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**Optični spojni elementi in pasivne komponente - Optični elementi za WDM (valovni multipleks) - 1. del: Rodovna specifikacija (IEC 62074-1:2009)**

Fibre optic interconnecting devices and passive components - Fibre optic WDM devices - Part 1: Generic specification (IEC 62074-1:2009)

Lichtwellenleiter - Verbindungselemente und passive Bauteile - Lichtwellenleiter-WDM-Bauteile -- Teil 1: Fachgrundspezifikation (IEC 62074-1:2009)

Dispositifs d'interconnexion et dispositifs passifs à fibres optiques - Dispositifs WDM à fibres optiques - Partie 1: Spécification générique (CEI 62074-1:2009)

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**Ta slovenski standard je istoveten z: EN 62074-1:2009**

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EUROPEAN STANDARD  
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English version

**Fibre optic interconnecting devices and passive components -  
Fibre optic WDM devices -  
Part 1: Generic specification  
(IEC 62074-1:2009)**

Dispositifs d'interconnexion  
et dispositifs passifs à fibres optiques -  
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Lichtwellenleiter -  
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Teil 1: Fachgrundspezifikation  
(IEC 62074-1:2009)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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

**Central Secretariat: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 86B/2850/FDIS, future edition 1 of IEC 62074-1, prepared by SC 86B, Fibre optic interconnecting devices and passive components, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62074-1 on 2009-10-01.

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) 2010-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2012-10-01

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 62074-1:2009 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 61300-1	NOTE	Harmonized as EN 61300-1:2003 (not modified).
IEC 61300-2	NOTE	Harmonized in EN 61300-2 series (not modified).
IEC 61300-3	NOTE	Harmonized in EN 61300-3 series (not modified).

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## 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 60027	Series	Letter symbols to be used in electrical technology	EN 60027	Series
IEC 60050-731	- <sup>1)</sup>	International Electrotechnical Vocabulary (IEV) - Chapter 731: Optical fibre communication	-	-
IEC 60617	Data-base	Graphical symbols for diagrams	-	-
IEC 60695-11-5	- <sup>1)</sup>	Fire hazard testing - Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance	EN 60695-11-5	2005 <sup>2)</sup>
IEC 60825	Series	Safety of laser products	EN 60825	Series
ISO 129-1	- <sup>1)</sup>	Technical drawings - Indication of dimensions and tolerances - Part 1: General principles	-	-
ISO 286-1	- <sup>1)</sup>	ISO system of limits and fits - Part 1: Bases of tolerances, deviations and fits	EN 20286-1	1993 <sup>2)</sup>
ISO 370	- <sup>1)</sup>	Toleranced dimensions - Conversion from inches into millimetres and vice versa	-	-
ISO 1101	- <sup>1)</sup>	Geometrical Product Specifications (GPS) - Geometrical tolerancing - Tolerances of form, orientation, location and run-out	EN ISO 1101	2005 <sup>2)</sup>
ISO 8601	- <sup>1)</sup>	Data elements and interchange formats - Information interchange - Representation of dates and times	-	-
ITU-T Recommendation G.671	2005	Transmission characteristics of optical components and subsystems	-	-
ITU-T Recommendation G.692	1998	Optical interfaces for multichannel systems with optical amplifiers	-	-

<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

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# INTERNATIONAL STANDARD

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**Fibre optic interconnecting devices and passive components – Fibre optic WDM devices –  
Part 1: Generic specification**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC INTERCONNECTING  
DEVICES AND PASSIVE COMPONENTS –  
FIBRE OPTIC WDM DEVICES –**

**Part 1: Generic specification**

**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 62074-1 has been prepared by subcommittee SC86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This standard cancels and replaces IEC/PAS 62074-1 published in 2007. This first edition constitutes a technical revision.

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

FDIS	Report on voting
86B/2850/FDIS	86B/2889/RVD

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.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

A bilingual version of this publication may be issued at a later date.

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# FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – FIBRE OPTIC WDM DEVICES –

## Part 1: Generic specification

### 1 Scope

This part of IEC 62074 applies to fibre optic wavelength division multiplexing (WDM) devices. These have all of the following general features:

- They are passive, in that they contain no optoelectronic or other transducing elements; but they may use temperature control only the purpose to stabilize the characteristics of devices; they exclude any optical switching function.
- They have three or more ports for the entry and/or exit of optical power, and share optical power among these ports in a predetermined fashion depending on the wavelength.
- The ports are optical fibres or optical fibre connectors.

This standard establishes uniform requirements for the optical, mechanical and environmental properties.

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### 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 60027(all parts), *Letter symbols to be used in electrical technology*

IEC 60050(731), *International Electrotechnical Vocabulary (IEV) – Chapter 731: Optical fibre communication*

IEC 60617, *International Standard Database Snapshot – Graphical symbols for diagrams*

IEC 60695-11-5, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

IEC 60825(all parts), *Safety of laser products*

ISO 129-1, *Technical drawings – Indication of dimensions and tolerances – General principles*

ISO 286-1, *ISO system of limits and fits – Part 1: Bases of tolerances, deviations and fits*

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ISO 1101, *Geometrical Product Specifications (GPS) – Geometrical tolerancing – Tolerances of form, orientation, location and run-out*

ISO 8601, *Data elements and interchange formats – Information interchange – Representation of dates and times*

ITU-T Recommendation G.671:2005, *Transmission characteristics of optical components and subsystems*

ITU-T Recommendation G.692:1998, *Optical interfaces for multichannel systems with optical amplifiers*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050(731) and the following apply.

#### 3.1 Basic term definitions

##### 3.1.1

##### port

optical fibre or optical fibre connector attached to a passive component for the entry and/or exit of the optical power (input and/or output port)

##### 3.1.2

##### transfer matrix

optical properties of a fibre optic wavelength-selective branching device can be defined in terms of an  $n \times n$  matrix of coefficients, where  $n$  is the number of ports, and the coefficients represent the fractional optical power transferred between designated ports

NOTE The detail explanation of transfer matrix is shown in Annex A.

##### 3.1.3

##### transfer matrix coefficient

element  $t_{ij}$  of the transfer matrix

NOTE The detail explanation is shown in Annex A.

##### 3.1.4

##### logarithmic transfer matrix

transfer matrix whose matrix element  $a_{ij}$  is a logarithmic value of transfer matrix element  $t_{ij}$

NOTE The detail explanation is shown in Annex A.

##### 3.1.5

##### conducting ports

two ports  $i$  and  $j$  between which  $t_{ij}$  is nominally greater than zero at a specified wavelength

##### 3.1.6

##### input/output port pair

conducting ports  $i$  and  $j$  ( $t_{ij}$  nominally greater than zero) that are isolated from any other ports  $j$  ( $a_{ij}$  nominally infinite). The ports are numbered sequentially, so that the transfer matrix is developed to show all ports and all possible combinations. The port numbering is arbitrary.

NOTE Figure 1 below shows an example of a six-port device, with two input ports and four output ports.