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**Fiberoptik –
Aktiva komponenter –
Prestanda –
Del 5: ATM-PON sändar-mottagarmodul med kretsar
för CDR och drivning av laserdiod**

*Fibre optic active components and devices –
Performance standards –
Part 5: ATM-PON transceivers with LD driver and CDR ICs*

Som svensk standard gäller europastandarden EN IEC 62149-5:2020. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62149-5:2020.

Nationellt förord

Europastandarden EN IEC 62149-5:2020

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 62149-5, Third edition, 2020 - Fibre optic active components and devices - Performance standards - Part 5: ATM-PON transceivers with LD driver and CDR ICs**

utarbetad inom International Electrotechnical Commission, IEC.

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SEK Svensk Elstandard

Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

EUROPEAN STANDARD

EN IEC 62149-5

NORME EUROPÉENNE

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Supersedes EN 62149-5:2011 and all of its amendments
and corrigenda (if any)

English Version

**Fibre optic active components and devices - Performance
standards - Part 5: ATM-PON transceivers with LD driver and
CDR ICs
(IEC 62149-5:2020)**

Composants et dispositifs actifs fibroniques - Normes de
performances - Partie 5: Emetteurs-récepteurs ATM-PON
avec programme de gestion LD et CI CDR
(IEC 62149-5:2020)

Aktive Lichtwellenleiterbauelemente und -geräte -
Betriebsverhalten - Teil 5: ATM-PON Sende- und
Empfangsmodule mit Laserdiodentreiberschaltungen und
Takt- und Datenrückgewinnungs-ICs
(IEC 62149-5:2020)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
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SS-EN IEC 62149-5, utg 3:2021

European foreword

The text of document 86C/1667(F)/FDIS, future edition 3 of IEC 62149-5, 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 62149-5:2020.

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) 2021-06-22
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-09-22

This document supersedes EN 62149-5:2011 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62149-5:2020 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 60793 series NOTE Harmonized as EN IEC 60793 series
- IEC 60794 series NOTE Harmonized as EN 60794 series
- IEC 60825 series NOTE Harmonized as EN 60825 series
- IEC 61076 series NOTE Harmonized as EN IEC 61076 series
- IEC 61280 series NOTE Harmonized as EN 61280 series
- IEC 61281-1 NOTE Harmonized as EN IEC 61281-1
- IEC 61754 series NOTE Harmonized as EN 61754 series
- IEC 62007-1 NOTE Harmonized as EN 62007-1
- IEC 62007-2 NOTE Harmonized as EN 62007-2
- ISO 1101:2017 NOTE Harmonized as EN ISO 1101:2017 (not modified)

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.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-6	-	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	-EN 60068-2-6	-
IEC 60068-2-27	-	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	-EN 60068-2-27	-
IEC 60332-3-24	-	Tests on electric and optical fibre cables under fire conditions - Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category C	EN IEC 60332-3-24	-
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 61000-6-3	-	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments		-
IEC 61280-1-1	-	Fibre optic communication subsystem basic test procedures - Part 1-1: Test procedures for general communication subsystems - Transmitter output optical power measurement for single-mode optical fibre cable	EN 61280-1-1	-
IEC 61280-1-3	-	Fibre optic communication subsystem test procedures - Part 1-3: General communication subsystems - Central wavelength and spectral width measurement	EN 61280-1-3	-
IEC 61280-2-2	-	Fibre optic communication subsystem test procedures - Part 2-2: Digital systems - Optical eye pattern, waveform and extinction ratio measurement	EN 61280-2-2	-

EN IEC 62149-5:2020 (E)

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 61300-2-17	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-17: Tests - Cold	EN 61300-2-17	-
IEC 61300-2-18	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-18: Tests - Dry heat - High temperature endurance	EN 61300-2-18	-
IEC 61300-2-19	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-19: Tests - Damp heat (steady-state)	EN 61300-2-19	-
IEC 61300-2-22	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-22: Tests - Change of temperature	EN 61300-2-22	-
IEC 61300-3-6	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-6: Examinations and measurements - Return loss	EN 61300-3-6	-
IEC 61753-1	-	Fibre optic interconnecting devices and passive components - Performance standard - Part 1: General and guidance	EN IEC 61753-1	-
IEC 62148-1	-	Fibre optic active components and devices - Package and interface standards - Part 1: General and guidance	EN IEC 62148-1	-
IEC 62150-2	-	Fibre optic active components and devices - Test and measurement procedures - Part 2: ATM-PON transceivers	EN 62150-2	-
ITU-T Recommendation G.957	2006	Optical interfaces for equipments and systems relating to the synchronous digital hierarchy		-
ITU-T Recommendation G.983.1	2005	Broadband optical access systems based on Passive Optical Networks (PON)		-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – PERFORMANCE STANDARDS –

Part 5: ATM-PON transceivers with LD driver and CDR ICs

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62149-5 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 2009 and constitutes a technical revision.

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

- a) description of types in Clause 4 has been removed;
- b) titles of reference documents have been updated.

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

FDIS	Report on voting
86C/1667/FDIS	86C/1678/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 of 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,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

Fibre optic transceivers are used to convert electrical signals into optical signals and vice versa. The optical performance criteria are generally well specified for a number of internationally agreed applications areas such as ITU-T Recommendation G.983.1 and IEEE Std 802.3. This document aims to assure inter-changeability in performance between fibre optic transceivers for ATM-PON (ATM-based broadband passive optical network) systems supplied by different manufacturers but does not guarantee operation between fibre optic transceivers.

Manufacturers using this document are responsible for meeting the required performance and/or reliability and quality assurance under a recognized scheme.

FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – PERFORMANCE STANDARDS –

Part 5: ATM-PON transceivers with LD driver and CDR ICs

1 Scope

This part of IEC 62149 specifies performance on the transceiver modules for asynchronous-transfer-mode passive optical network (ATM-PON) systems recommended by the International Telecommunication Union (ITU) in ITU-T Recommendation G.983.1.

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

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

IEC 60332-3-24, *Tests on electric and optical fibre cables under fire conditions – Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category C*

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 61000-6-3, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments*

IEC 61280-1-1, *Fibre optic communication subsystem basic test procedures – Part 1-1: Test procedures for general communication subsystems – Transmitter output optical power measurement for single-mode optical fibre cable*

IEC 61280-1-3, *Fibre optic communication subsystem test procedures – Part 1-3: General communication subsystems – Central wavelength and spectral width measurement*

IEC 61280-2-2, *Fibre optic communication subsystem test procedures – Part 2-2: Digital systems – Optical eye pattern, waveform and extinction ratio measurement*

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 61300-2-18, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-18: Tests – Dry heat – High temperature endurance*

IEC 61300-2-19, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-19: Tests – Damp heat (steady state)*

IEC 61300-2-22, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-22: Tests – Change of temperature*

IEC 61300-3-6, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-6: Examinations and measurements – Return loss*

IEC 61753-1, *Fibre optic interconnecting devices and passive components – Performance standard – Part 1: General and guidance*

IEC 62148-1, *Fibre optic active components and devices – Package and interface standards – Part 1: General and guidance*

IEC 62150-2, *Fibre optic active components and devices – Test and measurement procedures – Part 2: ATM-PON transceivers*

ITU-T Recommendation G.957:2006, *Optical interfaces for equipments and systems relating to the synchronous digital hierarchy*

ITU-T Recommendation G.983.1:2005, *Broadband optical access systems based on Passive Optical Networks (PON)*