Doc No. LITD 08 (28342)
Draft IS 14481 (Part 1): 2025
IEC 60951-1: 2022
July 2025

BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

मसौदा भारतीय मानक

आण्विक शक्ति संयंत्र – सुरक्षा के लिए महत्त्वपूर्ण यंत्रीकरण - दुर्घटना और दुर्घटना के बाद की अवस्थाओं के लिए विकिरण मॉनीटरिंग भाग 1 सामान्य अपेक्षाऐं

(दूसरा पुनरीक्षण)

Draft Indian Standard

Nuclear facilities - Instrumentation systems important to safety - Radiation monitoring for accident and post-accident conditions

Part 1: General requirements

(Second Revision)

ICS 27.120.20

LITD 08 Electronic Measuring Instruments, Instrumentation Systems and Accessories Sectional Committee,	Last date for comments: 12 September 2025

NATIONAL FOREWORD

This draft Indian Standard (Part 1) which is identical to IEC 60951-1: 2022 'Nuclear facilities - Instrumentation systems important to safety - Radiation monitoring for accident and post-accident conditions - Part 1: General requirements' issued by the International Electrotechnical Commission (IEC) *will be* adopted by the Bureau of Indian Standards on the recommendation of the Electronic Measuring Instruments, Instrumentation Systems and Accessories Sectional Committee and approval of the Electronics and Information Technology Division Council.

The text of IEC Standard *may be* approved as suitable for publication as an Indian Standard without deviations. Certain conventions are however not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a. Wherever the words 'International Standard' appears referring to this standard, they should be read as 'Indian Standard'.

b. Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their places, are listed below along with their degree of equivalence for editions indicated. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies:

International Standard	***Corresponding Indian Standard***	***Degree of Equivalence***
IEC 60068-2-1:2007, Environmental Testing Part 2 Tests Section 1 Test A: Cold	IS/IEC 60068-2-1:2007, Environmental Testing Part 2 Tests Section 1 Test A: Cold	Identical
IEC 60068-2-2:2007, Environmental Testing Part 2: Tests - Test B Section 2: Dry Heat	IS/IEC 60068-2-2:2007, Environmental Testing Part 2: Tests - Test B Section 2: Dry Heat	Identical
IEC 60068-2-6:2007, Environmental Testing Part 2 Tests Section 6 Test Fc: Vibration sinusoidal	IS/IEC 60068-2-6:2007, Environmental Testing Part 2 Tests Section 6 Test Fc: Vibration sinusoidal	Identical

IEC 60068-2-14:2009, Environmental testing – Part 2-14: Tests – Test N: Change of temperature	IS/IEC 60068-2-14:2023, Environmental Testing Part 2 Tests Section 14 Test N: Change of Temperature (First Revision)	Identical
IEC 60068-2-30:2005, Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)	IS/IEC 60068-2-30:2005, Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)	Identical
IEC 60068-2-78:2012, Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state	IS 9000 (Part 4) : 2020, Environmental Testing Part 4 Tests - Test Cab: Damp Heat, Steady State (Second Revision)	Identical
IEC 60529, Degrees of protections provided by enclosures (IP code)	IS/IEC 60529:2001, Degrees of protection provided by enclosures (IP Code)	Identical with IEC 60529:2001
IEC 60987, Nuclear power plants – Instrumentation and control important to safety – Hardware requirements	IS 15399:2003, Hardware for computers in the safety system of nuclear and radiation facilities	Modified/Technically Equivalent
IEC 61000-4-2:2008, Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test	IS 14700 (Part 4/Sec 2):2018, Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 2 electrostatic discharge immunity test (Second Revision)	Identical under dual numbering
IEC 61000-4-3:2020, Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test	IS 14700 (Part 4/Sec 3):2023, Electromagnetic compatibility EMC Part 4 Testing and Measurement Techniques Section 3 Radiated radio-frequency electromagnetic field immunity test (Second Revision)	Identical under dual numbering
IEC 61000-4-4:2012, Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques –	IS 14700 (Part 4/Sec 4):2018, Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 4	Identical under dual numbering

Electrical fast transient/burst immunity test	electrical fast transient / burst immunity test (Second Revision)	
IEC 61000-4-4:2012, Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test	IS 14700 (Part 4/Sec 5):2019, Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 5 surge immunity test (First Revision)	Identical under dual numbering
IEC 61000-4-6:2013, Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields	IS 14700 (Part 4/Sec 6):2025, Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 6 immunity to conducted disturbances, induced by radio - Frequency fields	Identical under dual numbering
IEC 61000-4-8:2009, Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test	IS 14700 (Part 4/Sec 8):2018, Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 8 power frequency magnetic field immunity test (Second Revision)	Identical under dual numbering
IEC 61000-4-12:2017, Electromagnetic compatibility (EMC) – Part 4-12: Testing and measurement techniques – Ring wave immunity test	IS 14700 (Part 4/Sec 12):2019, Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 12 ring wave immunity test (Second Revision)	Identical under dual numbering
IEC 61226, Nuclear power plants – Instrumentation, control and electrical power systems important to safety – Categorization of functions and classification of systems	IS/IEC 61226:2020, Nuclear power plants - Instrumentation control and electrical power systems important to safety - Categorization of functions and classification of systems	Identical
ISO 2889:2015, Sampling airborne radioactive materials from the stacks and ducts of nuclear facilities	IS 16692:2018, Sampling airborne radioactive materials from the stacks and ducts of nuclear facilities	Identical under dual numbering

The technical committee has reviewed the provisions of the following International Standards referred in this adopted standard and has decided that they are acceptable for use in conjunction with this standard. For undated references, the latest edition of the referenced document applies, including any corrigenda and amendment. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies:

International Standard	***Title***
IEC 60038:2009	IEC standard voltages
IEC/IEEE 60780-323:2016	Nuclear facilities – Electrical equipment important to safety – Qualification
IEC 60880	Nuclear power plants – Instrumentation and control systems important to safety – Software aspects for computer-based systems performing category A functions
IEC/IEEE 60980-344	Nuclear facilities – Equipment important to safety – Seismic qualification
IEC 61000-4-18:2019	Electromagnetic compatibility (EMC) – Part 4-18: Testing and measurement techniques – Damped oscillatory wave immunity test
IEC 61000-6-4:2018	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments
IEC 61069-1:2016	Industrial-process measurement, control and automation – Evaluation of system properties for the purpose of system assessment – Part 1: Terminology and basic concepts
IEC 61504:2017	Nuclear facilities – Instrumentation and control systems important to safety – Centralized systems for continuous monitoring of radiation and/or levels of radioactivity
IEC 61513:2011	Nuclear power plants – Instrumentation and control important to safety – General requirements for systems
IEC 61513:2011	Nuclear power plants – Instrumentation and control important to safety – General requirements for systems
IEC 62262:2002	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
IEC 62566:2012	Nuclear power plants – Instrumentation and control important to safety – Development of HDL-programmed integrated circuits for systems performing category A functions

IEC 62566-2:2020	Nuclear power plants – Instrumentation and control important to safety – Development of HDL-programmed integrated circuits – Part 2: HDL-programmed integrated circuits for systems performing category B or C functions
IEC 62705	Nuclear facilities – Instrumentation and control important to safety – Radiation monitoring systems (RMS): Characteristics and lifecycle

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2:2022 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded-off value should be the same as that of the specified value in this standard.

Scope of IEC 60951-1: 2022 is as follows:

This part of IEC 60951 provides general guidance on the design principles and performance criteria for equipment to measure radiation and fluid (gaseous effluents or liquids) radioactivity levels at nuclear facilities during and after design basis accidents (DBA) and design extension conditions (DEC), including severe accident (SA). This document is limited to equipment for continuous monitoring of radioactivity in design basis accidents (DBA), design extension conditions (DEC), including severe accident (SA) and post-accident conditions.

The purpose of this document is to lay down general requirements and give examples of acceptable methods for equipment for continuous monitoring of radioactivity within the facility during and after design basis accidents (DBA), design extension conditions (DEC), including severe accident (SA) in nuclear facilities.

It specifies, for the equipment described above, the general characteristics, general test procedures, radiation, electrical, safety and environmental characteristics and the identification and certification of the equipment. If this equipment is part of a centralized system for continuous radiation monitoring in a nuclear facility, there may be additional requirements from other standards related to this system.

Sample extraction and laboratory analysis, which are essential to a complete programme of effluent monitoring, are not within the scope of this document.

NOTE: - Technical content of this document has not been enclosed as these are identical to the corresponding IEC Standard, for details please refer IEC 60951-1: 2022 or kindly contact:

Head Electronics & IT Department

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