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INTERNATIONAL STANDARD

colour inside

Digital addressable lighting interface –
Part 105: Particular requirements for control gear and control devices – Firmware transfer

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DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 105: Particular requirements for control gear and control devices – Firmware transfer

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.
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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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 62386-105:2020. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 62386-105 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 2020. This edition constitutes a technical revision.

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

a) several commands have been modified, renamed and added;
b) variables have been modified and added;
c) recommendations for implementation within emergency control gear have been added;
d) requirements for block acceptance have been changed;
e) example process-flow diagrams have been added;
f) requirements for restarting and power-on have been changed.

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

Draft	Report on voting
34/1258/FDIS	34/1281/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/publications.

This document is intended to be used in conjunction with:

- IEC 62386-101, which contains general requirements for system components;
- IEC 62386-102, which contains general requirements for the relevant product type (control gear), and with the appropriate parts of the IEC 62386-2xx series (particular requirements for control gear);
- IEC 62386-103, which contains general requirements for the relevant product type (control devices), and with the appropriate parts of the IEC 62386-3xx series (particular requirements for control devices);
- IEC 62386-104, which contains general requirements for wireless and alternative wired system components.

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, or
- revised.

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 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. IEC 62386-101 contains general requirements for system components, IEC 62386-102 extends this information with general requirements for control gear and IEC 62386-103 extends it further with general requirements for control devices. IEC 62386-104 and IEC 62386-105 can be applied to control gear or control devices. IEC 62386-104 gives requirements for wireless and alternative wired system components. IEC 62386-105 describes firmware transfer. IEC 62386-150 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~~ second edition of IEC 62386-105 is intended to be used in conjunction with IEC 62386-101, IEC 62386-102 and the various parts that make up the IEC 62386-2xx series for control gear, together with IEC 62386-103 and the various parts that make up the IEC 62386-3xx series of particular requirements 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 recognized.

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

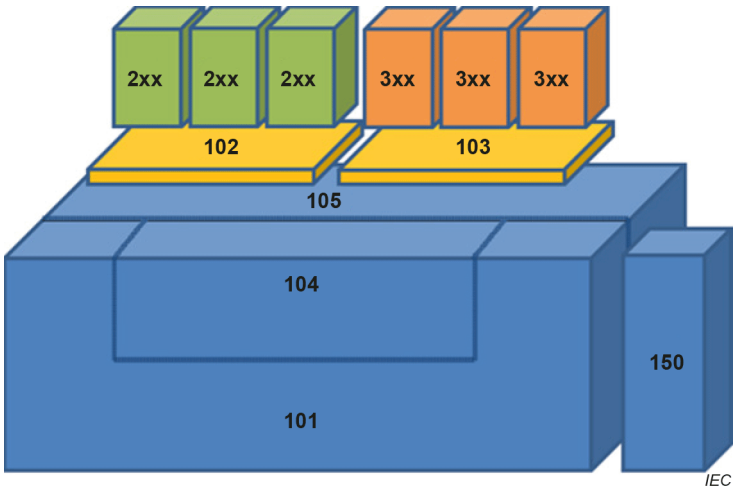


Figure 1 – IEC 62386 graphical overview

When this document refers to any of the clauses of the IEC 62386-1xx series, the extent to which such a clause is applicable ~~and the order in which the tests are to be performed are~~ 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".

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".

Function or command parameters: *parameter name*.

DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 105: Particular requirements for control gear and control devices – Firmware transfer

1 Scope

This part of IEC 62386 applies to control gear and control devices for control by digital signals of electronic lighting equipment.

Typically, a bus unit according to the IEC 62386 series contains firmware. There are circumstances where it ~~might~~ can be necessary to change the firmware after production or shipping of the product, for example if the bus unit does not operate as intended. In such a case, a firmware update of a bus unit via the interface is beneficial.

This firmware update process is primarily designed to be a bug fix process, not a feature extension process. Nevertheless, the firmware update process can be used for feature extensions. But it is important that the risk of negative effects to the complete system be considered in detail.

NOTE Annex D provides a "Firmware update management check sheet" to support risk estimation.

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~~2022, *Digital addressable lighting interface – Part 101: General requirements – System components*
~~IEC 62386-101:2014/AMD1:2018~~

IEC 62386-102:~~2014~~2022, *Digital addressable lighting interface – Part 102: General requirements – Control gear*
~~IEC 62386-102:2014/AMD1:2018~~

IEC 62386-103:~~2014~~2022, *Digital addressable lighting interface – Part 103: General requirements – Control devices*
~~IEC 62386-103:2014/AMD1:2018~~

IEC 62386-105

Edition 2.0 2024-12

INTERNATIONAL STANDARD

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Digital addressable lighting interface – Part 105: Particular requirements for control gear and control devices – Firmware transfer

Interface d'éclairage adressable numérique – Partie 105: Exigences particulières pour appareillages et dispositifs de commande – Transfert du microprogramme



IEC 62386-105:2024-12(en-fr)

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DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 105: Particular requirements for control gear and control devices – Firmware transfer

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- IEC 62386-104, which contains general requirements for wireless and alternative wired system components.

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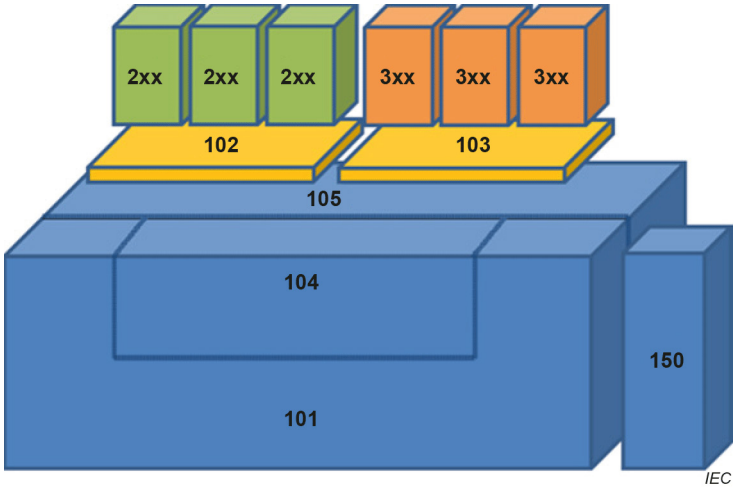


Figure 1 – IEC 62386 graphical overview

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DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 105: Particular requirements for control gear and control devices – Firmware transfer

1 Scope

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Typically, a bus unit according to the IEC 62386 series contains firmware. There are circumstances where it can be necessary to change the firmware after production or shipping of the product, for example if the bus unit does not operate as intended. In such a case, a firmware update of a bus unit via the interface is beneficial.

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2 Normative references

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

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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INTERFACE D'ÉCLAIRAGE ADRESSABLE NUMÉRIQUE –

Partie 105: Exigences particulières pour appareillages et dispositifs de commande – Transfert du microprogramme

AVANT-PROPOS

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L'IEC 62386-105 a été établie par le comité d'études 34 de l'IEC: Éclairage. Il s'agit d'une Norme internationale.

Cette deuxième édition annule et remplace la première édition parue en 2020. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

a) plusieurs commandes ont été modifiées, renommées et ajoutées;
b) des variables ont été modifiées et ajoutées;
c) des recommandations de mise en œuvre dans les appareillages de commande de secours ont été ajoutées;
d) les exigences relatives à l'acceptation des blocs ont été modifiées;
e) des exemples de schémas de flux de processus ont été ajoutés;
f) les exigences relatives au redémarrage et à la mise sous tension ont été modifiées.

Le texte de la présente Norme internationale est issu des documents suivants:

Projet	Rapport de vote
34/1258/FDIS	34/1281/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Le présent document a été rédigé selon les Directives ISO/IEC, Partie 2, et a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/publications.

Le présent document est destiné à être utilisé conjointement avec:

- l'IEC 62386-101, qui contient des exigences générales relatives aux composants de système;
- l'IEC 62386-102, qui contient des exigences générales relatives au type de produit pertinent (appareillages de commande), et les parties appropriées de la série IEC 62386-2xx (exigences particulières relatives aux appareillages de commande);
- l'IEC 62386-103, qui contient des exigences générales relatives au type de produit pertinent (dispositifs de commande), et les parties appropriées de la série IEC 62386-3xx (exigences particulières relatives aux dispositifs de commande);
- IEC 62386-104, qui contient des exigences générales relatives aux composants de système à connexion alternative ou sans fil.

Une liste de toutes les parties de la série IEC 62386, publiées sous le titre général *Interface d'éclairage adressable numérique*, se trouve sur le site web de l'IEC.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous http://webstore.iec.ch dans les données relatives au document recherché. À cette date, le document sera

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utiles à une bonne compréhension de son contenu. Les utilisateurs devraient, par conséquent, imprimer cette publication en utilisant une imprimante couleur.

INTRODUCTION

L'IEC 62386 est composée de plusieurs parties collectivement désignées comme une série. La série IEC 62386 spécifie un système à bus pour la commande par signaux numériques des équipements d'éclairage électroniques. La série IEC 62386-1xx inclut les spécifications de base. L'IEC 62386-101 contient les exigences générales relatives aux composants de système, l'IEC 62386-102 complète ces informations avec les exigences générales relatives aux appareillages de commande et l'IEC 62386-103 complète ces informations avec les exigences générales relatives aux dispositifs de commande. L'IEC 62386-104 et l'IEC 62386-105 peuvent être appliquées aux appareillages ou aux dispositifs de commande. L'IEC 62386-104 définit les exigences relatives aux composants de système à connexion alternative ou sans fil. L'IEC 62386-105 décrit le transfert du microprogramme. L'IEC 62386-150 définit les exigences relatives à une source d'alimentation auxiliaire qui peut être autonome, ou intégrée à des appareillages ou des dispositifs de commande.

La série IEC 62386-2xx étend les exigences générales relatives aux appareillages de commande aux extensions spécifiques aux lampes (principalement pour la rétrocompatibilité avec l'Édition 1 de l'IEC 62386) et aux caractéristiques spécifiques aux appareillages de commande.

La série IEC 62386-3xx étend les exigences générales relatives aux dispositifs de commande aux extensions spécifiques aux dispositifs d'entrée qui décrivent les types d'instances, ainsi que certaines caractéristiques communes qui peuvent être combinées à plusieurs types d'instances.

Cette seconde édition de l'IEC 62386-105 est destinée à être utilisée conjointement avec l'IEC 62386-101, l'IEC 62386-102 et les différentes parties qui composent la série IEC 62386-2xx relatives aux appareillages de commande, ainsi qu'avec l'IEC 62386-103 et les différentes parties qui composent la série IEC 62386-3xx qui spécifient les exigences particulières relatives aux dispositifs de commande. La division en parties publiées séparément facilite les futurs amendements et révisions. Des exigences supplémentaires seront ajoutées en fonction des besoins identifiés.

La structure des normes est représentée sous forme de graphique à la Figure 1 ci-dessous.

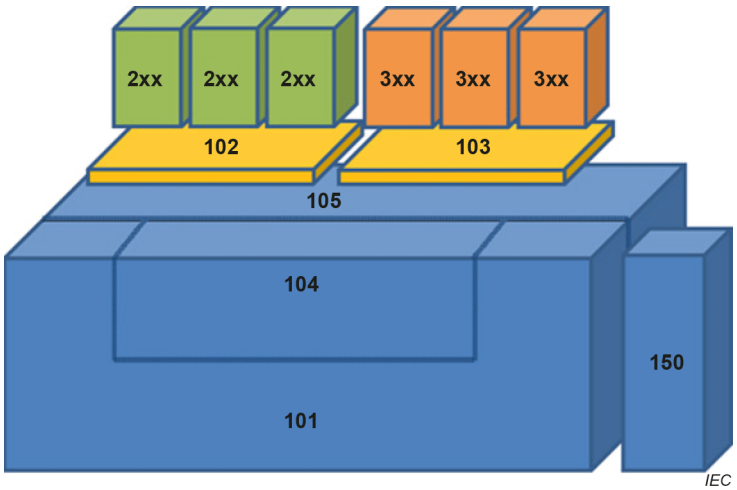


Figure 1 – Vue d'ensemble graphique de l'IEC 62386

Le présent document, tout en faisant référence à un article quelconque de la série IEC 62386-1xx, spécifie la mesure dans laquelle un article s'applique. Les autres parties contiennent également des exigences supplémentaires, si nécessaire.

Tous les nombres utilisés dans le présent document sont des nombres décimaux, sauf indication contraire. Les nombres hexadécimaux sont donnés dans le format 0xVV, où VV est la valeur. Les nombres binaires sont donnés dans le format XXXXXXXXb ou dans le format XXXX, où X est 0 ou 1; "x" dans les nombres binaires signifie "que la valeur n'a pas d'influence".

Les expressions typographiques suivantes sont utilisées:

variables: *variableName* ou *variableName[3:0]*, qui définit uniquement les bits 3 à 0 de *variableName;*

plage de valeurs: [lowest, highest] ([minimale, maximale]);

commande: "COMMAND NAME" (Nom de la commande);

les paramètres de fonction ou de commande: *parameter name*.

INTERFACE D'ÉCLAIRAGE ADRESSABLE NUMÉRIQUE –

Partie 105: Exigences particulières pour appareillages et dispositifs de commande – Transfert du microprogramme

1 Domaine d'application

La présente partie de l'IEC 62386 s'applique aux appareillages et dispositifs de commande par signaux numériques des équipements d'éclairage électroniques.

Un appareillage de bus conforme à la série IEC 62386 contient généralement un microprogramme. Il peut être nécessaire, dans certaines circonstances, de modifier ce microprogramme après la production ou l'expédition du produit, par exemple lorsque l'appareillage de bus ne fonctionne pas comme prévu. Dans ce cas, il est bénéfique de mettre à jour le microprogramme de l'appareillage de bus par l'intermédiaire de l'interface.

Ce processus de mise à jour du microprogramme est principalement conçu comme un processus de correction des bogues et non comme un processus d'extension de caractéristiques. Le processus de mise à jour du microprogramme peut néanmoins être utilisé pour l'extension des caractéristiques. Il est important cependant d'étudier en détail le risque d'effets négatifs sur le système entier.

NOTE L'Annexe D fournit une "fiche de vérification de gestion de mise à jour du microprogramme" afin de prendre en charge l'estimation des risques.

2 Références normatives

Les documents suivants cités dans le texte constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 62386-101:2022, *Interface d'éclairage adressable numérique – Partie 101: Exigences générales – Composants de système*

IEC 62386-102:2022, *Interface d'éclairage adressable numérique – Partie 102: Exigences générales – Appareillages de commande*

IEC 62386-103:2022, *Interface d'éclairage adressable numérique – Partie 103: Exigences générales – Dispositifs de commande*