

### SLOVENSKI STANDARD SIST EN IEC 61291-2:2023

01-maj-2023

# Optični ojačevalniki - 2. del: Enokanalne aplikacije - Specifikacijska predloga delovanja (IEC 61291-2:2023)

Optical amplifiers - Part 2: Single channel applications - Performance specification template (IEC 61291-2:2023)

Lichtwellenleiter-Verstärker - Teil 2: Einzelkanal-Anwendungen – Vorlage für Betriebsverhaltensspezifikationen (IEC 61291-2:2023)

Amplificateurs optiques - Partie 2: Applications à un seul canal - Modèle de spécifications de performances (IEC 61291-2:2023)

Ta slovenski standard je istoveten z: EN IEC 61291-2:2023

<u>ICS:</u>

33.180.30 Optični ojačevalniki

**Optic amplifiers** 

SIST EN IEC 61291-2:2023

en

SIST EN IEC 61291-2:2023

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

<u>SIST EN IEC 61291-2:2023</u> https://standards.iteh.ai/catalog/standards/sist/d804f949-33fe-4998-b2d0-9079d1b2bc4e/sist-en-iec-61291-2-2023

#### SIST EN IEC 61291-2:2023

### EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

### EN IEC 61291-2

March 2023

ICS 33.180.30

Supersedes EN 61291-2:2016

**English Version** 

### Optical amplifiers - Part 2: Single channel applications -Performance specification template (IEC 61291-2:2023)

Amplificateurs optiques - Partie 2: Applications à un seul canal - Modèle de spécifications de performances (IEC 61291-2:2023) Lichtwellenleiter-Verstärker - Teil 2: Einzelkanal-Anwendungen - Vorlage für Betriebsverhaltensspezifikationen (IEC 61291-2:2023)

This European Standard was approved by CENELEC on 2023-03-20. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

### European foreword

The text of document 86C/1849/FDIS, future edition 5 of IEC 61291-2, prepared by SC 86C "Fibre optic systems and active devices" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61291-2:2023.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2023-12-20 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2026-03-20 document have to be withdrawn

This document supersedes EN 61291-2:2016 and all of its amendments and corrigenda (if any).

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

### iTeh STA<sub>Endorsement notice</sub> (standards.iteh.ai)

The text of the International Standard IEC 61291-2:2023 was approved by CENELEC as a European Standard without any modification. <u>SIST EN IEC 61291-2:2023</u>

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

- IEC 61000 (series) NOTE Approved as EN IEC 61000 (series)
- IEC 61280 (series) NOTE Approved as EN IEC 61280 (series)
- IEC 61291-4 NOTE Approved as EN 61291-4
- IEC 62148-11 NOTE Approved as EN 62148-11
- IEC 62149-1 NOTE Approved as EN 62149-1
- IEC 62149-3 NOTE Approved as EN IEC 62149-3
- IEC 62572-3 NOTE Approved as EN 62572-3

# Annex ZA (normative)

# Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: <u>www.cencenelec.eu</u>.

Publication	Year	Title	EN/HD	Year
IEC 60825-1	-	Safety of laser products - Part 1: Equipment classification and requirements	EN 60825-1	-
IEC 61000-6-1	Teh	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light- industrial environments	EN IEC 61000-6-1	-
IEC 61000-6-3	-	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments	EN IEC 61000-6-3	-
IEC 61290-1 ttps:/	series	Optical amplifiers - Test methods - Part 1: Power and gain parameters		series
IEC 61290-3	series	Optical amplifiers - Test methods - Part 3: Noise figure parameters	EN 61290-3	series
IEC 61290-4-3	-	Optical amplifiers - Test methods - Part 4-3: Power transient parameters - Single channel optical amplifiers in output power control	EN IEC 61290-4-3	-
IEC 61290-5	series	Optical amplifiers - Test methods - Part 5: Reflectance parameters	EN 61290-5	series
IEC 61290-6-1	-	Optical fibre amplifiers - Basic specification - Part 6-1: Test methods for pump leakage parameters - Optical demultiplexer	EN 61290-6-1	-
IEC 61290-11	series	Optical amplifiers - Test methods - Part 11: Polarization mode dispersion parameter	EN 61290-11	series
IEC 61291-1	-	Optical amplifiers - Part 1: Generic specification	EN IEC 61291-1	-
IEC 61291-5-2	-	Optical amplifiers - Part 5-2: Qualification specifications - Reliability qualification for optical fibre amplifiers	EN 61291-5-2	-
IEC/TS 62538	2008	Categorization of optical devices	-	-

SIST EN IEC 61291-2:2023

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

<u>SIST EN IEC 61291-2:2023</u> https://standards.iteh.ai/catalog/standards/sist/d804f949-33fe-4998-b2d0-9079d1b2bc4e/sist-en-iec-61291-2-2023



### IEC 61291-2

Edition 5.0 2023-02

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

Optical amplifiers - STANDARD PREVIEW

Part 2: Single channel applications – Performance specification template

Amplificateurs optiques -

Partie 2: Applications à un seul canal – Modèle de spécifications de performances tandards itel al/catalog/standards/sist/d8041949-33fe-4998-b2d0-9079d1b2bc4e/sist-en-iec-61291-2-2023

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 33.180.30

ISBN 978-2-8322-6454-6

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.

 Registered trademark of the International Electrotechnical Commission Marque déposée de la Commission Electrotechnique Internationale

#### CONTENTS

FOREWORD	3			
INTRODUCTION	5			
1 Scope	3			
2 Normative references	3			
3 Terms, definitions and abbreviated terms	7			
3.1 Terms and definitions	7			
3.2 Abbreviated terms	3			
4 Performance specification templates for power amplifiers	3			
5 Performance specification templates for pre-amplifiers	1			
6 Performance specification templates for line amplifiers				
7 Electromagnetic compatibility (EMC) requirements	9			
8 Laser safety requirements	9			
Bibliography20				

Table 1 – Minimum relevant parameters for power amplifiers based on OFA components or modules using active fibre specified for single channel applications	9
Table 2 – Minimum relevant parameters for power amplifiers based on SOA           components specified for single channel applications	10
Table 3 – Minimum relevant parameters for pre-amplifiers based on OFA components           or modules using active fibre specified for single channel applications	12
Table 4 – Minimum relevant parameters for pre-amplifiers based on SOA components           specified for single channel applications	14
Table 5 – Minimum relevant parameters for line amplifiers based on OFA components           or modules using active fibre specified for single channel applications	16
Table 6 – Minimum relevant parameters for line amplifiers based on SOA componentsspecified for single channel applications	18

IEC 61291-2:2023 © IEC 2023

#### INTERNATIONAL ELECTROTECHNICAL COMMISSION

#### **OPTICAL AMPLIFIERS –**

#### Part 2: Single channel applications – Performance specification template

#### 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.
- 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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 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.
- 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.

IEC 61291-2 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2016. This edition constitutes a technical revision.

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

- a) the test methods for gain ripple in Table 2, Table 4 and Table 6 refer now to the IEC 61290-1 series;
- b) the SOA definition (3.1.3) refers now to IEC 61931.

– 4 –

IEC 61291-2:2023 © IEC 2023

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

Draft	Report on voting	
86C/1849/FDIS	86C/1858/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.

A list of all parts in the IEC 61291 series, published under the general title *Optical amplifiers*, 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, Teh STANDARD PREVIEW
- withdrawn,
- replaced by a revised edition, or 10 and 5. it en.al)
- amended.

SIST EN IEC 61291-2:2023 https://standards.iteh.ai/catalog/standards/sist/d804f949-33fe-4998-b2d0-9079d1b2bc4e/sist-en-iec-61291-2-2023 IEC 61291-2:2023 © IEC 2023

- 5 -

#### INTRODUCTION

This document is devoted to the subject of optical amplifiers. The technology of optical amplifiers is still rapidly evolving, hence amendments and new additions to this document can be expected. Each abbreviated term introduced in this document is generally explained in the text the first time it appears. However, for an easier understanding of the whole text, a list of all abbreviated terms used in this document is given in Clause 3.

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

SIST EN IEC 61291-2:2023 https://standards.iteh.ai/catalog/standards/sist/d804f949-33fe-4998-b2d0-9079d1b2bc4e/sist-en-iec-61291-2-2023