



BSI Standards Publication

Optical amplifiers

Part 1: Parameters of optical fibre amplifier components

National foreword

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TECHNICAL REPORT

Optical amplifiers – Part 1: Parameters of optical fibre amplifier components

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ELECTROTECHNICAL
COMMISSION

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CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references	6
3 Terms, definitions, abbreviated terms and symbols.....	6
3.1 Terms and definitions.....	6
3.1.1 Parameters for active fibres.....	6
3.1.2 Parameters for pump lasers.....	8
3.1.3 Parameters for WDM couplers	11
3.1.4 Parameters for pump WDM couplers.....	12
3.1.5 Parameters for optical isolators	12
3.1.6 Parameters for ASE rejection filters	14
3.1.7 Parameters for pump rejection filters	14
3.1.8 Parameters for gain flattening filters	15
3.1.9 Parameters for tap couplers.....	16
3.1.10 Parameters for PIN-photodiodes.....	17
3.1.11 Parameters for variable optical attenuators (VOAs)	18
3.1.12 Parameters for optical connectors	19
3.2 Abbreviated terms.....	19
3.3 Symbols.....	20
4 OFA components.....	21
5 Parameters of optical fibre amplifier components.....	24
5.1 Active fibre.....	24
5.1.1 Function and technical outline	24
5.1.2 Parameters for active fibres.....	24
5.2 Gain fibre for FRA.....	25
5.2.1 Function and technical outline	25
5.2.2 Parameters for gain fibres of FRAs	25
5.3 Pump laser	25
5.3.1 Function and technical outline	25
5.3.2 Parameters for pump lasers.....	25
5.4 WDM coupler (for combining signal light and pump light)	26
5.4.1 Function and technical outline	26
5.4.2 Parameters for WDM couplers	26
5.5 Pump WDM coupler	26
5.5.1 Function and technical outline	26
5.5.2 Parameters for pump WDM couplers.....	26
5.6 Polarization beam combiner (PBC)	26
5.6.1 Function and technical outline	26
5.6.2 Parameters for PBC.....	26
5.7 Optical isolator.....	27
5.7.1 Function and technical outline	27
5.7.2 Parameters for optical isolators	27
5.8 ASE rejection filter.....	27
5.8.1 Function and technical outline	27
5.8.2 Parameters for ASE rejection filters	27
5.9 Pump rejection filter.....	27
5.9.1 Function and technical outline	27

5.9.2	Parameters for pump rejection filter	27
5.10	Gain flattening filter (GFF)	28
5.10.1	Function and technical outline	28
5.10.2	Parameters for gain flattening filters	28
5.11	Tap coupler	28
5.11.1	Function and technical outline	28
5.11.2	Parameters for tap couplers	28
5.12	PIN-photodiode (PIN-PD)	29
5.12.1	Function and technical outline	29
5.12.2	Parameters for PIN-photodiodes	29
5.13	Variable optical attenuator (VOA)	29
5.13.1	Function and technical outline	29
5.13.2	Parameters for variable optical attenuators	29
5.14	Optical connectors	29
5.14.1	Function and technical outline	29
5.14.2	Parameters for optical connectors	30
	Bibliography	31
	Figure 1 – Example of the components inside an EDFA operating in a co-propagating pumping scheme	23
	Figure 2 – Example of the component layout of a distributed Raman amplifier (DRA)	23
	Figure 3 – Example of the component layout of a lumped (or discrete) Raman amplifier	24
	Table 1 – Documents defining terms and definitions of each component	22

INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL AMPLIFIERS –**Part 1: Parameters of optical fibre amplifier components**

FOREWORD

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IEC TR 61292-1 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics. It is a Technical Report.

This third edition cancels and replaces the second edition published in 2009. This edition constitutes a technical revision.

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

- a) Change of document title from "Parameters of amplifier components" to "Parameters of optical fibre amplifier components";
- b) Addition of parameters for optical components used in fibre Raman amplifiers;
- c) Addition of Table 1, listing various documents that specify terms and definitions for optical components used in optical fibre amplifiers;
- d) Addition of Figure 2 and Figure 3, showing typical component layouts for distributed and lumped fibre Raman amplifiers;

- e) Harmonization of the descriptions of optical component parameters with the definitions in other standards on optical components.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
86C/1775/DTR	86C/1784/RVDTR

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 Technical Report is English.

A list of all parts of the IEC 61292 series, published under the general title *Optical amplifiers*, can be found on the IEC website.

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.

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 –

Part 1: Parameters of optical fibre amplifier components

1 Scope

This part of IEC 61292, which is a Technical Report, applies to optical components of optical fibre amplifiers (OFAs). This document provides information about the most relevant parameters of these optical components, especially for erbium doped fibre amplifiers (EDFAs) and fibre Raman amplifiers (FRAs). It provides introductory information for a better understanding operation and applications of EDFAs and FRAs.

NOTE IEC TR 61292-6 provides more technical information on FRAs.

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 61291-1:2018, *Fibre amplifiers – Generic specification*

IEC TR 61931, *Fibre optic – Terminology*

3 Terms, definitions, abbreviated terms and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61291-1, IEC TR 61931, and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1.1 Parameters for active fibres

3.1.1.1

maximum input signal power

<active fibres> maximum power of the input signal above which the active fibre gets damaged, causing impossibility of normal operation for a given active fibre

3.1.1.2

insertion loss at out-of-band wavelength

<active fibres> insertion loss for a signal at the specified out-of-band wavelength(s) for a given active fibre

Note 1 to entry: IEC 61290-7-1 defines the measurement procedure of out-of-band insertion loss.

[SOURCE: IEC 61291-1:2018, 3.2.1.59, modified – Term changed from "out-of-band insertion loss", the specific use "active fibres" has been added, and Note 1 to entry has been added.]