

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Fibre optic active components and devices – Performance standards –  
Part 3: Modulator-integrated laser diode transmitter, for 40-Gbit/s fibre optic  
transmission systems**

**Composants et dispositifs actifs fibroniques – Normes de performances –  
Partie 3: Émetteurs à diodes laser à modulateur intégré pour systèmes de  
transmission fibroniques 40 Gbit/s**



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IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

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**FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES –  
PERFORMANCE STANDARDS –**
**Part 3: Modulator-integrated laser diode transmitters  
for 40-Gbit/s fibre optic transmission systems**

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International Standard IEC 62149-3 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This third edition cancels and replaces the second edition published in 2014 and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition: updates of the title, scope, normative references and performance test tables.

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

FDIS	Report on voting
86C/1666/FDIS	86C/1676/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62149 series, published under the general title *Fibre optic active components and devices – Performance standards*, 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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
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- replaced by a revised edition, or
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## INTRODUCTION

Fibre optic transmitters are used to convert electrical signals into optical signals. This document covers the performance standard for optical modulators monolithically integrated with laser diodes for 40 Gbit/s optical telecommunication systems. This document is applicable for on-off keying format.

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## FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – PERFORMANCE STANDARDS –

### Part 3: Modulator-integrated laser diode transmitters for 40-Gbit/s fibre optic transmission systems

#### 1 Scope

This part of IEC 62149 covers the performance specification for electroabsorption (EA) type optical modulators monolithically integrated with laser diodes for 40 Gbit/s fibre optic transmission systems. This document contains a definition of the product performance requirements together with a series of sets of tests and measurements with clearly defined conditions, severities and pass/fail criteria. The tests are intended to be run as an initial design verification to prove any product's ability to satisfy this document's requirements. This document is applicable for on-off keying format.

A product that has been shown to meet all the requirements of a performance standard can be declared as compliant with the performance standard but will then be controlled by a quality assurance program.

#### 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 60068-2-1, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-27, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60719-7, *Semiconductor devices – Mechanical and climatic test methods – Part 7: Internal moisture content measurement and the analysis of other residual gases*

IEC 60749-26, *Semiconductor devices – Mechanical and climatic test methods – Part 26: Electrostatic discharge (ESD) sensitivity testing – Human body model (HBM)*

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

IEC 60950-1, *Information technology equipment – Safety – Part 1: General requirements*

IEC 62007-1, *Semiconductor optoelectronic devices for fibre optic system applications – Part 1: Specification template for essential ratings and characteristics*