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Semiconductor optoelectronic devices for fibre optic system applications –
Part 2: Measuring methods

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Semiconductor optoelectronic devices for fibre optic system applications - Part 2: Measuring methods

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IEC 62007-2 has been prepared by subcommittee 86C: Fibre optic systems, sensing and active devices, of IEC technical committee 86: Fibre optics. It is an International Standard.

This third edition cancels and replaces the second edition published in 2009. This edition constitutes a technical revision.

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

a) Modification of the definition of “optical fibre pigtail” in 3.1.3;

b) Correction of an error in Formula (1) for relative intensity noise;

c) Correction of an error in Formula (5);

d) Correction of errors in the title of Figure 11 and the text of 4.9 (replaced "LD" with "LED");

e) Clarification of how to calculate the 1 dB compression in 4.9;

f) Corrections of the circuit diagrams in Figure 2, Figure 5, Figure 11, Figure 17, Figure 18, Figure 19, Figure 20, and Figure 21;

g) Clarification of the measurement setup in 5.10 (Figure 28).

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

Draft	Report on voting
86C/1975/FDIS	86C/1985/RVD

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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of the IEC 62007 series can be found, under the general title *Semiconductor optoelectronic devices for fibre optic system applications*, 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 in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

Semiconductor optical signal transmitters and receivers play important roles in optical communication networks. This document covers the measurement procedures for evaluating their optical and electrical properties that are important for applications in digital communication systems. These properties are essential for specifying the performance of these devices.

1 Scope

This part of IEC 62007 specifies measuring methods for characterizing semiconductor optoelectronic devices that are used in the field of fibre optic digital communication systems and subsystems.

2 Normative references

There are no normative references in this document.

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

3.1.1
PIN photodiode
photodiode with a large intrinsic region sandwiched between P- and N-doped semiconducting regions used for the detection of optical radiation

[SOURCE: IEC 60050-731:1991, 731-06-29, modified – the note was removed.]

3.1.2
avalanche photodiode
APD
photodiode operating with a bias voltage such that the primary photocurrent undergoes amplification by cumulative multiplication of charge carriers

[SOURCE: IEC 60050-731:1991, 731-06-30, modified – the note was removed.]

3.1.3
optical fibre pigtail
short length of optical fibre, usually permanently attached to a component and intended to facilitate jointing between that component and another optical fibre or component

[SOURCE: IEC 60050-731:1991, 731-05-08, modified – the note was removed.]