

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 62149-5:2011 sisaldab Euroopa standardi EN 62149-5:2011 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 28.02.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

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English version

**Fibre optic active components and devices -
Performance standards -
Part 5: ATM-PON transceivers with LD driver and CDR ICs
(IEC 62149-5:2009)**

Composants et dispositifs actifs à fibres
optiques -
Normes de fonctionnement
Partie 5: Émetteurs-récepteurs ATM-PON
avec programme de gestion LD et ICs
CDR
(CEI 62149-5:2009)

Aktive Lichtwellenleiterbauelemente und -
geräte -
Betriebsverhalten -
Teil 5: ATM-PON Sende- und
Empfangsmodule mit
Laserdiodentreiberschaltungen und Takt-
und Datenrückgewinnungs-ICs
(IEC 62149-5:2009)

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CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 86C/891/FDIS, future edition 2 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 was approved by CENELEC as EN 62149-5 on 2011-01-02.

This European Standard supersedes EN 62149-5:2003.

The main changes with respect to EN 62149-5:2003 are listed below:

- Normative references have been updated;
- Incorrect “Letter symbols” have been corrected;
- Some “Notes” in tables have been revised in order to harmonize with EN 62150-2:2004.

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

The following dates were fixed:

- | | | |
|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2011-10-02 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2014-01-02 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62149-5:2009 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 60617 series	NOTE	Harmonized in EN 60617 series (not modified).
IEC 60793 series	NOTE	Harmonized in EN 60793 series (partially modified).
IEC 60794 series	NOTE	Harmonized in EN 60794 series (not modified).
IEC 60825 series	NOTE	Harmonized in EN 60825 series (not modified).
IEC 60874 series	NOTE	Harmonized in EN 60874 series (not modified).
IEC 61076 series	NOTE	Harmonized in EN 61076 series (not modified).
IEC 61280 series	NOTE	Harmonized in EN 61280 series (not modified).
IEC 61281-1:1999	NOTE	Harmonized as EN 61281-1:1999 (not modified).
IEC 61754 series	NOTE	Harmonized in EN 61754 series (partially modified).
IEC 62007-1:1999	NOTE	Harmonized as EN 62007-1:2000 (not modified).
IEC 62007-2:1999	NOTE	Harmonized as EN 62007-2:2000 (not modified).
IEC 62148-1:2002	NOTE	Harmonized as EN 62148-1:2002 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-6	2007	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	2008
IEC 60068-2-27	2008	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	EN 60068-2-27	2009
IEC 60825-1	2007	Safety of laser products - Part 1: Equipment classification and requirements	EN 60825-1	2007
IEC 60950-1 (mod)	2005	Information technology equipment - Safety - Part 1: General requirements	EN 60950-1 + A11	2006 2009
IEC 61000-6-3	-	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light- industrial environments	EN 61000-6-3	-
IEC 61280-1-1	1998	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	1998
IEC 61280-1-3	1998	Fibre optic communication subsystem basic test procedures - Part 1-3: Test procedures for general communication subsystems - Central wavelength and spectral width measurement	EN 61280-1-3 ¹⁾	1999
IEC 61280-2-2	2008	Fibre optic communication subsystem test procedures - Part 2-2: Digital systems - Optical eye pattern, waveform and extinction ratio measurement	EN 61280-2-2	2008
IEC 61300-2-4	1995	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-4: Tests - Fibre/cable retention	EN 61300-2-4	1997

¹⁾ EN 61280-1-3 is superseded by EN 61280-1-3:2010, which is based on IEC 61280-1-3:2010.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61300-2-17	2003	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-17: Tests - Cold	EN 61300-2-17	2003
IEC 61300-2-18	2005	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	2005
IEC 61300-2-19	2005	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-19: Tests - Damp heat (steady state)	EN 61300-2-19	2005
IEC 61300-2-22	2007	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-22: Tests - Change of temperature	EN 61300-2-22	2007
IEC 61300-3-6	2003	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-6: Examinations and measurements - Return loss	EN 61300-3-6 ²⁾	2003
IEC 61753-1	2007	Fibre optic interconnecting devices and passive components performance standard - Part 1: General and guidance for performance standards	EN 61753-1	2007
IEC/TR 61931	-	Fibre optic - Terminology	-	-
IEC 62150-2	2004	Fibre optic active components and devices - Test and measurement procedures - Part 2: ATM-PON transceivers	EN 62150-2 ³⁾	2004
ITU-T Recommendation G.983.1	-	Broadband optical access systems based on Passive Optical Networks (PON)	-	-

²⁾ EN 61300-3-6 is superseded by EN 61300-3-6:2009, which is based on IEC 61300-3-6:2008.

³⁾ EN 62150-2 is superseded by EN 62150-2:2011, which is based on IEC 62150-2:2010.

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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 802.3. This standard aims to assure inter-changeability in performance between fibre optic transceivers for ATM-PON systems supplied by different manufacturers, but does not guarantee operation between fibre optic transceivers.

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

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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 referenced documents are indispensable for the application 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 60068-2-6:2007, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-27:2008, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60825-1:2007, *Safety of laser products – Part 1: Equipment classification and requirements*

IEC 60950-1:2005, *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 61280-1-1:1998, *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 61280-1-3:1998, *Fibre optic communication subsystem basic test procedures – Part 1-3: Test procedures for general communication subsystems – Central wavelength and spectral width measurement*

IEC 61280-2-2:2008, *Fibre optic communication subsystem test procedures – Part 2-2: Digital systems – Optical eye pattern, waveform and extinction ratio measurement*

IEC 61300-2-4:1995, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-4: Tests – Fibre/cable retention*

IEC 61300-2-17:2003, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-17: Tests – Cold*

IEC 61300-2-18:2005, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-18: Tests – Dry heat – High temperature endurance*

IEC 61300-2-19:2005, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-19: Tests – Damp heat (steady state)*

IEC 61300-2-22:2007, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-22: Tests – Change of temperature*

IEC 61300-3-6:2003, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-6: Examinations and measurements – Return loss*

IEC 61753-1:2007, *Fibre optic interconnecting devices and passive components performance standard – Part 1: General and guidance for performance standards*

IEC 61931, *Fibre optic – Terminology*

IEC 62150-2:2004, *Fibre optic active components and devices – Test and measurement procedures – Part 2: ATM-PON transceivers*

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

3 Term, definitions and abbreviations

For the purposes of this document, the following terms, definitions and abbreviations apply.

Further terminology concerning related physical concepts, types of devices, general terms, and terms related to ratings and characteristics can be found in IEC 61931.

It is also recommended to refer to ITU-T Recommendation G.983.1.

3.1 Terms and definitions

3.1.1

optical access network

OAN

set of access links sharing the same network-side interfaces and supported by optical access transmission systems.

NOTE The OAN may include a number of ODNs connected to the same OLT.

3.1.2

optical distribution network

ODN

apparatus or component that provides the optical transmission means from the OLT to the users, and vice versa. It utilizes passive optical components

3.1.3

optical line termination

OLT

apparatus that provides the network-side interface of the OAN, and is connected to one or more ODNs

3.1.4

optical network unit

ONU

apparatus that provides (directly or remotely) the user-side interface of the OAN, and is connected to the ODN