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INTERNATIONAL STANDARD

NORME INTERNATIONALE

GROUP SAFETY PUBLICATION
PUBLICATION GROUPÉE DE SÉCURITÉ

Safety requirements for electrical equipment for measurement, control, and laboratory use –
Part 2-091: Particular requirements for cabinet X-ray systems

Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire –
Partie 2-091: Exigences particulières pour les équipements à rayons X montés en armoire

IEC 61010-2-091:2012

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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FOREWORD

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International Standard IEC 61010-2-91 has been prepared by IEC technical committee 66: Safety of measuring, control and laboratory equipment.

It has the status of a group safety publication as specified in IEC Guide 104.

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

FDIS	Report on voting
66/462/FDIS	66/470/RVD

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

This Part 2-091 is intended to be used in conjunction with IEC 61010-1. It was established on the basis of the third edition (2010). Consideration may be given to future editions of, or amendments to, IEC 61010-1.

This Part 2-091 supplements or modifies the corresponding clauses in IEC 61010-1 so as to convert that publication into the IEC standard: *Particular requirements for CABINET X-RAY SYSTEMS*.

Where a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. Where this part states “addition”, “modification”, “replacement”, or “deletion”, the relevant requirement, test specification or note in Part 1 should be adapted accordingly.

In this standard:

a) the following print types are used:
   - requirements: in roman type;
   - NOTES: in small roman type;
   - *conformity and tests: in italic type*;
   - terms used throughout this standard which have been defined in Clause 3: SMALL ROMAN CAPITALS.

b) subclauses, figures, and tables which are additional to those in Part 1 are numbered starting from 101; additional annexes are lettered starting from AA and additional list items are lettered from aa).

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

The following differing practices exist in the countries indicated below:

- 7.1: Conveyor systems are required to meet the requirements of ANSI/ASME B20.1 (USA).

A list of all parts of the IEC 61010 series, published under the general title *Safety requirements for electrical equipment for measurement, control, and laboratory use*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE –

Part 2-091: Particular requirements for CABINET X-RAY SYSTEMS

1 Scope and object

This clause of Part 1 is applicable, except as follows:

1.1.1 Equipment included in scope

Replacement:

Replace the text with the following:

This part of IEC 61010 specifies particular safety requirements for CABINET X-RAY SYSTEMS.

A CABINET X-RAY SYSTEM is a system that contains an X-ray tube installed in a cabinet which, independently of existing architectural structures except the floor on which it may be placed, is intended to contain at least that portion of a material being irradiated, provide radiation attenuation, and exclude personnel from the interior during generation of X-radiation.

These CABINET X-RAY SYSTEMS are used in industrial, commercial, and public environments, for example, to inspect materials, to analyze materials, and to screen baggage.

1.1.2 Equipment excluded from scope

Addition:

Add the following new items to the list:

aa) equipment intended to apply X-radiation to humans or animals;

bb) equipment incorporating an X-ray tube but not incorporating complete shielding against X-radiation hazards, such as:

1) equipment intended to be used within a shielded room which excludes personnel during operation;

2) equipment intended to be used with separate portable or temporary shielding;

3) equipment intended to produce an emerging beam of X-radiation.

1.2.1 Aspects included in scope

Addition:

Add the following text at the end of the first paragraph:

This part of IEC 61010 specifies requirements for the design and methods of construction of CABINET X-RAY SYSTEMS to provide adequate protection for OPERATORS, bystanders, trained service personnel, and the surrounding area against unintentionally-emitted X-radiation and from mechanical HAZARDS related to their conveyors.

2 Normative references

This clause of Part 1 is applicable, except as follows:

Addition:

Add the following references to the list:

IEC 62061, *Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems*

ISO 13849-1, *Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design*

3 Terms and definitions

This clause of Part 1 is applicable, except as follows:

3.2 Parts and accessories

Addition:

Add the following new definitions:

3.2.101
ACCESS PANEL
barrier or panel which is designed to be removed or opened for maintenance or service purposes to permit access to the interior of the cabinet

3.2.102
APERTURE
opening in the outside surface of the cabinet, other than a PORT, which remains open during generation of X-radiation

3.2.103
DOOR
barrier which is designed to be movable or opened for routine operation purposes, does not generally require TOOLS to open, and permits access to the interior of the cabinet

Note 1 to entry: Inflexible hardware rigidly affixed to the DOOR is considered part of the DOOR.

3.2.104
EXTERNAL SURFACE
outside surface of the CABINET X-RAY SYSTEM, including DOORS, ACCESS PANELS, latches, control knobs, and other permanently mounted hardware, the virtual surface across any APERTURE or PORT, and the bottom of the cabinet

3.2.105
PORT
opening in the EXTERNAL SURFACE of the cabinet which is designed to remain open during generation of X-rays, for the purpose of conveying objects into and out of the cabinet, or for partial insertion for irradiation of an object with a dimension that does not permit complete insertion into the cabinet