TECHNICAL REPORT

IEC TR 60825-10

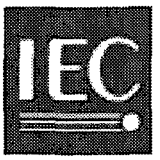
First edition
2002-02

Safety of laser products –

Part 10: Application guidelines and explanatory notes to IEC 60825-1

Sécurité des appareils à laser –

Partie 10:
Guide d'application et notes explicatives concernant la CEI 60825-1



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF LASER PRODUCTS –

Part 10: Application guidelines and explanatory notes to IEC 60825-1

FOREWORD

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Technical reports do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful by the maintenance team.

IEC 60825-10, which is a technical report, has been prepared by subcommittee 76: Optical radiation safety and laser equipment.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
76/217/CDV	76/229/RVC

Full information on the voting for the approval of this technical report 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.

This document, which is purely informative, is not to be regarded as an International Standard.

INTRODUCTION

This technical report is an informative document providing a simplified introduction to laser hazard concepts, classification, intrabeam viewing and extended source viewing used in IEC 60825-1, *Safety of laser products – Part 1: Equipment classification, requirements and user's guide*.

This technical report does not replace IEC 60825-1; however, if there is any real or apparent conflict between this technical report and the standard, the standard must prevail.

SAFETY OF LASER PRODUCTS –

Part 10: Application guidelines and explanatory notes to IEC 60825-1

1 Scope

This technical report gives information on the physics relating to the dangers posed by laser products. It complements, but does not replace, the information in IEC 60825-1 by explaining the underlying principles. The application of this technical report is limited to laser products with finite accessible emissions of laser radiation.

2 Object

This technical report provides a user of IEC 60825-1 with background information for that standard (specifically the laser hazard, classification system, intrabeam viewing and extended source viewing), giving the user an insight into the physics behind that standard, so that the user may correctly interpret its requirements.

3 Reference documents

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 60825-1:1993, *Safety of laser products – Equipment classification, requirements and user's guide* [1]
Amendment 1 (1997)
Amendment 2 (2001)

4 Definitions

For the purpose of this technical report, the definitions in IEC 60825-1 apply.

5 Why laser radiation is hazardous

Electromagnetic radiation is not normally considered dangerous. However, the simple analysis below shows that a 1 W laser can introduce more than five orders of magnitude greater light into the eye (at 1 m distance) than an incandescent bulb of equal power placed at the same distance, and more than one order of magnitude greater than that of the sun.

Laser radiation in the optical hazard region from 400 nm to 1 400 nm is focused to a small spot on the retina. This increases the hazard in that region. The current example illustrates the effect in the optical hazard region.

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[1] There exists a consolidated edition (2001) that includes IEC 60825-1 (1993) and its Amendment 1 (1997) and Amendment 2 (2001).