressable numérique - Partie 103:
Exigences générales - Dispositifs de commande
(IEC 62386-103:2022)Digital adressierbare Schnittstelle für die Beleuchtung - Teil
103: Allgemeine Anforderungen - Steuergeräte
(IEC 62386-103:2022)

This European Standard was approved by CENELEC on 2022-12-21. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

EN IEC 62386-103:2022 (E)**European foreword**

The text of document 34/946/FDIS, future edition 2 of IEC 62386-103, prepared by IEC/TC 34 "Lighting" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62386-103:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-09-21
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-12-21

This document supersedes EN 62386-103:2014 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

iTeh STANDARD PREVIEW
Endorsement notice
(standards.itih.ai)

The text of the International Standard IEC 62386-103:2022 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 62386-104:2019 NOTE Harmonized as EN IEC 62386-104:2019 (not modified)

IEC 62386-103:2014 NOTE Harmonized as EN 62386-103:2014 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62386-101	2022	Digital addressable lighting interface - Part 101: General requirements - System components	EN IEC 62386-101	2022
IEC 62386-102	2022	Digital addressable lighting interface - Part 102: General requirements - Control gear	EN IEC 62386-102	2022
IEC 62386-3XX	series	Digital addressable lighting interface - Part 3XX: Particular requirements for control devices	EN 62386-3XX	series

[SIST EN IEC 62386-103:2023](https://standards.iteh.ai/catalog/standards/sist/fccb02d9-1d83-4986-8218-e20e1658e840/sist-en-iec-62386-103-2023)

<https://standards.iteh.ai/catalog/standards/sist/fccb02d9-1d83-4986-8218-e20e1658e840/sist-en-iec-62386-103-2023>



IEC 62386-103

Edition 2.0 2022-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Digital addressable lighting interface –
Part 103: General requirements – Control devices**

**Interface d'éclairage adressable numérique –
Partie 103: Exigences générales – Dispositifs de commande**

<https://standards.iteh.ai/catalog/standards/sist/fccb02d9-1d83-4986-8218-e20e1658e840/sist-en-iec-62386-103-2023>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.140.50; 29.140.99

ISBN 978-2-8322-5966-5

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	7
INTRODUCTION.....	9
1 Scope.....	11
2 Normative references	11
3 Terms and definitions	11
4 General	14
4.1 General.....	14
4.2 Version number	14
5 Electrical specification.....	15
6 Bus power supply	15
7 Transmission protocol structure.....	15
7.1 General.....	15
7.2 24-bit forward frame encoding.....	15
7.2.1 Frame format for instructions and queries.....	15
7.2.2 Frame format for event messages.....	17
8 Timing	18
9 Method of operation.....	18
9.1 General.....	18
9.2 Device features.....	18
9.3 Application controller	18
9.3.1 General	18
9.3.2 Single-master application controller.....	19
9.3.3 Multi-master application controller.....	19
9.4 Input device	20
9.5 Instances of input devices.....	20
9.5.1 General	20
9.5.2 Instance number.....	20
9.5.3 Instance type.....	20
9.5.4 Instance features.....	20
9.5.5 Instance groups.....	21
9.6 Commands excluding event messages.....	21
9.6.1 General	21
9.6.2 Device commands	22
9.6.3 Instance commands.....	22
9.6.4 Feature commands	22
9.7 Event messages	23
9.7.1 Response to event messages.....	23
9.7.2 Device power cycle event.....	23
9.7.3 Input notification event	23
9.7.4 Event message filter.....	24
9.8 Input signal, measured value and “ <i>inputValue</i> ”.....	24
9.8.1 General	24
9.8.2 Input resolution.....	24
9.8.3 Getting the input value.....	25
9.8.4 Notification of changes	26

9.9	System failure.....	26
9.10	Operating a control device	26
9.10.1	Enable/disable the application controller.....	26
9.10.2	Application controller always active	26
9.10.3	Enable/disable event messages.....	27
9.10.4	Quiescent mode	27
9.10.5	Modes of operation	27
9.11	Memory banks	28
9.11.1	General	28
9.11.2	Memory map.....	29
9.11.3	Selecting a memory bank location	30
9.11.4	Protectable memory locations.....	30
9.11.5	Memory bank reading	30
9.11.6	Memory bank writing.....	32
9.11.7	Memory bank 0.....	33
9.11.8	Memory bank 1 (optional)	36
9.11.9	Manufacturer-specific memory banks.....	37
9.11.10	Reserved memory banks	37
9.12	Reset.....	38
9.12.1	Reset operation	38
9.12.2	Reset memory bank operation	38
9.13	Power on behaviour	38
9.13.1	Power on	38
9.13.2	Power cycle notification	39
9.14	Priority use	39
9.14.1	General	39
9.14.2	Priority of input notifications	39
9.15	Assigning short addresses	40
9.15.1	General	40
9.15.2	Random address allocation.....	40
9.15.3	Identification of a device.....	40
9.16	Exception handling	41
9.17	Device capabilities and status information	41
9.17.1	Device capabilities.....	41
9.17.2	Device status.....	41
9.17.3	Instance status	42
9.18	Non-volatile memory	42
9.19	Instance types and configuration.....	42
9.20	Current bus unit configuration	43
10	Declaration of variables	43
11	Definition of commands	45
11.1	General.....	45
11.2	Overview sheets	45
11.3	Event messages	52
11.3.1	INPUT NOTIFICATION (<i>device/instance, event</i>).....	52
11.3.2	POWER NOTIFICATION (<i>device</i>)	52
11.4	Device control instructions	52
11.4.1	General	52
11.4.2	IDENTIFY DEVICE	52

11.4.3	RESET POWER CYCLE SEEN	53
11.5	Device configuration instructions.....	53
11.5.1	General	53
11.5.2	RESET	53
11.5.3	RESET MEMORY BANK (<i>DTR0</i>)	54
11.5.4	SET SHORT ADDRESS (<i>DTR0</i>)	54
11.5.5	ENABLE WRITE MEMORY	54
11.5.6	ENABLE APPLICATION CONTROLLER	54
11.5.7	DISABLE APPLICATION CONTROLLER	54
11.5.8	SET OPERATING MODE (<i>DTR0</i>)	54
11.5.9	ADD TO DEVICE GROUPS 0-15 (<i>DTR2:DTR1</i>)	55
11.5.10	ADD TO DEVICE GROUPS 16-31 (<i>DTR2:DTR1</i>)	55
11.5.11	REMOVE FROM DEVICE GROUPS 0-15 (<i>DTR2:DTR1</i>).....	55
11.5.12	REMOVE FROM DEVICE GROUPS 16-31 (<i>DTR2:DTR1</i>).....	55
11.5.13	START QUIESCENT MODE	55
11.5.14	STOP QUIESCENT MODE	55
11.5.15	ENABLE POWER CYCLE NOTIFICATION.....	55
11.5.16	DISABLE POWER CYCLE NOTIFICATION.....	55
11.5.17	SET EVENT PRIORITY (<i>DTR0</i>).....	55
11.6	Device queries.....	56
11.6.1	General	56
11.6.2	QUERY DEVICE CAPABILITIES.....	56
11.6.3	QUERY DEVICE STATUS	56
11.6.4	QUERY APPLICATION CONTROLLER ERROR	56
11.6.5	QUERY INPUT DEVICE ERROR	56
11.6.6	QUERY MISSING SHORT ADDRESS.....	57
11.6.7	QUERY VERSION NUMBER.....	57
11.6.8	QUERY CONTENT <i>DTR0</i>	57
11.6.9	QUERY NUMBER OF INSTANCES.....	57
11.6.10	QUERY CONTENT <i>DTR1</i>	57
11.6.11	QUERY CONTENT <i>DTR2</i>	57
11.6.12	QUERY RANDOM ADDRESS (H)	57
11.6.13	QUERY RANDOM ADDRESS (M).....	57
11.6.14	QUERY RANDOM ADDRESS (L).....	57
11.6.15	READ MEMORY LOCATION (<i>DTR1</i> , <i>DTR0</i>).....	57
11.6.16	QUERY APPLICATION CONTROLLER ENABLED	58
11.6.17	QUERY OPERATING MODE	58
11.6.18	QUERY MANUFACTURER SPECIFIC MODE	58
11.6.19	QUERY QUIESCENT MODE.....	58
11.6.20	QUERY DEVICE GROUPS 0-7	58
11.6.21	QUERY DEVICE GROUPS 8-15	58
11.6.22	QUERY DEVICE GROUPS 16-23	58
11.6.23	QUERY DEVICE GROUPS 24-31	58
11.6.24	QUERY POWER CYCLE NOTIFICATION	58
11.6.25	QUERY EXTENDED VERSION NUMBER(<i>DTR0</i>)	58
11.6.26	QUERY RESET STATE	59
11.6.27	QUERY APPLICATION CONTROLLER ALWAYS ACTIVE	59
11.6.28	QUERY FEATURE TYPE.....	59
11.6.29	QUERY NEXT FEATURE TYPE.....	59

11.6.30	QUERY EVENT PRIORITY	59
11.7	Instance control instructions	59
11.8	Instance configuration instructions	59
11.8.1	General	59
11.8.2	ENABLE INSTANCE	60
11.8.3	DISABLE INSTANCE	60
11.8.4	SET PRIMARY INSTANCE GROUP (<i>DTR0</i>)	60
11.8.5	SET INSTANCE GROUP 1 (<i>DTR0</i>)	60
11.8.6	SET INSTANCE GROUP 2 (<i>DTR0</i>)	60
11.8.7	SET EVENT SCHEME (<i>DTR0</i>)	60
11.8.8	SET EVENT PRIORITY (<i>DTR0</i>)	61
11.8.9	SET EVENT FILTER (<i>DTR2:DTR1:DTR0</i>)	61
11.8.10	SET INSTANCE TYPE (<i>DTR0</i>)	61
11.8.11	SET INSTANCE CONFIGURATION (<i>DTR0, DTR2:DTR1</i>)	61
11.9	Instance queries	62
11.9.1	General	62
11.9.2	QUERY INSTANCE TYPE	62
11.9.3	QUERY RESOLUTION	62
11.9.4	QUERY INSTANCE ERROR	62
11.9.5	QUERY INSTANCE STATUS	62
11.9.6	QUERY INSTANCE ENABLED	62
11.9.7	QUERY PRIMARY INSTANCE GROUP	62
11.9.8	QUERY INSTANCE GROUP 1	63
11.9.9	QUERY INSTANCE GROUP 2	63
11.9.10	QUERY EVENT SCHEME	63
11.9.11	QUERY INPUT VALUE	63
11.9.12	QUERY INPUT VALUE LATCH	63
11.9.13	QUERY EVENT PRIORITY	63
11.9.14	QUERY FEATURE TYPE	63
11.9.15	QUERY NEXT FEATURE TYPE	64
11.9.16	QUERY EVENT FILTER 0-7	64
11.9.17	QUERY EVENT FILTER 8-15	64
11.9.18	QUERY EVENT FILTER 16-23	64
11.9.19	QUERY INSTANCE CONFIGURATION (<i>DTR0</i>)	64
11.9.20	QUERY AVAILABLE INSTANCE TYPES	65
11.10	Special commands	65
11.10.1	General	65
11.10.2	TERMINATE	65
11.10.3	INITIALISE (<i>device</i>)	65
11.10.4	RANDOMISE	65
11.10.5	COMPARE	66
11.10.6	WITHDRAW	66
11.10.7	SEARCHADDRH (<i>data</i>)	66
11.10.8	SEARCHADDRM (<i>data</i>)	66
11.10.9	SEARCHADDRL (<i>data</i>)	67
11.10.10	PROGRAM SHORT ADDRESS (<i>data</i>)	67
11.10.11	VERIFY SHORT ADDRESS (<i>data</i>)	67
11.10.12	QUERY SHORT ADDRESS	67
11.10.13	WRITE MEMORY LOCATION (<i>DTR1, DTR0, data</i>)	67

11.10.14	WRITE MEMORY LOCATION – NO REPLY (<i>DTR1, DTR0, data</i>)	68
11.10.15	DTR0 (<i>data</i>)	68
11.10.16	DTR1 (<i>data</i>)	68
11.10.17	DTR2 (<i>data</i>)	68
11.10.18	DIRECT WRITE MEMORY (<i>DTR1, offset, data</i>)	68
11.10.19	DTR1:DTR0 (<i>data1, data0</i>)	68
11.10.20	DTR2:DTR1 (<i>data2, data1</i>)	69
11.10.21	SEND TESTFRAME (<i>data</i>)	69
	Bibliography	70
	Figure 1 – IEC 62386 graphical overview	9
	Table 1 – 24-bit command frame encoding	16
	Table 2 – Instance byte in a command frame	16
	Table 3 – 24-bit event message frame encoding	17
	Table 4 – Instance types	20
	Table 5 – Feature types	21
	Table 6 – Instance group variables	21
	Table 7 – Device address information in power cycle event	23
	Table 8 – Event addressing schemes	23
	Table 9 – Measured value ($\approx 50\%$) versus resolution and “ <i>inputValue</i> ”	25
	Table 10 – Example of querying sequence to read a 4-byte input value	25
	Table 11 – Memory types	29
	Table 12 – Basic memory map of memory banks	29
	Table 13 – Memory map of memory bank 0	34
	Table 14 – Memory map of memory bank 1	36
	Table 15 – Control device capabilities	41
	Table 16 – Control device status	42
	Table 17 – Instance status	42
	Table 18 – Current bus unit configuration	43
	Table 19 – Declaration of device variables	44
	Table 20 – Declaration of instance variables	45
	Table 21 – Instance event messages	45
	Table 22 – Device event messages	46
	Table 23 – Standard commands	47
	Table 24 – Special commands (implemented by both application controller and input device)	51
	Table 25 – Device addressing with “INITIALISE (<i>device</i>)”	65

INTERNATIONAL ELECTROTECHNICAL COMMISSION

DIGITAL ADDRESSABLE LIGHTING INTERFACE –**Part 103: General requirements –
Control devices**

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.

IEC 62386-103 has been prepared by IEC technical committee 34: Lighting. It is an International Standard.

This second edition cancels and replaces the first 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:

- a) the scope has been updated;
- b) quiescent mode has been updated;
- c) non-volatile memory (NVM) save time has been added, and SAVE PERSISTENT VARIABLES command removed;
- d) memory bank 0 has been modified, and common memory bank requirements have been added;

- e) IDENTIFY DEVICE has been updated;
- f) version number has been changed;
- g) bus unit configuration has been added; and
- h) instance types and configuration have been added.

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

Draft	Report on voting
34/946/FDIS	34/990/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 103 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 Parts 3xx (particular requirements for control devices) containing clauses to supplement or modify the corresponding clauses in Part 101 and Part 103 in order to provide the relevant requirements for each type of product.

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. [6-103:2023](https://standards.iteh.ai/catalog/standards/sist/fccb02d9-1d83-4986-8218-6-103:2023)

[https://standards.iteh.ai/catalog/standards/sist/fccb02d9-1d83-4986-8218-](https://standards.iteh.ai/catalog/standards/sist/fccb02d9-1d83-4986-8218-6-103:2023)

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 document 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 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 second edition of IEC 62386-103 is intended to be used in conjunction with IEC 62386-101 and with the various parts that make up the IEC 62386-3xx series of particular requirements for control devices, and can be used together with IEC 62386-102 and with the various parts that make up the IEC 62386-2xx series for control gear. 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.

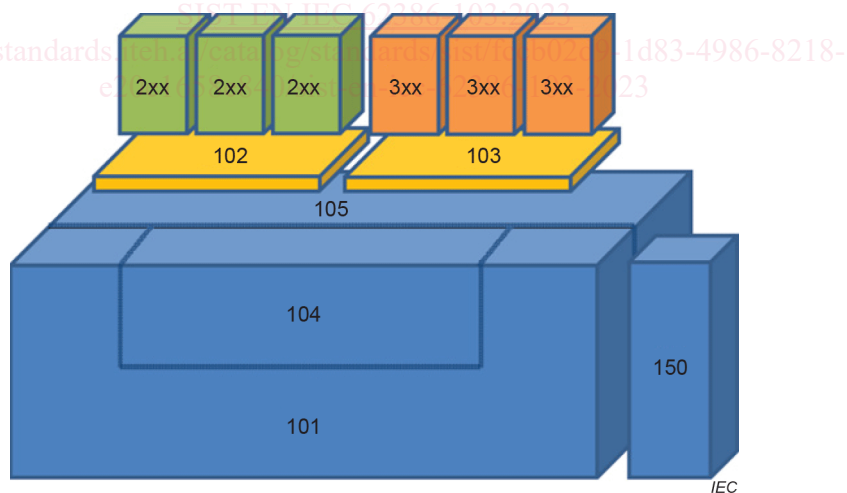


Figure 1 – IEC 62386 graphical overview

When this part of IEC 62386 refers to any of the clauses of the 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, "x" in binary numbers means "don't care".