Test Report issued under the responsibility of:

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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. .....:	**CN23AWQR 002**
Date of issue .....:	2024.01.29
Total number of pages.....:	159
Name of Testing Laboratory preparing the Report.....:	**Hunan Electric Research Institute Testing Group Co.,Ltd.**
Applicant's name.....:	**Elmark Industries SC**
Address .....:	**2 Dobrudzha blvd.,Dobrich,BULGARIA**
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

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
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Test item description .....:	**RCCBs**
Trade Mark .....:	ELMARK
Manufacturer.....:	Elmark Industries SC
Model/Type reference .....:	JEL1A
Ratings .....:	Un=230V~(1P+N); 400V~(3P+N); 50/60Hz; In=10,16,20,25,32,40,63A; IΔn=30mA,100mA,300mA; Type AC or Type A Im=IΔm=500 or 10In(whichever is the greater) IΔc=Inc=6,0kA

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	Hunan Electric Research Institute Testing Group Co.,Ltd.	
Testing location/ address ..... :		199 Xinxiangxi Road, Xiangxiang Kunlunqiao, Xiangtan, Hunan Province, China	
Tested by (name, function, signature) ..... :		Test engineer Wu Jiang	Wu Jiang
Approved by (name, function, signature) .. :		Reviewer Li Bin	Li Bin
☐	**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):
N/A

Summary of testing:

This CB test report is Amendment No.1 to CB test report CN23AWQR 001 dated 2023.10.25,it's created for updating of manufacturer and factory's name and address.And in order to increase 60Hz for JEL1A.

Before Change :
MAXGE ELECTRIC TECHNOLOGY CO., LTD.
NO. 299 EAST CHANGHONG ROAD DEQING ECONOMIC ZONE, WUKANG DEQING, 313200 Zhejiang P.R. China

After Change :
Elmark Industries SC
2 Dobrudzha blvd.,9300 Dobrich Bulgaria

Tests performed (name of test and test clause):

Test sequence A (A_1+A_2)

1P+N, 63 A, Type A, 30 mA, General type	page 7*

Test sequence D(D_0+D_1)

1P+N, 63 A, Type A, 30 mA, General type	page 18
1P+N, 63 A, Type AC, 30 mA, General type	page 61
3P+N, 63 A, Type A, 30 mA, General type	page 123
3P+N, 63 A, Type AC, 30 mA, General type	page 130

Test sequence D(D_2)

1P+N, 63A, Type A, 30 mA, General type	page 42
3P+N, 63A, Type A, 30 mA, General type	page 118

Test sequence D_0

1P+N, 63A, Type A, 100 mA, General type	page 47
1P+N, 63A, Type A, 300 mA, General type	page 53
1P+N, 63A, Type AC, 100 mA, General type	page 81
1P+N, 63A, Type AC, 300 mA, General type	page 87

Remark:The Test sequence marked'*'are based on Hunan Electric Research Institute CB report,the others are based on Intertek CB report No. 180600073SHA_V1.

Summary of compliance with National Differences:

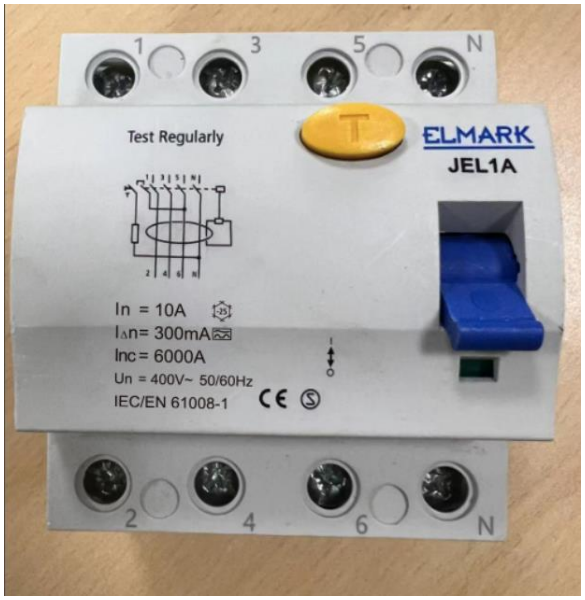
EU Group Differences

☒ **The product fulfils the requirements of EN 61008-1:2012+A1+A2+A11+A12 and EN 61008-2-1:1994+A11.**

Copy of marking plate

With sample of 1P+N, type A, 10A, 300mA, General type

with sample 3P+N, General type, 10A, type A, 300mA



Test item particulars.....:	
Classification of RCCBs functionally dependent on the line voltage .....:	N/A
Opening automatically in case of failure of the line voltage.....:	N/A
- 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.....:	N/A
- 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 .....:	IP20
- for fixed installation.....:	Yes / ~~No~~
- for mobile installation.....:	Yes / ~~No~~
Number of poles.....:	1P+N or 3P+N
Ambient air temperature (°C) .....:	-25...+40 ºC
Method of mounting.....:	DIN rail mounting
Method of connection .....:	not associated with the mechanical mounting
Rated residual operating current (A) .....:	$I_{\Delta n}$ = 30, 100, 300mA (General type);
Rated current (A) .....:	16A, 25A, 40A, 63A
Rated voltage (V).....:	230V (1P+N); 400V (3P+N)
Rated impulse withstand voltage (U_{imp})	4,0kV
Nature of supply.....:	AC
Rated frequency (Hz).....:	50/60Hz

ated making and breaking capacity (A) ..... :	500A or 10In(which is greater)
Rated residual making and breaking capacity (A) ..... :	500A or 10In(which is greater)
Rated conditional short-circuit current (A) ..... :	6,0kA
Rated conditional residual short-circuit current (A).... :	6,0kA
Type of terminal ..... :	Pillar terminal and screw 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 ..... :	**15.01.2024**
Date (s) of performance of tests ..... :	**15.01.2024 to 29.01.2024**

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(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) ..... :	Elmark Industries SC
	2 Dobrudzha blvd.,9300 Dobrich Bulgaria

General product information:

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

Un=230V~(1P+N); 400V~(3P+N); 50Hz;

In=10,16,20,25,32,40,63A;

IΔn=30mA,100mA,300mA; Type AC or Type A

Im=IΔm=500 or 10In(whichever is the greater)

IΔc=Inc=6,0kA

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

	TEST SEQUENCE A_1 (1 sample) 1P+N, 63 A, Type A, 30 mA,General type		
6.	**Marking**		
	a) manufacturer's name or trademark .....:	ELMARK	P
	b) type designation, catalogue number or serial number .....:	JEL1A	P
	c) rated voltage(s) (V) .....:	230V	P
	d) rated frequency (Hz) .....:	50/60 Hz	P
	e) rated current (A) .....:	63 A	P
	f) rated residual operating current (A) .....:	30 mA	P
	h) rated making and breaking capacity (A) .....:	630	P
	j) degree of protection .....:	IP20	P
	k) position of use .....:		N/A
	l) rated residual making and breaking capacity (A) .....:	630	P
	m) symbol S for type S		N/A
	n) symbol of the method of operation .....:		N/A
	o) operating means of test device .....:	T	P
	p) wiring diagram .....:	Yes	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 :	e), f), o) and q) 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) .....:	Without time-delay	N/A
	Open position indicated by "0" and closed position by "I" .....:	O-OFF / I-ON	P
	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
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		N/A
	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

IEC 61008-1			
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		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		P
	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		P
	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

IEC 61008-1			
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.		N/A
	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

IEC 61008-1			
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) .....:	2,5 Nm; 5 times;	P
	- torque (Nm); 5/10 times; diameter (mm) .....:	5 / 10	N/A
	- torque (Nm); 5/10 times; diameter (mm) .....:	5 / 10	N/A
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		P
	- an alloy 58% copper for parts worked cold		N/A
	- an alloy 50% copper for other parts		N/A
	- other metal		P
	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
	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- torque (Nm); diameter (mm) .....:	2,5 Nm; ø5,9 mm	P
	- torque (Nm); diameter (mm) .....:		N/A
	- torque (Nm); diameter (mm) .....:		N/A
	- max. cross-sectional area (mm²) .....:	25	—
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 / 1,0mm² / 1,5 mm²	—
	Max. cross-section solid / stranded / flexible (mm²):	6mm² / 16mm² / 25mm²	—
	Torque $^{2}/_{3}$ (Nm).....:	1,70Nm	—
	Pull for 1 min solid / stranded / flexible (N) ....:	50N for Min. cross-section 60N / 90N / 100N for Max. cross-section	P
	During the test no noticeable move of conductor		P
9.5.2	Torque test:		P
	- torque (2/3) (Nm) .....:	1,70	—
	- min. cross-sectional area (mm²) .....:	16	—
	- max. cross-sectional area (mm²) .....:	25	—
	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	—
	Max. cross-section flexible (mm²).....:	16	—
	Torque $^{2}/_{3}$ (Nm).....:	1,70Nm	—
	After the test no strand of conductor escaped outside		P
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

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

IEC 61008-1			
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
	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		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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		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 .....:	100 °C ~~/ 70 °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).....:		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 .....:	Enclosure, 125 °C 1,22mm	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 .....:	Handle, 70 °C 0,88mm	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

IEC 61008-1			
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:		P
	- Tests according to 9.7.2 to 9.7.6 as applicable		P
	- 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)		P
	If measurement does not show any reduced clearance, test 9.7.7.2 is not applied		P
	Compliance for item 3, checked by measurement		P
	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	IIIa	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	5,15	P
	2. between live parts of different polarity	7,12	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	22,9	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	16,2	P
	- screws or other means for fixing the RCCB		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- metal covers or boxes		N/A
	- other accessible metal parts		N/A
	- 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	9,03	P
	2. between live parts of different polarity	16,1	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	> 10,00	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	28,4	P
	- screws or other means for fixing the RCCB		N/A
	- metal covers or boxes		N/A
	- other accessible metal parts		N/A
	- 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

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

	TEST SEQUENCE D (3+3+3 samples) (D0+D1+D2) 1P+N, 63 A, Type A, 30 mA,General type										
	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									Test on 50 and 60Hz	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									23 °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) ..... :									$I_{\Delta n}$=30mA	P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..... :									D1 – 21,9~23,1mA D2 –22,8~23,2mA D3 –21,8~22,4mA	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
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) ..... :	D1 – 44 D2 – 42 D3 – 42	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: $I_{\Delta n}$ ..... :	D1 – 43 D2 – 42 D3 – 42	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D1 – 43 D2 – 42 D3 – 40	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D1 – 31 D2 – 30 D3 – 25	P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :		N/A
	- maximum break time (ms) at: 500 A ..... :	D1 – 20 D2 – 17 D3 – 15	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) ..... : According to – AS/NZS 61008.1:2015	D1 – 9,2 D2 – 9,2 D3 – 9,1	P
	- maximum break time (ms) at: __10____A (value 2 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	D1 – 9,7 D2 – 9,8 D3 – 9,5	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: __20____A (value 3 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	D1 – 9,7 D2 – 9,4 D3 – 9,8	P
	- maximum break time (ms) at: __50____A (value 4 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	D1 – 9,7 D2 – 9,6 D3 – 9,1	P
	- maximum break time (ms) at: __100___A (value 5 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	D1 – 9,1 D2 – 9,1 D3 – 9,7	P
	- maximum break time (ms) at: __200___A (value 6 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	D1 – 9,8 D2 – 9,2 D3 – 9,6	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: $I_{\Delta n}$ ..... :	D1 – 39 D2 – 41 D3 – 39	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D1 – 27 D2 – 25 D3 – 26	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) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D1 – 19 D2 – 16 D3 – 18	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:		P
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test ..... :	63	—
	- cross-sectional area (mm^2) ..... :	16	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	D1 – 42 D2 – 48 D3 – 44	P

IEC 61008-1			
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: $I_{\Delta n}$ ..... :	D1 – 89---38 D2 – 97---44 D3 – 95---39	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D1 – 45 D2 – 47 D3 – 48	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D1 – 25 D2 – 24 D3 – 28	P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 500 A ..... :	D1 – 10,3 D2 – 9,5 D3 – 10,4	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 ..... :	63	—

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- cross-sectional area (mm^2) ..... :	16	—
	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: $I_{\Delta n}$ ..... :	D1 –38 D2 –40 D3 –37	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	D1 – 24 D2 – 22 D3 – 26	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :	D1 – 30 D2 – 30 D3 – 31	P
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	D1 - 18 D2 - 15 D3 - 16	N/A
	- maximum break time (ms) at: 500 A ..... :	D1 – 10,2 D2 – 10,4 D3 – 10,6	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		P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
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)	0~42mA	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° (+/-) ..... :	D1 – 25,4~26,7mA D2 – 26,3~27,2mA D3 – 27,9~28,8mA	P
	- angle α = 90° (+/-) ..... :	D1 – 21,5~22,1mA D2 – 24,0~25,3mA D3 – 24,0~26,4mA	P
	- angle α = 135° (+/-) ..... :	D1 – 22,0~23,2mA D2 – 26,1~27,3mA D3 – 24,4~27,8mA	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 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 4 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 – 29 D2 – 33 D3 – 31	P
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) ..... :	D1 – 27 D2 – 29 D3 – 28	P
	- maximum break time (ms) at: 0,35 A rms (+/-) . :	D1 – 11 D2 – 12 D3 – 11	P
	- maximum break time (ms) at: 350 A rms (+/-) .. :	D1 – 9,4 D2 – 9,6 D3 – 9,5	P
	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: 7 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :	D1 - D2 - D3 -	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		

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- test current (A): In ..... :	63	—
	- 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)	0~42	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° (+/-) ..... :	D1 – 25,5~26,6mA D2 – 26,4~27,2mA D3 – 27,9~28,7mA	P
	- angle α = 90° (+/-) ..... :	D1 – 21,6~22,1mA D2 – 24,1~25,4mA D3 – 24,0~26,3mA	P
	- angle α = 135° (+/-) ..... :	D1 – 22,0~23,3mA D2 – 26,0~27,3mA D3 – 24,3~27,8mA	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)	0~42mA	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) ..... :	D1 – 25,7~26,9mA D2 – 26,2~27,1mA D3 – 27,5~28,2mA	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

IEC 61008-1			
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) .:	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		
	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

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

IEC 61008-1			
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
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A

IEC 61008-1			
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 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%	200	P
	- virtual front time: 0,5 μs ± 30%	0,5 μs	P
	- period of the following oscillatory wave: 10 μs ± 20%	10 μs	P
	- each successive reverse peak: about 60% of the preceding peak	OK	P
	The polarity shall be inverted after every two applications	OK	P
	The interval between two consecutive applications shall be about 30 s	30 s	P
	During the test the RCCB shall not trip .....:	D1 – not trip D2 – not trip D3 – not trip	P
	- break time (ms) at: $I_{\Delta n}$ .....:	D1 – 37 D2 – 34 D3 – 35	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%	3,0kA	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Virtual front time: 0,8μs ± 20%	0,8 μs	P
	Virtual time of half value: 20μs ± 20%	20 μs	P
	Peak of reverse current: less than 30 % of peak value	OK	P
	The polarity shall be inverted after every two applications	OK	P
	The interval between two consecutive applications shall be about 30 s	30s	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 $I_{\Delta n}$ .....:	D1 – 32 D2 – 31 D3 – 34	P
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°	45°	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)	D1 - < 0,2 mA D2 - < 0,2 mA D3 - < 0,2 mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) .....:	D1 – 460 D2 – 460 D3 – 460	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	b) .....:	D1 – 460 D2 – 460 D3 – 460	P
	c) .....:	D1 – 460 D2 – 460 D3 – 460	P
	d) .....:	D1 – 460 D2 – 460 D3 – 460	P
	e) .....:	D1 - D2 - D3 -	N/A
	No flashover or breakdown .....:	D1 – OK D2 – OK D3 – OK	P
	Making and breaking In at Un .....:	D1 – OK D2 – OK D3 – OK	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	D1 – 32 D2 – 27 D3 – 30	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

IEC 61008-1			
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		N/A
	RCCB supplied with rated voltage, and the line voltage then switched off		
	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

IEC 61008-1			
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
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		

IEC 61008-1			
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
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ .....:	630	—
	Test circuit according to figure .....:	7	—

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Point of test circuit which is directly earthed .....:	Neutral pole of supply	—
	Grid distance "a" (mm) .....:	35	—
	Prospective current (A) .....:	630	—
	Prospective current obtained (A) .....:	638	—
	Power factor .....:	0,93…0,98	—
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°	45°	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)	D1 - < 0,2mA D2 - < 0,2 mA D3 - < 0,2 mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) between open contacts.....:	D1 – 460 D2 – 460 D3 – 460	P
	b) between terminals (closed contacts) .....:	D1 – 460 D2 – 460 D3 – 460	P
	c) between poles and frame.....:	D1 – 460 D2 – 460 D3 – 460	P
	d) between metal parts of the mechanism and the frame.....:	D1 – 460 D2 – 460 D3 – 460	P
	e) RCCBs with a metal enclosure.....:	D1 - D2 - D3 -	N/A
	No flashover or breakdown .....:	D1 – OK D2 – OK D3 – OK	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Making and breaking In at Un .....:	D1 – OK D2 – OK D3 – OK	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	D1 – 25 D2 – 27 D3 – 32	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		N/A
9.17.1	Limiting value of the line voltage (Ux):		N/A
	- 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		N/A

IEC 61008-1			
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	- 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		N/A
	- 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:		N/A

IEC 61008-1			
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:		N/A
	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 S_2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S_1		N/A
	- 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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Additional test for type S:		N/A
	- 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
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		N/A
8.11	Test device		
	RCCBs shall be provided with a test device		P
	Ampere-turns produced when operating the test device do not exceed 1,66 times the ampere-turns produced by $I_{\Delta n}$		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 .....:	D1 – OK D2 – OK D3 – OK	P
	b) test a) repeated at 1,1 times the rated voltage :	D1 – OK D2 – OK D3 – OK	P
	c) test b) repeated, but only once, the operating means of the test device being held in the closed position for 30 s .....:	D1 – OK D2 – OK D3 – OK	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	RCCB operated at each test .....:	D1 – operated D2 – operated D3 – operated	P
	No change impairing further use .....:	D1 – OK D2 – OK D3 – OK	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 .....:	D1 – OK D2 – OK D3 – OK	P
9.12.2	Mechanical impact		
9.12.2.1	Impact test (10 blows, height 10 cm): no damage :	D1 – OK D2 – OK D3 – OK	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 .....:	D1 – OK D2 – OK D3 – OK	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 .....:	378A, 1s	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Test repeated three times with an interval of at least 1 min .....:	D1 – OK D2 – OK D3 – OK	P
	The RCCB shall not open .....:	D1 – OK D2 – OK D3 – OK	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		
	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 .....:	D1 - D2 - D3 -	N/A
	The RCCB shall not open .....:	D1 - D2 - D3 -	N/A
	RCCBs functionally dependent on the line voltage at rated voltage		N/A

	Tests "D2"		**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 .....:		—
	Grid distance "a" (mm) .....:	35	—
	Test voltage 105% of rated phase to neutral voltage for the pole exclusively for the neutral	252	
	Test voltage 105% of rated phase to phase voltage for the other poles	444V	
	Prospective current - 500A or - 10 I_n (A) .....:	 630	
	Prospective current (A) .....:	630	—
	Prospective current obtained (A) .....:	645	—
	Power factor .....:	0,93…0,98	—
	Power factor obtained .....:	0,96	—

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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 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)	D1 - < 0,2 mA D1 - < 0,2 mA D1 - < 0,2 mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) .....:	D1 – 460 D2 – 460 D3 – 460	P
	b) .....:	D1 – 460 D2 – 460 D3 – 460	P
	c) .....:	D1 – 460 D2 – 460 D3 – 460	P
	d) .....:	D1 – D2 – D3 –	N/A
	e) .....:	D1 – 460 D2 – 460 D3 – 460	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	D1 –63A,230VAC D2 –63A,230VAC D3 –63A,230VAC	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	D1 – 34 D2 – 25 D3 – 30	P
	The polyethylene sheet shows no holes		P

IEC 61008-1			
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		
	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

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

IEC 61008-1			
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
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s .....:	D1 - D2 - D3 -	N/A

IEC 61008-1			
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 tests		N/A

	TEST SEQUENCE D (1 sample) (D0) 1P+N, 63A, Type A, 100 mA,type General										
	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										--

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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	22 °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) .....:	$I_{\Delta n}$=100mA	P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	78,1~79,0mA	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) .....:	39	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: $I_{\Delta n}$ .....:	34	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	31	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	26	P
	- maximum break time (ms) at: 500 A .....:	11	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) .....: According to – AS/NZS 61008.1:2015	21	P
	- maximum break time (ms) at: __10____A (value 2 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	17	P
	- maximum break time (ms) at: __20____A (value 3 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	15	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: __50____A (value 4 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	15	P
	- maximum break time (ms) at: __100___A (value 5 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	14	P
	- maximum break time (ms) at: __200___A (value 6 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	13	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: $I_{\Delta n}$ .....:	36	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	33	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	27	P
	- maximum break time (ms) at: 500 A .....:	12	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 .....:	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:		P
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test .....:	63	—
	- cross-sectional area (mm^2) .....:	16	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	35	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	35	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	29	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	32	P
	- maximum break time (ms) at: 500 A .....:	11	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:		

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- test current (A): In at a temperature of +40 °C: until steady state conditions are reached .....:	63	—
	- cross-sectional area (mm^2) .....:	16	—
	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: $I_{\Delta n}$ .....:	34	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	31	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	26	P
	- maximum break time (ms) at: 500 A .....:	11	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
	- 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		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):		

IEC 61008-1			
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)	0~140mA	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° (+/-) .....:	79,1~81,3mA	P
	- angle α = 90° (+/-) .....:	79,3~81,7mA	P
	- angle α = 135° (+/-) .....:	79,6~81,6mA	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 $I_{\Delta n}$ (+/-) .....:	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 $I_{\Delta n}$ (+/-) .....:	27	P
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) .....:	23	P
	- maximum break time (ms) at: 0,35 A rms (+/-) .:	13	P
	- maximum break time (ms) at: 350 A rms (+/-) ..:	10	P
	RCCBs with $I_{\Delta n}$ > 0,03 A:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) .....:	D1 – 189/192 D2 – 190/188 D3 - 200/204	P
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) .....:	D1 – 112/110 D2 – 111/114 D3 - 113/115	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-) .....:	D1 - 96/97 D2 - 100/93 D3 - 103/100	P
	- maximum break time (ms) at: 350 A rms (+/-) ..:	D1 - 103/100 D2 – 90/95 D3 – 95/97	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 .....:	63	—
	- 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)	0~140mA	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° (+/-) .....:	78,9~80,9mA	P
	- angle α = 90° (+/-) .....:	79,1~82,7mA	P
	- angle α = 135° (+/-) .....:	79,6~81,3mA	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) .....:	78,6~82,3mA	P
	No value exceeds the relevant specified limiting values		P

	TEST SEQUENCE D (1 sample) (D0) 1P+N, 63A, Type A, 300 mA,type General	
	Tests "D0"	
8.5	Operating characteristics	

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

	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						21 °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) .....:						$I_{\Delta n}$=300mA				P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:						235~238mA				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) .....:						37				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										

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	39	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	34	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	27	P
	- maximum break time (ms) at: 500 A .....:	12	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) .....: According to – AS/NZS 61008.1:2015	22	P
	- maximum break time (ms) at: __10____A (value 2 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	19	P
	- maximum break time (ms) at: __20____A (value 3 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	16	P
	- maximum break time (ms) at: __50____A (value 4 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	14	P
	- maximum break time (ms) at: __100___A (value 5 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	12	P
	- maximum break time (ms) at: __200___A (value 6 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	14	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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: $I_{\Delta n}$ .....:	36	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	34	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	29	P
	- maximum break time (ms) at: 500 A .....:	11	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 .....:	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:		P
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test .....:	63	—
	- cross-sectional area (mm²) .....:	16	—

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	37	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	37	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	29	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	32	P
	- maximum break time (ms) at: 500 A .....:	11	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:		
	- test current (A): In at a temperature of +40 °C: until steady state conditions are reached .....:	63	—
	- cross-sectional area (mm²) .....:	16	—
	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: $I_{\Delta n}$ .....:	36	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	31	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	27	P
	- maximum break time (ms) at: 500 A .....:	11	P

IEC 61008-1			
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 $I_{\Delta n}$ 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**		N/A
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)	0~420mA	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° (+/-) .....:	232~257mA	P
	- angle α = 90° (+/-) .....:	233~259mA	P
	- angle α = 135° (+/-) .....:	230~255mA	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:		

IEC 61008-1			
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: 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 $I_{\Delta n}$ (+/-) .....:		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
	- 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 $I_{\Delta n}$ (+/-) .....:	27	P
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) .....:	24	P
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-) .....:	14	P
	- maximum break time (ms) at: 350 A rms (+/-) ..:	10	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 .....:	63	—
	- 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)	0~420mA	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° (+/-) .....:	229~259mA	P
	- angle α = 90° (+/-) .....:	230~256mA	P
	- angle α = 135° (+/-) .....:	230~255mA	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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) ..... :	230~252mA	P
	No value exceeds the relevant specified limiting values		P

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

	TEST SEQUENCE D (1 samples) (D0+D1) 1P+N, 63 A, Type AC, 30 mA,General type										
	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						22 °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) .....:						$I_{\Delta n}$=30mA				P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:						21,9~22,1mA				P
9.9.2.2	Verification of the correct operation at closing on residual current										

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	36	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: $I_{\Delta n}$ .....:	37	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	28	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	21	P
	- maximum break time (ms) at: 500 A .....:	11	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) .....: According to – AS/NZS 61008.1:2015	15	N/A
	- maximum break time (ms) at: __10____A (value 2 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	9	N/A
	- maximum break time (ms) at: __20____A (value 3 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	9	N/A
	- maximum break time (ms) at: __50____A (value 4 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	9	N/A
	- maximum break time (ms) at: __100___A (value 5 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	10	N/A
	- maximum break time (ms) at: __200___A (value 6 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	9	N/A

IEC 61008-1			
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 :	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: $I_{\Delta n}$ .....:	39	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	33	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) .....:	25	P
	- maximum break time (ms) at: 500 A .....:	12	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

IEC 61008-1			
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 the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated current:		P
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test .....:	63	—
	- cross-sectional area (mm²) .....:	16	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	35	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	35	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	31	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	24	P
	- maximum break time (ms) at: 500 A .....:	12	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

IEC 61008-1			
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 .....:	63	—
	- cross-sectional area (mm^2) .....:	16	—
	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: $I_{\Delta n}$ .....:	35	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	29	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	24	P
	- maximum break time (ms) at: 500 A .....:	11	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
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)	0~42mA	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° (+/-) .....:		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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	- 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 $I_{\Delta n}$ (+/-) .....:	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: 7 $I_{\Delta n}$ (+/-) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 350 A rms (+/-) ..:	D1 - D2 - D3 -	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 $\alpha = 0°$ (+/-) (+/- 6 mA) .....:		N/A
	No value exceeds the relevant specified limiting values		N/A
	Tests "D1"		
8.12	RCCBs functionally dependent on line voltage		
	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
	- 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

IEC 61008-1			
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:		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
	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

IEC 61008-1			
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		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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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
9.17.5	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%	200	P
	- virtual front time: 0,5 µs ± 30%	0,5 µs	P
	- period of the following oscillatory wave: 10 µs ± 20%	10 µs	P
	- each successive reverse peak: about 60% of the preceding peak	OK	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The polarity shall be inverted after every two applications	OK	P
	The interval between two consecutive applications shall be about 30 s	30 s	P
	During the test the RCCB shall not trip .....:	not trip	P
	- break time (ms) at: $I_{\Delta n}$ .....:	37	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%	3,0kA	P
	Virtual front time: 0,8µs ± 20%	0,8 µs	P
	Virtual time of half value: 20µs ± 20%	20 µs	P
	Peak of reverse current: less than 30 % of peak value	OK	P
	The polarity shall be inverted after every two applications	OK	P
	The interval between two consecutive applications shall be about 30 s	30s	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	630	P
	- break time (ms) at $I_{\Delta n}$ .....:	7	P
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°	35	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA (mA)	D1 - < 0,2 mA D2 - < 0,2 mA D3 - < 0,2 mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) .....:	OK	P
	b) .....:	OK	P
	c) .....:	OK	P
	d) .....:		P
	e) .....:		N/A
	No flashover or breakdown .....:	OK	P
	Making and breaking In at Un .....:	OK	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	37	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		
	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

IEC 61008-1			
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) .....:		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:		

IEC 61008-1			
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: $I_{\Delta n}$ .....:		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 th4 e reclosing function of automatically reclosing RCCBs (under consideration)		
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%	3000A	P
	- virtual front time: 0,5 µs ± 30%	0,8 µs	P
	- period of the following oscillatory wave: 10 µs ± 20%	20 µs	P
	- each successive reverse peak: about 60% of the preceding peak	OK	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The polarity shall be inverted after every two applications	OK	P
	The interval between two consecutive applications shall be about 30 s	30 s	P
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ .....:	630	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	Neutral pole of supply	—
	Grid distance "a" (mm) .....:	35	—
	Prospective current (A) .....:	630	—
	Prospective current obtained (A) .....:	632	—
	Power factor .....:	0,93…0,98	—
	Power factor obtained .....:	0,97	—
	Point of initiation: 45° ± 5°	45°	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)	D1 - < 0,2mA D2 - < 0,2 mA D3 - < 0,2 mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) between open contacts.....:	OK	P
	b) between terminals (closed contacts) .....:	OK	P
	c) between poles and frame.....:	OK	P
	d) between metal parts of the mechanism and the frame.....:		N/A
	e) RCCBs with a metal enclosure.....:		N/A
	No flashover or breakdown .....:	OK	P
	Making and breaking In at Un .....:	OK	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	37	P
	The polyethylene sheet shows no holes		P

IEC 61008-1			
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):		N/A
	- 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		N/A
	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	- 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

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 S_2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S_1		N/A
	- 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:		N/A
	- 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:		N/A
	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 S_2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S_1		N/A
	- 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:		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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)		N/A
8.11	Test device		
	RCCBs shall be provided with a test device		P
	Ampere-turns produced when operating the test device do not exceed 1,66 times the ampere-turns produced by $I_{\Delta n}$		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 .....:	OK	P
	b) test a) repeated at 1,1 times the rated voltage :	OK	P
	c) test b) repeated, but only once, the operating means of the test device being held in the closed position for 30 s .....:	OK	P
	RCCB operated at each test .....:	operated	P
	No change impairing further use .....:	OK	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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 .....:	378A, 1s	P
	Test repeated three times with an interval of at least 1 min .....:	D1 – OK D2 – OK D3 – OK	P
	The RCCB shall not open .....:	D1 – OK D2 – OK D3 – OK	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		
	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 .....:	D1 - D2 - D3 -	N/A
	The RCCB shall not open .....:	D1 - D2 - D3 -	N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	RCCBs functionally dependent on the line voltage at rated voltage		N/A

	TEST SEQUENCE D (1 samples) (D0) 1P+N, 63 A, Type AC, 100 mA,General type										
	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						22 °C				P
9.9.2.1	Verification of the correct operation in case of a steady increase residual current:										

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) ..... :	$I_{\Delta n}$=100mA	P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..... :	78,6~79,1mA	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) ..... :	37	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: $I_{\Delta n}$ ..... :	35	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	30	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	24	P
	- maximum break time (ms) at: 500 A ..... :	11	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) ..... : According to – AS/NZS 61008.1:2015	21	P
	- maximum break time (ms) at: __10____A (value 2 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	19	P
	- maximum break time (ms) at: __20____A (value 3 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	17	P
	- maximum break time (ms) at: __50____A (value 4 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	17	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: __100___A (value 5 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	14	P
	- maximum break time (ms) at: __200___A (value 6 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	13	N/A
	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: $I_{\Delta n}$ .....:	35	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	34	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	31	P
	- maximum break time (ms) at: 500 A .....:	12	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

IEC 61008-1			
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
9.9.2.5	Tests repeated with the RCCB loaded with rated current:		P
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test ..... :	63	—
	- cross-sectional area (mm²) ..... :	16	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	37	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	37	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	30	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	26	P
	- maximum break time (ms) at: 500 A ..... :	11	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:		
	- test current (A): In at a temperature of +40 °C: until steady state conditions are reached ..... :	63	—
	- cross-sectional area (mm²) ..... :	16	—

IEC 61008-1			
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: $I_{\Delta n}$ ..... :	34	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	29	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	26	P
	- maximum break time (ms) at: 500 A ..... :	11	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
	- 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)		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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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:		
	- 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
	- 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 $I_{\Delta n}$ (+/-) .....:	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: 7 $I_{\Delta n}$ (+/-) .....:	D1 - D2 - D3 -	N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 350 A rms (+/-) ... :	D1 - D2 - D3 -	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
	TEST SEQUENCE D (1 samples) (D0) 1P+N, 63 A, Type AC, 300 mA,General type		
	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

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

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						21 °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) ..... :						$I_{\Delta n}$=300mA				P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..... :						231~234mA				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) ..... :						36				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: $I_{\Delta n}$ ..... :						35				P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :						28				P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :										N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	26	P
	- maximum break time (ms) at: 500 A ..... :	11	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) ..... : According to – AS/NZS 61008.1:2015	22	P
	- maximum break time (ms) at: __10____A (value 2 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	20	P
	- maximum break time (ms) at: __20____A (value 3 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	15	P
	- maximum break time (ms) at: __50____A (value 4 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	15	P
	- maximum break time (ms) at: __100___A (value 5 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	14	P
	- maximum break time (ms) at: __200___A (value 6 between 5A and 200A) ..... : According to – AS/NZS 61008.1:2015	14	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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: $I_{\Delta n}$ ..... :	38	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	35	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	30	P
	- maximum break time (ms) at: 500 A ..... :	11	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:		P
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test ..... :	63	—
	- cross-sectional area (mm²) ..... :	16	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) ..... :	36	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ ..... :	37	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	11	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	27	P
	- maximum break time (ms) at: 500 A ..... :	11	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:		
	- test current (A): In at a temperature of +40 °C: until steady state conditions are reached ..... :	63	—
	- cross-sectional area (mm²) ..... :	16	—
	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: $I_{\Delta n}$ ..... :	36	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ ..... :	29	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ ..... :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) ..... :	27	P
	- maximum break time (ms) at: 500 A ..... :	11	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

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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 $I_{\Delta n}$ (+/-) ..... :		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
	- 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 $I_{\Delta n}$ (+/-) ..... :	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: 7 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 350 A rms (+/-) .. :	D1 - D2 - D3 -	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

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

	TEST SEQUENCE D (3+3+3 samples) (D0+D1+D2) 3P+N, 63 A, Type A, 30 mA,General type										
	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	--

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

				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						23 °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) .....:						D1 –6---30 D2 –6---30 D3 –6---30				P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:						D1 - 22,0~22,6mA D2 - 22,6~23,2mA D3 – 24,2~26,5mA				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) .....:						D1 – 39 D2 – 38 D3 – 38				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: $I_{\Delta n}$ .....:						D1 – 38 D2 – 36 D3 – 45				P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:						D1 – 30 D2 – 24 D3 – 28				P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:										N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:						D1 – 15 D2 – 13 D3 – 14				P
	- maximum break time (ms) at: 500 A .....:						D1 – 9,4 D2 – 9,8 D3 – 10,4				P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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) .....: According to – AS/NZS 61008.1:2015	D1 – 10,3 D2 – 9,9 D3 – 10,1	P
	- maximum break time (ms) at: __10____A (value 2 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	D1 – 10,1 D2 – 10,2 D3 – 8,9	P
	- maximum break time (ms) at: __20____A (value 3 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	D1 – 9,8 D2 – 9,5 D3 – 10,2	P
	- maximum break time (ms) at: __50____A (value 4 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	D1 – 9,6 D2 – 9,8 D3 – 9,4	P
	- maximum break time (ms) at: __100___A (value 5 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	D1 – 9,5 D2 – 9,1 D3 – 10,1	P
	- maximum break time (ms) at: __200__A (value 6 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	D1 – 9,6 D2 – 8,9 D3 – 9,1	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

IEC 61008-1			
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 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: $I_{\Delta n}$ .....:	D1 – 35 D2 – 37 D3 – 41	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 – 26 D2 – 29 D3 – 26	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 – 13 D2 – 15 D3 – 18	P
	- maximum break time (ms) at: 500 A .....:	D1 – 10,2 D2 – 10,1 D3 – 10,3	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

IEC 61008-1			
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:		P
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test .....:	63	—
	- cross-sectional area (mm^2) .....:	16	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	D1 – 38 D2 – 34 D3 – 38	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	D1 – 33 D2 – 34 D3 – 39	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 – 23 D2 – 30 D3 – 24	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 – 13 D2 – 13 D3 – 14	P
	- maximum break time (ms) at: 500 A .....:	D1 – 9,4 D2 – 10,2 D3 – 9,6	P
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		N/A
	- 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

IEC 61008-1			
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 .....:	63	—
	- cross-sectional area (mm^2) .....:	16	—
	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: $I_{\Delta n}$ .....:	D1 – 37 D2 – 38 D3 – 40	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	D1 – 26 D2 – 28 D3 – 24	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	D1 – 12 D2 – 13 D3 – 13	P
	- maximum break time (ms) at: 500 A .....:	D1 – 18 D2 – 16 D3 – 13	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

IEC 61008-1			
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° (+/-) .....:	D1 – 27,6~29,0mA D2 – 25,8~27,3mA D3 – 24,4~26,8mA	P
	- angle α = 90° (+/-) .....:	D1 – 23,7~29,0mA D2 – 24,2~25,3mA D3 – 21,4~22,2mA	P
	- angle α = 135° (+/-) .....:	D1 – 24,2~27,3mA D2 – 26,0~27,2mA D3 – 22,0~23,0mA	P
	No value exceeds the relevant specified limiting values		P

IEC 61008-1			
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 - 31 D2 - 32 D3 – 32	P
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) .....:	D1 - 28 D2 - 28 D3 – 27	P
	- maximum break time (ms) at: 0,35 A rms (+/-) ..:	D1 - 11 D2 - 12 D3 - 11	P
	- maximum break time (ms) at: 350 A rms (+/-) ...:	D1 – 8,9 D2 – 9,0 D3 – 8,8	P
	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 350 A rms (+/-) ...:	D1 - D2 - D3 -	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 .....:	63	—
	- 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° (+/-) .....:	D1 – 27,4~28,8mA D2 – 26,0~27,4mA D3 – 24,5~26,7mA	P
	- angle α = 90° (+/-) .....:	D1 – 23,8~26,3mA D2 – 24,1~25,3mA D3 – 21,5~22,0mA	P
	- angle α = 135° (+/-) .....:	D1 – 24,3~27,4mA D2 – 26,1~27,2mA D3 – 22,1~23,1mA	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) .....:	D1 – 26,6~28,2mA D2 – 26,3~27,6mA D3 – 25,7~26,8mA	P

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

IEC 61008-1			
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:		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
	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

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

IEC 61008-1			
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		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%	200	P
	- virtual front time: 0,5 µs ± 30%	0,5 µs	P
	- period of the following oscillatory wave: 10 µs ± 20%	10 µs	P
	- each successive reverse peak: about 60% of the preceding peak	OK	P
	The polarity shall be inverted after every two applications	OK	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The interval between two consecutive applications shall be about 30 s	30 s	P
	During the test the RCCB shall not trip .....:	D1 – not trip D2 – not trip D3 – not trip	P
	- break time (ms) at: $I_{\Delta n}$ .....:	D1 – 35 D2 – 37 D3 – 35	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%	3,0kA	P
	Virtual front time: 0,8μs ± 20%	0,8 μs	P
	Virtual time of half value: 20μs ± 20%	20 μs	P
	Peak of reverse current: less than 30 % of peak value	OK	P
	The polarity shall be inverted after every two applications	OK	P
	The interval between two consecutive applications shall be about 30 s	30s	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 $I_{\Delta n}$ .....:	D1 – 37 D2 – 29 D3 – 36	P
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°	45°	P
	Test sequence: O-t-CO-t-CO on each pole in turn excluding the switched neutral pole		P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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)	D1 - < 0,2 mA D2 - < 0,2 mA D3 - < 0,2 mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) .....:	D1 –800 D2 –800 D3 –800	P
	b) .....:	D1 –800 D2 –800 D3 –800	P
	c) .....:	D1 –800 D2 –800 D3 –800	P
	d) .....:	D1 –800 D2 –800 D3 –800	P
	e) .....:	D1 - D2 - D3 -	N/A
	No flashover or breakdown .....:	D1 – OK D2 – OK D3 – OK	P
	Making and breaking In at Un .....:	D1 – OK D2 – OK D3 – OK	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	D1 – 22 D2 – 23 D3 – 21	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):		

IEC 61008-1			
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) .:	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		
	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

IEC 61008-1			
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
	- minimum non-actuating time (ms) at: 500 A; 0,04 s .....:	D1 - D2 - D3 -	N/A

IEC 61008-1			
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: $I_{\Delta n}$ .....:	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

IEC 61008-1			
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
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ .....:	630	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	Neutral pole of supply	—
	Grid distance "a" (mm) .....:	35	—
	Prospective current (A) .....:	630	—
	Prospective current obtained (A) .....:	642	—
	Power factor .....:	0,93…0,98	—
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°	45°	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)	D1 - < 0,2 mA D2 - < 0,2 mA D3 - < 0,2 mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) between open contacts .....:	D1 –800 D2 –800 D3 –800	P
	b) between terminals (closed contacts) .....:	D1 –800 D2 –800 D3 –800	P
	c) between poles and frame.....:	D1 –800 D2 –800 D3 –800	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	d) between metal parts of the mechanism and the frame.....:	D1 –800 D2 –800 D3 –800	P
	e) RCCBs with a metal enclosure.....:	D1 - D2 - D3 -	N/A
	No flashover or breakdown .....:	D1 – OK D2 – OK D3 – OK	P
	Making and breaking In at Un .....:	D1 – OK D2 – OK D3 – OK	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	D1 – 29 D2 – 24 D3 – 23	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		N/A
9.17.1	Limiting value of the line voltage (Ux):		N/A
	- 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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	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	- 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 S_2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S_1		N/A
	- 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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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:		N/A
	- 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:		N/A
	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 S_2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S_1		N/A
	- 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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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:		N/A
	- 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
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		N/A
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 $I_{\Delta n}$	D1:41 ampere-turns D2:41 ampere-turns D3:41 ampere-turns	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:		

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	a) RCCB at 0,85 times the rated voltage, test device actuated 25 times at intervals of 5 s .....:	D1 – OK D2 – OK D3 – OK	P
	b) test a) repeated at 1,1 times the rated voltage :	D1 – OK D2 – OK D3 – OK	P
	c) test b) repeated, but only once, the operating means of the test device being held in the closed position for 30 s .....:	D1 – OK D2 – OK D3 – OK	P
	RCCB operated at each test .....:	D1 – operated D2 – operated D3 – operated	P
	No change impairing further use .....:	D1 – OK D2 – OK D3 – OK	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 .....:	D1 – OK D2 – OK D3 – OK	P
9.12.2	Mechanical impact		
9.12.2.1	Impact test (10 blows, height 10 cm): no damage :	D1 – OK D2 – OK D3 – OK	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 .....:	D1 – OK D2 – OK D3 – OK	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.12.2.3	RCCBs of plug-in type (under consideration)		P
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 .....:		N/A
	Test repeated three times with an interval of at least 1 min .....:	D1 – D2 – D3 –	N/A
	The RCCB shall not open .....:	D1 – D2 – D3 –	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 .....:	378A 1s	—
	Test repeated three times for each possible combination of current paths with an interval of at least 1 min .....:	D1 – OK D2 – OK D3 – OK	P
	The RCCB shall not open .....:	D1 – OK D2 – OK D3 – OK	P
	RCCBs functionally dependent on the line voltage at rated voltage		N/A

	Tests "D2"		**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 .....:		—
	Grid distance "a" (mm) .....:	35	—

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Test voltage 105% of rated phase to neutral voltage for the pole exclusively for the neutral	252	
	Test voltage 105% of rated phase to phase voltage for the other poles	444V	
	Prospective current - 500A or - 10 I_n (A) .....:	630	
	Prospective current (A) .....:	630	—
	Prospective current obtained (A) .....:	639	—
	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 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)	D1 - < 0,2 mA D2 - < 0,2 mA D3 - < 0,2 mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) .....:	D1 - 800 D2 - 800 D3 - 800	P
	b) .....:	D1 - 800 D2 - 800 D3 - 800	P
	c) .....:	D1 - 800 D2 - 800 D3 - 800	P
	d) .....:	D1 - 800 D2 - 800 D3 - 800	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	e) .....:	D1 - D2 - D3 -	N/A
	No flashover or breakdown .....:		P
	Making and breaking In at Un .....:	D1 – OK D2 – OK D3 – OK	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	D1 – 32 D2 – 27 D3 – 24	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
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

IEC 61008-1			
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) .....:	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

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

IEC 61008-1			
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		N/A

	TEST SEQUENCE D (1 sample) (D0+D1) 3P+N, 63 A, Type A, 30 mA,type General										
	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		--

IEC 61008-1											
Clause	Requirement + Test						Result - Remark				Verdict
	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						22 °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) .....:						30mA				P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:						21~22,3mA				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) .....:						37				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: $I_{\Delta n}$ .....:						38				P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:						29				P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:										N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:						23				P
	- maximum break time (ms) at: 500 A .....:						12				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):										

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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) .....: According to – AS/NZS 61008.1:2015	16	P
	- maximum break time (ms) at: __10____A (value 2 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	12	P
	- maximum break time (ms) at: __20____A (value 3 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	10	P
	- maximum break time (ms) at: __50____A (value 4 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	10	P
	- maximum break time (ms) at: __100___A (value 5 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	9	P
	- maximum break time (ms) at: __200____A (value 6 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	9	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: $I_{\Delta n}$ .....:	37	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	30	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	25	P
	- maximum break time (ms) at: 500 A .....:	12	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:		P
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test .....:	63	—
	- cross-sectional area (mm^2) .....:	16	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	34	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	38	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	29	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	25	P
	- maximum break time (ms) at: 500 A .....:	11	P
	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 .....:	63	—
	- cross-sectional area (mm²) .....:	16	—
	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: $I_{\Delta n}$ .....:	36	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	30	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	21	P
	- maximum break time (ms) at: 500 A .....:	11	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
	- 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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
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)		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:		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-) ..... :	D1 - D2 - D3 -	N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 $I_{\Delta n}$ (+/-) .....:		
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-) .....:		
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-) .....:		
	- maximum break time (ms) at: 350 A rms (+/-) ..:		
	No value exceeds the relevant specified limiting value		
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 .....:	63	—
	- 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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	No value exceeds the relevant specified limiting values		N/A

	TEST SEQUENCE D (1 samples) (D0+D1) 3P+N, 63 A, Type AC, 30 mA,General type										
	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						22 °C				P
9.9.2.1	Verification of the correct operation in case of a steady increase residual current:										

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:	$I_{\Delta n}$=30mA	P
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) .....:	21,7~22,3mA	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) .....:	37	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: $I_{\Delta n}$ .....:	38	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	29	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	23	P
	- maximum break time (ms) at: 500 A .....:	12	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) .....: According to – AS/NZS 61008.1:2015	16	P
	- maximum break time (ms) at: __10____A (value 2 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	12	P
	- maximum break time (ms) at: __20____A (value 3 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	10	P
	- maximum break time (ms) at: __50____A (value 4 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	10	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: __100___A (value 5 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	9	P
	- maximum break time (ms) at: __200___A (value 6 between 5A and 200A) .....: According to – AS/NZS 61008.1:2015	9	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: $I_{\Delta n}$ .....:	37	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	30	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) .....:	25	P
	- maximum break time (ms) at: 500 A .....:	12	P
	No value exceeds the relevant specified limiting value		P

IEC 61008-1			
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 the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated current:		P
	- test current (A): In, the pole under test and one other pole loaded with rated current, the current being established shortly before the test .....:	63	—
	- cross-sectional area (mm²) .....:	16	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms) .....:	34	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :		
	- maximum break time (ms) at: $I_{\Delta n}$ .....:	38	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	29	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	25	P
	- maximum break time (ms) at: 500 A .....:	11	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

IEC 61008-1			
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 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 .....:	63	—
	- cross-sectional area (mm²) .....:	16	—
	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: $I_{\Delta n}$ .....:	36	P
	- maximum break time (ms) at: 2 $I_{\Delta n}$ .....:	30	P
	- maximum break time (ms) at: 5 $I_{\Delta n}$ .....:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) .....:	21	P
	- maximum break time (ms) at: 500 A .....:	11	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

IEC 61008-1			
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)		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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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: 0,35 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 $I_{\Delta n}$ (+/-) .....:	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: 7 $I_{\Delta n}$ (+/-) .....:	D1 - D2 - D3 -	N/A
	- maximum break time (ms) at: 350 A rms (+/-) ...:	D1 - D2 - D3 -	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

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

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

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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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
9.17.5	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%	200	P
	- virtual front time: 0,5 µs ± 30%	0,5 µs	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- period of the following oscillatory wave: 10 μs ± 20%	10 μs	P
	- each successive reverse peak: about 60% of the preceding peak	OK	P
	The polarity shall be inverted after every two applications	OK	P
	The interval between two consecutive applications shall be about 30 s	30 s	P
	During the test the RCCB shall not trip .....:	not trip	P
	- break time (ms) at: $I_{\Delta n}$ .....:	34	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%	3,0kA	P
	Virtual front time: 0,8μs ± 20%	0,8 μs	P
	Virtual time of half value: 20μs ± 20%	20 μs	P
	Peak of reverse current: less than 30 % of peak value	OK	P
	The polarity shall be inverted after every two applications	OK	P
	The interval between two consecutive applications shall be about 30 s	30s	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	630	P
	- break time (ms) at $I_{\Delta n}$ .....:	7	P
	Power factor obtained .....:	0,95	—
	Point of initiation: 45° ± 5°	35	P
	Test sequence: O-t-CO-t-CO on each pole in turn excluding the switched neutral pole		P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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)	D1 - < 0,2 mA D2 - < 0,2 mA D3 - < 0,2 mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) .....:	OK	P
	b) .....:	OK	P
	c) .....:	OK	P
	d) .....:		P
	e) .....:		N/A
	No flashover or breakdown .....:	OK	P
	Making and breaking In at Un .....:	OK	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	37	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		

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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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
9.17.5	Verification of th4 e reclosing function of automatically reclosing RCCBs (under consideration)		
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%	3000A	P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- virtual front time: 0,5 μs ± 30%	0,8 μs	P
	- period of the following oscillatory wave: 10 μs ± 20%	20 μs	P
	- each successive reverse peak: about 60% of the preceding peak	OK	P
	The polarity shall be inverted after every two applications	OK	P
	The interval between two consecutive applications shall be about 30 s	30 s	P
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ .....:	630	—
	Test circuit according to figure .....:	7	—
	Point of test circuit which is directly earthed .....:	Neutral pole of supply	—
	Grid distance "a" (mm) .....:	35	—
	Prospective current (A) .....:	630	—
	Prospective current obtained (A) .....:	632	—
	Power factor .....:	0,93…0,98	—
	Power factor obtained .....:	0,97	—
	Point of initiation: 45° ± 5°	45°	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)	D1 - < 0,2mA D2 - < 0,2 mA D3 - < 0,2 mA	P
9.7.3	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:		
	a) between open contacts.....:	OK	P
	b) between terminals (closed contacts) .....:	OK	P
	c) between poles and frame.....:	OK	P
	d) between metal parts of the mechanism and the frame.....:		N/A
	e) RCCBs with a metal enclosure.....:		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	No flashover or breakdown .....:	OK	P
	Making and breaking In at Un .....:	OK	P
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$ (ms) .....:	37	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**		N/A
9.17.1	Limiting value of the line voltage (Ux):		N/A
	- 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		N/A
	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	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) .....:		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 S_2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S_1		N/A
	- 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:		N/A
	- 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:		N/A
	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 S_2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S_1		N/A
	- 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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		N/A
	- 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)		N/A
8.11	Test device		
	RCCBs shall be provided with a test device		P
	Ampere-turns produced when operating the test device do not exceed 1,66 times the ampere-turns produced by $I_{\Delta n}$		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 .....:	OK	P
	b) test a) repeated at 1,1 times the rated voltage :	OK	P
	c) test b) repeated, but only once, the operating means of the test device being held in the closed position for 30 s .....:	OK	P
	RCCB operated at each test .....:	operated	P
	No change impairing further use .....:	OK	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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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 .....:	378A, 1s	P
	Test repeated three times with an interval of at least 1 min .....:	D1 – OK D2 – OK D3 – OK	P
	The RCCB shall not open .....:	D1 – OK D2 – OK D3 – OK	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		
	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 .....:	D1 - D2 - D3 -	N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The RCCB shall not open .....:	D1 - D2 - D3 -	N/A
	RCCBs functionally dependent on the line voltage at rated voltage		N/A

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

ATTACHMENT 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)

Part 1: General rules

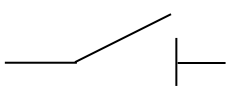
Differences according to .....:	EN 61008-1:2012+A1:2014+A2:2014+A11:2015+A12:2017 used in conjunction with EN 61008-2-1:1994 + A11:1998
TRF template used .....:	IECEE OD-2020-F2:2020, Ed. 1.1
Attachment Form No. .....:	EU_GD_IEC61008_1H
Attachment Originator .....:	OVE
Master Attachment .....:	Dated 2022-08-16

	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"		
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.		-
	RCCB marked with:		-
a)	The manufacturer's name or trademark	ELMARK	P
b)	Type designation, catalogue number or serial number	JEL1	P
c)	Rated voltage(s) with the symbol ~	230V~(1P+N)	P

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

		400V~(3P+N)	
d)	Rated frequency, if the RCCB is designed for frequencies other than 50Hz	50/60Hz	P
e)	rated current	63A	P
f)	Rated residual operating current ($I_{\Delta n}$) in A or in mA	30mA	P
h) *)	Rated making and breaking capacity (I_m)	630A	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 I_m	N/A
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"	"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	IP20	N/A

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

	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		
	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.		P
	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 "|"	O/I	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		P
	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

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

	- 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	Marking made by impression	N/A
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		-
	- no markings		P
	For non-universal terminals:		-
	- 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:		-
	- The RCCB shall comply with all the requirements of the additional standard.		P
	- 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.		P
	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.		P
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		P

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

	interventions		
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~~		-
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.~~		-
8.1.Z1 add	Non-interchangeability		-
	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	Mechanical mounting of plug-in type RCCBs		-

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

add					
	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)				-
	Compliance of the mechanical mounting is checked by the relevant tests of 9.12.				N/A
	TEST SEQUENCE "D"	**D1**	**D2**	**D3**	
	TESTS D_0				
9.9.1 delete:	~~For multiple settings of $I_{\Delta n}$ tests are made for each setting~~				
	TESTS D_1				
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				-
	U_N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	--
					N/A
	All values less than 0,7 U_N				N/A
	Tripping test:				-
	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

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

9.17.2 replace by:	Verification of behaviour in case of failure of the line voltage				
	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				-
	- 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				--
	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)*				--
9.11.2.3	Verification of the rated residual making and breaking capacity (A): $I_{\Delta m}$ .....:	630			--
9.7.3 modify	Dielectric strength test of the main circuit at test voltage 2 Un for 1 min:				--
	a) .....:	D1 -OK D2 -OK D3 -OK			P
	b) .....:	D1 -OK D2 -OK D3 -OK			P
	c) .....:	D1 -OK D2 -OK D3 -OK			P
	d) .....:	D1 - D2 - D3 -			N/A

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

	No flashover or breakdown .....:	D1 -OK D2 -OK D3 -OK	P
8.11 replace by:	**Test device**		--
	RCCBs provided with a test device		P
	RCCBs with rated residual current of 30mA:		--
	Ampere-turns produced when operating the test device do not exceed 1,66 times the ampere turns produced by $I_{\Delta N}$		P
	RCCBs with rated residual current other than 30mA:		--
	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		--
	test acc. 9.12.2.1 for all types, in addition by the tests of:		--
	- 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 .....:	D1 -OK D2 -OK D3 -OK	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		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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).		
	TESTS "D2"		
9.11.2.3c) 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:		
	a) .....:	E1 -OK E2 -OK E3 -OK	P
	b) .....:	E1 -OK E2 -OK E3 -OK	P
	c) .....:	E1 -OK E2 -OK E3 -OK	P
	d) .....:	E1 - E2 - E3 -	N/A
	No flashover or breakdown .....:	E1 -OK E2 -OK E3 -OK	P

END