

SLOVENSKI STANDARD

SIST EN 61008-1:2013

01-februar-2013

Nadomešča:

SIST EN 61008-1:2005

SIST EN 61008-1:2005/A11:2007

SIST EN 61008-1:2005/A12:2009

SIST EN 61008-1:2005/A13:2012

SIST EN 61008-1:2005/A13:2012/AC:2013

SIST EN 61008-1:2005/IS1:2008

Odklopniki na preostali (residualni) tok brez vgrajene nadtokovne zaščite za gospodinjsko in podobno rabo (RCCB's) - 1. del: Splošna pravila (IEC 61008-1:2010, spremenjen)

(standards.iteh.ai)

Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - Part 1: General rules (IEC 61008-1:2010, modified)

Fehlerstrom-/Differenzstrom-Schutzschalter ohne eingebauten Überstromschutz (RCCBs) für Hausinstallationen und für ähnliche Anwendungen -- Teil 1: Allgemeine Anforderungen (IEC 61008-1:2010, modifiziert)

Interrupteurs automatiques à courant différentiel résiduel sans dispositif de protection contre les surintensités incorporé pour usages domestiques et analogues (ID) - Partie 1: Règles générales (CEI 61008-1:2010, modifiée)

Ta slovenski standard je istoveten z: EN 61008-1:2012

ICS:

29.120.50

Varovalke in druga medtokovna zaščita

Fuses and other overcurrent protection devices

SIST EN 61008-1:2013

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61008-1:2013

<https://standards.iteh.ai/catalog/standards/sist/3597e47b-ca13-4a91-889b-ad3d9a4e94d0/sist-en-61008-1-2013>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61008-1

December 2012

ICS 29.120.50

Supersedes EN 61008-1:2004 + A11:2007 + A12:2009 + A13:2012 + AC:2012,
EN 61008-1:2004/IS1:2007

English version

**Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) -
Part 1: General rules
(IEC 61008-1:2010, modified)**

Interrupteurs automatiques à courant différentiel résiduel sans dispositif de protection contre les surintensités incorporé pour usages domestiques et analogues (ID) -

Partie 1: Règles générales
(CEI 61008-1:2010, modifiée)

Fehlerstrom-/Differenzstrom-Schutzschalter ohne eingebauten Überstromschutz (RCCBs) für Hausinstallationen und für ähnliche Anwendungen -

Teil 1: Allgemeine Anforderungen
(IEC 61008-1:2010, modifiziert)

(standards.iteh.ai)

SIST EN 61008-1:2013

<https://standards.iteh.ai/catalog/standards/sist/3597e47b-ca13-4a91-889b-ad3d9a4e94d0/sist-en-61008-1-2013>

This European Standard was approved by CENELEC on 2012-06-18. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey 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

Foreword

This document (EN 61008-1:2012) consists of the text of IEC 61008-1:2010 prepared by IEC/TC 23E "Circuit-breakers and similar equipment for household use", together with the common modifications prepared by CLC/TC 23E "Circuit breakers and similar devices for household and similar applications".

The following dates are fixed:

- latest date by which this document has to be implemented (dop) 2013-06-18
at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting (dow) 2017-06-18
with this document have to be withdrawn

This document supersedes EN 61008-1:2004 + A11:2007 + A12:2009 + A13:2012 + AC:2012 + IS1:2007.

EN 61008-1:2012 includes the following significant technical changes with respect to EN 61008-1:2004:

- complete revision of EMC sequences, including the new test T.2.6 already approved in EN 61543;
- clarification of RCDs current/time characteristics reported in Tables 1 and 2;
- revision of test procedure for $I_{\Delta n}$ between 5 A and 200 A;
- testing procedure regarding the 6mA d.c. current superimposed to the fault current;
- improvement highlighting RCDs with multiple sensitivity;
- tests for the use of RCCBs in IT systems.

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.

<https://standards.iteh.ai/catalog/standards/sist/3597e47b-ca13-4a91-889b-ad3d9a4e94d0/sist-en-61008-1-2013>

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 61008-1:2010 are prefixed "Z".

Endorsement notice



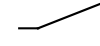
The text of the International Standard IEC 61008-1:2010 was approved by CENELEC as a European Standard with agreed common modifications.

COMMON MODIFICATIONS

Clause	Common modification
1	Add in the first paragraph after "125 A" the words "for fixed installations".
1	Delete in the first paragraph "with rated frequencies of 50 Hz, 60 Hz or 50/60 Hz".
1	Add after "They are intended for use in an environment with pollution degree 2", "and overvoltage category III". Delete in the seventh paragraph "with the exception of those with an interrupted neutral".
1	Replace the second dashed indent after note 4 by: "RCCBs integrated in one unit with a socket-outlet or designed exclusively for being associated locally with a socket-outlet in the same mounting box."
1	Replace the third dashed indent after note 4 by: "RCCBs intended to be used at frequencies other than 50 Hz."
1	Replace Note 5 by the following sentence in the core text of the scope: "For RCCBs incorporated in, or intended only for association with socket-outlets, the requirements of this standard may be used in conjunction with the requirements of IEC 60884-1 or national requirements of the country where the product is placed on the market".
1	Delete notes 6 and 7.
2	Replace the text of Clause 2 by: Normative references to international publications are listed in Annex ZA.
3.3.16	Replace "current paths" by "poles".
3.3.Z1	Add after 3.3.21 3.3.Z1 plug-in RCCB a RCCB having one or more plug-in terminals (see 3.6.Z1) and designed for use with appropriate means for the plug-in connection
3.4.2.1	Modify "RCCB with two current paths" by "a two pole RCCB"
3.4.4	Modify "current path" by "pole"
3.6.Z1	Add after 3.6.11 3.6.Z1 plug-in terminal terminal the electrical connection and disconnection of which can be effected without displacing the conductors of the corresponding circuit The connection is effected without the use of a tool and is provided by the resilience of the fixed and/or moving parts and/or by springs.
4.1	Replace the note by the following text: "The selection of the various types is made according to HD 60364 and non conflicting national wiring rules. Table Z1 lists the types of RCCBs according to the various applications but does not exclude the use of RCCBs of any classification for protection over and above that required by the relevant wiring rules."

Clause	Common modification																				
4.1	Add at the end : Table Z1 – Survey of the types of RCCBs according to their method of operation																				
	<table border="1"> <thead> <tr> <th>Classification</th> <th>4.1.1</th> <th>4.1.2.2a)</th> <th>4.1.2.1 b)</th> <th>4.1.2.2b)</th> </tr> </thead> <tbody> <tr> <td>Marking of use</td> <td>Without</td> <td>E1</td> <td>E2</td> <td>E3</td> </tr> <tr> <td>Protection</td> <td>Fault protection and additional protection^a</td> <td>Fault protection and additional protection^a</td> <td>Additional protection^a</td> <td>Additional protection^{a b}</td> </tr> <tr> <td>Service continuity^c</td> <td>Yes</td> <td>Yes</td> <td>No</td> <td>Yes</td> </tr> </tbody> </table> <p>^a Additional protection, provided only by RCCBs with $I\Delta n \leq 0,03$ A.</p> <p>^b Only devices integrated in one unit with a socket-outlet or designed exclusively for being associated locally with a socket outlet in a same mounting box.</p> <p>^c This information is given for guidance only.</p>	Classification	4.1.1	4.1.2.2a)	4.1.2.1 b)	4.1.2.2b)	Marking of use	Without	E1	E2	E3	Protection	Fault protection and additional protection ^a	Fault protection and additional protection ^a	Additional protection ^a	Additional protection ^{a b}	Service continuity ^c	Yes	Yes	No	Yes
Classification	4.1.1	4.1.2.2a)	4.1.2.1 b)	4.1.2.2b)																	
Marking of use	Without	E1	E2	E3																	
Protection	Fault protection and additional protection ^a	Fault protection and additional protection ^a	Additional protection ^a	Additional protection ^{a b}																	
Service continuity ^c	Yes	Yes	No	Yes																	
4.1.2.1	Replace a) by “a) deleted”																				
4.1.2.2	Delete the note																				
4.1.2.2	Replace the final sentence in brackets by “(additional requirements are under consideration)”																				
4.2	Replace the title of 4.2 with “Void” and delete the text.																				
4.3	Delete in the title “and current paths”. Delete first and fourth dashes.																				
4.4	Replace the title of 4.4 with “Void” and delete the text.																				
4.10	Add a third bullet after “bolt-on type”: <ul style="list-style-type: none"> • screw-in type. 																				
4.Z1	Add the following subclause: 4.Z1 According to the type of terminals: <ul style="list-style-type: none"> – RCCBs with screw-type terminals for external copper conductors; – RCCBs with screwless type terminals for external copper conductors; NOTE The requirements for RCCBs equipped with this type of terminals are given in Annex J.																				
4.Z2	Add after 4.10 4.Z2 According to the range of ambient air temperature <ul style="list-style-type: none"> – RCCBs for use at ambient air temperatures between -5 °C and +40 °C; – RCCBs for use at ambient air temperatures between -25 °C and +40 °C. 																				
5.1	Delete the first dashed item																				
5.1	Delete in second dash “and current paths”																				
5.1	Add the following item to the list: – ranges of ambient air temperature (see 5.3.Z1)																				
5.2.1.3	Modify “Table 3” by “5.3.13”																				
5.2.3	Delete 2 last paragraphs.																				
5.3.1	Replace (twice) “preferred” by “standard”.																				

Clause	Common modification									
5.3.1	Replace the table by: <table border="1" data-bbox="331 286 1206 479"> <thead> <tr> <th>RCCB</th> <th>Rated voltage of RCCBs for use in systems 230 V, 230 V/400 V, 400V</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Two-pole</td> <td>230 V</td> </tr> <tr> <td>400 V</td> </tr> <tr> <td>Three-pole</td> <td>400 V</td> </tr> <tr> <td>Four-pole</td> <td>400 V</td> </tr> </tbody> </table>	RCCB	Rated voltage of RCCBs 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
RCCB	Rated voltage of RCCBs 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									
5.3.3	Delete the value "0,006 A".									
5.3.3	Remove the note									
5.3.3	Add 1A to the standard values.									
5.3.7	Replace the title by: "Preferred value of rated frequency" (delete the "s" of values)									
5.3.7	Replace the first line by: The preferred value of rated frequency is 50 Hz.									
5.3.7	Delete the second paragraph									
5.3.10.1	Delete the note									
5.3.12.1	Delete the note									
5.3.Z1	Add the following subclause: 5.3.Z1 Standard ranges of ambient air temperature The standard ranges of ambient air temperature are: – -5 °C to +40 °C; – -25 °C to +40 °C									
5.3.12.1	Modify in Table 1 "non operating" by "non-actuating"									
5.3.13	Change contents of 5.3.13 to Standard value of the rated impulse voltage (U_{imp}) is 4 kV. Replace the title of table 3 by "Void" and delete the contents of Table 3.									
6	Replace the text of Clause 6 by: 6.Z1 Standard marking Each RCCB shall be marked in a durable manner according to the following Table Z3. If a degree of protection higher than IP20 according to EN 60529 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 manufacturer shall state the Joule integral I2t and the peak current Ip withstand capabilities of the RCCB. Where these are not stated, minimum values as given in Table 15 apply. The manufacturer shall give the reference of one or more suitable SCPDs in his catalogues and in a sheet accompanying each RCCB. For RCCBs classified according to 4.1.2.1 and opening with delay in case of failure of the line voltage the manufacturer shall state the range of such delay. For RCCBs other than those operated by means of push-buttons 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 for this indication are allowed. Provisionally the use of national indications only is allowed. These indications shall be readily									

Clause	Common modification
	<p>visible when the RCCB is installed.</p> <p>For RCCBs 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".</p> <p>Red shall not be used for any other push-button of the RCCB. If a push-button is used for closing the contact and is evidently identified as such, its depressed position is sufficient to indicate the closed position.</p> <p>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.</p> <p>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).</p> <p>Terminals exclusively intended for the connection of the neutral circuit shall be indicated by the letter N.</p> <p>Terminals intended for the protective conductor, if any, shall be indicated by the symbol  (IEC 60417-5019 a)).</p> <p>NOTE The symbol  (IEC 60417-5017 a)) previously recommended, shall be progressively superseded by the preferred symbol IEC 60417-5019 a), given above.</p> <p>The suitability for isolation, which is provided by all RCCBs 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. 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.</p> <p>The base for plug-in RCCBs shall be marked with the following:</p> <ul style="list-style-type: none"> - rated current or maximum rated current; - trade mark. <p>The marking shall be indelible, easily legible and not be placed on screws, washers or other removable parts.</p> <p><i>Compliance is checked by inspection and by the test of 9.3.</i></p>
6	<p>Add the following subclause</p> <p>6.Z2 Additional marking</p> <p>Additional marking to other standards (EN or IEC or other) or additional requirements are allowed under the following conditions:</p> <ul style="list-style-type: none"> - the RCCB 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. <p><i>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</i></p>

Clause	Common modification
	<p><i>be repeated.</i></p> <p style="text-align: center;">Table Z3 – Requirements for marking</p> <p>NOTE see the table at the end of this document</p>
6.Z2	In note (*), to replace twice “ $I\Delta n$ ” by “ $I\Delta m$ ”
7.1	<p>In Table 4, second column, add to “-5 °C to 40 °C²” in the same box, the range “-25 °C to 40 °C²”.</p> <p>Modify footnote 7) to read</p> <p>7) Extreme limits of -20 °C and + 60 °C, for RCCBs for use in the range of -5 °C to +40 °C and of -35 °C and + 60 °C, for RCCBs for use in the range of -25 °C to +40 °C, are admissible during storage and transportation. These conditions should be taken into account in the design of the device.</p> <p>Add footnote 8) as follows:</p> <p>8) For installations at higher altitudes, it is necessary to take into account the reduction of the dielectric strength and of the cooling effect of the air. RCCBs intended to be so used shall be designed specially or used according to an agreement between manufacturer and user. Information given in the manufacturer's catalogue may take the place of such an agreement.</p>
8.1.1	<p>Delete in the second paragraph: “other than those specifically intended for changing the setting of the residual operating current”.</p> <p>Delete the first sentence in the third paragraph.</p> <p>Delete the note and the fourth paragraph.</p>
8.1.2	<p>Replace Note 1 by “Note 1: deleted”</p> <p>Add in 13th paragraph “9.9 and” before “9.11”</p> <p>Delete 17th paragraph (“In the case of...)</p> <p>Replace Note 3 by “Note 3: deleted”.</p> <p>Replace Note 4 by “Note 4: deleted”.</p>
8.1.3	<p>In second paragraph, add “in addition” after “and” and before “for item 1”</p> <p>In third paragraph, replace “2, 4 and 5” by “2 and 4”</p> <p>In fifth paragraph, replace “2.7.1.1” by “4.8.1.1” and “2.7.1.3” by “4.8.1.3”.</p>
8.1.3	<p>Modify Table 5 in deleting columns 2 and 3 and deleting item 5 (in the first column).</p> <p>Modify table note 2 by:</p> <p>“The parts of the neutral pole, if any, are considered to be live parts.”</p> <p>Replace Note 3 by “Note 3: deleted”.</p> <p>Modify table note c by:</p> <p>“Including a metal foil in contact with the surfaces of insulating material which are accessible after installation for normal use. The foil is pushed into corners, grooves, etc., by means of a straight jointed test finger according to 9.6 (see Figure 3).”</p>

Clause	Common modification
8.1.3	<p>Add in item 3 (in the first column) of Table 5 the reference to footnote j).</p> <p>Add the following footnote j) in Table 5 : j) This applies also to clearance and creepage distances between live parts of different polarity of the RCCB and equipments mounted close to it.</p> <p>Replace Note 4 by "Note 4: deleted".</p>
8.1.5.1	Delete the second paragraph
8.1.5.1	Delete the note
8.1.5.1	<p>Replace last paragraph by:</p> <p><i>Compliance is checked by inspection, by the tests of 9.5 for screw-type terminals, by specific tests for plug-in or bolt-on RCCBs included in the standard, or by the tests of annex, as relevant for the type of connection.</i></p>
8.1.5.2	Delete the last note in Table 6 which refers to AWG.
8.1.Z1	<p>Add the following new subclause:</p> <p>8.1.Z1 Non-interchangeability</p> <p>For RCCBs intended to be mounted on bases forming a unit therewith (plug-in type or screw-in type) it shall not be possible, without the aid of a tool, to replace a RCCB when mounted and wired as for normal use by another of the same make having a higher rated current.</p> <p><i>Compliance is checked by inspection.</i></p> <p>NOTE The expression "as for normal use" implies that the RCCB is installed according to the manufacturer's instructions.</p>
8.1.7	<p>Add the following new subclause:</p> <p>8.1.Z2 Mechanical mounting of plug-in type RCCBs</p> <p>The mechanical mounting of plug-in type RCCBs, the holding in position of which does not depend solely on their plug-in connection(s), shall be reliable and have adequate stability.</p>
8.1.7	<p>Replace 8.1.7 by 8.1.Z2</p> <p>Replace 8.1.7.1 by 8.1.Z2.1</p> <p>Replace 8.1.7.2 by 8.1.Z2.2</p>
8.1.7.1	<p>Add the following new subclause:</p> <p>8.1.Z2.1 Plug-in type RCCBs, the holding in position of which does not depend solely on their plug-in connection(s)</p> <p><i>Compliance of the mechanical mounting is checked by the relevant tests of 9.12.</i></p>
8.1.7.2	<p>Add the following new subclause:</p> <p>8.1.Z2.2 Plug-in type RCCBs, the holding in position of which depends solely on their plug-in connection(s)</p> <p><i>Compliance of the mechanical mounting is checked by the relevant tests of 9.12.</i></p>
8.11	Delete third paragraph ("In the case of RCCBs...")

Clause	Common modification
8.11	<p>Replace the 3rd paragraph by the following:</p> <p>For RCCBs with rated residual current of 30 mA the ampere-turns produced when operating the test device of a RCCB, supplied at rated voltage or at the highest value of the voltage range, if applicable, shall not exceed 1,66 times the ampere-turns produced, when a residual current equal to $I_{\Delta n}$ is passed through one of the poles of the RCCB.</p> <p>For RCCBs with rated residual currents other than 30 mA the ampere-turns produced when operating the test device of a RCCB, supplied at rated voltage or at the highest value of the voltage range, if applicable, shall not exceed 2,5 times the ampere-turns produced, when a residual current equal to $I_{\Delta n}$ is passed through one of the poles of the RCCB.</p>
8.12	Replace in the first paragraph "current paths" by "poles".
8.Z1	<p>Add the following subclause :</p> <p>8.Z1 Behaviour of RCCBs at low ambient air temperatures</p> <p>RCCBs for use in the range of -25 °C to $+40\text{ °C}$ (see 4.Z1) shall operate reliably at low temperatures.</p> <p><i>Compliance is checked by the tests of 9.Z1.</i></p>
9.1.1	<p>Add the following note before Table 9 :</p> <p>NOTE To verify compliance of additional marking to 6.Z2, if any, additional tests according to the relevant standard may be necessary.</p> <p>In Table 9 replace the fifth dash by:</p> <ul style="list-style-type: none"> – Dielectric properties and isolating capability <p>In Table 9 add the following dashed item :</p> <ul style="list-style-type: none"> – Behaviour at low ambient air temperatures of RCCBs classified for use in the range of -25 °C to $+40\text{ °C}$ <p>and add correspondingly "9.Z1" in the column named "Subclause"</p>
9.1.2	<p>Modify first paragraph by:</p> <p><i>"For the purpose of verification of conformity with the standard, type tests are carried out in test sequences."</i></p> <p>Replace the note by:</p> <p>"NOTE Verification of the conformity to the standards may be made</p> <ul style="list-style-type: none"> – by the manufacturer for the purpose of suppliers declaration (13.5.1 of ISO/IEC Guide 2); – by an independent body for certification (13.5.2 of ISO/IEC Guide 2). <p>According to the terminology of ISO/IEC Guide 2 the term "certification" can be used for the second case only."</p>
9.2	Replace Note 2 by "Note 2: deleted".
9.4	<p>Add before Table 11 the two following paragraphs:</p> <p>"Plug-in connections are tested by plugging the RCCB in and pulling it out five times. After the test the connections shall not have become loose nor shall their electrical function be impaired."</p>
9.7	Add at the end of the title "and isolating capability"
9.7.2	Modify "current paths" by "poles"
9.7.2	<p>Add a note before c):</p> <p>NOTE To this purpose samples specially prepared by the manufacturer should be submitted to the test sequences implying this test.</p>

Clause	Common modification
9.7.2	Delete d) and its contents Rename "e)" with "d)"
9.7.2	Modify the beginning of the last but one paragraph as follows: "For the measurements according to b) to d), ..."
9.7.3	Delete at the end of the first paragraph: "electronic components, if any, being disconnected for the test" Replace the two dashes in the fifth paragraph by: - 2 000 V for a) to c) of 9.7.2; electronic components, if any, having been disconnected for test b) (see relevant note for 9.7.2.b) - 2 500 V for d) of 9.7.2.
9.7.7.1	Modify in the ninth paragraph "Table 3" by "5.3.13"
9.7.7.1	Delete in the table 15 the line beginning with "2,5"
9.7.7.2	Modify in the tenth paragraph "Table 3" by "5.3.13"
9.7.7.2	Delete in the Table 16 the line beginning with "2,5"
9.7.7.3	Modify in the first paragraph of 9.7.7.3 "circuit-breaker" by "RCCB".
9.9.1	Delete in the third paragraph " <i>shall be at least of Class 0.5 and</i> "
9.9.2	Delete second paragraph ("For RCCBs...")
9.9.2.4	Add at the end of first paragraph "among the following list : 5A – 10A – 20A – 50A – 100A – 200A".
9.9.3	Add a note after the second paragraph : NOTE Preheating may be carried out at reduced voltage but auxiliary circuit 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_{An} .
9.11.2.1	Modify Note 1 by "Note 1: deleted"
9.11.2.1	Modify first paragraph of a) by "Figures 7 and 12 give diagrams of the circuits to be used for the tests concerning – a two-pole RCCB; – a three-pole RCCB; – a four-pole RCCB." Replace in the second paragraph "Z3" by "Z1" Delete in the fourth paragraph before item b): "– across the terminals of the pole, for single-pole RCCBs; Replace in the eighth paragraph "Z3" by "Z1"
9.11.2.1	Replace in the 5 th paragraph after Table 18 Resistor R ₁ by R ₂ .
9.11.2.1	Replace in the 6 th paragraph after Table 18 current sensor O ₁ by I ₁ , I ₂ , I ₃ , I ₄
9.11.2.1	Replace in the last line "± 5 %" by "0, - 5 %".
9.11.2.1	Replace in the first paragraph and in the note "105 %" by "110 %".
9.11.2.1	Replace in the 2 th paragraph current sensor O ₁ by I ₁ , I ₂ , I ₃ , I ₄
9.11.2.1	Replace in the last paragraph "Z3" by "Z1"
9.11.2.1	Modify (in item f) "i)" and "ii)" respectively by "f1)" and "f2)"

Clause	Common modification
9.11.2.1 .i)	Modify first paragraph by: "After each of the tests applicable carried out in accordance with 9.11.2.2, 9.11.2.3 and 9.11.2.4 c), the indicator means shall show the open position of the contacts. If during the tests of 9.11.2.4 a) and 9.11.2.4 b) the RCCB does not trip, the open position of the indicator means shall be checked after the tripping test at $1,25 I_{\Delta n}$. Furthermore, the RCCB shall show no damage impairing its further use and shall be capable, without maintenance, of complying with the following tests :"
9.11.2.1 .i)	Replace the second sentence of the last but two paragraphs of item i) 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 $I_{\Delta n}$."
9.11.2.3	Modify in c) paragraph twice "105 %" by "110 %" Delete the third paragraph after the second dash in c): " <i>RCCBs with uninterrupted neutral are not subjected to this test.</i> "
9.11.2.3	Delete the third paragraph before the end (" <i>RCCBs with uninterrupted...</i> ")
9.12.2	Replace the first two dashes by: - 9.12.2.2 for RCCBs intended to be mounted on a rail and for all types of plug-in RCCBs designed for surface mounting; - 9.12.2.3 for plug-in type RCCBs, the holding in position of which depends solely on their connections.
9.12.2.2	Add after the first paragraph: <i>Plug-in RCCBs designed for surface mounting are mounted complete with the appropriate means for the plug-in connection but without cables being connected and without any cover-plate.</i>
9.12.2.3	Replace the existing subclause by: <i>Plug-in type RCCBs, the holding in position of which depends solely on their connections, are mounted, complete with the appropriate plug-in base but without cables being connected and without any cover-plate, on a vertical rigid wall. A force of 20 N is applied to the RCCB portion at a point equidistant between the plug-in connections, without jerks for 1 min (see Figure Z4).</i>
9.13.1	Replace the second sentence of the fourth paragraph by: <i>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 $I_{\Delta n}$.</i>
9.14	Add the requirements for 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).
9.15.2	Replace Note 2 by "Note 2: deleted".
9.16	Replace the 3 rd paragraph by the following: In order to verify that at rated voltage or the highest voltage of the voltage range, if applicable, the ampere-turns due to the operation of the test device are less than <ul style="list-style-type: none"> • 1,66 times the ampere turns produced at rated residual current for RCCB 30 mA and • 2,5 times the ampere turns produced at rated residual current for all other RCCB the impedance of the circuit is measured and the test ampere turns are calculated, taking into account the configuration of the circuit of the test device.

Clause	Common modification
9.17.1	<p>Starting from the seventh line, replace the text by:</p> <p><i>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).</i></p> <p><i>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.</i></p> <p><i>It shall also be 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.</i></p>
9.17.2	Replace in the title "automatic opening" by "behaviour".
9.17.2	<p>Add after item a):</p> <p><i>No tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s.</i></p>
9.17.2	<p>Add after item b):</p> <p>RCCBs classified in 4.1 .2.1 b) are additionally submitted to the following test.</p> <p><i>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.</i></p> <p><i>The test is carried out five times.</i></p>
9.17.4	<p>Replace the title by:</p> <p>9.17.4 Verification of correct operation of RCCBs with three or four poles, in presence of a residual current, the neutral and one line terminal only being energized</p> <p>Add in second line between "line" and "only" the word "terminal".</p>
9.17.5	Delete 9.17.5
9.18	Delete the note.
9.18.1	In the title replace "current paths" by "poles".
9.19.1	Modify in the fourth dash "each successive peak" by "each successive reverse peak"
9.22	<p>Add, after the first line:</p> <p>Specifications on verification of reliability of electronic circuits are under consideration.</p> <p>Delete the note.</p>
9.22.1.5	<p>Replace the second sentence by:</p> <p><i>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 $I_{\Delta n}$.</i></p>
9.22.2	<p>Replace the second sentence of the last paragraph by:</p> <p><i>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 $I_{\Delta n}$.</i></p>
9.23	<p>Delete in the title "of electronic components".</p> <p>Replace the second sentence of the last paragraph by:</p> <p><i>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 $I_{\Delta n}$.</i></p>
9.Z1	<p>Add the following new subclause:</p> <p>9.Z1 Verification of the correct operation at low ambient air temperatures for RCCBs for use at temperatures between -25 °C and +40 °C</p> <p><i>Enclosed-type RCCBs are tested in their enclosure, unenclosed-type RCCBs are mounted in an individual enclosure with a degree of protection IP55, and are connected as for normal use (see Figure 4a).</i></p> <p>NOTE 1 No drain hole in the enclosure shall be opened for this test.</p>

Clause	Common modification
	<p>NOTE 2 RCCBs tested in enclosures IP55 may also be used in enclosures of a degree of protection other than IP55 within the temperature range of -25 °C to $+40\text{ °C}$.</p> <p><i>The RCCB (including the enclosure) is brought into a suitable test chamber with an ambient air temperature of $(23 \pm 2)\text{ °C}$ and a relative humidity of $(93 \pm 3)\%$. The volume ratio of the test chamber to the test samples (including enclosures) shall be greater than 50.</i></p> <p><i>The RCCB is in the ON-position without load and shall be subjected to the following cycle (see Figure Z3).</i></p> <p><i>For the first 6 h (stabilization period) the temperature is kept at $(23 \pm 2)\text{ °C}$ and the humidity at $(93 \pm 3)\%$. Within the next 6 h the ambient air temperature is decreased to $(-25 \pm 2)\text{ °C}$ without any supply of humidity. This temperature of $(-25 \pm 2)\text{ °C}$ is kept for 6 h. Within the next 6 h the temperature is increased to $(+23 \pm 2)\text{ °C}$ and the relative humidity is increased to $(93 \pm 3)\%$ (end of the first cycle). This cycle is performed five times.</i></p> <p><i>During these cycles the RCCB shall not trip.</i></p> <p><i>During the fifth cycle, at the end of the period at $(-25 \pm 2)\text{ °C}$, an a.c. residual current is passed through one pole of the RCCB (see Figure 4a)</i></p> <ul style="list-style-type: none"> <i>– for RCCBs of the general type, the residual current is calibrated to $1,25 I_{\Delta n}$ and established by closing S2. One test only is made on one pole taken at random. The break time measured shall not exceed the value specified in Table 1 for $I_{\Delta n}$;</i> <i>– for RCCBs of type S the residual current is calibrated to $1,25 \times 2 I_{\Delta n}$ and established by closing S2. One test only is made on one pole taken at random. The break time measured shall not exceed the value specified in Table 1 for $2 I_{\Delta n}$.</i> <p><i>In addition, RCCBs of type A are tested with pulsating d.c. residual currents immediately after the above test with a.c. residual current, the test circuit corresponding to Figure 4b</i></p> <ul style="list-style-type: none"> <i>– for RCCBs of the general type, the residual current is calibrated to $1,25 \times 2 I_{\Delta n}$ for RCCBs with $I_{\Delta n} \leq 0,01\text{ A}$, and to $1,25 \times 1,4 I_{\Delta n}$ for RCCBs with $I_{\Delta n} > 0,01\text{ A}$. The current delay angle shall be $= 0^\circ$, the position of S3 is set at random, and the current is established by closing S2. One test only is made on one pole taken at random. The break time measured shall not exceed the value specified in Table 1 for $I_{\Delta n}$.</i> <i>– for RCCBs of type S the residual current is calibrated to $1,25 \times 1,4 \times 2 I_{\Delta n}$ current delay angle shall be $= 0^\circ$, the position of S3 is set at random, and the current is established by closing S2. One test only is made on one pole taken at random. The break time measured shall not exceed the value specified in Table 1 for $2 I_{\Delta n}$.</i> <p><i>After these tests a visual inspection shall show that the materials have not undergone deterioration impairing the further use of the RCCB and it shall be possible to switch on the RCCB, without the presence of any residual current, at the temperature of -25 °C.</i></p>
<p>Figure 4</p>	<p>Add the following dashed item in the title:</p> <p>– behaviour at low ambient air temperature of RCCBs for use in the range of -25 °C to $+40\text{ °C}$ (9.Z1)</p>