



SLOVENSKI STANDARD
SIST EN 61009-1:2005/A11:2008
01-junij-2008

Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBO's) - Part 1: General rules

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Fehlerstrom-/Differenzstrom-Schutzschalter mit eingebautem Überstromschutz (RCBOs) für Hausinstallationen und für ähnliche Anwendungen - Teil 1: Allgemeine Anforderungen

Interrupteurs automatiques a courant différentiel résiduel avec protection contre les surintensités incorporée pour installations domestiques et analogues (DD) - Partie 1: Regles générales

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Ta slovenski standard je istoveten z: EN 61009-1:2004/A11:2008

ICS:

29.120.50 Xæ[çæ\ ^Á Ái\ * æ Fuses and other overcurrent protection devices
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SIST EN 61009-1:2005/A11:2008 en,fr,de

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**Residual current operated circuit-breakers
with integral overcurrent protection
for household and similar uses (RCBO's) -
Part 1: General rules**

Interrupteurs automatiques à courant
différentiel résiduel avec protection
contre les surintensités incorporée
pour installations domestiques et
analogues (DD) -
Partie 1: Règles générales

Fehlerstrom-/Differenzstrom-
Schutzschalter mit eingebautem
Überstromschutz (RCBOs)
für Hausinstallationen und
für ähnliche Anwendungen -
Teil 1: Allgemeine Anforderungen

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SIST EN 61009-1:2005/A11:2008
This amendment A11 modifies the European Standard EN 61009-1:2004; it was approved by CENELEC on 2007-12-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, 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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This amendment to the European Standard EN 61009-1:2004 was prepared by the Technical Committee CENELEC TC 23E, Circuit breakers and similar devices for household and similar applications.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A11 to EN 61009-1:2004 on 2007-12-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2008-12-01
- latest date by which the national standards conflicting
with the amendment have to be withdrawn (dow) 2009-04-01

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Annex ZE (normative) Particular requirements for RCBOs with screwless type terminals for external copper conductors

Annex ZF (normative) Particular requirements for RCBOs with flat quick-connect terminations

Figure Z7 – Diagrammatic representation of a small part

Table Z3 – Requirements for marking

4 Classification

4.10 **Replace** the existing subclause title and text by the following new subclause:

4.10 According to the methods of connection

4.10.1 According to the fixation system:

- RCBO's, the electrical connections of which are not associated with the mechanical mounting;
- RCBO's, the electrical connections of which are associated with the mechanical mounting.

NOTE Examples of this type are <http://standards.iteh.ai/SIST-EN-61009-1-2005-A11-2008>

- plug-in type;
- bolt-on type;
- screw-in type.

Some RCBO's may be of the plug-in type or bolt-on type on the line side only, the load terminals being usually suitable for wiring connection.

4.10.2 According to the type of terminals:

- RCBO's with screw-type terminals for external copper conductors;
- RCBO's with screwless type terminals for external copper conductors;

NOTE 1 The requirements for RCBO's equipped with this type of terminals are given in Annex ZE.

- RCBO's with flat quick-connect terminals for external copper conductors;

NOTE 2 The requirements for RCBO's equipped with this type of terminals are given in Annex ZF.

5 Characteristics of RCBOs

5.3.1 **Replace** the table by the following:

RCBO	Rated voltage of RCBOs for use in systems 230 V, 230 V/400 V, 400V
Two-pole	230 V
	400 V
Three-pole	400 V
Four-pole	400 V

5.3.8 **Add**, in the seventh column heading of Table 2, a reference to footnote e) after "500 A".

Delete, in footnote b) of Table 2, "500 A".

Add the following new footnote e):

e) The verification of the break times at 500 A is only made for the test of 9.9.1.2.c, but in any case the test is not done for values exceeding the lower limit of the overcurrent instantaneous tripping range.

6 Marking and other product information

6.Z1 **Replace** the whole subclause by:

6.Z1 Standard marking

Each RCBO shall be marked in a durable manner according to the following Table Z3.

For RCBOs other than those operated by means of push-button, the open position shall be indicated by the symbol "O" and the closed position by the symbol "I" (a short straight line).

Additional national symbols are allowed for this indication. Provisionally the use of national indications only is allowed. These indications shall be readily visible when the RCBO is installed.

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For RCBOs operated by means of two push-buttons, the push-button designed for the opening operation only shall be RED and/or be marked with the symbol "O".


RED shall not be used for any other push-button of the RCBO.


If a push-button is used for closing the contacts and is evidently identified as such, its depressed position is sufficient to indicate the closed position.

If a single push-button is used for closing and opening the contacts and is identified as such, the button remaining in its depressed position is sufficient to indicate the closed position. On the other hand, if the button does not remain depressed, an additional means indicating the position of the contacts shall be provided.

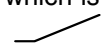
If it is necessary to distinguish between the supply and the load terminals, they shall be clearly marked (e.g. by "line" and "load" placed near the corresponding terminals or by arrows indicating the direction of power flow).

Terminals exclusively intended for the connection of the neutral circuit shall be indicated by the letter N.

Terminals intended for the protective conductor, if any, shall be indicated by the symbol  (IEC 60417-5019 a)).

NOTE The symbol  (IEC 60417-5017 a)), previously recommended, shall be progressively superseded by the preferred symbol IEC 60417-5019 a), given above.

If a degree of protection higher than IP20 is marked on the device, it shall comply with it, whichever the method of installation. If the higher degree of protection is obtained only by a specific method of installation and/or with the use of specific accessories (e.g. terminal covers, enclosures, etc.), this shall be specified in the manufacturer's literature

The suitability for isolation, which is provided by all RCBOs of this standard, may be indicated by the symbol  on the device. When affixed, this marking may be included in a wiring diagram, where it may be combined with symbols of other functions, (e.g. overload protection, or other symbols of IEC TC 3). When the symbol is used on its own (i.e. not in a wiring diagram), combination with symbols of other functions is not allowed.

The base for plug-in RCBOs shall be marked with the following:

- rated current or maximum rated current;
- trade mark.

Marking shall be indelible, easily legible and not be placed on screws, washers or other removable parts.

Compliance is checked by inspection and by the test of 9.3.

6.Z2

Replace the whole subclause by:

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6.Z2 Additional marking




Additional marking to other standards (EN or IEC or other) or additional requirements are allowed under the following conditions:

- the RCBO shall comply with all the requirements of the additional standard;
- the relevant standard to which the additional marking refers shall be indicated adjacent to this marking and shall be clearly differentiated or separated from the standard marking according to 6.Z1.

Compliance is checked by inspection and by carrying out all the test sequences required by the relevant standard. Equivalent or less severe test sequences need not be repeated.

Table Z3 – Requirements for marking

	Each RCBO shall be marked in a durable manner with all or, for small apparatus, part of the following data: The minimum requirements are indicated by the symbol "X"	Marking on the RCBO itself			Product information in the catalogue
		If, for small devices the space available does not allow all the data to be marked, at least the following information shall be marked and visible when the device is installed.	The following information may be marked on the side or on the back of the device and be visible only before the device is installed.	Alternatively the following information may be on the inside of any cover which has to be removed in order to connect the supply wires.	
a)	the manufacturer's name or trademark;		X		Any remaining information not marked shall be given in the manufacturer's catalogues .
b)	type designation, catalogue number or serial number;		X		
c)	rated voltage(s) with the symbol ~;		X		
d)	rated current without symbol "A", preceded by the symbol of overcurrent instantaneous tripping (B, C or D), for example B16;	X			
e)	rated frequency, if the RCBO is designed for frequencies other than 50 Hz (see 5.3.5);		X		
f)	rated residual operating current ($I_{\Delta n}$) in A or in mA;	X			
g)	deleted;				
h)	rated short circuit capacity, in amperes in a rectangle without symbol "A";		X (*)		
j)	reference calibration temperature, if different from 30 °C;				X
k)	the degree of protection (only if different from IP20);				X
l)	the position of use (symbol according to IEC 60051), if necessary;		X		
m)	rated residual making and breaking capacity ($I_{\Delta m}$), if different from rated short-circuit capacity (I_{cn});				X
n)	the symbol \square (S in a square) for type S devices;	X			
o)	symbol of the method of operation according to Table Z1 of 4.1 if the RCBO is functionally dependent on the line voltage;		X	X	

	Product information in the catalogue	Marking on the RCBO itself			
	Alternatively the following information may be on the inside of any cover which has to be removed in order to connect the supply wires.	The following information may be marked on the side or on the back of the device and be visible only before the device is installed.	If, for small devices the space available does not allow all the data to be marked, at least the following information shall be marked and visible when the device is installed.		
q)			X	operating means of the test device, by the letter T ^b ;	
r)	X			wiring diagram unless the correct mode of operation is evident;	
s)		X	X	operating characteristic in presence of residual currents with d.c. components - RCBOs of type AC with the symbol  - RCBOs of type A with the symbol 	
t)			X ^a	energy limiting class (e.g. 3) in a square in accordance with Annex ZD if applied;	
u)		X		RCBOs according to 4.Z1 shall be marked with the symbol  (the value -25 included in the snow flake symbol according to Figure 0027 of ISO 7000) if relevant;	
v)			X	indication of the terminal for the neutral with "N";	
w)		X	X	additional marking of performance to other standards or additional requirements according to 6.Z2.	

^a I_{cn} and the energy limiting class shall be on the device and combined together.

^b It is recommended to advise the user to test the device regularly.

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6.Z3 Delete this subclause.

8 Requirements for construction and operation

8.1.3 Add in item 2 of Table 5 the reference to footnote j).

Delete item 5 of Table 5.

Add the following new footnote j) in Table 5:

j) This applies also to clearance and creepage distances between live parts of different polarity of the RCBO and equipments mounted close to it.

Delete note 3 after Table 5.

8.1.5.1 Delete the second paragraph and the relevant note.

Replace the last paragraph by the following:

Compliance is checked by inspection, by the tests of 9.5 for screw-type terminals, by specific tests for plug-in or bolt-on RCBO's included in the standard, or by the tests of Annex ZE or ZF, as relevant for the type of connection.

8.1.5.2 Replace the existing note by the following new note:

NOTE Examples of possible designs of screw-type terminals are given in Annex IC.

8.5.2.Z1 Add the following new subclause:

8.5.2.Z1 Effect of single phase loading of multi-pole RCBO on the tripping characteristic

Single phase loading of RCBO with more than 2 current paths shall not have a significant effect on the overcurrent tripping characteristic.

Compliance is checked by the tests of 9.9.2.Z1.

9 Tests

9.5 Replace the existing title of this subclause by the following new title:

9.5 Tests of reliability of screw-type terminals for external copper conductors

9.7.2 Delete item d).

Rename item e) as item d).

Modify the beginning of the last but one paragraph as follows:

“For the measurements according to items b) to d),”

9.9.2.Z1 Add the following new subclause:

9.9.2.Z1 Test of effect of single phase loading on the over-current tripping characteristic of RCBO with three or four current paths

This test does not apply to RCBOs obtained by the assembly of an adaptable residual current unit on a circuit-breaker.

RCBOs with three or four current paths are loaded on 2 current paths. Where a switched neutral pole exists, the test circuit shall include the neutral pole. The test current having the value of 1,2 times the conventional tripping current is applied, starting from cold.

Except for the neutral pole if applicable, the test is carried out on different poles for each sample.

The RCBO shall trip within the conventional times as for test b according to Table 8.

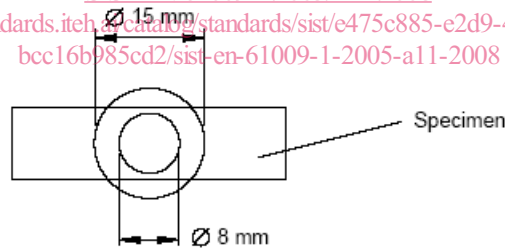
9.15 Add the following definition of small parts after the note:

Small parts, where each surface lies completely within a circle of 15 mm diameter, or where any part of the surface lies outside a 15 mm diameter circle and it is not possible to fit a circle of 8 mm diameter on any of the surfaces, are not subjected to the test of this subclause (see Figure Z7 for diagrammatic representation).

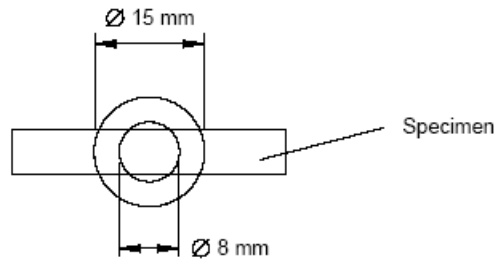
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Figures Add the following new Figure Z7:

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To be tested



No test is required

IEC 230/98

Figure Z7 – Diagrammatic representation of a small part