



SLOVENSKI STANDARD
SIST EN 60825-2:1999

01-julij-1999

**Safety of laser products -- Part 2: Safety of optical fibre communication systems
(IEC 60825-2:1993)**

Safety of laser products -- Part 2: Safety of optical fibre communication systems

Sicherheit von Lasereinrichtungen -- Teil 2: Sicherheit von Lichtwellenleiter-Kommunikationssystemen

iTeh STANDARD PREVIEW

Sécurité des appareils à laser -- (Partie 2: Sécurité des systèmes de télécommunication par fibres optiques)

[SIST EN 60825-2:1999](https://standards.iteh.ai/catalog/standards/sist/2ba059dd-41c3-9e68-100820d47c68/sist-en-60825-2-1999)

Ta slovenski standard je istoveten z: EN 60825-2:1994

ICS:

31.260	Optoelektronika, laserska oprema	Optoelectronics. Laser equipment
33.180.01	Účelové systémy optických vláken • [[z]]	Fibre optic systems in general

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EUROPEAN STANDARD

REPUBLIKA SLOVENIJA
 MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO
 Urad RS za standardizacijo in meroslovje
 LJUBLJANA

EN 60825-2

NORME EUROPEENNE

SIST. EN 60825-2
 PREVZET PO METODI RAZGLASITVE

January 1994

EUROPÄISCHE NORM

-08-1999

UDC 621.375.826:681.7.086:614.876

Descriptors: Laser product, radiation safety, user's guide, telecommunication,
 optical fibre

ENGLISH VERSION

Safety of laser products
 Part 2: Safety of optical fibre communication
 systems
 (IEC 825-2:1993)

Sécurité des appareils à laser
 Partie 2: Sécurité des systèmes
 de télécommunication par fibres
 optiques

(CEI 825-2:1993)

Sicherheit von
 Lasereinrichtungen
 Teil 2: Sicherheit von
 Lichtwellenleiter-Kommunikations-
 systemen

(IEC 825-2:1993)

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This European Standard was approved by CENELEC on 1993-12-08.
 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.

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.

This European Standard exists in three official versions (English, French, German).
 A version in any other language made by translation under the responsibility of
 a CENELEC member into its own language and notified to the Central Secretariat
 has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium,
 Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg,
 Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

FOREWORD

The text of document 76(CO)30, as prepared by IEC Technical Committee N° 76: Laser equipment, was submitted to the IEC-CENELEC parallel vote in January 1993.

The reference document was approved by CENELEC as EN 60825-2 on 8 December 1993.

The following dates were fixed:

- latest date of publication of
an identical national standard (dop) 1994-12-01
- latest date of withdrawal of
conflicting national standards (dow) 1994-12-01

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given only for information. In this standard, annexes A and C are informative and annexes B and ZA are normative.

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ENDORSEMENT NOTICE

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The text of the International Standard IEC 825-2:1993 was approved by CENELEC as a European Standard without any modification.

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

NOTE : When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication	Date	Title	EN/HD	Date
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794-2	1989	Optical fibre cables - Part 2: Product specifications	-	-
825-1	1993*	Safety of laser products Part 1: Equipment classification, requirements and user's guide	-	-

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* IEC 825:1984 + A1:1990, mod., is harmonized as EN 60825:1991

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**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC
825-2**

Première édition
First edition
1993-09

Sécurité des appareils à laser

**Partie 2:
Sécurité des systèmes de télécommunication
par fibres optiques**

iTeh STANDARD PREVIEW

**(standards.iteh.ai)
Safety of laser products**

SIST EN 60825-2:1999

<https://standards.iteh.ai/catalog/standards/sist/2ba059dd-cbee-41c3-9e68->

**Part 2:
Safety of optical fibre communication systems**

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF LASER PRODUCTS

Part 2: Safety of optical fibre communication systems

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a world-wide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter. <https://standards.iteh.ai/catalog/standards/sist/2ba059dd-cbee-41c3-9e68-f60820d47c68/sist-en-60825-2-1999>

International Standard IEC 825-2 has been prepared by IEC technical committee 76: Laser equipment.

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

DIS	Report on voting
76(CO)30	76(CO)32

Full information on the voting for the approval of this standard can be found in the voting report indicated in the above table.

IEC 825-2 constitutes part 2 of a series of publications under the general title: Safety of laser products.

Annex B forms an integral part of this standard.

Annexes A and C are for information only.

SAFETY OF LASER PRODUCTS

Part 2: Safety of optical fibre communication systems

1 Scope

This part 2 of IEC 825 provides requirements and specific guidance for the safe use of optical fibre and/or control communication systems where optical power may be accessible at great distance from the optical source. It does not apply to optical fibre systems primarily designed to transmit optical power for applications such as material processing or medical treatment.

Throughout this part of IEC 825, light emitting diodes (LEDs) are included whenever the word "laser" is used.

The objective of this part 2 of IEC 825 is to:

- protect people from optical radiation resulting from optical fibre communication systems. This requires the introduction of engineering requirements and work practices according to the degree of hazard;
- lay down requirements for manufacturers and operating organizations in order to establish procedures and supply information so that proper precautions can be adopted;
- ensure adequate warning to individuals of hazards associated with optical fibre communication systems through signs, labels and instructions;
- reduce the possibility of injury by minimising unnecessary accessible radiation and to give improved control of the optical radiation through protective features and provide safe usage of products by specifying user control measures.

Annex A gives a more detailed rationale for this part of IEC 825.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 825. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 825 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 794-2: 1989, *Optical fibre cables – Part 2: Product specifications*

IEC 825-1: 1993, *Safety of laser products – Part 1: Equipment classification, requirements and user's guide*

3 Definitions

For the purposes of this part of IEC 825, the following definitions apply. They are in addition to those given in IEC 825-1.

3.1 automatic power reduction: A feature of an optical fibre communication system by which the accessible power is reduced to a specified level within a specified time, whenever there is an event which could result in human exposure to radiation, e.g. a fibre cable break.

3.2 enclosed system: System in which, during normal operation, the optical radiation is totally enclosed, e.g. by light-proof cabinets, components, total internal reflection or optical fibre cables and connectors.

3.3 end-user: The person/organization using the optical fibre communication system in the manner the system was designed to be used. The user cannot necessarily control the power generated and transmitted within the system.

3.4 hazard level: The potential hazard at any accessible location within an optical fibre communication system. It is based on the level of optical radiation which could become accessible in reasonably foreseeable circumstances, e.g. a fibre cable break. It is closely related to the laser classification procedure in IEC 825-1.

3.5 hazard level 1: A hazard level 1 is allocated to any part within an optical fibre communication system at which, under reasonably foreseeable circumstances, human access to laser radiation in excess of the accessible emission limits (AEL) of class 1 for the applicable wavelengths and emission duration will not occur.

3.6 hazard level 2: A hazard level 2 is allocated to any part within an optical fibre communication system at which, under reasonably foreseeable circumstances, human access to laser radiation in excess of the accessible emission limits of class 2 for the applicable wavelengths and emission duration will not occur.

3.7 hazard level 3A: A hazard level 3A is allocated to any part within an optical fibre communication system at which, under reasonably foreseeable circumstances, human access to laser radiation in excess of the accessible emission limits of class 3A for the applicable wavelengths and emission duration will not occur.

3.8 hazard level $k \times 3A$: In the wavelength range 400 nm to 4 000 nm, a hazard level $k \times 3A$ is allocated to any part within an optical fibre communication system at which, under reasonably foreseeable circumstances, human access to laser radiation in excess of the accessible emission limits of hazard level $k \times 3A$ for the applicable wavelengths and emission duration will not occur. For purposes of the $k \times 3A$ hazard level evaluation, class 3A AEL table is used and the minimum measurement distance shall be increased to 250 mm from the apparent source and the time base used shall be 10 s provided longer viewing durations are not reasonably foreseeable.