

BS EN 60875-1:2010



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Fibre optic interconnecting devices and passive components — Non-wavelength-selective fibre optic branching devices

Part 1: Generic specification

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National foreword

This British Standard is the UK implementation of EN 60875-1:2010. It is identical to IEC 60875-1:2010. It supersedes BS EN 60875-1:2001 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee GEL/86, Fibre optics, to Subcommittee GEL/86/2, Fibre optic interconnecting devices and passive components.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments issued since publication

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EUROPEAN STANDARD
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EN 60875-1

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Supersedes EN 60875-1:2001

English version

**Fibre optic interconnecting devices and passive components -
Non-wavelength-selective fibre optic branching devices -
Part 1: Generic specification
(IEC 60875-1:2010)**

Dispositifs d'interconnexion
et composants passifs à fibres optiques -
Dispositifs de couplage pour fibres
optiques ne dépendant pas de la longueur
d'onde -
Partie 1: Spécification générique
(CEI 60875-1:2010)

Lichtwellenleiter - Verbindungselemente
und passive Bauteile -
wellenlängenunabhängige
Lichtwellenleiter-Verzweiger -
Teil 1: Fachgrundspezifikation
(IEC 60875-1:2010)

This European Standard was approved by CENELEC on 2010-07-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

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Foreword

The text of document 86B/2986/FDIS, future edition 5 of IEC 60875-1, 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 60875-1 on 2010-07-01.

This European Standard supersedes EN 60875-1:2001.

This EN 60875-1:2010 constitutes a technical revision. The changes with respect to EN 60875-1:2001 are to delete the clause of Quality assessment procedures and reconsider the constitution of this standard.

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) | 2011-04-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2011-07-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60875-1:2010 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 60068 series	NOTE	Harmonized in EN 60068 series (not modified).
IEC 60874 series	NOTE	Harmonized in EN 60874 series (not modified).
IEC 60869-1	NOTE	Harmonized as EN 60869-1.
IEC 60974 series	NOTE	Harmonized in EN 60974 series (partially modified).
IEC 61300-1	NOTE	Harmonized as EN 61300-1.
IEC 61300-2 series	NOTE	Harmonized in EN 61300-2 series (not modified).
IEC 61300-3 series	NOTE	Harmonized in EN 61300-3 series (not modified).
IEC 61753	NOTE	Harmonized as EN 61753.
IEC 61754-4	NOTE	Harmonized as EN 61754-4.
IEC 61754-13	NOTE	Harmonized as EN 61754-13.
IEC 61754-15	NOTE	Harmonized as EN 61754-15.
IEC 62005 series	NOTE	Harmonized in EN 62005 series (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 60027	Series	Letter symbols to be used in electrical technology	EN 60027	Series
IEC 60050-731	-	International Electrotechnical Vocabulary (IEV) - Chapter 731: Optical fibre communication	-	-
IEC 60617-SN	-	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	EN 60695-11-5	-
IEC 60825	Series	Safety of laser products	EN 60825	Series
IEC 61300	Series	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures	EN 61300	Series
IEC/TR 61930	-	Fibre optic graphical symbology	-	-
IEC Guide 102	-	Electronic components - Specification structures for quality assessment (Qualification approval and capability approval)	-	-
IECQ 01	-	IEC Quality Assessment System for Electronic Components (IECQ) - Basic Rules	-	-
IECQ 001002-3	-	IEC Quality Assessment System for Electronic Components (IECQ) - Rules of Procedure - Part 3: Approval procedures	-	-
ISO 129-1	-	Technical drawings - Indication of dimensions - and tolerances - Part 1: General principles	-	-
ISO 286-1	-	ISO system of limits and fits - Part 1: Bases of tolerances, deviations and fits	EN ISO 286-1	-
ISO 1101	-	Geometrical Product Specifications (GPS) - Geometrical tolerancing - Tolerances of form, orientation, location and run-out	EN ISO 1101	-
ISO 8601	-	Data elements and interchange formats - Information interchange - Representation of dates and times	-	-

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FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – NON-WAVELENGTH-SELECTIVE FIBRE OPTIC BRANCHING DEVICES –

Part 1: Generic specification

1 Scope

This part of IEC 60875 applies to non-wavelength-selective fibre optic branching devices, all exhibiting the following features:

- they are passive, in that they contain no optoelectronic or other transducing elements;
- 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;
- the ports are optical fibres, or optical fibre connectors.

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

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-SN, *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*

IEC 61300 (all parts), *Fibre optic interconnecting devices and passive components*

IEC 61930, *Fibre optic graphic symbology*

IEC Guide 102, *Electronic components – Specification structures for quality assessment (Qualification approval and capability approval)*

IECQ 01, *IEC Quality Assessment System for Electronic Components (IECQ Scheme) – Basic Rules*

IECQ 001002-3, *IEC Quality Assessment System for Electronic Components (IECQ) – Rules of Procedure – Part 3: Approval procedures*

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

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

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*

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

3.1.2

optical pigtail

short length of jumper or cable forming an optical port for an optic component

3.1.3

transfer matrix

optical properties of a non-wavelength-selective optic branching device can be defined in terms of an $n \times n$ matrix of coefficients, n being the number of ports, with the coefficients representing the fractional optical power transferred between designated ports

In general, the transfer matrix T is as follows:

$$T = \begin{bmatrix} t_{11} & t_{12} & \cdot & \cdot & \cdot & t_{1n} \\ t_{21} & & & & & \\ \cdot & & & t_{ij} & & \\ \cdot & & & & & \\ t_{n1} & & & & & t_{nn} \end{bmatrix}$$

where

t_{ij} is the ratio of the optical power P_{ij} transferred out of port j with respect to input power P_i into port i , that is:

$$t_{ij} = P_{ij}/P_i$$

The transfer matrix is used to classify the different types of non-wavelength-selective branching devices which are specified in this generic specification.

In a non-wavelength-selective branching device, the coefficients t_{ij} may be a function of the input wavelength, input polarization or modal power distribution. The values of these parameters are provided in the detail specification, when necessary.