



# UL 61010-2-091

## STANDARD FOR

Safety Requirements for Electrical  
Equipment for Measurement, Control  
and Laboratory Use – Part 2-091:  
Particular Requirements for Cabinet X-  
Ray Systems



UL Standard for Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use – Part 2-091: Particular Requirements for Cabinet X-Ray Systems, UL 61010-2-091

Second Edition, Dated July 31, 2019

### **Summary of Topics**

***This revision of ANSI/UL 61010-2-091 dated December 7, 2023 is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.***

***UL 61010-2-091 is an adoption of IEC 61010-2-091, Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use – Part 2-091: Particular Requirements for Cabinet X-Ray Systems (second edition, issued by IEC February 2019) as an IEC-based UL standard with No US Differences.***

Text that has been changed in any manner or impacted by ULSE's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated October 20, 2023.

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**ANSI/UL 61010-2-091-2019 (R2023)**

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**UL 61010-2-091**

**Standard for Safety Requirements for Electrical Equipment for  
Measurement, Control and Laboratory Use – Part 2-091: Particular  
Requirements for Cabinet X-Ray Systems**

First Edition – August 2014

**Second Edition**

**July 31, 2019**

This ANSI/UL Standard for Safety consists of the Second Edition including revisions through December 7, 2023.

The most recent designation of ANSI/UL 61010-2-091 as a Reaffirmed American National Standard (ANS) occurred on December 7, 2023. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or Preface. The IEC Foreword is also excluded from the ANSI approval of IEC-based standards.

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### **Bibliography**

## Preface

This UL Standard is based on IEC Publication 61010-2-091: second edition, Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use – Part 2-091: Particular Requirements for Cabinet X-Ray Systems. IEC publication 61010-2-091 is copyrighted by the IEC.

This UL Standard 61010-2-091 Standard for Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use – Part 2-091: Particular Requirements for Cabinet X-Ray Systems, is to be used in conjunction with the third edition of UL 61010-1. The requirements for control equipment are contained in this Part 2 Standard and UL 61010-1.

Requirements of this Part 2 Standard, where stated, amend the requirements of UL 61010-1.

Where a particular subclause of UL 61010-1 is not mentioned in UL 61010-2-091, the UL 61010-1 subclause applies.

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Note – Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.

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## FOREWORD

### INTERNATIONAL ELECTROTECHNICAL COMMISSION

#### **SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE – Part 2-091: Particular requirements for cabinet X-ray systems**

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International Standard IEC 61010-2-091 has been prepared by IEC technical committee 66: Safety of measuring, control and laboratory equipment.

This second edition cancels and replaces the first edition published in 2012. It constitutes a technical revision.

This edition includes the following significant changes from the first edition, as well as numerous other changes:

- The scope of the document has been clarified and limited to equipment up to 500 kV.
- Additional marking requirements for X-ray generating assemblies have been added. (5.1)
- Requirements for high-voltage cables used in the X-ray assembly have been added. (6.5)



- Insulation requirements have been added. (6.7)
- Temperature requirements for beam-limiting devices have been added. (10.3)
- Clarification has been provided on PROTECTED EQUIPMENT and PARTIALLY PROTECTED EQUIPMENT, and test methods. (12)
- Requirements for INTERLOCKS have been modified, taking into account functional safety standards. (15)
- Requirements for reasonably foreseeable misuse have been clarified. (16)
- Risk assessment has been made mandatory for specific aspects. (17)

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

| FDIS        | Report on voting |
|-------------|------------------|
| 66/684/FDIS | 66/686A/RVD      |

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.

This document is intended to be used in conjunction with IEC 61010-1. It was established on the basis of the third edition (2010) of IEC 61010-1, including its Amendment 1 (2016), hereinafter referred to as Part 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*.

Clauses of Part 1 that are fully applicable are indicated by the statement "This clause of Part 1 is applicable." Where this Part 2-091 identifies a particular subclause and states "addition", "modification", "replacement", or "deletion", the text of that particular subclause Part 1 is adapted accordingly. Where a particular subclause of Part 1 is not mentioned in this Part 2-091, that subclause applies as far as is reasonable.

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).