
Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCB's) - Part 1: General rules (IEC 1008-1:1990 + A1:1992, modified)

Electrical accessories - Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCB's) -- Part 1: General rules

Elektrisches Installationsmaterial - Fehlerstrom-/Differenzstrom-Schutzschalter ohne eingebauten Überstromschutz (RCCBs) für Hausinstallationen und für ähnliche Anwendungen - Teil 1: Allgemeine Anforderungen

Petit appareillage électrique - Interrupteurs automatiques à courant différentiel résiduel pour usages domestiques et analogues sans dispositif de protection contre les surintensités incorporé (ID) -- Partie 1: Règles générales

Ta slovenski standard je istoveten z: EN 61008-1:1994

ICS:

29.120.50	Varovalke in druga medtokovna zaščita	Fuses and other overcurrent protection devices
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EUROPEAN STANDARD

EN 61008-1

NORME EUROPEENNE

EUROPÄISCHE NORM

August 1994

UDC 621.316.57:621.316.9:620.1

Descriptors: Electrical household accessory, low voltage equipment, residual current operated switching device, definition, characteristics, construction, tests

ENGLISH VERSION

Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCB's)
Part 1: General rules
(IEC 1008-1:1990 + A1:1992, modified)

Interrupteurs automatiques à courant différentiel résiduel pour usages domestiques et analogues sans dispositif de protection contre les surintensités incorporé (ID)
Partie 1: Règles générales
(CEI 1008-1:1990 + A1:1992, modifiée)

Fehlerstrom-/Differenzstrom-Schutzschalter ohne eingebauten Überstromschutz für Hausinstallationen und für ähnliche Anwendungen
Teil 1: Allgemeine Anforderungen
(IEC 1008-1:1990 + A1:1992, modifiziert)

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This European Standard was approved by CENELEC on 1994-03-08. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and 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

The text of the International Standard IEC 1008-1: 1990 and its amendment 1:1992 together with common modifications prepared by Technical Committee CENELEC TC 23E, Circuit-breakers and similar equipment for household and similar uses, was submitted to the Unique Acceptance Procedure (UAP) for acceptance as European Standard.

As the original document did not obtain a sufficient number of positive votes a revised draft was prepared and submitted to a second vote. The new draft was approved by CENELEC as EN 61008-1 on 1994-03-08.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1996-07-01

- latest date of withdrawal of conflicting national standard: (dow) 2000-07-01

For products which have complied with the relevant national standard before 2000-07-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for the production until 2005-07-01.

Conformity of products with the requirements of this standard ensures conformity with the essential requirements of Directive 73/23/EEC (Low voltage Directive) and its amendment 93/68/EEC.

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given for information only. In this standard, annexes A, B, C, D, ZA and ZB are normative and annexes IA, IB, IC and ZC are informative.

Annexes ZA (normative references), ZB (special national conditions) and ZC (A-deviations) have been added by CENELEC.

Subclauses, figures and tables added by CENELEC are numbered starting from Z1, Z2.....

ENDORSEMENT NOTICE

The text of the International Standard IEC 1008-1:1990 and its amendment 1:1992 was approved by CENELEC as a european standard with agreed common modifications as given below.

Common modifications**1 Scope**

In the first paragraph, in the last but one line **add**, after "not exceeding 125 A", the words: "for fixed installation".

In note 3 **add**, after "(see 8.1.3" ;, "9.7.2, 9.7.3, 9.11.2.1 i)"

Replace the second dashed indent after note 4 by:

- RCCB's integrated in one unit with a socket-outlet or designed exclusively for being associated locally with a socket-outlet in the same mounting box.

Replace note 5 by:

NOTE 5 - For the time being, for RCCB's 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 requirements of this standard in conjunction with those of IEC 884-1 may be used as far as applicable.

2 Normative references

Replace the text of clause 2, Normative references, by:

NOTE - Normative references to international publications are listed in annex ZA (normative).

3 Definitions

3.3.16 **Replace** "current paths" by : "poles".

4 Classification

4.1 **Replace** the note by the following specification:

The selection of the various types is made according to of HD 384 and non conflicting national wiring rules. Table Z1 lists the types of RCCB's according to the various applications but does not exclude the use of RCCB's of any classification for protection over and above that required by the relevant wiring rules.

4.1.2.1 **Replace** item a) by Deleted

Add, after b) :

NOTE - RCCB's of type 4.1.2.1b) shall comply with the relevant requirements of 8.12

4.1 Add at the end:

Table Z1: Survey of the types of RCCB's according to their method of operation

Classification	4.1.1	4.1.2.2.a)	4.1.2.1b)	4.1.2.2b
Marking of use	Without	E1	E2	E3
Protection	Indirect contact and additional ¹⁾	Indirect contact and additional ¹⁾	Additional ¹⁾	Additional ¹⁾²⁾
Service continuity ³⁾	Yes	Yes	No	Yes

1) Additional protection, provided only by RCCB's with $I_{\Delta n} \leq 0,03$ A.
 2) Only devices integrated in one unit with a socket-outlet or designed exclusively for being associated locally with a socket-outlet in the same mounting box.
 3) This information is given for guidance only.

4.1.2.2a) Replace the text in brackets by "(additional requirements are under consideration)".

4.2 Replace the text by "Deleted".

4.3 Delete "- single-pole RCCB with two current paths;" and "- three-pole RCCB with four current paths;"

4.4 Replace the text by: "Deleted".

5

Characteristics of RCCB's

5.1 Delete the first dashed item.

5.2.3 Delete the note.

5.3.1 Replace the table by:

RCCB	Circuit supplying the RCCB	Rated voltage
Two pole with two current paths	single phase, phase to neutral, phase to phase	230 V
	single phase, phase to phase	400 V
Three pole with three current paths	three-phase three-wire	400 V
Four pole	three-phase four-wire	400 V

5.3.3 Delete the value "0,006 A".

5.3.7 Replace the first line by:

The preferred value of rated frequency is 50 Hz.

5.3.8 Replace "table 14" by "table 16".

- 5.3.9 Replace "table 14" by "table 16".
- 5.3.10.1 Replace "table 14" by "table 16".
- 5.3.10.2 Replace "table 14" by "table 16".
- 5.3.11.1 Replace "table 14" by "table 16".
- 5.3.11.2 Replace "table 14" by "table 16".
- 5.3.12 Replace the note of table 1 by :

NOTE - For RCCB's of the general type integrated in one unit with a socket-outlet or designed exclusively for being associated locally with a socket-outlet in the same mounting box and for RCCB's with $I_{\Delta n} \leq 0,030 \text{ A}$, $0,25 \text{ A}$ may be used as an alternative to $5 I_{\Delta n}$.

Replace, in the last but third line "9.2.1.1" by "9.21.1".

6 Marking and other product information

- item d) delete "and/or 60 Hz";
- item g) replace the text by: "Deleted".
- item n) replace by :

n) symbol of the method of operation according to table Z1 of 4.1 if the RCCB is functionally dependent on the line voltage.

Add, at the end of the clause:

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

8 Requirements for construction and operation

- 8.1.2. Delete the 8th paragraph and the relevant note.
Delete the note before the last paragraph.
- 8.1.3 Delete the note d) in table 3.
- 8.1.5 Delete the note after table 4.
- 8.11 Delete the first sentence of the third paragraph: "In the case of RCCB's having ... shall be used."
- 8.12 Replace, in the first paragraph, "current paths" by "poles"
Add at the end of the subclause:
Specific requirements are under consideration for RCCB's classified in 4.1.2. 2a).

9 Tests

- 9.2 Delete the note after table 8.
- 9.7.2 In the last line of item b) replace: "current paths" by "poles".
Add after b):

NOTE - To this purpose samples specially prepared by the manufacturer should be submitted to the test sequences implying this test.

- 9.7.3 In the first paragraph delete "electronic components, if any, being disconnected for the test".
- Replace the second line of the fifth paragraph by:
- 2 000 V for a) to d) of 9.7.2, electronic components, if any, having been disconnected for test b) (see relevant note for 9.7.2 b);
- 9.8.3 Replace the title by "Measurement of the temperature of parts".
- 9.9.2 Delete the second paragraph.
- 9.9.2.1 Replace, in the third line, "In" by " $I_{\Delta n}$ ".
- 9.9.3 Add after the second paragraph:
- NOTE - Preheating may be carried out at reduced voltage but auxiliary circuits shall be connected to their normal operating voltage (particularly for components depending on line voltage).
- Delete the last paragraph.
- 9.9.4 Delete the last paragraph.
- 9.10.2 Delete the note.
- 9.10.3 Replace the second sentence of the last but one paragraph by:
- One test only is made with measurement of break time: the latter shall not exceed the value specified in table 1 at $I_{\Delta n}$.
- Replace the last paragraph by:
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- The RCCB shall then perform satisfactorily the dielectric strength test specified in 9.7.3 but at a voltage of 900 V, for 1 min, and without previous humidity treatment.
- 9.11.2.1 Delete the note after the first paragraph.
- item a) :
- delete in the first line "5" and "8".
- replace in the first line "7" by "Z1" and "9" by "Z2";
- delete first and fourth dashed line ;
- delete the words: "across the terminals of the pole, for single-pole RCCB's;"
- item b) replace, in the last line, " $\pm 5\%$ " to " $^{+5}_0\%$ ".
- item i) replace the second sentence of the last but second paragraph by:
- One test only is made on one pole taken at random, with measurement of break time: the latter shall not exceed the value specified in table 1 at $I_{\Delta n}$.

- 9.13.1 **Replace** the second sentence of the fourth paragraph by:
Only one test is made, on one pole taken at random, with measurement of break time: the latter shall not exceed the value specified in table 1 at $I_{\Delta n}$.
- 9.15.2 **Delete** Note 2.
- 9.17.1 Starting from the eighth line, **replace** the text by:
All the values measured shall be less than 0,70 times the rated voltage (or, if relevant, 0,70 times the minimum value of the range of rated voltages).
At the end of these measurements the RCCB is supplied with a voltage just above the highest measured value and it shall be verified that the RCCB operates in a period of time corresponding to the value specified in table 1 for $I_{\Delta n}$, when a current equal to $1,25 I_{\Delta n}$ is applied.
It shall be also verified that for any value of the line voltage less than the lowest measured value it shall not be possible to close the apparatus by the manual operating means.
- 9.17.2 **Replace**, in the title, "automatic opening" by "behaviour".
- Item a) **add**, after the first line:
no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s
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Add after item b):
RCCBs classified in 4.1.2.1b) are additionally submitted to the following test.
The RCCB, previously energized with the rated voltage and brought to the closed position, is opened by hand or by operating the test device. The rated voltage is then switched off at the line side of the RCCB and suddenly re-established: the RCCB shall not close automatically.
The test is carried out five times.
- 9.17.4 **Replace** the title by:
Verification of correct operation of RCCB's with three or four poles, in presence of a residual current, the neutral and one line terminal only being energized.
Replace the text by:
In case of RCCB's with three or four poles (see 4.3) a test is made in accordance with 9.9.2.3, but the neutral and one line terminal only being energized in turn, the connections being made in accordance with figure 4.
Second line: **Add**, between "line" and only" the word "terminal".
- 9.17.5 **Replace** by "Deleted".

- 9.18 **Delete** the note
- 9.18.1 In the title, **replace** "current paths" by "poles".
- 9.19 **Add**:
- Tests on immunity from electromagnetic disturbances are under consideration, based on the basic and generic European Standards on electromagnetic compatibility.
- 9.20 **Replace** the third paragraph by:
- A first series of tests is made at an impulse voltage of 6 kV peak, the impulses being applied between the phase pole(s), connected together, and the neutral pole of the RCCB or, in absence of the neutral pole, on one pole taken at random;
- delete**, in the last line of the fourth paragraph, the words "(or paths)".
- 9.22 **Add**, after the first line:
- Specifications on verification of reliability of electronic circuits are under consideration.
- Delete** the note.
- 9.22.1.5 **Replace** the second sentence by:
- One test only is made on one pole taken at random, with measurement of the break time: the latter shall not exceed the value specified in table 1 at $I\Delta n$.
- 9.22.2 **Replace** the second sentence of the last paragraph by:
- One test only is made on one pole taken at random, with measurement of the break time: the latter shall not exceed the value specified in table 1 at $I\Delta n$.
- 9.23 **Delete** in the title "of electronic components"..
- Replace** the second sentence of the last paragraph by:
- One test only is made one pole taken at random, with measurement of the break time: the latter shall not exceed the value specified in table 1 at $I\Delta n$.
- Fig. 5 **Delete**.
- Fig. 7 **Replace** by figure Z1
- Fig. 8 **Deleted**.
- Fig. 9 **Replace** by figure Z2
- Fig. 22 **Delete** in the title "of electronic components".
- Annex A2 **Delete** the last paragraph.
- Table A.3 **Delete** notes c), d) and e).
- Annex ID **Delete**.

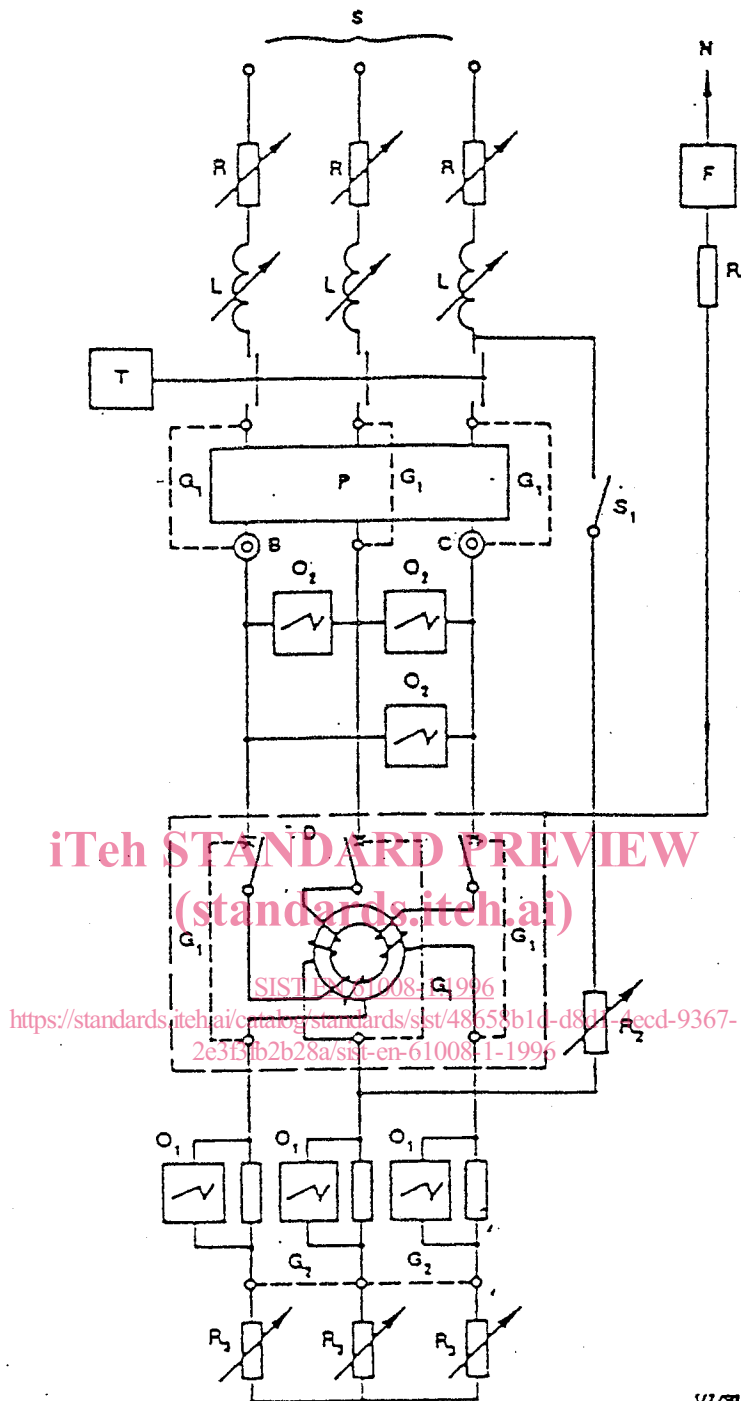


Figure Z 1 Circuit d'essai pour la vérification du pouvoir de fermeture et de coupure assigné et de la coordination avec un DPCC d'un ID tripolaire à trois voies, dans le cas d'un circuit triphasé (9.11).

Test circuit for the verification of the rated making and breaking capacity and of the co-ordination with a SCPD of a three-pole RCCB on three-phase circuit (9.11).

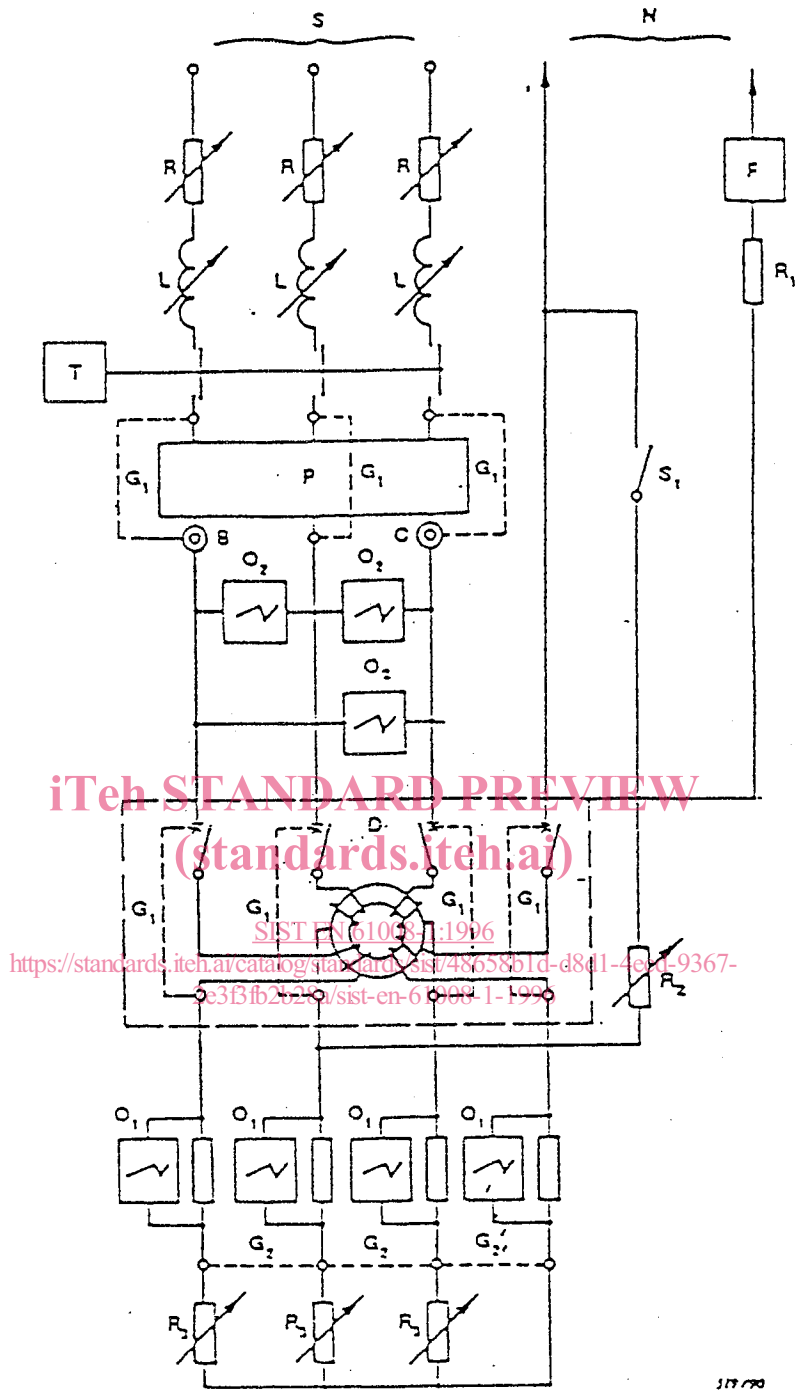


Figure Z 2 Circuit d'essai pour la vérification du pouvoir de fermeture et de coupure assigné et de la coordination avec un DPCC d'un ID tétrapolaire, dans le cas d'un circuit triphasé avec neutre (9.11).

Test circuit for the verification of the rated making and breaking capacity and of the co-ordination with a SCPD of a four-pole RCCB on a three-phase circuit with neutral (9.11).

Annex ZA (normative)

Other international publications quoted in this standard
with the references of the relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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

IEC Publication	Date	Title	EN/HD	Date
38 (mod)	1983	IEC standard voltages ¹⁾	HD 472 S1	1989
50(151)	1978	International Electrotechnical Vocabulary (IEV) Chapter 151: Electrical and magnetic devices	-	-
50(441)	1984	Chapter 441: Switchgear, controlgear and fuses	-	-
51	Series	Direct acting indicating analogue electrical measuring instruments and their accessories	EN 60051	Series
68-2-28	1980	Basic environmental testing procedures Part 2: Tests - Guidance for damp heat tests	HD 323.2.28 S1	1988
68-2-30	1980	Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)	HD 323.2.30 S3 ²⁾	1993
364-4-443	1990	Electrical installations of buildings Part 4: Protection for safety Chapter 44: Protection against overvoltages Section 443 - Protection against overvoltages of atmospheric origin or due to switching (corrigendum 1990)	-	-
364-5-53	1986	Part 5: Selection and erection of equipment Chapter 53: Switchgear and controlgear	-	-
417	1973	Graphical symbols for use on equipment Index, survey and compilation of the single sheets	HD 243 S10 ³⁾	1993
529	1989	Degrees of protection provided by enclosures (IP Code)	En 60529	1991

1) The title of HD 472 S1:1989 is Nominal voltages for low voltage public electricity supply systems.

2) HD 323.2.30 S3:1988 includes A1:1985 to IEC 68-2-30:1980.

3) HD 243 S10:1993 includes supplements A:1974 to K:1991 to IEC 417:1973.

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<u>IEC Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
695-2-1	1980	Fire hazard testing - Part 2: Test methods Glow-wire test and guidance	HD 444.2.1 S1	1983
755	1983	General requirements for residual current operated protective devices	-	-
884-1	1994	Plugs and socket-outlets for household and similar purposes - Part 1: General requirements	-	-
1009	Series	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBO's)	EN 61009	Series

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Annex ZB (normative)**Special national conditions**

Special national condition: National characteristic or practice that cannot be changed even over a long period, e.g. climatic conditions, electrical earthing conditions. If it affects harmonization, it forms part of the European Standard.

For the countries in which the relevant special national conditions apply these provisions are normative, for other countries they are informative.

AUSTRIA

For use at low temperatures down to -25°C a special type of RCCB's shall be used. The tripping characteristics at low temperatures and the particular requirements and tests are as follows:

4 Classification

Add the following subclauses:


4.Z1 *According to the ambient air temperature*

4.Z1.1 For use at temperatures from -5°C to $+40^{\circ}\text{C}$

4.Z1.2 For use at temperatures from -25°C to $+40^{\circ}\text{C}$

6 Marking and other product information

Add:

RCCB's according to 4.Z1.2 shall be marked with the symbol  (snow flake enclosing -25).

7 Standard conditions for operation in service and for installation

7.1, table 2, add for ambient temperature in the second column: " -25°C to $+40^{\circ}\text{C}$ ".

8 Requirements for construction and operation

Add the following subclause:

8.Z1 *Behaviour of RCCB's at low ambient air temperature*

RCCB's according to 4.Z1.2 shall operate reliably at low ambient air temperatures.

Compliance is checked by the tests of 9.Z1.