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NSAI Standards

Irish Standard
I.S. EN 62534:2015

# Radiation protection instrumentation - Highly sensitive hand-held instruments for neutron detection of radioactive material

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**I.S. EN 62534:2015**

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I.S. EN 62534:2015 is the adopted Irish version of the European Document EN 62534:2015, Radiation protection instrumentation - Highly sensitive hand-held instruments for neutron detection of radioactive material

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 62534

November 2015

ICS 13.280

English Version

# Radiation protection instrumentation - Highly sensitive hand-held instruments for neutron detection of radioactive material (IEC 62534:2010)

Instrumentation pour la radioprotection - Instruments portables de haute sensibilité pour la détection neutronique de matières radioactives (IEC 62534:2010)

Strahlenschutz-Messgeräte - Hochempfindliche Handgeräte zur Detektion von Neutronenstrahlung emittierendem radioaktivem Material (IEC 62534:2010)

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## European foreword

This document (EN 62534:2015) consists of the text of IEC 62534:2010 prepared by SC 45B "Radiation protection instrumentation" of IEC/TC 45 "Nuclear instrumentation".

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) 2016-11-02
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-11-02

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

| | | |
|---|---|---|
| IEC 60068-2-18:2000 | NOTE | Harmonized as EN 60068-2-18:2001 (not modified). |
| IEC 60068-2-27:2008 | NOTE | Harmonized as EN 60068-2-27:2009 (not modified). |
| IEC 60068-2-75:1997 | NOTE | Harmonized as EN 60068-2-75:1997 (not modified). |
| IEC 60086-1:2006 | NOTE | Harmonized as EN 60086-1:2007 [1)] (not modified). |
| IEC 60721-3-7:2002 | NOTE | Harmonized as EN 60721-3-7:1995 (not modified) and as EN 60721-3-7:1995/A1:1997 (not modified) |
| IEC 61000-4-1:2006 | NOTE | Harmonized as EN 61000-4-1:2007 (not modified). |
| IEC 61000-4-4:2004 | NOTE | Harmonized as EN 61000-4-4:2004 [2)] (not modified). |
| IEC 61000-4-6:2008 | NOTE | Harmonized as EN 61000-4-6:2009 (not modified). |
| IEC 61000-4-8:2009 | NOTE | Harmonized as EN 61000-4-8:2010 (not modified). |
| IEC 61187:1993 | NOTE | Harmonized as EN 61187:1994 (modified). |
| IEC 62022:2004 | NOTE | Harmonized as EN 62022:2007 (modified). |
| IEC 62244:2006 | NOTE | Harmonized as EN 62244:2011 (modified). |
| IEC 62327:2006 | NOTE | Harmonized as EN 62327:2011 (modified). |

1) Superseded by EN 60086-1:2011 (IEC 60086-1:2011), not modified.

2) Superseded by EN 61000-4-4:2012 (IEC 61000-4-4:2012), not modified.

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# Annex ZA
(normative)

## Normative references to international publications with their corresponding European publications

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NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60050-393 | 2003 | International Electrotechnical Vocabulary - Part 393: Nuclear instrumentation - Physical phenomena and basic concepts | - | - |
| IEC 60050-394 | 2007 | International Electrotechnical Vocabulary - Part 394: Nuclear instrumentation - Instruments, systems, equipment and detectors | - | - |
| IEC 60529 | 1989 | Degrees of protection provided by enclosures (IP Code) | EN 60529 | 1991 |
| - | - | | + corrigendum May | 1993 |
| + A1 | 1999 | | + A1 | 2000 |
| IEC 61000-4-2 | 2008 | Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test | EN 61000-4-2 | 2009 |
| IEC 61005 (mod) | 2003 | Radiation protection instrumentation - Neutron ambient dose equivalent (rate) meters | EN 61005 | 2004 |
| IEC 61526 (mod) | 2005 | Radiation protection instrumentation - Measurement of personal dose equivalents Hp(10) and Hp(0,07) for X, gamma, neutron and beta radiations - Direct reading personal dose equivalent meters and monitors | EN 61526 | 2007 |
| ISO 8529-1 | 2001 | Reference neutron radiations - Part 1: Characteristics and methods of production | - | - |

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# IEC 62534

Edition 1.0 2010-06

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

## Radiation protection instrumentation – Highly sensitive hand-held instruments for neutron detection of radioactive material

## Instrumentation pour la radioprotection – Instruments portables de haute sensibilité pour la détection neutronique de matières radioactives

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# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

## Radiation protection instrumentation – Highly sensitive hand-held instruments for neutron detection of radioactive material

## Instrumentation pour la radioprotection – Instruments portables de haute sensibilité pour la détection neutronique de matières radioactives

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

# RADIATION PROTECTION INSTRUMENTATION – HIGHLY SENSITIVE HAND-HELD INSTRUMENTS FOR NEUTRON DETECTION OF RADIOACTIVE MATERIAL

## FOREWORD

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International Standard IEC 62534 has been prepared by subcommittee 45B: Radiation protection instrumentation, of IEC technical committee 45: Nuclear instrumentation.

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

| FDIS | Report on voting |
|---|---|
| 45B/639/FDIS | 45B/653/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 publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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# RADIATION PROTECTION INSTRUMENTATION – HIGHLY SENSITIVE HAND-HELD INSTRUMENTS FOR NEUTRON DETECTION OF RADIOACTIVE MATERIAL

## 1 Scope and object

This International Standard applies to hand-held instruments used for the detection and localization of neutron emitting radioactive material. These instruments are highly sensitive meaning that they are designed to detect slight variations in the range of usual background that may be caused by illicit trafficking or inadvertent movement of radioactive material. This high sensitivity allows scanning of larger volume items such as vehicles and containers. These instruments may also be used in fixed or temporally fixed unattended mode to monitor check points or critical areas. Instruments addressed by this standard will also provide a means to detect photon radiation for personal protection.

This standard does not apply to the performance of radiation protection instrumentation which is covered in IEC 61005 and in IEC 61526.

The object of this standard is to establish performance requirements, provide examples of acceptable test methods, and to specify general characteristics, general test conditions, radiation characteristics, electrical safety, and environmental characteristics, that are used to determine if an instrument meets the requirements of this standard.

The results of tests performed provide information to government agencies and other users on the capability of radiation detection instruments for reliably detecting neutron sources.

Obtaining operating performance that meets or exceeds the specifications as stated in this standard depends upon properly establishing appropriate operating parameters, maintaining calibration, implementing a suitable response testing and maintenance program, auditing compliance with quality requirements, and providing proper training for operating personnel.

## 2 Normative references

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

IEC 60050-393:2003, *International Electrotechnical Vocabulary (IEV) – Part 393: Nuclear instrumentation – Physical phenomena and basic concepts*

IEC 60050-394:2007, *International Electrotechnical Vocabulary – Part 394: Nuclear instrumentation – Instruments, systems, equipment, and detectors*

IEC 60529:2001, *Degrees of protection provided by enclosures (IP Code)*

IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61005:2003, *Radiation protection instrumentation – Neutron ambient dose equivalent (rate) meters*

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