

Optical amplifiers - Part 2: Single channel applications -
Performance specification template

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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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-
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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.

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- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-12-20
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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

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Optical amplifiers –
Part 2: Single channel applications – Performance specification template**

**Amplificateurs optiques –
Partie 2: Applications à un seul canal – Modèle de spécifications de
performances**



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OPTICAL AMPLIFIERS –**Part 2: Single channel applications –
Performance specification template**

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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.

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- withdrawn,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

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.

OPTICAL AMPLIFIERS –

Part 2: Single channel applications – Performance specification template

1 Scope

This part of IEC 61291 provides a performance specification template applicable to optical amplifiers (OAs) used in single channel applications. Multichannel applications are covered in IEC 61291-4.

The objective of this template is to provide a framework for the preparation of performance standards and/or product specifications defining the performance of OA devices used in single channel applications. In addition to the requirements specified in this template, a performance standard or product specification could include other parameters, such as ratings, operating conditions, tests, and pass/fail criteria.

For a particular application, product specification writers could add specification parameters and/or groups of specification parameters to this template, without removing the parameters specified in this document.

2 Normative 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 60825-1, *Safety of laser products – Part 1: Equipment classification and requirements*

IEC 61000-6-1, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity standard for residential, commercial and light-industrial environments*

IEC 61000-6-3, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for equipment in residential environments*

IEC 61290-1 (all parts), *Optical amplifiers – Test methods – Part 1: Power and gain parameters*

IEC 61290-3 (all parts), *Optical amplifiers – Test methods – Part 3: Noise figure parameters*

IEC 61290-4-3, *Optical amplifiers – Test methods – Part 4-3: Power transient parameters – Single channel optical amplifiers in output power control*

IEC 61290-5 (all parts), *Optical amplifiers – Test methods – Part 5: Reflectance parameters*

IEC 61290-6-1, *Optical fibre amplifiers – Basic specification – Part 6-1: Test methods for pump leakage parameters – Optical demultiplexer*

IEC 61290-11 (all parts), *Optical amplifiers – Test methods – Part 11: Polarization mode dispersion parameter*

IEC 61291-1, *Optical amplifiers – Part 1: Generic specification*

IEC 61291-5-2, *Optical amplifiers – Part 5-2: Qualification specifications – Reliability qualification for optical fibre amplifiers*

IEC TS 62538:2008, *Categorization of optical devices*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61291-1, IEC TS 62538 and the following apply.

NOTE Possible supplementary definitions specific to OAs for single channel applications can be given in product specifications.

3.1.1

optical amplifier

OA

optical waveguide device containing a suitably pumped, active medium that is able to amplify an optical signal

[SOURCE: IEC TR 61931:1998, 2.7.75]

3.1.2

optical fibre amplifier

OFA

optical amplifier made of active optical fibre that is doped with rare-earth ions or that presents non-linear optical effects in order to obtain optical amplification

3.1.3

semiconductor optical amplifier

SOA

optical amplifier in which the active optical waveguide is formed by a semiconductor laser diode structure and will be electrically pumped

Note 1 to entry: The structure of these amplifiers is similar to that of Fabry-Perot laser diodes but with anti-reflection design elements at the end-face surfaces. The signal is amplified through the stimulated emission phenomenon in the gain medium.

[SOURCE: IEC TR 61931:1998, 2.7.77, modified – The note to entry has been added.]

3.1.4

optical element

unpackaged or partially packaged optical basic unit, typically non repairable and non-re-workable (at least by users)

Note 1 to entry: Examples of optical elements include laser chips or laser diodes, photodiodes, lenses, prisms, optical collimators, grating chips and filter chips.

[SOURCE: IEC TS 62538:2008, 2.2.1]

3.1.5

optical component

packaged unit comprising at least one optical element, typically non repairable and non-re-workable (at least by users), suitably pigtailed or connectorized

Note 1 to entry: Examples of optical components include packaged lasers, photodiodes, optical splitters, couplers, attenuators, isolators, MEMS, and modulators.

[SOURCE: IEC TS 62538:2008, 2.2.2]