



**NSAI**  
Standards

Irish Standard  
I.S. EN IEC 60601-2-22:2020

Medical electrical equipment - Part 2-22:  
Particular requirements for basic safety  
and essential performance of surgical,  
cosmetic, therapeutic and diagnostic laser  
equipment

**I.S. EN IEC 60601-2-22:2020**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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## National Foreword

I.S. EN IEC 60601-2-22:2020 is the adopted Irish version of the European Document EN IEC 60601-2-22:2020, Medical electrical equipment - Part 2-22: Particular requirements for basic safety and essential performance of surgical, cosmetic, therapeutic and diagnostic laser equipment

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EUROPEAN STANDARD

**EN IEC 60601-2-22**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2020

ICS 11.040.01; 31.260

Supersedes EN 60601-2-22:2013 and all of its  
amendments and corrigenda (if any)

English Version

**Medical electrical equipment - Part 2-22: Particular requirements  
for basic safety and essential performance of surgical, cosmetic,  
therapeutic and diagnostic laser equipment  
(IEC 60601-2-22:2019)**

Appareils électromédicaux - Partie 2-22: Exigences  
particulières pour la sécurité de base et les performances  
essentielle des appareils chirurgicaux, esthétiques,  
thérapeutiques et de diagnostic à laser  
(IEC 60601-2-22:2019)

Medizinische elektrische Geräte - Teil 2-22: Besondere  
Festlegungen für die Sicherheit einschließlich der  
wesentlichen Leistungsmerkmale für chirurgische,  
therapeutische und diagnostische Lasergeräte  
(IEC 60601-2-22:2019)

This European Standard was approved by CENELEC on 2019-12-25. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

## **EN IEC 60601-2-22:2020 (E)**

### **European foreword**

The text of document 76/580/CDV, future edition 4 of IEC 60601-2-22, prepared by IEC/TC 76 "Optical radiation safety and laser equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60601-2-22:2020.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2021-04-30 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2023-10-30 document have to be withdrawn

This document supersedes EN 60601-2-22:2013 and all of its amendments and corrigenda (if any).

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### **Endorsement notice**

The text of the International Standard IEC 60601-2-22:2019 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 60335-2-113:2016	NOTE	Harmonized as EN 60335-2-113:— <sup>1</sup>
IEC 61010-1	NOTE	Harmonized as EN 61010-1
IEC 60947-3	NOTE	Harmonized as EN 60947-3

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<sup>1</sup> Under preparation. Stage at time of publication: FprEN 60335-2-113:2019.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

***The Annex ZA of EN 60601-1:2006/A12:2014 applies with the following additions:***

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60601-1	2005	Medical electrical equipment - Part 1:EN 60601-1 General requirements for basic safety and essential performance		2006
-	-		+ corrigendum Mar. 2010	
+ A1	2012		+ A1	2013
-	-		+ A12	2014
IEC 60825-1	2014	Safety of laser products - Part 1:EN 60825-1 Equipment classification and requirements		2014
-	-		/AC	2017

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**IEC 60601-2-22**

Edition 4.0 2019-11

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**

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**Medical electrical equipment –  
Part 2-22: Particular requirements for basic safety and essential performance  
of surgical, cosmetic, therapeutic and diagnostic laser equipment**

**Appareils électromédicaux –  
Partie 2-22: Exigences particulières pour la sécurité de base et les performances  
essentielles des appareils chirurgicaux, esthétiques, thérapeutiques et de  
diagnostic à laser**





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#### **IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)**

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La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

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**IEC 60601-2-22**

Edition 4.0 2019-11

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**

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**Medical electrical equipment –  
Part 2-22: Particular requirements for basic safety and essential performance  
of surgical, cosmetic, therapeutic and diagnostic laser equipment**

**Appareils électromédicaux –  
Partie 2-22: Exigences particulières pour la sécurité de base et les  
performances essentielles des appareils chirurgicaux, esthétiques,  
thérapeutiques et de diagnostic à laser**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

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ICS 11.040.50; 11.040.60; 31.260

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### MEDICAL ELECTRICAL EQUIPMENT –

#### **Part 2-22: Particular requirements for basic safety and essential performance of surgical, cosmetic, therapeutic and diagnostic laser equipment**

#### 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 60601-2-22 has been prepared by IEC subcommittee 76: Optical radiation safety and laser equipment.

This fourth edition cancels and replaces the third edition published in 2007 and Amendment 1:2012. This edition constitutes a technical revision.

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

- a) it takes account of IEC 60601-1:2005/AMD1:2012 and IEC 60825-1:2014, which have been published since publication of the third edition;
- b) it addresses technical and safety issues which have arisen since publication of the third edition;

- c) the scope of this fourth edition differs from the scope of the third edition. It now includes CLASS 1C laser equipment, as defined in IEC 60825-1:2014, when the ENCLOSED LASER is CLASS 3B or 4;
- d) LED (light emitting diode) products are now excluded from this document as medical LED products may be covered by IEC 60601-2-57.

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

CDV	Report on voting
76/580/CDV	76/610/RVC

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this document, the following print types are used:

- requirements and definitions: roman type;
- *test specifications: italic type*;
- informative material appearing outside of tables, such as notes, examples and references: in smaller type. Normative text of tables is also in a smaller type.
- TERMS DEFINED IN CLAUSE 3 OF THE GENERAL STANDARD, IN THIS PARTICULAR STANDARD OR AS NOTED: SMALL CAPITALS.

In referring to the structure of this document, the term

- “clause” means one of the seventeen numbered divisions within the table of contents, inclusive of all subdivisions (e.g. Clause 7 includes subclauses 7.1, 7.2, etc.);
- “subclause” means a numbered subdivision of a clause (e.g. 7.1, 7.2 and 7.2.1 are all subclauses of Clause 7).

References to clauses within this document are preceded by the term “Clause” followed by the clause number. References to subclauses within this document are by number only.

In this document, the conjunctive “or” is used as an “inclusive or” so a statement is true if any combination of the conditions is true.

The verbal forms used in this document conform to usage described in Clause 7 of the ISO/IEC Directives, Part 2:2018. For the purposes of this document, the auxiliary verb:

- “shall” means that compliance with a requirement or a test is mandatory for compliance with this document;
- “should” means that compliance with a requirement or a test is recommended but is not mandatory for compliance with this document;
- “may” is used to describe a permissible way to achieve compliance with a requirement or test.

A list of all parts of the IEC 60601 and IEC 80601 series, published under the general title *Medical electrical equipment*, can be found 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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## INTRODUCTION

This document amends and supplements IEC 60601-1:2005 and IEC 60601-1:2005/AMD1:2012, *Medical electrical equipment – Part 1: General requirements for basic safety and essential performance*.

This document also refers to IEC 60825-1:2014. The requirements of this document are the minimum that need to be complied with, in order to achieve a reasonable level of safety and reliability during operation and application of medical laser equipment.

An asterisk (\*) as the first character of a title or at the beginning of a paragraph or table title indicates that there is guidance or rationale related to that item in Annex AA. Understanding the reasons for these requirements will not only facilitate the proper application of this document but will, in due course, expedite any revisions necessitated by changes in clinical practice or by developments in technology.



## **MEDICAL ELECTRICAL EQUIPMENT –**

### **Part 2-22: Particular requirements for basic safety and essential performance of surgical, cosmetic, therapeutic and diagnostic laser equipment**

#### **201.1 Scope, object and related standards**

Clause 1 of the general standard<sup>1</sup> applies, except as follows:

##### **201.1.1 Scope**

*Replacement:*

This part of IEC 60601 applies to the BASIC SAFETY and ESSENTIAL PERFORMANCE of laser equipment for surgical, therapeutic, medical diagnostic, cosmetic or veterinary applications, intended for use on humans or animals, classified as LASER PRODUCT of CLASS 1C where the ENCLOSED LASER is of CLASS 3B or 4, or CLASS 3B, or CLASS 4.

MEDICAL ELECTRICAL EQUIPMENT or MEDICAL ELECTRICAL SYSTEMS which incorporate lasers as sources of energy being transferred to the PATIENT or animal and where the lasers are specified as above, are referred to as “laser equipment” in this document.

NOTE 1 LASER PRODUCTS for these applications classified as a Class 1, Class 1M, CLASS 2, Class 2M or CLASS 3R LASER PRODUCT, are covered by IEC 60825-1:2014 and by the general standard.

If a clause or subclause is specifically intended to be applicable to ME EQUIPMENT only, or to ME SYSTEMS only, the title and content of that clause or subclause will say so. If that is not the case, the clause or subclause applies to ME EQUIPMENT and to ME SYSTEMS, as relevant.

Hazards inherent in the intended physiological function of laser equipment within the scope of this document are not covered by specific requirements in this document except in 7.2.13, Physiological effects, of the general standard.

NOTE 2 See also 4.2, RISK MANAGEMENT process, of the general standard.

NOTE 3 If the laser equipment is CLASS 1C according to IEC 60825-1:2014 and is used as a laser appliance in a household, it is covered by IEC 60335-2-113:2016.

##### **201.1.2 Object**

*Replacement:*

The object of this document is to establish particular BASIC SAFETY and ESSENTIAL PERFORMANCE requirements for the safety of surgical, cosmetic, therapeutic and diagnostic laser equipment.

##### **201.1.3 Collateral standards**

*Addition:*

This document refers to those applicable collateral standards that are listed in Clause 2 of the general standard and Clause 201.2 of this document.

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<sup>1</sup> In this document, “the general standard” means IEC 60601-1:2005 and IEC 60601-1:2005/AMD1:2012.

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