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Optical amplifiers - Test methods - Part 1: Power and gain parameters

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/22

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EN IEC 61290-1

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English Version

**Optical amplifiers - Test methods - Part 1: Power and gain
parameters
(IEC 61290-1:2022)**

Amplificateurs optiques - Méthodes d'essai - Partie 1:
Paramètres de puissance et de gain
(IEC 61290-1:2022)

Prüfverfahren für Lichtwellenleiter-Verstärker - Teil 1:
Optische Leistungs- und Verstärkungsparameter
(IEC 61290-1:2022)

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Europäisches Komitee für Elektrotechnische Normung

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EN IEC 61290-1:2022 (E)

European foreword

The text of document 86C/1746/CDV, future edition 2 of IEC 61290-1, 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 61290-1:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-04-12
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-07-12

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

IEC 60793-1-1	NOTE Harmonized as EN 60793-1-1
IEC 60793-1-40	NOTE Harmonized as EN IEC 60793-1-40
IEC 60825-1	NOTE Harmonized as EN 60825-1
IEC 60825-2	NOTE Harmonized as EN 60825-2
IEC 61290-10 (series)	NOTE Harmonized as EN 61290-10 (series)

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: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61290-1-1	-	Optical amplifiers - Test methods - Part 1-1: Power and gain parameters - Optical spectrum analyzer method	EN IEC 61290-1-1	-
IEC 61290-1-2	-	Optical amplifiers - Test methods - Part 1-2: Power and gain parameters - Electrical spectrum analyzer method	EN 61290-1-2	-
IEC 61290-1-3	-	Optical amplifiers - Test methods - Part 1-3: Power and gain parameters - Optical power meter method	EN IEC 61290-1-3	-
IEC 61291-1	2018	Optical amplifiers - Part 1: Generic specification	EN IEC 61291-1	2018



IEC 61290-1

Edition 2.0 2022-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Optical amplifiers – Test methods –
Part 1: Power and gain parameters**

**Amplificateurs optiques – Méthodes d’essai –
Partie 1: Paramètres de puissance et de gain**





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Edition 2.0 2022-06

INTERNATIONAL STANDARD

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**Optical amplifiers – Test methods –
Part 1: Power and gain parameters**

**Amplificateurs optiques – Méthodes d’essai –
Partie 1: Paramètres de puissance et de gain**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL AMPLIFIERS – TEST METHODS –**Part 1: Power and gain parameters**

FOREWORD

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IEC 61290-1 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 second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

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

- a) specification of gain ripple as a new parameter;
- b) specification of test method and test report for gain ripple measurements;
- c) use of the term “measurement uncertainty” instead of “measurement accuracy”.

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

Draft	Report on voting
86C/1746/FDIS	86C/1783/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 61290 series, published under the general title *Optical amplifiers – Test methods*, 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.

OPTICAL AMPLIFIERS – TEST METHODS –

Part 1: Power and gain parameters

1 Scope

This part of IEC 61290 applies to all commercially available optical amplifiers (OAs) and optically amplified subsystems. It applies to OAs using optically pumped fibres (optical fibre amplifiers (OFAs) based on either rare-earth doped fibres or on the Raman effect), semiconductors (semiconductor optical amplifiers (SOAs)), and waveguides (planar optical waveguide amplifiers (POWAs)). It is specifically directed to single-channel amplifiers. Test methods for multichannel amplifiers are defined in the IEC 61290-10 series.

This document establishes uniform requirements for accurate and reliable measurements of the following OA parameters, as defined in IEC 61291-1:2018, Clause 3:

- a) nominal output signal power;
- b) gain;
- c) reverse gain;
- d) maximum gain;
- e) maximum gain wavelength;
- f) maximum gain variation with temperature;
- g) gain wavelength band;
- h) gain wavelength variation;
- i) gain stability;
- j) polarization-dependent gain;
- k) gain ripple (SOA only);
- l) large-signal output stability;
- m) saturation output power;
- n) maximum output signal power;
- o) maximum total output power.

NOTE 1 The applicability of the test methods described in this document to distributed Raman amplifiers is still under study.

NOTE 2 All numerical values followed by (\pm) are suggested values for which the measurement is assured. Other values are acceptable if verified.

2 Normative references

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IEC 61290-1-2, *Optical amplifiers – Test methods – Part 1-2: Power and gain parameters – Electrical spectrum analyzer method*

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