

SLOVENSKI STANDARD SIST EN 60613:1995

01-maj-1995

Electrical, thermal and loading characteristics of rotating anode X ray tubes for medical diagnosis

Electrical, thermal and loading characteristics of rotating anode X-ray tubes for medical diagnosis

Elektrische, thermische und Belastungs-Kennwerte von Drehanoden-Röntgenröhren für die medizinische Diagnostikn STANDARD PREVIEW

Caractéristiques électriques, thermiques et de charge des tubes radiogènes à anode tournante pour diagnostic médical SIST EN 60613:1995

https://standards.iteh.ai/catalog/standards/sist/d2aeb4bc-3eb3-48ec-82f9-

Ta slovenski standard je istoveten z: EN 60613-1995

ICS:

11.040.50 Radiografska oprema Radiographic equipment

SIST EN 60613:1995

en



iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>SIST EN 60613:1995</u> https://standards.iteh.ai/catalog/standards/sist/d2aeb4bc-3eb3-48ec-8249-5439e55b115e/sist-en-60613-1995 SIST EN 60613:1995

EUROPEAN STANDARD

EN 60613

NORME EUROPEENNE

EUROPÄISCHE NORM

December 1990

UDC 615.849.114:616-073.75:621.386.2

Descriptors: Medical electrical equipment, X-ray equipment, radiodiagnostic X-ray generator, high voltage generators, X-ray tube assemblies, rotating anode X-ray tubes, definitions, electrical characteristics, thermal characteristics

ENGLISH VERSION

ELECTRICAL, THERMAL AND LOADING CHARACTERISTICS OF ROTATING ANODE X-RAY TUBES FOR MEDICAL DIAGNOSIS (IEC 613:1989)

Caractéristiques électriques, E	lektrische, thermische und
thermiques et de charge des tubes B	elastungs-Kennwerte von
radiogènes à anode tournante D	rehanoden-Röntgenröhren für
pour diagnostic médical d	ie medizinische Diagnostik
(CEI 613:1989) (IEC 613:1989)

This European Standard was approved by CENELEC on 1990-09-11. 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.

SIST EN 60613:1995

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application 450 steel 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.

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CENELEC

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

Central Secretariat: rue de Stassart 35, 8-1050 Brussels

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Ref. No. EN 60613:1990 E

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FOREWORD

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 613:1989 could be accepted without textual changes, has shown that no CENELEC common modifications were necessary for the acceptance as European Standard. The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as EN 60613 on 11 September 1990.

The following dates were fixed:

-	latest date of publication of		
	an identical national standard	(dop)	1991-06-15
		-	

- latest date of withdrawal of conflicting national standards (dow) 1991-06-15

Annex designated "normative" is part of the body of the standard. In this standard, annex ZA is normative.

For products which have complied with the relevant national standard

before 1991-06-15, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1996-06-15.

SIST EN 60613:1995 https://standards.iteh.ai/catalog/standards/sist/d2aeb4bc-3eb3-48ec-82f9-ENDORSEMENTStNOTICE3-1995

The text of the International Standard IEC 613:1989 was approved by CENELEC as a European Standard without any modification.

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ANNEX ZA (normative)

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

IEC <u>Publicatio</u> r	Date	Title		
	<u> 2400</u>	11010	EN/HD	<u>Date</u>
601-1	1977	. Safety of medical electrical equipment Part 1: General requirements	HD 395.1 S1*	1978
601-1	1988	Medical electrical equipment Part 1: General requirements for safety	EN 60601-1 S1	1990
601-2-7	1987	Part 2: Particular requirements for the safety of high-voltage generators of diagnostic X-ray generators	HD 395.2.7 S1	1989
613		Electrical, thermal and loading characteristics of rotating anode X-ray tubes for medical diagnosis	-	-
788	1984	Medical radiology Terminology	HD 501 S1	1988
	https	<u>SIST EN 60613:1995</u> ://standards.iteh.ai/catalog/standards/sist/d2aeb4bc-3eb3-48ec-82f9- 5439e55b1 1 5e/sist_an_60613-1 995	· .	

* superseded by HD 395.1 S2 1988

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<u>SIST EN 60613:1995</u> https://standards.iteh.ai/catalog/standards/sist/d2aeb4bc-3eb3-48ec-8249-5439e55b115e/sist-en-60613-1995 SIST EN 60613:1995

NORME INTERNATIONALE INTERNATIONAL **STANDARD**

CEI **IEC** 613

Deuxième édition Second edition 1989-04

Caractéristiques électriques, thermiques et de charge des tubes radiogènes à anode tournante pour diagnostic médical

iTeh STANDARD PREVIEW

(standards.iteh.ai)

Electrical, thermal and loading characteristics of notating anode X-ray tubes for medical diagnosis

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Commission Electrotechnique Internationale CODE PRIX International Electrotechnical Commission PRICE CODE Международная Электротехническая Комиссия •

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Pour prix, voir catalogue en vigueur For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL, THERMAL AND LOADING CHARACTERISTICS OF ROTATING ANODE X-RAY TUBES FOR MEDICAL DIAGNOSIS

FOREWORD

- 1) 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.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This Standard has been prepared by Sub-Committee 62B: X-ray equipment operating up to 400 kV and accessories, of IEC Technical Committee No. 62: Electrical equipment in medical practice.

This second edition of IEC Publication 613 replaces the first edition, issued in 1978.

https://standards.iteh.ai/catalog/standards/sist/d2aeb4bc-3eb3-48ec-82f9-

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

Six Months' Rule	Report on Voting	Two Months' Procedure	Report on Voting
62B(CO)69	62B(CO)74	62B(CO)79	62B(CO)82

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

The following IEC publications are quoted in this Standard:

Publications Nos. 601-1 (1977): Safety of medical electrical equipment, Part 1: General requirements.

601-1 (1988): Medical electrical equipment, Part 1: General requirements for safety.

- 601-2-7 (1987): Part 2: Particular requirements for the safety of high-voltage generators of diagnostic X-ray generators.
 - 613 (1978): Electrical thermal and loading characteristics of rotating anode X-ray tubes for medical diagnosis.

788 (1984): Medical radiology – Terminology.

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ELECTRICAL, THERMAL AND LOADING CHARACTERISTICS OF ROTATING ANODE X-RAY TUBES FOR MEDICAL DIAGNOSIS

1. Scope and object

1.1 Scope

This International Standard applies to ROTATING ANODE X-RAY TUBES and X-RAY TUBE ASSEMBLIES intended for use in medical diagnosis.

1.2 Object

This International Standard covers definitions of electrical, thermal and loading characteristics of the devices with relation to their behaviour during and after energization and, where appropriate, methods of presentation, determination and verification of these characteristics.

2. Introduction

This International Standard is intended to provide a common basis for the indication of data on ROTATING ANODE X-RAY TUBES and X-RAY TUBE ASSEMBLIES and to facilitate the application of RADIOGRAPHIC RATINGS by the user, basing these on standardized conditions as given in the ACCOMPANYING DOCUMENTS RD PREVIEW

3. Terminology

(standards.iteh.ai)

3.1 Degree of requirements

In this International Standard the auxiliary verb

- "shall" implies that compliance with a requirement is mandatory for compliance with the standard;
- "should" implies that compliance with a requirement is strongly recommended but is not mandatory for compliance with the standard;
- "may" implies that compliance with a requirement is permitted to be accomplished in a particular manner, for compliance with the standard.

3.2 Definitions

Definitions of terms printed in small capital letters and not contained in this International Standard are used as given in IEC 788: Medical Radiology – Terminology, first edition 1984. See annex A, Terminology.

The numbering rm-..-.. in the sub-clauses headed "Definition" refers to IEC 788.

Note. — The French terms in Sub-clauses 7.2, 8.1 and 8.2 and the definitions in Sub-clauses 4.4.1 and 6.2.1 deviate from those given in IEC 788, which latter will be revised accordingly.

4. Electrical characteristics of an X-RAY TUBE

- 4.1 X-ray tube voltage
- 4.1.1 Definition rm-36-02

Potential difference applied to an X-RAY TUBE between the ANODE and the CATHODE.

4.1.2 Units

X-RAY TUBE VOLTAGE shall be given as the peak value, in KILOVOLTS.

613 © IEC

4.2 Nominal X-ray tube voltage

4.2.1 *Definition* rm-36-03 Highest permitted X-RAY TUBE VOLTAGE for specific operating conditions.

4.2.2 Units

NOMINAL X-RAY TUBE VOLTAGE shall be given as the peak value, in KILOVOLTS.

4.2.3 Presentation of data

Values shall be given for the maximum permitted X-RAY TUBE VOLTAGE between

- ANODE and CATHODE.

Values may be given for the highest permitted potential difference between

- ANODE and earth

and between

- CATHODE and earth.

Unless otherwise specified, the above values are valid for all specified operating conditions.

- Notes 1. For different operating conditions of the X-RAY TUBE, for example continuous operation, intermittent operation, short-time operation, there may be different values of the above NOMINAL X-RAY TUBE VOLTAGE.
 - 2. In some cases the value of the NOMINAL X-RAY TUBE VOLTAGE during on-load conditions (which characterizes essentially the RADIATION ENERGY of the emitted X-RADIATION) and the value during off-load conditions may be different.
- 4.3 Limited X-ray tube voltage

4.3.1 Definition rm-36-04 (standards.iteh.ai)

In an X-RAY INSTALLATION, a NOMINAL X-RAY TUBE VOLTAGE limited for a particular combination

combination. https://standards.iteh.ai/catalog/standards/sist/d2aeb4bc-3eb3-48ec-82f94.4 X-ray tube current 5439e55b115e/sist-en-60613-1995

4.4.1 Definition (rm-36-07; see also 3.2)

Electric current through an X-RAY TUBE.

Unless otherwise specified, values of X-RAY TUBE CURRENT correspond to the electron beam reaching the TARGET of the X-RAY TUBE.

4.4.2 Units

X-RAY TUBE CURRENT shall be given as the average value in MILLIAMPERES.

- 4.5 Cathode emission characteristic
- 4.5.1 Definition rm-36-20

Dependence of the X-RAY TUBE CURRENT on variables, for example FILAMENT CURRENT, X-RAY TUBE VOLTAGE.

4.5.2 Presentation of data

CATHODE EMISSION CHARACTERISTICS are given as a family of curves in which the X-RAY TUBE CURRENT is shown as a function of the FILAMENT CURRENT and, if appropriate, of further relevant characteristics of the CATHODE, each curve corresponding to an X-RAY TUBE VOLTAGE and a PERCENTAGE MODULATION of stated value and waveform, and other factors as appropriate. In addition, the relationship between FILAMENT CURRENT and filament voltage shall be indicated and, if appropriate, also its dependence on other characteristics of the CATHODE.