



NSAI
Standards

Irish Standard
I.S. EN 61010-2-091:2012

Safety requirements for electrical
equipment for measurement, control
and laboratory use -- Part 2-091:
Particular requirements for cabinet x-
ray systems (IEC 61010-2-091:2012
(EQV))

I.S. EN 61010-2-091:2012

Incorporating amendments/corrigenda issued since publication:

EN 61010-2-091:2012/AC:2013

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

<i>This document replaces:</i>	<i>This document is based on:</i> EN 61010-2-091:2012	<i>Published:</i> 3 August, 2012
This document was published under the authority of the NSAI and comes into effect on: 10 August, 2012		ICS number: 19.080 71.040.10
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Corrigendum to EN 61010-2-091:2012

English version

Following BT Decision D143/C081, add the following Annex ZB:

"

Annex ZB

(informative)

A-deviations

A-deviation: National deviation due to regulations, the alteration of which is for the time being outside the competence of the CEN/CENELEC national member.

This European Standard falls under Directive LVD (2006/95/EC).

NOTE (from CEN/CENELEC IR Part 2:2006, 2.17) Where standards fall under EC Directives, it is the view of the Commission of the European Communities (OJ No C 59; 1982-03-09) that the effect of the decision of the Court of Justice in case 815/79 Cremonini/Vrankovich (European Court Reports 1980, p. 3583) is that compliance with A-deviations is no longer mandatory and that the free movement of products complying with such a standard should not be restricted except under the safeguard procedure provided for in the relevant Directive.

A-deviations in an EFTA-country are valid instead of the relevant provisions of the European Standard in that country until they have been removed.

Country	Divergence
France	<p>National legislation</p> <p>Section 1 of the Decree of 2 September 1991, determining technical requirements to be met by X-ray generators, used in industrial radiology, states:</p> <p><i>"The devices of X-ray generators used in industrial radiology, including accessories, put into service after the publication of this Decree shall comply with the rules set out the date of commissioning by the approved French standard NF C 74-100 concerning Radiology equipment. X-ray apparatus - Construction and tests. or any equivalent standard of a Member State of the European Economic Community "</i></p>

"

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EUROPEAN STANDARD

EN 61010-2-091

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2012

ICS 19.080; 71.040.10

English version

**Safety requirements for electrical equipment for measurement, control
and laboratory use -**

Part 2-091: Particular requirements for cabinet x-ray systems

(IEC 61010-2-091:2012)

Règles de sécurité pour appareils
électriques de mesure, de régulation et
de laboratoire -
Partie 2-091: Exigences particulières pour
les équipements à rayons x montés en
armoire
(CEI 61010-2-091:2012)

Sicherheitsbestimmungen für elektrische
Mess-, Steuer-, Regel- und Laborgeräte -
Teil 2-091: Besondere Anforderungen für
Röntgengeräteschränke
(IEC 61010-2-091:2012)

This European Standard was approved by CENELEC on 2012-07-30. 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 66/462/FDIS, future edition 1 of IEC 61010-2-091, prepared by IEC/TC 66 "Safety of measuring, control and laboratory equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61010-2-091:2012.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-04-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-07-30

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

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

This Part 2-091 is intended to be used in conjunction with EN 61010-1:2010. Consideration may be given to future editions of, or amendments to, EN 61010-1.

This Part 2-091 supplements or modifies the corresponding clauses in EN 61010-1 so as to convert that publication into the EN 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).

Endorsement notice

The text of the International Standard IEC 61010-2-091:2012 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)
**Normative references to international publications
with their corresponding European publications**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Addition to Annex ZA of EN 61010-1:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62061	-	Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems	EN 62061	-
ISO 13849-1	-	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design	EN ISO 13849-1	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT
FOR MEASUREMENT, CONTROL, AND LABORATORY USE –**
Part 2-091: Particular requirements for CABINET X-RAY SYSTEMS

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.
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- 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.

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

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