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Standards

Irish Standard  
I.S. EN 62149-3:2014

# Fibre optic active components and devices - Performance standards - Part 3: Modulator- integrated laser diode transmitters for 2,5- Gbit/s to 40-Gbit/s fibre optic transmission systems

**I.S. EN 62149-3:2014**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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EUROPEAN STANDARD

**EN 62149-3**

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

**Fibre optic active components and devices - Performance standards - Part 3: Modulator-integrated laser diode transmitters for 2,5-Gbit/s to 40-Gbit/s fibre optic transmission systems (IEC 62149-3:2014)**

Composants et dispositifs actifs à fibres optiques - Normes de performances - Partie 3: Émetteurs à diodes laser à modulateur intégré pour des systèmes de transmission à fibres optiques de 2,5 Gbit/s à 40 Gbit/s  
(CEI 62149-3:2014)

Aktive Lichtwellenleiterbauelemente und -geräte - Betriebsverhalten - Teil 3: Laserdiodensender mit integriertem Modulator für 2,5-Gbit/s- bis 40-Gbit/s-Lichtwellenleiter-Übertragungssysteme  
(IEC 62149-3:2014)

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## Foreword

The text of document 86C/1157/CDV, future edition 2 of IEC 62149-3, 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 62149-3:2014.

The following dates are fixed:

- latest date by which the document has to be (dop) 2015-03-30  
implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2017-06-30  
standards conflicting with the  
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This document supersedes EN 62149-3:2004.

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## Endorsement notice

The text of the International Standard IEC 62149-3:2014 was approved by CENELEC as a European Standard without any modification.

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

IEC 60068 Series	NOTE	Harmonized as EN 60068 Series.
IEC 60793 Series	NOTE	Harmonized as EN 60793 Series.
IEC 60825 Series	NOTE	Harmonized as EN 60825 Series.
IEC 60874 Series	NOTE	Harmonized as EN 60874 Series.
IEC 62572-2	NOTE	Harmonized as EN 62572-2.
IEC 62572-3	NOTE	Harmonized as EN 62572-3.
IEC 61280 Series	NOTE	Harmonized as EN 61280 Series.
IEC 62007-2	NOTE	Harmonized as EN 62007-2.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE 1 When 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](http://www.cenelec.eu)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-1	-	Environmental testing -- Part 2-1: Tests - Test A: Cold	EN 60068-2-1	-
IEC 60068-2-2	-	Environmental testing -- Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	-
IEC 60068-2-6	-	Environmental testing -- Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	-
IEC 60068-2-14	-	Environmental testing -- Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-27	-	Environmental testing -- Part 2-27: Tests - Test Ea and guidance: Shock	EN 60068-2-27	-
IEC 60068-2-78	-	Environmental testing -- Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60749-7	-	Semiconductor devices - Mechanical and climatic test methods -- Part 7: Internal moisture content measurement and the analysis of other residual gases	EN 60749-7	-
IEC 60749-26	-	Semiconductor devices - Mechanical and climatic test methods -- Part 26: Electrostatic discharge (ESD) sensitivity testing - Human body model (HBM)	EN 60749-26	-
IEC 60825-1	-	Safety of laser products -- Part 1: Equipment classification and requirements	EN 60825-1	-
IEC 60950-1	-	Information technology equipment - Safety -- Part 1: General requirements	EN 60950-1	-
IEC 62007-1	-	Semiconductor optoelectronic devices for fibre optic system applications - Part 1: Specification template for essential ratings and characteristics	EN 62007-1	-
ITU-T G.694-1	-	Spectral grids for WDM applications: DWDM frequency grid	-	-
MIL-STD-883	-	Test methods and procedures for microelectronics	-	-

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**IEC 62149-3**

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# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Fibre optic active components and devices – Performance standards –  
Part 3: Modulator-integrated laser diode transmitters for 2,5-Gbit/s to 40-Gbit/s  
fibre optic transmission systems**

**Composants et dispositifs actifs à fibres optiques – Normes de performances –  
Partie 3: Émetteurs à diodes laser à modulateur intégré pour des systèmes de  
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**IEC 62149-3**

Edition 2.0 2014-05

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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Partie 3: Emetteurs à diodes laser à modulateur intégré pour des systèmes de  
transmission à fibres optiques de 2,5 Gbit/s à 40 Gbit/s**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

#### **Part 3: Modulator-integrated laser diode transmitters for 2,5-Gbit/s to 40-Gbit/s fibre optic transmission systems**

#### FOREWORD

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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 second edition cancels and replaces the first edition published in 2004 and constitutes a technical revision.

The significant technical change with respect to the previous edition is as follows:

The performance standards covered by this standard are now extended to a 40 Gb/s-class system from their original 2,5 Gb/s.

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

CDV	Report on voting
86C/1157/CDV	86C/1230/RVC

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 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 publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

## INTRODUCTION

Fibre optic transmitters are used to convert electrical signals into optical signals. This part of IEC 62149 covers the performance standard for optical modulators monolithically integrated with laser diodes for 2,5 Gbit/s to 40 Gbit/s multi-channel optical telecommunication systems.

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

### Part 3: Modulator-integrated laser diode transmitters for 2,5-Gbit/s to 40-Gbit/s fibre optic transmission systems

#### 1 Scope

This part of IEC 62149 covers the performance specification for optical modulators monolithically integrated with laser diodes for 2,5 Gbit/s to 40 Gbit/s multi-channel fibre optic transmission systems. This performance standard 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 the performance standard's requirements. This standard is only 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 complying with the performance standard, but should then be controlled by a quality assurance program.

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

IEC 60068-2-2, *Basic environmental testing procedures – Part 2: Tests – Tests B: Dry heat*

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

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

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

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

IEC 60749-7, *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*

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