

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

## AMENDMENT 1 AMENDEMENT 1

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

**Interface d'éclairage adressable numérique –  
Partie 101: Exigences générales – Composants de système**

ITIH STANDARD PREVIEW  
(standards.iteh.ai)  
IEC 62386-101:2014/AMD1:2018  
<https://standards.iteh.ai/catalog/standards/sist/5dc52165-c967-4b22-ac63-303dab80e3fd/iec-62386-101-2014-amd1-2018>



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2018 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

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

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

#### IEC Catalogue - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

#### IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary of electronic and electrical terms, containing 21 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)

67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

### A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

### A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

#### Catalogue IEC - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

#### Recherche de publications IEC - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient 21 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)

67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

#### Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [sales@iec.ch](mailto:sales@iec.ch).

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

### AMENDMENT 1 AMENDEMENT 1

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

**Interface d'éclairage adressable numérique –**  
**Partie 101: Exigences générales – Composants de système**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 29.140.50; 29.140.99

ISBN 978-2-8322-5657-2

**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.**

## FOREWORD

This amendment has been prepared by IEC technical committee 34: Lamps and related equipment.

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

CDV	Report on voting
34/418/CDV	34/502/RVC

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[IEC 62386-101:2014/AMD1:2018](https://standards.iteh.ai/catalog/standards/sist/3dc32f65-c067-4f32-ae63-303dab80e3fd/iec-62386-101-2014-amd1-2018)  
<https://standards.iteh.ai/catalog/standards/sist/3dc32f65-c067-4f32-ae63-303dab80e3fd/iec-62386-101-2014-amd1-2018>

## INTRODUCTION

*Replace the first sentence of the fourth paragraph with the following new text:*

This second edition of IEC 62386-101 is intended to be used in conjunction with IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:— and with the various parts that make up the IEC 62386-2xx series for control gear, together with IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:— and the various parts that make up the IEC 62386-3xx series of particular requirements for control devices.

## 1 Scope

*Delete the second sentence and add, at the end of the first sentence, the following new text:*

which is in line with the requirements of IEC 61347 (all parts), with the addition of DC supplies.

## 2 Normative references

*Replace the first paragraph with the following new text:*

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.

*Delete the reference "IEC 61347 (all parts), Lamp controlgear".*

*Replace the references to IEC 62386-102 and IEC 62386-103 with the following new references:*

IEC 62386-102:2014, *Digital addressable lighting interface – Part 102: General requirements – Control gear*

IEC 62386-102:2014/AMD1:—<sup>1</sup>

IEC 62386-103:2014, *Digital addressable lighting interface – Part 103: General requirements – Control devices*

IEC 62386-103:2014/AMD1:—<sup>2</sup>

## 3 Terms and definitions

*Add, after the first sentence, the following new text:*

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>

*Add after 3.49 the following new terms:*

### 3.50

#### **frame accepted**

frame that has been received and uses the correct frame type and data bit content

<sup>1</sup> Under preparation. Stage at the time of publication: IEC DECFDIS 62386-102/AMD1:2018.

<sup>2</sup> Under preparation. Stage at the time of publication: IEC RFDIS 62386-103/AMD1:2018.

### 3.51

#### **frame ignored**

frame received but not accepted

### 3.52

#### **frame received**

frame with a valid start bit, valid data bits, and a stop condition

### 3.53

#### **frame rejected**

frame not received

## 4.2 Version number

*Replace the fourth paragraph with the following new text:*

The current version number is "2.01".

## 4.3 System structure and architecture

*Replace Table 1 with the following new Table 1:*

**Table 1 – System components**

IEC 62386-101:2014/AMD1:2018

Component	Quantity	For detailed information see
Bus power supply	$\geq 1$	Clause 6
Control gear	$\geq 0$	IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:—
Application controller	$\geq 1$	IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—
Input devices	$\geq 0$	IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—
Bus	1	Subclause 4.8 and Clause A.2

### 4.6.1 Transmitters and receivers in bus units

*Replace the first sentence with the following new sentence:*

Table 2 gives a short summary of the different receivers and transmitters allowed for each bus unit.

*Add after the first sentence:*

It is not allowed for a bus unit to transmit or receive other frames than the ones indicated in Table 2, except proprietary forward frames.

#### 4.6.4 Single master application controller

Delete NOTE 3.

#### 4.11.1 Different levels of power interruptions

**Table 4**

In the third column, fourth row, delete "450 ms" and in the last column, fifth row, add "for system failure" after "Grey area", as follows:

Minimum	Typical	Maximum	Description
		40 ms	Short interruptions of bus power supply <sup>a</sup>
> 40 ms		< 45 ms	Grey area
45 ms			Bus power down <sup>b</sup>
> 450 ms		< 550 ms	Grey area for system failure
550 ms			System failure <sup>b</sup>
<sup>a</sup> See 4.11.4.			
<sup>b</sup> See Clause 3.			

iTeh STANDARD PREVIEW

#### 4.11.3 External power cycle (standards.iteh.ai)

Replace the first paragraph with the following new paragraph:

<https://standards.iteh.ai/catalog/standards/sist/3dc32f65-c067-4f32-ae63-60a280c20133/iec-62386-101-2014-amd1-2018>

After an external power cycle (see Table 3), an externally powered bus unit shall apply power-on behaviour to all logical units simultaneously. During an external power cycle, a bus unit might still respond to commands.

#### 4.11.5 Bus power down

Replace the existing text with the following new text:

A bus powered bus unit may interpret bus power down as an external power cycle. It shall interpret system failure as an external power cycle. The behaviour shall apply to all logical units simultaneously. See Table 4.

#### 5.4 Signal voltage rating

Add, after NOTE 1, the following new text:

Devices need to be polarity insensitive (see 5.1) or power supplies need to be able to withstand reverse voltages (see 9.7).

**Table 7**

*In the second column, last row, replace "-6,5 V" with "0 V", as follows:*

	Minimum	Typical	Maximum
Nominal system voltage $U$	0 V		20,5 V
Absolute maximum system voltage	0 V		22,5 V

**Table 8**

*In the second column, last row, replace "-6,5 V" with "0 V", as follows:*

	Minimum	Typical	Maximum
High level voltage	9,5 V		22,5 V
Threshold voltage	> 6,5 V	8,0 V	< 9,5 V
Low level voltage	0 V		6,5 V

## 5.5 Signal current rating

**Table 10**

*Replace, in footnote "a", "See 4.7" with "See 4.7, 5.6 and the text below", as follows:*

	Minimum	Typical	Maximum	Condition
Externally powered bus unit current consumption $I_{BUS}$ when not transmitting	IEC 62386-101:2014/AMD1:2018 input/standards.iteh.ai/catalog/standards/sist/3dc32ff2-4f52-ae63-303cab80e3fd/iec-62386-101-2014-amd1-2018		20 mA	$0 V \leq U \leq 22,5 V$
Bus powered bus unit current consumption $I_{BUS}$ when not transmitting			250 mA <sup>a</sup>	
Current consumption $I_{BUS}$ when not transmitting	10 $\mu A$ <sup>b</sup>			$U_{TH} \leq U \leq 22,5 V$ <sup>c</sup>
Transmitter sink current	250 mA			$U \leq 4,5 V$ <sup>d</sup>
<sup>a</sup> This is the theoretical maximum current. In reality a device should consume less current. See 4.7, 5.6 and the text below. <sup>b</sup> The minimum current consumption is necessary for discharging the wiring capacitances and input capacitances of the bus units connected. <sup>c</sup> $U_{TH}$ is the threshold voltage of the receiver. <sup>d</sup> This is the required resulting voltage when sinking the maximum current.				

*Add, after Table 10, the following new text:*

Bus units shall not to draw more than their specified maximum current, not even during power up or power down. For bus powered units the actual value to use for testing is the documented maximum current consumption.

### 6.5.2 Single bus power supply current rating

*Add, after the first sentence, the following new sentence:*

Such a power supply should be able to withstand any ringing on the bus; no test is provided.



### 8.2.1 Receiver bit timing

*Replace the first sentence with the following new sentence:*

A receiver shall receive or reject frames according to the bit timing requirements as follows.

*Replace NOTE 2 with the following new NOTE 2:*

NOTE 2 For the significance of this, see 9.8.

### 8.2.2 Receiver bit timing violation

*Replace the first paragraph with the following new paragraph:*

If a receiver detects a bit timing violation it shall reject the frame, except in the case of a backward frame. See 8.2.5.

### 8.2.4 Receiver frame sequence timing

Table 20

iTeh STANDARD PREVIEW

*In the last column, replace all instances of "accepted" with "interpreted" and in footnote "b", replace "accepted or rejected" with "interpreted in multiple ways", as follows:*

IEC 62386-101:2014/AMD1:2018  
<https://standards.iteh.ai/catalog/standards/sist/3dc32f65-c067-4f32-ac63-303dab80e3fd/iec-62386-101-2014-amd1-2018>

	Minimum	Typical	Maximum	Description
Settling time between forward frame and backward frame	> 1,4 ms <sup>a</sup>		< 2,4 ms	Grey area <sup>b</sup>
	2,4 ms		12,4 ms	Frame shall be interpreted as backward frame.
	> 12,4 ms		< 13,4 ms	Grey area <sup>b</sup>
	13,4 ms			Frame shall not be interpreted as backward frame.
Settling time between forward frame and forward frame	> 1,4 ms <sup>a</sup>		< 2,4 ms	Grey area <sup>b</sup>
	2,4 ms			Frame shall be interpreted as forward frame.
Settling time between first and second forward frame of send-twice forward frames <sup>c</sup>	> 1,4 ms <sup>a</sup>		< 2,4 ms	Grey area <sup>b</sup>
	2,4 ms		94 ms	Frames shall be interpreted as send-twice forward frames.
	> 94 ms		< 105 ms	Grey area <sup>c d</sup>
	105 ms			Frames shall be interpreted as two separate forward frames.
Settling time between backward frame and forward frame	> 1,4 ms <sup>a</sup>		< 2,4 ms	Grey area <sup>b</sup>
	2,4 ms			Frame shall be interpreted as forward frame.
<sup>a</sup> Because of the definition of the stop condition this is the minimum time to distinguish frames. <sup>b</sup> Frames within this area can be interpreted in multiple ways. <sup>c</sup> See 9.3. <sup>d</sup> Frames within this area can be interpreted as send-twice forward frames or as two separate forward frames.				

### 8.2.5 Reception of backward frames

*Replace the text with the following new text:*

The reception of a backward frame shall start with the first active state after the forward frame which triggered the backward frame if this first active state is detected within a maximum of 13,4 ms settling time.

If this frame triggers a frame size violation or bit timing violation, it shall be interpreted as a backward frame. Such a frame might contain information that is worth processing in certain cases. See also 7.4.4 and 9.5.2.

### 8.3.1 Multi-master transmitter bit timing

**Table 21**

*Replace, in the second column, the stop condition time value "2 400 µs" with "2 450 µs", as follows:*

	Minimum	Typical	Maximum
Half bit time $t_{\text{HIGH}}, t_{\text{LOW}}$	400,0 µs	416,7 µs	433,3 µs
Double half bit time $t_{\text{DOUBLE,LOW}}, t_{\text{DOUBLE,HIGH}}$	800,0 µs	833,3 µs	866,7 µs
Stop condition time $T_{\text{STOP}}$	2 450 µs		

## 9 Method of operation

[IEC 62386-101:2014/AMD1:2018](https://standards.iteh.ai/catalog/standards/sist/3dc32f65-c067-4f32-ae63-303dab80e3fd/iec-62386-101-2014-amd1-2018)

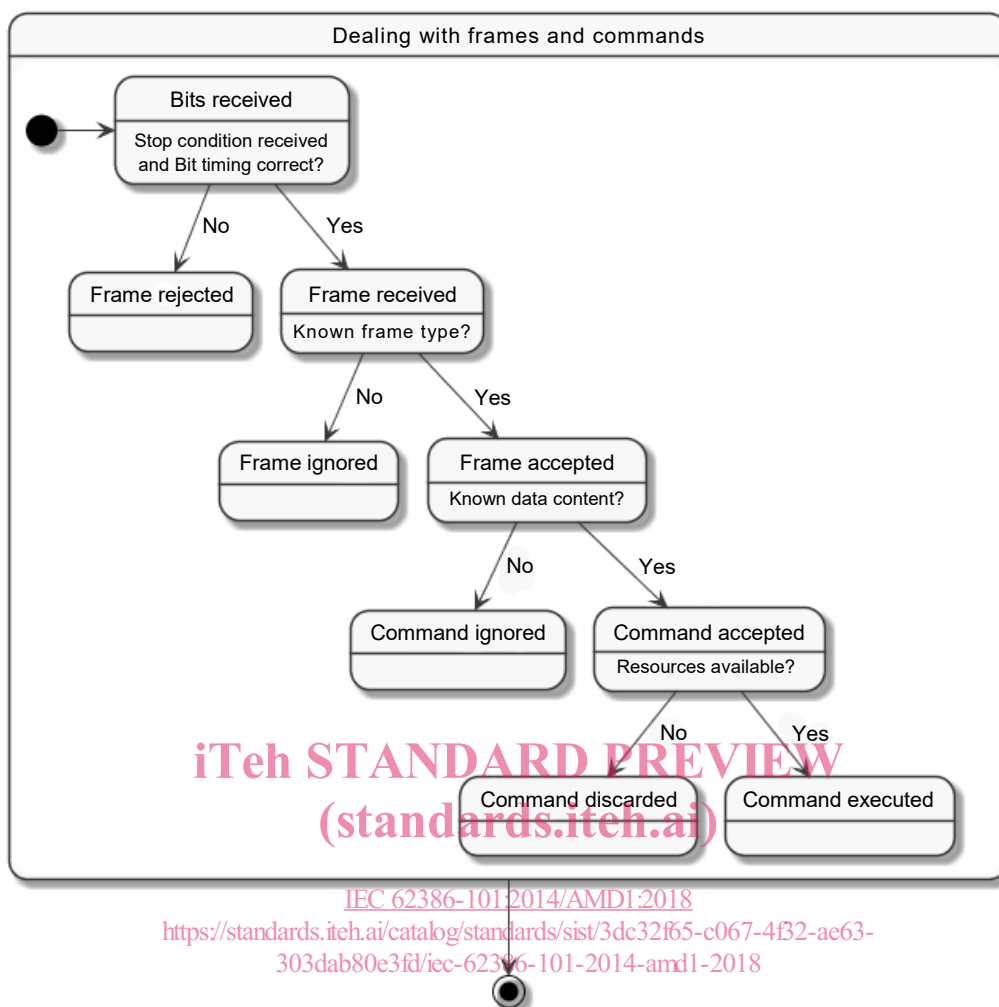
<https://standards.iteh.ai/catalog/standards/sist/3dc32f65-c067-4f32-ae63-303dab80e3fd/iec-62386-101-2014-amd1-2018>

*Add, before the existing Subclause 9.1, the following new Subclause 9.8:*

### 9.8 Dealing with frames and commands

#### 9.8.1 General

The flow from the moment a number of bits are received on bus interface until a command is executed is illustrated in Figure 20. The conditions to enter the next state are described below. Subclause 9.8 does not necessarily apply when using proprietary forward frames.



IEC

**Figure 20 – Dealing with frames and commands**

### 9.8.2 Frame received or rejected

Any frame consisting of valid bits and a stop condition shall be considered received, otherwise it shall be considered rejected.

### 9.8.3 Frame accepted or ignored

Any received frame that uses the correct frame type and correct number of data bits for a particular receiver shall be considered accepted, otherwise it shall be considered ignored.

### 9.8.4 Command accepted or ignored

Any accepted frame shall be analysed for content. If the content forms a command, this command shall be accepted, otherwise it shall be considered as an ignored command.

NOTE Further details on commands are given in IEC 62386-102, IEC 62386-103, the IEC 62386-2xx series and the IEC 62386-3xx series.

### 9.8.5 Command executed or discarded

Any accepted command shall be executed in the settling time between the frame in which it was received and the next possible frame on the bus, except when explicitly stated otherwise in the description of the command. Execution of the command could depend on resources to handle the command.