



SLOVENSKI STANDARD
SIST EN IEC 60601-2-46:2024

01-november-2024

Medicinska električna oprema - 2-46. del: Posebne zahteve za osnovno varnost in bistvene lastnosti operacijskih miz (IEC 60601-2-46:2023)

Medical electrical equipment - Part 2-46: Particular requirements for the basic safety and essential performance of operating tables (IEC 60601-2-46:2023)

Medizinische elektrische Geräte - Teil 2-46: Besondere Festlegungen für die Sicherheit einschließlich der wesentlichen Leistungsmerkmale von Operationstischen (IEC 60601-2-46:2023)

Appareils électromédicaux - Partie 2-46: Exigences particulières pour la sécurité de base et les performances essentielles des tables d'opération (IEC 60601-2-46:2023)

Ta slovenski standard je istoveten z: IEC EN IEC 60601-2-46:2024

<https://standards.iteh.ai/catalog/standards/sist/1a359438-e34a-43ec-ba2f-f9f707e25d48/sist-en-iec-60601-2-46-2024>

ICS:

11.140 Oprema bolnišnic Hospital equipment

SIST EN IEC 60601-2-46:2024 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN IEC 60601-2-46

September 2024

ICS 11.140

Supersedes EN IEC 60601-2-46:2019

English Version

**Medical electrical equipment - Part 2-46: Particular requirements
for the basic safety and essential performance of operating
tables
(IEC 60601-2-46:2023)**

Appareils électromédicaux - Partie 2-46: Exigences
particulières pour la sécurité de base et les performances
essentielle des tables d'opération
(IEC 60601-2-46:2023)

Medizinische elektrische Geräte - Teil 2-46: Besondere
Festlegungen für die Sicherheit einschließlich der
wesentlichen Leistungsmerkmale von Operationstischen
(IEC 60601-2-46:2023)

This European Standard was approved by CENELEC on 2024-07-31. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



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 60601-2-46:2024 (E)**European foreword**

The text of document 62D/1939/CDV, future edition 4 of IEC 60601-2-46, prepared by SC 62D "Particular medical equipment, software, and systems" of IEC/TC 62 "Medical equipment, software, and systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60601-2-46:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2025-05-01 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2027-07-31 document have to be withdrawn

This document supersedes EN IEC 60601-2-46:2019 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

iTeh Standards
(<https://standards.iteh.ai>)
Endorsement notice
Document Preview

The text of the International Standard IEC 60601-2-46:2023 was approved by CENELEC as a European Standard without any modification.

<https://standards.iteh.ai> SIST EN IEC 60601-2-46:2024 In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60601-1-8:2006	NOTE	Approved as EN 60601-1-8:2007 (not modified) +A11:2017
IEC 60601-1-8:2006/A1:2012	NOTE	Approved as EN 60601-1-8:2007/A1:2013 (not modified)
IEC 60601-1-8:2006/A2:2020	NOTE	Approved as EN 60601-1-8:2007/A2:2021 (not modified)
IEC 60601-1-9:2007	NOTE	Approved as EN 60601-1-9:2008 (not modified)
IEC 60601-1-9:2007/A1:2013	NOTE	Approved as EN 60601-1-9:2008/A1:2013 (not modified)
IEC 60601-1-9:2007/A2:2020	NOTE	Approved as EN 60601-1-9:2008/A2:2020 (not modified)
IEC 60601-1-10:2007	NOTE	Approved as EN 60601-1-10:2008 (not modified)
IEC 60601-1-10:2007/A1:2013	NOTE	Approved as EN 60601-1-10:2008/A1:2015 (not modified)
IEC 60601-1-10:2007/A2:2020	NOTE	Approved as EN 60601-1-10:2008/A2:2021 (not modified)
IEC 60601-1-11:2015	NOTE	Approved as EN 60601-1-11:2015 (not modified)
IEC 60601-1-11:2015/A1:2020	NOTE	Approved as EN 60601-1-11:2015/A1:2021 (not modified)
IEC 60601-1-12:2014	NOTE	Approved as EN 60601-1-12:2015 (not modified)

EN IEC 60601-2-46:2024 (E)

IEC 60601-1-12:2014/A1:2020	NOTE	Approved as EN 60601-1-12:2015/A1:2020 (not modified)
IEC 60601-2-35:2020	NOTE	Approved as EN IEC 60601-2-35:2021 (not modified)
IEC 60601-2-52:2009/A1:2015	NOTE	Approved as EN 60601-2-52:2010/A1:2015 (not modified)
IEC 62366-1:2015	NOTE	Approved as EN 62366-1:2015 (not modified)
IEC 62366-1:2015/A1:2020	NOTE	Approved as EN 62366-1:2015/A1:2020 (not modified)
ISO 7494-1:2018	NOTE	Approved as EN ISO 7494-1:2018 (not modified)
ISO 20342-1:2022	NOTE	Approved as EN ISO 20342-1:2022 (not modified)

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[SIST EN IEC 60601-2-46:2024](https://standards.iteh.ai/catalog/standards/sist/1a359438-e34a-43ec-ba2f-f9f707e25d48/sist-en-iec-60601-2-46-2024)

<https://standards.iteh.ai/catalog/standards/sist/1a359438-e34a-43ec-ba2f-f9f707e25d48/sist-en-iec-60601-2-46-2024>

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.cencenelec.eu.

Annex ZA of EN 60601-1:2006¹, applies, except as follows:

Replace:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60601-1-3	2008	Medical electrical equipment - Part 1-3: General requirements for basic safety and essential performance - Collateral Standard: Radiation protection in diagnostic X-ray equipment	EN 60601-1-3	2008
-	-		+ AC	2010
+ A1	2013		+ A1	2013
-	-		+ AC	2014
-	-		+ A11	2016
+ A2	2021		+ A2	2021
ISO 2878	2017	Rubber, vulcanized or thermoplastic - Antistatic and conductive products - Determination of electrical resistance	-	-

¹ As impacted by EN 60601-1:2006/AC:2010, EN 60601-1:2006/A1:2013, EN 60601-1:2006/A1:2013/AC:2014, EN 60601-1:2006/A12:2014, EN 60601-1:2006/A2:2021, EN 60601-1:2006/AC:2022-12 and EN 60601-1:2006/A13:2024.

Add:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60601-2-2	2017	Medical electrical equipment - Part 2-2: Particular requirements for the basic safety and essential performance of high frequency surgical equipment and high frequency surgical accessories	EN IEC 60601-2-2	2018
IEC 60601-2-43	2022	Medical electrical equipment - Part 2-43: Particular requirements for the basic safety and essential performance of X-ray equipment for interventional procedures	EN IEC 60601-2-43	2023
IEC 60601-2-54	2022	Medical electrical equipment - Part 2-54: Particular requirements for the basic safety and essential performance of X-ray equipment for radiography and radioscopy	EN IEC 60601-2-54	2024

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[SIST EN IEC 60601-2-46:2024](https://standards.iteh.ai/catalog/standards/sist/1a359438-e34a-43ec-ba2f-f9f707e25d48/sist-en-iec-60601-2-46-2024)

<https://standards.iteh.ai/catalog/standards/sist/1a359438-e34a-43ec-ba2f-f9f707e25d48/sist-en-iec-60601-2-46-2024>



IEC 60601-2-46

Edition 4.0 2023-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Medical electrical equipment –
Part 2-46: Particular requirements for the basic safety and essential performance
of operating tables

Appareils électromédicaux –
Partie 2-46: Exigences particulières pour la sécurité de base et les performances
essentiels des tables d'opération

<https://standards.iteh.ai/catalog/standards/sist/1a359438-e34a-43ec-ba2f-f9f707e25d48/sist-en-iec-60601-2-46-2024>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 11.140

ISBN 978-2-8322-7028-8

Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	6
201.1 Scope, object and related standards	7
201.2 Normative references.....	9
201.3 Terms and definitions.....	9
201.4 General requirements	10
201.5 General requirements for testing ME EQUIPMENT.....	10
201.6 Classification of ME EQUIPMENT and ME SYSTEMS	10
201.7 ME EQUIPMENT identification, marking and documents	11
201.8 Protection against electrical HAZARDS from ME EQUIPMENT.....	11
201.9 Protection against MECHANICAL HAZARDS of ME EQUIPMENT and ME SYSTEMS.....	11
201.10 Protection against unwanted and excessive radiation HAZARDS	14
201.11 Protection against excessive temperatures and other HAZARDS	14
201.12 Accuracy of controls and instruments and protection against hazardous outputs	15
201.13 HAZARDOUS SITUATIONS and fault conditions for ME EQUIPMENT	15
201.14 PROGRAMMABLE ELECTRICAL MEDICAL SYSTEMS (PEMS).....	15
201.15 Construction of ME EQUIPMENT	15
201.16 ME SYSTEMS.....	15
201.17 Electromagnetic compatibility of ME EQUIPMENT and ME SYSTEMS	15
202 Electromagnetic disturbances – Requirements and tests	16
203 *Radiation protection in diagnostic X-ray equipment	19
Annexes	20
Annex G (normative) Protection against HAZARDS of ignition of flammable anaesthetic mixtures.....	21
Annex AA (informative) Particular guidance and rationale.....	22
Bibliography.....	26
Index of defined terms used in this particular standard.....	27
Figure 202.101 – ENCLOSURE ad hoc test.....	17
Figure 202.102 – POWER SUPPLY CORD ad hoc test.....	18
Figure 202.103 – ACCESSORY cable ad hoc test	18
Figure AA.1 – Recommended distribution of mass in excess of 135 kg and examples of application	22
Figure AA.2 – Typical stress-strain curve.....	24
Figure AA.3 – Typical bending line along the length L_0 of a beam	24
Table 201.101 – Determination of TENSILE SAFETY FACTOR.....	13
Table AA.1 – Recommended distribution of mass in excess of 135 kg and examples of application	23

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MEDICAL ELECTRICAL EQUIPMENT –**Part 2-46: Particular requirements for the basic safety
and essential performance of operating tables**

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60601-2-46 has been prepared by subcommittee 62D: Particular medical equipment, software, and systems, of IEC technical committee 62: Medical equipment, software, and systems. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2016. This edition constitutes a technical revision.

This edition includes the following significant technical change with respect to the previous edition: structural alignment with IEC 60601-1:2005, IEC 60601-1:2005/AMD1:2012 and IEC 60601-1:2005/AMD2:2020.