SLOVENSKI STANDARD
SIST EN 62327:2011

01-oktober-2011

Oprema za zaščito pred sevanjem - Ročni instrumenti za odkrivanje in prepoznavanje radionuklidov in za prikaz stopnje ekvivalentne doze v prostoru zaradi fotonskega sevanja

Radiation protection instrumentation - Hand-held instruments for the detection and identification of radionuclides and for the indication of ambient dose equivalent rate from photon radiation

Strahlenschutz-Messgeräte - Handgeräte für den Nachweis und die Identifizierung von Radionukliden und die Anzeige der durch Gammastrahlung erzeugten Umgebungs-Äquivalentdosisleistung

Instrumentation pour la radioprotection - Instruments portables pour la détection et l'identification des radionucléides et pour l'indication du débit d'équivalent de dose ambiant pour le rayonnement de photons

Ta slovenski standard je istoveten z: **EN 62327:2011**

ICS:

13.280	Varstvo pred sevanjem	Radiation protection

SIST EN 62327:2011 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62327

July 2011

ICS 13.280

English version

Radiation protection instrumentation - Hand-held instruments for the detection and identification of radionuclides and for the indication of ambient dose equivalent rate from photon radiation

(IEC 62327:2006, modified)

Instrumentation pour la radioprotection - Instruments portables pour la détection et l'identification des radionucléides et pour l'indication du débit d'équivalent de dose ambiant pour le rayonnement de photons (CEI 62327:2006, modifiée)

Strahlenschutz-Messgeräte - Handgeräte für den Nachweis und die Identifizierung von Radionukliden und die Anzeige der durch Gammastrahlung erzeugten Umgebungs-Äquivalentdosisleistung (IEC 62327:2006, modifiziert)

This European Standard was approved by CENELEC on 2011-06-27. 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 Central Secretariat 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 Central Secretariat 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland 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

Ref. No. EN 62327:2011 E

Foreword

The text of the International Standard IEC 62327:2006, prepared by SC 45B, “Radiation protection instrumentation”, of IEC TC 45, “Nuclear instrumentation”, together with the common modifications prepared by the Technical Committee CENELEC TC 45B, Radiation protection instrumentation, was submitted to the CENELEC formal vote and was approved by CENELEC as EN 62327 on 2011-06-27.

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

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2012-06-27
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2014-06-27

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62327:2006 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

1 Scope and object

Add at the end of the penultimate paragraph “In which case it shall be clearly identified that the instrument is for the measurement of photon radiation only.”.

Add a paragraph at the end. ”Conformation with the requirements of this standard does not guarantee that a radionuclide will always be detected.”.

2 Normative references

Replace in the first paragraph “indispensable for” with “relevant to”.

3 Terms and definitions

3.4 ambient dose equivalent rate indication

Replace the title with “indication of ambient dose equivalent rate”.

3.6 error of indication

Replace “an activity” with “a quantity” and replace “that activity” with “that quantity”.

4 General characteristics of hand-held instruments for the detection and identification of radionuclides

4.2 Radiation detectors

Replace in the second sentence “shall” with “may”.

4.7 Moisture and dust protection

Replace “see IEC 60529“ with “See 9.5”.

Delete the last paragraph.

4.8 Markings

4.8.2 Exterior markings

Third bullet: Replace “center” with “centre”.

4.11 Spectral storage and display

Add to the start of the last bullet “where the equipment is able to detect neutrons,”.

Table 1 Reference conditions and standard test conditions

Row two, columns two and three: Replace “S-CS” with “S-Cs” and “4037-1” with “4037-3”.

Row three, column one: Replace “$H_p(10)$” with “$H^*(10)$”.

6 Radionuclide identification

6.1 Radiation categorization

6.1.1 General

Third bullet: Add to the list of industrial radionuclides “^{226}Ra and decay products (radioactive source),”.

6.2 Identification of single radionuclides

6.2.1 Requirements

Add in the last bullet after both ^{226}Ra and ^{232}Th “(and decay products)”.

6.3 Identifications of mixed radionuclides

6.3.2 Test method

Change the last two sentences to “The test shall consist of 10 or more trials for each combination of radionuclides. The performance is acceptable if the instrument correctly indicates within 1 min the combination of radionuclides in at least 90 % of the trials.”.

6.4 Overload characteristics for identification

6.4.1 Requirement

Delete “too low or”.

6.4.2 Test method

Sixth line, replace “state” with “indicate”.

Sixth line after “not possible” add “or ^{137}Cs is continued to be identified. In the latter case increase the ambient dose equivalent rate slowly until indication that proper identification of is not possible occurs.”.

Delete the last sentence.

8 Neutron detection

8.1 Neutron indication

8.1.1 Requirement

Start “If the instrument is neutron sensitive the instrument shall…..”.

8.1.2 Test method

Delete the first paragraph.

Second paragraph, replace “n/s” with “neutrons per second”.

Add at the end “Remove the neutron source and leave the instrument switched on for one hour. Insure that there is no more than one neutron alarm, with the alarm setting as recommended by the manufacturer.”.

9 Electrical and environmental performance requirements

9.1 Stabilization time

9.1.2 Test method

Move the second sentence to a note at the end.

Replace the last sentence with “The requirement is met if the instrument is operational as determined by having a stable response, for example indicating approximately 1 μSv.h^{-1}, and being able to perform an identification.”.

9.2 Power supply – battery

9.2.2 Requirement

Replace “10 %” with “± 10 %”.

9.2.3 Test method

Add at the end to the first sentence “or new primary batteries”.

9.5 Moisture and dust protection

9.5.1 Requirement

9.5.1.3 Test method – moisture

Delete at the end of the first paragraph, “is 1 min/m^2 of the calculated surface area of the instrument with a minimum duration of”.

9.9 Electromagnetic compatibility

9.9.2 Electrostatic discharge (ESD)

9.9.2.2 Test method

Begin with “The test shall comply with IEC 61000-4-2.”.

9.9.3 Radio frequency (RF)

9.9.3.1 Requirement

At the end replace “no discharge applied” with “no RF field applied”.

9.9.3.2 Test Method

Replace at the beginning “Place the instrument in an RF controlled environment and expose it to” with “The test shall comply with IEC 61000-4-6. Place an ^{241}Am and ^{60}Co source in a location that provides an ambient dose equivalent rate of 0,5 μSv.h^{-1} (from each source) at the detector and expose the detector to”.

Replace the last sentence of the first paragraph with “Perform tests at the radiation frequencies (20, 22, 24, 26, 29, 32, 35, 38, 42, 46, 51, 56, 62, 68, 75, 80, 90, 100, 110, 120, 130, 140, 150, 160, 180, 200, 220, 240, 260, 290, 320, 350, 380, 420, 460, 510, 560, 620, 680, 750, 820, 900, 1 000) MHz and (1,4; 1,5; 1,6; 1,8; 2,0; 2,2; 2,4, 2,5) GHz.”.

Delete the first sentence of the second paragraph: “If susceptibilities … frequencies.”.

9.9.4 Radiated RF emissions

9.9.4.2 Test method

Begin with “The test shall comply with IEC 61000-4-3.”.

9.9.5 Conducted disturbances

9.9.5.1 Requirement

Change “onto” to “to”.

9.9.5.2 Test method

Replace the second sentence of the first paragraph with “Perform tests at the radiation frequencies (150, 160, 180, 200, 220, 240, 260, 290, 320, 350, 380, 420, 460, 510, 560, 620, 680, 750, 820, 900, 1 000) kHz and (1,0; 1,1; 1,2; 1,3; 1,4; 1,5; 1,6; 1,8; 2,0; 2,2; 2,4; 2,6; 2,9; 3,2; 3,5; 3,8; 4,2; 4,6; 5,1; 5,6; 6,2; 6,8; 7,5; 8,0; 9,0; 10; 11; 12;13; 14; 15; 16; 18; 20; 22; 24; 26; 29; 32; 35; 38; 42; 46; 51; 56; 62; 68; 75, 80) MHz.”.

Delete the third sentence.

Replace in the fourth sentence “should be” with “shall be”.

9.9.6 Magnetic fields

9.9.6.1 Requirement

Change text to “The instrument shall be fully functional when exposed to d.c. magnetic fields in three orientations mutually at right angles to a 10 Gauss (about 800 A m^{-1} in vacuum) magnetic field.

9.9.6.2 Test method

Delete the second sentence.

Replace the third sentence with “No additional alarms shall be activated and the two radionuclides shall be correctly identified and the indicated ambient dose equivalent rate shall remain within ± 20 % of the initial indicated value. The test shall be carried out in three orientations mutually at right angles.”.

Bibliography

Third entry: Update to ”IEC 61000-4-2:2008” and delete the amendments.

Fourth entry: Update to “IEC 61000-4-3:2006" and delete the amendment.

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

IEC 60068-2-27:1987	NOTE	Harmonized as EN 60068-2-27:1993 (not modified).
IEC 60086-1:2000	NOTE	Harmonized as EN 60086-1:2001 (not modified).
IEC 61000-4-2:1995 + A1:1998 + A2:2000	NOTE	Harmonized as EN 61000-4-2:1995 + A1:1998 + A2:2001 (not modified).

IEC 61000-4-3:2002 + A1:2002	NOTE Harmonized as EN 61000-4-3:2002 + A1:2002 (not modified).
IEC 61000-4-6:2003 + A1:2004	NOTE Harmonized as EN 61000-4-6:2007 (not modified).
IEC 61000-4-8:1993 + A1:2000	NOTE Harmonized as EN 61000-4-8:1993 + A1:2001 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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

Publication	Year	Title	EN/HD	Year
IEC 60050-393	2003	International Electrotechnology Vocabulary - Part 393: Nuclear instrumentation - Physical phenomena and basic concepts	-	-
IEC 60050-394 + A1 + A2	1995 1996 2000	International Electrotechnical Vocabulary - Chapter 394: Nuclear instrumentation: Instruments	- - -	- - -
IEC 60529 + A1	1989 1999	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May + A1	1991 1993 2000
IEC 60846 (mod)	2002	Radiation protection instrumentation - Ambient and/or directional dose equivalent (rate) meters and/or monitors for beta, X and gamma radiation	EN 60846	2004
IEC 61187 (mod)	1993	Electrical and electronic measuring equipment - Documentation	EN 61187 + corr. March	1994 1995
ISO 4037-1	1996	X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy - Part 1: Radiation characteristics and production methods	-	-
ISO 8529-1	2001	Reference neutron radiations - Part 1: Characteristics and methods of production	-	-
ISO 8529-2	2000	Reference neutron radiations - Part 2: Calibration fundamentals of radiation protection devices related to the basic quantities characterizing the radiation field	-	-
ISO 22188	2004	Monitoring for inadvertent movement and illicit trafficking of radioactive material	-	-
International Bureau of Weights and Measures	1998	The international System of Units (SI)	-	-

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