SLOVENSKI STANDARD
SIST EN 60529:1997/A2:2014

01-januar-2014

Stopnja zaščite, ki jo zagotavlja ohišje (koda IP) - Dopolnilo A2

Degrees of protection provided by enclosures (IP Code)

Schutzarten durch Gehäuse (IP-Code)

Degrés de protection procurés par les enveloppes (Code IP)

Ta slovenski standard je istoveten z: **EN 60529:1991/A2:2013**

ICS:

29.100.99	Drugi sestavni deli za električne naprave	Other components for electrical equipment

SIST EN 60529:1997/A2:2014 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60529/A2

October 2013

ICS 13.260; 29.020

English version

Degrees of protection provided by enclosures (IP Code)
(IEC 60529:1989/A2:2013)

Degrés de protection procurés par les enveloppes (Code IP)
(CEI 60529:1989/A2:2013)

Schutzarten durch Gehäuse (IP-Code)
(IEC 60529:1989/A2:2013)

This amendment A2 modifies the European Standard EN 60529:1991; it was approved by CENELEC on 2013-10-03. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 CEN-CENELEC Management Centre or to any CENELEC member.

This amendment 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 CEN-CENELEC Management Centre has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 60529:1991/A2:2013 E

Foreword

The text of document 70/122/CDV, future IEC 60529:1989/A2, prepared by IEC/TC 70 "Degrees of protection provided by enclosures" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60529:1991/A2:2013.

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)	2014-07-03
–	latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-10-03

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

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 60529:1989/A2:2013 was approved by CENELEC as a European Standard without any modification.

IEC 60529

Edition 2.0 2013-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

AMENDMENT 2
AMENDEMENT 2

Degrees of protection provided by enclosures (IP Code)

Degrés de protection procurés par les enveloppes (Code IP)

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

K

ICS 13.260; 29.020

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FOREWORD

This amendment has been prepared by IEC technical committee 70: Degrees of protection provided by enclosures.

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

FDIS	Report on voting
70/122/FDIS	70/123/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION TO AMENDMENT 2

This Amendment 2 introduces a new degree of protection IP X9 whereas no modifications of the existing degrees of protection are made.

Thus neither additional tests nor modifications of the existing certificates should be requested in case of enclosures providing a different IP code.

CONTENTS

Add the following new subclause title:

14.2.9 Test for second characteristic numeral 9 with a spray nozzle

Add the following new figure titles:

Figure 7 – Fan jet nozzle dimensions

Figure 8 – Fan jet nozzle resulting dimensions of spraying hole for checking purpose

Figure 9 – Fan jet nozzle examples

Figure 10 – Set-up for measuring the impact force of the water jet for determining the protection against high-pressure and temperature water jet, degree of protection against ingress of water IP X9

Figure 11 – Impact force distribution

Figure 12 – Test device to verify protection against high pressure and temperature water jet for small enclosures

4.1 Arrangement of the IP Code

Replace the sixth line by the following:

(numerals 0 to 9, or letter X)

4.2 Elements of the IP Code and their meanings

Add, in the line "Second characteristic numeral":

	9	High pressure and temperature water jet		

4.3 Examples for the use of letters in the IP Code

Replace the last line by the following:

IPX5/IPX7/IPX9 – giving three degrees of protection by an enclosure against water jets, temporary immersion and high pressure and temperature water jet for a "versatile" application.

6 Degrees of protection against ingress of water indicated by the second characteristic numeral

Replace the second paragraph by the following:

The tests for the second characteristic numeral are carried out with fresh water. The actual protection may not be satisfactory if cleaning operations with high pressure and temperature water jet outside the requirements of second characteristic numeral 9 and/or solvents are used.

Replace the seventh paragraph by the following

An enclosure designated with second characteristic numeral 9 only is considered unsuitable for exposure to water jets (designated by second characteristic numeral 5 or 6) and immersion in water (designated by second characteristic numeral 7 or 8) and need not comply with requirements for numeral 5, 6, 7 or 8 unless it is multiple coded as follows:

Replace the table after the seventh paragraph by:

Enclosure passes test for:		Designation and marking	Range of application
Water jets second characteristic numeral	**Temporary/continuous immersion second characteristic numeral**		
5	7	IPX5/IPX7	Versatile
5	8	IPX5/IPX8	Versatile
6	7	IPX6/IPX7	Versatile
6	8	IPX6/IPX8	Versatile
9	7	IPX7/IPX9	Versatile
9	8	IPX8/IPX9	Versatile
5 and 9	7	IPX5/IPX7/IPX9	Versatile
5 and 9	8	IPX5/IPX8/IPX9	Versatile
6 and 9	7	IPX6/IPX7/IPX9	Versatile
6 and 9	8	IPX6/IPX8/IPX9	Versatile
–	7	IPX7	Restricted
–	8	IPX8	Restricted
9	–	IPX9	Restricted
5 and 9	–	IPX5/IPX9	Versatile
6 and 9	–	IPX6/IPX9	Versatile

Replace the last paragraph before Table 3 by the following:

Enclosures for “restricted” application indicated in the last column are considered suitable only for the conditions to which they were tested.

Add, at the end of Table 3, the following new line:

9	Protected against high pressure and temperature water jets	Water projected at high pressure and high temperature against the enclosure from any direction shall not have harmful effects	14.2.9

14 Tests for protection against water indicated by the second characteristic numeral

14.1 Test means

Add, at the end of Table 8, the following new line:

9	Fan jet nozzle Figure 7 Test of small enclosure on turntable Figure 12 Turntable speed (5 ± 1) r/min Spray at 0°, 30°, 60°, 90° Or Test of large enclosures as per intended use Spray from all practical directions Distance (175 ± 25) mm	(15 ± 1) l/min	30 s per position 1 min/m^2 at least 3 min	14.2.9 a) 14.2.9 b)

14.2 Test conditions

Replace the second paragraph by the following:

Details concerning compliance of degrees of protection – in particular for second characteristic numerals 5/6/9 (water jets) and numerals 7/8 (immersion) – are given in Clause 6.

Replace the last sentence of the fourth paragraph by:

For IPX7 and IPX9 details of the water temperature are given in 14.2.7 and 14.2.9 respectively.

Add the following new subclause:

14.2.9 Test for second characteristic numeral 9 by high pressure and temperature water jetting

The test is made by spraying the enclosure with a stream of water from a standard test nozzle as shown in Figures 7, 8 and 9.

The set-up for measuring the impact force of the water jet is given in Figure 10.

The distribution force shall be verified at upper and lower limits of distance tolerance range (see Figure 11).

During the test a) or b) of the enclosure, the water temperature shall be (80 ± 5) °C.

a) For small enclosures (largest dimension less than 250 mm), the enclosure shall be mounted on the test device shown in Figure 12.

   – turntable speed: 5 r/min ± 1 r/min

   – spray positions: 0°, 30°, 60°, 90°

   The test duration is 30 s per position.

b) For large enclosures (largest dimension greater than or equal to 250 mm), the enclosure shall be mounted as per intended use. The entire exposed surface area of the enclosure shall be subjected to the spray at some point during the test procedure.