

# INTERNATIONAL STANDARD

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**Nuclear facilities – Instrumentation and control systems – Design, location and application criteria for installed area gamma radiation dose rate monitoring equipment for use during normal operation and anticipated operational occurrences**





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IEC 61031

Edition 2.0 2020-07

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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ICS 13.280; 27.120.10

ISBN 978-2-8322-8586-2

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**NUCLEAR FACILITIES –  
INSTRUMENTATION AND CONTROL SYSTEMS –  
DESIGN, LOCATION AND APPLICATION CRITERIA FOR  
INSTALLED AREA GAMMA RADIATION DOSE RATE MONITORING  
EQUIPMENT FOR USE DURING NORMAL OPERATION AND ANTICIPATED  
OPERATIONAL OCCURRENCES**

## FOREWORD

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International Standard IEC 61031 has been prepared by subcommittee 45A: Instrumentation, control and electrical power systems of nuclear facilities, of IEC technical committee 45: Nuclear instrumentation.

This document is to be used in conjunction with IEC 60532:2010.

This second edition cancels and replaces the first edition published in 1990. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) The scope of the standard is extended from nuclear power plants to nuclear facilities and the title is accordingly aligned.
- b) The relevant standards published by IEC SC 45A since the publication of the first edition are taken into account and referred to when relevant.

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

FDIS	Report on voting
45A/1328/FDIS	45A/1341/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.

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

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- withdrawn,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

## INTRODUCTION

### **a) Technical background, main issues and organisation of the standard**

This IEC standard specifically focuses on radiation monitoring systems used for normal operation and anticipated operational occurrences in nuclear facilities such as nuclear power plants.

This document is intended for use by purchasers in developing specifications for their plant specific radiation monitoring systems and by manufacturers to identify needed product characteristics when developing systems for normal operation and anticipated operational occurrences. Some specific instrument characteristics such as measurement range, required energy response, and ambient environment requirements will depend upon the specific application. In such cases guidance is provided on determining the specific requirements, but specific requirements themselves are not stated.

This document is intended to be used in conjunction with IEC 60532:2010.

For area gamma radiation dose rate monitoring equipment for accident and post-accident conditions refer to IEC 60951-1 and IEC 60951-3 (not within the scope of this document).

### **b) Situation of the current standard in the structure of the IEC SC 45A standard series**

IEC 61031 is at the third level in the hierarchy of SC 45A standards.

This document provides requirements for equipment for area radiation monitoring in normal conditions in conjunction with IEC 60532. Other standards developed by SC 45A and SC 45B provide guidance on instruments used for monitoring radiation as part of normal operations.

The IEC 60761 series provides requirements for equipment for continuous off-line monitoring of radioactivity in gaseous effluents in normal conditions. IEC 60861 provides requirements for equipment for continuous off-line monitoring of radioactivity in liquid effluents in normal conditions. IEC 60768 provides requirements for equipment for continuous in-line and on-line monitoring of radioactivity in process stream in normal and incident conditions. Finally, ISO 2889 gives guidance on gas and particulate sampling. In addition, IEC 62705 was issued on July 2014. IEC 62705 provides guidance on the application of existing IEC/ISO standards covering design and qualification of system and equipment for RMS, and the overviews of the standards covering the radiation monitoring in nuclear facilities are listed in Table 1 below.