IEC 62386-103

Edition 1.0 2018-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1
AMENDEMENT 1

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

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

IEC 62386-103:2014-11/AMD1:2018-09(en-fr)

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

Tel.: +41 22 919 02 11
info@iec.ch
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
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
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 It also gives information on projects, replaced and withdrawn publications.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
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
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
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
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: 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
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
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
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
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
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
Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC 62386-103

Edition 1.0 2018-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1
AMENDEMENT 1

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

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

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 29.140.50, 29.140.99

ISBN 978-2-8322-5921-4

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:

FDIS	Report on voting
34/524/FDIS	34/535/RVD

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.

INTRODUCTION

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

This first edition of IEC 62386-103 is intended to be used in conjunction with IEC 62386-101:2014, IEC 62386-101:2014/AMD1:2018, IEC 62386-102:2014, IEC 62386-102:2014/AMD1:2018 and with the various parts that make up the IEC 62386-2xx series for control gear, together with 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 text and references with the following new text and 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, *Digital addressable lighting interface – Part 101: General requirements – System components*
IEC 62386-101:2014/AMD1:2018

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

3 Terms and definitions

Replace the first paragraph with the following new text:

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

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

Insert, between 3.7 and 3.8, the following new entry 3.28:

3.28
feature
optional extension at instance and/or device level

3.15
NO

Replace the definition and Note 1 to entry with the following new definition and new Note 1 to entry:

answer used to deny or refuse a query

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 62386-101:2014 and IEC62386-101:2014/AMD1:2018, 8.2.5.

Renumber the existing Note 1 to entry as Note 2 to entry, as follows:

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

3.27
YES

Replace the definition with the following new definition:

answer used to accept or affirm a query

Add the following new Note 1 to entry:

Note 1 to entry: If a query is asked where the answer is YES, the response will be a backward frame containing the value of MASK.

4.1 General

Replace the sentence with the following new sentence:

The requirements of IEC 62386-101:2014 and IEC62386-101:2014/AMD1:2018, Clause 4 apply, with the restrictions, changes and additions identified below.

4.2 Version number

Replace the first sentence with the following new sentence:

This subclause replaces IEC 62386-101:2014 and IEC62386-101:2014/AMD1:2018, 4.2.

Replace the fifth paragraph with the following new paragraph:

The current version number is “*versionNumber*” as defined in Table 17.

5 Electrical specification

Replace the sentence with the following new sentence:

The requirements of IEC 62386-101:2014 and IEC 62386-101:2014/AMD1:2018, Clause 5 apply.

6 Interface power supply

Replace the sentence with the following new sentence:

If a bus power supply is integrated into a control gear, the requirements of IEC 62386-101:2014 and IEC62386-101:2014/AMD1:2018, Clause 6 apply.

7.1 General

Replace the sentence with the following new sentence:

The requirements of IEC 62386-101:2014 and IEC62386-101:2014/AMD1:2018, Clause 7 apply, with the following additions.

7.2.1.1 General

Replace Table 2 with the following new Table 2:

Table 2 – Instance byte in a command frame

Instance byte								Addressing
15	14	13	12	11	10	09	08	
0	0	0	32 Instance numbers					Instance number
1	0	0	32 Instance groups					Instance group
1	1	0	32 Instance types					Instance type
0	0	1	32 Instance numbers					Feature on instance number level
1	0	1	32 Instance groups					Feature on instance group level
0	1	1	32 Instance types					Feature on instance type level
1	1	1	1	1	0	0	1	Feature broadcast
1	1	1	1	1	1	0	1	Feature on instance broadcast level
1	1	1	1	1	1	1	1	Instance broadcast
1	1	1	1	1	1	0	0	Feature on device level
1	1	1	1	1	1	1	0	Device
0	1	0	x	x	x	x	x	Reserved
1	1	1	0	x	x	x	x	
1	1	1	1	0	x	x	x	
1	1	1	1	1	0	1	x	
1	1	1	1	1	0	0	0	

8 Timing

Replace the sentence with the following new sentence:

The requirements of IEC 62386-101:2014 and IEC62386-101:2014/AMD1:2018, Clause 8 apply.

9.1 General

Replace the sentence with the following new sentence:

The requirements of IEC 62386-101:2014 and IEC62386-101:2014/AMD1:2018, Clause 9 apply with the following additions.

Insert, between Subclauses 9.1 and 9.2 the following new Subclause 9.18:

9.18 Device features

This standard allows for the future publication of feature extensions that extend the requirements in this specification, or exempt particular requirements.

The features for a device can be queried by "QUERY FEATURE TYPE" and "QUERY NEXT FEATURE TYPE" while the instance byte is set to "feature on device level" (see Table 2).

Table 5 shows the feature type encoding. For further information on the different feature types see parts of the IEC 62386-3xx series.

9.2.1 General

*Replace, in the last bulleted list item, "*behaviour*" with "*system response*" and add, after "IEC 62386-102", the following new text:*

:2014 and IEC 62386-102:2014/AMD1:2018

9.2.2 Single-master application controller

Replace the second paragraph with the following new paragraph:

A single-master application controller may try to configure other control devices on the bus, and/or change the system response of control gear in the system, thereby using any command defined in IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018 and/or instructions and queries defined in IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:2018.

9.4.3 Instance type

Replace the first paragraph with the following new paragraph:

The instance type for each of the instances of an input device can be different. It can be queried by "QUERY INSTANCE TYPE" while the instance byte is set to either "instance type" or " instance number" scheme (see Table 2).The meaning of event information transmitted by means of "INPUT NOTIFICATION (*device/instance, event*)" depends on the instance type.

9.4.4 Feature type

Replace the existing title with the following new title:

9.4.4 Instance features

Replace the second paragraph with the following new paragraph:

The features for each of the instances of an input device can be different. They can be queried by "QUERY FEATURE TYPE" and "QUERY NEXT FEATURE TYPE" while the instance byte is set to either "feature on instance type level" or "feature on instance number level" scheme (see Table 2).

9.5.1 General

Replace the NOTE with the following new NOTE:

NOTE For instance feature commands, additional conditions for command acceptance hold. These are given in 9.6.3 and 9.6.4.

9.5.4 Feature commands

Replace the text with the following new text:

For feature commands that are accepted by a device or instance (refer to 9.5), the feature addressing scheme determines the intended (set of) receiving features within that device (see Table 2).

A feature on device level shall accept the feature command unless any of the following additional conditions hold:

- the command is sent using feature addressing other than feature addressing on device level;
- the command is sent with instance byte reserved addressing.

A feature on instance level shall accept the feature command unless any of the following additional conditions hold:

- the command is sent using feature on instance number level addressing and the given instance number is not equal to "*instanceNumber*";
- the command is sent using feature on instance group level addressing and the given instance group does not match any of the groups identified by "*instanceGroup0*", "*instanceGroup1*" and "*instanceGroup2*";
- the command is sent using feature on instance type level addressing and the given instance type is not equal to "*instanceType*";
- the command is sent using feature on device level addressing;
- the command is sent with instance addressing;
- the command is sent with device addressing;
- the command is sent with instance byte reserved addressing.

A feature broadcast command shall be used to address a given feature both on device and instance level. A feature broadcast shall be accepted unless any of the following additional conditions hold:

- the command is sent using feature addressing other than feature broadcast;
- the command is sent with instance byte reserved addressing.

If the feature command is accepted, the opcode byte determines which feature is addressed.

9.6.4 Event message filter

Replace the first paragraph with the following new paragraph:

The event message filter can be used to enable and disable specific events. While the event filter of a specific event is disabled, this specific event shall not be generated. To enable or disable all events see 9.10.3.

9.7.2 Input resolution

Replace the third paragraph with the following new paragraph:

The result of the conversion and the *"inputValue"* shall be MSB-aligned. Unused bits in *"inputValue"* shall contain a repeating pattern of the most significant bit(s) of the result of the conversion.

9.7.3 Getting the input value

*Replace, in the third and fourth paragraphs, "*received*" with "*executed*".*

9.9.1 Enable/disable the application controller

Add, at the end of the last paragraph, the following new text:

"*applicationActive*" can be queried using "QUERY APPLICATION CONTROLLER ENABLED".

Insert, between Subclauses 9.9.1 and 9.9.2, the following new Subclause 9.9.5:

9.9.5 Application controller always active

If an application controller is present it may be always active. This shall be reflected by "*applicationControllerAlwaysActive*" being TRUE.

When "*applicationControllerAlwaysActive*" is TRUE, "*applicationControllerPresent*" and "*applicationActive*" shall always be TRUE.

"*applicationControllerAlwaysActive*" can be observed through "QUERY DEVICE CAPABILITIES" and "QUERY APPLICATION CONTROLLER ALWAYS ACTIVE".

9.9.2 Enable/disable event messages

Add, at the end of the third paragraph, the following new sentence:

"*instanceActive*" can be queried using "QUERY INSTANCE ENABLED".

9.9.3 Quiescent mode

*Replace, in the second paragraph, "*received*" with "*executed*".*

9.9.4.4 Operating mode 0x80 to 0xFF: manufacturer specific modes

Add, in the first bulleted list item, after "IEC 62386-101:2014" the following new text:

and IEC 62386-101:2014/AMD1:2018.

9.10.4 Memory bank reading

*Replace, in the second paragraph, "*ignored*" with "*discarded*".*

9.10.5 Memory bank writing

*Replace, in the first paragraph, "*reception*" with "*execution*".*

*Replace, in the second paragraph, "*accept*" with "*execute*".*

*Replace, in the third and penultimate paragraphs, "*received*" with "*accepted*".*

9.10.6 Memory bank 0

Replace Table 12 with the following new Table 12:

Table 12 – Memory map of memory bank 0

Address	Description	Default value (factory)	Memory type
0x00	Address of last accessible memory location	factory burn-in	ROM
0x01	Reserved – not implemented	answer NO	n.a.
0x02	Number of last accessible memory bank	factory burn-in, range [0,0xFF]	ROM
0x03	GTIN byte 0 (MSB) [a]	factory burn-in	ROM
0x04	GTIN byte 1	factory burn-in	ROM
0x05	GTIN byte 2	factory burn-in	ROM
0x06	GTIN byte 3	factory burn-in	ROM
0x07	GTIN byte 4	factory burn-in	ROM
0x08	GTIN byte 5 (LSB)	factory burn-in	ROM
0x09	Firmware version (major)	factory burn-in	ROM
0x0A	Firmware version (minor)	factory burn-in	ROM
0x0B	Identification number byte 0 (MSB)	factory burn-in	ROM
0x0C	Identification number byte 1	factory burn-in	ROM
0x0D	Identification number byte 2	factory burn-in	ROM
0x0E	Identification number byte 3	factory burn-in	ROM
0x0F	Identification number byte 4	factory burn-in	ROM
0x10	Identification number byte 5	factory burn-in	ROM
0x11	Identification number byte 6	factory burn-in	ROM
0x12	Identification number byte 7 (LSB)	factory burn-in	ROM
0x13	Hardware version (major)	factory burn-in	ROM
0x14	Hardware version (minor)	factory burn-in	ROM
0x15	101 version number [b]	factory burn-in, according to implemented version number	ROM
0x16	102 version number of all integrated control gear [c]	factory burn-in, according to implemented version number	ROM
0x17	103 version number of all integrated control devices [d]	factory burn-in, according to implemented version number	ROM
0x18	Number of logical control device units in the bus unit	factory burn-in, range [1,64]	ROM
0x19	Number of logical control gear units in the bus unit	factory burn-in, range [0,64]	ROM
0x1A	Index number of this logical control device unit	factory burn-in, range [0,location 0x18 -1]	ROM
[0x1B,0x7F]	Reserved – not implemented	answer NO	n.a.
[0x80,0xFE]	Additional control device information [e]	[e]	ROM
0xFF	Reserved – not implemented	answer NO	n.a.

[a] It is recommended that the product GTIN is not re-used within the expected lifetime of the product after installation.

[b] Format of the version number is defined in IEC 62386-101:2014 and IEC 62386-101:2014/AMD1:2018, 4.2.

[c] Format of the version number is defined in IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, 4.2. If not implemented, this is indicated by 0xFF.

[d] Format of the version number is defined in 4.2.

[e] Purpose and (default) value of these bytes shall be defined by the manufacturer.

Replace the NOTE with the following new NOTE:

NOTE As an example there might be a product containing three logical devices with three different short addresses. Each of these control devices has the same GTIN and identification number, each reports as number of devices the value 3 and the index of the three control devices is reported as 0, 1 or 2 respectively. Reading location 0x1A using broadcast yields a backward frame according to IEC 62386-101:2014 and IEC 62386-101:2014/AMD1:2018, 9.5.2 (overlapping backward frame).

9.10.7 Memory bank 1

Replace the second paragraph with the following new paragraph:

If implemented, memory bank 1 shall at least implement the memory locations up to and including address 0x10. The fixed usage for location 0x00 to 0x02 and the recommended memory map usage for location 0x03 to 0x10 are shown in Table 13.

9.12.1 Power on

Replace the first sentence with the following new sentence:

After an external power cycle (see IEC 62386-101:2014 and IEC 62386-101:2014/AMD1:2018, 4.11.1), the device shall maintain its most recent configuration saved as a result of the execution of “SAVE PERSISTENT VARIABLES”, with the following exceptions:

Add, at the beginning of the list, the following new bulleted list item:

- all variables mentioned in Table 17 shall be set to the value indicated in the power on value column. The variables that are marked with ‘no change’ in the power on value column shall not be considered. The variables defined in implemented parts of the IEC 62386-2xx series shall be included;

9.12.2 Power cycle notification

Replace the first sentence with the following new sentence:

After completing its external power cycle, a bus unit shall generate one power cycle event message per device if the *“powerCycleNotification”* is ENABLED for at least one of its logical units.

9.13.1 General

*Replace, in the first bulleted list item, "subclause 9.3" with "*and IEC 62386-101:2014/AMD1:2018, 9.3*".*

9.14.2 Random address allocation

*Replace, in the second paragraph, “*received*” with “*executed*”.*

9.14.3 Identification of a device

Replace the first paragraph with the following new paragraph:

No variables shall be affected by the identification procedure. Normal processing shall continue, i.e. events can be generated on a change of the input value; this shall not stop identification. Where appropriate, variables can be temporarily ignored, so that after the identification has ended, there are no side effects.

*Replace, in the second paragraph, “*reception*” with “*execution*”.*

9.16.1 Device capabilities

Replace Table 14 with the following new Table 14:

Table 14 – Control device capabilities

Bit	Description	Value	See subclause
0	*"applicationControllerPresent"* is TRUE?	"1" = "Yes"	9.1
1	*"numberOfInstances"* is greater than 0?	"1" = "Yes"	9.4.2
2	*"applicationControllerAlwaysActive"* is TRUE?	"1" = "Yes"	9.9.2
3-7	unused	"0" = default value	

9.17 Non-volatile memory

Add, at the end of the fourth paragraph, the following new sentence:

However, until the operation is complete, the value of the affected variables may be undefined.