

<b>STN</b>	<b>Optovláknové aktívne súčiastky a prvky Norma na prevádzkové charakteristiky Časť 3: Vysielače s laserovými diódami a integrovanými modulátormi pre optické prenosové systémy 40 Gbit/s</b>	<b>STN EN IEC 62149-3</b>  35 9255
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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

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. 10/23

Obsahuje: EN IEC 62149-3:2023, IEC 62149-3:2023

Oznámením tejto normy sa od 23.08.2026 ruší  
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EUROPEAN STANDARD

**EN IEC 62149-3**

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2023

ICS 33.180.20

Supersedes EN IEC 62149-3:2020;  
EN IEC 62149-3:2020/AC:2021-03

English Version

**Fibre optic active components and devices - Performance standards - Part 3: Modulator-integrated laser diode transmitters for 40-Gbit/s fibre optic transmission systems (IEC 62149-3:2023)**

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 (IEC 62149-3:2023)

Aktive Lichtwellenleiterbauelemente und -geräte - Betriebsverhaltensnormen - Teil 3: Modulator-integrierte Laserdioden-Sender für 40 Gbit/s-Lichtwellenleiter-Übertragungssysteme (IEC 62149-3:2023)

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**EN IEC 62149-3:2023 (E)****European foreword**

The text of document 86C/1839/CDV, future edition 4 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 IEC 62149-3:2023.

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) 2024-05-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-08-23

This document supersedes EN IEC 62149-3:2020 and all of its amendments and corrigenda (if any).

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

IEC 60068 (series) NOTE Approved as EN 60068 (series)

IEC 60793 (series) NOTE Approved as EN IEC 60793 (series)

IEC 60825 (series) NOTE Approved as EN 60825 (series)

IEC 60874 (series) NOTE Approved as EN 60874 (series)

IEC 61280 (series) NOTE Approved as EN IEC 61280 (series)

IEC 62007-2 NOTE Approved as EN 62007-2

## 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.cencenelec.eu](http://www.cencenelec.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 IEC 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		-
IEC 61300-2-4	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-4: Tests - Fibre or cable retention	EN IEC 61300-2-4	-
IEC 62007-1	-	Semiconductor optoelectronic devices for fibre optic system applications - Part 1: Specification template for essential ratings and characteristics	EN 62007-1	-

**EN IEC 62149-3:2023 (E)**

IEC 62149-1	-	Fibre optic active components and devices EN 62149-1 - Performance standards - Part 1: General and guidance	-
IEC 62572-3	-	Fibre optic active components and devices EN 62572-3 - Reliability standards - Part 3: Laser modules used for telecommunication	-
ITU-T Recommendation G.694.1	-	Spectral grids for WDM applications: DWDM frequency grid	-
ITU-T Recommendation G.957	-	Optical interfaces for equipment and systems relating to the synchronous digital hierarchy	-
MIL-STD-883-1	-	U.S. Department of Defense - Test method - standard - Environmental test methods for microcircuits, Part 1: Test methods 1000- 1999	-



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Edition 4.0 2023-07

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Fibre optic active components and devices – Performance standards –  
Part 3: Modulator-integrated laser diode transmitters 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 62149-3

Edition 4.0 2023-07

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Partie 3: Émetteurs à diodes laser à modulateur intégré pour systèmes de  
transmission fibroniques 40 Gbit/s**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**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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IEC 62149-3 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 fourth edition cancels and replaces the third edition published in 2020. This edition constitutes a technical revision.

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

- a) specification of pull force for fibre pull test in Table 6 according to fibre type;
- b) change of symbol for kink free radiant power in Table 4 and Table 5;
- c) replacement of undefined symbols in Table 7;
- d) addition of IEC 62149-1 as a normative reference.

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

Draft	Report on voting
86C/1839/CDV	86C/1864/RVC

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

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 [webstore.iec.ch](http://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.

## 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 formats.

## **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 definitions for product performance requirements as well as a series of tests and measurements, for which clearly defined conditions, severities and pass/fail criteria are provided. 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 modulation formats.

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 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*

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

IEC 61300-2-4, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-4: Tests – Fibre or cable retention*

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

IEC 62149-1, *Fibre optic active components and devices – Performance standards – Part 1: General and guidance*

IEC 62572-3, *Fibre optic active components and devices – Reliability standards – Part 3: Laser modules used for telecommunication*

ITU-T Recommendation G.694.1, *Spectral grids for WDM applications: DWDM frequency grid*

ITU-T Recommendation G.957, *Optical interfaces for equipments and systems relating to the synchronous digital hierarchy*

MIL-STD-883-1, *U.S. Department of Defense – Test method standard – Environmental test methods for microcircuits, Part 1: Test methods 1000-1999*

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