

# INTERNATIONAL STANDARD



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





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INTERNATIONAL  
ELECTROTECHNICAL  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**OPTICAL AMPLIFIERS – TEST METHODS****Part 4-3: Power transient parameters –  
Single channel optical amplifiers in output power control**

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This International Standard is to be used in conjunction with IEC 61291-1:2012, on the basis of which it was established.

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

FDIS	Report on voting
86C/1310/FDIS	86C/1329/RVD

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.

A list of all parts of the IEC 61290 series, published under the general title *Optical amplifiers – Test methods*<sup>1)</sup> can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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

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<sup>1)</sup> The first editions of some of these parts were published under the general title *Optical fibre amplifiers – Basic specification* or *Optical amplifier test methods*.

## OPTICAL AMPLIFIERS – TEST METHODS

### Part 4-3: Power transient parameters – Single channel optical amplifiers in output power control

#### 1 Scope

This part of IEC 61290 applies to output power controlled optically amplified, elementary sub-systems. It applies to optical fibre amplifiers (OFA) using active fibres containing rare-earth dopants, presently commercially available, as indicated in IEC 61291-1, as well as alternative optical amplifiers that can be used for single channel output power controlled operation, such as semiconductor optical amplifiers (SOA).

The object of this standard is to provide the general background for optical amplifier (OA) power transients and its measurements and to indicate those IEC standard test methods for accurate and reliable measurements of the following transient parameters:

- a) Transient power response
- b) Transient power overcompensation response
- c) Steady-state power offset
- d) Transient power response time

The stimulus and responses behaviours under consideration include:

- 1) Channel power increase (step transient)
- 2) Channel power reduction (inverse step transient)
- 3) Channel power increase/reduction (pulse transient)
- 4) Channel power reduction/increase (inverse pulse transient)
- 5) Channel power increase/reduction/increase (lightning bolt transient)
- 6) Channel power reduction/increase/reduction (inverse lightning bolt transient)

These parameters have been included to provide a complete description of the transient behaviour of an output power transient controlled OA. The test definition defined here are applicable if the amplifier is an OFA or an alternative OA. However, the description in Annex A of this document concentrates on the physical performance of an OFA and provides a detailed description of the behaviour of OFA; it does not give a similar description of other OA types.

#### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61291-1:2012, *Optical amplifiers – Part 1: Generic specification*