

AS/NZS 62386.208:2020



Australian/New Zealand Standard™

# Digital addressable lighting interface

Part 208: Particular requirements for control gear — Switching function  
(device type 7) (IEC 62386-208:2009 (ED. 1.0) MOD)



currently in review, click buy full version

AS/NZS 62386.208:2020

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee EL-041, Lamps and Related Equipment. It was approved on behalf of the Council of Standards Australia on 4 November 2020 and by the New Zealand Standards Approval Board on 4 November 2020.

This Standard was published on 20 November 2020.

The following are represented on Committee EL-041:

Australian Industry Group  
Better Regulation Division  
CHOICE  
Consumer Electronics Suppliers Association  
Consumers' Federation of Australia  
Department of Industry, Science, Energy and Resources  
Electrical Compliance Testing Association of Australia  
Electrical Regulatory Authorities Council  
Energy Efficiency & Conservation Authority of New Zealand  
IES: The Lighting Society  
Joint Accreditation System of Australia and New Zealand  
Joint Accreditation System of Australia and New Zealand — New Zealand  
Lighting Council Australia  
Lighting Council New Zealand  
Master Electricians Australia  
Master Electricians NZ  
WorkSafe New Zealand

This Standard was issued in draft form for comment as AS/NZS 62386.208:2020.

#### **Keeping Standards up-to-date**

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

[www.standards.org.au](http://www.standards.org.au)

[www.standards.govt.nz](http://www.standards.govt.nz)

ISBN 978 1 76113 069 4

Australian/New Zealand Standard™

# Digital addressable lighting interface

**Part 208: Particular requirements for control gear  
— Switching function (device type 7) (IEC 62386-  
208:2009 (ED. 1.0) MOD)**

First published as AS/NZS 62386.208:2020.



© IEC 2020 — All rights reserved

© Standards Australia Limited/the Crown in right of New Zealand, administered by the New Zealand Standards Executive 2020

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth) or the Copyright Act 1994 (New Zealand).

## Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-041, Lamps and Related Equipment.

The objective of this document is to specify a protocol and test methods for the control by digital signals of electronic control gear that switches its output only on and off.

This document is an adoption with national modifications, and has been reproduced from, IEC 62386-208:2009 (ED. 1.0), *Digital addressable lighting interface — Part 208: Particular requirements for control gear — Switching function (device type 7)*. The modifications are additional requirements and are set out in [Appendix ZZ](#), which has been added at the end of the source text.

[Appendix ZZ](#) lists the variations to IEC 62386-208:2009 (ED. 1.0), for the application of this document in Australia and New Zealand.

As this document has been reproduced from an International Standard, the following applies:

- (a) In the source text “International Standard” should read “this document”.
- (b) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

NOTES

Currently in preview, click buy full version

## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions.....	8
4 General description.....	8
5 Electrical specification.....	9
6 Interface power supply.....	9
7 Transmission protocol structure.....	9
8 Timing.....	9
9 Method of operation.....	9
10 Declaration of variables.....	11
11 Definition of commands.....	12
12 Test procedures.....	18
Annex A (informative) Examples of algorithms.....	70
Bibliography.....	71
Figure 1 – Example of a possible configuration.....	11
Figure 2 – Application extended configuration command sequence example.....	13
Figure 3 – Test sequence QUERY FEATURES.....	19
Figure 4 – Test sequence Reset State / Persistent Memory.....	20
Figure 5 – Test sequence QUERY LOAD ERROR.....	22
Figure 6 – Test sequence QUERY LOAD ERROR with HOLD-OFF TIME.....	23
Figure 7 – Test sequence QUERY LOAD ERROR with indefinitely HOLD-OFF TIME.....	24
Figure 8 – Test sequence QUERY Control Gear Information.....	25
Figure 9 – Test sequence REFERENCE SYSTEM POWER.....	26
Figure 10 – Test sequence REFERENCE SYSTEM POWER: 100 ms-timeout.....	27
Figure 11 – Test sequence REFERENCE SYSTEM POWER: Command in-between.....	28
Figure 12 – Test sequence REFERENCE SYSTEM POWER: 15 min timer.....	29
Figure 13 – Test sequence REFERENCE SYSTEM POWER: failed.....	30
Figure 14 – Test sequence THRESHOLDS: Configuration Sequence.....	31
Figure 15 – Test sequence ERROR HOLD-OFF TIME: Configuration Sequence.....	33
Figure 16 – Test sequence STORE DTR AS THRESHOLD X.....	34
Figure 17 – Test sequence STORE DTR AS MIN / MAX LEVEL.....	35
Figure 18 – Test sequence STORE DTR AS ERROR HOLD-OFF TIME.....	36
Figure 19 – Test sequence ENABLE DEVICE TYPE: Appl. extended query commands.....	37
Figure 20 – Test sequence ENABLE DEVICE TYPE: Reference System Power.....	38
Figure 21 – Test sequence ENABLE DEVICE TYPE: Other Application Extended Configuration Commands.....	39
Figure 22 – Test sequence ENABLE DEVICE TYPE: Error Hold-Off Time.....	41
Figure 23 – Test sequence ENABLE DEVICE TYPE: Application Extended Configuration Commands 2.....	42

Figure 24 – Test sequence DEFAULT ON AND OFF .....	44
Figure 25 – Test sequence DEFAULT OFF WITH FADING .....	45
Figure 26 – Test sequence SWITCHING ON AND OFF – FULL RANGE.....	47
Figure 27 – Test sequence SWITCHING ON AND OFF – LIMITED RANGE .....	51
Figure 28 – Test sequence VIRTUAL DIMMING – FADE TIME.....	54
Figure 29 – Test sequence VIRTUAL DIMMING – FADE RATE.....	56
Figure 30 – Test sequence SWITCHING ON AND OFF – IAPC.....	57
Figure 31 – Test sequence SWITCHING ON AND OFF – ADJUSTING THRESHOLDS .....	58
Figure 32 – Test sequence SWITCHING ON AND OFF – ADJUSTING MIN/MAX.....	60
Figure 33 – Test sequence SWITCHING ON AND OFF – DEFAULT POL/SYS.....	62
Figure 34 – Test sequence SWITCHING ON AND OFF – POWER ON.....	64
Figure 35 – Test sequence SWITCHING ON AND OFF – SYSTEM FAILURE.....	66
Figure 36 – Test sequence QUERY EXTENDED VERSION NUMBER.....	68
Figure 37 – Test sequence RESERVED APPLICATION EXTENDED COMMANDS.....	69
Figure A.1 – Examples of switching characteristics .....	70
Table 1 – virtual arc power level (VAPL) .....	11
Table 2 – Declaration of variables.....	12
Table 3 – Summary of the application extended command set.....	18
Table 4 – Parameters for the test sequence State / Persistent Memory.....	21
Table 5 – Test step QUERY LOAD ERROR with HOLD OFF TIME.....	23
Table 6 – Test steps REFERENCE SYSTEM POWER: Command in-between.....	28
Table 7 – Test parameter and test steps 1 THRESHOLDS: Configuration Sequence.....	31
Table 8 – Test parameter and test steps 2 THRESHOLDS: Configuration Sequence.....	32
Table 9 – Test parameter and test steps 3 THRESHOLDS: Configuration Sequence.....	32
Table 10 – Test steps ERROR HOLD OFF TIME: Configuration Sequence .....	33
Table 11 – Test steps STORE DTR AS THRESHOLD X.....	34
Table 12 – Test steps STORE DTR AS MIN / MAX LEVEL.....	35
Table 13 – Test step STORE DTR AS ERROR HOLD-OFF TIME .....	36
Table 14 – Test steps ENABLE DEVICE TYPE: Appl. extended query commands.....	37
Table 15 – Test steps ENABLE DEVICE TYPE: Reference System Power .....	38
Table 16 – Test steps 1 ENABLE DEVICE TYPE: Other Application Extended Configuration Commands.....	40
Table 17 – Test steps 2 ENABLE DEVICE TYPE: Other Application Extended Configuration Commands.....	40
Table 18 – Test steps 3 ENABLE DEVICE TYPE: Other Application Extended Configuration Commands.....	40
Table 19 – Test steps ENABLE DEVICE TYPE: Error Hold-Off Time.....	41
Table 20 – Test steps 1 ENABLE DEVICE TYPE: Application Extended Configuration Commands 2 .....	43
Table 21 – Test steps 2 ENABLE DEVICE TYPE: Application Extended Configuration Commands 2 .....	43
Table 22 – Test steps DEFAULT ON AND OFF.....	44
Table 23 – Test steps 1 DEFAULT OFF WITH FADING .....	45

Table 24 – Test steps 2 DEFAULT OFF WITH FADING .....	46
Table 25 – Test steps and parameter 1 SWITCHING ON AND OFF – FULL RANGE .....	48
Table 26 – Test steps and parameter 2 SWITCHING ON AND OFF – FULL RANGE .....	48
Table 27 – Test steps and parameter 3 SWITCHING ON AND OFF – FULL RANGE .....	48
Table 28 – Test steps and parameter 4 SWITCHING ON AND OFF – FULL RANGE .....	49
Table 29 – Test steps and parameter 5 SWITCHING ON AND OFF – FULL RANGE .....	50
Table 30 – Test steps and parameter 1 SWITCHING ON AND OFF – LIMITED RANGE .....	52
Table 31 – Test steps and parameter 2 SWITCHING ON AND OFF – LIMITED RANGE .....	52
Table 32 – Test steps and parameter 3 SWITCHING ON AND OFF – LIMITED RANGE .....	52
Table 33 – Test steps and parameter 4 SWITCHING ON AND OFF – LIMITED RANGE .....	53
Table 34 – Test steps and parameter 5 SWITCHING ON AND OFF – LIMITED RANGE .....	53
Table 35 – Test steps and parameter 1 VIRTUAL DIMMING – FADE TIME .....	54
Table 36 – Test steps and parameter 2 VIRTUAL DIMMING – FADE TIME .....	55
Table 37 – Test steps and parameter 3 VIRTUAL DIMMING – FADE TIME .....	55
Table 38 – Test steps VIRTUAL DIMMING – FADE RATE .....	56
Table 39 – Test steps SWITCHING ON AND OFF – IAPC .....	57
Table 40 – Test steps and parameter 1 SWITCHING ON AND OFF – ADJUSTING THRESHOLDS .....	59
Table 41 – Test steps and parameter 2 SWITCHING ON AND OFF – ADJUSTING THRESHOLDS .....	59
Table 42 – Test steps and parameter 3 SWITCHING ON AND OFF – ADJUSTING THRESHOLDS .....	59
Table 43 – Test steps and parameter 1 SWITCHING ON AND OFF – ADJUSTING MIN/MAX .....	60
Table 44 – Test steps and parameter 2 SWITCHING ON AND OFF – ADJUSTING MIN/MAX .....	61
Table 45 – Test steps and parameter 3 SWITCHING ON AND OFF – ADJUSTING MIN/MAX .....	61
Table 46 – Test steps and parameter 1 SWITCHING ON AND OFF – DEFAULT POL/SYS .....	62
Table 47 – Test steps and parameter 2 SWITCHING ON AND OFF – DEFAULT POL/SYS .....	63
Table 48 – Test steps and parameter 1 SWITCHING ON AND OFF – POWER ON .....	64
Table 49 – Test steps and parameter 2 SWITCHING ON AND OFF – POWER ON .....	65
Table 50 – Test steps and parameter 1 SWITCHING ON AND OFF – SYSTEM FAILURE .....	66
Table 51 – Test steps and parameter 2 SWITCHING ON AND OFF – SYSTEM FAILURE .....	67
Table 52 – Test steps RESERVED APPLICATION EXTENDED COMMANDS .....	69

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DIGITAL ADDRESSABLE LIGHTING INTERFACE –****Part 208: Particular requirements for control gear –  
Switching function (device type 7)**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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 provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 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.

International Standard IEC 62386-208 has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical committee 34: Lamps and related equipment.

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

CDV	Report on voting
34C/821/CDV	34C/842/RVC

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This Part 208 is intended to be used in conjunction with IEC 62386-101 and IEC 62386-102, which contain general requirements for the relevant product type (control gear or control devices).

A list of all parts of the IEC 62386 series, under the general title *Digital addressable lighting interface*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

Currently in preview, click buy full version

## INTRODUCTION

This first edition of IEC 62386-208 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 recognized.

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, specify 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 'n' 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 208.

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".

# DIGITAL ADDRESSABLE LIGHTING INTERFACE –

## Part 208: Particular requirements for control gear – Switching function (device type 7)

### 1 Scope

This International Standard specifies a protocol and test methods for the control by digital signals of electronic control gear that switches its output only on and off.

### 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 shall apply, with the following additional definitions.

#### 3.1

##### **virtual arc power level**

value calculated by the control gear during virtual dimming. It corresponds to the actual level of a dimmable control gear

#### 3.2

##### **virtual dimming**

attribute of the control gear for treating arc power commands in the same way as a dimmable control gear. It provides virtual dimming by calculating a virtual arc power level in accordance with the appropriate fading definition, thus requiring the output state to change when the virtual arc power level reaches or passes a threshold

#### 3.3

##### **up switch-on threshold**

value against which the virtual arc power level is continually compared, the output of the control gear being switched on whenever the virtual arc power level reaches or passes this level whilst increasing

#### 3.4

##### **up switch-off threshold**

value against which the virtual arc power level is continually compared, the output of the control gear being switched off whenever the virtual arc power level reaches or passes this level whilst increasing