

**SLOVENSKI
STANDARD**

**SIST EN 61009-
1:1996/A13:1999**

prva izdaja
april 1999

Electrical accessories - Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBO's) - Part 1: General rules - Amendment A13

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ICS 29.120.50

Referenčna številka
SIST EN 61009-1:1996/A13:1999(en)

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EUROPEAN STANDARD

EN 61009-1/A13

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 1998

UDC 621.316.573:621.316.9:620.1
ICS 29.120.50

Descriptors: Electrical household accessory, low-voltage equipment, residual current operated circuit-breakers, overcurrent protection, definition, characteristics, construction, tests

English version

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

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

Elektrisches Installationsmaterial
Fehlerstrom-Schutzschalter mit
Überstromauslöser (RCBO's) für
Hausinstallationen und für ähnliche
Anwendungen
Teil 1: Allgemeine Anforderungen

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This amendment A13 modifies the European Standard EN 61009-1:1994; it was approved by CENELEC on 1997-10-01. 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.

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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

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Ref. No. EN 61009-1:1994/A13:1998 E

Foreword

This amendment 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 formal vote and was approved by CENELEC as amendment A13 to EN 61009-1:1994 on 1997-10-01.

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) 1998-07-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2001-01-01

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5 Characteristics of the RCBOs

5.2.7 Rated residual making and breaking capacity ($I_{\Delta m}$)

Replace the last line by :

The conditions are those specified in 9.12.11.2 and 9.12.11.4d)

5.3.6 Modify as follows :

5.3.6 Values of rated short-circuit capacity (I_{cn}) and of rated residual making and breaking capacity ($I_{\Delta m}$)

5.3.6.1 Standard values up to and including 10 000 A

The standard values of rated short-circuit capacity and of rated residual making and breaking capacity are given in table 1. The values of I_{cn} and $I_{\Delta m}$ may be different on the same product.

Table 1 - Standard values of rated short-circuit capacity and of rated residual making and breaking capacity

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1 500 A (*)
3 000 A
4 500 A
6 000 A
10 000 A

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(*) Only for RCBOs integrated in one unit with a socket outlet or designed exclusively for being associated locally with a socket outlet in the same mounting box.

The corresponding ranges of power factor are given in 9.12.5.

5.3.6.2 Unchanged

5.3.7 Delete

Secr. note : 5.3.7 is covered by the new 5.3.6.

5.3.8. Replace table 2 by the following new one :

Table 2 - Standard values of break time and non-actuating time for operation under residual current conditions

Type	I_n	$I_{\Delta n}$	Standard value of break time and non-actuating time at a residual current equal to:					
			$I_{\Delta n}$	$2I_{\Delta n}$	$5I_{\Delta n}^*$	$I_{\Delta t}^{**}$	500 A or $10 I_n^{****}$	
General	Any value	Any value	0,3	0,15	0,04	0,04 ^{**}	0,04	Maximum break times
S	≥ 25	$>$	0,5	0,2	0,15	0,15 ^{**}	0,15	Maximum break times
		0,03	0,13	0,06	0,05	0,04 ^{**}	***	Minimum non actuating times

* For RCBOs of the general type incorporated in or intended only for association with plugs and socket outlets, and for RCBOs of the general type with $I_{\Delta n} \leq 30$ mA, 0,25 A may be used as an alternative to $5 I_{\Delta n}$.

** This test is made with a current $I_{\Delta t}$ which is the lower limit of the overcurrent instantaneous tripping range according to type B, C or D, as applicable (see Table 3).

*** Discrimination between instantaneous tripping and residual tripping cannot be ensured.

**** 500 A or $10 I_n$, whichever is the greater. The verifications of the break times at these values are only made during the tests of 9.12.11.2.

6 Marking and other product information


The text of clause 6 becomes 6.1 with the following modifications:

Add:

6.1 Standard marking

- c) Add "with the symbol ~"
- f) Add " $(I_{\Delta n})$ in A or mA"
- h) Replace by: " rated short-circuit capacity, in amperes in rectangle without symbol A"
- m) Add " $(I_{\Delta m})$ " between "capacity" and", if different from..." and add " (I_{cn}) " at the end.
- r) Add "unless the correct mode of connection is evident"

Add the following item:

- t) "Energy limiting class in a square in accordance with annex ZD, if applied.
 I_{cn} and the energy limiting class when apply shall be both on the device and combined together."
- u) Add : "RCBOs according to 4.Z1.2 shall be marked with the symbol  (snowflake enclosing -25)."

In the second paragraph after s) :

- Replace "under d), f), and n)" by "under d), f), n), and q)".
- Replace "under a), b), c) and h)" by "under a), b), c), h), l), o), r), s), t) and u).
- Replace "The information under r)" by: "Alternatively the information under r) and o) "

Add between the 2nd and 3rd paragraph after s)

If the degree of protection IP is marked on the device itself, all parts shall comply with the relevant IP requirements (EN 60529). The IP indications in the catalogue or instruction sheets may take into account various methods of installation (e.g. additional covers, terminal covers, enclosures...)." **iTeh STANDARD PREVIEW**

Add the following two subclauses:

6.2 Additional marking

Additional marking to other standards (European or International Standards or other) is 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 6.1.

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.

6.3 Guidance table for marking

See next page

6.3 Guidance table for marking

6	Marking and other product information 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 shall be on the RCBO itself				Marking in the catalogue
		Marking visible when the device is installed in case of small devices, where the space available does not allow all the data to be marked.	Marking allowed on the side or on the back of the device before the device is installed.	Alternatively the information may be on the inside of any cover which has to be removed in order to connect the supply wires.	Remaining information to be given in the manufacturer's catalogues if not marked on the device	
a)	the manufacturer's name or trademark;		X			
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 only for one frequency (see 5.3.5);					X
f)	rated residual operating current ($I_{\Delta n}$) in A or in mA	X				
h)	rated short circuit capacity, in amperes in a rectangle without symbol "A"		X(*)			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 51), 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 S (S in a square) for type S devices;	X				
o)	indication that the RCBO is functionally dependent on line voltage, if applicable;		X		X	
q)	operating means of the test device, by the letter T;	X				
r)	wiring diagram unless the correct mode of operation is evident;		X		X	
s)	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 		X			
t)	Energy limiting class (e.g. 3) in a square in accordance with Annex ZD if applied		X(*)			
u)	RCBOs according to 4.21.2 shall be marked with the symbol  (snowflake enclosing -25)		X			
	Indication of the terminal for the neutral with "N"		X			
	Additional marking of performance to other standards					

(*) I_{cn} and the energy limiting class, if applied, shall be on the device and combined together.

NOTE: Specifications on appropriate recommendations to the user to regularly operate the test device are under consideration.

9 Tests

9.1.1 Add the following note before table 10

"NOTE - To verify compliance of additional marking to 6.2, if any, tests are carried out according to the relevant standard."

9.12 Short-circuit tests

9.12.1 General conditions for test

Table 16 :

Replace "9.12.13.1" by "9.12.11.4d)".

Replace "9.12.13.2" by "9.12.12.3".

9.12.11.2 Replace the second paragraph by :

Each pole of the RCBO, except the switched neutral pole or the overcurrent unprotected pole, is subjected separately to a test in a circuit, the connections of which are shown in figure Z1. Phases which do not carry the short circuit current during this test shall be connected to the supply voltage at the line terminals.

The measurement of the breaking time shall be carried out at every test and the values shall comply with the values of Table 2.

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Add :

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9.12.11.4 d) Test at residual making and breaking capacity $I_{\Delta m}$.

The test circuit is calibrated according to 9.12.7.

The test is carried out on one pole taken at random which shall not be the switched neutral pole or the overcurrent unprotected pole. This pole is connected according to the diagram of fig. Z1.

Phases which do not carry the short circuit current during this test shall be connected to the supply voltage at the line terminals.

The sequence of operation is : O - t - CO

For the "O" operations, the auxiliary switch A is synchronised with respect to the voltage wave so that the circuit is closed on the point 15° on the wave for the "O" operation on the first sample.

This point is then shifted by 30° for the "O" operation on the second sample and by a further 30° for the "O" operation on the third sample.

The synchronization tolerance shall be $\pm 5^\circ$.

For three-and four-pole RCBO's the same pole shall be used as reference for the purpose of synchronization.

9.12.12.2 Add in the first line, after 9.12.11.4c) "and 9.12.11.4d)"

Add the new subclause:

9.12.12.3 After the test of 9.12.11.2, under the condition of 9.9.1.2 c), the RCBO shall trip with a test current of $1,25 I_{\Delta n}$. One test only is made on one pole, taken at random, with measurement of break time. This shall not exceed the value specified in table 2 for $I_{\Delta n}$.

Delete 9.12.13