

**Digital addressable lighting interface - Part 210:
Particular requirements for control gear - Sequencer
(device type 9)**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 62386-210:2011 sisaldab Euroopa standardi EN 62386-210:2011 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 30.06.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 10.06.2011.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 62386-210:2011 consists of the English text of the European standard EN 62386-210:2011.

This standard is ratified with the order of Estonian Centre for Standardisation dated 30.06.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 10.06.2011.

The standard is available from Estonian standardisation organisation.

ICS 29.140.50, 29.140.99

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

Right to reproduce and distribute belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:
Aru str 10 Tallinn 10317 Estonia; www.evs.ee; Phone: 605 5050; E-mail: info@evs.ee

**Digital addressable lighting interface -
Part 210: Particular requirements for control gear -
Sequencer (device type 9)
(IEC 62386-210:2011)**

Interface d'éclairage adressable
numérique -
Partie 210: Exigences particulières pour
les appareillages de commande -
Séquenceur (dispositifs de type 9).
(CEI 62386-210:2011)

Digital adressierbare Schnittstelle für die
Beleuchtung -
Teil 210: Besondere Anforderungen an
Betriebsgeräte -
Sequenzler (Gerätetyp 9)
(IEC 62386-210:2011)

This European Standard was approved by CENELEC on 2011-05-25. 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 Central Secretariat 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 Central Secretariat 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 34C/915/CDV, future edition 1 of IEC 62386-210, prepared by SC 34C, Auxiliaries for lamps, of IEC TC 34, Lamps and related equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62386-210 on 2011-05-25.

EN 62386-210 is intended to be used in conjunction with EN 62386-101 and EN 62386-102, which contain general requirements for the relevant product type (control gear or control devices).

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

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-02-25
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2014-05-25

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62386-210:2011 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 standards indicated:

IEC 60598-1	NOTE	Harmonized as EN 60598-1.
IEC 60669-2-1	NOTE	Harmonized as EN 60669-2-1.
IEC 60921	NOTE	Harmonized as EN 60921.
IEC 60923	NOTE	Harmonized as EN 60923.
IEC 60925	NOTE	Harmonized as EN 60925.
IEC 60929	NOTE	Harmonized as EN 60929.
IEC 61347-1	NOTE	Harmonized as EN 61347-1.
IEC 61347-2-3	NOTE	Harmonized as EN 61347-2-3.
IEC 61547	NOTE	Harmonized as EN 61547.
CISPR 15	NOTE	Harmonized as EN 55015.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62386-101	2009	Digital addressable lighting interface - Part 101: General requirements - System	EN 62386-101	2009
IEC 62386-102	2009	Digital addressable lighting interface - Part 102: General requirements - Control gear	EN 62386-102	2009

This document is a preview generated by EVS

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references	8
3 Terms and definitions	8
4 General description	9
5 Electrical specifications	9
6 Interface power supply	9
7 Transmission protocol structure.....	9
8 Timing	9
9 Method of operation.....	9
10 Declaration of variables	14
11 Definition of commands	15
12 Test procedures	24
Bibliography.....	62
Figure 1 – Timing example for an automatic sequence.....	13
Figure 2 – Application extended configuration command sequence example.....	16
Figure 3 – Test sequence "Physical address allocation".....	24
Figure 4 – Test sequence "QUERY FEATURES".....	25
Figure 5 – Test sequence "Configure POINT N".....	26
Figure 6 – Test sequence "Configuration – sent twice".....	27
Figure 7 – Test sequence "Configuration – time-out".....	28
Figure 8 – Test sequence "Configuration – command in-between 1"	29
Figure 9 – Test sequence "Configuration – command in-between 2"	30
Figure 10 – Test sequence "COPY TO POINT N".....	31
Figure 11 – Test sequence "COPY TO POINT N – sent twice"	32
Figure 12 – Test sequence "COPY TO POINT N – time-out".....	33
Figure 13 – Test sequence "COPY TO POINT N – command in-between".....	34
Figure 14 – Test sequence "CHANNEL SELECTION"	35
Figure 15 – Test sequence "CHANNEL SELECTION – sent twice / time-out".....	36
Figure 16 – Test sequence "CHANNEL SELECTION – command in-between".....	37
Figure 17 – Test sequence "CONFIGURE CONTROL N"	38
Figure 18 – Test sequence "CONFIGURE CONTROL N – sent twice / time-out"	39
Figure 19 – Test sequence "CONFIGURE CONTROL N – command in-between".....	40
Figure 20 – Test sequence "ENABLE DEVICE TYPE: Application extended commands".....	41
Figure 21 – Test sequence 'ENABLE DEVICE TYPE: Application extended configuration commands 1'	42
Figure 22 – Test sequence 'ENABLE DEVICE TYPE: Application extended configuration commands 2'	43
Figure 23 – Subsequence 'Configure sequence'.....	44
Figure 24 – Test sequence 'GO TO POINT N'.....	45

Figure 25 – Test sequence 'GO TO NEXT POINT'	46
Figure 26 – Test sequence 'GO TO PREVIOUS POINT'	47
Figure 27 – Test sequence 'Automatic sequence'	48
Figure 28 – Timing diagram for test 'Automatic sequence'	49
Figure 29 – Test sequence 'Automatic sequence – pointer'	50
Figure 30 – Test sequence 'Automatic sequence – number of runs'	51
Figure 31 – Test sequence 'Automatic sequence – stopped by command'	52
Figure 32 – Test sequence 'Sequencer performance'	53
Figure 33 – Template for 'Sequencer performance'	53
Figure 34 – Test sequence 'START AT POINT N – number of runs'	54
Figure 35 – Test sequence 'RESET SEQUENCER'	55
Figure 36 – Test sequence 'RESET SEQUENCER – send twice / time-out'	56
Figure 37 – Test sequence 'RESET SEQUENCER – command in-between'	57
Figure 38 – Test sequence 'RESET CONTROL N'	58
Figure 39 – Test sequence 'FAULTY CHANNEL'	59
Figure 40 – Test sequence 'QUERY EXTENDED VERSION NUMBER'	60
Figure 41 – Test sequence 'RESERVED APPLICATION EXTENDED COMMANDS'	61
Table 1 – Access to the sequencer variables	11
Table 2 – Sequencer programming example	12
Table 3 – Declaration of variables	14
Table 4 – Summary of the application extended command set	23
Table 5 – Parameters for test sequence "Configure POINT N"	26
Table 6 – Parameters for test sequence "Configuration – sent twice"	27
Table 7 – Parameters for test sequence "Configuration – time-out"	28
Table 8 – Parameters for test sequence "Configuration – command in-between 1"	29
Table 9 – Parameters for test sequence "Configuration – command in-between 2"	30
Table 10 – Parameters for test sequence "COPY TO POINT N"	31
Table 11 – Parameters for test sequence "COPY TO POINT N – sent twice"	32
Table 12 – Parameters for test sequence "COPY TO POINT N – time-out"	33
Table 13 – Parameters for test sequence "COPY TO POINT N – command in-between"	34
Table 16 – Parameters for test sequence "CHANNEL SELECTION – command in-between"	37
Table 19 – Parameters for test sequence "CONFIGURE CONTROL N – command in-between"	40
Table 20 – Parameters for test sequence "ENABLE DEVICE TYPE: Application extended commands"	41
Table 21 – Parameters for test sequence 'ENABLE DEVICE TYPE: Application extended configuration commands 1'	42
Table 23 – Parameters for subsequence 'Configure sequence'	44
Table 24 – Parameters for test sequence 'GO TO POINT N'	45
Table 27 – Parameters for test sequence 'Automatic sequence'	48
Table 29 – Parameters for test sequence 'Automatic sequence – pointer'	50
Table 30 – Parameters for test sequence 'Automatic sequence – number of runs'	51

Table 31 – Parameters for test sequence 'Automatic sequence – stopped by command'	52
Table 34 – Parameters for test sequence 'START AT POINT N – number of runs'	54
Table 37 – Parameters for test sequence 'RESET SEQUENCER – command in-between'	57
Table 39 – Parameters for test sequence 'FAULTY CHANNEL'	59
Table 41 – Parameters for test sequence 'RESERVED APPLICATION EXTENDED COMMANDS'	61

This document is a preview generated by EVS

INTRODUCTION

This first edition of IEC 62386-210 is published in conjunction with IEC 62386-101 and IEC 62386-102. 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 recognised.

This International Standard, and the other parts that make up the IEC 62386-200 series, in referring to any of the clauses of IEC 62386-101 or IEC 62386-102, specifies the extent to which such a clause is applicable and the order in which the tests are to be performed. The parts also include additional requirements, as necessary. All parts that make up the IEC 62386-200 series are self-contained and therefore do not include references to each other.

Where the requirements of any of the clauses of IEC 62386-101 or IEC 62386-102 are referred to in this International Standard by the sentence "The requirements of IEC 62386-1XX, clause 'x' apply", this sentence is to be interpreted as meaning that all requirements of the clause in question of Part 101 or Part 102 apply, except any which are inapplicable to the specific type of lamp control gear covered by Part 210.

All numbers used in this International Standard 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'.

This document is a preview generated by EVS

DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 210: Particular requirements for control gear – Sequencer (device type 9)

1 Scope

This International Standard specifies a protocol and test procedures for the control by digital signals of electronic control gear working as automatic sequencers.

2 Normative references

The following referenced documents are indispensable for the application 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 62386-101:2009, *Digital addressable lighting interface – Part 101: General requirements – System*

IEC 62386-102:2009, *Digital addressable lighting interface – Part 102: General requirements – Control gear*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in Clause 3 of IEC 62386-101:2009 and Clause 3 of IEC 62386-102:2009 apply, with the following additional definitions.

3.1

multi channel device

device which provides more than one output for controlling light sources

NOTE The individual outputs can have different states at the same time.

3.2

point

tuple consisting of a sequencer fade time, a hold time and an arc power level for each output channel

NOTE A point is reached when the sequencer fade time of this point has expired.

3.3

next point

point following the current point in a sequence

3.4

previous point

point preceding the current point in a sequence

3.5

pointer

contents of a register used as reference to the starting point of a sequence