Test Report issued under the responsibility of:

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

Report Number. .....:	B220097
Date of issue .....:	2022-10-18
Total number of pages.....:	275 pages
Name of Testing Laboratory preparing the Report.....:	**The Comprehensive Technical Service Center (Yueqing Branch) of Wenzhou Customs**
Applicant's name.....:	ZHEJIANG GEYA ELECTRICAL CO., LTD.
Address .....:	WENZHOU BRIDGE INDUSTRIAL ZONE, BEIBAIXIANG TOWN 325603 YUEQING,ZHEJIANG - CHINA
Test specification:	
Standard.....:	IEC 61008-1:2010 (Third Edition) +A1:2012 +A2:2013 used in conjunction with IEC 61008-2-1:1990 (First Edition) or ~~IEC 61008-2-2:1990 (First Edition)~~
Test procedure.....:	CB Scheme
Non-standard test method…….:	N/A
Test Report Form No.....:	IEC61008_1H
Test Report Form(s) Originator.....:	OVE
Master TRF .....:	Dated 2015-11

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Test item description .....:	RCCB
Trade Mark .....:	GEYA
Manufacturer.....:	ZHEJIANG GEYA ELECTRICAL CO., LTD. WENZHOU BRIDGE INDUSTRIAL ZONE, BEIBAIXIANG TOWN 325603 YUEQING,ZHEJIANG - CHINA
Model/Type reference .....:	GYL9 (Reference list on pages 8 to 12)
Ratings .....:	See pages 11 to 12

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ **CB Testing Laboratory:**	The Comprehensive Technical Service Center (Yueqing Branch) of Wenzhou Customs	
Testing location/ address ..... :	Inspection and Quarantine Mansion, jingang Avenue, Liushi, Yueqing, Wenzhou, Zhejiang, P.R.China	
☐ **Associated CB Testing Laboratory:**		
Testing location/ address ..... :		
Tested by (name, function, signature) ..... :	Gaoke Zheng - Testing engineer Lechen HU - Testing engineer (Reviewer)	Gaoke Zheng
Approved by (name, function, signature) .. :	Xiaomu Ye - Technical manager	Xiaomu Ye
☐ **Testing procedure: CTF Stage 1:**		
Testing location/ address ..... :		
Tested by (name, function, signature) ..... :		
Approved by (name, function, signature) .. :		
☐ **Testing procedure: CTF Stage 2:**		
Testing location/ address ..... :		
Tested by (name + signature)..... :		
Witnessed by (name, function, signature). :		
Approved by (name, function, signature) .. :		
☐ **Testing procedure: CTF Stage 3:**		
☐ **Testing procedure: CTF Stage 4:**		
Testing location/ address ..... :		
Tested by (name, function, signature) ..... :		
Witnessed by (name, function, signature). :		
Approved by (name, function, signature) .. :		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment): Attachment for european group differences see Annex N°.1(Total pages 64) EN 61008-1:2012/A11:2015 addition requirement see Annex N°.2(Total pages 1) EN 61008-1:2012/A12:2017 addition requirement see Annex N°.3(Total pages 1) Attachment for the Australia and New Zealand variations see Annex N°.4.(Total pages 5)
Summary of testing: **Standard used:** **-IEC 61008-1:2010+A1:2012+A2:2013** **-IEC 61008-2-1:1990 (First Edition)** **-EN 61008-1:2012+A1:2014+A2:2014+A11:2015 +A12:2017** **-EN 61008-2-1:1994+A11:1998** **-AS/NZS 61008.1:2015** **-All the samples satisfy to the clauses examined.**

Tests performed (name of test and test clause):

Number of poles	Type	A_1	A_2	B	C	D0+D1	D0	D2	E	F	G0	G1	EMC tests		
											EN Standard Modify		H	I	J
1P+N Inc=10kA	80A TypeA 30mA	1	3	3	3	3	-	3	3	3	3	-	-	-	-
	16A TypeA 300mA	-	-	-	-	-	-	-	-	3	3	-	-	-	-
	80A TypeA 100mA	-	-	-	-	-	1	-	-	-	-	-	-	-	-
	80A TypeA 300mA	-	-	-	-	-	1	-	-	-	-	-	-	-	-
	80A TypeAC 30mA	-	-	-	-	1	-	-	-	-	-	-	-	-	-
	80A TypeAC 100mA	-	-	-	-	-	1	-	-	-	-	-	-	-	-
	80A TypeAC 300mA	-	-	-	-	-	1	-	-	-	-	-	-	-	-

Number of poles	Type	A_1	A_2	B	C	D0+D1	D0	D2	E	F	G0	G1	EMC tests		
											EN Standard Modify		H	I	J
3P+N Inc=10kA	80A TypeA 30mA	1	3	3	3	3	-	3	3	3	3	3	3	3	3
	16A TypeA 300mA	-	-	-	-	-	-	-	-	3	3	3	-	-	-
	80A TypeAC 30mA	-	-	-	-	1	-	-	-	-	-	-	-	-	-

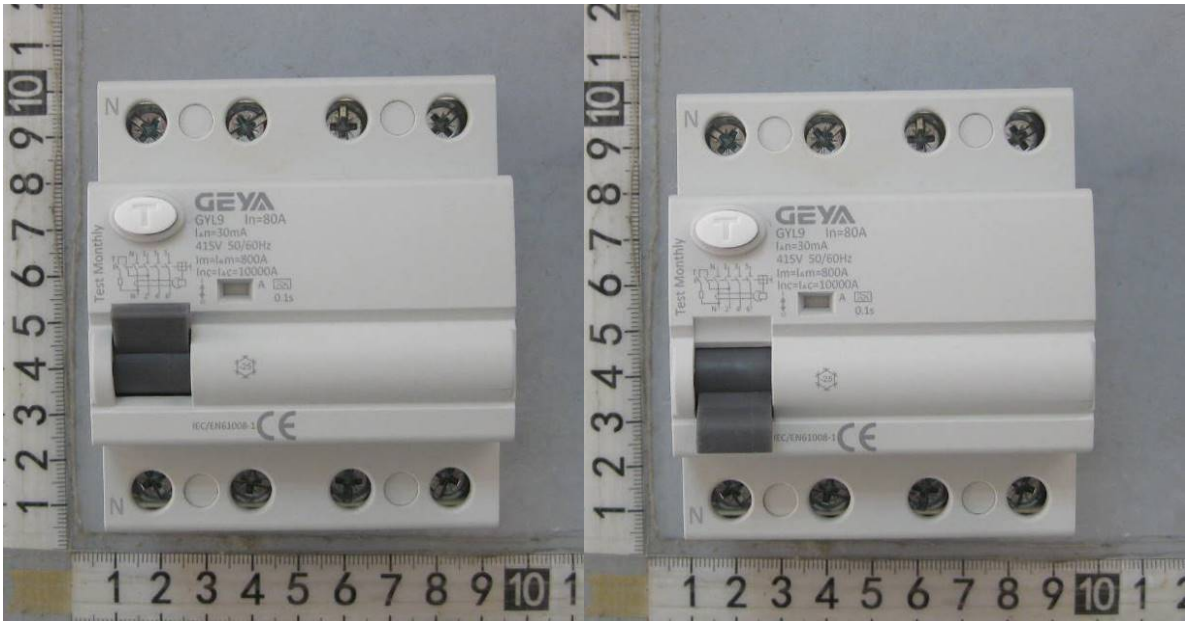
Testing location: - Test sequences for EMC part were subcontracted to Fujian Inspection and Research Institute for Product Quality. Address:No.101 Baozhen Road, Kuaian District, Mawei Economic Development Zone, Fuzhou, Fujian, China - Other tests were performed in The Comprehensive Technical Service Center (Yueqing Branch) of Wenzhou Customs Address: Inspection and Quarantine Mansion, jingang Avenue, Liushi, Yueqing, Wenzhou, Zhejiang, P.R.China
Summary of compliance with National Differences： **CENELEC** ☒ **The product fulfils the requirements of EN 61008-1:2012+A1:2014+A2:2014+A11:2015 +A12:2017 and EN 61008-2-1:1994+A11:1998** **Australia and New Zealand** ☒ **The product fulfils the requirements of AS/NZS 61008.1:2015**

Copy of marking plate:

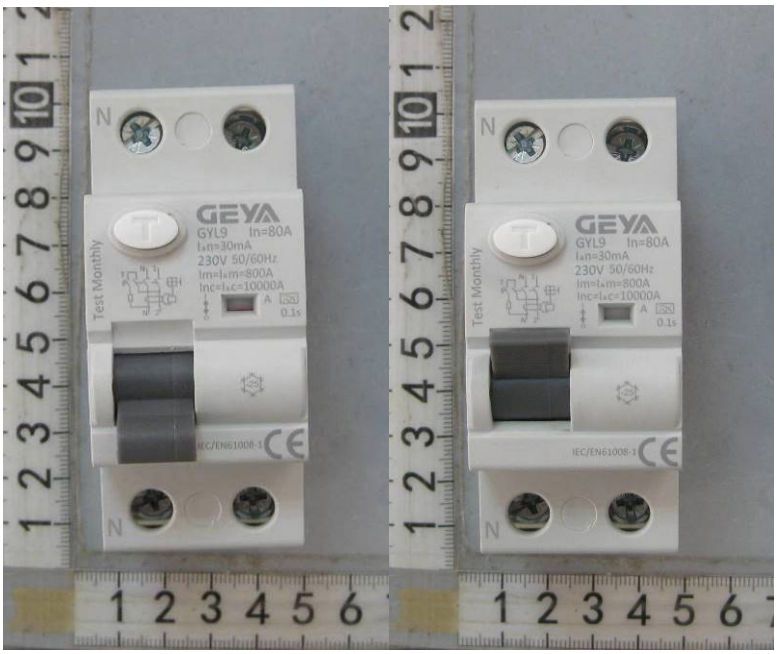
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

In=80A IΔn =30mA 1P+N A type 240V (for Australia)

In=80A IΔn =30mA 3P+N A type 415V (for Australia)



In=80A IΔn =30mA 1P+N A type 230V (for New Zealand)



In=80A IΔn =30mA 3P+N A type 400V (for New Zealand)

Test item particulars.....:	
Classification of RCCBs functionally dependent on the line voltage .....:	No
Opening automatically in case of failure of the line voltage .....:	No
- reclosing automatically when the line voltage is restored .....:	**~~Yes~~ / No**
- not reclosing automatically when the line voltage is restored .....:	~~Yes~~ / No
Not opening automatically in case of failure of the line voltage .....:	No
- able to trip in a hazardous situation arising on failure of line voltage .....:	~~Yes~~ / No
- not able to trip in a hazardous situation arising on failure of line voltage .....:	~~Yes~~ / No
Type of RCCB .....:	
- type AC.....:	Yes / ~~No~~
- type A .....:	Yes / ~~No~~
- independent of the line voltage.....:	Yes / ~~No~~
- dependent on the line voltage.....:	~~Yes~~ / No
- without time delay .....:	Yes / ~~No~~
- with time delay: type S .....:	~~Yes~~ / No
- enclosed.....:	Yes / ~~No~~
- unenclosed.....:	~~Yes~~ / No
- IP number .....:	20
- for fixed installation .....:	Yes/ ~~No~~
- for mobile installation .....:	~~Yes~~ / No
Number of poles.....:	1P+N and 3P+N (Neutral on left)
Ambient air temperature (°C).....:	-25 ºC to +40ºC
Method of mounting .....:	On rail (IP20)
Method of connection.....:	Not associated with the mechanical mounting
Rated residual operating current (A) .....:	30mA,100mA,300mA
Rated current (A).....:	16A; 25A; 40A; 63A; 80A
Rated voltage (V) .....:	230/240V for 1P+N; 400/415V for 3P+N
Rated impulse withstand voltage (U_{imp})	4kV
Nature of supply .....:	~
Rated frequency (Hz).....:	50/60Hz

Rated making and breaking capacity (A) ..... :	10In for 63A; 80A; 500A for 16A; 25A; 40A
Rated residual making and breaking capacity (A) ..... :	10In for 63A; 80A;500A for 16A; 25A; 40A
Rated conditional short-circuit current (A)..... :	Inc=10000A
Rated conditional residual short-circuit current (A).... :	IΔc=10000A
Type of terminal ..... :	Pillar terminal
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing..... :	
Date of receipt of test item..... :	2022-07-24
Date (s) of performance of tests ..... :	2022-07-26 to 2022-10-08
General remarks:	
"(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. **Throughout this report a ☒ comma / ☐ point is used as the decimal separator.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	ZHEJIANG GEYA ELECTRICAL CO., LTD. WENZHOU BRIDGE INDUSTRIAL ZONE, BEIBAIXIANG TOWN 325603 YUEQING,ZHEJIANG - CHINA

General product information:

1P+N and 3P+N(neutral on left)
230/240V(1P+N);400/415V(3P+N)
In=16A; 25A; 40A; 63A; 80A
Inc=IΔc=10000A
Im=IΔm=500A for 16A; 25A; 40A and 10In for 63A; 80A
IΔn=30mA; 100mA; 300mA
Grid distance = 50mm
Ui= 415V
Uimp=4kV
Material group=IIIa
Screw diameter=5,9mm
50/60Hz

Product references list:

		30mA	
		1P+N	3P+N
16A	A	GYL9 1P+N 16A 30mA A Type	GYL9 3P+N 16A 30mA A Type
25A	A	GYL9 1P+N 25A 30mA A Type	GYL9 3P+N 25A 30mA A Type
40A	A	GYL9 1P+N 40A 30mA A Type	GYL9 3P+N 40A 30mA A Type
63A	A	GYL9 1P+N 63A 30mA A Type	GYL9 3P+N 63A 30mA A Type
80A	A	GYL9 1P+N 80A 30mA A Type	GYL9 3P+N 80A 30mA A Type
16A	AC	GYL9 1P+N 16A 30mA AC Type	GYL9 3P+N 16A 30mA AC Type
25A	AC	GYL9 1P+N 25A 30mA AC Type	GYL9 3P+N 25A 30mA AC Type
40A	AC	GYL9 1P+N 40A 30mA AC Type	GYL9 3P+N 40A 30mA AC Type
63A	AC	GYL9 1P+N 63A 30mA AC Type	GYL9 3P+N 63A 30mA AC Type
80A	AC	GYL9 1P+N 80A 30mA AC Type	GYL9 3P+N 80A 30mA AC Type

		100mA	
		1P+N	3P+N
16A	A	GYL9 1P+N 16A 100mA A Type	GYL9 3P+N 16A 100mA A Type
25A	A	GYL9 1P+N 25A 100mA A Type	GYL9 3P+N 25A 100mA A Type
40A	A	GYL9 1P+N 40A 100mA A Type	GYL9 3P+N 40A 100mA A Type
63A	A	GYL9 1P+N 63A 100mA A Type	GYL9 3P+N 63A 100mA A Type
80A	A	GYL9 1P+N 80A 100mA A Type	GYL9 3P+N 80A 100mA A Type
16A	AC	GYL9 1P+N 16A 100mA AC Type	GYL9 3P+N 16A 100mA AC Type
25A	AC	GYL9 1P+N 25A 100mA AC Type	GYL9 3P+N 25A 100mA AC Type
40A	AC	GYL9 1P+N 40A 100mA AC Type	GYL9 3P+N 40A 100mA AC Type
63A	AC	GYL9 1P+N 63A 100mA AC Type	GYL9 3P+N 63A 100mA AC Type
80A	AC	GYL9 1P+N 80A 100mA AC Type	GYL9 3P+N 80A 100mA AC Type

		300mA	
		1P+N	3P+N
16A	A	GYL9 1P+N 16A 300mA A Type	GYL9 3P+N 16A 300mA A Type
25A	A	GYL9 1P+N 25A 300mA A Type	GYL9 3P+N 25A 300mA A Type
40A	A	GYL9 1P+N 40A 300mA A Type	GYL9 3P+N 40A 300mA A Type
63A	A	GYL9 1P+N 63A 300mA A Type	GYL9 3P+N 63A 300mA A Type
80A	A	GYL9 1P+N 80A 300mA A Type	GYL9 3P+N 80A 300mA A Type
16A	AC	GYL9 1P+N 16A 300mA AC Type	GYL9 3P+N 16A 300mA AC Type
25A	AC	GYL9 1P+N 25A 300mA AC Type	GYL9 3P+N 25A 300mA AC Type
40A	AC	GYL9 1P+N 40A 300mA AC Type	GYL9 3P+N 40A 300mA AC Type
63A	AC	GYL9 1P+N 63A 300mA AC Type	GYL9 3P+N 63A 300mA AC Type
80A	AC	GYL9 1P+N 80A 300mA AC Type	GYL9 3P+N 80A 300mA AC Type

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE A_1 (1 sample) **In=80A IΔn =30mA 1P+N A type**	**A_{1-1}**	**P**

6.	**MARKING**		
	a) manufacturer's name or trademark .....:	GEYA	P
	b) type designation, catalogue number or serial number .....:	GYL9	P
	c) rated voltage(s) (V) .....:	240V	P
	d) rated frequency (Hz) .....:	50/60Hz	P
	e) rated current (A) .....:	In=80A	P
	f) rated residual operating current (A) .....:	IΔn=30mA	P
	h) rated making and breaking capacity (A) .....:	Im=800A	P
	j) degree of protection .....:	IP	N/A
	k) position of use .....:		N/A
	l) rated residual making and breaking capacity (A) .....:		N/A
	m) symbol S for type S	S	N/A
	n) symbol of the method of operation .....:		N/A
	o) operating means of test device .....:	T	P
	p) wiring diagram .....:		P
	q) operating characteristic .....:	≈	P
	Marking on the RCCB itself or on nameplate or nameplates attached to the RCCB and located so that for small devices at least e), f), o) and q) (only for type A) are legible when the RCCB is installed :		P
	Joule integral withstand capacity (A^2s) .....:		N/A
	Peak current withstand capacity (A) .....:		N/A
	Time delay when opening in case of failure of the line voltage (s) .....:		N/A
	Open position indicated by "0" and closed position by "I" .....:	I O	P
	For push-buttons the OFF push-button shall either be red or marked with "0" .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If necessary to distinguish between supply and load terminals they shall be clearly marked .....:		N/A
	Terminals for neutral conductor marked by "N"		P
	Terminals for protective conductor marked by [symbol IEC 417-5019 a]		N/A
	Marking indelible, easy legible and not on removable parts		P
9.3	Test: 15 s with water, 15 s with hexane		P
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		P
	- no markings		P
	For non-universal terminals:		N/A
	- terminals for rigid-solid conductors only, marked by the letters “s” or “sol”		N/A
	- terminals for rigid (solid and stranded) conductors only, marked by the letter “r”		N/A
	marking on the RCCB or if the space available is not sufficient, on the smallest package unit or in technical information		P
8.	**REQUIREMENTS FOR CONSTRUCTION AND OPERATION**		
8.1.1	**General**		
	Residual current detection is located between the incoming and outgoing terminals		P
	Not possible to alter the operating characteristics by means of external interventions other than those specifically intended for changing the setting of the residual operating current		P
	Changing from one setting to another shall not be possible without a tool		N/A
	In case of an RCCB having multiple settings of residual operating current the rating refers to the highest setting		N/A
8.1.2	**Mechanism**		
	Moving contacts of all poles so mechanically coupled that all poles except the switched neutral, make and break substantially together		P
	Switched neutral opens after and closes before other poles		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Compliance is checked by inspection and by manual tests, using any appropriate means (e.g.: indicator lights, oscilloscope, etc.)		P
	Trip-free mechanism		P
9.15	Test: the RCCB is mounted and wired as in normal use		
	- test circuit according to fig. 4a		P
	- a residual current equal to 1,5 $I_{\Delta n}$ is passed by closing S2, the RCCB having been closed and the operating means being held in the closed position. The RCCB shall trip	45mA	P
	- test repeated by moving the operating means slowly (1 s) to a position where the current starts to flow. Tripping shall occur without further movement		P
8.1.2	Possible to switch on and off by hand		P
	No intermediate positions of the contacts		P
	In the open position isolation distance in accordance with the requirements necessary to satisfy the isolating function		P
	Indication of the open and closed position of the main contacts shall be provided by one or both of the following means:		P
	- the position of the actuator (this being preferred)		P
	- a separate mechanical indicator		N/A
	If a separate mechanical indicator is used, this shall show the colour red for the closed position and the colour green for the open position		N/A
	means of indication of the contact position shall be reliable -checked by inspection and by the tests of 9.15		P
	RCCBs shall be designed so that the actuator, front plate or cover can only be correctly fitted in a manner which ensures correct indication of the contact position -checked by inspection and by the tests of 9.11		P

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Clause	Requirement + Test	Result - Remark	Verdict
	When means are provided or specified by the manufacturer to lock the operating means in the open position: locking only possible when the main contacts are in the open position		N/A
	If the operating means is used for indication, it shall, when released, automatically take up the position to that of the moving contacts; the operating means shall have two distinct rest positions except that for automatic opening a third distinct position may be provided, when necessary to reset before reclosing		P
	For RCCBs functionally dependent on line voltage, reclosing automatically when the line voltage is restored after failure, the operating means shall remain in the ON position and the contacts shall reclose automatically unless the operating means has been placed in the OFF position		N/A
	When an indicator light is used this shall be lit when the RCCB is in the closed position		N/A
	The indicator light shall not be the only means to indicate the closed position		N/A
	The action of the mechanism shall not be influenced by the position of enclosures or covers and shall be independent of any removable part.		P
	If the cover is used as a guiding means for push-buttons, it shall not be possible to remove the buttons from the outside		P
	Operating means securely fixed; not possible to remove them without a tool		P
	For "up-down" operating means the contacts shall be closed by the up movement		P
8.1.4	Screws, current-carrying parts and connections		
8.1.4.1	Connections withstand mechanical stresses occurring in normal use		P
	Screws for mounting the RCCB are not of thread-cutting type		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.4	**Screws and nuts which are operated when mounting and connecting comply with the test of 9.4**		P
	Torque test:		
	- torque (Nm); 5/10 times; diameter (mm) .....:	2,5Nm; 5 times; Ø 5,9 mm	P
8.1.4.2	Screws with a thread of insulating material operated when mounting the RCCB: correct introduction ensured		N/A
8.1.4.3	Electrical connections: contact pressure not transmitted through insulating material unless there is sufficient resilience in the metallic parts		P
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		N/A
	- an alloy 58% copper for parts worked cold		P
	- an alloy 50% copper for other parts		N/A
	- other metal		N/A
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.25).		P
	The requirements of this subclause do not apply to: contacts, magnetic circuits, heater elements, bimetals, shunts, parts of electronic devices or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
8.1.5	Terminals for external conductors		P
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		P
	9.5 for screw-type terminals		P

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Clause	Requirement + Test	Result - Remark	Verdict
	by specific tests for plug-in or bolt-on RCCBs included in the standard		N/A
	by the tests of Annexes J, K or L		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	**Torque test:**		P
	- torque (Nm); diameter (mm) .....:	2,5Nm;Ø 5,9mm	P
	- max. cross-sectional area (mm²) .....:	50mm²	—
9.5.1	Pull test:		P
	Terminal shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.		—
	Min. cross-section solid / stranded / flexible (mm²):	1,0 mm²/1,5 mm²/1,0 mm²	—
	Max. cross-section solid / stranded / flexible (mm²):	6 mm²/25 mm²/16 mm²	—
	Torque $^2/_3$ (Nm) ..... :	1,67Nm	—
	Pull for 1 min solid / stranded / flexible (N) ... :	Min. cross-section 50/50/50N Max. cross-section 60/100/90N	P
	During the test no noticeable move of conductor		P
9.5.2	Torque test:		P
	- torque (2/3) (Nm) .....:	1,67Nm	—
	- min. cross-sectional area (mm²) .....:	1,0 mm²	—
	- max. cross-sectional area (mm²) .....:	25 mm²	—
	The conductor shows no damage		P
	Terminals have not worked loose and no damage		P
9.5.3	Terminals fitted with the largest cross-section area specified in Table 6, for stranded and/or flexible copper conductor.		—
	Max. cross-section stranded (mm²) ..... :	25 mm²	—
	Max. cross-section flexible (mm²) ..... :	16 mm²	—
	Torque $^2/_3$ (Nm) ..... :	1,67Nm	—
	After the test no strand of conductor escaped outside		P
8.1.5.2	RCCBs shall be provided with:		

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Clause	Requirement + Test	Result - Remark	Verdict
	- terminals which shall allow the connection of copper conductors having nominal cross-sectional areas as shown in Table 6		P
	Rated current (A) / Range of nominal cross sections to be clamped* (mm²) Rigid (solid or stranded) conductors / Flexible conductors ≤ 13: 1 to 2,5 / 1 to 2,5 **> 13 ≤ 16: 1 to 4 / 1 to 4** **> 16 ≤ 25: 1,5 to 6 / 1,5 to 6** **> 25 ≤ 32: 2,5 to 10 / 2,5 to 6** **> 32 ≤ 50: 4 to 16 / 4 to 10** **> 50 ≤ 80: 10 to 25 / 10 to 16** > 80 ≤ 100: 16 to 35 / 16 to 25 > 100 ≤ 125: 24 to 50 / 25 to 35	Solid 1,0mm² to 6mm² Stranded 1,5mm² to 25mm² Flexible 1,0mm² to 16mm²	P
	*It is required that, for current ratings up to and including 50 A, terminals be designed to clamp solid conductors as well as rigid stranded conductors. Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm² up to 6 mm² be designed to clamp solid conductors only.		P
	- or terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors according to Annex L.		N/A
8.1.5.3	Means for clamping the conductors in the terminals do not serve to fix any other component (see tests of 9.5)		P
8.1.5.4	Terminals for In ≤ 32 A allow the connection of conductors without special preparation		P
8.1.5.5	Terminals shall have adequate mechanical strength and metric ISO thread or equivalent (see tests of 9.4 and 9.5.1)		P
8.1.5.6	Clamping of conductor without undue damage to conductor (see tests of 9.5.2)		P

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.7	Clamping of conductor reliably and between metal surfaces (see tests of 9.4 and 9.5.1)		P
8.1.5.8	Terminals so designed or positioned that no conductor can slip out while the clamping screws or nuts are tightened (see tests of 9.5.3.)		P
8.1.5.9	Terminals so fixed or located that they do not work loose when the clamping screws or nuts are tightened or loosened (see tests of 9.4)		P
8.1.5.10	Clamping screws or nuts of terminals for the protective conductors adequately secured against accidental loosening and not possible to unclamp without a tool		N/A
8.1.5.11	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread and the screws shall not be of the tapping screw type		P
8.2	**Protection against electric shock**		
	Live parts not accessible in normal use		P
	For RCCBs other than plug-in type, external parts, other than screws or other means for fixing covers, which are accessible in normal use shall be of insulating material or be lined throughout with insulating material		P
	Lining reliably fixed		N/A
	Lining has adequate thickness and mechanical strength		N/A
	Inlet openings for cables or conduits shall be of insulating material or be provided with bushings or similar devices of insulating material		N/A
	Such devices shall be reliably fixed		N/A
	Such devices shall have adequate mechanical strength		N/A
	For plug-in RCCBs, external parts, other than screws or other means for fixing covers, which are accessible, shall be of insulating material		N/A
	Metallic operating means insulated from live parts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Metal parts of the mechanism not accessible, insulated from accessible metal parts, from metal frames (for flush-type), from screws or other means for fixing the base and from metal plates		P
	Possible to replace plug-in RCCBs easily without touching live parts		N/A
	Lacquer or enamel not considered to provide adequate insulation		P
9.6	**Test: verify with test finger, 1 min with a force of 75 N**	1min/75N	P
	Enclosures or covers not deformed to such an extent that live parts can be touched		P
8.9	**Resistance to heat**		
	RCCB sufficiently resistant to heat		P
9.13.1	Test: 1 h; test temperature (°C): (100 ± 2) °C for not removable covers or (70 ± 2)°C for removable covers .....:	1h/100°C	P
	No change impairing further use and no flow of sealing compound so that live parts are exposed		P
	No access to live parts even if the test finger is applied with a force not exceeding 5 N		P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms).....:	37,5mA;24ms	P
	Marking still legible after test		P
9.13.2	Ball-pressure test for external parts of insulating material (parts retaining live parts in position); test temperature: 125 °C ± 2°C for 1 h; diameter of impression (mm): ≤ 2 mm .....:	125°C/1h Impression: 1,1mm	P
9.13.3	Ball-pressure test for external parts of insulating material (parts not retaining live parts in position); test temperature (°C): (70 ± 2)°C or (40 ± 2) °C + max. temperature rise of 9.8; diameter of impression (mm): ≤ 2 mm .....:	70 °C/1h Impression: 0,8mm	P
8.1.3	Clearances and creepage distances (internal and external parts)		--
	The minimum required clearances and creepage distances are based on the RCCB being designed for operating in an environment with pollution degree 2		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Compliance for item 1 in is checked by measurement and by the test of 9.7.7.4.1 and 9.7.7.4.2. The test is carried out with samples not submitted to the humidity treatment described in 9.7.1.		P
	The clearances of items 2 and 4 (except accessible surface after installation) may be reduced provided that the measured clearances are not shorter than the minimum allowed in IEC 60664-1 for homogenous field conditions.		N/A
	In this case, after the humidity treatment in 9.7.1, compliance for item 2 and 4 and arrangements of 9.7.2 items b), c), d) and e) is checked:		N/A
	- Tests according to 9.7.2 to 9.7.6 as applicable		N/A
	- Test according to 9.7.7.2 with test voltages acc. Table 16 with test arrangements of 9.7.2 items b), c), d), e)		N/A
	If measurement does not show any reduced clearance, test 9.7.7.2 is not applied		P
	Compliance for item 3, checked by measurement		N/A
	Parts of PCBs connected to the live parts protected against pollution by the use of a type 2 protection according to IEC 60664-3 are exempt from this verification		N/A
	The insulating materials are classified into Material Groups on the basis of their comparative tracking index (CTI) acc. to IEC 60664-1 and measured according to IEC 60112		P
	Clearances [mm] U_{imp}		--
	4kV (see table 5) **2,5kV(see table 5)**	☒ ☐	--
	Minimum clearances (see table 5)		--
		minimum clearances [mm]	--
	1. between live parts which are separated when the main contacts are in the open position	4,86mm	P
	2. between live parts of different polarity	8,84mm	P
	3. between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and:		P
	- accessible surfaces of operating means	6,58mm	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- screws or other means for fixing covers which have to be removed when mounting the RCCB		N/A
	- surface on which the RCCB is mounted	15,5mm	P
	- screws or other means for fixing the RCCB	15,5mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	6,58mm	P
	- metal frames supporting flush-type RCCBs		N/A
	Minimum creepage distances (see table 5)		--
	Material group	IIIb ☐ IIIa ☒ II ☐ I ☐	P
		minimum creepage distances [mm]	--
	1. between live parts which are separated when the main contacts are in the open position	9,24mm	P
	2. between live parts of different polarity	8,84mm	P
	3. between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and:		P
	- accessible surfaces of operating means	6,58mm	P
	- screws or other means for fixing covers which have to be removed when mounting the RCCB		N/A
	- surface on which the RCCB is mounted	15,5mm	P
	- screws or other means for fixing the RCCB	15,5mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	6,58mm	P
	- metal frames supporting flush-type RCCBs		N/A
9.25	**Test of resistance to rusting:**		--
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of ammonium chloride in water at 20°C±5°C		P
	- 10 min in a box containing air saturated with moisture at 20°C±5°C		P
	- 10 min at 100°C		P

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Clause	Requirement + Test	Result - Remark	Verdict

	No sign of rust				P

	TEST SEQUENCE A_2 (3 samples) **In=80A IΔn =30mA 1P+N A type**	**A_{2-1}**	**A_{2-2}**	**A_{2-3}**	**P**
8.10	**Resistance to abnormal heat and fire**				P
	External parts of insulating material shall not be liable to ignite and to spread fire under fault or overload conditions				P
9.14	**Glow wire test**				P
	Test performed on a complete RCCB				P
	Glow-wire test: (960 + 15) °C for external parts of insulating material retaining current-carrying parts or parts of the protective circuit in position	960°C	960°C	960°C	P
	Glow-wire test: (650 + 10) °C for all other external parts insulating material	650°C	650°C	650°C	P
	No visible flames, no sustained glowing, or				P
	flames and glowing extinguish within 30 s after removal .....:				P
	flames and glowing extinguish within 30 s after removal .....:				P
	No ignition of tissue paper or scorching of the pinewood board				P

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE A_1 (1 sample) **In=80A IΔn =30mA 3P+N A type**	**A_{1-2}**	**P**

6.	**MARKING**		
	a) manufacturer's name or trademark .....:	GEYA	P
	b) type designation, catalogue number or serial number .....:	GYL9	P
	c) rated voltage(s) (V) .....:	415V	P
	d) rated frequency (Hz) .....:	50/60Hz	P
	e) rated current (A) .....:	In=80A	P
	f) rated residual operating current (A) .....:	IΔn=30mA	P
	h) rated making and breaking capacity (A) .....:	Im=800A	P
	j) degree of protection .....:	IP	N/A
	k) position of use .....:		N/A
	l) rated residual making and breaking capacity (A) .....:		N/A
	m) symbol S for type S	S	N/A
	n) symbol of the method of operation .....:		N/A
	o) operating means of test device .....:	T	P
	p) wiring diagram .....:		P
	q) operating characteristic .....:	≈	P
	Marking on the RCCB itself or on nameplate or nameplates attached to the RCCB and located so that for small devices at least e), f), o) and q) (only for type A) are legible when the RCCB is installed :		P
	Joule integral withstand capacity (A^2s) .....:		N/A
	Peak current withstand capacity (A) .....:		N/A
	Time delay when opening in case of failure of the line voltage (s) .....:		N/A
	Open position indicated by "0" and closed position by "I" .....:	I ON O OFF	P

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Clause	Requirement + Test	Result - Remark	Verdict
	For push-buttons the OFF push-button shall either be red or marked with "0" .....:		N/A
	If necessary to distinguish between supply and load terminals they shall be clearly marked .....:		N/A
	Terminals for neutral conductor marked by "N"		P
	Terminals for protective conductor marked by [symbol IEC 417-5019 a]		N/A
	Marking indelible, easy legible and not on removable parts		P
9.3	Test: 15 s with water, 15 s with hexane		P
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		P
	- no markings		P
	For non-universal terminals:		N/A
	- terminals for rigid-solid conductors only, marked by the letters “s” or “sol”		N/A
	- terminals for rigid (solid and stranded) conductors only, marked by the letter “r”		N/A
	marking on the RCCB or if the space available is not sufficient, on the smallest package unit or in technical information		P
8.	**REQUIREMENTS FOR CONSTRUCTION AND OPERATION**		
8.1.1	**General**		
	Residual current detection is located between the incoming and outgoing terminals		P
	Not possible to alter the operating characteristics by means of external interventions other than those specifically intended for changing the setting of the residual operating current		P
	Changing from one setting to another shall not be possible without a tool		N/A
	In case of an RCCB having multiple settings of residual operating current the rating refers to the highest setting		N/A
8.1.2	**Mechanism**		

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Clause	Requirement + Test	Result - Remark	Verdict
	Moving contacts of all poles so mechanically coupled that all poles except the switched neutral, make and break substantially together		P
	Switched neutral opens after and closes before other poles		P
	Compliance is checked by inspection and by manual tests, using any appropriate means (e.g.: indicator lights, oscilloscope, etc.)		P
	Trip-free mechanism		P
9.15	Test: the RCCB is mounted and wired as in normal use		
	- test circuit according to fig. 4a		P
	- a residual current equal to 1,5 $I_{\Delta n}$ is passed by closing S2, the RCCB having been closed and the operating means being held in the closed position. The RCCB shall trip	45mA	P
	- test repeated by moving the operating means slowly (1 s) to a position where the current starts to flow. Tripping shall occur without further movement		P
8.1.2	Possible to switch on and off by hand		P
	No intermediate positions of the contacts		P
	In the open position isolation distance in accordance with the requirements necessary to satisfy the isolating function		P
	Indication of the open and closed position of the main contacts shall be provided by one or both of the following means:		P
	- the position of the actuator (this being preferred)		P
	- a separate mechanical indicator		N/A
	If a separate mechanical indicator is used, this shall show the colour red for the closed position and the colour green for the open position		N/A
	means of indication of the contact position shall be reliable -checked by inspection and by the tests of 9.15		P

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Clause	Requirement + Test	Result - Remark	Verdict
	RCCBs shall be designed so that the actuator, front plate or cover can only be correctly fitted in a manner which ensures correct indication of the contact position -checked by inspection and by the tests of 9.11		P
	When means are provided or specified by the manufacturer to lock the operating means in the open position: locking only possible when the main contacts are in the open position		N/A
	If the operating means is used for indication, it shall, when released, automatically take up the position to that of the moving contacts; the operating means shall have two distinct rest positions except that for automatic opening a third distinct position may be provided, when necessary to reset before reclosing		P
	For RCCBs functionally dependent on line voltage, reclosing automatically when the line voltage is restored after failure, the operating means shall remain in the ON position and the contacts shall reclose automatically unless the operating means has been placed in the OFF position		N/A
	When an indicator light is used this shall be lit when the RCCB is in the closed position		N/A
	The indicator light shall not be the only means to indicate the closed position		N/A
	The action of the mechanism shall not be influenced by the position of enclosures or covers and shall be independent of any removable part.		P
	If the cover is used as a guiding means for push-buttons, it shall not be possible to remove the buttons from the outside		P
	Operating means securely fixed; not possible to remove them without a tool		P

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Clause	Requirement + Test	Result - Remark	Verdict
	For "up-down" operating means the contacts shall be closed by the up movement		P
8.1.4	Screws, current-carrying parts and connections		
8.1.4.1	Connections withstand mechanical stresses occurring in normal use		P
	Screws for mounting the RCCB are not of thread-cutting type		N/A
9.4	**Screws and nuts which are operated when mounting and connecting comply with the test of 9.4**		P
	Torque test:		
	- torque (Nm); 5/10 times; diameter (mm) .....:	2,5Nm; 5 times; Ø 5,9mm	P
8.1.4.2	Screws with a thread of insulating material operated when mounting the RCCB: correct introduction ensured		N/A
8.1.4.3	Electrical connections: contact pressure not transmitted through insulating material unless there is sufficient resilience in the metallic parts		P
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		N/A
	- an alloy 58% copper for parts worked cold		P
	- an alloy 50% copper for other parts		N/A
	- other metal		N/A
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.25).		P
	The requirements of this subclause do not apply to: contacts, magnetic circuits, heater elements, bimetals, shunts, parts of electronic ts or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
8.1.5	Terminals for external conductors		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		P
	9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on RCCBs included in the standard		N/A
	by the tests of Annexes J, K or L		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	**Torque test:**		P
	- torque (Nm); diameter (mm) .....:	2,5Nm;Ø 5,9mm	P
	- max. cross-sectional area (mm²) .....:	25mm²	—
9.5.1	Pull test:		P
	Terminal shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.		—
	Min. cross-section solid / stranded / flexible (mm²):	1,0 mm²/1,5 mm²/1,0 mm²	—
	Max. cross-section solid / stranded / flexible (mm²):	6 mm²/25 mm²/16 mm²	—
	Torque $^{2}/_{3}$ (Nm)..... :	1,67Nm	—
	Pull for 1 min solid / stranded / flexible (N) ... :	Min. cross-section 50/50/50N Max. cross-section 60/100/90N	P
	During the test no noticeable move of conductor		P
9.5.2	Torque test:		P
	- torque (2/3) (Nm) .....:	1,67Nm	—
	- min. cross-sectional area (mm²) .....:	1,0 mm²	—
	- max. cross-sectional area (mm²) .....:	25 mm²	—
	The conductor shows no damage		P
	Terminals have not worked loose and no damage		P
9.5.3	Terminals fitted with the largest cross-section area specified in Table 6, for stranded and/or flexible copper conductor.		—
	Max. cross-section stranded (mm²)..... :	25 mm²	—
	Max. cross-section flexible (mm²)..... :	16 mm²	—
	Torque $^{2}/_{3}$ (Nm)..... :	1,67Nm	—
	After the test no strand of conductor escaped outside		P

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.2	RCCBs shall be provided with:		
	- terminals which shall allow the connection of copper conductors having nominal cross-sectional areas as shown in Table 6		P
	Rated current (A) / Range of nominal cross sections to be clamped* (mm²) Rigid (solid or stranded) conductors / Flexible conductors ≤ 13: 1 to 2,5 / 1 to 2,5 **> 13 ≤ 16: 1 to 4 / 1 to 4** **> 16 ≤ 25: 1,5 to 6 / 1,5 to 6** **> 25 ≤ 32: 2,5 to 10 / 2,5 to 6** **> 32 ≤ 50: 4 to 16 / 4 to 10** **> 50 ≤ 80: 10 to 25 / 10 to 16** > 80 ≤ 100: 16 to 35 / 16 to 25 > 100 ≤ 125: 24 to 50 / 25 to 35	Solid 1,0mm² to 6mm² Stranded 1,5mm² to 25mm² Flexible 1,0mm² to 16mm²	P
	*It is required that, for current ratings up to and including 50 A, terminals be designed to clamp solid conductors as well as rigid stranded conductors. Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm² up to 6 mm² be designed to clamp solid conductors only.		P
	- or terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors according to Annex L.		N/A
8.1.5.3	Means for clamping the conductors in the terminals do not serve to fix any other component (see tests of 9.5)		P
8.1.5.4	Terminals for In ≤ 32 A allow the connection of conductors without special preparation		P
8.1.5.5	Terminals shall have adequate mechanical strength and metric ISO thread or equivalent (see tests of 9.4 and 9.5.1)		P
8.1.5.6	Clamping of conductor without undue damage to conductor (see tests of 9.5.2)		P
8.1.5.7	Clamping of conductor reliably and between metal surfaces (see tests of 9.4 and 9.5.1)		P
8.1.5.8	Terminals so designed or positioned that no conductor can slip out while the clamping screws or nuts are tightened (see tests of 9.5.3.)		P

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.9	Terminals so fixed or located that they do not work loose when the clamping screws or nuts are tightened or loosened (see tests of 9.4)		P
8.1.5.10	Clamping screws or nuts of terminals for the protective conductors adequately secured against accidental loosening and not possible to unclamp without a tool		N/A
8.1.5.11	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread and the screws shall not be of the tapping screw type		P
8.2	**Protection against electric shock**		
	Live parts not accessible in normal use		P
	For RCCBs other than plug-in type, external parts, other than screws or other means for fixing covers, which are accessible in normal use shall be of insulating material or be lined throughout with insulating material		P
	Lining reliably fixed		N/A
	Lining has adequate thickness and mechanical strength		N/A
	Inlet openings for cables or conduits shall be of insulating material or be provided with bushings or similar devices of insulating material		N/A
	Such devices shall be reliably fixed		N/A
	Such devices shall have adequate mechanical strength		N/A
	For plug-in RCCBs, external parts, other than screws or other means for fixing covers, which are accessible, shall be of insulating material		N/A
	Metallic operating means insulated from live parts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Metal parts of the mechanism not accessible, insulated from accessible metal parts, from metal frames (for flush-type), from screws or other means for fixing the base and from metal plates		P
	Possible to replace plug-in RCCBs easily without touching live parts		N/A
	Lacquer or enamel not considered to provide adequate insulation		P
9.6	**Test: verify with test finger, 1 min with a force of 75 N**	1min/75N	P
	Enclosures or covers not deformed to such an extent that live parts can be touched		P
8.9	**Resistance to heat**		
	RCCB sufficiently resistant to heat		P
9.13.1	Test: 1 h; test temperature (°C): (100 ± 2) °C for not removable covers or (70 ± 2)°C for removable covers .....:	1h/100°C	P
	No change impairing further use and no flow of sealing compound so that live parts are exposed		P
	No access to live parts even if the test finger is applied with a force not exceeding 5 N		P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms).....:	37,5mA;26ms	P
	Marking still legible after test		P
9.13.2	Ball-pressure test for external parts of insulating material (parts retaining live parts in position); test temperature: 125 °C ± 2°C for 1 h; diameter of impression (mm): ≤ 2 mm .....:	125°C/1h Impression: 1,1mm	P
9.13.3	Ball-pressure test for external parts of insulating material (parts not retaining live parts in position); test temperature (°C): (70 ± 2)°C or (40 ± 2) °C + max. temperature rise of 9.8; diameter of impression (mm): ≤ 2 mm .....:	70 °C/1h Impression: 0,8mm	P
8.1.3	Clearances and creepage distances (internal and external parts)		--
	The minimum required clearances and creepage distances are based on the RCCB being designed for operating in an environment with pollution degree 2		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Compliance for item 1 in is checked by measurement and by the test of 9.7.7.4.1 and 9.7.7.4.2. The test is carried out with samples not submitted to the humidity treatment described in 9.7.1.		P
	The clearances of items 2 and 4 (except accessible surface after installation) may be reduced provided that the measured clearances are not shorter than the minimum allowed in IEC 60664-1 for homogenous field conditions.		N/A
	In this case, after the humidity treatment in 9.7.1, compliance for item 2 and 4 and arrangements of 9.7.2 items b), c), d) and e) is checked:		N/A
	- Tests according to 9.7.2 to 9.7.6 as applicable		N/A
	- Test according to 9.7.7.2 with test voltages acc. Table 16 with test arrangements of 9.7.2 items b), c), d), e)		N/A
	If measurement does not show any reduced clearance, test 9.7.7.2 is not applied		P
	Compliance for item 3, checked by measurement		N/A
	Parts of PCBs connected to the live parts protected against pollution by the use of a type 2 protection according to IEC 60664-3 are exempt from this verification		N/A
	The insulating materials are classified into Material Groups on the basis of their comparative tracking index (CTI) acc. to IEC 60664-1 and measured according to IEC 60112		P
	Clearances [mm] U_{imp}		--
	4kV (see table 5) **2,5kV(see table 5)**	☒ ☐	--
	Minimum clearances (see table 5)		--
		minimum clearances [mm]	--
	1. between live parts which are separated when the main contacts are in the open position	4,86mm	P
	2. between live parts of different polarity	8,84mm	P
	3. between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and:		P
	- accessible surfaces of operating means	6,58mm	P
	- screws or other means for fixing covers which have to be removed when mounting the RCCB		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- surface on which the RCCB is mounted	15,5mm	P
	- screws or other means for fixing the RCCB	15,5mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	6,58mm	P
	- metal frames supporting flush-type RCCBs		N/A
	Minimum creepage distances (see table 5)		--
	Material group	IIIb ☐ IIIa ☒ II ☐ I ☐	P
		minimum creepage distances [mm]	--
	1. between live parts which are separated when the main contacts are in the open position	9,24mm	P
	2. between live parts of different polarity	8,84mm	P
	3. between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and:		P
	- accessible surfaces of operating means	6,58mm	P
	- screws or other means for fixing covers which have to be removed when mounting the RCCB		N/A
	- surface on which the RCCB is mounted	15,5mm	P
	- screws or other means for fixing the RCCB	15,5mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	6,58mm	P
	- metal frames supporting flush-type RCCBs		N/A
9.25	**Test of resistance to rusting:**		--
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of ammonium chloride in water at 20°C±5°C		P
	- 10 min in a box containing air saturated with moisture at 20°C±5°C		P
	- 10 min at 100°C		P
	No sign of rust		P

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE A_2 (3 samples) In=80A IΔn =30mA 3P+N A type	A_{2-4}	A_{2-5}	A_{2-6}	P

8.10	**Resistance to abnormal heat and fire**				P
	External parts of insulating material shall not be liable to ignite and to spread fire under fault or overload conditions				P
9.14	**Glow wire test**				P
	Test performed on a complete RCCB				P
	Glow-wire test: (960 + 15) °C for external parts of insulating material retaining current-carrying parts or parts of the protective circuit in position	960°C	960°C	960°C	P
	Glow-wire test: (650 + 10) °C for all other external parts insulating material	650°C	650°C	650°C	P
	No visible flames, no sustained glowing, or				P
	flames and glowing extinguish within 30 s after removal .....:				P
	flames and glowing extinguish within 30 s after removal .....:				P
	No ignition of tissue paper or scorching of the pinewood board				P

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE B (3 samples) In=80A IΔn =30mA 1P+N A type	B-1	B-2	B-3	P

8	**REQUIREMENTS FOR CONSTRUCTION AND OPERATION**		--
8.3	**Dielectric properties and isolating capability**		--
	RCCBs have adequate dielectric properties		P
9.7	**Test of dielectric properties and isolating capability**		--
9.7.7.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		P
	These tests are not preceded by the humidity treatment described in 9.7.1.		P
	The test is carried out on an RCCB fixed on a metal support		P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2μs, and a time to half-value of 50μs		P
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		P
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A
	rated impulse withstand voltage [kV]:	4kV	--
	see level of test laboratory [m]	Sea level	--
	test voltage (acc. Table 22) [kV]:	6,2kV	--
9.7.7.4.2	RCCB in open position (contacts in open position)		P
	The impulses are applied between:		P
	the line terminals connected together and the load terminals connected together		P
9.7.7.4.3	RCCB in closed position		P
	All components bridging the basic insulation disconnected		N/A
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		P

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Clause	Requirement + Test	Result - Remark	Verdict
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		P
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		P
	no disruptive discharges during the test		P
9.7.7.5	VERIFICATION OF THE BEHAVIOUR OF COMPONENTS BRIDGING THE BASIC INSULATION		--
	A new RCCB sample is tested		N/A
	Test only performed on RCCBs, where components bridging the basic insulation have been disconnected during the impulse voltage test of 9.7.7.4.3		N/A
	test voltage 1200V+U_0	V	N/A
	The voltage is applied during 5s between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the prospective conductor(s), if any		N/A
	after test, no component bridging the basic insulation should show a visible alteration.		N/A
	Then, the equipment is connected to the mains acc. manufacturer's instruction		N/A
	The RCCB shall trip with a test current of 1,25 $I_{\Delta N}$	[ms]	--
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1.		N/A
9.7.1	RESISTANCE TO HUMIDITY		P
9.7.1.1	Parts which can be removed without a tool are removed, spring lids kept open, inlet openings are left open and if knock-outs one is opened.		N/A
9.7.1.2	Test conditions: 48 h in humidity cabinet RH = 91% to 95% T = 20 to 30°C ± 1°C	48h 93% 25°C	--
9.7.1.4	The samples show no damage		P

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:	B-1 [MΩ]	B-2 [MΩ]	B-3 [MΩ]	--
	a) between the terminals which are electrically connected together when the RCCB is in the closed position .....≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	P
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected)≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	P
	c) with the RCCB in the closed position, between all poles connected together and the frame, including a metal foil in contact with the outer surface of the housing of insulation material but with the terminal area kept free.....≥ 5 MΩ	≥ 5 MΩ	≥ 5 MΩ	≥ 5 MΩ	P
	d) between metal parts of the mechanism and the frame.....≥ 5 MΩ	-	-	-	N/A
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material .....≥ 5 MΩ	-	-	-	N/A
9.7.3	Dielectric strength of the main circuit measured with an AC voltage (45-65Hz) for 1 min:				--
	a) electronic components disconnected..... 2000 V	2000V	2000V	2000V	P
	b) electronic components disconnected..... 2000 V	2000V	2000V	2000V	P
	c) electronic components disconnected..... 2000 V	2000V	2000V	2000V	P
	d) electronic components disconnected..... 2000 V	-	-	-	N/A
	e) electronic components disconnected..... 2500 V	-	-	-	N/A
	No flashover or breakdown				P
9.7.4	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:	B-1 [MΩ]	B-2 [MΩ]	B-3 [MΩ]	--
	1) between all auxiliary circuits and the frame (MΩ) .....≥ 2 MΩ				N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together (MΩ) .....≥ 2 MΩ				N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:				--

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Clause	Requirement + Test	Result - Remark	Verdict
	Rated voltage of auxiliary circuits (a.c. or d.c.) / Test voltage (V) ≤ 30 — 600 > 30 ≤ 50 — 1000 > 50 ≤ 110 — 1500 > 110 ≤ 250 — 2000 > 250 ≤ 500 — 2500	V	--
	1) between all auxiliary circuits and the frame		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together		N/A
	No flashover or perforation		N/A
9.7.7.2	Verification of clearances with the impulse withstand voltage		--
	If the measurement of clearances of items 2 and 4 in Table 5 shows a reduction of the required length, this test applies.		--
	The test is carried out on an RCCB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2μs, and a time to half-value of 50μs		N/A
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		N/A
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A
	test performed with:		--
	- surge impedance of the test apparatus ≤500Ω and surge protective devices disconnected before testing or		N/A
	- hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:		--
	see level of test laboratory [m]		--
	test voltage (acc. Table 16) [kV]:		--

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Clause	Requirement + Test	Result - Remark	Verdict
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		N/A
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected)		N/A
	c) between all poles connected together and the frame		N/A
	d) between metal parts of the mechanism and the frame		N/A
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material		N/A
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		N/A
	no disruptive discharges during the test		N/A
9.7.5	Secondary circuit of detection transformers		--
	No insulation test, provided that no connection with accessible metal parts or with protective conductor or live parts exists.		N/A
9.7.6	Capability of control circuits connected to the main circuit of withstanding high DC voltages due to insulation measurements	B-1 / B-2 / B-3	--
	RCCB fixed on metal support in closed position with all control circuits connected as in service.		P
	Open test voltage 600 V +25 / -0 V Maximum ripple 5% Short-circuit current 12 mA +2 / -0 mA Applied for 1 min between each pole and the other poles connected together to the frame.	615V / 615V / 615V 12,5mA 1min / 12,5mA 1min / 12,5mA 1min	P
	Type / I_N A / $I_{\Delta N}$ A	Standard values of break time and non-actuating time at a residual current equal to	--

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Clause	Requirement + Test						Result - Remark				Verdict
				$I_{\Delta N}$	2 $I_{\Delta N}$	5 $I_{\Delta N}$	5 $I_{\Delta N}$ or 0,25A **a)**	5A-200A, **b)**	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non-actuating times	--
	a) value to be decided by the manufacturer for this test										--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2.3	Verification of the correct operation in case of sudden appearance of residual current by closing S_1, (S_2 and RCCB in closed position):										P
	Maximum break times at:						[ms]	[ms]	[ms]		--
	- $I_{\Delta N}$ (ms)						77	75	75		P
	- 2 $I_{\Delta N}$ (ms)						33	30	31		P
	- 5 $I_{\Delta N}$ or (ms)						-	-	-		N/A
	- 0,25 A (ms)						18	20	17		P
	- 500A (ms)						19	17	19		P
	No value exceeds the relevant specified limiting value										P
	Additional test for type S:										--
	Minimum non-actuating time at:						[ms]	[ms]	[ms]		--
	- $I_{\Delta N}$ (ms) .....0,13 s										N/A
	- 2 $I_{\Delta N}$ (ms) .....0,06 s										N/A
	- 5 $I_{\Delta N}$ (ms) .....0,05 s										N/A
	- 500 A (ms).....0,04 s										N/A
	The test switch S_1 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S_2 for min. non-operating times acc. table 2										N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	No tripping during tests				N/A
8.4	**Temperature rise**				--
	Temperature rises do not exceed the limiting values stated in table 7.				P
	Cross-section (mm²)	25mm²			P
9.8.1	Ambient air temperature (°C)	B-1:22,7°C B-2:22,7°C B-3:22,5°C			P
9.8.2	Test current I_N (A) until steady state values are reached.	80A			P
	Four pole RCCBs:				N/A
	Current passing through				N/A
	- 3 phase poles (1)				N/A
	- neutral and adjacent pole (2)				N/A
	Parts ..... Temperature rise K	[K]	[K]	[K]	--
	Terminals for external connections (K) 65	44	40	37	P
	External parts liable to be touched during manual operation of the RCCB, including operating means of insulating material and metallic means for coupling insulated operating means of several poles (K)..... 40	10	11	8	P
	External metallic parts of operating means (K).... 25	-	-	-	N/A
	Other external parts, including that face of the RCCB in direct contact with the mounting surface (K) 60	31	30	32	P
8.16	**Reliability**				--
	RCCBs operate reliably even after long service.				P
9.22.2	Test with 28 cycles at 40 ± 2°C	40°C			--
	Cross-section (mm²) ..... :	25mm²			--
	Torque $^2/_3$ (Nm) ..... :	1,67Nm			--
	Test current I_N (A) ..... :	125A			--
	- with current passing ..... 21 h	21h			P
	- without current..... 3 h	3h			P
	For 4 pole RCCBs with 3 overcurrent protected poles only 3 poles loaded				N/A
	At the end of the last period of 21 h with current passing the temperature rise of the terminals shall not exceed 65K (K)	[K] 46	[K] 41	[K] 38	P

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Clause	Requirement + Test	Result - Remark			Verdict
	After cool down the RCCB shall trip with a test current of 1,25 $I_{\Delta N}$ - break time not exceeding the value for $I_{\Delta N}$ in table 2 (ms)	[ms] 25	[ms] 28	[ms] 23	P
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1.				P
9.23	**Verification of ageing of electronic components**				--
	168 h at 40 ± 2°C ..... :	168h at 40°C			--
	Test current I_N (A) ..... :	80A			--
	Cross-section (mm²) ..... :	25mm²			--
	Electronic parts at 1,1 U_N ..... :	264V			--
	After cool down:				P
	- electronic parts show no damage				P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta N}$ - break time not exceeding the value for $I_{\Delta N}$ in table 2 (ms)	[ms] 20	[ms] 22	[ms] 24	P
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1				P

	TEST SEQUENCE B (3 samples) **In=80A IΔn =30mA 3P+N A type**	**B-4**	**B-5**	**B-6**	**P**

8	**REQUIREMENTS FOR CONSTRUCTION AND OPERATION**				--
8.3	**Dielectric properties and isolating capability**				--
	RCCBs have adequate dielectric properties				P
9.7	**Test of dielectric properties and isolating capability**				--
9.7.7.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions				P
	These tests are not preceded by the humidity treatment described in 9.7.1.				P
	The test is carried out on an RCCB fixed on a metal support				P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2μs, and a time to half-value of 50μs				P

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Clause	Requirement + Test	Result - Remark	Verdict
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		P
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A
	rated impulse withstand voltage [kV]:	4kV	--
	see level of test laboratory [m]	Sea level	--
	test voltage (acc. Table 22) [kV]:	6,2kV	--
9.7.7.4.2	RCCB in open position (contacts in open position)		P
	The impulses are applied between:		P
	the line terminals connected together and the load terminals connected together		P
9.7.7.4.3	RCCB in closed position		P
	All components bridging the basic insulation disconnected		N/A
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		P
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		P
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		P
	no disruptive discharges during the test		P
9.7.7.5	VERIFICATION OF THE BEHAVIOUR OF COMPONENTS BRIDGING THE BASIC INSULATION		--
	A new RCCB sample is tested		N/A
	Test only performed on RCCBs, where components bridging the basic insulation have been disconnected during the impulse voltage test of 9.7.7.4.3		N/A
	test voltage 1200V+U_0	V	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The voltage is applied during 5s between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the prospective conductor(s), if any		N/A
	after test, no component bridging the basic insulation should show a visible alteration.		N/A
	Then, the equipment is connected to the mains acc. manufacturer's instruction		N/A
	The RCCB shall trip with a test current of 1,25 $I_{\Delta N}$	[ms]	--
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1.		N/A
9.7.1	RESISTANCE TO HUMIDITY		P
9.7.1.1	Parts which can be removed without a tool are removed, spring lids kept open, inlet openings are left open and if knock-outs one is opened.		N/A
9.7.1.2	Test conditions: 48 h in humidity cabinet RH = 91% to 95% T = 20 to 30°C ± 1°C	48h 93% 25°C	--
9.7.1.4	The samples show no damage		P

9.7.2	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:	B-4 [MΩ]	B-5 [MΩ]	B-6 [MΩ]	--
	a) between the terminals which are electrically connected together when the RCCB is in the closed position .....≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	P
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected)≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	P
	c) with the RCCB in the closed position, between all poles connected together and the frame, including a metal foil in contact with the outer surface of the housing of insulation material but with the terminal area kept free.....≥ 5 MΩ	≥ 5 MΩ	≥ 5 MΩ	≥ 5 MΩ	P
	d) between metal parts of the mechanism and the frame.....≥ 5 MΩ	-	-	-	N/A
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material .....≥ 5 MΩ	-	-	-	N/A

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.3	Dielectric strength of the main circuit measured with an AC voltage (45-65Hz) for 1 min:				--
	a) electronic components disconnected..... 2000 V	2000V	2000V	2000V	P
	b) electronic components disconnected..... 2000 V	2000V	2000V	2000V	P
	c) electronic components disconnected..... 2000 V	2000V	2000V	2000V	P
	d) electronic components disconnected..... 2000 V	-	-	-	N/A
	e) electronic components disconnected..... 2500 V	-	-	-	N/A
	No flashover or breakdown				P
9.7.4	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:	B-4 [MΩ]	B-5 [MΩ]	B-6 [MΩ]	--
	1) between all auxiliary circuits and the frame (MΩ) .....≥ 2 MΩ				N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together (MΩ) .....≥ 2 MΩ				N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:				--
	Rated voltage of auxiliary circuits (a.c. or d.c.) — Test voltage (V) ≤ 30 — 600 > 30 ≤ 50 — 1000 > 50 ≤ 110 — 1500 > 110 ≤ 250 — 2000 > 250 ≤ 500 — 2500	V			--
	1) between all auxiliary circuits and the frame				N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together				N/A
	No flashover or perforation				N/A
9.7.7.2	Verification of clearances with the impulse withstand voltage				--
	If the measurement of clearances of items 2 and 4 in Table 5 shows a reduction of the required length, this test applies.				--
	The test is carried out on an RCCB fixed on a metal support and being in the closed position				N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2μs, and a time to half-value of 50μs				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		N/A
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A
	test performed with:		--
	- surge impedance of the test apparatus ≤500Ω and surge protective devices disconnected before testing or		N/A
	- hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:		--
	see level of test laboratory [m]		--
	test voltage (acc. Table 16) [kV]:		--
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		N/A
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected)		N/A
	c) between all poles connected together and the frame		N/A
	d) between metal parts of the mechanism and the frame		N/A
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material		N/A
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	no disruptive discharges during the test										N/A
9.7.5	Secondary circuit of detection transformers										--
	No insulation test, provided that no connection with accessible metal parts or with protective conductor or live parts exists.										N/A
9.7.6	Capability of control circuits connected to the main circuit of withstanding high DC voltages due to insulation measurements						B-4	B-5	B-6		--
	RCCB fixed on metal support in closed position with all control circuits connected as in service.										P
	Open test voltage 600 V +25 / -0 V Maximum ripple 5% Short-circuit current 12 mA +2 / -0 mA Applied for 1 min between each pole and the other poles connected together to the frame.						615V 12,5mA 1min	615V 12,5mA 1min	615V 12,5mA 1min		P
	Type	I_N A	$I_{\Delta N}$ A	Standard values of break time and non-actuating time at a residual current equal to							--
				$I_{\Delta N}$	2 $I_{\Delta N}$	5 $I_{\Delta N}$	5 $I_{\Delta N}$ or 0,25A **a)**	5A-200A, **b)**	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non-actuating times	--
	a) value to be decided by the manufacturer for this test										--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2.3	Verification of the correct operation in case of sudden appearance of residual current by closing S_1, (S_2 and RCCB in closed position):										P
	Maximum break times at:						[ms]	[ms]	[ms]		--
	- $I_{\Delta N}$ (ms)						73	77	74		P
	- 2 $I_{\Delta N}$ (ms)						30	33	29		P

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Clause	Requirement + Test	Result - Remark			Verdict
	- 5 $I_{\Delta N}$ or (ms)	-	-	-	N/A
	- 0,25 A (ms)	19	20	22	P
	- 500A (ms)	18	24	16	P
	No value exceeds the relevant specified limiting value				P
	Additional test for type S:				--
	Minimum non-actuating time at:	[ms]	[ms]	[ms]	--
	- $I_{\Delta N}$ (ms) .....0,13 s				N/A
	- 2 $I_{\Delta N}$ (ms) .....0,06 s				N/A
	- 5 $I_{\Delta N}$ (ms) .....0,05 s				N/A
	- 500 A (ms).....0,04 s				N/A
	The test switch S_1 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S_2 for min. non-operating times acc. table 2				N/A
	No tripping during tests				N/A
8.4	**Temperature rise**				--
	Temperature rises do not exceed the limiting values stated in table 7.				P
	Cross-section (mm²)	25mm²			P
9.8.1	Ambient air temperature (°C)	B-4: 23,1°C B-5: 23,7°C B-6: 23,1°C			P
9.8.2	Test current I_N (A) until steady state values are reached.	80A			P
	Four pole RCCBs:				P
	Current passing through				P
	- 3 phase poles (1)				P
	- neutral and adjacent pole (2)				P
	Parts ..... Temperature rise K	[K]	[K]	[K]	--
	Terminals for external connections (K) 65	44	43	42	P
	External parts liable to be touched during manual operation of the RCCB, including operating means of insulating material and metallic means for coupling insulated operating means of several poles (K)..... 40	13	13	11	P
	External metallic parts of operating means (K).... 25	-	-	-	N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Other external parts, including that face of the RCCB in direct contact with the mounting surface (K) 60	33	32	32	P
8.16	**Reliability**				--
	RCCBs operate reliably even after long service.				P
9.22.2	Test with 28 cycles at 40 ± 2°C	40°C			--
	Cross-section (mm²) ..... :	25mm²			--
	Torque $^2/_3$ (Nm) ..... :	1,67Nm			--
	Test current I_N (A) ..... :	80A			--
	- with current passing ..... 21 h	21h			P
	- without current ..... 3 h	3h			P
	For 4 pole RCCBs with 3 overcurrent protected poles only 3 poles loaded				P
	At the end of the last period of 21 h with current passing the temperature rise of the terminals shall not exceed 65K (K)	[K] 45	[K] 43	[K] 43	P
	After cool down the RCCB shall trip with a test current of 1,25 $I_{\Delta N}$ - break time not exceeding the value for $I_{\Delta N}$ in table 2 (ms)	[ms] 22	[ms] 24	[ms] 23	P
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1.				P
9.23	**Verification of ageing of electronic components**				--
	168 h at 40 ± 2°C ..... :	168h at 40°C			--
	Test current I_N (A) ..... :	80A			--
	Cross-section (mm²) ..... :	25mm²			--
	Electronic parts at 1,1 U_N ..... :	457V			--
	After cool down:				P
	- electronic parts show no damage				P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta N}$ - break time not exceeding the value for $I_{\Delta N}$ in table 2 (ms)	[ms] 25	[ms] 27	[ms] 21	P
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1				P

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE C (3 samples) **In=80A IΔn =30mA 1P+N A type**	**C-1**	**C-2**	**C-3**	**P**

8.6	**Mechanical and electrical endurance**		P
	RCCBs shall be capable of performing an adequate number of mechanical and electrical operations		P
9.10	**Test is made:**		P
	- In ≤ 25 A; 2 s on; 13 s off .....:		N/A
	- In > 25 A; 2 s on; 28 s off .....:		P
	Number of operating cycles: 2000		P
	Test voltage Un (V); test current In (A); cos phi 0,85-0,9 .....:	242V;80,5A;0,87	—
	Cross-sectional area (mm²) .....:	25mm²	—
	RCCBs having $I_{\Delta n}$ > 0,010 A tested at:		
	- 1000 cycles for manual operation .....:	C-1 – 1000 cycles C-2 - 1000 cycles C-3 - 1000 cycles	P
	- 500 cycles by using the test device .....:	C-1 - 500 cycles C-2 - 500 cycles C-3 - 500 cycles	P
	- 500 cycles at a current of $I_{\Delta n}$ .....:	C-1 - 500 cycles C-2 - 500 cycles C-3 - 500 cycles	P
	RCCBs having $I_{\Delta n}$ ≤ 0,010 A tested at:		N/A
	- 500 cycles for manual operation .....:		N/A
	- 750 cycles by using the test device .....:		N/A
	- 750 cycles at a current of $I_{\Delta n}$ .....:		N/A
	Test is made without load using manual operation:		
	- In ≤ 25 A; 2000 cycles .....:		N/A
	- In > 25 A; 1000 cycles .....:	C-1 - 1000 cycles C-2 - 1000 cycles C-3 - 1000 cycles	P
	After the test:		
	- no undue wear		P
	- no damage		P
	- no loosening of connections		P
	- no seepage of sealing compound		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	C-1 - 37,5mA;73ms C-2 - 37,5mA;69ms C-3 - 37,5mA;77ms	P
	Dielectric strength test at a voltage of 900 V a.c. for 1 min:		
	a) .....:	C-1 – 900V C-2 – 900V C-3 – 900V	P
	b) .....:	C-1 – 900V C-2 – 900V C-3 – 900V	P
	c) .....:	C-1 – 900V C-2 – 900V C-3 – 900V	P
	d) .....:		N/A
	e) .....:		N/A

	TEST SEQUENCE C (3 samples) **In=80A IΔn =30mA 3P+N A type**	**C-4**	**C-5**	**C-6**	**P**

8.6	**Mechanical and electrical endurance**		P
	RCCBs shall be capable of performing an adequate number of mechanical and electrical operations		P
9.10	**Test is made:**		P
	- In ≤ 25 A; 2 s on; 13 s off .....:		N/A
	- In > 25 A; 2 s on; 28 s off .....:		P
	Number of operating cycles: 2000		P
	Test voltage Un (V); test current In (A); cos phi 0,85-0,9 .....:	416V;80,6A;0,87	—
	Cross-sectional area (mm²) .....:	25mm²	—
	RCCBs having $I_{\Delta n}$ > 0,010 A tested at:		
	- 1000 cycles for manual operation .....:	C-4 – 1000 cycles C-5 - 1000 cycles C-6 - 1000 cycles	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- 500 cycles by using the test device .....:	C-4 - 500 cycles C-5 - 500 cycles C-6 - 500 cycles	P
	- 500 cycles at a current of $I_{\Delta n}$ .....:	C-4 - 500 cycles C-5 - 500 cycles C-6 - 500 cycles	P
	RCCBs having $I_{\Delta n} \leq 0{,}010$ A tested at:		N/A
	- 500 cycles for manual operation .....:		N/A
	- 750 cycles by using the test device .....:		N/A
	- 750 cycles at a current of $I_{\Delta n}$ .....:		N/A
	Test is made without load using manual operation:		
	- In ≤ 25 A; 2000 cycles .....:		N/A
	- In > 25 A; 1000 cycles .....:	C-4 - 1000 cycles C-5 - 1000 cycles C-6 - 1000 cycles	P
	After the test:		
	- no undue wear		P
	- no damage		P
	- no loosening of connections		P
	- no seepage of sealing compound		N/A
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	C-4 - 37,5mA;73ms C-5 - 37,5mA;75ms C-6 - 37,5mA;79ms	P
	Dielectric strength test at a voltage of 900 V a.c. for 1 min:		
	a) .....:	C-4 – 900V C-5 – 900V C-6 – 900V	P
	b) .....:	C-4 – 900V C-5 – 900V C-6 – 900V	P
	c) .....:	C-4 – 900V C-5 – 900V C-6 – 900V	P
	d) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	e) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE D (3 samples) In=80A IΔn =30mA 1P+N A type	D0+D1-1	D0+D1-2	D0+D1-3	P

	Tests "D0"										
8.5	**Operating characteristics**										
	For multiple settings of $I_{\Delta n}$ tests are made for each setting										N/A
9.9.1	RCCB installed as for normal use, test circuit according to fig. 4										P
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) ..... :										N/A
	Type	I_N A	$I_{\Delta N}$ A	Standard values of break time and non-actuating time at a residual current equal to							--
				$I_{\Delta N}$	2 $I_{\Delta N}$	5 $I_{\Delta N}$	5 $I_{\Delta N}$ or 0,25A **a)**	5A-200A, **b)**	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non-actuating times	--
	a) value to be decided by the manufacturer for this test										--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2	Off-load tests made at a temperature of 20 ± 5 °C										P
9.9.2.1	Verification of the correct operation in case of a steady increase residual current:										

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Clause	Requirement + Test	Result - Remark	Verdict
	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) ..... :	D0+D1-1 – 6mA to 30mA D0+D1-2 – 6mA to 30mA D0+D1-3 – 6mA to 30mA	P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..... :	D0+D1-1 – 24,8mA to 24,9mA D0+D1-2 – 23,5mA to 23,6mA D0+D1-3 – 23,4mA to 23,4mA	P
9.9.2.2	Verification of the correct operation at closing on residual current		
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D0+D1-1 – Max. 72ms D0+D1-2 – Max. 74ms D0+D1-3 – Max. 72ms	P
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-1 –75ms D0+D1-2 –76ms D0+D1-3 –75ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-1 –33ms D0+D1-2 –31ms D0+D1-3 –32ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-1 –20ms D0+D1-2 –22ms D0+D1-3 –24ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-1 –19ms D0+D1-2 –22ms D0+D1-3 –21ms	P
	No value exceeds the relevant specified limiting value		P
9.9.2.4	Verification of the correct operation in case of sudden appearance of residual current of values between 5 $I_{\Delta n}$ and 500A (among the following list: 5A, 10A, 20A, 50A, 100A, 200A):		
	The test switch S1 and the RCCB being in the closed position, the residual current is suddenly established by closing the test switch S2		

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: __5__A (value 1 between 5A and 200A) ..... :	D0+D1-1 –21ms D0+D1-2 –20ms D0+D1-3 –20ms	P
	- maximum break time (ms) at: __10__A (value 2 between 5A and 200A) ..... :	D0+D1-1 –21ms D0+D1-2 –19ms D0+D1-3 –16ms	P
	- maximum break time (ms) at: __20__A (value 3 between 5A and 200A) ..... :	D0+D1-1 –19ms D0+D1-2 –22ms D0+D1-3 –15ms	P
	- maximum break time (ms) at: __50__A (value 4 between 5A and 200A) ..... :	D0+D1-1 –21ms D0+D1-2 –14ms D0+D1-3 –18ms	P
	- maximum break time (ms) at: __100__A (value 5 between 5A and 200A) ..... :	D0+D1-1 –17ms D0+D1-2 –15ms D0+D1-3 –18ms	P
	- maximum break time (ms) at: _200_A (value 6 between 5A and 200A) ..... :	D0+D1-1 –26ms D0+D1-2 –20ms D0+D1-3 –19ms	P
	- maximum break time (ms) at: __500__A ..... :	D0+D1-1 –15ms D0+D1-2 –13ms D0+D1-3 –14ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during tests		N/A
9.9.2.6	a) Tests repeated at a temperature of -5 °C:		

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Clause	Requirement + Test	Result - Remark	Verdict
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		P
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-1 –76ms D0+D1-2 –74ms D0+D1-3 –75ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-1 –31ms D0+D1-2 –32ms D0+D1-3 –29ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-1 –20ms D0+D1-2 –23ms D0+D1-3 –21ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-1 –22ms D0+D1-2 –20ms D0+D1-3 –24ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$: 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated current:		
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test ..... :	80A	—
	- cross-sectional area (mm²) ..... :	25mm²	—

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Clause	Requirement + Test	Result - Remark	Verdict
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D0+D1-1 – Max. 74ms D0+D1-2 – Max. 71ms D0+D1-3 – Max. 73ms	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-1 –76ms D0+D1-2 –77ms D0+D1-3 –77ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-1 –32ms D0+D1-2 –31ms D0+D1-3 –28ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-1 –23ms D0+D1-2 –25ms D0+D1-3 –22ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-1 –24ms D0+D1-2 –16ms D0+D1-3 –21ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during the tests		N/A
9.9.2.6	b) Tests repeated with the RCCB loaded with rated current:		

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Clause	Requirement + Test	Result - Remark	Verdict
	- test current (A): In at a temperature of +40 °C: until steady state conditions are reached ..... :	80A;+40 °C	—
	- cross-sectional area (mm²) ..... :	25mm²	—
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-1 –76ms D0+D1-2 –78ms D0+D1-3 –74ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-1 –33ms D0+D1-2 –30ms D0+D1-3 –30ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-1 –24ms D0+D1-2 –17ms D0+D1-3 –25ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-1 –19ms D0+D1-2 –18ms D0+D1-3 –20ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$ for 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during the tests		N/A
8.15	**Behaviour of RCCBs in case of earth fault currents comprising a d.c. component**		P
9.9.3	Additional verification of correct operation at residual currents with d.c. components for RCCBs type A		P
9.9.3.1	RCCB installed as for normal use, test circuits according to fig. 5 and 6		P
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) ..... :		N/A
9.9.3.1	Verification of the correct operation in case of a continuous rise of the residual pulsating direct current (see Table 20):		
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		P
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) ..... :	D0+D1-1 –20,6A/20,9mA D0+D1-2 –21,2mA/21,1mA D0+D1-3 –22,8mA/22,7mA	P
	- angle α = 90° (+/-) ..... :	D0+D1-1 –20,3mA/20,3mA D0+D1-2 –20,7mA/20,7mA D0+D1-3 –20,9mA/20,8mA	P
	- angle α = 135° (+/-) ..... :	D0+D1-1 –22,6mA/22,7mA D0+D1-2 –22,8mA/22,7mA D0+D1-3 –23,0mA/22,8mA	P
	No value exceeds the relevant specified limiting values		P
9.9.3.2	Verification of the correct operation in case of suddenly appearing residual pulsating direct currents by closing S2 (angle α = 0°)		
	RCCBs with $I_{\Delta n}$ < 0,03 A:		
	- maximum break time (ms) at: 2 $I_{\Delta n}$ (+/-) ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 4 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 0,5 A rms (+/-) ... :		N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :		N/A
	RCCBs with $I_{\Delta n}$ = 0,03 A:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :	D0+D1-1 –65ms/69ms D0+D1-2 –71ms/70ms D0+D1-3 –68ms/74ms	P
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :	D0+D1-1 –18ms/25ms D0+D1-2 –26ms/22ms D0+D1-3 –24ms/15ms	P
	- maximum break time (ms) at: 0,35 A rms (+/-) . :	D0+D1-1 –10ms/23ms D0+D1-2 –16ms/19ms D0+D1-3 –19ms/17ms	P
	- maximum break time (ms) at: 350 A rms (+/-) .. :	D0+D1-1 –19ms/18ms D0+D1-2 –15ms/18ms D0+D1-3 –18ms/10ms	P
	RCCBs with $I_{\Delta n}$ > 0,03 A:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :		N/A
	No value exceeds the relevant specified limiting value		N/A
9.9.3.3	Verification of the correct operation with the pole under test and one other pole loaded with rated current		
	- test current (A): In ..... :	80A	—
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		P
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) ..... :	D0+D1-1 –20,9mA/20,7mA D0+D1-2 –21,1mA/21,4mA D0+D1-3 –21,5mA/21,6mA	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- angle α = 90° (+/-) ..... :	D0+D1-1 –20,4mA/20,3mA D0+D1-2 –20,8mA/20,7mA D0+D1-3 –20,9mA/20,9mA	P
	- angle α = 135° (+/-) ..... :	D0+D1-1 –22,9mA/22,8mA D0+D1-2 –22,9mA/22,7mA D0+D1-3 –23,3mA/23,3mA	P
	No value exceeds the relevant specified limiting values		P
9.9.3.4	Verification of the correct operation in case of residual pulsating d.c. currents with angle α = 0° superimposed by smooth direct current of 0,006 A:		
	- steady increase of pulsating d.c. current from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		P
	- steady increase of pulsating d.c. current from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) (+/- 6 mA) ..... :	D0+D1-1 –21,9mA/21,9mA D0+D1-2 –22,6mA/22,7mA D0+D1-3 –22,3mA/22,4mA	P
	No value exceeds the relevant specified limiting values		P

	Tests "D1"		
8.12	**RCCBs functionally dependent on line voltage**		
	RCCBs functionally dependent on the line voltage, shall operate correctly between 0,85 and 1,1 times their rated voltage; voltage (V) ..... :		N/A
	Multipole RCCBs shall have all current paths supplied from the phases and neutral, if any		N/A
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		N/A
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) . :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- all values less than 0,85 times the rated voltage (V) ..... :	D1 - D2 - D3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) ..... :	D1 - D2 - D3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux ..... :	D1 - D2 - D3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts ..... :	D1 - D2 - D3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) ..... :		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) ..... :	D1 - D2 - D3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..... :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D1 - D2 - D3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		N/A
8.14	**Behaviour of RCCBs in case of current surges caused by impulse voltages**		P
9.19	**Verification of behaviour of RCCBs in case of current surges caused by impulse voltages**		P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	- peak value:200 A + 10/0%		P
	- virtual front time: 0,5 µs ± 30%		P
	- period of the following oscillatory wave: 10 µs ± 20%		P
	- each successive reverse peak: about 60% of the preceding peak		P
	The polarity shall be inverted after every two applications		P
	The interval between two consecutive applications shall be about 30 s		P
	During the test the RCCB shall not trip ..... :		P
	- break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-1 – Max. 75ms D0+D1-2 – Max. 68ms D0+D1-3 – Max. 72ms	P
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)		

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Clause	Requirement + Test	Result - Remark	Verdict
9.19.2.1	Test conditions		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	Peak value: 3000A +10/-0%		P
	Virtual front time: 0,8μs ± 20%		P
	Virtual time of half value: 20μs ± 20%		P
	Peak of reverse current: less than 30 % of peak value		P
	The polarity shall be inverted after every two applications		P
	The interval between two consecutive applications shall be about 30 s		P
9.19.2.2	S-type: During the test the RCCB shall not trip	D1 - D2 - D3 -	N/A
	- break time (ms) at $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed		P
	- break time (ms) at $I_{\Delta n}$ ..... :	D0+D1-1 – Max. 70ms D0+D1-2 – Max. 72ms D0+D1-3 – Max. 69ms	P
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ ..... :	800A	—
	Test circuit according to figure ..... :	7	—
	Point of test circuit which is directly earthed ..... :	Neutral point of the supply	—
	Grid distance "a" (mm) ..... :	35mm	—
	Prospective current (A) ..... :	800A	—
	Prospective current obtained (A) ..... :	815A	—
	Power factor ..... :	0,93~0,98	—
	Power factor obtained ..... :	0,95	
	Point of initiation: 45° ± 5°		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Test sequence: O-t-CO-t-CO on each pole in turn excluding the switched neutral pole		P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	D0+D1-1 – 264V/0,001mA D0+D1-2 – 264V/0,001mA D0+D1-3 – 264V/0,002mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) ..... :	D0+D1-1 – 480V D0+D1-2 – 480V D0+D1-3 – 480V	P
	b) ..... :	D0+D1-1 – 480V D0+D1-2 – 480V D0+D1-3 – 480V	P
	c) ..... :	D0+D1-1 – 480V D0+D1-2 – 480V D0+D1-3 – 480V	P
	d) ..... :	D1 - D2 - D3 -	N/A
	e) ..... :	D1 - D2 - D3 -	N/A
	No flashover or breakdown ..... :		P
	Making and breaking In at Un ..... :	D0+D1-1 –80A; 240V D0+D1-2 –80A; 240V D0+D1-3 –80A; 240V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) ..... :	D0+D1-1 – 37,5mA; 75ms D0+D1-2 – 37,5mA; 74ms D0+D1-3 – 37,5mA; 76ms	P
	The polyethylene sheet shows no holes		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) . :	D1 - D2 - D3 -	N/A
	- all values less than 0,85 times the rated voltage (V) ..... :	D1 - D2 - D3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) ..... :	D1 - D2 - D3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux ..... :	D1 - D2 - D3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		N/A
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts ..... :	D1 - D2 - D3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) ..... :		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		

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Clause	Requirement + Test	Result - Remark	Verdict
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) ..... :	D1 - D2 - D3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..... :	D1 - D2 - D3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D1 - D2 - D3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during tests		
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
8.11	**Test device**		
	RCCBs shall be provided with a test device		P
	Ampere-turns produced when operating the test device do not exceed 2,5 times the ampere-turns produced by $I_{\Delta n}$	1,57times	P
	Not possible to energize the circuit on the load side by operating the test device when the RCCB is in the open position		P
9.16	**Verification of the operation of the test device at the limits of rated voltage:**		
	a) RCCB at 0,85 times the rated voltage, test device actuated 25 times at intervals of 5 s ..... :	D0+D1-1 – 196V D0+D1-2– 196V D0+D1-3 – 196V	P
	b) test a) repeated at 1,1 times the rated voltage :	D0+D1-1 – 264V D0+D1-2 – 264V D0+D1-3– 264V	P

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Clause	Requirement + Test	Result - Remark	Verdict
	c) test b) repeated, but only once, the operating means of the test device being held in the closed position for 30 s ..... :	D0+D1-1 – 264V/30s D0+D1-2 – 264V/30s D0+D1-3 – 264V/30s	P
	RCCB operated at each test ..... :		P
	No change impairing further use ..... :		P
8.8	**Resistance to mechanical shock and impact**		
	RCCBs shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use		P
9.12.1.2	Mechanical shock		P
	Mechanical shock: 50 falls of 40 mm on one side; 50 falls on opposite side C turned through 90°; 50 falls on one side; 50 falls on opposite side		P
	No opening of RCCB during the test ..... :		P
9.12.2	Mechanical impact		
9.12.2.1	Impact test (10 blows, height 10 cm): no damage :		P
9.12.2.2	RCCBs for rail mounting downward vertical force of 50 N for 1 min, upward vertical force of 50 N for 1 min		P
	RCCB shall not become loose during test and no damage impairing its further use ..... :		P
9.12.2.3	RCCBs of plug-in type (under consideration)		N/A
8.13	**Behaviour of RCCBs in case of overcurrents in the main circuit**		
	RCCBs shall not operate under specified conditions of overcurrent		P
9.18.1	Verification of the limiting value of overcurrent in case of a load through a RCCB with two poles		
	RCCB connected as for normal use with a load equal to (A): 6 In switched on using a two-pole test switch for 1 s ..... :	480A/1s	P
	Test repeated three times with an interval of at least 1 min ..... :	1min	P
	The RCCB shall not open ..... :		P

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Clause	Requirement + Test	Result - Remark	Verdict

	RCCBs functionally dependent on the line voltage at rated voltage (Un) ..... :		N/A
9.18.2	Verification of the limiting value of overcurrent in case of a single phase load through a three-pole or four-pole RCCB		
	RCCB connected according to fig. 22		N/A
	Test current (A): 6 In closed by S1 for 1 s ..... :		—
	Test repeated three times for each possible combination of current paths with an interval of at least 1 min ..... :		N/A
	The RCCB shall not open ..... :		N/A
	RCCBs functionally dependent on the line voltage at rated voltage		N/A

	TEST SEQUENCE D (3 samples) **In=80A IΔn =30mA 3P+N A type**	**D0+D1-5**	**D0+D1-6**	**D0+D1-7**	**P**

	Tests "D0"										
8.5	**Operating characteristics**										
	For multiple settings of $I_{\Delta n}$ tests are made for each setting										N/A
9.9.1	RCCB installed as for normal use, test circuit according to fig. 4										P
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) ..... :										N/A
	Type	I_N A	$I_{\Delta N}$ A	Standard values of break time and non-actuating time at a residual current equal to							--
				$I_{\Delta N}$	2 $I_{\Delta N}$	5 $I_{\Delta N}$	5 $I_{\Delta N}$ or 0,25A **a)**	5A-200A, **b)**	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max.	--

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Clause	Requirement + Test						Result - Remark				Verdict
			0,03	0,3	0,15	--	0,04	0,04	0,04	break times	--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non-actuating times	--
	a) value to be decided by the manufacturer for this test										--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2	Off-load tests made at a temperature of 20 ± 5 °C										P
9.9.2.1	Verification of the correct operation in case of a steady increase residual current:										
	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) ..... :						D0+D1-5 – 6mA to 30mA D0+D1-6 – 6mA to 30mA D0+D1-7 – 6mA to 30mA				P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..... :						D0+D1-5 – 23,7mA to 23,9mA D0+D1-6 – 24,3mA to 24,4mA D0+D1-7 – 23,6mA to 23,7mA				P
9.9.2.2	Verification of the correct operation at closing on residual current										
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :						D0+D1-5 – Max. 71ms D0+D1-6 – Max. 72ms D0+D1-7 – Max. 72ms				P
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1										
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :						D0+D1-5 –73ms D0+D1-6 –76ms D0+D1-7 –78ms				P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :						D0+D1-5 –31ms D0+D1-6 –33ms D0+D1-7 –30ms				P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :						D1 - D2 - D3 -				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-5 –21ms D0+D1-6 –18ms D0+D1-7 –25ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-5 –20ms D0+D1-6 –22ms D0+D1-7 –22ms	P
	No value exceeds the relevant specified limiting value		P
9.9.2.4	Verification of the correct operation in case of sudden appearance of residual current of values between 5 $I_{\Delta n}$ and 500A (among the following list: 5A, 10A, 20A, 50A, 100A, 200A):		
	The test switch S1 and the RCCB being in the closed position, the residual current is suddenly established by closing the test switch S2		
	- maximum break time (ms) at: __5__A (value 1 between 5A and 200A) ..... :	D0+D1-5 –16ms D0+D1-6 –15ms D0+D1-7 –21ms	P
	- maximum break time (ms) at: __10__A (value 2 between 5A and 200A) ..... :	D0+D1-5 –23ms D0+D1-6 –17ms D0+D1-7 –15ms	P
	- maximum break time (ms) at: __20__A (value 3 between 5A and 200A) ..... :	D0+D1-5 –16ms D0+D1-6 –22ms D0+D1-7 –14ms	P
	- maximum break time (ms) at: __50__A (value 4 between 5A and 200A) ..... :	D0+D1-5 –20ms D0+D1-6 –19ms D0+D1-7 –18ms	P
	- maximum break time (ms) at: __100__A (value 5 between 5A and 200A) ..... :	D0+D1-5 –18ms D0+D1-6 –14ms D0+D1-7 –20ms	P
	- maximum break time (ms) at: _200_A (value 6 between 5A and 200A) ..... :	D0+D1-5 –16ms D0+D1-6 –15ms D0+D1-7 –21ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: __500__A..... :	D0+D1-5 –21ms D0+D1-6 –17ms D0+D1-7 –15ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during tests		N/A
9.9.2.6	a) Tests repeated at a temperature of -5 °C:		
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		P
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-5 –75ms D0+D1-6 –70ms D0+D1-7 –74ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-5 –29ms D0+D1-6 –31ms D0+D1-7 –33ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-5 –21ms D0+D1-6 –24ms D0+D1-7 –20ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-5 –23ms D0+D1-6 –27ms D0+D1-7 –19ms	P
	No value exceeds the relevant specified limiting value		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$: 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated current:		
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test ..... :	80A	—
	- cross-sectional area (mm²) ..... :	25mm²	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D0+D1-5 – Max. 68ms D0+D1-6 – Max. 70ms D0+D1-7 – Max. 71ms	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-5 –71ms D0+D1-6 –76ms D0+D1-7 –71ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-5 –30ms D0+D1-6 –33ms D0+D1-7 –28ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-5 –21ms D0+D1-6 –16ms D0+D1-7 –25ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-5 –19ms D0+D1-6 –22ms D0+D1-7 –24ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during the tests		N/A
9.9.2.6	b) Tests repeated with the RCCB loaded with rated current:		
	- test current (A): In at a temperature of +40 °C: until steady state conditions are reached ..... :	80A;+40 °C	—
	- cross-sectional area (mm²) ..... :	25mm²	—
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-5 –75ms D0+D1-6 –76ms D0+D1-7 –71ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-5 –27ms D0+D1-6 –30ms D0+D1-7 –30ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-5 –19ms D0+D1-6 –22ms D0+D1-7 –17ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-5 –21ms D0+D1-6 –18ms D0+D1-7 –24ms	P
	No value exceeds the relevant specified limiting value		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$ for 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during the tests		N/A
8.15	**Behaviour of RCCBs in case of earth fault currents comprising a d.c. component**		P
9.9.3	Additional verification of correct operation at residual currents with d.c. components for RCCBs type A		P
9.9.3.1	RCCB installed as for normal use, test circuits according to fig. 5 and 6		P
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) ..... :		N/A
9.9.3.1	Verification of the correct operation in case of a continuous rise of the residual pulsating direct current (see Table 20):		
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		P
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) ..... :	D0+D1-5 –21,6mA/21,6mA D0+D1-6 –21,5mA/21,7mA D0+D1-7 –21,9mA/21,8mA	P
	- angle α = 90° (+/-) ..... :	D0+D1-5 –20,9mA/20,9mA D0+D1-6 –20,8mA/20,8mA D0+D1-7 –21,3mA/21,1mA	P
	- angle α = 135° (+/-) ..... :	D0+D1-5 –23,6mA/23,4mA D0+D1-6 –23,3mA23,1mA D0+D1-7 –23,8mA/23,7mA	P

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Clause	Requirement + Test	Result - Remark	Verdict
	No value exceeds the relevant specified limiting values		P
9.9.3.2	Verification of the correct operation in case of suddenly appearing residual pulsating direct currents by closing S2 (angle α = 0°)		
	RCCBs with $I_{\Delta n}$ < 0,03 A:		
	- maximum break time (ms) at: 2 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 4 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 0,5 A rms (+/-) ... :		N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :		N/A
	RCCBs with $I_{\Delta n}$ = 0,03 A:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :	D0+D1-5 –70ms/69ms D0+D1-6 –76ms/77ms D0+D1-7 –71ms/69ms	P
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :	D0+D1-5 –27ms/27ms D0+D1-6 –26ms/24ms D0+D1-7 –28ms/23ms	P
	- maximum break time (ms) at: 0,35 A rms (+/-) . :	D0+D1-5 –19ms/21ms D0+D1-6 –19ms/19ms D0+D1-7 –17ms/19ms	P
	- maximum break time (ms) at: 350 A rms (+/-) .. :	D0+D1-5 –16ms/19ms D0+D1-6 –16ms/17ms D0+D1-7 –15ms/19ms	P
	RCCBs with $I_{\Delta n}$ > 0,03 A:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :		N/A
	No value exceeds the relevant specified limiting value		P
9.9.3.3	Verification of the correct operation with the pole under test and one other pole loaded with rated current		
	- test current (A): In ..... :	80A	—

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Clause	Requirement + Test	Result - Remark	Verdict
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		P
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) ..... :	D0+D1-5 –21,9mA/21,9mA D0+D1-6 –21,6mA/21,7mA D0+D1-7 –22,4mA/22,7mA	P
	- angle α = 90° (+/-) ..... :	D0+D1-5 –21,2mA/21,4mA D0+D1-6 –20,9mA/20,5mA D0+D1-7 –21,3mA/21,4mA	P
	- angle α = 135° (+/-) ..... :	D0+D1-5 –23,8mA/24,0mA D0+D1-6 –23,1mA/22,9mA D0+D1-7 –24,5mA/24,3mA	P
	No value exceeds the relevant specified limiting values		P
9.9.3.4	Verification of the correct operation in case of residual pulsating d.c. currents with angle α = 0° superimposed by smooth direct current of 0,006 A:		
	- steady increase of pulsating d.c. current from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		P
	- steady increase of pulsating d.c. current from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) (+/- 6 mA) ..... :	D0+D1-5 –22,7mA/22,5mA D0+D1-6 –22,9mA/22,4mA D0+D1-7 –22,5mA/22,4mA	P
	No value exceeds the relevant specified limiting values		P

	Tests "D1"		
8.12	**RCCBs functionally dependent on line voltage**		
	RCCBs functionally dependent on the line voltage, shall operate correctly between 0,85 and 1,1 times their rated voltage; voltage (V) .....:		N/A
	Multipole RCCBs shall have all current paths supplied from the phases and neutral, if any		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		N/A
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:		N/A
	- all values less than 0,85 times the rated voltage (V) .....:		N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:		N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:		N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:		N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:		N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:		N/A
	- maximum break time (ms) at: 500 A .....:		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:		N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A .....:	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		N/A
8.14	**Behaviour of RCCBs in case of current surges caused by impulse voltages**		P
9.19	**Verification of behaviour of RCCBs in case of current surges caused by impulse voltages**		P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)		P

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Clause	Requirement + Test	Result - Remark	Verdict
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	- peak value: 200 A + 10/0%		P
	- virtual front time: 0,5 μs ± 30%		P
	- period of the following oscillatory wave: 10 μs ± 20%		P
	- each successive reverse peak: about 60% of the preceding peak		P
	The polarity shall be inverted after every two applications		P
	The interval between two consecutive applications shall be about 30 s		P
	During the test the RCCB shall not trip .....:		P
	- break time (ms) at: $I_{\Delta n}$ .....:	D0+D1-5 – Max.72ms D0+D1-6– Max. 69ms D0+D1-7– Max. 70ms	P
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20μs surge current)		
9.19.2.1	Test conditions		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	Peak value: 3000A +10/-0%		P
	Virtual front time: 0,8μs ± 20%		P
	Virtual time of half value: 20μs ± 20%		P
	Peak of reverse current: less than 30 % of peak value		P
	The polarity shall be inverted after every two applications		P
	The interval between two consecutive applications shall be about 30 s		P
9.19.2.2	S-type: During the test the RCCB shall not trip		N/A
	- break time (ms) at $I_{\Delta n}$ .....:		N/A
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- break time (ms) at $I_{\Delta n}$ .....:	D0+D1-5 – Max. 77ms D0+D1-6 – Max. 72ms D0+D1-7 – Max. 74ms	P
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ .....:	800A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	Neutral point of the supply	—
	Grid distance "a" (mm) .....:	35mm	—
	Prospective current (A) .....:	800A	—
	Prospective current obtained (A) .....:	803A	—
	Power factor .....:	0,93~0,98	—
	Power factor obtained .....:	0,95	
	Point of initiation: 45° ± 5°		P
	Test sequence: O-t-CO-t-CO on each pole in turn excluding the switched neutral pole		P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	D0+D1-5 – 457V/0,002mA D0+D1-6 – 457V/0,002mA D0+D1-7 – 457V/0,001mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) .....:	D0+D1-5 – 830V D0+D1-6 – 830V D0+D1-7 – 830V	P
	b) .....:	D0+D1-5 – 830V D0+D1-6 – 830V D0+D1-7 – 830V	P
	c) .....:	D0+D1-5 – 830V D0+D1-6 – 830V D0+D1-7 – 830V	P
	d) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	e) .....:		N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	D0+D1-5 –125A; 415V D0+D1-6 –125A; 415V D0+D1-7 –125A; 415V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	D0+D1-5 – 37,5mA; 79ms D0+D1-6 – 37,5mA; 70ms D0+D1-7 – 37,5mA; 75ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:		N/A
	- all values less than 0,85 times the rated voltage (V) .....:		N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:		N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:		N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		N/A
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:		N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:		N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A .....:	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 500 A .....:	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	D1 - D2 - D3 -	N/A
	No tripping during tests		
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
8.11	**Test device**		
	RCCBs shall be provided with a test device		P
	Ampere-turns produced when operating the test device do not exceed 2,5 times the ampere-turns produced by $I_{\Delta n}$	1,47times	P
	Not possible to energize the circuit on the load side by operating the test device when the RCCB is in the open position		P
9.16	**Verification of the operation of the test device at the limits of rated voltage:**		
	a) RCCB at 0,85 times the rated voltage, test device actuated 25 times at intervals of 5 s .....:	D0+D1-5 – 340V D0+D1-6 – 340V D0+D1-7 – 340V	P

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Clause	Requirement + Test	Result - Remark	Verdict
	b) test a) repeated at 1,1 times the rated voltage :	D0+D1-5 – 457V D0+D1-6 – 457V D0+D1-7 – 457V	P
	c) test b) repeated, but only once, the operating means of the test device being held in the closed position for 30 s .....:	D0+D1-5 – 457V/30s D0+D1-6 – 457V/30s D0+D1-7 – 457V/30s	P
	RCCB operated at each test .....:		P
	No change impairing further use .....:		P
8.8	**Resistance to mechanical shock and impact**		
	RCCBs shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use		P
9.12.1.2	Mechanical shock		P
	Mechanical shock: 50 falls of 40 mm on one side; 50 falls on opposite side C turned through 90°; 50 falls on one side; 50 falls on opposite side		P
	No opening of RCCB during the test .....:		P
9.12.2	Mechanical impact		
9.12.2.1	Impact test (10 blows, height 10 cm): no damage :		P
9.12.2.2	RCCBs for rail mounting downward vertical force of 50 N for 1 min, upward vertical force of 50 N for 1 min		P
	RCCB shall not become loose during test and no damage impairing its further use .....:		P
9.12.2.3	RCCBs of plug-in type (under consideration)		N/A
8.13	**Behaviour of RCCBs in case of overcurrents in the main circuit**		
	RCCBs shall not operate under specified conditions of overcurrent		P
9.18.1	Verification of the limiting value of overcurrent in case of a load through a RCCB with two poles		N/A
	RCCB connected as for normal use with a load equal to (A): 6 In switched on using a two-pole test switch for 1 s .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test repeated three times with an interval of at least 1 min .....:		N/A
	The RCCB shall not open .....:		N/A
	RCCBs functionally dependent on the line voltage at rated voltage (Un) .....:		N/A
9.18.2	Verification of the limiting value of overcurrent in case of a single phase load through a three-pole or four-pole RCCB		
	RCCB connected according to fig. 22		P
	Test current (A): 6 In closed by S1 for 1 s .....:	480A/1s	—
	Test repeated three times for each possible combination of current paths with an interval of at least 1 min .....:	1min	P
	The RCCB shall not open .....:		P
	RCCBs functionally dependent on the line voltage at rated voltage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE D (3 samples) **D0+D1-4:In=80A IΔn =30mA 1P+N AC type** **D0+D1-8:In=80A IΔn =30mA 3P+N AC type**	**D0+D1-4**	**D0+D1-8**	**P**

	Tests "D0"										
8.5	**Operating characteristics**										
	For multiple settings of $I_{\Delta n}$ tests are made for each setting										N/A
9.9.1	RCCB installed as for normal use, test circuit according to fig. 4										P
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) ..... :										N/A
	Type	I_N A	$I_{\Delta N}$ A	Standard values of break time and non-actuating time at a residual current equal to							--
				$I_{\Delta N}$	2 $I_{\Delta N}$	5 $I_{\Delta N}$	5 $I_{\Delta N}$ or 0,25A **a)**	5A-200A, **b)**	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non-actuating times	--
	a) value to be decided by the manufacturer for this test										--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2	Off-load tests made at a temperature of 20 ± 5 °C										P
9.9.2.1	Verification of the correct operation in case of a steady increase residual current:										

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Clause	Requirement + Test	Result - Remark	Verdict
	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) ..... :	D0+D1-4 – 6mA to 30mA D0+D1-8 – 6mA to 30mA	P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..... :	D0+D1-4– 24,3 mA to 24,5mA D0+D1-8– 23,7mA to 23,8mA	P
9.9.2.2	Verification of the correct operation at closing on residual current		
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D0+D1-4– Max. 79ms D0+D1-8– Max. 73ms	P
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-4–78ms D0+D1-8–76ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-4–27ms D0+D1-8–33ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-4–20ms D0+D1-8–20ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-4–18ms D0+D1-8–21ms	P
	No value exceeds the relevant specified limiting value		P
9.9.2.4	Verification of the correct operation in case of sudden appearance of residual current of values between 5 $I_{\Delta n}$ and 500A (among the following list: 5A, 10A, 20A, 50A, 100A, 200A):		
	The test switch S1 and the RCCB being in the closed position, the residual current is suddenly established by closing the test switch S2		
	- maximum break time (ms) at: __5__A (value 1 between 5A and 200A) ..... :	D0+D1-4–20ms D0+D1-8–17ms	P
	- maximum break time (ms) at: __10__A (value 2 between 5A and 200A) ..... :	D0+D1-4–24ms D0+D1-8–18ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: __20__A (value 3 between 5A and 200A) ..... :	D0+D1-4–19ms D0+D1-8–19ms	P
	- maximum break time (ms) at: __50__A (value 4 between 5A and 200A) ..... :	D0+D1-4–16ms D0+D1-8–18ms	P
	- maximum break time (ms) at: __100__A (value 5 between 5A and 200A) ..... :	D0+D1-4–14ms D0+D1-8–21ms	P
	- maximum break time (ms) at: _200_A (value 6 between 5A and 200A) ..... :	D0+D1-4–21ms D0+D1-8–9ms	P
	- maximum break time (ms) at: __500__A..... :	D0+D1-4–21ms D0+D1-8–16ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during tests		N/A
9.9.2.6	a) Tests repeated at a temperature of -5 °C:		
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		P
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-4–76ms D0+D1-8–76ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-4–31ms D0+D1-8–31ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-4–25ms D0+D1-8–20ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 500 A ..... :	D0+D1-4–22ms D0+D1-8–20ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$: 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated current:		
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test ..... :	80A	—
	- cross-sectional area (mm²) ..... :	25mm²	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D0+D1-4– Max. 73ms D0+D1-8– Max. 70ms	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-4–78ms D0+D1-8–74ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-4–29ms D0+D1-8–30ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-4–20ms D0+D1-8–17ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-4–17ms D0+D1-8–19ms	P
	No value exceeds the relevant specified limiting value		P

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Clause	Requirement + Test	Result - Remark	Verdict

	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during the tests		N/A
9.9.2.6	b) Tests repeated with the RCCB loaded with rated current:		
	- test current (A): In at a temperature of +40 °C: until steady state conditions are reached ..... :	80A;+40 °C	—
	- cross-sectional area (mm²) ..... :	25mm²	—
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0+D1-4–76ms D0+D1-8–74ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0+D1-4–32ms D0+D1-8–30ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D0+D1-4–25ms D0+D1-8–24ms	P
	- maximum break time (ms) at: 500 A ..... :	D0+D1-4–23ms D0+D1-8–22ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$ for 0,06 s ..... :		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :		N/A
	No tripping during the tests		N/A
8.15	**Behaviour of RCCBs in case of earth fault currents comprising a d.c. component**		N/A
9.9.3	Additional verification of correct operation at residual currents with d.c. components for RCCBs type A		N/A
9.9.3.1	RCCB installed as for normal use, test circuits according to fig. 5 and 6		N/A
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) ..... :		N/A
9.9.3.1	Verification of the correct operation in case of a continuous rise of the residual pulsating direct current (see Table 20):		
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) ..... :		N/A
	- angle α = 90° (+/-) ..... :		N/A
	- angle α = 135° (+/-) ..... :		N/A
	No value exceeds the relevant specified limiting values		N/A
9.9.3.2	Verification of the correct operation in case of suddenly appearing residual pulsating direct currents by closing S2 (angle α = 0°)		
	RCCBs with $I_{\Delta n}$ < 0,03 A:		
	- maximum break time (ms) at: 2 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 4 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 0,5 A rms (+/-) ... :		N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :		N/A
	RCCBs with $I_{\Delta n}$ = 0,03 A:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 0,35 A rms (+/-) . :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	- maximum break time (ms) at: 350 A rms (+/-) .. :		N/A
	RCCBs with $I_{\Delta n}$ > 0,03 A:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :		N/A
	No value exceeds the relevant specified limiting value		N/A
9.9.3.3	Verification of the correct operation with the pole under test and one other pole loaded with rated current		
	- test current (A): In ..... :		—
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) ..... :		N/A
	- angle α = 90° (+/-) ..... :		N/A
	- angle α = 135° (+/-) ..... :		N/A
	No value exceeds the relevant specified limiting values		N/A
9.9.3.4	Verification of the correct operation in case of residual pulsating d.c. currents with angle α = 0° superimposed by smooth direct current of 0,006 A:		
	- steady increase of pulsating d.c. current from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- steady increase of pulsating d.c. current from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) (+/- 6 mA) ..... :		N/A
	No value exceeds the relevant specified limiting values		N/A

	Tests "D1"	
8.12	**RCCBs functionally dependent on line voltage**	

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Clause	Requirement + Test	Result - Remark	Verdict
	RCCBs functionally dependent on the line voltage, shall operate correctly between 0,85 and 1,1 times their rated voltage; voltage (V) .....:		N/A
	Multipole RCCBs shall have all current paths supplied from the phases and neutral, if any		N/A
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		N/A
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:		N/A
	- all values less than 0,85 times the rated voltage (V) .....:		N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:		N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:		N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:		N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:		N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:		N/A
	- maximum break time (ms) at: 500 A .....:		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:		N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A .....:	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		N/A
8.14	**Behaviour of RCCBs in case of current surges caused by impulse voltages**		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.19	**Verification of behaviour of RCCBs in case of current surges caused by impulse voltages**		P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	- peak value: 200 A + 10/0%		P
	- virtual front time: 0,5 µs ± 30%		P
	- period of the following oscillatory wave: 10 µs ± 20%		P
	- each successive reverse peak: about 60% of the preceding peak		P
	The polarity shall be inverted after every two applications		P
	The interval between two consecutive applications shall be about 30 s		P
	During the test the RCCB shall not trip .....:		P
	- break time (ms) at: $I_{\Delta n}$ .....:	D0+D1-4 – Max. 65ms D0+D1-8 – Max. 68ms	P
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)		
9.19.2.1	Test conditions		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	Peak value: 3000A +10/-0%		P
	Virtual front time: 0,8µs ± 20%		P
	Virtual time of half value: 20µs ± 20%		P
	Peak of reverse current: less than 30 % of peak value		P
	The polarity shall be inverted after every two applications		P
	The interval between two consecutive applications shall be about 30 s		P
9.19.2.2	S-type: During the test the RCCB shall not trip		N/A
	- break time (ms) at $I_{\Delta n}$ .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed		P
	- break time (ms) at $I_{\Delta n}$ .....:	D0+D1-4 – Max. 70ms D0+D1-8 – Max. 65ms	P
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ .....:	800A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	Neutral point of the supply	—
	Grid distance "a" (mm) .....:	35mm	—
	Prospective current (A) .....:	800A	—
	Prospective current obtained (A) .....:	D0+D1-4 – 815A D0+D1-8 – 803A	—
	Power factor .....:	0,93~0,98	—
	Power factor obtained .....:	0,95	
	Point of initiation: 45° ± 5°		P
	Test sequence: O-t-CO-t-CO on each pole in turn excluding the switched neutral pole		P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	D0+D1-4 – 264V/0,002mA D0+D1-8 – 457V/0,001mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) .....:	D0+D1-4 – 480V D0+D1-8 – 830V	P
	b) .....:	D0+D1-4 – 480V D0+D1-8 – 830V	P
	c) .....:	D0+D1-4 – 480V D0+D1-8 – 830V	P
	d) .....:		N/A
	e) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	D0+D1-4 –80A; 240V D0+D1-8 –80A; 415V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	D0+D1-4 – 37,5mA; 71ms D0+D1-8 – 37,5mA; 69ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:		N/A
	- all values less than 0,85 times the rated voltage (V) .....:		N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:		N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:		N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		N/A
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:		N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		

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Clause	Requirement + Test	Result - Remark	Verdict
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:		N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A .....:	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A .....:	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	D1 - D2 - D3 -	N/A
	No tripping during tests		
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
8.11	**Test device**		
	RCCBs shall be provided with a test device		P
	Ampere-turns produced when operating the test device do not exceed 2,5 times the ampere-turns produced by $I_{\Delta n}$	D0+D1-4 –1,57times D0+D1-8 –1,47times	P
	Not possible to energize the circuit on the load side by operating the test device when the RCCB is in the open position		P
9.16	**Verification of the operation of the test device at the limits of rated voltage:**		
	a) RCCB at 0,85 times the rated voltage, test device actuated 25 times at intervals of 5 s .....:	D0+D1-4 – 196V D0+D1-8 – 340V	P
	b) test a) repeated at 1,1 times the rated voltage :	D0+D1-4 – 264V D0+D1-8 – 457V	P
	c) test b) repeated, but only once, the operating means of the test device being held in the closed position for 30 s .....:	D0+D1-4 – 264V/30s D0+D1-8 – 457V/30s	P
	RCCB operated at each test .....:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	No change impairing further use .....:		P
8.8	**Resistance to mechanical shock and impact**		
	RCCBs shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use		P
9.12.1.2	Mechanical shock		P
	Mechanical shock: 50 falls of 40 mm on one side; 50 falls on opposite side C turned through 90°; 50 falls on one side; 50 falls on opposite side		P
	No opening of RCCB during the test .....:		P
9.12.2	Mechanical impact		
9.12.2.1	Impact test (10 blows, height 10 cm): no damage :		P
9.12.2.2	RCCBs for rail mounting downward vertical force of 50 N for 1 min, upward vertical force of 50 N for 1 min		P
	RCCB shall not become loose during test and no damage impairing its further use .....:		P
9.12.2.3	RCCBs of plug-in type (under consideration)		N/A
8.13	**Behaviour of RCCBs in case of overcurrents in the main circuit**		
	RCCBs shall not operate under specified conditions of overcurrent		P
9.18.1	Verification of the limiting value of overcurrent in case of a load through a RCCB with two poles		P
	RCCB connected as for normal use with a load equal to (A): 6 In switched on using a two-pole test switch for 1 s .....:	D0+D1-4 – 480A/1s	P
	Test repeated three times with an interval of at least 1 min .....:	1min	P
	The RCCB shall not open .....:		P
	RCCBs functionally dependent on the line voltage at rated voltage (Un) .....:		N/A
9.18.2	Verification of the limiting value of overcurrent in case of a single phase load through a three-pole or four-pole RCCB		

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Clause	Requirement + Test	Result - Remark	Verdict

	RCCB connected according to fig. 22		P
	Test current (A): 6 In closed by S1 for 1 s .....:	D0+D1-8– 480A/1s	—
	Test repeated three times for each possible combination of current paths with an interval of at least 1 min .....:	1min	P
	The RCCB shall not open .....:		P
	RCCBs functionally dependent on the line voltage at rated voltage		N/A

	TEST SEQUENCE D (1 samples) **D0-1:In=80A IΔn =100mA 1P+N A type** **D0-2:In=80A IΔn =300mA 1P+N A type**	**D0-1**	**D0-2**	

	Tests "D0"										
8.5	**Operating characteristics**										
	For multiple settings of $I_{\Delta n}$ tests are made for each setting										N/A
9.9.1	RCCB installed as for normal use, test circuit according to fig. 4										P
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) ..... :										N/A
	Type	I_N A	$I_{\Delta N}$ A	Standard values of break time and non-actuating time at a residual current equal to							--
				$I_{\Delta N}$	2 $I_{\Delta N}$	5 $I_{\Delta N}$	5 $I_{\Delta N}$ or 0,25A **a)**	5A-200A, **b)**	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--

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Clause	Requirement + Test						Result - Remark				Verdict

	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non-actuating times	--
	a) value to be decided by the manufacturer for this test										--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2	Off-load tests made at a temperature of 20 ± 5 °C										P
9.9.2.1	Verification of the correct operation in case of a steady increase residual current:										
	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) ..... :						D0-1– 20mA to 100mA D0-2– 60mA to 300mA				P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..... :						D0-1– 70,6mA to 71,8mA D0-2– 218mA to 229mA				P
9.9.2.2	Verification of the correct operation at closing on residual current										
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :						D0-1– Max. 28ms D0-2– Max. 29ms				P
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1										
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :						D0-1–32ms D0-2–29ms				P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :						D0-1 –17ms D0-2–20ms				P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :						D0-1 –17ms D0-2–19ms				P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :						D1 - D2 - D3 -				N/A
	- maximum break time (ms) at: 500 A ..... :						D0-1–24ms D0-2–25ms				P
	No value exceeds the relevant specified limiting value										P

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Clause	Requirement + Test	Result - Remark	Verdict

9.9.2.4	Verification of the correct operation in case of sudden appearance of residual current of values between 5 $I_{\Delta n}$ and 500A (among the following list: 5A, 10A, 20A, 50A, 100A, 200A):		
	The test switch S1 and the RCCB being in the closed position, the residual current is suddenly established by closing the test switch S2		
	- maximum break time (ms) at: __5__A (value 1 between 5A and 200A) ..... :	D0-1–16ms D0-2–26ms	P
	- maximum break time (ms) at: __10__A (value 2 between 5A and 200A) ..... :	D0-1–19ms D0-2–19ms	P
	- maximum break time (ms) at: __20__A (value 3 between 5A and 200A) :	D0-1–16ms D0-2–18ms	P
	- maximum break time (ms) at: __50__A (value 4 between 5A and 200A) ..... :	D0-1–29ms D0-2–16ms	P
	- maximum break time (ms) at: __100__A (value 5 between 5A and 200A) ..... :	D0-1–19ms D0-2–22ms	P
	- maximum break time (ms) at: _200_A (value 6 between 5A and 200A) ..... :	D0-1–31ms D0-2–24ms	P
	- maximum break time (ms) at: __500__A..... :	D0-1–25ms D0-2–29ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.9.2.6	a) Tests repeated at a temperature of -5 °C:		
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		P
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0-1–32ms D0-2–27ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0-1–21ms D0-2–23ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D0-1–25ms D0-2–21ms	P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D0-1–24ms D0-2–27ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$: 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated current:		
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test ..... :	80A	—
	- cross-sectional area (mm²) ..... :	25mm²	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D0-1– Max. 33ms D0-2– Max. 28ms	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0-1–32ms D0-2–29ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0-1–25ms D0-2–19ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D0-1–20ms D0-2–21ms	P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D0-1–24ms D0-2–26ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during the tests		N/A
9.9.2.6	b) Tests repeated with the RCCB loaded with rated current:		
	- test current (A): In at a temperature of +40 °C: until steady state conditions are reached ..... :	80A;+40 °C	—
	- cross-sectional area (mm²) ..... :	25mm²	—
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0-1–29ms D0-2–31ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0-1–21ms D0-2–24ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D0-1–20ms D0-2–20ms	P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D0-1–17ms D0-2–25ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$ for 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during the tests		N/A
8.15	**Behaviour of RCCBs in case of earth fault currents comprising a d.c. component**		P
9.9.3	Additional verification of correct operation at residual currents with d.c. components for RCCBs type A		P
9.9.3.1	RCCB installed as for normal use, test circuits according to fig. 5 and 6		P
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) ..... :		N/A
9.9.3.1	Verification of the correct operation in case of a continuous rise of the residual pulsating direct current (see Table 20):		
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		P
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) ..... :	D0-1–92,5mA/81,3mA D0-2–247mA/269mA	P
	- angle α = 90° (+/-) ..... :	D0-1–98,6mA/71,1mA D0-2–203mA/298mA	P
	- angle α = 135° (+/-) ..... :	D0-1–109mA/80,4mA D0-2–229mA/320mA	P
	No value exceeds the relevant specified limiting values		P

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Clause	Requirement + Test	Result - Remark	Verdict

9.9.3.2	Verification of the correct operation in case of suddenly appearing residual pulsating direct currents by closing S2 (angle α = 0°)		
	RCCBs with $I_{\Delta n}$ < 0,03 A:		
	- maximum break time (ms) at: 2 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 4 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,5 A rms (+/-) ... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :	D1 - D2 - D3 -	N/A
	RCCBs with $I_{\Delta n}$ = 0,03 A:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,35 A rms (+/-) . :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :	D1 - D2 - D3 -	N/A
	RCCBs with $I_{\Delta n}$ > 0,03 A:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :	D0-1–14ms/23ms D0-2–23ms/16ms	P
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :	D0-1–16ms/8ms D0-2–9ms/15ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-) ..... :	D0-1–15ms/10ms D0-2–14ms/16ms	P
	- maximum break time (ms) at: 350 A rms (+/-) .. :	D0-1–19ms/16ms D0-2–10ms/15ms	P
	No value exceeds the relevant specified limiting value		P
9.9.3.3	Verification of the correct operation with the pole under test and one other pole loaded with rated current		
	- test current (A): In ..... :	80A	—
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		P
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) ..... :	D0-1–91,6mA/81,2mA D0-2–253mA/275mA	P
	- angle α = 90° (+/-) ..... :	D0-1–99,8mA/72,0mA D0-2–213mA/297mA	P
	- angle α = 135° (+/-) ..... :	D0-1–110mA/81,4mA D0-2–230mA/326mA	P
	No value exceeds the relevant specified limiting values		P
9.9.3.4	Verification of the correct operation in case of residual pulsating d.c. currents with angle α = 0° superimposed by smooth direct current of 0,006 A:		
	- steady increase of pulsating d.c. current from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		P
	- steady increase of pulsating d.c. current from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) (+/- 6 mA) ..... :	D0-1–89,8mA/83,2mA D0-2–234mA/267mA	P
	No value exceeds the relevant specified limiting values		P

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	TEST SEQUENCE D (1 samples) **D0-3:In=80A IΔn =100mA 1P+N AC type** **D0-4:In=80A IΔn =300mA 1P+N AC type**	**D0-3**	**D0-4**	

	Tests "D0"										
8.5	**Operating characteristics**										
	For multiple settings of $I_{\Delta n}$ tests are made for each setting										N/A
9.9.1	RCCB installed as for normal use, test circuit according to fig. 4										P
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) ..... :										N/A
	Type	I_N A	$I_{\Delta N}$ A	Standard values of break time and non-actuating time at a residual current equal to							--
				$I_{\Delta N}$	2 $I_{\Delta N}$	5 $I_{\Delta N}$	5 $I_{\Delta N}$ or 0,25A **a)**	5A-200A, **b)**	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non-actuating times	--
	a) value to be decided by the manufacturer for this test										--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2	Off-load tests made at a temperature of 20 ± 5 °C										P
9.9.2.1	Verification of the correct operation in case of a steady increase residual current:										

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Clause	Requirement + Test	Result - Remark	Verdict
	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) ..... :	D0-3– 20mA to 100mA D0-4– 60mA to 300mA	P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..... :	D0-3– 71,5mA to 71,7mA D0-4– 225mA to 226mA	P
9.9.2.2	Verification of the correct operation at closing on residual current		
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D0-3– Max. 29ms D0-4– Max. 27ms	P
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0-3–31ms D0-4–28ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0-3 –16ms D0-4 –24ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D0-3 –20ms D0-4 –23ms	P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D0-3–24ms D0-4–16ms	P
	No value exceeds the relevant specified limiting value		P
9.9.2.4	Verification of the correct operation in case of sudden appearance of residual current of values between 5 $I_{\Delta n}$ and 500A (among the following list: 5A, 10A, 20A, 50A, 100A, 200A):		
	The test switch S1 and the RCCB being in the closed position, the residual current is suddenly established by closing the test switch S2		
	- maximum break time (ms) at: __5__A (value 1 between 5A and 200A) ..... :	D0-3–22ms D0-4–22ms	P
	- maximum break time (ms) at: __10__A (value 1 between 5A and 200A) ..... :	D0-3–16ms D0-4–16ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: __20__A (value 1 between 5A and 200A) ..... :	D0-3–17ms D0-4–19ms	P
	- maximum break time (ms) at: __50__A (value 1 between 5A and 200A) ..... :	D0-3–20ms D0-4–16ms	P
	- maximum break time (ms) at: __100__A (value 1 between 5A and 200A) ..... :	D0-3–18ms D0-4–15ms	P
	- maximum break time (ms) at: _200_A (value 2 between 5A and 200A) ..... :	D0-3–11ms D0-4–18ms	P
	- maximum break time (ms) at: __500__A (value 1 between 5A and 200A) ..... :	D0-3–21ms D0-4–26ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.9.2.6	a) Tests repeated at a temperature of -5 °C:		
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		P
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0-3–28ms D0-4–30ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0-3–23ms D0-4–25ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D0-3–20ms D0-4–21ms	P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D0-3–24ms D0-4–22ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$: 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated current:		
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test ..... :	80A	—
	- cross-sectional area (mm²) ..... :	25mm²	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D0-3– Max. 29ms D0-4– Max. 26ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0-3–31ms D0-4–28ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0-3–20ms D0-4–17ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D0-3–20ms D0-4–20ms	P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D0-3–22ms D0-4–19ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during the tests		N/A
9.9.2.6	b) Tests repeated with the RCCB loaded with rated current:		
	- test current (A): In at a temperature of +40 °C: until steady state conditions are reached ..... :	80A;+40 °C	—
	- cross-sectional area (mm²) ..... :	25mm²	—

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Clause	Requirement + Test	Result - Remark	Verdict

	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	D0-3–29ms D0-4–31ms	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D0-3–25ms D0-4–26ms	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D0-3–21ms D0-4–22ms	P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D0-3–24ms D0-4–21ms	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$ for 0,06 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s ..... :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s ..... :	D1 - D2 - D3 -	N/A
	No tripping during the tests		N/A
8.15	**Behaviour of RCCBs in case of earth fault currents comprising a d.c. component**		N/A
9.9.3	Additional verification of correct operation at residual currents with d.c. components for RCCBs type A		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.9.3.1	RCCB installed as for normal use, test circuits according to fig. 5 and 6		N/A
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) ..... :		N/A
9.9.3.1	Verification of the correct operation in case of a continuous rise of the residual pulsating direct current (see Table 20):		
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) ..... :		N/A
	- angle α = 90° (+/-) ..... :		N/A
	- angle α = 135° (+/-) ..... :		N/A
	No value exceeds the relevant specified limiting values		N/A
9.9.3.2	Verification of the correct operation in case of suddenly appearing residual pulsating direct currents by closing S2 (angle α = 0°)		
	RCCBs with $I_{\Delta n}$ < 0,03 A:		
	- maximum break time (ms) at: 2 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 4 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,5 A rms (+/-) ... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :	D1 - D2 - D3 -	N/A
	RCCBs with $I_{\Delta n}$ = 0,03 A:		

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,35 A rms (+/-) . :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :	D1 - D2 - D3 -	N/A
	RCCBs with $I_{\Delta n}$ > 0,03 A:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-) ..... :		N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :		N/A
	No value exceeds the relevant specified limiting value		N/A
9.9.3.3	Verification of the correct operation with the pole under test and one other pole loaded with rated current		
	- test current (A): In ..... :		—
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) ..... :		N/A
	- angle α = 90° (+/-) ..... :		N/A
	- angle α = 135° (+/-) ..... :		N/A
	No value exceeds the relevant specified limiting values		N/A
9.9.3.4	Verification of the correct operation in case of residual pulsating d.c. currents with angle α = 0° superimposed by smooth direct current of 0,006 A:		

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Clause	Requirement + Test	Result - Remark	Verdict

	- steady increase of pulsating d.c. current from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n}$ > 0,01 A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- steady increase of pulsating d.c. current from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq$ 0,01 A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A
	- angle α = 0° (+/-) (+/- 6 mA) ..... :		N/A
	No value exceeds the relevant specified limiting values		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Tests "D2"(3 samples) **In=80A IΔn =30mA 1P+N A type**	**D2-1**	**D2-2**	**D2-3**	**P**
9.11.2.3c)	Verification of suitability in IT system: .....:				—
	Test circuit according to figure .....:	8			—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply			—
	Grid distance "a" (mm) .....:	35mm			—
	Test voltage 105% of rated phase to neutral voltage for the pole exclusively for the neutral	253V			P
	Test voltage 105% of rated phase to phase voltage for the other poles	436V			P
	Prospective current - 500A or - 10 I_n (A) .....:	10In			P
	Prospective current (A) .....:	800A			—
	Prospective current obtained (A) .....:	830A			—
	Power factor .....:	0,93~0,98			—
	Power factor obtained .....:	0,96			—
	Point of initiation: 0 ± 5° for the first tested pole, shifted by 30° for the other poles				P
	Test sequence: O-t-CO on each pole in turn				P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F				P
	After the tests no damage impairing further use				P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	D2-1 – 264V/0,001mA D2-2 – 264V/0,002mA D2-3 – 264V/0,002mA			P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:				
	a) .....:	D2-1 – 480V D2-2 – 480V D2-3 – 480V			P
	b) .....:	D2-1 – 480V D2-2 – 480V D2-3 – 480V			P

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Clause	Requirement + Test	Result - Remark	Verdict
	c) .....:	D2-1 – 480V D2-2 – 480V D2-3 – 480V	P
	d) .....:	D1 - D2 - D3 -	N/A
	e) .....:	D1 - D2 - D3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	D2-1 – 80A;240V D2-2 – 80A;240V D2-3 – 80A;240V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	D2-1 – 37,5mA; 75ms D2-2 – 37,5mA; 76ms D2-3 – 37,5mA; 74ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	D1 - D2 - D3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	D1 - D2 - D3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	D1 - D2 - D3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	D1 - D2 - D3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	D1 - D2 - D3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	D1 - D2 - D3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	D1 - D2 - D3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A .....:	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A .....:	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	D1 - D2 - D3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	No tripping during tests		N/A

	Tests "D2"(3 samples) **In=80A IΔn =30mA 3P+N A type**	**D2-7**	**D2-8**	**D2-9**	**P**
9.11.2.3c)	Verification of suitability in IT system: .....:				—
	Test circuit according to figure .....:	8			—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply			—
	Grid distance "a" (mm) .....:	35mm			—
	Test voltage 105% of rated phase to neutral voltage for the pole exclusively for the neutral	253V			P
	Test voltage 105% of rated phase to phase voltage for the other poles	436V			P
	Prospective current - 500A or - 10 I_n (A) .....:	10In			P
	Prospective current (A) .....:	800A			—
	Prospective current obtained (A) .....:	830A			—
	Power factor .....:	0,93~0,98			—
	Power factor obtained .....:	0,96			—
	Point of initiation: 0 ± 5° for the first tested pole, shifted by 30° for the other poles				P
	Test sequence: O-t-CO on each pole in turn				P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F				P
	After the tests no damage impairing further use				P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	D2-4 – 457V/0,001mA D2-5 – 457V/0,002mA D2-6 – 457V/0,002mA			P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:				
	a) .....:	D2-4 – 830V D2-5 – 830V D2-6 – 830V			P

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Clause	Requirement + Test	Result - Remark	Verdict
	b) .....:	D2-4 – 830V D2-5 – 830V D2-6 – 830V	P
	c) .....:	D2-4 – 830V D2-5 – 830V D2-6 – 830V	P
	d) .....:	D1 - D2 - D3 -	N/A
	e) .....:	D1 - D2 - D3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	D2-4 – 80A;415V D2-5 – 80A;415V D2-6 – 80A;415V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	D2-4 – 37,5mA; 72ms D2-5 – 37,5mA; 77ms D2-6 – 37,5mA; 76 ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	D1 - D2 - D3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	D1 - D2 - D3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	D1 - D2 - D3 -	N/A
	No value exceeds the specified limiting values		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Not possible to close the apparatus by manual operating means below Ux .....:	D1 - D2 - D3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	D1 - D2 - D3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	D1 - D2 - D3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	D1 - D2 - D3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	D1 - D2 - D3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A .....:	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	D1 - D2 - D3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	D1 - D2 - D3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		

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Clause	Requirement + Test	Result - Remark	Verdict
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A .....:	D1 - D2 - D3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:		N/A
	No tripping during tests		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE E (3 samples) In=80A IΔn =30mA 1P+N A type	E-1	E-2	E-3	P

8.7	**Performance at short-circuit currents**		
9.11.2.4	a) Verification of the coordination between the RCCB and the SCPD		P
	Verification of the coordination at the rated conditional short-circuit current (A): Inc .....:	10000A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	50mm	—
	Silver wire diameter (mm) or fuse .....:	0,85mm	—
	Prospective current (A) .....:	10000A	—
	Prospective current obtained (A) .....:	10450A	—
	Power factor .....:	0,45~0,50	—
	Power factor obtained .....:	0,46	—
	Point of initiation: 45° ± 5°		P
	Verification of I²t (kA²s) and Ip (kA) prior to testing ((≥1x ≤1,1x values of table 15), RCCB replaced by a connection having negligible impedance	(With an agreement of the manufacturer, these values could be higher than 1,1 times the values.)	P
	Test sequence: O-t-CO		P
	I²t (kA²s); Ip (kA) .....:	E-1 – 36,5 kA²s; 5,64kA E-2 – 34,9 kA²s; 5,71kA E-3 – 37,1 kA²s; 5,64kA	P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	E-1 – 264V /0,001mA E-2 – 264V /0,001mA E-3 – 264V /0,002mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		

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Clause	Requirement + Test	Result - Remark	Verdict
	a) .....:	E-1 – 480V E-2 – 480V E-3 – 480V	P
	b) .....:	E-1 – 480V E-2 – 480V E-3 – 480V	P
	c) .....:	E-1 – 480V E-2 – 480V E-3 – 480V	P
	d) .....:	E1 - E2 - E3 -	N/A
	e) .....:	E1 - E2 - E3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	E-1 – 80A; 240V E-2 – 80A; 240V E-3 – 80A; 240V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	E-1 – 37,5mA; 69ms E-2 – 37,5mA; 72ms E-3 – 37,5mA; 78ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	E1 - E2 - E3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	E1 - E2 - E3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	E1 - E2 - E3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:	E1 - E2 - E3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	E1 - E2 - E3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	E1 - E2 - E3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	E1 - E2 - E3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	E1 - E2 - E3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 500 A .....:	E1 - E2 - E3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	E1 - E2 - E3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 500 A .....:	E1 - E2 - E3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	E1 - E2 - E3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	E1 - E2 - E3 -	N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
9.11.2.2	Verification of the rated making and breaking capacity (A): Im .....:	800A	—
	Test circuit according to figure .....:	7	—
	Residual operating current (A): 10 $I_{\Delta n}$ .....:	300mA	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	35mm	—
	Prospective current (A) .....:	800A	—
	Prospective current obtained (A) .....:	816A	—
	Power factor .....:	0,93~0,98	—
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°		P
	Test sequence: CO-t-CO-t-CO		P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	E-1 – 264V/0,002mA E-2 – 264V/0,001mA E-3 – 264V/0,002mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	E-1 – 480V E-2 – 480V E-3 – 480V	P

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Clause	Requirement + Test	Result - Remark	Verdict
	b) .....:	E-1 – 480V E-2 – 480V E-3 – 480V	P
	c) .....:	E-1 – 480V E-2 – 480V E-3 – 480V	P
	d) .....:	E1 - E2 - E3 -	N/A
	e) .....:	E1 - E2 - E3 -	N/A
	No flashover or breakdown		P
	Making and breaking In at Un .....:	E-1 – 80A; 240V E-2 – 80A; 240V E-3 – 80A; 240V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	E-1 – 37,5mA; 72ms E-2 – 37,5mA; 73ms E-3 – 37,5mA; 70ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	E1 - E2 - E3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	E1 - E2 - E3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	E1 - E2 - E3 -	N/A
	No value exceeds the specified limiting values		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Not possible to close the apparatus by manual operating means below Ux .....:	E1 - E2 - E3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	E1 - E2 - E3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	E1 - E2 - E3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	E1 - E2 - E3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	E1 - E2 - E3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 500 A .....:	E1 - E2 - E3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:		N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:		N/A
	- maximum break time (ms) at: 500 A .....:		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:		N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		

	TEST SEQUENCE E (3 samples) **In=80A IΔn =30mA 3P+N A type**	**E-4**	**E-5**	**E-6**	**P**

8.7	**Performance at short-circuit currents**		
9.11.2.4	a) Verification of the coordination between the RCCB and the SCPD		P
	Verification of the coordination at the rated conditional short-circuit current (A): Inc .....:	10000A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	50mm	—
	Silver wire diameter (mm) or fuse .....:	0,85mm	—
	Prospective current (A) .....:	10000A	—
	Prospective current obtained (A) .....:	10340A	—
	Power factor .....:	0,45~0,50	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Power factor obtained .....:	0,46	—
	Point of initiation: 45° ± 5°		P
	Verification of I²t (kA²s) and Ip (kA) prior to testing ((≥1x ≤1,1x values of table 15), RCCB replaced by a connection having negligible impedance	(With an agreement of the manufacturer, these values could be higher than 1,1 times the values.)	P
	Test sequence: O-t-CO		P
	I²t (kA²s); Ip (kA) .....:	E-4 – 80,5 kA²s; 6,06kA E-5 – 88,4 kA²s; 6,13kA E-6 – 72,3 kA²s; 6,16kA	P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	E-4 – 457V /0,002mA E-5 – 457V /0,002mA E-6 – 457V /0,002mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	E-4 – 830V E-5 – 830V E-6 – 830V	P
	b) .....:	E-4 – 830V E-5 – 830V E-6 – 830V	P
	c) .....:	E-4 – 830V E-5 – 830V E-6 – 830V	P
	d) .....:	E1 - E2 - E3 -	N/A
	e) .....:	E1 - E2 - E3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	E-4 – 80A; 415V E-5 – 80A; 415V E-6 – 80A; 415V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	E-4 – 37,5mA; 69ms E-5 – 37,5mA; 73ms E-6 – 37,5mA; 75ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	E1 - E2 - E3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	E1 - E2 - E3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	E1 - E2 - E3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:	E1 - E2 - E3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	E1 - E2 - E3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	E1 - E2 - E3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	E1 - E2 - E3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	E1 - E2 - E3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	E1 - E2 - E3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 500 A .....:	E1 - E2 - E3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	E1 - E2 - E3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 500 A .....:	E1 - E2 - E3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	E1 - E2 - E3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	E1 - E2 - E3 -	N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
9.11.2.2	Verification of the rated making and breaking capacity (A): Im .....:	800A	—
	Test circuit according to figure .....:	7	—
	Residual operating current (A): 10 $I_{\Delta n}$ .....:	300mA	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	35mm	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Prospective current (A) .....:	800A	—
	Prospective current obtained (A) .....:	803A	—
	Power factor .....:	0,93~0,98	—
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°		P
	Test sequence: CO-t-CO-t-CO		P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	E-4 – 457V/0,002mA E-5 – 457V/0,002mA E-6 – 457V/0,002mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	E-4 – 830V E-5 – 830V E-6 – 830V	P
	b) .....:	E-4 – 830V E-5 – 830V E-6 – 830V	P
	c) .....:	E-4 – 830V E-5 – 830V E-6 – 830V	P
	d) .....:	E1 - E2 - E3 -	N/A
	e) .....:	E1 - E2 - E3 -	N/A
	No flashover or breakdown		P
	Making and breaking In at Un .....:	E-4 – 80A; 415V E-5 – 80A; 415V E-6 – 80A; 415V	P

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Clause	Requirement + Test	Result - Remark	Verdict
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	E-4 – 37,5mA; 71ms E-5 – 37,5mA; 75ms E-6 – 37,5mA; 74ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	E1 - E2 - E3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	E1 - E2 - E3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	E1 - E2 - E3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:	E1 - E2 - E3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	E1 - E2 - E3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		

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Clause	Requirement + Test	Result - Remark	Verdict
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	E1 - E2 - E3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	E1 - E2 - E3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	E1 - E2 - E3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	E1 - E2 - E3 -	N/A
	- maximum break time (ms) at: 500 A .....:	E1 - E2 - E3 -	N/A
	No value exceeds the relevant specified limiting value		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:		N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:		N/A
	- maximum break time (ms) at: 500 A .....:		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:		N/A
	No tripping during tests		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)	

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE F (3 samples) In=80A IΔn =30mA 1P+N A type	F-1	F-2	F-3	P

8.7	**Performance at short-circuit currents**		
9.11.2.4	Verification of the coordination between the RCCB and the SCPD		
	b) Verification of the coordination at the rated making and breaking capacity (A): Im .....:	800A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	35mm	—
	Silver wire diameter (mm) or fuse .....:	0,85mm	—
	Prospective current (A) .....:	800A	—
	Prospective current obtained (A) .....:	816A	—
	Power factor .....:	0,93~0,98	—
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°		P
	Test sequence: O-t-CO-t-CO		P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	F-1 – 264V/0,002mA F-2 – 264V/0,001mA F-3 – 264V/0,001mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	F-1 – 480V F-2 – 480V F-3 – 480V	P
	b) .....:	F-1 – 480V F-2 – 480V F-3 – 480V	P

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Clause	Requirement + Test	Result - Remark	Verdict
	c) .....:	F-1 – 480V F-2 – 480V F-3 – 480V	P
	d) .....:	F1 - F2 - F3 -	N/A
	e) .....:	F1 - F2 - F3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	F-1 – 80A; 240V F-2 – 80A; 240V F-3 – 80A; 240V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	F-1 – 37,5mA; 77ms F-2 – 37,5mA; 71ms F-3 – 37,5mA; 72ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	F1 - F2 - F3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	F1 - F2 - F3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	F1 - F2 - F3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	F1 - F2 - F3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	F1 - F2 - F3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
9.11.2.4	c) Verification of the coordination at the rated conditional residual short-circuit current (A): IΔc ..:	10000A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	50mm	—
	Silver wire diameter (mm) or fuse .....:	0,85mm	—
	Prospective current (A) .....:	10000A	—
	Prospective current obtained (A) .....:	10450A	—
	Power factor .....:	0,45~0,50	—
	Power factor obtained .....:	0,46	—
	Point of initiation: 45° ± 5°		
	Verification of I²t (kA²s) and Ip (kA) prior to testing (≥1x ≤1,1x values of table 15), RCCB replaced by a connection having negligible impedance	(With an agreement of the manufacturer, these values could be higher than 1,1 times the values.)	P
	Test sequence: O-t-CO-t-CO		P
	I²t (kA²s); Ip (kA) .....:	F-1 – 103 kA²s; 5,79kA F-2 – 62,5 kA²s; 5,72kA F-3 – 49,2 kA²s; 5,75kA	P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	F-1 – 264V/0,002mA F-2 – 264V/0,001mA F-3 – 264V/0,001mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	F-1 – 480V F-2 – 480V F-3 – 480V	P

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Clause	Requirement + Test	Result - Remark	Verdict
	b) .....:	F-1 – 480V F-2 – 480V F-3 – 480V	P
	c) .....:	F-1 – 480V F-2 – 480V F-3 – 480V	P
	d) .....:	F1 - F2 - F3 -	N/A
	e) .....:	F1 - F2 - F3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	F-1 –80A;240V F-2 – 80A;240V F-3 – 80A;240V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	F-1 – 37,5mA; 69ms F-2 – 37,5mA; 66ms F-3 – 37,5mA; 74ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	F1 - F2 - F3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	F1 - F2 - F3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
	No value exceeds the specified limiting values		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Not possible to close the apparatus by manual operating means below Ux .....:	F1 - F2 - F3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	F1 - F2 - F3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:		N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:		N/A
	- maximum break time (ms) at: 500 A .....:		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:		N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		

	TEST SEQUENCE F (3 samples) **In=16A IΔn =300mA 1P+N A type**	**F-4**	**F-5**	**F-6**	**P**

8.7	**Performance at short-circuit currents**		
9.11.2.4	Verification of the coordination between the RCCB and the SCPD		
	b) Verification of the coordination at the rated making and breaking capacity (A): Im .....:	500A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Grid distance "a" (mm) .....:	35mm	—
	Silver wire diameter (mm) or fuse .....:	0,35mm	—
	Prospective current (A) .....:	500A	—
	Prospective current obtained (A) .....:	503A	—
	Power factor .....:	0,95~1	—
	Power factor obtained .....:	0,96	—
	Point of initiation: 45° ± 5°		P
	Test sequence: O-t-CO-t-CO		P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	F-4 – 264V/0,001mA F-5 – 264V/0,001mA F-6 – 264V/0,001mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	F-4 – 480V F-5 – 480V F-6 – 480V	P
	b) .....:	F-4 – 480V F-5 – 480V F-6 – 480V	P
	c) .....:	F-4 – 480V F-5 – 480V F-6 – 480V	P
	d) .....:	F1 - F2 - F3 -	N/A
	e) .....:	F1 - F2 - F3 -	N/A
	No flashover or breakdown .....:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Making and breaking In at Un .....:	F-4 – 16A; 240V F-5 – 16A; 240V F-6 – 16A; 240V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	F-4 – 375mA; 27ms F-5 – 375mA; 31ms F-6 – 375mA; 25ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	F1 - F2 - F3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	F1 - F2 - F3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:	F1 - F2 - F3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	F1 - F2 - F3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	F1 - F2 - F3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	F1 - F2 - F3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
9.11.2.4	c) Verification of the coordination at the rated conditional residual short-circuit current (A): IΔc ..:	10000A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	50mm	—
	Silver wire diameter (mm) or fuse .....:	0,35mm	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Prospective current (A) .....:	10000A	—
	Prospective current obtained (A) .....:	10450A	—
	Power factor .....:	0,45~0,50	—
	Power factor obtained .....:	0,46	—
	Point of initiation: 45° ± 5°		
	Verification of I²t (kA²s) and Ip (kA) prior to testing (≥1x ≤1,1x values of table 15), RCCB replaced by a connection having negligible impedance	(With an agreement of the manufacturer, these values could be higher than 1,1 times the values.)	P
	Test sequence: O-t-CO-t-CO		P
	I²t (kA²s); Ip (kA) .....:	F-4 – 26,7 kA²s; 2,90kA F-5 – 34,1 kA²s; 3,17kA F-6 – 8,00 kA²s; 1,67kA	P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	F-4 – 264V/0,001mA F-5 – 264V/0,001mA F-6 – 264V/0,001mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	F-4 – 480V F-5 – 480V F-6 – 480V	P
	b) .....:	F-4 – 480V F-5 – 480V F-6 – 480V	P
	c) .....:	F-4 – 480V F-5 – 480V F-6 – 480V	P
	d) .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	e) .....:	F1 - F2 - F3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	F-4 – 16A;240V F-5 – 16A;240V F-6 – 16A;240V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	F-4 – 375mA; 28ms F-5 – 375mA; 25ms F-6 – 375mA; 26ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	F1 - F2 - F3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	F1 - F2 - F3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:	F1 - F2 - F3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:		N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:		N/A
	- maximum break time (ms) at: 500 A .....:		N/A
	No value exceeds the relevant specified limiting value		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:		N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		

	TEST SEQUENCE F (3 samples) **In=80A IΔn =30mA 3P+N A type**	**F-7**	**F-8**	**F-9**	**P**

8.7	**Performance at short-circuit currents**		
9.11.2.4	Verification of the coordination between the RCCB and the SCPD		
	b) Verification of the coordination at the rated making and breaking capacity (A): Im .....:	800A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	35mm	—
	Silver wire diameter (mm) or fuse .....:	0,85mm	—
	Prospective current (A) .....:	800A	—
	Prospective current obtained (A) .....:	803A	—
	Power factor .....:	0,93~0,98	—
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°		P
	Test sequence: O-t-CO-t-CO		P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P

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Clause	Requirement + Test	Result - Remark	Verdict
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	F-7 – 457V/0,002mA F-8 – 457V/0,002mA F-9 – 457V/0,001mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	F-7 – 830V F-8 – 830V F-9 – 830V	P
	b) .....:	F-7 – 830V F-8 – 830V F-9 – 830V	P
	c) .....:	F-7 – 830V F-8 – 830V F-9 – 830V	P
	d) .....:	F1 - F2 - F3 -	N/A
	e) .....:	F1 - F2 - F3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	F-7 – 80A; 415V F-8 – 80A; 415V F-9 – 80A; 415V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	F-7 – 37,5mA; 74ms F-8 – 37,5mA; 73ms F-9 – 37,5mA; 68ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		

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Clause	Requirement + Test	Result - Remark	Verdict
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	F1 - F2 - F3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	F1 - F2 - F3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:	F1 - F2 - F3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	F1 - F2 - F3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	F1 - F2 - F3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
9.11.2.4	c) Verification of the coordination at the rated conditional residual short-circuit current (A): IΔc ..:	10000A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	50mm	—
	Silver wire diameter (mm) or fuse .....:	0,85mm	—
	Prospective current (A) .....:	10000A	—
	Prospective current obtained (A) .....:	10450A	—
	Power factor .....:	0,45~0,50	—
	Power factor obtained .....:	0,46	—
	Point of initiation: 45° ± 5°		
	Verification of I^2t (kA^2s) and Ip (kA) prior to testing (≥1x ≤1,1x values of table 15), RCCB replaced by a connection having negligible impedance	(With an agreement of the manufacturer, these values could be higher than 1,1 times the values.)	P
	Test sequence: O-t-CO-t-CO		P

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Clause	Requirement + Test	Result - Remark	Verdict
	I^2t (kA^2s); Ip (kA) .....:	F-7 – 56,1 kA^2s; 5,81kA F-8 – 38,2 kA^2s; 5,89kA F-9 – 63,8 kA^2s; 5,78kA	P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	F-7 – 457V/0,002mA F-8 – 457V/0,002mA F-9 – 457V/0,001mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	F-7 – 830V F-8 – 830V F-9 – 830V	P
	b) .....:	F-7 – 830V F-8 – 830V F-9 – 830V	P
	c) .....:	F-7 – 830V F-8 – 830V F-9 – 830V	P
	d) .....:	F1 - F2 - F3 -	N/A
	e) .....:	F1 - F2 - F3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	F-7 – 80A;415V F-8 – 80A;415V F-9 – 80A;415V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	F-7 – 37,5mA; 72ms F-8 – 37,5mA; 71ms F-9 – 37,5mA; 75ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	F1 - F2 - F3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	F1 - F2 - F3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:	F1 - F2 - F3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	F1 - F2 - F3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:		N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:		N/A
	- maximum break time (ms) at: 500 A .....:		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:		N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:		N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE F (3 samples) In=16A IΔn =300mA 3P+N A type	F-10	F-11	F-12	P

8.7	**Performance at short-circuit currents**		
9.11.2.4	Verification of the coordination between the RCCB and the SCPD		
	b) Verification of the coordination at the rated making and breaking capacity (A): Im .....:	500A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	35mm	—
	Silver wire diameter (mm) or fuse .....:	0,35mm	—
	Prospective current (A) .....:	500A	—
	Prospective current obtained (A) .....:	510A	—
	Power factor .....:	0,95~1	—
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°		P
	Test sequence: O-t-CO-t-CO		P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	F-10 – 457V/0,002mA F-11 – 457V/0,003mA F-12 – 457V/0,002mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	F-10 – 830V F-11 – 830V F-12 – 830V	P
	b) .....:	F-10 – 830V F-11 – 830V F-12 – 830V	P

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Clause	Requirement + Test	Result - Remark	Verdict
	c) .....:	F-10 – 830V F-11 – 830V F-12 – 830V	P
	d) .....:	F1 - F2 - F3 -	N/A
	e) .....:	F1 - F2 - F3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	F-10 – 16A; 415V F-11 – 16A; 415V F-12 – 16A; 415V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	F-10 – 375mA; 26ms F-11 – 375mA; 28ms F-12 – 375mA; 27ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	F1 - F2 - F3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	F1 - F2 - F3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below Ux .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	F1 - F2 - F3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	F1 - F2 - F3 -	N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	F1 - F2 - F3 -	N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
9.11.2.4	c) Verification of the coordination at the rated conditional residual short-circuit current (A): IΔc ..:	10000A	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	The neutral point of the supply	—
	Grid distance "a" (mm) .....:	50mm	—
	Silver wire diameter (mm) or fuse .....:	0,35mm	—
	Prospective current (A) .....:	10000A	—
	Prospective current obtained (A) .....:	10450	—
	Power factor .....:	0,45~0,50	—
	Power factor obtained .....:	0,46	—
	Point of initiation: 45° ± 5°		
	Verification of I²t (kA²s) and Ip (kA) prior to testing (≥1x ≤1,1x values of table 15), RCCB replaced by a connection having negligible impedance	(With an agreement of the manufacturer, these values could be higher than 1,1 times the values.)	P
	Test sequence: O-t-CO-t-CO		P
	I²t (kA²s); Ip (kA) .....:	F-10 – 30,8 kA²s; 2,89kA F-11 – 34,2 kA²s; 3,19kA F-12 – 40,8 kA²s; 3,38kA	P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	F-10 – 457V/0,002mA F-11 – 457V/0,003mA F-12 – 457V/0,002mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a) .....:	F-10 – 830V F-11 – 830V F-12 – 830V	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	b) .....:	F-10 – 830V F-11 – 830V F-12 – 830V	P
	c) .....:	F-10 – 830V F-11 – 830V F-12 – 830V	P
	d) .....:	F1 - F2 - F3 -	N/A
	e) .....:	F1 - F2 - F3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	F-10 – 16A;415V F-11 – 16A;415V F-12 – 16A;415V	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	F-10 – 375mA; 29ms F-11 – 375mA; 28ms F-12 – 375mA; 25ms	P
	The polyethylene sheet shows no holes		P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .:	F1 - F2 - F3 -	N/A
	- all values less than 0,85 times the rated voltage (V) .....:	F1 - F2 - F3 -	N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms) .....:	F1 - F2 - F3 -	N/A
	No value exceeds the specified limiting values		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Not possible to close the apparatus by manual operating means below Ux .....:	F1 - F2 - F3 -	N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts .....:	F1 - F2 - F3 -	N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		
	RCCB connected according to fig. 4 at the rated voltage (Un) .....:		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:		N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		
	RCCB connected according to fig. 4		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	F1 - F2 - F3 -	N/A
	- maximum break time (ms) at: 500 A .....:	F1 - F2 - F3 -	N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s .....:	F1 - F2 - F3 -	N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	F1 - F2 - F3 -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE G (3 samples) In=80A IΔn =30mA 1P+N A type	G0-1	G0-2	G0-3	P

9.22	**Verification of reliability**		
9.22.1	Climatic test based on Clause 4 of IEC 60068-2-3:2000 and IEC 60068-3-4:		
	- number of cycles: 28	28 cycles	P
	- test temperature: upper temperature 55 °C ± 2 °C	55 °C	P
	Initial verification:		P
9.9.2.3	- maximum break time at $I_{\Delta n}$ (ms) .....:	G0-1 – 78ms G0-2 – 79ms G0-3 – 78ms	P
	No value exceeds the specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	G1 - G2 - G3 -	N/A
	No tripping during tests		N/A
	Climatic test: no tripping during 28 cycles test .....:		P
	Final verification: the RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	G0-1 – 59ms G0-2 – 62ms G0-3 – 67ms	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE G (3 samples) In=16A IΔn =300mA 1P+N A type	G0-4	G0-5	G0-6	P

9.22	**Verification of reliability**		
9.22.1	Climatic test based on Clause 4 of IEC 60068-2-3:2000 and IEC 60068-3-4:		
	- number of cycles: 28	28 cycles	P
	- test temperature: upper temperature 55 °C ± 2 °C	55 °C	P
	Initial verification:		P
9.9.2.3	- maximum break time at $I_{\Delta n}$ (ms) .....:	G0-4 – 31ms G0-5 – 34ms G0-6 – 30ms	P
	No value exceeds the specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	G1 - G2 - G3 -	N/A
	No tripping during tests		N/A
	Climatic test: no tripping during 28 cycles test .....:		P
	Final verification: the RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	G0-4 – 23ms G0-5 – 20ms G0-6 – 24ms	P

	TEST SEQUENCE G (3 samples) In=80A IΔn =30mA 3P+N A type	G0-7	G0-8	G0-9	P

9.22	**Verification of reliability**		
9.22.1	Climatic test based on Clause 4 of IEC 60068-2-3:2000 and IEC 60068-3-4:		
	- number of cycles: 28	28 cycles	P
	- test temperature: upper temperature 55 °C ± 2 °C	55 °C	P
	Initial verification:		P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.9.2.3	- maximum break time at $I_{\Delta n}$ (ms) .....:	G0-7 – 74ms G0-8 – 72ms G0-9 – 76ms	P
	No value exceeds the specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	G1 - G2 - G3 -	N/A
	No tripping during tests		N/A
	Climatic test: no tripping during 28 cycles test .....:		P
	Final verification: the RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	G0-7 – 62ms G0-8 – 69ms G0-9 – 70ms	P

	TEST SEQUENCE G (3 samples) **In=16A IΔn =300mA 3P+N A type**	**G0-10**	**G0-11**	**G0-12**	**P**

9.22	**Verification of reliability**		
9.22.1	Climatic test based on Clause 4 of IEC 60068-2-3:2000 and IEC 60068-3-4:		
	- number of cycles: 28	28 cycles	P
	- test temperature: upper temperature 55 °C ± 2 °C	55 °C	P
	Initial verification:		P
9.9.2.3	- maximum break time at $I_{\Delta n}$ (ms) .....:	G0-10 – 33ms G0-11 – 35ms G0-12 – 30ms	P
	No value exceeds the specified limiting value		P
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	G1 - G2 - G3 -	N/A
	No tripping during tests		N/A
	Climatic test: no tripping during 28 cycles test .....:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Final verification: the RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	G0-10 – 25ms G0-11 – 21ms G0-12 – 20ms	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE H (3 samples) **In=80A IΔn =30mA 3P+N A type**		
IEC 61543:			
table4-T1.1	**Harmonics, interharmonics**		P
table4-T1.2	**Signalling voltage**		P
table5-T2.3	**Conducted unidirectional transients of the ms and µs time scale**		P
	Test results of test sequence H:		
	General Since the models of the series have the same electrical components, 3P+N;80A;30mA;A type have been chosen to be submitted to test sequences H,I,J. One new set of samples is subjected to every test sequence. Climatic conditions during the tests: T: 22°C to 25°C RH: 50% to 55% Atmospheric pressure: 101kPa		

	Reference condition of IEC 61543: T2.3a		
	Conducted unidirectional transients of the ms and µs time scale		
	Voltage surge 1,2/50µs- 4kV peak for common mode 5kV peak for differential mode (IEC 61000-4-5)		
	Device under line voltage……..:		
	Differential mode (generator Z=2 ohms) on each possible combination of the current parts		
	Peak voltage: 4kV Impulses and polarity: 5 positive / 5 negative		P
	Common mode (generator Z=12 Ohms) between the earth terminal, the frame of the device and the other terminals connected together		
	Peak voltage: 5kV Impulses and polarity: 5 positive / 5 negative		P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict

	Performance criteria 5.1.2	No tripping during the test	P
	Performance criteria 5.1.2 After tests: trip time (ms) with IΔn	H-1: Max.70ms H-2: Max.72ms H-3: Max.71ms	P
	Reference condition of IEC 61543: T2.3b	Not performed as no tripping occurred during test T2.3a	

	TEST SEQUENCE I (3 samples) **In=80A IΔn =30mA 3P+N A type**		
IEC 61543:			
Table 5-T2.1	Conducted sine-wave voltages or currents		P
	Conducted oscillatory voltages or currents (IEC 61000-4-6)		
	Device under line voltage		
	Frequency range: 0,15 to 80MHz (generator Z=150Ohms) Test level 10V for IΔn>30mA Test level 3V for IΔn<30mA	Voltage level:10V (unmodulated signal) Modulation frequence: 1kHz Modulation depth:80% Application with EM clamp	P
	Performance criteria 5.1.1: No tripping during the tests under 0,3 IΔn(mA)	Done by sweeping all the frequency range Frequency step:1% Dwell time:3s	P
	Performance criteria 5.1.1: Trip under 1,25 IΔn(mA)	Done at 5 frequencies selected at random	P
Table 5-T2.5	Radiated high-frequency phenomena		P
	Radiated electromagnetic field (IEC 61000-4-3)		
	Device under line voltage		
	Test level 10V/m	10V/m, unmodulated signal Modulation frequency:1kHz Modulation depth:80% Logperiodic antenna	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Performance criteria 5.1.1: No tripping during the tests under 0,3 IΔn(mA)	Done by sweeping all the frequency range Frequency step:1% Dwell time:3s	P
	Performance criteria 5.1.1: Trip under 1,25 IΔn(mA)	Done at 450MHz, 900 MHz And other 3 frequencies Selected at random	P
Table 5-T2.2	Fast transients (burst)		P
	Conducted unidirectional transients of the ns time scale(burst) (IEC 61000-4-4)		
	Device under line voltage		
	On each pole of the supply connection On each pole of the supply connection	±4kV ±4kV repetition rate: 2.5kHz testing time: 2min	P
	Performance criteria 5.1.2: No tripping during the tests		P
	Performance criteria 5.1.2: After tests: trip time (ms) with IΔn	I-1: Max.72ms I-2: Max.70ms I-3: Max.69ms	P

	TEST SEQUENCE J (3 samples) **In=80A IΔn =30mA 3P+N A type**		
IEC 61543:			
Table 5-T2.6	Conducted common mode disturbances in the frequency range lower than 150 kHz		P
	Conducted common mode disturbances in the frequency range lower than 150kHz (IEC 61000-4-16)		
	Device under line voltage		
	Frequency range: 1 to 150kHz (generator Z=150Ohms) Test level 2 for IΔn<30mA Test level 3 for IΔn≥30mA	Level 3: 1kHz to 1.5kHz 6.6mA 1.5kHz to 15kHz 6.6mA to 66mA 15kHz to 150kHz 66mA	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Performance criteria 5.1.1: No tripping during the tests under 0,3 IΔn(mA)	Done by sweeping all the frequency range Frequency step:1% Dwell time:3s	P
	Trip under 1,25 IΔn(mA)	Done at 5 frequencies selected at random	P
Table 6-T3.1	Electrostatic discharges		P
	Electrostatic discharges		
	Device under line voltage		
	Level 3		
	10 discharges, with interval≥1s, in air applied on isolating surfaces	±8kV	P
	10 discharges, with interval≥1s, on conducting surfaces	±6kV	N/A
	10 discharges, with interval≥1s, on vertical coupling plan	±6kV	P
	10 discharges, with interval≥1s, on Horizontal coupling plan	±6kV	P
	Performance criteria 5.1.3 Condition after tests: trip time (ms) with IΔn	J-1: Max.76ms J-2: Max.72ms J-3: Max.72ms	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX A (NORMATIVE)		
Test sequence and number of samples to be submitted for certification purposes Table A.1 - Test sequences		
Test sequence	**Clause or subclause**	**Test (or inspection)**
A_1	6 8.1.1 8.1.2 9.3 8.1.3 9.15 9.4 9.5 9.6 9.13 8.1.3 9.25	Marking General Mechanism Indelibility of marking Clearance and creepage distances (external parts only) Trip free mechanism Reliability of screws, current-carrying parts and connections Reliability of terminals for external conductors Protection against electric shock Resistance to heat Clearances and creepage distances (internal parts) Resistance to rusting
A_2	9.14	Resistance to abnormal heat and to fire
B	9.7.7.4 9.7.7.5 b) 9.7.1 9.7.2 9.7.3 9.7.4 9.7.7.2 9.7.5 9.7.6 9.8 9.22.2 9.23	Resistance of the insulation of open contacts and basic insulation against an impulse voltage in normal conditions Verification of the behaviour of components bridging the basic insulation Resistance to humidity Insulation resistance of the main circuit Dielectric strength of the main circuit Insulation resistance an dielectric strength of auxiliary circuits Verification of clearances with the impulse withstand voltage Secondary circuit of detection transformers Capability of control circuits connected to the main circuits etc. Temperature-rise Reliability at 40°C Ageing of electronic components
C	9.10	Mechanical and electrical endurance
D D_0	9.9	Residual operating characteristics
D D_1	9.17 9.19 9.11.2.3 a)b) 9.16 9.12 9.18	Behaviour in case of failure of the line voltage Unwanted tripping Behaviour in case of surge currents Performance at $I_{\Delta m}$ Test device Resistance to mechanical shock and impact Non-operating current under overcurrent conditions
D D_2	9.11.2.3 c)	Verification of the suitability of RCCBs for use in IT-systems
E	9.11.2.4 a)	Coordination at I_{nc}
	9.11.2.2	Performance at I_m
F	9.11.2.4 b)	Coordination at I_m
	9.11.2.4 c)	Coordination at $I_{\Delta c}$

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Clause	Requirement + Test	Result - Remark	Verdict

G	9.22.1	Reliability (climatic tests)
H a)	IEC 61543 Table 4 - T1.1 IEC 61543 Table 4 - T1.2 IEC 61543 Table 5 - T2.3	Harmonics, interharmonics Signalling voltage Surges
I	IEC 61543 Table 5 - T2.1 IEC 61543 Table 5 - T2.5 IEC 61543 Table 5 - T2.2	Conducted sine-wave voltages or currents Radiated electromagnetic field Fast transients (burst)
J	IEC 61543 Table 5 - T2.6 IEC 61543 Table 6 - T3.1	Conducted common mode disturbances in the frequency range lower than 150 kHz Electrostatic discharges
a) For devices containing a continuously operating oscillator, the test of CISPR 14-1 shall be carried out on the samples prior to the tests of this sequence. b) This test may be done on separate samples.		

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict

Table A.2 - Number of samples for full test procedure			
Test sequence [a]	**Number of samples**	**Minimum number of accepted samples [b]**	**Maximum number of samples for repeated tests [c]**
A_1	1	1	--
A_2	3	2	3
B	3	2	3
C	3	2	3
D	3	2 [d]	3
D_2	3	3	3
E	3	2 [d]	3
F	3	2 [d]	3
G	3	2	3
H [e]	3	2	3
I [e]	3	2	3
J [e]	3	2	3

a) In total a maximum of three test sequences may be repeated.

b) It is assumed that a sample which has not passed a test has not met the requirements due to workmanship or assembly defects which are not representative of the design.

c) In the case of repeated tests, all test results must be acceptable.

d) All samples shall meet the requirements in 9.9.2.1, 9.9.2.2, 9.9.2.3, 9.9.2.4, 9.9.2.5 and 9.11.2.3, as appropriate. In addition, permanent arcing or flashover between poles or between poles and frame shall not occur in any sample during tests of 9.11.2.2, 9.11.2.4 a), 9.11.2.4 b) or 9.11.2.4 c).

e) At the manufacturer's request, the same set of samples may be subjected to more than one of these test sequences.

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Clause	Requirement + Test	Result - Remark	Verdict

Table A.3 - Number of samples for simplified test procedure			
Test sequence	**Number of samples according to the number of poles [a) g)]**		
	2-poles [b) c)]	**3-poles [d) f) i)]**	**4-poles [e)]**
A_1	1 max. rating I_N min. rating $I_{\Delta N}$	1 max. rating I_N min. rating $I_{\Delta N}$	1 max. rating I_N min. rating $I_{\Delta N}$
A_2	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
B	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
C	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
D_0 + D_1	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
D_0	1 for all other ratings of $I_{\Delta N}$		
D_2	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
E	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
F	3 max. rating I_N min. rating $I_{\Delta N}$ 3 min. rating I_N max. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$ 3 min. rating I_N max. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$ 3 min. rating I_N max. rating $I_{\Delta N}$
G [j)]	3 max. rating I_N min. rating $I_{\Delta N}$ 3 min. rating I_N max. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$ 3 min. rating I_N max. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$ 3 min. rating I_N max. rating $I_{\Delta N}$
H			3 [h)] samples of the same rating I_N chosen at random min. rating $I_{\Delta N}$
I			3 [h)] samples of the same rating I_N chosen at random min. rating $I_{\Delta N}$
J			3 [h)] samples of the same rating I_N chosen at random min. rating $I_{\Delta N}$
a) If a test is to be repeated according to the minimum performance criteria of clause A.2, a new set of samples is used for the relevant test. In the repeated test all test results must be acceptable.			

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Clause	Requirement + Test	Result - Remark	Verdict

b) If only 3-pole or 4-pole RCCBs are submitted, this column shall also apply to a set of samples with the smallest number of poles.
c) Also applicable to 1-pole RCCBs with uninterrupted neutral and 2-pole RCCBs with 1 protected pole.
d) Also applicable to 3-pole RCCBs with two protected poles
e) Also applicable to 3-pole RCCBs with uninterrupted neutral and 4-pole RCCBs with 3 protected poles.
f) This column is omitted when 4-pole RCCBs have been tested.
g) If only one value of $I_{\Delta N}$ is submitted, min. rating $I_{\Delta N}$ and max. rating $I_{\Delta N}$ are replaced by $I_{\Delta N}$.
h) Only the highest number of current paths.
i) If a 3-pole RCCB with 4 current paths and a 4-pole RCCB are submitted, then only the 4-pole RCCB is tested,
with exception of the test of 9.8 of test sequence B for which both types are submitted to the test.
j) if the requirement to test max. rating In and minimum rating $I_{\Delta N}$ does not cover all the possible range of RCBOs, the minimum
$I_{\Delta N}$ shall in any case be chosen for the test.

Table A.4 - Test sequences for RCCBs of different classification according to 4.6

Test sequence	Number of samples according to the number of poles [a)]		
	2-pole [b) c)]	3-pole [e)]	4-pole [d)]
$D_0 + D_1$	1 max. rating I_N min. rating $I_{\Delta N}$	1 max. rating I_N min. rating $I_{\Delta N}$	1 max. rating I_N min. rating $I_{\Delta N}$
D_0	1 for all other ratings of $I_{\Delta N}$ with max. $I_{\Delta N}$		

a) If a test is to be repeated according to the minimum performance criteria of clause A.2, a new set of samples is used for the relevant test. In the repeated test all test results must be acceptable.

b) If only 3-pole or 4-pole RCCBs are submitted, this column shall also apply to a set of samples with the smallest number of poles.

c) Also applicable to 1-pole RCCBs with uninterrupted neutral.

d) Also applicable to 3-pole RCCBs with uninterrupted neutral.

e) This column is omitted when 4-pole RCCBs are being tested.

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict

	ANNEX B **DETERMINATION OF CLEARANCES AND CREEPAGE DISTANCES**	--
B.1	**General**	P
	In determining clearances and creepage distances, it is recommended that the following points should be considered.	P
B.2	**Orientation and location of a creepage distance**	P
	If necessary, the manufacturer shall indicate the intended orientation of the equipment or component in order that creepage distances are not adversely affected by the accumulation of pollution for which they were not designed.	P
B.3	**Creepage distances where more than one material is used**	N/A
	A creepage distance may be split in several portions of different materials and/or have different pollution degrees if one of the creepage distances is dimensioned to withstand the total voltage or if the total distance is dimensioned according to the material having the lowest CTI.	N/A
B.4	**Creepage distances split by floating conductive part**	N/A
	A creepage distance may be split into several parts, made with insulation material having the same CTI, including or separated by floating conductors as long as the sum of the distances across each individual part is equal or greater than the creepage distance required if the floating part did not exist. The minimum distance X for each individual part of the creepage distance is given in IEC 60664-1:2007, 6.2 (see also Example 11 in Figure B.1).	N/A
B.5	**Measurement of creepage distances and clearances**	P
	In determining creepage distances according to IEC 60664-1, the dimension *X*, specified in the following examples, has a minimum value of 1,0 mm for pollution degree 2.	N/A
	If the associated clearance is less than 3 mm, the minimum dimension *X* may be reduced to one third of this clearance.	N/A
	The methods of measuring creepage distances and clearances are indicated in Example 1 to 11. These cases do not differentiate between gaps and grooves or between types of insulation.	P
	The following assumptions are made:	P
	- any recess is assumed to be bridged with an insulating link having a length equal to the specified width *X* and being placed in the most unfavourable position (see Example 3);	P
	- where the distance across a groove is equal to or larger than the specified width *X*, the creepage distance is measured along the contours of the groove (see Example 3);	P
	- creepage distances and clearances measured between parts which can assume different positions in relation to each other, are measured when these parts are in their most unfavourable position.	P

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Clause	Requirement + Test	Result - Remark	Verdict

	ANNEX C ARRANGEMENT FOR THE DETECTION OF THE EMISSION OF IONIZED GASES DURING SHORT-CIRCUIT TESTS	
	The device under test is mounted as shown in figure C.1, which may require adapting to the specific design of the device, and in accordance with the manufacturer's instructions.	P
	When required (i.e. during "O" operations), a clear polyethylene sheet (0,05 ± 0,01) mm thick, of a size at least 50 mm larger, in each direction, than the overall dimensions of the front face of the device but not less than 200 mm × 200 mm, is fixed and reasonably stretched in a frame, placed at a distance of 10 mm from	P
	– either the maximum projection of the operating means of a device without recess for the operating means;	P
	– or the rim of a recess for the operating means of a device with recess for the operating means.	N/A
	The sheet should have the following physical properties: Density at 23 °C: 0,92 ± 0,05 g/cm³ Melting-point: 110 °C – 120 °C.	P
	When required, a barrier of insulating material, at least 2 mm thick, is placed, as shown in figure C.1, between the arc vent and the polyethylene sheet to prevent damage of the sheet due to hot particles emitted from the arc vent.	P
	When required, a grid (or grids) according to figure C.2 is (are) placed at a distance of "a" mm from each arc vent side of the device.	P
	The grid circuit (see figure C.3) shall be connected to the points B and C (see figures 7 or 8, as applicable).	P
	The parameters for the grid circuit are as follows:	P
	Resistor R': 1,5 Ω	P
	Copper wire F': length 50 mm, and diameter in accordance with 9.11.2.1 f 1).	P

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Clause	Requirement + Test	Result - Remark	Verdict

	ANNEX D **ROUTINE TESTS**	N/A

J	**ANNEX J** **Particular requirements for RCCBs with screwless type terminals for external copper conductors**	N/A

K	**ANNEX K** **Particular requirements for RCCBs with flat quick-connect terminations**	N/A

L	**ANNEX L** **Specific requirements for RCCBs with screw-type terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors**	N/A

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Annex nº 1

ATTACHMENT TO TEST REPORT IEC 61008-1
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs)

Differences according to.....:	EN 61008-1:2012+A1:2014+A2:2014 used in conjunction with EN 61008-2-1:1994 + A11:1998
Attachment Form No. .....:	EU_GD_IEC61008_1H
Attachment Originator .....:	OVE
Master Attachment .....:	Dated 2015-11

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	CENELEC COMMON MODIFICATIONS (EN)		
	GENERAL		--
9.11	Short circuit tests		--
9.11.2.1 d)	Value of power frequency recovery voltage shall be equal to 110% of the rated voltage		--
9.11.2.1 b)	Tolerances and test quantities		--
	voltage (including recovery voltage): 0, -5%		--
	TEST SEQUENCE "A_1" **In=80A IΔn =30mA 1P+N A type**	**A_{1-1}**	
6	***MARKING (REPLACE CLAUSE 6 BY)***		--
6.Z1	**Standard marking**		--
	Each RCCB shall be marked in a durable manner according to the following Table Z3.		P
	RCCB MARKED WITH:		--
a)	The manufacturer's name or trademark	GEYA	P
b)	Type designation, catalogue number or serial number	GYL9	P
c)	Rated voltage(s) with the symbol ~	240V	P
d)	Rated frequency, if the RCCB is designed for	50/60Hz	P

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	frequencies other than 50Hz		
e)	rated current	In=80A	P
f)	Rated residual operating current ($I_{\Delta n}$) in A or in mA	IΔn=30mA	P
h) *)	Rated making and breaking capacity (I_m)	Im=800A	P
j)	The degree of protection (only if different from IP20)	IP20	N/A
k)	The position of use, if necessary		N/A
l) *)	Rated residual making and breaking capacity ($I_{\Delta m}$), if different from rated short-circuit capacity (I_m)	Same as Im	P
m)	The symbol S (S in a square) for type S devices		N/A
n)	symbol of the method of operation according to Table Z1 of 4.1 if the RCCB is functionally dependent on the line voltage		N/A
o)	Operating means of the test device, by the letter T (It is recommended to advise the user to test the device regularly)		P
p)	Wiring diagram unless the correct mode of operation is evident		P
r)	Operating characteristic in presence of residual currents with d.c. components		--
	- RCCBs of type AC with the symbol		N/A
	- RCCBs of type A with the symbol		P
s)	RCCBs according to 4 Z2 marked with the symbol (snowflake enclosing -25)		P
t)	Indication of the terminal for the neutral with "N"		P
u)	Additional marking of performance to other standards or additional requirements according to 6.Z2		N/A
	*) $I_{\Delta M}$ and I_m (if different of $I_{\Delta M}$) may be anywhere on the device or in the catalogue but shall be together.		N/A
	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 this shall be specified in the manufacturers literature		N/A
	The manufacturer shall state the Joule integral I^2t and the peak current I_p withstand capability of the RCCB. Where this are not stated, minimum values as given in table 15 apply.		N/A
	RCCB classified acc. 4.1.2.1: Time delay when opening in case of failure of the		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	line voltage (s) :		
	RCCB´s other than operated by means of push button, open position indicated by "0" and closed position by "|"	I ON O OFF	P
	Additional national symbols are allowed Provisionally the use of national indications only is allowed These indication visible when RCCB is installed		N/A
	For push-buttons the OFF push-button shall either be red and/or marked with "O"		N/A
	RED shall not be uses for any other push-button		N/A
	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.		N/A
	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.		N/A
	If necessary to distinguish between supply and load terminals they shall be clearly marked		N/A
	Terminals for neutral circuit N	N	P
	Terminal for protective conductor		N/A
	The suitability for isolation, which is provided by all RCCBs of this standard, may be indicated by the symbol on the device		P
	The base for plug-in RCCBs shall be marked with the following:		N/A
	- rated current or maximum rated current		N/A
	- trade mark		N/A
	Marking indelible, easy legible and not on removable parts		P
	Labels not easy to remove and no curling. Test acc. to cl. 9.3: 15 s with water and 15 s with hexane		P
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		P
	- no markings		P
	For non-universal terminals:		N/A
	- terminals for rigid-solid conductors only, marked by the letters “s” or “sol”		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- terminals for rigid (solid and stranded) conductors only, marked by the letter “r”		N/A
	marking on the RCCB or if the space available is not sufficient, on the smallest package unit or in technical information		N/A
6.Z2	ADDITIONAL MARKING		--
	Additional marking to other standards (EN or IEC or other) or additional requirements are allowed under the following conditions:		N/A
	- The RCCB shall comply with all the requirements of the additional standard.		N/A
	- The relevant standards 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.Z.1.		N/A
	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.		N/A
8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		--
8.1	**Mechanical design**		--
8.1.1	General		--
modify	Not possible to alter the operating characteristics by means of external interventions		P
8.1.2	Mechanism		--
	The means of indication of the contact position shall be reliable (Compliance is checked by inspection and by the test of 9.9 and 9.15		P
delete	~~For RCCBs functionally dependent on line voltage, reclosing automatically when the line voltage is restored after failure, the operating means shall remain in the ON position and the contacts shall reclose automatically unless the operating means has been placed in the OFF position~~		P
9.4 *add*	Plug-in connections are tested by plugging the RCCB in and pulling it out five times.		N/A
	After the test the connection shall not have become loose nor shall their electrical function be impaired.		N/A
8.1.5	Terminals for external conductors		--
8.1.5.1	Terminals ensure the necessary contact pressure		--
modify	In this standard, only terminals for copper conductors are considered		P

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		P
	9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on RCCBs included in the standard		N/A
	by the tests of Annexes Jor K		N/A
8.1.5.2 *delete*	~~or terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors according to Annex L.~~		P
8.1.Z1 *add*	Non-interchangeability		N/A
	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. Compliance is checked by inspection.		N/A
8.1.Z2 *add*	Mechanical mounting of plug-in type RCCBs		N/A
	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.		N/A
8.1.Z2.1 *add*	Plug-in type RCCBs, the holding in position of which does not depend solely on their plug-in connection(s)		N/A
8.1.Z2.2 *add*	Plug-in type RCCBs, the holding in position of which depends solely on their plug-in connection(s)		N/A
	Compliance of the mechanical mounting is checked by the relevant tests of 9.12.		N/A
	TEST SEQUENCE "'A_2"		--
9.14	**Glow-wire test**		--
add	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).		P

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE "A_1" **In=80A IΔn =30mA 3P+N A type**	**A_{1-2}**	P
6	***MARKING (REPLACE CLAUSE 6 BY)***		--
6.Z1	**Standard marking**		--
	Each RCCB shall be marked in a durable manner according to the following Table Z3.		P
	RCCB MARKED WITH:		--
a)	The manufacturer's name or trademark	GEYA	P
b)	Type designation, catalogue number or serial number	GYL9	P
c)	Rated voltage(s) with the symbol ~	415V	P
d)	Rated frequency, if the RCCB is designed for frequencies other than 50Hz	50/60Hz	N/A
e)	rated current	In=80A	P
f)	Rated residual operating current ($I_{\Delta n}$) in A or in mA	IΔn=30mA	P
h) *)	Rated making and breaking capacity (I_m)	Im=800A	P
j)	The degree of protection (only if different from IP20)		N/A
k)	The position of use, if necessary		N/A
l) *)	Rated residual making and breaking capacity ($I_{\Delta m}$), if different from rated short-circuit capacity (I_m)	Same as Im	P
m)	The symbol S (S in a square) for type S devices		N/A
n)	symbol of the method of operation according to Table Z1 of 4.1 if the RCCB is functionally dependent on the line voltage		N/A
o)	Operating means of the test device, by the letter T (It is recommended to advise the user to test the device regularly)		P
p)	Wiring diagram unless the correct mode of operation is evident		P
r)	Operating characteristic in presence of residual currents with d.c. components		--
	- RCCBs of type AC with the symbol		N/A
	- RCCBs of type A with the symbol		P
s)	RCCBs according to 4 Z2 marked with the symbol (snowflake enclosing -25)	-25	P
t)	Indication of the terminal for the neutral with "N"		P
u)	Additional marking of performance to other standards or additional requirements according to		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	6.Z2		
	*) $I_{\Delta M}$ and I_m (if different of $I_{\Delta M}$) may be anywhere on the device or in the catalogue but shall be together.		N/A
	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 this shall be specified in the manufacturers literature		N/A
	The manufacturer shall state the Joule integral I^2t and the peak current I_p withstand capability of the RCCB. Where this are not stated, minimum values as given in table 15 apply.		N/A
	RCCB classified acc. 4.1.2.1: Time delay when opening in case of failure of the line voltage (s) :		N/A
	RCCB´s other than operated by means of push button, open position indicated by "0" and closed position by "|"	I ON O OFF	P
	Additional national symbols are allowed Provisionally the use of national indications only is allowed These indication visible when RCCB is installed		N/A
	For push-buttons the OFF push-button shall either be red and/or marked with "O"		N/A
	RED shall not be uses for any other push-button		N/A
	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.		N/A
	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.		N/A
	If necessary to distinguish between supply and load terminals they shall be clearly marked		N/A
	Terminals for neutral circuit N	N	P
	Terminal for protective conductor		N/A
	The suitability for isolation, which is provided by all RCCBs of this standard, may be indicated by the symbol on the device		P
	The base for plug-in RCCBs shall be marked with		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	the following:		
	- rated current or maximum rated current		N/A
	- trade mark		N/A
	Marking indelible, easy legible and not on removable parts		P
	Labels not easy to remove and no curling. Test acc. to cl. 9.3: 15 s with water and 15 s with hexane		P
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		P
	- no markings		P
	For non-universal terminals:		N/A
	- terminals for rigid-solid conductors only, marked by the letters “s” or “sol”		N/A
	- terminals for rigid (solid and stranded) conductors only, marked by the letter “r”		N/A
	marking on the RCCB or if the space available is not sufficient, on the smallest package unit or in technical information		N/A
6.Z2	ADDITIONAL MARKING		--
	Additional marking to other standards (EN or IEC or other) or additional requirements are allowed under the following conditions:		N/A
	- The RCCB shall comply with all the requirements of the additional standard.		N/A
	- The relevant standards 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.Z.1.		N/A
	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.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		--
8.1	**Mechanical design**		--
8.1.1	General		--
modify	Not possible to alter the operating characteristics by means of external interventions		P
8.1.2	Mechanism		--
	The means of indication of the contact position shall be reliable (Compliance is checked by inspection and by the test of 9.9 and 9.15		P
delete	~~For RCCBs functionally dependent on line voltage, reclosing automatically when the line voltage is restored after failure, the operating means shall remain in the ON position and the contacts shall reclose automatically unless the operating means has been placed in the OFF position~~		P
9.4 *add*	Plug-in connections are tested by plugging the RCCB in and pulling it out five times.		N/A
	After the test the connection shall not have become loose nor shall their electrical function be impaired.		N/A
8.1.5	Terminals for external conductors		--
8.1.5.1	Terminals ensure the necessary contact pressure		--
modify	In this standard, only terminals for copper conductors are considered		P
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		P
	9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on RCCBs included in the standard		N/A
	by the tests of Annexes Jor K		N/A
8.1.5.2 *delete*	~~or terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors according to Annex L.~~		P
8.1.Z1 *add*	Non-interchangeability		N/A
	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. Compliance is checked by inspection.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

8.1.Z2 *add*	Mechanical mounting of plug-in type RCCBs		N/A
	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.		N/A
8.1.Z2.1 *add*	Plug-in type RCCBs, the holding in position of which does not depend solely on their plug-in connection(s)		N/A
8.1.Z2.2 *add*	Plug-in type RCCBs, the holding in position of which depends solely on their plug-in connection(s)		N/A
	Compliance of the mechanical mounting is checked by the relevant tests of 9.12.		N/A
	TEST SEQUENCE "'A_2"		--
9.14	**Glow-wire test**		--
add	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).		P

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE "B" **In=80A IΔn =30mA 1P+N A type**	**B-1**	**B-2**	**B-3**	
8	**requirements for construction and operation**				--
8.3	DIELECTRIC PROPERTIES AND ISOLATING CAPABILITY				--
	RCCBs have adequate dielectric properties				P
9.7 ***MODIFY***	TEST OF DIELECTRIC PROPERTIES AND ISOLATING CAPABILITY				--
9.7.7.4.1 ***MODIFY***	rated impulse withstand voltage [kV]:	4kV			--
	see level of test laboratory [m]	Sea level			--
	test voltage (acc. Table 22, *modified*) [kV]:	6,2kV			--
9.7.7.4.3 ***MODIFY***	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (~~or path~~) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (~~or path~~) of the RCCB				
9.7.2 *modify*	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:	B-1 [MΩ]	B-2 [MΩ]	B-3 [MΩ]	--
	a) between the terminals which are electrically connected together when the RCCB is in the closed position ..... ≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	P
	b) between each pole and the others connected together (electronic components, connected between poles being disconnected)..... ≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	P
	c) with the RCCB in the closed position, between all poles connected together and the frame, including a metal foil in contact with the outer surface of the housing of insulation material but with the terminal area kept free ..... ≥ 5 MΩ	≥ 5 MΩ	≥ 5 MΩ	≥ 5 MΩ	P
	d) between the frame and a metal foil in contact with the inner surface of the lining of insulating material..... ≥ 5 MΩ				N/A
9.7.3 *modify*	Dielectric strength of the main circuit measured with an AC voltage (45-65Hz) for 1 min:				--
	a)..... 2000 V	2000V	2000V	2000V	P
	b) (electronic components, connected between poles being disconnected) ..... 2000 V	2000V	2000V	2000V	P
	c)..... 2000 V	2000V	2000V	2000V	P

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Clause	Requirement + Test	Result - Remark			Verdict
	d)..... 2500 V				N/A
	No flashover or breakdown				P
9.7.7.2 *modify*	delete in table 16 the line beginning with “2,5” rated impulse withstand voltage [kV]:	4kV			N/A
	see level of test laboratory [m]				N/A
	test voltage (acc. Table 16) [kV]:				N/A
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole ~~(or path)~~ connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole ~~(or path)~~ of the RCCB				N/A
9.23 *MODIFY*	**Verification of ageing**				--

	TEST SEQUENCE "B" **In=80A IΔn =30mA 3P+N A type**	**B-4**	**B-5**	**B-6**	
8	**requirements for construction and operation**				--
8.3	DIELECTRIC PROPERTIES AND ISOLATING CAPABILITY				--
	RCCBs have adequate dielectric properties				P
9.7 *MODIFY*	TEST OF DIELECTRIC PROPERTIES AND ISOLATING CAPABILITY				--
9.7.7.4.1 *MODIFY*	rated impulse withstand voltage [kV]:	4kV			--
	see level of test laboratory [m]	Sea level			--
	test voltage (acc. Table 22, *modified*) [kV]:	6,2kV			--
9.7.7.4.3 *MODIFY*	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (~~or path~~) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (~~or path~~) of the RCCB				
9.7.2	Insulation resistance of the main circuit measured	B-4	B-5	B-6	--

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Clause	Requirement + Test	Result - Remark			Verdict
modify	between 30 and 60 min after this treatment with 500 V DC after 5 s:	[MΩ]	[MΩ]	[MΩ]	
	a) between the terminals which are electrically connected together when the RCCB is in the closed position ..... ≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	P
	b) between each pole and the others connected together (electronic components, connected between poles being disconnected)..... ≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	≥ 2 MΩ	P
	c) with the RCCB in the closed position, between all poles connected together and the frame, including a metal foil in contact with the outer surface of the housing of insulation material but with the terminal area kept free ..... ≥ 5 MΩ	≥ 5 MΩ	≥ 5 MΩ	≥ 5 MΩ	P
	d) between the frame and a metal foil in contact with the inner surface of the lining of insulating material..... ≥ 5 MΩ				N/A
9.7.3 *modify*	Dielectric strength of the main circuit measured with an AC voltage (45-65Hz) for 1 min:				--
	a)..... 2000 V	2000V	2000V	2000V	P
	b) (electronic components, connected between poles being disconnected) ..... 2000 V	2000V	2000V	2000V	P
	c)..... 2000 V	2000V	2000V	2000V	P
	d)..... 2500 V				N/A
	No flashover or breakdown				P
9.7.7.2 *modify*	delete in table 16 the line beginning with “2,5” rated impulse withstand voltage [kV]:	4kV			N/A
	see level of test laboratory [m]				N/A
	test voltage (acc. Table 16) [kV]:				N/A
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole ~~(or path)~~ connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole ~~(or path)~~ of the RCCB				N/A
9.23 MODIFY	**Verification of ageing**				--

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE "C" **In=80A IΔn =30mA 1P+N A type**	**C-1 C-2 C-3**	
	TESTS C_1		--
8	**requirements for construction and operation**		--
8.6	MECHANICAL AND ELECTRICAL ENDURANCE		--
	RCCBs shall be capable of performing an adequate number of mechanical and electrical operations.		P
9.10.3 modify:	After test:		--
	a)	C-1 – 900V C-2 – 900V C-3 – 900V	P
	b)	C-1 – 900V C-2 – 900V C-3 – 900V	P
	c)	C-1 – 900V C-2 – 900V C-3 – 900V	P
	d)		N/A

	TEST SEQUENCE "C" **In=80A IΔn =30mA 3P+N A type**	**C-4 C-5 C-6**	
	TESTS C_1		--
8	**requirements for construction and operation**		--
8.6	MECHANICAL AND ELECTRICAL ENDURANCE		--
	RCCBs shall be capable of performing an adequate number of mechanical and electrical operations.		P
9.10.3 modify:	After test:		--
	a)	C-4 – 900V C-5 – 900V C-6 – 900V	P
	b)	C-4 – 900V	P

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Clause	Requirement + Test	Result - Remark	Verdict
		C-5 – 900V C-6 – 900V	
	c)	C-4 – 900V C-5 – 900V C-6 – 900V	P
	d)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE "D" **In=80A IΔn =30mA 1P+N A type**	**D0+D1-1**	**D0+D1-2**	**D0+D1-3**	P
	TEST D_0				P
9.9.1 *delete:*	~~For multiple settings of $I_{\Delta n}$ tests are made for each setting~~				P
	TEST D_1	--			P
8	requirements for construction and operation				--
8.12	RCCBS FUNCTIONALLY DEPENDENT ON LINE VOLTAGE				--
	RCCBs functionally dependent on the line voltage operate correctly between 0,85 and 1,1 UN				N/A
9.17	VERIFICATION OF THE BEHAVIOUR OF RCCBS OPENING AUTOMATICALLY IN CASE OF FAILURE OF THE LINE VOLTAGE				--
9.17.1 *replace by:*	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V)	V			--
	Residual current 1,25.$I_{\Delta N}$	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 *replace by:*	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
b)	RCCBs opening with delay		N/A
	Values within the range indicated by manufacturer	to ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N		N/A
	Voltage off and on at the line side:		N/A
	No automatically closing		N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*		N/A
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ .....:		--
9.7.3 *modify*	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		--
	a) .....:	D0+D1-1 – 480V D0+D1-2 – 480V D0+D1-3 – 480V	P
	b) .....:	D0+D1-1 – 480V D0+D1-2 – 480V D0+D1-3 – 480V	P
	c) .....:	D0+D1-1 – 480V D0+D1-2 – 480V D0+D1-3 – 480V	P
	d) .....:	D1 - D2 - D3 -	N/A
	No flashover or breakdown .....:		P
***8.11 REPLACE BY*:**	**Test device**		--
	RCCBs provided with a test device		P
	RCCBs with rated residual current of 30mA:		P
	Ampere-turns produced when operating the test device do not exceed 1,66 times the ampere turns produced by $I_{\Delta N}$	1,57times	P
	RCCBs with rated residual current other than 30mA:		N/A
	Ampere-turns produced when operating the test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	device do not exceed 2,5 times the ampere turns produced by $I_{\Delta N}$		
	Not possible to energize the circuit on the load side by operating the test device when the RCCB is in the open position		P
9.12.2	Mechanical impact		P
	test acc. 9.12.2.1 for all types, in addition by the tests of:		P
	- 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;		P
	- 9.12.2.3 for plug-in type RCCBs, the holding in position of which depends solely on their connections.		N/A
9.12.2.2 *replace by:*	RCCBs for rail mounting downward vertical force of 50 N for 1 min, upward vertical force of 50 N for 1 min		P
	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.		N/A
	RCCB shall not become loose during test and no damage impairing its further use .....:		P
9.12.2.3 *replace by:*	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).		N/A

	TEST SEQUENCE "D" **In=80A IΔn =30mA 3P+N A type**	**D0+D1-4**	**D0+D1-5**	**D0+D1-6**	P
	TEST D_0				P
9.9.1 *delete:*	~~For multiple settings of $I_{\Delta n}$ tests are made for each setting~~				P
	TEST D_1	--			P

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Clause	Requirement + Test	Result - Remark	Verdict

8	requirements for construction and operation				--
8.12	RCCBS FUNCTIONALLY DEPENDENT ON LINE VOLTAGE				--
	RCCBs functionally dependent on the line voltage operate correctly between 0,85 and 1,1 UN				N/A
9.17	VERIFICATION OF THE BEHAVIOUR OF RCCBS OPENING AUTOMATICALLY IN CASE OF FAILURE OF THE LINE VOLTAGE				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V)	V			--
	Residual current 1,25.$I_{\Delta N}$	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*		N/A
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ .....:		--
9.7.3 *modify*	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		--
	a) .....:	D0+D1-4 – 830V D0+D1-5 – 830V D0+D1-6 – 830V	P
	b) .....:	D0+D1-4 – 830V D0+D1-5 – 830V D0+D1-6 – 830V	P
	c) .....:	D0+D1-4 – 830V D0+D1-5 – 830V D0+D1-6 – 830V	P
	d) .....:	D1 - D2 - D3 -	N/A
	No flashover or breakdown .....:		P
***8.11 REPLACE BY*:**	**Test device**		--
	RCCBs provided with a test device		P
	RCCBs with rated residual current of 30mA:		P
	Ampere-turns produced when operating the test device do not exceed 1,66 times the ampere turns produced by $I_{\Delta N}$	1,47times	P
	RCCBs with rated residual current other than 30mA:		N/A
	Ampere-turns produced when operating the test device do not exceed 2,5 times the ampere turns produced by $I_{\Delta N}$		N/A
	Not possible to energize the circuit on the load side by operating the test device when the RCCB is in the open position		P
9.12.2	Mechanical impact		P

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Clause	Requirement + Test	Result - Remark	Verdict
	test acc. 9.12.2.1 for all types, in addition by the tests of:		P
	- 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;		P
	- 9.12.2.3 for plug-in type RCCBs, the holding in position of which depends solely on their connections.		N/A
9.12.2.2 *replace by:*	RCCBs for rail mounting downward vertical force of 50 N for 1 min, upward vertical force of 50 N for 1 min		P
	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.		N/A
	RCCB shall not become loose during test and no damage impairing its further use .....:		P
9.12.2.3 *replace by:*	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).		N/A

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Clause	Requirement + Test	Result - Remark		Verdict
	TEST SEQUENCE "D" **D0+D1-4:In=80A IΔn =30mA 1P+N AC type** **D0+D1-8:In=80A IΔn =30mA 3P+N AC type**	**D0+D1-4**	**D0+D1-8**	P
	TEST D_0			P
9.9.1 *delete:*	~~For multiple settings of $I_{\Delta n}$ tests are made for each setting~~			P
	TEST D_1	--		P
8	requirements for construction and operation			--
8.12	RCCBS FUNCTIONALLY DEPENDENT ON LINE VOLTAGE			--
	RCCBs functionally dependent on the line voltage operate correctly between 0,85 and 1,1 UN			N/A
9.17	VERIFICATION OF THE BEHAVIOUR OF RCCBS OPENING AUTOMATICALLY IN CASE OF FAILURE OF THE LINE VOLTAGE			--
9.17.1 replace by:	Limiting value of the line voltage U_x			N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N			N/A
	Tripping test:			N/A
	Test voltage (V).....	V		--
	Residual current 1,25.$I_{\Delta N}$.....	1,25.$I_{\Delta N}$ = A		--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x			N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage			N/A
	RCCB supplied with U_N and line voltage, then switched off			N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay			N/A
	- no value exceeds 0,5 s				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s		N/A
b)	RCCBs opening with delay		N/A
	Values within the range indicated by manufacturer	to ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N		N/A
	Voltage off and on at the line side:		N/A
	No automatically closing		N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*		N/A
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ ..... :		--
9.7.3 *modify*	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		--
	a) ..... :	D0+D1-4 – 480V D0+D1-8 – 830V	P
	b) ..... :	D0+D1-4 – 480V D0+D1-8 – 830V	P
	c) ..... :	D0+D1-4 – 480V D0+D1-8 – 830V	P
	d) ..... :	D1 - D2 - D3 -	N/A
	No flashover or breakdown ..... :		P
***8.11 REPLACE BY*:**	**Test device**		--
	RCCBs provided with a test device		P
	RCCBs with rated residual current of 30mA:		P
	Ampere-turns produced when operating the test device do not exceed 1,66 times the ampere turns produced by $I_{\Delta N}$	D0+D1-4 – 1,57times D0+D1-8 – 1,47times	P
	RCCBs with rated residual current other than 30mA:		N/A
	Ampere-turns produced when operating the test device do not exceed 2,5 times the ampere turns		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	produced by $I_{\Delta N}$		
	Not possible to energize the circuit on the load side by operating the test device when the RCCB is in the open position		P
9.12.2	Mechanical impact		P
	test acc. 9.12.2.1 for all types, in addition by the tests of:		P
	- 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;		P
	- 9.12.2.3 for plug-in type RCCBs, the holding in position of which depends solely on their connections.		N/A
9.12.2.2 *replace by:*	RCCBs for rail mounting downward vertical force of 50 N for 1 min, upward vertical force of 50 N for 1 min		P
	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.		N/A
	RCCB shall not become loose during test and no damage impairing its further use .....:		P
9.12.2.3 *replace by:*	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).		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

9.11.2.3c)	**Tests "D2"** **In=80A IΔn =30mA 1P+N A type**	**D2-1**	**D2-2**	**D2-3**	P
modify:	Test voltage 110% of rated phase to neutral voltage for the pole exclusively for the neutral				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	D2-1 – 480V D2-2 – 480V D2-3 – 480V			P
	b) .....:	D2-1 – 480V D2-2 – 480V D2-3 – 480V			P
	c) .....:	D2-1 – 480V D2-2 – 480V D2-3 – 480V			P
	d) .....:				N/A
	No flashover or breakdown .....:				P

9.11.2.3c)	**Tests "D2"** **In=80A IΔn =30mA 3P+N A type**	**D2-4**	**D2-5**	**D2-6**	P
modify:	Test voltage 110% of rated phase to neutral voltage for the pole exclusively for the neutral				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	D2-4 – 830V D2-5 – 830V D2-6 – 830V			P
	b) .....:	D2-4 – 830V D2-5 – 830V D2-6 – 830V			P
	c) .....:	D2-4 – 830V			P

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Clause	Requirement + Test	Result - Remark	Verdict

		D2-5 – 830V D2-6 – 830V	
	d) .....:		N/A
	No flashover or breakdown .....:		P

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE E (3 samples) **In=80A IΔn =30mA 1P+N A type**	**E-1**	**E-2**	**E-3**	**P**
9.11.2.4a)	Verification of the coordination at the rated conditional short-circuit current (A): Inc	10000A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	E-1 – 480V E-2 – 480V E-3 – 480V			P
	b) .....:	E-1 – 480V E-2 – 480V E-3 – 480V			P
	c) .....:	E-1 – 480V E-2 – 480V E-3 – 480V			P
	d) .....:				N/A
	No flashover or breakdown .....:				P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V).....:	V			--
	Residual current 1,25.$I_{\Delta N}$.....:	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A
9.11.2.2	Verification of the rated making and breaking capacity (A): Im .....:	800A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	E-1 – 480V E-2 – 480V E-3 – 480V			P
	b) .....:	E-1 – 480V E-2 – 480V E-3 – 480V			P
	c) .....:	E-1 – 480V E-2 – 480V E-3 – 480V			P
	d) .....:				N/A
	No flashover or breakdown .....:				P

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Clause	Requirement + Test	Result - Remark	Verdict

9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V).....:	V			--
	Residual current 1,25.$I_{\Delta N}$.....:	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A

	TEST SEQUENCE E (3 samples) **In=80A IΔn =30mA 3P+N A type**	**E-4**	**E-5**	**E-6**	**P**

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Clause	Requirement + Test	Result - Remark	Verdict

9.11.2.4a)	Verification of the coordination at the rated conditional short-circuit current (A): Inc	10000A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	E-4 – 830V E-5 – 830V E-6 – 830V			P
	b) .....:	E-4 – 830V E-5 – 830V E-6 – 830V			P
	c) .....:	E-4 – 830V E-5 – 830V E-6 – 830V			P
	d) .....:				N/A
	No flashover or breakdown .....:				P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V).....:	V			--
	Residual current 1,25.$I_{\Delta N}$.....:	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A
9.11.2.2	Verification of the rated making and breaking capacity (A): Im .....:	800A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	E-4 – 830V E-5 – 830V E-6 – 830V			P
	b) .....:	E-4 – 830V E-5 – 830V E-6 – 830V			P
	c) .....:	E-4 – 830V E-5 – 830V E-6 – 830V			P
	d) .....:				N/A
	No flashover or breakdown .....:				P

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Clause	Requirement + Test	Result - Remark			Verdict
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V).....:	V			--
	Residual current 1,25.$I_{\Delta N}$.....:	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE F (3 samples) **In=80A IΔn =30mA 1P+N A type**	**F-1**	**F-2**	**F-3**	**P**
9.11.2.4b)	Verification of the coordination at the rated making and breaking capacity (A): Im .....:	800A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	F-1 – 480V F-2 – 480V F-3 – 480V			P
	b) .....:	F-1 – 480V F-2 – 480V F-3 – 480V			P
	c) .....:	F-1 – 480V F-2 – 480V F-3 – 480V			P
	d) .....:				N/A
	No flashover or breakdown .....:				P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V) ..... :	V			--
	Residual current 1,25.$I_{\Delta N}$..... :	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A
9.11.2.4c)	Verification of the coordination at the rated conditional residual short-circuit current (A): I∆c ..:	10000A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	F-1 – 480V F-2 – 480V F-3 – 480V			P
	b) .....:	F-1 – 480V F-2 – 480V F-3 – 480V			P
	c) .....:	F-1 – 480V F-2 – 480V F-3 – 480V			P
	d) .....:				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	No flashover or breakdown .....:				P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V) ..... :	V			--
	Residual current 1,25.$I_{\Delta N}$..... :	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE F (3 samples) **In=16A IΔn =300mA 1P+N A type**	**F-4**	**F-5**	**F-6**	**P**
9.11.2.4b)	Verification of the coordination at the rated making and breaking capacity (A): Im .....:	500A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	F-4 – 480V F-5 – 480V F-6 – 480V			P
	b) .....:	F-4 – 480V F-5 – 480V F-6 – 480V			P
	c) .....:	F-4 – 480V F-5 – 480V F-6 – 480V			P
	d) .....:				N/A
	No flashover or breakdown .....:				P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V).....:	V			--
	Residual current 1,25.$I_{\Delta N}$.....:	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A
9.11.2.4c)	Verification of the coordination at the rated conditional residual short-circuit current (A): I∆c ..:	10000A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	F-4 – 480V F-5 – 480V F-6 – 480V			P
	b) .....:	F-4 – 480V F-5 – 480V F-6 – 480V			P
	c) .....:	F-4 – 480V F-5 – 480V F-6 – 480V			P
	d) .....:				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	No flashover or breakdown .....:				P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V).....:	V			--
	Residual current 1,25.$I_{\Delta N}$.....:	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE F (3 samples) **In=80A IΔn =30mA 3P+N A type**	**F-7**	**F-8**	**F-9**	**P**
9.11.2.4b)	Verification of the coordination at the rated making and breaking capacity (A): Im .....:	800A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	F-7– 830V F-8 – 830V F-9 – 830V			P
	b) .....:	F-7– 830V F-8 – 830V F-9 – 830V			P
	c) .....:	F-7– 830V F-8 – 830V F-9 – 830V			P
	d) .....:				N/A
	No flashover or breakdown .....:				P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V).....:	V			--
	Residual current 1,25.$I_{\Delta N}$.....:	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A
9.11.2.4c)	Verification of the coordination at the rated conditional residual short-circuit current (A): I∆c ..:	10000A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	F-7 – 830V F-8 – 830V F-9 – 830V			P
	b) .....:	F-7– 830V F-8 – 830V F-9 – 830V			P
	c) .....:	F-7– 830V F-8 – 830V F-9 – 830V			P
	d) .....:				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	No flashover or breakdown .....:				P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V).....:	V			--
	Residual current 1,25.$I_{\Delta N}$.....:	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE F (3 samples) **In=16A IΔn =300mA 3P+N A type**	**F-10**	**F-11**	**F-12**	**P**
9.11.2.4b)	Verification of the coordination at the rated making and breaking capacity (A): Im .....:	500A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	F-10 – 830V F-11 – 830V F-12 – 830V			P
	b) .....:	F-10 – 830V F-11 – 830V F-12 – 830V			P
	c) .....:	F-10 – 830V F-11 – 830V F-12 – 830V			P
	d) .....:				N/A
	No flashover or breakdown .....:				P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V).....:	V			--
	Residual current 1,25.$I_{\Delta N}$.....:	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A
9.11.2.4c)	Verification of the coordination at the rated conditional residual short-circuit current (A): I∆c ..:	10000A			P
modify:	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) .....:	F-10 – 830V F-11 – 830V F-12 – 830V			P
	b) .....:	F-10 – 830V F-11 – 830V F-12 – 830V			P
	c) .....:	F-10 – 830V F-11 – 830V F-12 – 830V			P
	d) .....:				N/A

IEC61008_1H - ATTACHMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	No flashover or breakdown .....:				P
9.17	**Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage**				--
9.17.1 replace by:	Limiting value of the line voltage U_x				N/A
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
	All values less than 0,7 U_N				N/A
	Tripping test:				N/A
	Test voltage (V).....:	V			--
	Residual current 1,25.$I_{\Delta N}$.....:	1,25.$I_{\Delta N}$ = A			--
	Time corresponding to value for $I_{\Delta N}$ in table 1	[ms]	[ms]	[ms]	--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer	to		ms	N/A
	RCCBs classified 4.1.2.1b): switch off at U_N				N/A
	Voltage off and on at the line side:				N/A
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs with 3 or 4 poles, in presence of a residual current, the neutral and one line terminal only being energized *(replace the title by)*				N/A

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

modify:	**TEST SEQUENCE "G_0"** **In=80A IΔn =30mA 1P+N A type**	**G_{0-1}**	**G_{0-2}**	**G_{0-3}**	P
9.22	VERIFICATION OF RELIABILITY				P
9.22.1	Climatic test				P

modify:	**TEST SEQUENCE "G_0"** **In=16A IΔn =300mA 1P+N A type**	**G_{0-4}**	**G_{0-5}**	**G_{0-5}**	P
9.22	VERIFICATION OF RELIABILITY				P
9.22.1	Climatic test				P

modify:	**TEST SEQUENCE "G_0"** **In=80A IΔn =30mA 3P+N A type**	**G_{0-7}**	**G_{0-8}**	**G_{0-9}**	P
9.22	VERIFICATION OF RELIABILITY				P
9.22.1	Climatic test				P

modify:	**TEST SEQUENCE "G_0"** **In=16A IΔn =300mA 1P+N A type**	**G_{0-10}**	**G_{0-11}**	**G_{0-12}**	P
9.22	VERIFICATION OF RELIABILITY				P
9.22.1	Climatic test				P

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE "G_1" **(add the new test sequence)** **In=80A IΔn =30mA 3P+N A type**	**G_{1-1}**	**G_{1-2}**	**G_{1-3}**	
8	requirements for construction and operation				--
add: 8.Z1	BEHAVIOUR OF RCCBS AT LOW AMBIENT AIR TEMPERATURE				--
	RCCBs for use between -25°C and +40°C operate reliably at low ambient air temperature				P
add: 9.Z1	VERIFICATION OF THE CORRECT OPERATION AT LOW AMBIENT AIR TEMPERATURE FOR RCCBS FOR USE AT TEMPERATURES BETWEEN -25° C AND +40° C				--
	RCCBs mounted in enclosure with degree of protection IP 55 and connected for normal use				N/A
	RCCBs in a test chamber at +23°C ± 2°C and rH 90% ± 3%				P
	RCCBs in ON-position without load				P
	Five test cycles performed acc. to figure Z6				P
	No tripping during cycles				P
	At the end of last 6 h period at -25°C an a.c. residual current is passed through one pole (see figure 4a)				P
	- general type:	[ms]	[ms]	[ms]	--
	break time at 1,25 $I_{\Delta N}$ not exceeding the value for $I_{\Delta N}$ in table 1	72	71	66	P
	- S-type:	[ms]	[ms]	[ms]	--
	break time at 2,5 $I_{\Delta N}$ not exceeding the value for 2 $I_{\Delta N}$ in table 1				N/A
	Additionally for RCCBs of type A:				P
	Break time with pulsating d.c. residual currents of				P
	- 1,25 $I_{\Delta N}$ (general type)				P
	- 2,5 $I_{\Delta N}$ (S-type)				N/A
	Multiplied by:	[ms]	[ms]	[ms]	--
	1,4 for $I_{\Delta N}$ > 0,01 A	35	30	35	P
	2 for $I_{\Delta N} \leq$ 0,01 A				N/A
	at α = 0°el (test circuit figure 4b)				P
	After test possible to switch on the RCCB without presence of residual current				P

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE "G_1" **(add the new test sequence)** **In=16A IΔn =300mA 3P+N A type**	**G_{1-4}**	**G_{1-5}**	**G_{1-6}**	
8	requirements for construction and operation				--
add: 8.Z1	BEHAVIOUR OF RCCBS AT LOW AMBIENT AIR TEMPERATURE				**--**
	RCCBs for use between -25°C and +40°C operate reliably at low ambient air temperature				P
add: 9.Z1	VERIFICATION OF THE CORRECT OPERATION AT LOW AMBIENT AIR TEMPERATURE FOR RCCBS FOR USE AT TEMPERATURES BETWEEN -25° C AND +40° C				**--**
	RCCBs mounted in enclosure with degree of protection IP 55 and connected for normal use				N/A
	RCCBs in a test chamber at +23°C ± 2°C and rH 90% ± 3%				P
	RCCBs in ON-position without load				P
	Five test cycles performed acc. to figure Z6				P
	No tripping during cycles				P
	At the end of last 6 h period at -25°C an a.c. residual current is passed through one pole (see figure 4a)				P
	- general type:	[ms]	[ms]	[ms]	--
	break time at 1,25 $I_{\Delta N}$ not exceeding the value for $I_{\Delta N}$ in table 1	24	32	25	P
	- S-type:	[ms]	[ms]	[ms]	--
	break time at 2,5 $I_{\Delta N}$ not exceeding the value for 2 $I_{\Delta N}$ in table 1				N/A
	Additionally for RCCBs of type A:				P
	Break time with pulsating d.c. residual currents of				P
	- 1,25 $I_{\Delta N}$ (general type)				P
	- 2,5 $I_{\Delta N}$ (S-type)				N/A
	Multiplied by:	[ms]	[ms]	[ms]	--
	1,4 for $I_{\Delta N}$ > 0,01 A	17	18	12	P
	2 for $I_{\Delta N} \leq$ 0,01 A				N/A
	at α = 0°el (test circuit figure 4b)				P
	After test possible to switch on the RCCB without presence of residual current				P

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Annex nº 2

ATTACHMENT TO TEST REPORT IEC 61008-1 Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs)
Differences according to.....: EN 61008-1:2012/A11:2015

	ANNEX ZB Special national conditions	
Ireland	For RCCBs, functionally dependant on line voltage IEC 61008-2-2 applies in conjunction with Part 1.	
Switzerland	In Switzerland, the use of RCCBs of type AC is not permitted.	

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Annex nº 3

ATTACHMENT TO TEST REPORT IEC 61008-1 Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs)
Differences according to.....: EN 61008-1:2012/A12:2017

	ANNEX ZC **Special national conditions**	
Belgium	The Belgian regulation for Electrical Installation (Art 251, part 5) requires that RCCB’s≤ 40 A installed at the head-end in household electrical installation, upstream the firstovercurrent protection, shall withstand an I^2t value not less than 22,5 kA^2s at 3000 A andshall be additionally marked with at least the following data: “3000 A, 22,5 kA^2s”.	
	This marking shall remain visible after installation.	

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Annex nº 4

ATTACHMENT TO TEST REPORT IEC 61008_1 **AUSTRALIA / NEW ZEALAND NATIONAL DIFFERENCES** Error! Use the Home tab to apply ITitle to the text that you want to appear here. **Part** Error! Use the Home tab to apply IPartNumber to the text that you want to appear here.**: General rules**	
Differences according to .....:	AS/NZS 61008.1:2015
Attachment Form No. .....:	AU_NZ_ND_IEC61008_1H
Attachment Originator.....:	JAS-ANZ
Master Attachment .....:	2017-06
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	National Differences		--
Appendix ZZ	VARIATIONS TO **Error! Use the Home tab to apply IDualNumberYear to the text that you want to appear here.** FOR APPLICATION IN AUSTRALIA AND NEW ZEALAND		--
ZZ1	INTRODUCTION This Appendix provides variations between this Standard and IEC 61008-1, Ed. 3.2 (2013).		--
ZZ2	VARIATIONS The variations are as follows		--
INTRODUCTION	*Delete* existing text and *replace* with the following: This Standard includes definitions, requirements and tests, covering all types of RCCBs.		--
3	**TERMS AND DEFINITIONS**		--
3.3	Addition *Add* the following definition: A type A RCCB with a maximum rated residual current of ≤0.01 A, which complies with the requirements for type 1 in Table 1.1 and Table 2.1	General type for the products IΔn=0,01A	N/A
4	**CLASSIFICATION**		--
4.4	Replacement *Delete* Clause 4.4 and *replace* with the following: **4.4 According to the possibility of adjusting the residual operating current** RCCBs shall have a single fixed value of rated residual operating current		P
5	**CHARACTERISTICS OF RCCBs**		--

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

5.2.3	Replacement *Delete* Clause 5.2.3 and *replace* with the following: **5.2.3 Rated residual operating current ($I_{\Delta n}$)** The value of residual operating current (see 3.2.4), assigned to the RCCB by the manufacturer, at which the RCCB shall operate under specified conditions. RCCBs shall have a single fixed value of rated residual operating current.		P
5.3.1	Addition After the Note *insert* the following: The marking of the rated voltage or rated voltage range of single phase RCCBs shall cover 240 V for Australia and 230 V for New Zealand, and for multiphase RCCBs, shall cover 415 V for Australia and 400 V for New Zealand.		P
5.3.3	Addition After the Note *insert* the following: RCCBs with a rated residual current of ≤0.01 A shall be type 1 and comply with type 1 and type A characteristics requirements in Table 1.1 and Table 2.1. Exception—if an RCCB with a rated residual current of ≤0.01 A is not type 1, but is of the 'general' type in Table 1 and Table 2, then it shall be marked in accordance with 6(f).	General type for the products IΔn=0,01A marked "GENERAL TYPE, NOT FOR PATIENT AREAS"	N/A
Table 1	Replacement *Delete Table 1 and replace* with the following: **Table 1 — Limit values of break time and non-actuating time(s) for alternating residual currents (r.m.s. values) for type AC and A RCCB**		N/A

			Limit values of break time and non-actuating time(s) for residual currents (r.m.s. values) equal to					
Type	**I_n A**	**$I_{\Delta n}$ A**	**$I_{\Delta n}$**	**2 $I_{\Delta n}$**	**5 $I_{\Delta n}$**	**5 $I_{\Delta n}$ or 0.25 A[a]**	**5 A, 10 A, 20 A, 50 A, 100 A, 200 A, 500 A[b]**	
General	Any	< 0.3	0.3	0.15	-	0.04	0.04	Maximum break times
		0.03	0.3	0.15	-	0.04	0.04	
		> 0.03	0.3	0.15	0.04		0.04	
S	≥ 25	> 0.03	0.5	0.2	0.15		0.15	
		> 0.03	0.13	0.06	0.05		0.04	Minimum non-actuating times

[a] Value to be decided by the manufacturer for this test.

[b] The tests are only made during the verification of the correct operation as mentioned in 9.9.2.4.

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Table 1.1	*Add Table 1.1 after Table 1:* **Table 1.1 — Limit values of break time alternating residual currents (r.m.s. values) for type 1 RCCB**		N/A

			Limit values of break time(s) for type 1 RCCB in event of alternating residual currents (r.m.s. values) equal to					
Type	**I_n A**	**$I_{\Delta n}$ A**	**$I_{\Delta n}$**	**2 $I_{\Delta n}$**	**5 $I_{\Delta n}$**	**5 $I_{\Delta n}$ or 0.25 A[a]**	**5 A, 10 A, 20 A, 50 A, 100 A, 200 A, 500 A[b]**	
General	Any	≤ 0.01	0.04	0.04	-	0.04	0.04	Maximum break times

[a] Value to be decided by the manufacturer for this test.

[b] The tests are only made during the verification of the correct operation as mentioned in 9.9.2.4.

Table 2.1	*Add* Table 2.1 after Table 2: **Table 2.1 — Maximum values of break time for half-wave pulsating residual currents (r.m.s values) for type 1 RCCB**		N/A

Table 2.1 — Maximum values of break time for half-wave pulsating residual currents (r.m.s values) for type 1 RCCB

			Maximum values of break time(s) for type 1 RCCB in event of half-wave pulsating residual currents (r.m.s. values) equal to							
Type	**I_n A**	**$I\Delta_n$ A**	**1.4 $I_{\Delta n}$**	**2 $I_{\Delta n}$**	**2.8 $I_{\Delta n}$**	**4 $I_{\Delta n}$**	**7 $I_{\Delta n}$**	**0.35 A**	**0.5 A**	**350 A**
1	Any	≤0.01		0.04		0.04			0.04	0.04

6	**MARKING AND OTHER PRODUCT INFORMATION**		P
6	*Replacement* 1. ..... *Delete* item (a) and *replace* with the following: (a) ..... name, registered trade name or mark of the manufacturer, or of the responsible vendor;		P
	2. ..... *Add* the following Note after item (c): Refer to 5.3.1 for specific requirements.		P

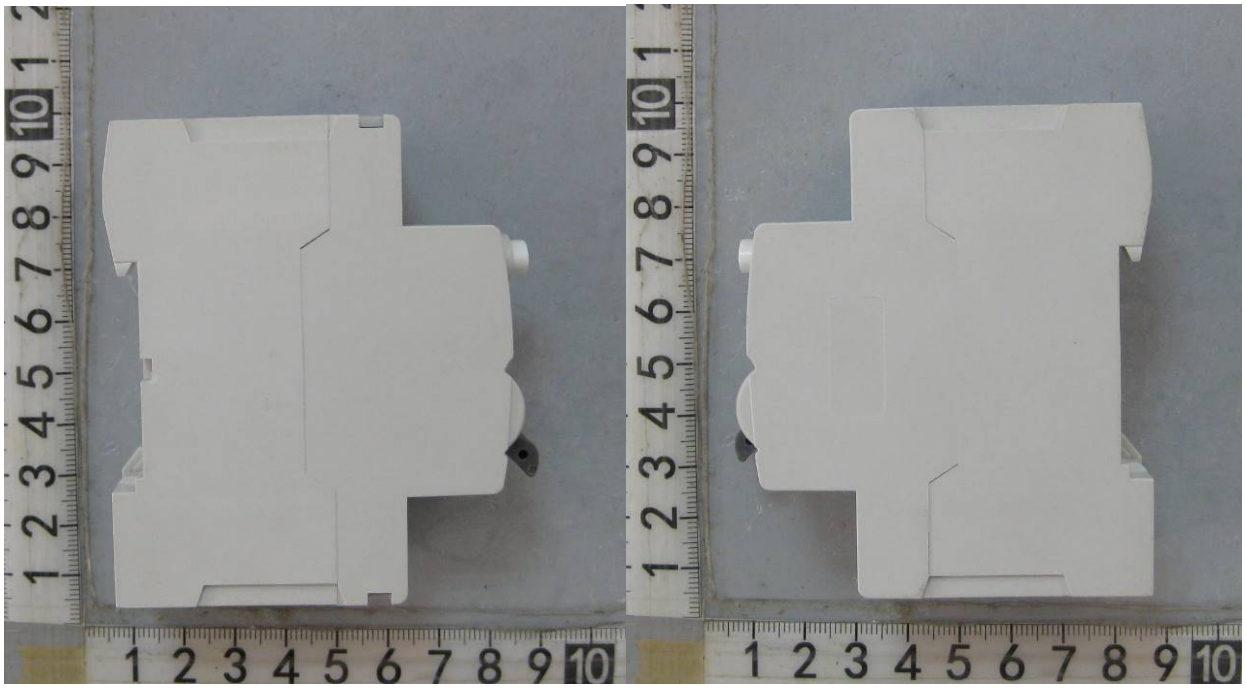
IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	3. *Add* the following sentence to item (f): If an RCCB has a rating of ≤ 0.01 A and is of the general type in Table 1 and 2, and not compliant with type 1 in Tables 1.1 and 2.1, it shall be marked as 'GENERAL TYPE, NOT FOR PATIENT AREAS'.		N/A
	4. *Delete* item (g)		P
8	**REQUIREMENTS FOR CONSTRUCTION AND OPERATION**		P
8.1.1	Replacement *Delete* Clause 8.1.1 and replace with the following: **8.1.1 General** The residual current detection and the residual current release shall be located between the incoming and outgoing terminals of the RCCB. RCCBs shall have a single fixed value of rated residual operating current. It shall not be possible to disable or inhibit the RCCB function by any means.		P
8.1.4.4	Addition *Add* the following new last paragraph: Compliance is checked by inspection and, if necessary, by chemical analysis.		P
8.11	Replacement *Delete paragraph 4 and replace with the following paragraph and Notes 1 and 2:* The protective conductor of the installation shall not become live (see NOTE 1) when the test device is operated. It shall not be possible to energize (see NOTE 2) the circuit on the load side by operating the test device when the RCCB is in the open position and connected as in normal use. NOTE 1 Verification of the protective conductor for a live voltage is by inspection of the RCCB circuit diagram and in case of doubt a test of the voltage on any connection to a protective earth. NOTE 2 Verification of load side for energization nspection of the RCCB circuit diagram and, in case of doubt, a test of the voltage on the load terminals.		P
9	**TESTS**		--

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.9.2.4	*Delete Clause 9.9.2.4 and replace* with the following: **9.9.2.4 Verification of the correct operation in case of sudden appearance of residual currents between 5 $I_{\Delta n}$ and 500 A.** The test circuit is calibrated successively to the following values of the residual current: 5 A, 10 A, 20 A, 50 A, 100 A, 200 A and 500 A.	See pages 57~58;78~79;97~98;115; 123~124	P
	The test switch S1 and the RCCB being in the closed position, the residual current is suddenly established by closing the test switch S2.		P
	The RCCB shall trip during each test. The break time shall not exceed the times given in Table 1 and Table 1.1.		P
	The test is made once for each value of residual current on one pole only, taken at random.		P
9.22.1.3	Replacement *Delete* item (b)(1) and *replace* with the following item and Note: 1. The RCCB in the closed position, mounted, wired and energized as for normal use, is introduced into the chamber. NOTE It is permissible to energize only those parts required for the operation of the RCD.		P

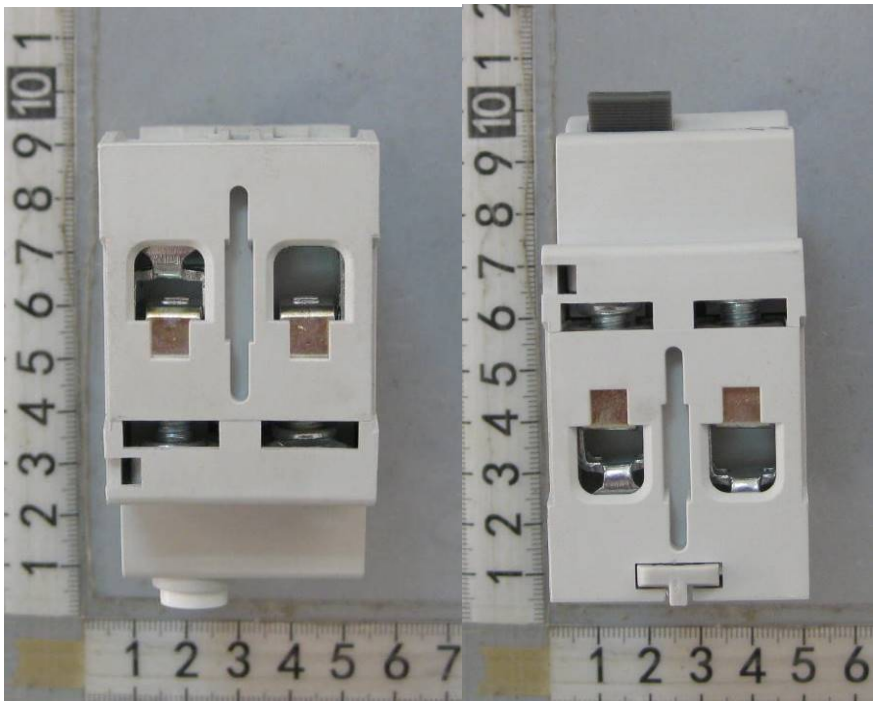
In=80A IΔn =30mA 1P+N A type

Over View

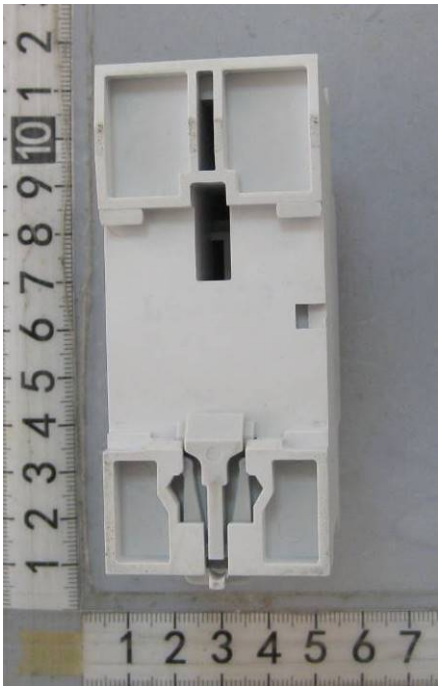
Side View



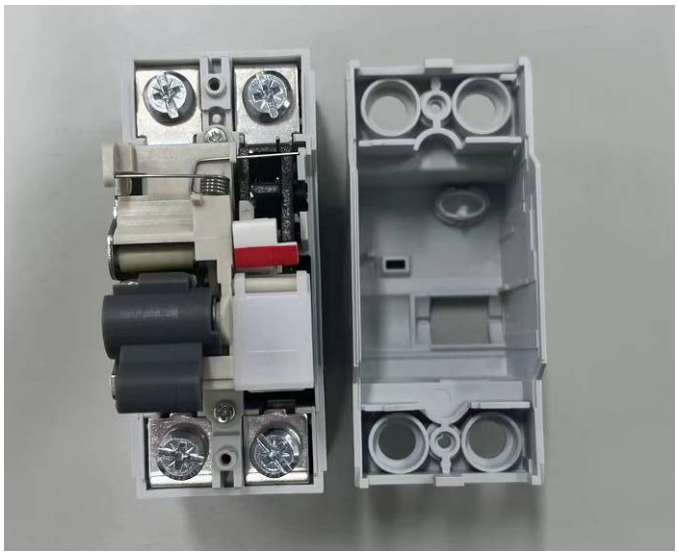
Side View



Bottom View

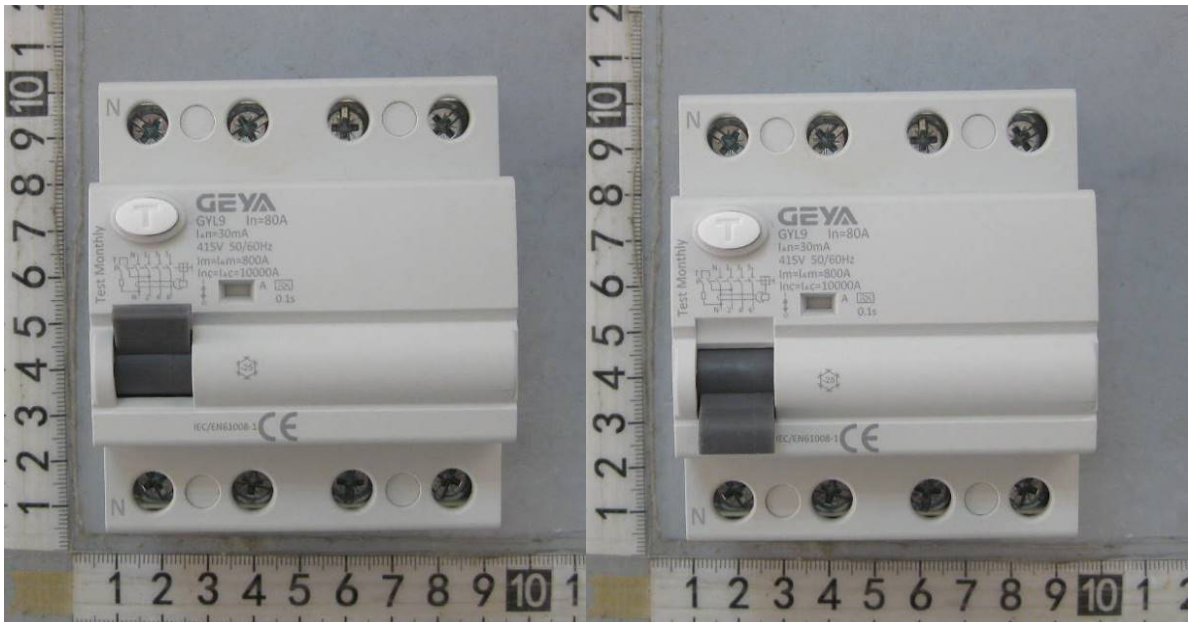


Inside View

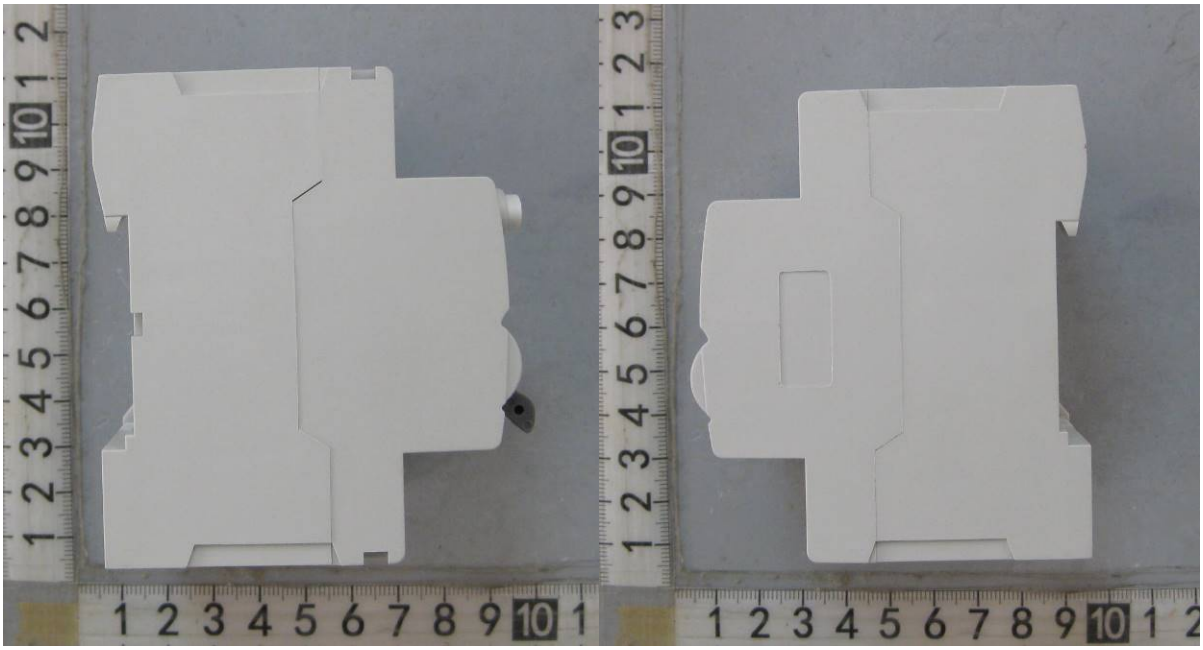


In=80A IΔn =30mA 3P+N A type

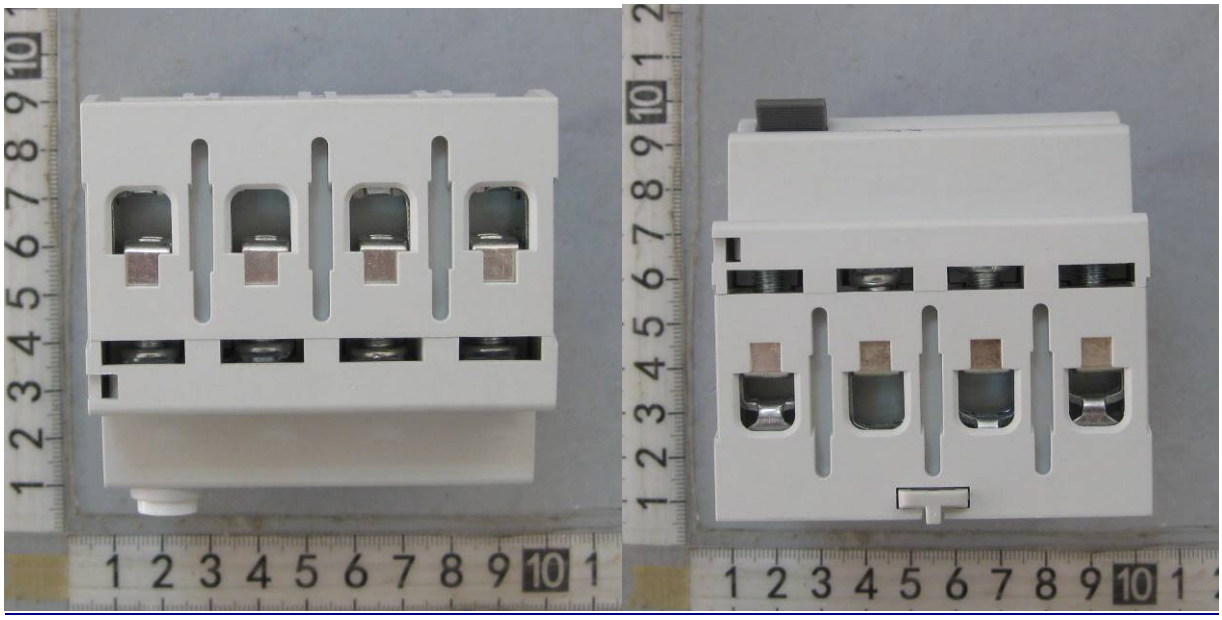
Over View



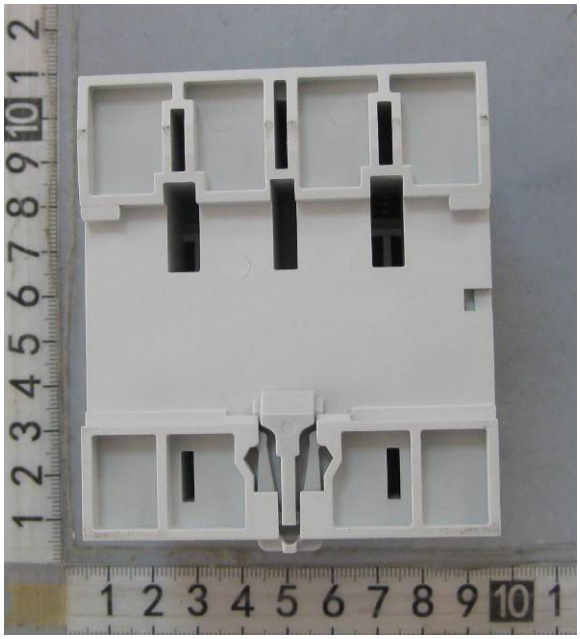
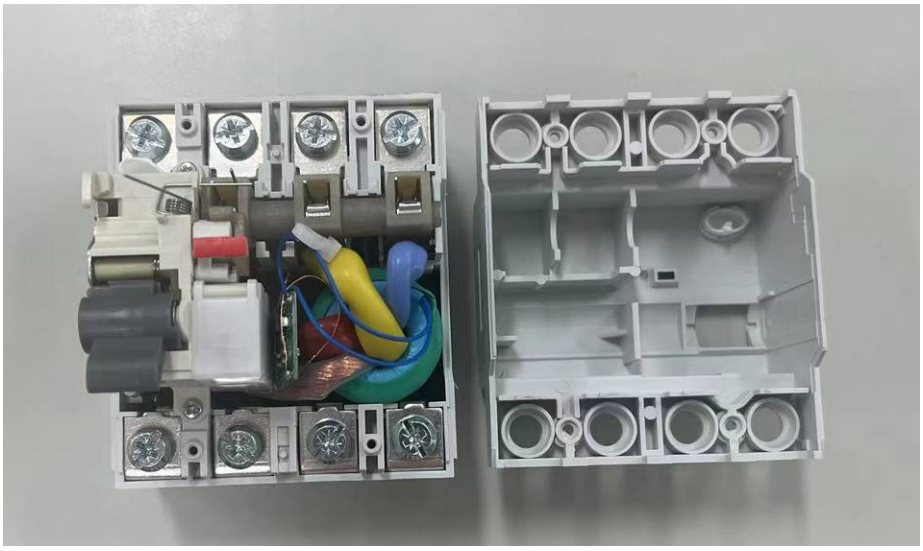
Side View



Side View



Bottom View



Internal view