



TEST REPORT IEC 61008-1

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

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Name of Testing Laboratory preparing the Report....:

Hunan Electric Research Institute Testing Group Co.,Ltd.

Applicant's name..... Elmark Industries SC

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Test specification:

Standard IEC 61008-1:2010 (Third Edition) +A1:2012 +A2:2013

used in conjunction with

IEC 61008-2-1:1990 (First Edition) or IEC 61008-2-2:1990 (First Edition)

Test procedure CB Scheme

Non-standard test method.....: N/A

Test Report Form No...... IEC61008_1H

Test Report Form(s) Originator....: OVE

Master TRF...... Dated 2015-11

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Test item description:	RCCBs		
Trade Mark:	ELN	MARK	
Manufacturer:	MAXGE	ELECTRIC TECHN	NOLOGY CO., LTD.
Model/Type reference:	JEL1A		
Ratings			(3P+N);
	In = 16A	, 25A, 40A, 63 A;	
Responsible Testing Laboratory (as	applicab	ole), testing proce	dure and testing location(s):
□ CB Testing Laboratory:		Hunan Electric Re Co.,Ltd.	esearch Institute Testing Group
Testing location/ address	:	199 Xinxiangxi Ro Hunan Province, 0	oad, Xiangxiang Kunlunqiao, Xiangtan, China
Tested by (name, function, signatur	e):	Test engineer	Mr Jeany
		Wu Jiang	M Jiang
Approved by (name, function, signa	ture) :	Reviewer	
		Li Bin	Low
☐ Testing procedure: CTF Stage 1	:		
Testing location/ address	:		
Tested by (name, function, signatur	e):		
Approved by (name, function, signa	ture) :		
		Ι	
Testing procedure: CTF Stage 2			
Testing location/ address	·····:		
Tested by (name + signature)	:		
Witnessed by (name, function, signa	ature).:		
Approved by (name, function, signa	ture) :		
☐ Testing procedure: CTF Stage 3			
Testing procedure: CTF Stage 4			
Testing location/ address			
Tested by (name, function, signature			
Witnessed by (name, function, signal			
Approved by (name, function, signa			
Supervised by (name, function, sign	iature) :		

List of Attachments (including a total number of pages in each attachment):

Attachment 1: EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES-28 pages Attachment 2: Photo documentation – 6 pages

Summary of testing:

The model JEL1A is family RCCBs of the same fundamental design. According to table A.3 of Annex A, following ratings products were subject relevant test accordingly.

Sample allocation and test items according to IEC 61008-1.

And the deviations EN 61008-1:2012+A1:2014+A2:2014+A11:2015+A12:2017

used in conjunction with EN 61008-2-1:1994 + A11:1998 are considered. So test sequence and samples see table below:

	Test	sample	Rating							Tes	st sec	quenc	е					
Pole	In	l∆n	Туре	Time- delay	A ₁	A ₂	В	С	D ₀ +D ₁	D ₀	D ₂	E	F	G₀	G ₁	Н	I	J
1P+N	63A	30mA	Α	-	1	3	3	3	3	-	3	3	3	-	-	-	-	-
1P+ N	63A	100mA	Α	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
1P+ N	63A	300mA	Α	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
1P+ N	63A	30mA	AC	-	1	-	-	1	1	-	-	-	-	1	-	-	1	-
1P+ N	63A	100mA	AC	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
1P+ N	63A	300mA	AC	-	-	-	-	-	-	1	-	-	-	-	3	-	-	-
1P+ N	10A	300mA	Α	-	-	-	-	-	-	-	-	-	3	3	-	-	-	-
3P+N	63A	30mA	Α	-	1	3	3	3	3	-	3	3	3	3	3	3	3	3
3P+N	16A	300mA	Α	-	1	-	-	•	-	-	-	-	3	3	3	-	-	-
3P+N	63A	30mA	AC	-	1	-	-	•	1	-	-	-	-	-	-	-	-	-

Note:

1)Type A tested firstly, type AC tested according to table A.4

Tests performed (name of test and test clause):		Remark:The Test sequence
Test sequence A (A ₁ +A ₂)		marked'*'are based on Hunan Electric
1P+N, 63 A, Type A, 30 mA, General type	page 10*	Research Institute CB report,the others are based on Intertek CB
Test sequence B		report No. 180600073SHA_V1.
1P+N, 63 A, Type A, 30 mA, General type	page 32	·
3P+N, 63 A, Type A, 30 mA, General type	page 40	
Test sequence C		
1P+N, 63 A, Type A, 30 mA, General type	page 49*	
3P+N, 63 A, Type A, 30 mA, General type	page 51	
Tost seguence D(D.+D.)		
Test sequence D(D ₀ +D ₁) 1P+N, 63 A, Type A, 30 mA, General type	page 52	
1P+N, 63 A, Type AC, 30 mA, General type	page 96	
3P+N, 63 A, Type A, 30 mA, General type	page 158	
3P+N, 63 A, Type AC, 30 mA, General type	page 165	
Test sequence D(D ₂)		
1P+N, 63A, Type A, 30 mA, General type	page 77	
3P+N, 63A, Type A, 30 mA, General type	page 153	
Test sequence D₀		
1P+N, 63A, Type A, 100 mA, General type	page 82	
1P+N, 63A, Type A, 300 mA, General type	page 88	
1P+N, 63A, Type AC, 100 mA, General type	page 116	
1P+N, 63A, Type AC, 300 mA, General type	page 122	
Test sequence E		
1P+N, 63A, Type A, 30 mA, General type	page 185*	
3P+N, 63A, Type A, 30 mA, General type	page 194*	
Test sequence F		
1P+N, 63A, Type A, 30 mA, General type	page 205	
1P+N, 10A, Type A, 300 mA, General type	page 214*	
3P+N, 63 A, Type A, 30 mA, General type	page 224	
3P+N, 10A, Type A, 300 mA, General type	page 233*	
Test sequence G		
1P+N, 63A, Type AC, 300 mA, General type(G ₁)	page 242	
1P+N, 10A, Type A, 300 mA, General type(G_0)	page 242 page 243	
$3P+N$, 63A, Type A, 30 mA, General type(G_0+G_1)	page 244	
$3P+N$, 10A, Type A, 300 mA, General type(G_0+G_1)		
2, 1.5.1, 1.7 po 7 ij 500 iii ij 50110101 typo(501+51)	Pago 2 1 1	
Test sequence H		
3P+N, 63 A, Type A, 30 mA,General type	page 245	
Test sequence I		
3P+N, 63 A, Type A, 30 mA, General type	page 246	
Test sequence J		
3P+N, 63 A, Type A, 30 mA, General type	page 246	

Summary of compliance with National Differences:

EU Group Differences

 \boxtimes The product fulfils the requirements of <u>EN 61008-1:2012+A1+A2+A11+A12</u> and <u>EN 61008-2-1:1994+A11.</u>

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 °C
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)	
Rated voltage (V)	230V (1P+N); 400V (3P+N)
Rated impulse withstand voltage (U _{imp})	4,0kV
Nature of supply	AC
Rated frequency (Hz)	50Hz

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:	15.09.2023				
Date (s) of performance of tests:	16.09.2023 to 22.10.2023				
General remarks:					
The test results presented in this report relate only to the This report shall not be reproduced, except in full, with laboratory. "(see Enclosure #)" refers to additional information ap "(see appended table)" refers to a table appended to the Throughout this report a or comma / point is under the property of the comma / point is under the co	out the written approval of the Issuing testing pended to the report. ne report.				
Manufacturer's Declaration per sub-clause 4.2.5 of	IECEE 02:				
The application for obtaining a CB Test Certificate	Yes				
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	Not applicable ■ Not applicable Not applicable Not applicable				
When differences exist; they shall be identified in t	When differences exist; they shall be identified in the General product information section.				
Name and address of factory (ies):	MAXGE ELECTRIC TECHNOLOGY CO., LTD.				
	NO. 299 EAST CHANGHONG ROAD DEQING ECONOMIC ZONE, WUKANG DEQING, 313200 Zhejiang				
	P.R. China				

General product information:

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

 $Un=230V\sim(1P+N),400V\sim(3P+N),50Hz$, switched neutral pole

In=10,16,20,25,32,40,63A;-25~40°C

 $I_{\triangle n}$ =0,03;0,1;0,3A Type AC & Type A

 $I_{nc}=I_{\triangle c}=6000A$

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

TEST SEQUENCE A₁ (1 sample) 1P+N, 63 A, Type A, 30 mA,General type

6.	Marking				
	a) manufacturer's name or trademark:	ELMARK	Р		
	b) type designation, catalogue number or serial	JEL1A	Р		
	number:		-		
	c) rated voltage(s) (V):	230V	Р		
	d) rated frequency (Hz)	50 Hz	Р		
	e) rated current (A)	63 A	Р		
	f) rated residual operating current (A):	30 mA	Р		
	h) rated making and breaking capacity (A):	630	Р		
	j) degree of protection:	IP20	Р		
	k) position of use:		N/A		
	I) rated residual making and breaking capacity (A)	630	Р		
	:				
	m) symbol S for type S		N/A		
	n) symbol of the method of operation:		N/A		
	o) operating means of test device:	Т	Р		
	p) wiring diagram:	Yes	Р		
	q) operating characteristic:	\approx	Р		
	Marking on the RCCB itself or on nameplate or	e), f), o) and q) are legible	Р		
	nameplates attached to the RCCB and located so	when the RCCB is installed.			
	that for small devices at least e), f), o) and q) (only				
	for type A) are legible when the RCCB is installed :				
	Joule integral withstand capacity (A²s):		N/A		
	Peak current withstand capacity (A):		N/A		
	Time delay when opening in case of failure of the	Without time-delay	N/A		
	line voltage (s):				
	Open position indicated by "0" and closed position	O-OFF / I-ON	Р		
	by "I":				
	For push-buttons the OFF push-button shall either		N/A		
	be red or marked with "0":				
	If necessary to distinguish between supply and		N/A		
	load terminals they shall be clearly marked:				

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Clause	Requirement + Test	Result - Remark	Verdict			
			_			
	Terminals for neutral conductor marked by "N"		P			
	Terminals for protective conductor marked by		N/A			
	[symbol IEC 417-5019 a]					
	Marking indelible, easy legible and not on		Р			
	removable parts					
9.3	Test: 15 s with water, 15 s with hexane		Р			
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		Р			
	- no markings		Р			
	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		Р			
	incoming and outgoing terminals					
	Not possible to alter the operating characteristics		N/A			
	by means of external interventions other than those					
	specifically intended for changing the setting of the					
	residual operating current					
	Changing from one setting to another shall not be		N/A			
	possible without a tool					
	In case of an RCCB having multiple settings of		N/A			
	residual operating current the rating refers to					
	the highest setting					
8.1.2	Mechanism					
	Moving contacts of all poles so mechanically		Р			
	coupled that all poles except the switched neutral,					
	make and break substantially together					
	Switched neutral opens after and closes before		Р			

	IEC 61008-1					
Clause	Requirement + Test	Result - Remark	Verdict			
		T	T			
	Compliance is checked by inspection and by		Р			
	manual tests, using any appropriate means (e.g.:					
	indicator lights, oscilloscope, etc.)					
	Trip-free mechanism		Р			
9.15	Test: the RCCB is mounted and wired as in normal	use				
	- test circuit according to fig. 4a		Р			
	- a residual current equal to 1,5 $I_{\Delta n}$ is passed by		Р			
	closing S2, the RCCB having been closed and the					
	operating means being held in the closed position.					
	The RCCB shall trip					
	- test repeated by moving the operating means		Р			
	slowly (1 s) to a position where the current starts to					
	flow. Tripping shall occur without further movement					
8.1.2	Possible to switch on and off by hand		Р			
	No intermediate positions of the contacts		Р			
	In the open position isolation distance in		Р			
	accordance with the requirements necessary to					
	satisfy the isolating function					
	Indication of the open and closed position of the		Р			
	main contacts shall be provided by one or both of					
	the following means:					
	- the position of the actuator (this being preferred)		Р			
	- a separate mechanical indicator		Р			
	If a separate mechanical indicator is used, this		Р			
	shall show the colour red for the closed position					
	and the colour green for the open position					
	means of indication of the contact position shall be		Р			
	reliable					
	-checked by inspection and by the tests of 9.15					
	RCCBs shall be designed so that the actuator,		Р			
	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					

IEC 61008-1						
Clause	Requirement + Test	Result - Remark	Verdict			
	When means are provided or appointed by the		N/A			
	When means are provided or specified by the		IN/A			
	manufacturer to lock the operating means in the					
	open position: locking only possible when the main					
	contacts are in the open position If the operating means is used for indication, it		P			
	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		N1/A			
	For RCCBs functionally dependent on line voltage,		N/A			
	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 When an indicator light is used this shall be lit		N/A			
	when the RCCB is in the closed position		IN/A			
	·		N/A			
	The indicator light shall not be the only means to		IN/A			
	indicate the closed position		NI/A			
	The action of the mechanism shall not be		N/A			
	influenced by the position of enclosures or covers					
	and shall be independent of any removable part.					
	If the cover is used as a guiding means for push-		Р			
	buttons, it shall not be possible to remove the					
	buttons from the outside					
	Operating means securely fixed; not possible to		P			
	remove them without a tool					
	For "up-down" operating means the contacts shall		Р			
0.4.4	be closed by the up movement					
8.1.4	Screws, current-carrying parts and connections		_			
8.1.4.1	Connections withstand mechanical stresses		Р			
	occurring in normal use					
	Screws for mounting the RCCB are not of thread-		N/A			
	cutting type					

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		Р		
	Torque test:	2 E Nm. E timos.	P		
	- torque (Nm); 5/10 times; diameter (mm)	2,5 Nm; 5 times; 5 / 10			
	- torque (Nm); 5/10 times; diameter (mm)	5/10	N/A N/A		
8.1.4.2	- torque (Nm); 5/10 times; diameter (mm)	37 10	N/A N/A		
8.1.4.3	Electrical connections: contact pressure not transmitted through insulating material unless there is sufficient resilience in the metallic parts		Р		
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:		Р		
	- copper		Р		
	- an alloy 58% copper for parts worked cold		N/A		
	- an alloy 50% copper for other parts		N/A		
	- other metal		Р		
	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).		Р		
	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		Р		
8.1.5	Terminals for external conductors		Р		
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		Р		
	9.5 for screw-type terminals		Р		
	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		Р		
9.5	Torque test:		Р		

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Clause	Requirement + Test	Result - Remark	Verdict
	- torque (Nm); diameter (mm):	2,5 Nm; Ø5,9 mm	Р
	- torque (Nm); diameter (mm):		N/A
	- torque (Nm); diameter (mm):		N/A
	- max. cross-sectional area (mm²):	25	_
9.5.1	Pull test:		Р
	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):	6mm ² / 16mm ² / 25mm ²	_
	Torque ² / ₃ (Nm):	1,70Nm	_
	Pull for 1 min solid / stranded / flexible (N):	50N for Min. cross-section	Р
		60N / 90N / 100N for Max. cross-section	
	During the test no noticeable move of conductor		Р
9.5.2	Torque test:		Р
	- torque (2/3) (Nm):	1,70	_
	- min. cross-sectional area (mm²)	16	_
	- max. cross-sectional area (mm²)	25	_
	The conductor shows no damage		Р
	Terminals have not worked loose and no damage		Р
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):		_
	Torque ² / ₃ (Nm):		_
	After the test no strand of conductor escaped outside		Р
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		Р

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Clause	Requirement + Tes	st		Result - Remark	Verdict
	Rated current (A) sections	Range of nomin			Р
		to be clamped*	(111111-)		
		Rigid (solid or stranded) conductors	Flexible conductors		
	 ≤ 13 > 13 ≤ 16 > 16 ≤ 25 > 25 ≤ 32 > 32 ≤ 50 > 50 ≤ 80 > 80 ≤ 100 	1 to 2,5 1 to 4 1,5 to 6 2,5 to 10 4 to 16 10 to 25 16 to 35	1 to 2,5 1 to 4 1,5 to 6 2,5 to 6 4 to 10 10 to 16 16 to 25		
	> 100 ≤ 125	24 to 50	25 to 35		
	*It is required that, including 50 A, ter solid conductors a conductors. Neve terminals for conductors 1 mm² up to solid conductors of	rminals be design as well as rigid st rtheless, it is per luctors having cro 6 mm² be design	ned to clamp randed mitted that oss-sections		P
	- or terminals for e conductors and terminals for use conductors acco	with aluminium s with copper or v	crew-type vith aluminium		N/A
8.1.5.3	Means for clamping	g the conductors	in the terminals	3	Р
	do not serve to fix	•			
	of 9.5)	any emer eempe			
8.1.5.4	Terminals for In ≤ 3	32 A allow the co	nnection of		Р
0.1.5.4	conductors without				'
8.1.5.5	Terminals shall have				Р
0.1.5.5	strength and metric	·			'
	tests of 9.4 and 9.5		quivalent (See		
0.4.5.0		,			
8.1.5.6	Clamping of condu		ue damage to		Р
	conductor (see tes	•			
8.1.5.7	Clamping of condu	•			P
	surfaces (see tests		,		
8.1.5.8	Terminals so desig	•			Р
	conductor can slip	out while the cla	mping screws		
	or nuts are tightene	ed (see tests of 9	9.5.3.)		

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

IEC 61008-1				
Clause	Requirement + Test	Result - Remark	Verdict	
	Possible to replace plug-in RCCBs easily without		N/A	
	touching live parts			
	Lacquer or enamel not considered to provide		Р	
	adequate insulation			
9.6	Test: verify with test finger, 1 min with a force of		Р	
	75 N			
	Enclosures or covers not deformed to such an		Р	
	extent that live parts can be touched			
8.9	Resistance to heat			
	RCCB sufficiently resistant to heat		Р	
9.13.1	Test: 1 h; test temperature (°C): (100 ± 2) °C for	100 °C / 70 °C	Р	
	not removable covers or (70 ± 2)°C for removable			
	covers			
	No change impairing further use and no flow of		Р	
	sealing compound so that live parts are exposed			
	No access to live parts even if the test finger is		Р	
	applied with a force not exceeding 5 N			
	The RCCB shall trip with a test current of 1,25 I _{Δn}		Р	
	(ms):			
	Marking still legible after test		Р	
9.13.2	Ball-pressure test for external parts of insulating		Р	
	material (parts retaining live parts in position); test			
	temperature: 125 °C ± 2°C for 1 h; diameter of	Enclosure, 125 °C		
	impression (mm): ≤ 2 mm:	1,22mm		
9.13.3	Ball-pressure test for external parts of insulating		Р	
	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	Handle, 70 °C		
	impression (mm): \leq 2 mm	0,88mm		
8.1.3	Clearances and creepage distances (internal and e	xternal parts)		
	The minimum required clearances and creepage distances are based on the RCCB being designed for operating in an environment with pollution degree 2		Р	

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Clause	Requirement + Test	Result - Remark	Verdict	
	Compliance for item 1 in is checked by measurement and by the test of 9.7.7.4.1 and 9.7.7.4.2. The test is carried out with samples not submitted to the humidity treatment described in 9.7.1.		Р	
	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:		Р	
	- Tests according to 9.7.2 to 9.7.6 as applicable		Р	
	- 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)		Р	
	If measurement does not show any reduced clearance, test 9.7.7.2 is not applied		Р	
	Compliance for item 3, checked by measurement		Р	
	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	Ilia	Р	
	Clearances [mm] U _{imp}			
	4kV (see table 5) 2,5kV(see table 5)			
	Minimum clearances (see table 5)			
		minimum clearances [mm]		
	between live parts which are separated when the main contacts are in the open position	5,15	Р	
	2. between live parts of different polarity	7,12	Р	
	3. between circuits supplied from different sources, one of which being PELV or SELV		N/A	
	4. between live parts and:		Р	
	- accessible surfaces of operating means	22,9	Р	
	- 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	Р	
	- screws or other means for fixing the RCCB		N/A	

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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 □	Р	
		I 🗆		
		minimum creepage distances [mm]		
	between live parts which are separated when the main contacts are in the open position	9,03	Р	
	2. between live parts of different polarity	16,1	Р	
	3. between circuits supplied from different sources, one of which being PELV or SELV		N/A	
	4. between live parts and:		Р	
	- accessible surfaces of operating means	> 10,00	Р	
	- 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	Р	
	- 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		Р	
	- 10 min immersed in a 10% solution of .ammonium chloride in water at 20°C±5°C		Р	
	- 10 min in a box containing air saturated with moisture at 20°C±5°C		Р	
	- 10 min at 100°C		Р	
	No sign of rust		Р	

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Clause	Requirement + Test	Result - Remark	Verdict		

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

	TEST SEQUENCE A ₁ (1 sample)		
	3P+N, 63 A, Type A, 30 mA,General type		
6.	Marking		
	a) manufacturer's name or trademark:	ELMARK	Р
	b) type designation, catalogue number or serial	JEL1A	Р
	number:		
	c) rated voltage(s) (V):	400V	Р
	d) rated frequency (Hz):	50/60Hz	N/A
	e) rated current (A):	63 A	Р
	f) rated residual operating current (A):	30 mA	Р
	h) rated making and breaking capacity (A):	500	Р
	j) degree of protection:	IP20	N/A
	k) position of use:		N/A
	I) rated residual making and breaking capacity (A)		N/A
	m) symbol S for type S		N/A
	n) symbol of the method of operation:		N/A
	o) operating means of test device:	Т	Р

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Clause	Requirement + Test	Result - Remark	Verdict	
		T	1	
	p) wiring diagram:	Yes	Р	
	q) operating characteristic:	\approx	Р	
	Marking on the RCCB itself or on nameplate or	e), f), o) and q) are legible	Р	
	nameplates attached to the RCCB and located so	when the RCCB is installed.		
	that for small devices at least e), f), o) and q) (only			
	for type A) are legible when the RCCB is installed :			
	Joule integral withstand capacity (A²s):		N/A	
	Peak current withstand capacity (A):		N/A	
	Time delay when opening in case of failure of the	Without time-delay	N/A	
	line voltage (s):			
	Open position indicated by "0" and closed position	O-OFF / I-ON	Р	
	by "I":			
	For push-buttons the OFF push-button shall either		N/A	
	be red or marked with "0":			
	If necessary to distinguish between supply and		N/A	
	load terminals they shall be clearly marked:			
	Terminals for neutral conductor marked by "N"		Р	
	Terminals for protective conductor marked by		N/A	
	[symbol IEC 417-5019 a]			
	Marking indelible, easy legible and not on		Р	
	removable parts			
9.3	Test: 15 s with water, 15 s with hexane		Р	
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		Р	
	- no markings		Р	
	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		Р	
	incoming and outgoing terminals			

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Clause	Requirement + Test	Result - Remark	Verdict		
			<u> </u>		
	Not possible to alter the operating characteristics		N/A		
	by means of external interventions other than				
	those specifically intended for changing the setting				
	of the residual operating current				
	Changing from one setting to another shall not be		N/A		
	possible without a tool				
	In case of an RCCB having multiple settings of		N/A		
	residual operating current the rating refers to				
	the highest setting				
8.1.2	Mechanism				
	Moving contacts of all poles so mechanically		Р		
	coupled that all poles except the switched neutral,				
	make and break substantially together				
	Switched neutral opens after and closes before		Р		
	other poles				
	Compliance is checked by inspection and by		Р		
	manual tests, using any appropriate means (e.g.:				
	indicator lights, oscilloscope, etc.)				
	Trip-free mechanism		Р		
9.15	Test: the RCCB is mounted and wired as in normal	use			
	- test circuit according to fig. 4a		Р		
	- a residual current equal to 1,5 l _{∆n} is passed by		Р		
	closing S2, the RCCB having been closed and the				
	operating means being held in the closed position.				
	The RCCB shall trip				
	- test repeated by moving the operating means		Р		
	slowly (1 s) to a position where the current starts to				
	flow. Tripping shall occur without further movement				
8.1.2	Possible to switch on and off by hand		Р		
	No intermediate positions of the contacts		Р		
	In the open position isolation distance in		Р		
	accordance with the requirements necessary to		·		
	satisfy the isolating function				
	Indication of the open and closed position of the		Р		
	main contacts shall be provided by one or both of		'		
	the following means:				

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Clause	Requirement + Test	Result - Remark	Verdict	
	T	1	T	
	- the position of the actuator (this being preferred)		Р	
	- a separate mechanical indicator		Р	
	If a separate mechanical indicator is used, this		Р	
	shall show the colour red for the closed position			
	and the colour green for the open position			
	means of indication of the contact position shall be		Р	
	reliable			
	-checked by inspection and by the tests of 9.15			
	RCCBs shall be designed so that the actuator,		Р	
	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			
	When means are provided or specified by the		N/A	
	manufacturer to lock the operating means in the			
	open position: locking only possible when the main			
	contacts are in the open position			
	If the operating means is used for indication, it		Р	
	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			
	For RCCBs functionally dependent on line voltage,		N/A	
	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			
	When an indicator light is used this shall be lit		N/A	
	when the RCCB is in the closed position			
	The indicator light shall not be the only means to		N/A	
	indicate the closed position			

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Clause	Requirement + Test	Result - Remark	Verdict	
	The action of the mechanism shall not be		N/A	
	influenced by the position of enclosures or covers			
	and shall be independent of any removable part.			
	If the cover is used as a guiding means for push-		Р	
	buttons, it shall not be possible to remove the			
	buttons from the outside			
	Operating means securely fixed; not possible to		Р	
	remove them without a tool			
	For "up-down" operating means the contacts shall		Р	
	be closed by the up movement			
8.1.4	Screws, current-carrying parts and connections	T		
8.1.4.1	Connections withstand mechanical stresses		Р	
	occurring in normal use			
	Screws for mounting the RCCB are not of thread-		N/A	
	cutting type			
9.4	Screws and nuts which are operated when		Р	
	mounting and connecting comply with the test of			
	9.4			
	Torque test:	·		
	- torque (Nm); 5/10 times; diameter (mm):	2,5 Nm; 5 times;	Р	
	- 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		N/A	
	operated when mounting the RCCB: correct			
	introduction ensured			
8.1.4.3	Electrical connections: contact pressure not		Р	
	transmitted through insulating material unless there			
	is sufficient resilience in the metallic parts			
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:		Р	
	- copper		N/A	
	- an alloy 58% copper for parts worked cold		N/A	
	- an alloy 50% copper for other parts		N/A	

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Clause	Requirement + Test	Result - Remark	Verdict
			1
	- other metal		Р
	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).	Zn plated steel	Р
	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		Р
8.1.5	Terminals for external conductors		Р
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		Р
	9.5 for screw-type terminals		Р
	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		Р
9.5	Torque test:		Р
	- torque (Nm); diameter (mm):	2,5 Nm; Ø5,9 mm	Р
	- torque (Nm); diameter (mm):		N/A
	- torque (Nm); diameter (mm):		N/A
	- max. cross-sectional area (mm²):	25	_
9.5.1	Pull test:		Р
	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):	6,0mm ² / 16,0mm ² / 25,0mm ²	_
	Torque ² / ₃ (Nm)	1,70Nm	_
	Pull for 1 min solid / stranded / flexible (N):	50N for Min. cross-section	Р
		100N / 90N / 90N for Max. cross-section	
	During the test no noticeable move of conductor		Р
9.5.2	Torque test:	<u>-</u>	Р
	- torque (2/3) (Nm):	1,67	_
	- min. cross-sectional area (mm²):	1,5	_
	- max. cross-sectional area (mm²):	25	_
	The conductor shows no damage		Р
	Terminals have not worked loose and no damage		Р

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Clause	Requirement + Tes	t		Result - Remark	Verdict
9.5.3	Terminals fitted wit specified in Table 6 copper conductor.				_
	Max. cross-section	stranded (mm²)		25	_
	Max. cross-section	flexible (mm²)		16,0	_
	Torque ² / ₃ (Nm)			1,67Nm	_
	After the test no stroutside				Р
8.1.5.2	RCCBs shall be pro	ovided with:			
	- terminals which s copper conducto sectional areas a	rs having nomina	al cross-		Р
	Rated current (A) sections	Range of noming to be clamped* Rigid (solid or stranded) conductors			Р
	 ≤ 13 > 13 ≤ 16 > 16 ≤ 25 > 25 ≤ 32 > 32 ≤ 50 > 50 ≤ 80 > 80 ≤ 100 > 100 ≤ 125 	1 to 2,5 1 to 4 1,5 to 6 2,5 to 10 4 to 16 10 to 25 16 to 35 24 to 50	1 to 2,5 1 to 4 1,5 to 6 2,5 to 6 4 to 10 10 to 16 16 to 25 25 to 35	1,5 to 25 mm ² (solid) 1,5 to 25 mm ² (stranded) 1,5 to 16mm ² (flexible)	
	*It is required that, including 50 A, ter solid conductors a conductors. Never terminals for conductors 1 mm² up to solid conductors of	for current rating minals be design as well as rigid startheless, it is per uctors having cru6 mm² be design	gs up to and ned to clamp randed mitted that oss-sections		Р
	- or terminals for e conductors and v terminals for use conductors acco	with aluminium s with copper or v	crew-type vith aluminium		N/A
8.1.5.3	Means for clamping	g the conductors	in the terminals		Р
	do not serve to fix				
	of 9.5)	·			
8.1.5.4	Terminals for In ≤ 3	32 A allow the co	nnection of		Р
	conductors without	special prepara	tion		

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Clause	Requirement + Test	Result - Remark	Verdict
	T		
8.1.5.5	Terminals shall have adequate mechanical		Р
	strength and metric ISO thread or equivalent (see		
	tests of 9.4 and 9.5.1)		
8.1.5.6	Clamping of conductor without undue damage to		Р
	conductor (see tests of 9.5.2)		
8.1.5.7	Clamping of conductor reliably and between metal		Р
	surfaces (see tests of 9.4 and 9.5.1)		
8.1.5.8	Terminals so designed or positioned that no		Р
	conductor can slip out while the clamping screws		
	or nuts are tightened (see tests of 9.5.3.)		
8.1.5.9	Terminals so fixed or located that they do not work		Р
	loose when the clamping screws or nuts are		
	tightened or loosened (see tests of 9.4)		
8.1.5.10	Clamping screws or nuts of terminals for the		N/A
	protective conductors adequately secured against		
	accidental loosening and not possible to unclamp		
	without a tool		
8.1.5.11	Screws and nuts of terminals for external		Р
	conductors shall be in engagement with a metal		
	thread and the screws shall not be of the tapping		
	screw type		
8.2	Protection against electric shock	T	
	Live parts not accessible in normal use		Р
	For RCCBs other than plug-in type, external parts,		Р
	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		
	Lining reliably fixed		N/A
	Lining has adequate thickness and mechanical		N/A
	strength		
	Inlet openings for cables or conduits shall be of		N/A
	insulating material or be provided with bushings or		
	similar devices of insulating material		
	Such devices shall be reliably fixed		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Such devices shall have adequate mechanical		N/A
	strength		
	For plug-in RCCBs, external parts, other than		N/A
	screws or other means for fixing covers, which are		
	accessible, shall be of insulating material		
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible,		N/A
	insulated from accessible metal parts, from metal		
	frames (for flush-type), from screws or other means		
	for fixing the base and from metal plates		
	Possible to replace plug-in RCCBs easily without		N/A
	touching live parts		
	Lacquer or enamel not considered to provide		Р
	adequate insulation		
9.6	Test: verify with test finger, 1 min with a force of		Р
	75 N		
	Enclosures or covers not deformed to such an		Р
	extent that live parts can be touched		
8.9	Resistance to heat		
	RCCB sufficiently resistant to heat		Р
9.13.1	Test: 1 h; test temperature (°C): (100 ± 2) °C for	100 °C / 70 °C	Р
	not removable covers or (70 ± 2)°C for removable		
	covers		
	No change impairing further use and no flow of		Р
	sealing compound so that live parts are exposed		
	No access to live parts even if the test finger is		Р
	applied with a force not exceeding 5 N		
	The RCCB shall trip with a test current of 1,25 I		Р
	(ms)		
	Marking still legible after test		Р
9.13.2	Ball-pressure test for external parts of insulating		P
3	material (parts retaining live parts in position); test		
	temperature: 125 °C ± 2°C for 1 h; diameter of	Enclosure, 125 °C	
	impression (mm): ≤ 2 mm:	1,22 mm	

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Clause	Requirement + Test	Result - Remark	Verdict	
	1	Γ		
9.13.3	Ball-pressure test for external parts of insulating		Р	
	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	Handle, 70 °C		
	impression (mm): ≤ 2 mm:	0,86mm		
8.1.3	Clearances and creepage distances (internal and ex	rternal parts)		
	The minimum required clearances and creepage distances are based on the RCCB being designed for operating in an environment with pollution degree 2		Р	
	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.		Р	
	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:		Р	
	- Tests according to 9.7.2 to 9.7.6 as applicable		Р	
	- 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)		Р	
	If measurement does not show any reduced clearance, test 9.7.7.2 is not applied		Р	
	Compliance for item 3, checked by measurement		Р	
	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	Illa	Р	
	Clearances [mm] U _{imp}			
	4kV (see table 5) 2,5kV(see table 5)			
	Minimum clearances (see table 5)			
		minimum clearances [mm]		
	between live parts which are separated when the main contacts are in the open position	5,17	Р	

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Clause	Requirement + Test	Result - Remark	Verdict	
	2 hotwoon live parts of different polarity	7.14		
	between live parts of different polarity between giravite symplical from different sources.	7,14	Р	
	3. between circuits supplied from different sources, one of which being PELV or SELV		N/A	
	4. between live parts and:		Р	
	- accessible surfaces of operating means	23,1	Р	
	- 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	16,4	Р	
	- 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	
	Minimum creepage distances (see table 5)			
	Material group	IIIb 🗌	Р	
		IIIa 🛚		
		I 🗆		
		minimum creepage distances [mm]		
	between live parts which are separated when the main contacts are in the open position	9,05	Р	
	2. between live parts of different polarity	16,4		
	3. between circuits supplied from different sources, one of which being PELV or SELV		N/A	
	4. between live parts and:		Р	
	- accessible surfaces of operating means	28,6	Р	
	- 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	20,9	Р	
	- 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		Р	
	- 10 min immersed in a 10% solution of ammonium chloride in water at 20°C±5°C		Р	

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Clause	Requirement + Test	Result - Remark	Verdict		
	- 10 min in a box containing air saturated with moisture at 20°C±5°C		Р		
	- 10 min at 100°C		Р		
	No sign of rust		Р		

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

	TEST SEQUENCE B (3 samples)		
	1P+N, 63 A, Type A, 30 mA, General type		
8	REQUIREMENTS FOR CONSTRUCTION AND OPER	RATION	
8.3	DIELECTRIC PROPERTIES AND ISOLATING CAPAB	BILITY	
	RCCBs have adequate dielectric properties		Р
9.7	TEST OF DIELECTRIC PROPERTIES AND ISOLATIN	IG CAPABILITY	
9.7.7.4	VERIFICATION OF RESISTANCE OF THE INSULATION BASIC INSULATION AGAINST AN IMPULSE VOLTAGE		Р
	These tests are not preceded by the humidity treatment described in 9.7.1.		Р
	The test is carried out on an RCCB fixed on a metal support		Р
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		Р

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Clause	Requirement + Test	Result - Remark	Verdict	
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		Р	
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A	
	rated impulse withstand voltage [kV]:	4,0kV		
	see level of test laboratory [m]	20m		
	test voltage (acc. Table 22) [kV]:	6,2kV		
9.7.7.4.2	RCCB in open position (contacts in open position)		Р	
	The impulses are applied between:		Р	
	the line terminals connected together and the load terminals connected together		Р	
9.7.7.4.3	RCCB in closed position		Р	
	All components bridging the basic insulation disconnected		Р	
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		P	
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		Р	
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		Р	
	no disruptive discharges during the test		Р	
9.7.7.5	VERIFICATION OF THE BEHAVIOUR OF COMPONENTS BRIDGING THE BASIC INSULATION			
	A new RCCB sample is tested		Р	
	Test only performed on RCCBs, where components bridging the basic insulation have been disconnected during the impulse voltage test of 9.7.7.4.3		Р	
	test voltage 1200V+U ₀	1440V	Р	
	The voltage is applied during 5s between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the prospective conductor(s), if any		P	

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Clause	Requirement + Test	Result - Remark	Verdict	
		T		
	after test, no component bridging the basic insulation should show a visible alteration.		P	
	Then, the equipment is connected to the mains acc. manufacturer's instruction		Р	
	The RCCB shall trip with a test current of 1,25 I _{△N}	[ms]		
		23	Р	
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1 .		Р	
9.7.1	RESISTANCE TO HUMIDITY		Р	
9.7.1.1	Parts which can be removed without a tool are removed, spring lids kept open, inlet openings are left open and if knock-outs one is opened.		Р	
9.7.1.2	Test conditions: 48 h in humidity cabinet RH = 91% to 95% T = 20 to 30°C ± 1°C	48h 9394% 25 °C		
9.7.1.4	The samples show no damage		Р	
9.7.2	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:			
	a) between the terminals which are electrically connected together when the RCCB is in the closed position $\geq 2~\text{M}\Omega$	B1 - > 500 MΩ B2 - > 500 MΩ B3 - > 500 MΩ	Р	
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected)≥ 2 MΩ	B1 - > 500 M Ω B2 - > 500 M Ω B3 - > 500 M Ω	Р	
	c) between all poles connected together and the frame $\geq 5~\text{M}\Omega$	B1 - > 500 MΩ B2 - > 500 MΩ B3 - > 500 MΩ	Р	
	d) between metal parts of the mechanism and the frame $\geq 5~\text{M}\Omega$	B1 – B2 – B3 -	N/A	
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material $\geq 5~\text{M}\Omega$	B1 –	N/A	
9.7.3	Dielectric strength of the main circuit measured with an AC voltage (45-65Hz) for 1 min:			
	a) electronic components disconnected 2000 V	B1 – 2000 V B2 – 2000 V B3 – 2000 V	Р	

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Clause	Requirement + Test	Result - Remark	Verdict	
	b) electronic components disconnected 2000 V	B1 – 2000 V	Р	
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	B2 – 2000 V		
		B3 – 2000 V		
	c) electronic components disconnected 2000 V	B1 – 2000 V	P	
	,	B2 – 2000 V		
	d) electronic components disconnected 2000 V	B3 – 2000 V	N1/A	
	a) dissilating components dissormedted2000 V	B1 –	N/A	
		B2 –		
	a) electronic components disconnected 2500 V	B3 -		
	e) electronic components disconnected 2500 V	B1 –	N/A	
		B2 –		
		B3 -		
	No flashover or breakdown		Р	
9.7.4	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:			
	1) between all auxiliary circuits and	B1 -	N/A	
	the frame (M Ω) \geq 2 M Ω	B2 -		
		B3 -		
	2) between each part of the auxiliary circuits	B1 -	N/A	
	which might be isolated from the other parts and the whole of the other parts connected	B2 -		
	together (M Ω) \geq 2 M Ω	B3 -		
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:			
	Rated voltage of Test voltage (V)			
	auxiliary circuits (a.c. or d.c.)			
	(a.c. or d.c.)			
	≤ 30 600			
	> 30 ≤ 50 1000 > 50 ≤ 110 1500			
	> 110 ≤ 250 2000			
	> 250 ≤ 500 2500			
	1) between all auxiliary circuits and the frame	B1 -	N/A	
		B2 -		
		B3 -		
	2) between each part of the auxiliary circuits	B1 -	N/A	
	which might be isolated from the other parts and the whole of the other parts connected	B2 -		
	together	B3 -		
	No flashover or perforation		N/A	

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.7.2	Verification of clearances with the impulse withstand voltage		
	If the measurement of clearances of items 2 and 4 in Table 5 shows a reduction of the required length, this test applies.		
	The test is carried out on an RCCB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2 μ s, and a time to half-value of 50 μ s		N/A
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		N/A
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A
	test performed with:		
	- surge impedance of the test apparatus ≤500Ω and surge protective devices disconnected before testing or		N/A
	- hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:		
	see level of test laboratory [m]		
	test voltage (acc. Table 16) [kV]:		
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		N/A
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected)	B1 – 6,2kV B2 – 6,2kV	N/A
		B3 – 6,2kV	

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Clause	Requiren	nent + Te	est				Result	- Remar	k		Verdict
	c) between all poles connected together and the frame						B2 – 6	B1 – 6,2kV B2 – 6,2kV			
		d) between metal parts of the mechanism and the frame						B3 – 6,2kV B1 - B2 - B3 -			
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material						B1 - 6 B2 - 6 B3 - 6	,2kV			N/A
								,			Р
	no disruptive discharges during the test										Р
9.7.5	Seconda	ry circuit	of detec	tion tran							
	No insula accessib or live pa	le metal	parts or v								N/A
9.7.6	Capability of control circuits connected to the main circuit of withstanding high DC voltages due to insulation measurements										
	RCCB fixed on metal support in closed position with all control circuits connected as in service.										
	Open test voltage 600 V +25 / -0 V Maximum ripple 5% Short-circuit current 12 mA +2 / -0 mA Applied for 1 min between each pole and the other poles connected together to the frame.						B1 – 600V B2 – 600V B3 – 600V				Р
	Туре	I _N A	Ι _{ΔΝ} Α	no			ues of break time and at a residual current equal to				
				ΙΔΝ	2 I _{ΔN}	5 IAN	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A		
	General	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.	
			0,03	0,3	0,15		0,04	0,04	0,04	break times	
-			>0,03	0,3	0,15	0,04		0,04	0,04		
	S	≥ 25	>0,03	0,5	0,2	0,15		0,15	0,15	Max. break times	

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Clause	Requiren	nent + Te	est				Result - Remark				Verdict
				0,13	0,06	0,05		0,04	0,04	Min. non- actuati ng times	
	a) value test	to be de	ecided by	the ma	nufacture	er for this					
					verificati d in 9.9.2	on of the					
9.9.2.3	Verificati sudden a S ₁ , (S ₂ a	appearan	ce of res	sidual cu	rrent by						Р
	Maximur	n break t	imes at:								
	- I _{ΔN} (ms)						B1 - 3° B2 - 3° B3 - 3°	6			Р
	- 2 I _{ΔN} (ms)						B1 – 29 B2 – 28 B3 – 27				Р
	- 5 I _{ΔN} 0	r (ms)					B1 – B2 –	<u>, </u>			N/A
	- 0,25 A (ms)						B3 – B1 -21 B2 -20 B3 -21				Р
	- 500A (ms)						B1 - 8 B2 - 8 B3 - 8				Р
	No value exceeds the relevant specified limiting value						B3 = 0				Р
	Additiona	al test for	type S:								
	Minimum			me at:							
	- I _{ΔN} (ms)					B1 - B2 - B3 -				N/A	
	- 2 I _{AN} (r	ns)				0,06 s					N/A

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Clause	Requirement + Test	Result - Remark	Verdict					
	- 5 I _{ΔN} (ms)0,05 s	B1 -	N/A					
		B2 -						
		B3 -						
	- 500 A (ms)0,04 s	B1 -	N/A					
		B2 -						
		B3 -						
	The test switch S_1 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S_2 for min. non-operating times acc. table 2		N/A					
	No tripping during tests		N/A					
8.4	Temperature rise							
	Temperature rises do not exceed the limiting values stated in table 7.		Р					
	Cross-section (mm²)	16mm²						
9.8.1	Ambient air temperature (°C)	24,2°C						
9.8.2	Test current I_N (A) until steady state values are reached.	63A						
	Four pole RCCBs:		N/A					
	Current passing through		N/A					
	- 3 phase poles (1)		N/A					
	- neutral and adjacent pole (2)		N/A					
	Parts Temperature rise K		Р					
	Terminals for external connections (K) 65	B1 – 52	Р					
		B2 – 47						
		B3 – 48						
	External parts liable to be touched during manual	B1 – 11	Р					
	operation of the RCCB, including operating means of insulating material and metallic means for	B2 – 11						
	coupling insulated operating means of several poles (K)40	B3 – 10						
	External metallic parts of operating means (K) 25	B1 -	N/A					
		B2 -						
		B3 -						
	Other external parts, including that face of the	B1 – 37	Р					
	RCCB in direct contact with the mounting surface (K)	B2 – 38						
		B3 – 36						
8.16	Reliability							
	RCCBs operate reliably even after long service.		Р					

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Clause	Requirement + Test	Result - Remark	Verdict							
9.22.2	Test with 28 cycles at 40 ± 2°C									
	Cross-section (mm²):	16mm²								
	Torque ² / ₃ (Nm):	1,67Nm								
	Test current I _N (A):	63A								
	- with current passing 21 h		Р							
	- without current 3 h		Р							
	For 4 pole RCCBs with 3 overcurrent protected poles only 3 poles loaded		N/A							
	At the end of the last period of 21 h with current passing the temperature rise of the terminals shall not exceed 65K (K)	B1 – 54 B2 – 50 B3 – 50	Р							
	After cool down the RCCB shall trip with a test current of 1,25 $I_{\Delta N}$ - break time not exceeding the value for $I_{\Delta N}$ in table 2 (ms)	B1 – 25 B2 – 29 B3 – 21	Р							
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1 .		Р							
9.23	Verification of ageing of electronic components									
	168 h at 40 ± 2°C:	40°C								
	Test current I _N (A):	63A								
	Cross-section (mm²):	16mm²								
	Electronic parts at 1,1 U _N :	264V								
	After cool down:		Р							
	- electronic parts show no damage		Р							
	The RCCB shall trip with a test current of 1,25 $I_{\Delta N}$ -break time not exceeding the value for $I_{\Delta N}$ in table 2 (ms)	B1 – 29 B2 – 31 B3 – 27	Р							
	Test switch S ₂ and RCCB in the closed position, test voltage established by closing the test switch S ₁		Р							

	TEST SEQUENCE B (3 samples)	
	3P+N, 63 A, Type A, 30 mA. General type	

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Clause	Requirement + Test	Result - Remark	Verdict							
	T									
8	REQUIREMENTS FOR CONSTRUCTION AND OPERATION									
8.3	DIELECTRIC PROPERTIES AND ISOLATING CAPABILITY									
	RCCBs have adequate dielectric properties									
9.7	TEST OF DIELECTRIC PROPERTIES AND ISOLATII	NG CAPABILITY								
9.7.7.4	VERIFICATION OF RESISTANCE OF THE INSULAT BASIC INSULATION AGAINST AN IMPULSE VOLTA		Р							
	These tests are not preceded by the humidity treatment described in 9.7.1.									
	The test is carried out on an RCCB fixed on a metal support									
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs									
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.									
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.									
	rated impulse withstand voltage [kV]: 4,0kV									
	see level of test laboratory [m]	20m								
	test voltage (acc. Table 22) [kV]:	6,2kV								
9.7.7.4.2	RCCB in open position (contacts in open position)		Р							
	The impulses are applied between:		Р							
	the line terminals connected together and the load terminals connected together		Р							
9.7.7.4.3	RCCB in closed position		Р							
	All components bridging the basic insulation disconnected		Р							
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		Р							
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		Р							
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		Р							
	no disruptive discharges during the test		Р							

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Clause	Requirement + Test	Result - Remark	Verdict					
9.7.7.5	VERIFICATION OF THE BEHAVIOUR OF COMPONENTS BRIDGING THE BASIC INSULATION							
	A new RCCB sample is tested		Р					
	Test only performed on RCCBs, where components bridging the basic insulation have been disconnected during the impulse voltage test of 9.7.7.4.3		Р					
	test voltage 1200V+U ₀	1440V	Р					
	The voltage is applied during 5s between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the prospective conductor(s), if any		P					
	after test, no component bridging the basic insulation should show a visible alteration.		Р					
	Then, the equipment is connected to the mains acc. manufacturer's instruction		Р					
	The RCCB shall trip with a test current of 1,25 $I_{\Delta N}$	[ms]						
			Р					
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1 .		Р					
9.7.1	RESISTANCE TO HUMIDITY		Р					
9.7.1.1	Parts which can be removed without a tool are removed, spring lids kept open, inlet openings are left open and if knock-outs one is opened.		Р					
9.7.1.2	Test conditions: 48 h in humidity cabinet RH = 91% to 95% T = 20 to 30°C ± 1°C	48h 9394% 2829 °C						
9.7.1.4	The samples show no damage		Р					
9.7.2	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:							
	a) between the terminals which are electrically connected together when the RCCB is in the closed position $\geq 2~\text{M}\Omega$	B1 - > 500 MΩ B2 - > 500 MΩ B3 - > 500 MΩ	Р					
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected)≥ 2 MΩ	B1 - > 500 MΩ B2 - > 500 MΩ B3 - > 500 MΩ	Р					

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Clause	Requirement + Test	Result - Remark	Verdict						
	c) between all poles connected together and the frame $\geq 5~\text{M}\Omega$	B1 - > 500 MΩ B2 - > 500 MΩ	Р						
	d) between metal parts of the mechanism and the frame	B3 - > 500 MΩ B1 - B2 -	N/A						
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material $\geq 5~\text{M}\Omega$	B3 - B1 - B2 -	N/A						
9.7.3	Dielectric strength of the main circuit measured with an AC voltage (45-65Hz) for 1 min:	B3 -							
	a) electronic components disconnected 2000 V	B1 – 2000 V B2 – 2000 V B3 – 2000 V	Р						
	b) electronic components disconnected 2000 V	B1 – 2000 V B2 – 2000 V B3 – 2000 V	Р						
	c) electronic components disconnected 2000 V	B1 – 2000 V B2 – 2000 V B3 – 2000 V	Р						
	d) electronic components disconnected 2000 V	B1 – B2 – B3 -	N/A						
	e) electronic components disconnected 2500 V	B1 – B2 – B3 -	N/A						
	No flashover or breakdown		Р						
9.7.4	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:								
	1) between all auxiliary circuits and the frame (M Ω) \geq 2 M Ω	B1 - B2 - B3 -	N/A						
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together ($M\Omega$) \geq 2 $M\Omega$	B1 - B2 - B3 -	N/A						
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:	DO -							

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Clause	Requirement + Test	Result - Remark	Verdict						
		I							
	Rated voltage of Test voltage (V) auxiliary circuits (a.c. or d.c.)								
	≤ 30 600 > $30 \leq 50$ 1000 > $50 \leq 110$ 1500 > $110 \leq 250$ 2000 > $250 \leq 500$ 2500								
	1) between all auxiliary circuits and the frame	B1 -	N/A						
		B2 -							
		B3 -							
	between each part of the auxiliary circuits which might be isolated from the other parts	B1 -	N/A						
	and the whole of the other parts connected	B2 -							
	together	B3 -							
	No flashover or perforation		N/A						
9.7.7.2	Verification of clearances with the impulse withstand voltage								
	If the measurement of clearances of items 2 and 4 in Table 5 shows a reduction of the required length, this test applies.								
	The test is carried out on an RCCB fixed on a metal support and being in the closed position		N/A						
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2μs, and a time to half-value of 50μs		N/A						
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		N/A						
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A						
	test performed with:								
	- surge impedance of the test apparatus ≤500Ω and surge protective devices disconnected before testing or		N/A						
	- hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A						
	rated impulse withstand voltage [kV]:								
	see level of test laboratory [m]								
	test voltage (acc. Table 16) [kV]:								

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Clause	Requirement + Test	Result - Remark	Verdict					
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A					
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		N/A					
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		N/A					
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected)	B1 – 6,2 kV B2 – 6,2 kV B3 – 6,2 kV	N/A					
	c) between all poles connected together and the frame	B1 – 6,2 kV B2 – 6,2 kV B3 – 6,2 kV	N/A					
	d) between metal parts of the mechanism and the frame	B1 - B2 - B3 -	N/A					
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material	B1 – 6,2kV B2 – 6,2kV B3 – 6,2kV	N/A					
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		N/A					
	no disruptive discharges during the test		N/A					
9.7.5	Secondary circuit of detection transformers							
	No insulation test, provided that no connection with accessible metal parts or with protective conductor or live parts exists.		N/A					
9.7.6	Capability of control circuits connected to the main circuit of withstanding high DC voltages due to insulation measurements							
	RCCB fixed on metal support in closed position with all control circuits connected as in service.		Р					
	Open test voltage 600 V +25 / -0 V Maximum ripple 5% Short-circuit current 12 mA +2 / -0 mA Applied for 1 min between each pole and the other poles connected together to the frame.	B1 – 600V B2 – 600V B3 – 600V	Р					

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Clause	Requirement + Test	Result - Remark	Verdict

	Туре	I _N A	Ι _{ΔΝ} Α	nc			lues of b at a resi			al to	
				ΙΔΝ	2 I _{ΔN}	5 IAN	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A		
	General	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.	
			0,03	0,3	0,15		0,04	0,04	0,04	break	
			>0,03	0,3	0,15	0,04		0,04	0,04	times	
	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- actuati ng times	
	a) value test	to be de	ecided by	the ma	nufacture	er for this	5				
			only made tion as m)				
9.9.2.3	Verification of the correct operation in case of sudden appearance of residual current by closing S ₁ , (S ₂ and RCCB in closed position):										Р
	Maximum break times at:										
	- I _{ΔN} (ms)						B2 – 3	B1 – 38 B2 – 36			
	- 2 I _{ΔN} (ms)						B3 – 39 B1 – 29 B2 – 30 B3 – 29				Р
	- 5 I _{ΔN} or (ms)						B1 – B2 – B3 –	B1 – B2 –			N/A
	- 0,25 A (ms)						B1 – 1	B1 – 19 B2 – 21			Р
							B3 - 2 B1 - 8 B2 - 7 B3 - 7				Р

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Clause	Requirement + Test	Verdict	
	No value exceeds the relevant specified limiting value		Р
	Additional test for type S:		
	Minimum non-actuating time at:		
	- I _{ΔN} (ms)0,13 s	B1 -	N/A
		B2 -	
		B3 -	
	- 2 I _{ΔN} (ms)0,06 s	B1 -	N/A
		B2 -	
		B3 -	
	- 5 I _{ΔN} (ms)0,05 s	B1 -	N/A
		B2 -	
		B3 -	
	- 500 A (ms)0,04 s	B1 -	N/A
		B2 -	
		B3 -	
	The test switch S ₁ and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S ₂ for min. non-operating times acc. table 2		N/A
	No tripping during tests		N/A
8.4	Temperature rise	I	
	Temperature rises do not exceed the limiting values stated in table 7.		Р
	Cross-section (mm²)	16mm²	
9.8.1	Ambient air temperature (°C)	22,0°C	
9.8.2	Test current I_N (A) until steady state values are reached.	63A	
	Four pole RCCBs:		Р
	Current passing through		Р
	- 3 phase poles (1)		N/A
	- neutral and adjacent pole (2)		N/A
	Parts Temperature rise K		Р
	Terminals for external connections (K)65	B1 – 59	Р
		B2 – 59	
		B3 – 59	

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Clause	Requirement + Test	Result - Remark	Verdict	
	External parts liable to be touched during manual operation of the RCCB, including operating means of insulating material and metallic means for coupling insulated operating means of several poles (K)	B1 – 11 B2 – 12 B3 – 11	Р	
	External metallic parts of operating means (K) 25	B1 - B2 - B3 -	N/A	
	Other external parts, including that face of the RCCB in direct contact with the mounting surface (K)	B1 – 43 B2 – 41 B3 – 41	Р	
8.16	Reliability	1		
	RCCBs operate reliably even after long service.		Р	
9.22.2	Test with 28 cycles at 40 ± 2°C			
	Cross-section (mm²):	16mm²		
	Torque ² / ₃ (Nm):	1,67Nm		
	Test current I _N (A):			
	- with current passing21 h		Р	
	- without current		Р	
	For 4 pole RCCBs with 3 overcurrent protected poles only 3 poles loaded		N/A	
	At the end of the last period of 21 h with current passing the temperature rise of the terminals shall not exceed 65K (K)	B1 –52 B2 –55 B3 –54	Р	
	After cool down the RCCB shall trip with a test current of 1,25 $I_{\Delta N}$ - break time not exceeding the value for $I_{\Delta N}$ in table 2 (ms)	B1 – 21 B2 – 23 B3 – 22	Р	
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1 .		Р	
9.23	Verification of ageing of electronic components			
	168 h at 40 ± 2°C:	40°C		
	Test current I _N (A):	63A		
	Cross-section (mm²)	16mm²		
	Electronic parts at 1,1 U _N :	457V		
	After cool down:		Р	
	- electronic parts show no damage		Р	

	9	•				
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Clause	Requirement + Test	Result - Remark	Verdict			
			<u> </u>			
	The RCCB shall trip with a test current of 1,25 l _{ΔN} -	B1 – 26	Р			
	break time not exceeding the value for $I_{\Delta N}$ in table 2 (ms)	B2 – 27				
		B3 – 23				
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1		Р			

	TEST SEQUENCE C (3 samples)		Р		
	1P+N, 63 A, type A, 30 mA, General type				
8.6	Mechanical and electrical endurance		Р		
	RCCBs shall be capable of performing an adequate				
	number of mechanical and electrical operations				
9.10	Test is made:		Р		
	- In ≤ 25 A; 2 s on; 13 s off:		N/A		
	- In > 25 A; 2 s on; 28 s off		Р		
	Number of operating cycles: 2000		Р		
	Test voltage Un (V); test current In (A);		_		
	cos phi 0,85-0,9:	235 V; 64,5 A; cos phi 0,88			
	Cross-sectional area (mm²):	25			
	RCCBs having I _{∆n} > 0,010 A tested at:				
	- 1000 cycles for manual operation:	C1 – OK	Р		
		C2 – OK			
		C3 – OK			
	- 500 cycles by using the test device	C1 – OK	Р		
		C2 – OK			
		C3 – OK			
	- 500 cycles at a current of I _{Δn}	C1 – OK	Р		
		C2 – OK			
		C3 – OK			
	RCCBs having $I_{\Delta n} \le 0,010$ A tested at:		N/A		
	- 500 cycles for manual operation	C1 -	N/A		
		C2 -			
		C3 -			
	- 750 cycles by using the test device	C1 -	N/A		
		C2 -			
		C3 -			

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Clause	Requirement + Test	Result - Remark	Verdict	
	- 750 cycles at a current of I _{Δn} :	C1 -	N/A	
	700 Cycles at a current of Ian	C2 -	13/73	
		C3 -		
	Test is made without load using manual operation:		Р	
	- In ≤ 25 A; 2000 cycles	C1 -	N/A	
		C2 -		
		C3 -		
	- In > 25 A; 1000 cycles	C1 – OK	Р	
		C2 – OK		
		C3 – OK		
	After the test:	-	Р	
	- no undue wear		Р	
	- no damage		Р	
	- no loosening of connections		Р	
	- no seepage of sealing compound		Р	
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	C1 –	Р	
	(ms):	C2 –		
		C3 –		
	Dielectric strength test at a voltage of 900 V a.c. for	1 min:	Р	
	a) between open contacts:	C1 – 900 V	Р	
		C2 – 900 V		
		C3 – 900 V		
	b) between terminals (closed contacts):	C1 – 900 V	Р	
		C2 – 900 V		
		C3 – 900 V		
	c) between poles and frame	C1 – 900 V	Р	
		C2 – 900 V		
		C3 – 900 V		
	d) between metal parts of the mechanism and	C1 – 900 V	Р	
	the frame:	C2 – 900 V		
		C3 – 900 V		
	e) RCCBs with a metal enclosure:	C1 -	N/A	
		C2 -		
		C3 -		

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE C (3 samples) 3P+N, 63 A, type A, 30 mA ,General type		Р				
8.6	Mechanical and electrical endurance		Р				
	RCCBs shall be capable of performing an adequate number of mechanical and electrical operations						
9.10	Test is made:		Р				
	- In ≤ 25 A; 2 s on; 13 s off:		N/A				
	- In > 25 A; 2 s on; 28 s off		Р				
	Number of operating cycles: 2000		Р				
	Test voltage Un (V); test current In (A); cos phi 0,85-0,9	405V; 63A; cos phi 0,88	_				
	Cross-sectional area (mm²):	16	_				
	RCCBs having $I_{\Delta n} > 0,010$ A tested at:		Р				
	- 1000 cycles for manual operation:	C1 – OK	Р				
		C2 – OK					
		C3 – OK					
	- 500 cycles by using the test device:	C1 – OK	Р				
		C2 – OK					
		C3 – OK					
	- 500 cycles at a current of I _{Δn}	C1 – OK	Р				
		C2 – OK					
		C3 – OK					
	RCCBs having $I_{\Delta n} \le 0,010$ A tested at:						
	- 500 cycles for manual operation:	C1 -	N/A				
		C2 -					
		C3 -					
	- 750 cycles by using the test device:	C1 -	N/A				
		C2 -					
		C3 -					
	- 750 cycles at a current of I _{Δn}	C1 -	N/A				
		C2 -					
		C3 -					
	Test is made without load using manual operation:		P				
	- In ≤ 25 A; 2000 cycles:	C1 -	N/A				
		C2 -					
		C3 -					

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Clause	Requirement + Test	Result - Remark	Verdict		
	- In > 25 A; 1000 cycles	C1 – OK	Р		
		C2 – OK			
		C3 – OK			
	After the test:		Р		
	- no undue wear		Р		
	- no damage		Р		
	- no loosening of connections		Р		
	- no seepage of sealing compound		Р		
	The RCCB shall trip with a test current of 1,25 I _{Δn}	C1 –	Р		
	(ms)	C2 –			
		C3 –			
	Dielectric strength test at a voltage of 900 V a.c. for	1 min:	Р		
	a) between open contacts:	C1 – 900 V	Р		
		C2 – 900 V			
		C3 – 900 V			
	b) between terminals (closed contacts):	C1 – 900 V	Р		
		C2 – 900 V			
		C3 – 900 V			
	c) between poles and frame:	C1 – 900 V	Р		
		C2 – 900 V			
		C3 – 900 V			
	d) between metal parts of the mechanism and	C1 – 900 V	Р		
	the frame:	C2 – 900 V			
		C3 – 900 V			
	e) RCCBs with a metal enclosure	C1 -	N/A		
		C2 -			
		C3 -			

	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 _{∆n} tests are made for each	
	setting	
9.9.1	RCCB installed as for normal use, test circuit	Р
	according to fig. 4	

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Clause	Requiren	nent + Te	est				Result	- Rema	'k		Verdict
9.9.4	For RCC each test		•	•		_					N/A
	line volta										
	Type	I _N A	I _{ΔN} A	no		ndard va ting time				al to	
				ΙΔΝ	2 IAN	5 I _{ΔN}	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A		
	General	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.	
			0,03	0,3	0,15		0,04	0,04	0,04	break times	
			>0,03	0,3	0,15	0,04		0,04	0,04		
	S	≥ 25	>0,03	0,5	0,2	0,15		0,15	0,15	Max. break times	
				0,13	0,06	0,05		0,04	0,04	Min. non- actuatin g times	
	a) value test	to be de	ecided by	the ma	nufacture	er for this					
			only made tion as m				•				
9.9.2	Off-load	tests ma	de at a te	emperati	ure of 20	±5°C	23 °C				Р
9.9.2.1	Verification of the correct operation in case of a steady increase residual current:										
	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s I _{Δn} =30mA (mA)								Р		
	- tripping	current	between	I _{∆no} and	I∆n (mA)	:	D2 –22	1,9~23,1 2,8~23,2 1,8~22,4	mA		Р
9.9.2.2	Verification	on of the	correct	operatio	n at clos	ing on re	•				
							D1 – 44				Р
		- the RCCB closes on I _{Δn} : no value exceeds the specified limiting value of Table 1 (ms):									
							D3 – 4	2			
9.9.2.3	specified	in Table	1, the te	est switc	h S2 and	I the RC0	CB being	in the c	losed po	al current esition,	
	the test v	oitage is	sudden	y establ	isned by	ciosing t	ine test s	switch S1			

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Clause	Requirement + Test	Result - Remark	Verdict
		T	
	- maximum break time (ms) at: $I_{\Delta n}$:	D1 – 43	Р
		D2 – 42	
		D3 – 42	
	- maximum break time (ms) at: 2 $I_{\Delta n}$:	D1 – 43	Р
		D2 – 42	
		D3 – 40	
	- maximum break time (ms) at: 5 $I_{\Delta n}$:	D1 – 31	Р
		D2 – 30	
		D3 – 25	
	- maximum break time (ms) at: 0,25 A (if		N/A
	applicable):		
	- maximum break time (ms) at: 500 A:	D1 – 20	Р
	` '	D2 – 17	
		D3 – 15	
	No value exceeds the relevant specified limiting		Р
	value		
9.9.2.4	Verification of the correct operation in case of sudde	en appearance of residual current	
	of values between 5 I _{Δn} and 500A		
	(among the following list: 5A, 10A, 20A, 50A, 100A,	200A):	
	The test switch S1 and the RCCB being in the close		
	suddenly established by closing the test switch S2	•	
	- maximum break time (ms) at:5A (value 1	D1 – 9,2	Р
	between 5A and 200A):	D2 – 9,2	
	According to – AS/NZS 61008.1:2015	D3 – 9,1	
	- maximum break time (ms) at:10A (value	D1 – 9,7	Р
	2 between 5A and 200A):	D2 – 9,8	
	According to – AS/NZS 61008.1:2015	D3 – 9,5	
	- maximum break time (ms) at:20A (value	D1 – 9,7	Р
	3 between 5A and 200A):	D2 – 9,4	
	According to – AS/NZS 61008.1:2015	D3 – 9,8	
	- maximum break time (ms) at:50A (value	D1 – 9,7	Р
	4 between 5A and 200A):	D2 – 9,6	
	According to – AS/NZS 61008.1:2015	D3 – 9,1	
	- maximum break time (ms) at:100A (value	D1 – 9,1	Р
	5 between 5A and 200A):	D2 – 9,1	-
	According to – AS/NZS 61008.1:2015	D3 – 9,7	
1	1,100014111g to 110101120 01000112010	1 0/.	

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at:200A (value	D1 – 9,8	Р
	6 between 5A and 200A):	D2 – 9,2	
	According to – AS/NZS 61008.1:2015	D3 – 9,6	
	No value exceeds the relevant specified limiting		Р
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	
	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	h of the values of residual current	Р
	specified in Table 1, the test switch S2 and the RCC		
	the test voltage is suddenly established by closing the		
	- maximum break time (ms) at: I _{Δn} :	D1 – 39	Р
	, ,	D2 – 41	
		D3 – 39	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 – 27	Р
	, ,	D2 – 25	
		D3 – 26	
	- maximum break time (ms) at: 5 I _{Δn} :	D1 –	N/A
		D2 –	
		D3 –	
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A
	applicable):	D2 -	- 4,7
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict	
	- maximum break time (ms) at: 500 A:	D1 – 19	Р	
		D2 – 16		
		D3 – 18		
	No value exceeds the relevant specified limiting		Р	
	value			
	Additional test for type S:			
	- minimum non-actuating time (ms) at: $I_{\Delta n}$: 0,13 s :	D1 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	D1 -	N/A	
	·····:	D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s	D1 -	N/A	
	:	D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A	
	0,04 s:	D2 -		
		D3 -		
	No tripping during the tests		N/A	
9.9.2.5	Tests repeated with the RCCB loaded with rated cur	rrent:	Р	
	- test current (A): In, the pole under test and one		_	
	other pole loaded with rated current, the current	63		
	being established shortly before the test:			
	- cross-sectional area (mm²):	16	_	
	- the RCCB closes on I _{Δn} : no value exceeds the	D1 – 42	Р	
	specified limiting value of Table 1 (ms):	D2 – 48		
		D3 – 44		
	The switch S1 and the RCCB are in closed position.	. The residual current is		
	established by closing S2 :			
	- maximum break time (ms) at: I _{Δn} :	D1 – 8938	Р	
	, ,	D2 – 9744		
		D3 – 9539		
	- maximum break time (ms) at: 2 I _{Δn} :	D1 – 45	Р	
	(1-2)	D2 – 47		
		D3 – 48		

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 5 I _{∆n} :	D1 – 25	Р
		D2 – 24	
		D3 – 28	
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A
	applicable):	D2 -	
		D3 -	
	- maximum break time (ms) at: 500 A:	D1 – 10,3	Р
		D2 – 9,5	
		D3 – 10,4	
	No value exceeds the relevant specified limiting		Р
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{∆n} ; 0,13 s :	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 l _{Δn} ; 0,06 s	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 l _{Δn} ; 0,05 s	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s	D2 -	
		D3 -	
	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:	63	
	until steady state conditions are reached:		
	- cross-sectional area (mm²):	16	
	The test circuit being successively calibrated at each		P
	specified in Table 1, the test switch S2 and the RCC		•
	the test voltage is suddenly established by closing the	,	
		D1 –38	 Р
	- maximum break time (ms) at: I _{∆n} :		Р
		D2 –40	
		D3 –37	

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Clause	Requirement + Test	Result - Remark	Verdict
		D4 04	
	- maximum break time (ms) at: 2 I _{∆n} :	D1 – 24	Р
		D2 – 22	
		D3 – 26	
	- maximum break time (ms) at: 5 I _{Δn} :	D1 – 30	P
		D2 – 30	
		D3 – 31	
	- maximum break time (ms) at: 0,25 A (if	D1 - 18	N/A
	applicable):	D2 - 15	
		D3 - 16	
	- maximum break time (ms) at: 500 A:	D1 – 10,2	Р
		D2 – 10,4	
		D3 – 10,6	
	No value exceeds the relevant specified limiting		Р
	value		
	Additional test for type S:	T	
	- minimum non-actuating time (ms) at: $I_{\Delta n};0,13~s$:	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$ for	D1 -	N/A
	0,06 s:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 l _{Δn} ; 0,05 s	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	
	No tripping during the tests		Р
3.15	Behaviour of RCCBs in case of earth fault curren	nts comprising a d.c.	Р
	component		
9.9.3	Additional verification of correct operation at residua	al currents with d.c. components	Р

9.9.3.1

for RCCBs type A

according to fig. 5 and 6

RCCB installed as for normal use, test circuits

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Clause	Requirement + Test	Result - Remark	Verdict
9.9.4	For RCCBs functionally dependent on line voltage,		N/A
	each test is made at 1,1 and 0,85 times the rated		
	line voltage; voltage (V):		
9.9.3.1	Verification of the correct operation in case of a cont	tinuous rise of the residual	
	pulsating direct current (see Table 20):	1	
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for	0~42mA	Р
	$I_{\Delta n} > 0.01 \text{ A with } 1.4 I_{\Delta n} /30 \text{ A/s (mA)}$		
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq 0{,}01$ A		N/A
	with 2 I _{Δn} /30 A/s (mA)		
	- angle α = 0° (+/-):	D1 – 25,4~26,7mA	Р
		D2 – 26,3~27,2mA	
		D3 – 27,9~28,8mA	
	- angle α = 90° (+/-):	D1 – 21,5~22,1mA	Р
		D2 – 24,0~25,3mA	
		D3 – 24,0~26,4mA	
	- angle α = 135° (+/-):	D1 – 22,0~23,2mA	Р
		D2 – 26,1~27,3mA	
		D3 – 24,4~27,8mA	
	No value exceeds the relevant specified limiting		Р
	values		
9.9.3.2	Verification of the correct operation in case of sudde	enly appearing residual pulsating	
	direct currents by closing S2 (angle α = 0°)		
	RCCBs with I _{Δn} < 0,03 A:		
	- maximum break time (ms) at: 2 I _{Δn} (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 4 I _{Δn} (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 0,5 A rms (+/-):	D1 -	N/A
	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	D2 -	
		D3 -	
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A
		D2 -	14/73
		D3 -	
	RCCBs with $I_{\Delta n} = 0.03$ A:	150	

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Clause	Requirement + Test	Result - Remark	Verdict	
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-):	D1 – 29	Р	
		D2 – 33		
		D3 – 31		
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-):	D1 – 27	Р	
		D2 – 29		
		D3 – 28		
	- maximum break time (ms) at: 0,35 A rms (+/-) .:	D1 – 11	Р	
		D2 – 12		
		D3 – 11		
	- maximum break time (ms) at: 350 A rms (+/-):	D1 – 9,4	Р	
		D2 – 9,6		
		D3 – 9,5		
	RCCBs with $I_{\Delta n} > 0.03$ A:	,		
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	No value exceeds the relevant specified limiting		N/A	
	value			
9.9.3.3	Verification of the correct operation with the pole und	der 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	0~42	Р	
	$I_{\Delta n} > 0.01$ A with 1.4 $I_{\Delta n}$ /30 A/s (mA)			
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq 0,01$ A		N/A	
	with 2 $I_{\Delta n}$ /30 A/s (mA)			

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Clause	Requirement + Test	Result - Remark	Verdict
	- angle α = 0° (+/-):	D1 – 25,5~26,6mA	Р
		D2 – 26,4~27,2mA	
		D3 – 27,9~28,7mA	
	- angle α = 90° (+/-):	D1 – 21,6~22,1mA	Р
		D2 – 24,1~25,4mA	
		D3 – 24,0~26,3mA	
	- angle α = 135° (+/-):	D1 – 22,0~23,3mA	Р
		D2 – 26,0~27,3mA	
		D3 – 24,3~27,8mA	
	No value exceeds the relevant specified limiting		Р
	values		
9.9.3.4	Verification of the correct operation in case of residua	al pulsating d.c. currents with	
	angle $\alpha = 0^{\circ}$ superimposed by smooth direct current	of 0,006 A:	
	- steady increase of pulsating d.c. current from zero	0~42mA	Р
	to: 1,4 $I_{\Delta n}$ for $I_{\Delta n} > 0,01$ A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		
	- steady increase of pulsating d.c. current from zero		N/A
	to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A with 2 $I_{\Delta n}$ /30 A/s (mA)		
	- angle α = 0° (+/-) (+/- 6 mA):	D1 – 25,7~26,9mA	Р
		D2 – 26,2~27,1mA	
		D3 – 27,5~28,2mA	
	No value exceeds the relevant specified limiting		Р
	values		

	Tests "D1"	
8.12	RCCBs functionally dependent on line voltage	
	RCCBs functionally dependent on the line voltage,	N/A
	shall operate correctly between 0,85 and 1,1 times	
	their rated voltage; voltage (V):	
	Multipole RCCBs shall have all current paths	N/A
	supplied from the phases and neutral, if any	
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the	
	line voltage	
9.17.1	Limiting value of the line voltage (Ux):	

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Requirement + Test	Result - Remark	Verdict	
- rated voltage applied to the line terminals and	D1 -	N/A	
progressively lowered to attain zero within about	D2 -		
30 s until automatic opening occurs; voltage (V) .:	D3 -		
- all values less than 0,85 times the rated voltage	D1 -	N/A	
(V):	D2 -		
	D3 -		
- tripping test at test voltage (V) with $I_{\Delta n}$ and	D1 -	N/A	
operating according to Table 1 (ms):	D2 -		
	D3 -		
No value exceeds the specified limiting values		N/A	
Not possible to close the apparatus by manual	D1 -	N/A	
operating means below Ux	D2 -		
	D3 -		
Verification of behaviour in case of failure of the line	voltage		
RCCB supplied with rated voltage, and the line		N/A	
	D1 -	N/A	
, ,		IN/A	
opening of the main contacts			
a) RCCBs opening without delay: no value	00.	N/A	
b) RCCBs opening with delay: max. and min. values within the range indicated by the		N/A	
Verification of the correct operation, in presence of a			
RCCB connected according to fig. 4 at the rated	5-	N/A	
		N/A	
	1	N/A	
	D1 -	N/A	
		,, .	
,, ,			
- tripping current between less and less (mA)		N/A	
TIPPING CUITCH Detween Idno and Idn (IIIA)		IN/A	
	D3 -		
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) .: - all values less than 0,85 times the rated voltage (V)	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) D3 - - all values less than 0,85 times the rated voltage (V) D2 - - all values less than 0,85 times the rated voltage (V) D2 - - tripping test at test voltage (V) with I _{An} and D1 - operating according to Table 1 (ms)	

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Clause	Requirement + Test	Result - Remark	Verdict
	The RCCB closes on $I_{\Delta n}$: no value exceeds the	D1 -	N/A
		D2 -	IN/A
	specified limiting value of Table 1 (ms):	D3 -	
9.9.2.3	The test circuit being successively calibrated at each		
9.9.2.3	specified in Table 1, the test switch S2 and the RCC		
	the test voltage is suddenly established by closing the	D1 -	N/A
	- maximum break time (ms) at: I _{∆n} :		IN/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A
	applicable):	D2 -	
		D3 -	
	- maximum break time (ms) at: 500 A	D1 -	N/A
		D2 -	
		D3 -	
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{∆n} ; 0,13 s :	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 l _{Δn} ; 0,06 s	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 l _{Δn} ; 0,05 s	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s	D2 -	
	5,5 . 6	D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict	
		T		
	No tripping during tests		N/A	
9.17.4	Verification of the correct operation of RCCBs with 3	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	h of the values of residual current		
	specified in Table 1, the test switch S2 and the RCC	B being in the closed position,		
	the test voltage is suddenly established by closing the	ne test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$:	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A	
	applicable)	D2 -		
		D3 -		
	- maximum break time (ms) at: 500 A	D1 -	N/A	
		D2 -		
		D3 -		
	No value exceeds the relevant specified limiting		N/A	
	value			
	Additional test for type S:			
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	D1 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A	
		D2 -		
		D3 -		

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Clause	Requirement + Test	Result - Remark	Verdict	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A	
	0,04 s:	D2 -		
		D3 -		
	No tripping during tests		N/A	
9.17.5	Verification of the reclosing function of automatically	reclosing RCCBs (under	N/A	
	consideration)			
8.14	Behaviour of RCCBs in case of current surges caus	ed by impulse voltages	Р	
9.19	Verification of behaviour of RCCBs in case of cu	ırrent surges caused by	Р	
	impulse voltages			
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring	g wave test)	Р	
	One pole of the RCCB is submitted to 10 application	ns of a surge current according to	Р	
	the following requirements:			
	- peak value: 200 A + 10/0%	200	Р	
	- virtual front time: 0,5 μ s ± 30%	0,5 μs	Р	
	- period of the following oscillatory wave: 10 μs $\pm20\%$	10 μs	Р	
	- each successive reverse peak: about 60% of the	ОК	Р	
	preceding peak			
	The polarity shall be inverted after every two	ОК	Р	
	applications			
	The interval between two consecutive applications	30 s	Р	
	shall be about 30 s			
	During the test the RCCB shall not trip:	D1 – not trip	Р	
		D2 – not trip		
		D3 – not trip		
	- break time (ms) at: I _{∆n} :	D1 – 37	Р	
		D2 – 34		
		D3 – 35		
9.19.2	Verification of behaviour at surge currents up to 300	00A (8/20µs surge current)		
9.19.2.1	Test conditions		Р	
	One pole of the RCCB is submitted to 10 applications of a surge current according to		P	
	the following requirements:			
	Peak value: 3000A +10/-0%	3,0kA	P	
	Virtual front time: 0,8µs ± 20%	0,8 μs	<u>.</u> Р	
	Virtual time of half value: 20µs ± 20%	20 μs	<u>.</u> Р	

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Clause	Requirement + Test	Result - Remark	Verdict
		T	
	Peak of reverse current: less than 30 % of peak	ОК	Р
	value		
	The polarity shall be inverted after every two	OK	Р
	applications		
	The interval between two consecutive applications	30s	Р
	shall be about 30 s		
9.19.2.2	S-type: During the test the RCCB shall not trip	D1 -	N/A
		D2 -	
		D3 -	
	- break time (ms) at I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
9.19.2.3	General type: During the test the RCCB may trip.		Р
	After any tripping the RCCB shall be re-closed		
	- break time (ms) at I _{Δn} :	D1 – 32	Р
		D2 – 31	
		D3 – 34	
	Power factor obtained:	0,95	_
	Point of initiation: 45° ± 5°	45°	Р
	Test sequence: O-t-CO-t-CO on each pole in turn		Р
	excluding the switched neutral pole		
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	D1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	D2 - < 0,2 mA	
	exceed 2mA (mA)	D3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volt	tage 2 Un for 1 min:	
	a):	D1 – 460	Р
		D2 – 460	
		D3 – 460	
	b):	D1 – 460	Р
		D2 - 460	
		D3 – 460	

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Clause	Requirement + Test	Result - Remark	Verdict
	c):	D1 – 460	P
	C)	D2 – 460	•
		D3 – 460	
	d):	D1 – 460	P
	<u>a</u> ,	D2 – 460	•
		D3 – 460	
	e):	D1 -	N/A
		D2 -	
		D3 -	
	No flashover or breakdown:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
	Making and breaking In at Un:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	D1 – 32	Р
	(ms):	D2 – 27	
		D3 – 30	
	The polyethylene sheet shows no holes		Р
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	D1 -	N/A
	progressively lowered to attain zero within about	D2 -	
	30 s until automatic opening occurs; voltage (V) .:	D3 -	
	- all values less than 0,85 times the rated voltage	D1 -	N/A
	(V):	D2 -	
		D3 -	
	- tripping test at test voltage (V) with $I_{\Delta n}$ and	D1 -	N/A
	operating according to Table 1 (ms)	D2 -	
		D3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	D1 -	N/A
	operating means below Ux:	D2 -	
		D3 -	
9.17.2	Verification of behaviour in case of failure of the line	voltage	N/A

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Clause	Requirement + Test	Result - Remark	Verdict	
		1		
	RCCB supplied with rated voltage, and the line			
	voltage then switched off			
	Time (ms) interval between switching off and	D1 -	N/A	
	opening of the main contacts:	D2 -		
		D3 -		
	a) RCCBs opening without delay: no value		N/A	
	exceeds 0,5 s			
	b) RCCBs opening with delay: max. and min.		N/A	
	values within the range indicated by the			
	manufacturer			
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 volta	ge		
	RCCB connected according to fig. 4 at the rated		N/A	
	voltage (Un)			
	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	D1 -	N/A	
	(mA):	D2 -		
		D3 -		
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA):	D1 -	N/A	
		D2 -		
		D3 -		
	The RCCB closes on I _{Δn} : no value exceeds the	D1 -	N/A	
	specified limiting value of Table 1 (ms)	D2 -		
		D3 -		
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 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A	
		D2 -		
		D3 -		

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Clause	Requirement + Test	Result - Remark	Verdict	
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A	
	applicable):	D2 -		
		D3 -		
	- maximum break time (ms) at: 500 A:	D1 -	N/A	
		D2 -		
		D3 -		
	No value exceeds the relevant specified limiting		N/A	
	value			
	Additional test for type S:			
	- minimum non-actuating time (ms) at: I _{∆n} ; 0,13 s :	D1 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A	
	:	D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A	
	0,04 s:	D2 -		
		D3 -		
	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 _{Δn} :	D1 -	N/A	
		D2 -		
		D3 -		

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Clause	Requirement + Test	Result - Remark	Verdict	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A	
		D2 -		
	_	D3 -		
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A	
	applicable):	D2 -		
		D3 -		
	- maximum break time (ms) at: 500 A	D1 -	N/A	
		D2 -		
		D3 -		
	No value exceeds the relevant specified limiting		N/A	
	value			
	Additional test for type S:	T		
	- minimum non-actuating time (ms) at: $I_{\Delta n};0,13~s$:	D1 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A	
	:	D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 5 l _{Δn} ; 0,05 s	D1 -	N/A	
	:	D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A	
	0,04 s:	D2 -		
		D3 -		
	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	630	_	
	breaking capacity (A): I _{Δm} :			
	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		

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Clause	Requirement + Test	Result - Remark	Verdict	
	Prospective current obtained (A)	638		
	Power factor	0,930,98		
	Power factor obtained	0,95		
	Point of initiation: 45° ± 5°	45°	Р	
İ	Test sequence: O-t-CO-t-CO on each pole in turn		Р	
	excluding the switched neutral pole			
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		Р	
	After the tests no damage impairing further use		Р	
9.7.7.3	The leakage current flowing across the open	D1 - < 0,2mA	Р	
	contacts is measured at 1,1 Un and shall not	D2 - < 0,2 mA		
	exceed 2mA (mA)	D3 - < 0,2 mA		
9.7.3	Dielectric strength test of the main circuit at test volt	age 2 Un for 1 min:		
	a) between open contacts:	D1 – 460	Р	
		D2 - 460		
		D3 - 460		
	b) between terminals (closed contacts):	D1 – 460	Р	
		D2 - 460		
		D3 – 460		
	c) between poles and frame:	D1 – 460	Р	
		D2 - 460		
		D3 – 460		
	d) between metal parts of the mechanism and	D1 – 460	Р	
	the frame	D2 - 460		
		D3 – 460		
	e) RCCBs with a metal enclosure	D1 -	N/A	
		D2 -		
		D3 -		
	No flashover or breakdown	D1 – OK	Р	
		D2 – OK		
		D3 – OK		
	Making and breaking In at Un	D1 – OK	Р	
		D2 – OK		
		D3 – OK		

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Clause	Requirement + Test	Result - Remark	Verdict	
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	D1 – 25	Р	
	(ms):	D2 – 27 D3 – 32		
	The polyethylene sheet shows no holes		Р	
9.17	Verification of the behaviour of RCCBs opening auto	matically in case of failure of the	N/A	
9.17.1	Limiting value of the line voltage (Ux):		N/A	
	- rated voltage applied to the line terminals and	D1 -	N/A	
	progressively lowered to attain zero within about	D2 -		
	30 s until automatic opening occurs; voltage (V) .:	D3 -		
	- all values less than 0,85 times the rated voltage	D1 -	N/A	
	(V):	D2 -		
		D3 -		
	- tripping test at test voltage (V) with I∆n and	D1 -	N/A	
	operating according to Table 1 (ms)	D2 -		
		D3 -		
	No value exceeds the specified limiting values		N/A	
	Not possible to close the apparatus by manual	D1 -	N/A	
	operating means below Ux	D2 -		
		D3 -		
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	D1 -	N/A	
	opening of the main contacts:	D2 -		
		D3 -		
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A	
	b) RCCBs opening with delay: max. and min.		N/A	
	values within the range indicated by the			
	manufacturer			
9.17.3	Verification of the correct operation, in presence of a		N/A	
	opening with delay in case of failure of the line voltage	je		
	RCCB connected according to fig. 4 at the rated		N/A	
	voltage (Un)			
	All phases but one switched off by means of S3		N/A	

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Clause	Requirement + Test	Result - Remark	Verdict

	During the delay: test of 9.9.2:						
9.9.2	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA)	D1 -	N/A				
	· · · · · · · · · · · · · · · · · · ·	D2 -					
		D3 -					
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA):	D1 -	N/A				
		D2 -					
		D3 -					
	The RCCB closes on $I_{\Delta n}$: no value exceeds the	D1 -	N/A				
	specified limiting value of Table 1 (ms)	D2 -					
		D3 -					
9.9.2.3	The test circuit being successively calibrated at each	of the values of residual current	N/A				
	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 _{Δn} :	D1 -	N/A				
		D2 -					
		D3 -					
	- maximum break time (ms) at: 2 I _{∆n} :	D1 -	N/A				
		D2 -					
		D3 -					
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A				
		D2 -					
		D3 -					
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A				
	applicable)	D2 -					
		D3 -					
	- maximum break time (ms) at: 500 A	D1 -	N/A				
		D2 -					
		D3 -					
	No value exceeds the relevant specified limiting		N/A				
	value						
	Additional test for type S:		N/A				
	- minimum non actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 -	N/A				
		D2 -					
		D3 -					

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Clause	Requirement + Test	Result - Remark	Verdict					
	- minimum non actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	D1 -	N/A					
	:	D2 -	14//-					
		D3 -						
	- minimum non actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A					
		D2 -						
		D3 -						
	- minimum non actuating time (ms) at: 500 A;	D1 -	N/A					
	0,04 s	D2 -						
		D3 -						
	No tripping during tests		N/A					
9.17.4	Verification of the correct operation of RCCBs with 3	3 or 4 current paths, neutral and	N/A					
	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 _{Δn} :	D1 -	N/A					
		D2 -						
		D3 -						
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A					
	, ,	D2 -						
		D3 -						
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A					
		D2 -						
		D3 -						
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A					
	applicable):	D2 -						
		D3 -						
	- maximum break time (ms) at: 500 A:	D1 -	N/A					
		D2 -						
		D3 -						
	No value exceeds the relevant specified limiting value		N/A					
	Additional test for type S:		N/A					

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Clause	Requirement + Test	Result - Remark	Verdict
		1	
	- minimum non actuating time (ms) at: $I_{\Delta n}; \ 0.13 \ s \ :$	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	D1 -	N/A
	<u>:</u>	D2 -	
		D3 -	
	- minimum non actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s	D1 -	N/A
	· · · · · · · · · · · · · · · · · · ·	D2 -	
		D3 -	
	- minimum non actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically r	reclosing RCCBs (under	N/A
0.44	consideration)		
8.11	Test device		- D
	RCCBs shall be provided with a test device		P
	Ampere-turns produced when operating the test		P
	device do not exceed 1,66 times the ampere-turns		
	produced by I _{Δn}		
	Not possible to energize the circuit on the load side		P
	by operating the test device when the RCCB is in		
	the open position		
9.16	Verification of the operation of the test device at the		_
	a) RCCB at 0,85 times the rated voltage, test	D1 – OK	P
	device actuated 25 times at intervals of 5 s:	D2 – OK	
		D3 – OK	
	b) test a) repeated at 1,1 times the rated voltage:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
	c) test b) repeated, but only once, the operating	D1 – OK	Р
	means of the test device being held in the closed	D2 – OK	
	position for 30 s	D3 – OK	
	RCCB operated at each test:	D1 – operated	Р
		D2 – operated	
		D3 – operated	

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Clause	Requirement + Test	Result - Remark	Verdict				
	No change impairing further use:	D1 – OK	Р				
		D2 – OK					
		D3 – OK					
8.8	Resistance to mechanical shock and impact						
	RCCBs shall have adequate mechanical behaviour		Р				
	so as to withstand the stresses imposed during						
	installation and use						
9.12.1.2	Mechanical shock		Р				
	Mechanical shock: 50 falls of 40 mm on one side;		Р				
	50 falls on opposite side C turned through 90°;						
	50 falls on one side; 50 falls on opposite side						
	No opening of RCCB during the test	D1 – OK	Р				
		D2 – OK					
		D3 – OK					
9.12.2	Mechanical impact						
9.12.2.1	Impact test (10 blows, height 10 cm): no damage :	D1 – OK	P				
	, , , , , , , , , , , , , , , , , , , ,	D2 – OK					
		D3 – OK					
9.12.2.2	RCCBs for rail mounting downward vertical force of		Р				
	50 N for 1 min, upward vertical force of 50 N for						
	1 min						
	RCCB shall not become loose during test and no	D1 – OK	Р				
	damage impairing its further use	D2 – OK					
		D3 – OK					
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		P				
	conditions of overcurrent		·				
9.18.1		se of a load through a RCCB with					
0.10.1	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	378A, 1s					
	equal to (A): 6 In switched on using a two-pole test		-				
	switch for 1 s						
	Test repeated three times with an interval of at	D1 – OK	P				
	least 1 min	D2 – OK	1				
	icast i iiiiii	D3 – OK					

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Clause	Requirement + Test	Result - Remark	Verdict
	The RCCB shall not open:	D1 – OK	Р
		D2 – OK	
		D3 – OK	N1/A
	RCCBs functionally dependent on the line voltage		N/A
0.40.0	at rated voltage (Un)		
9.18.2	Verification of the limiting value of overcurrent in case	se of a single phase load through	
	a three-pole or four-pole RCCB		N/A
	RCCB connected according to fig. 22		IN/A
	Test current (A): 6 In closed by S1 for 1 s	D1 -	 N/A
	Test repeated three times for each possible combination of current paths with an interval of at	D2 -	IN/A
	least 1 min	D3 -	
	The RCCB shall not open:	D1 -	N/A
	The ROOD shall not open	D2 -	14/74
		D3 -	
	RCCBs functionally dependent on the line voltage		N/A
	at rated voltage		
	-		
	Tests "D2"		Р
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	252	
	voltage for the pole exclusively for the neutral		
	Test voltage 105% of rated phase to phase voltage	444V	
	for the other poles		
	Prospective current - 500A or		
	- 10 I _n (A):	630	
	Prospective current (A)	630	
	Prospective current obtained (A):	645	_
	Power factor	0,930,98	
	1		

0,96

Ρ

shifted by 30° for the other poles

Power factor obtained

Point of initiation: $0 \pm 5^{\circ}$ for the first tested pole,

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Clause	Requirement + Test	Result - Remark	Verdict			
	Test sequence: O-t-CO on each pole in turn		Р			
	excluding the switched neutral pole		Г			
	During tests no endangering of operator, no		Р			
	permanent arcing, no flashover and no melting of		-			
	fuse F					
	After the tests no damage impairing further use		Р			
9.7.7.3	The leakage current flowing across the open	D1 - < 0,2 mA	Р			
	contacts is measured at 1,1 Un and shall not	D1 - < 0,2 mA				
	exceed 2mA (mA)	D1 - < 0,2 mA				
9.7.3	Dielectric strength test of the main circuit at test volt	age 2 Un for 1 min:				
ı	a):	D1 – 460	Р			
İ		D2 – 460				
		D3 – 460				
	b):	D1 – 460	Р			
		D2 – 460				
		D3 – 460				
	c):	D1 – 460	Р			
		D2 – 460				
		D3 – 460				
	d):	D1 –	N/A			
		D2 –				
		D3 –				
	e):	D1 – 460	N/A			
		D2 – 460				
		D3 – 460				
	No flashover or breakdown:		Р			
	Making and breaking In at Un:	D1 -63A,230VAC	Р			
		D2 -63A,230VAC				
		D3 -63A,230VAC				
	The RCCB shall trip with a test current of 1,25 I _{Δn}	D1 – 34	Р			
	(ms):	D2 – 25				
		D3 – 30				
	The polyethylene sheet shows no holes		Р			
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the					
<u> </u>	line voltage	<u> </u>				
9.17.1	Limiting value of the line voltage (Ux):					

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Clause	Requirement + Test	Result - Remark	Verdict				
	- rated voltage applied to the line terminals and	D1 -	N/A				
	progressively lowered to attain zero within about	D2 -					
	30 s until automatic opening occurs; voltage (V) .:	D3 -					
	- all values less than 0,85 times the rated voltage	D1 -	N/A				
	(V):	D2 -					
		D3 -					
	- tripping test at test voltage (V) with $I_{\Delta n}$ and	D1 -	N/A				
	operating according to Table 1 (ms):	D2 -					
		D3 -					
	No value exceeds the specified limiting values		N/A				
	Not possible to close the apparatus by manual	D1 -	N/A				
	operating means below Ux:	D2 -					
		D3 -					
9.17.2	Verification of behaviour in case of failure of the line voltage						
	RCCB supplied with rated voltage, and the line		N/A				
	voltage then switched off						
	Time (ms) interval between switching off and	D1 -	N/A				
	opening of the main contacts:	D2 -					
		D3 -					
	a) RCCBs opening without delay: no value		N/A				
	exceeds 0,5 s						
	b) RCCBs opening with delay: max. and min.		N/A				
	values within the range indicated by the						
	manufacturer						
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 volta						
	RCCB connected according to fig. 4 at the rated		N/A				
	voltage (Un)		14/7				
	All phases but one switched off by means of S3		N/A				
	During the delay: test of 9.9.2:	II.	14/74				
9.9.2.1	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s	D1 -	N/A				
J.J.∠. I	(mA)	D2 -	IN/A				
	(IIIA)						
	tripping groups to the second	D3 -	N1/A				
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA):	D1 -	N/A				
		D2 -					
		D3 -					

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Clause	Requirement + Test	Result - Remark	Verdict					
	The RCCB closes on $I_{\Delta n}$: no value exceeds the	D1 -	N/A					
		D2 -	IN/A					
	specified limiting value of Table 1 (ms):	D3 -						
9.9.2.3	The test circuit being successively calibrated at each							
9.9.2.3	specified in Table 1, the test switch S2 and the RCC							
	the test voltage is suddenly established by closing the test switch S1 - maximum break time (ms) at: $I_{\Delta n}$							
	- maximum break time (ms) at 1 _{An}		N/A					
		D2 -						
		D3 -						
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A					
		D2 -						
		D3 -						
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A					
		D2 -						
		D3 -						
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A					
	applicable):	D2 -						
		D3 -						
	- maximum break time (ms) at: 500 A	D1 -	N/A					
		D2 -						
		D3 -						
	No value exceeds the relevant specified limiting value		N/A					
	Additional test for type S:							
	- minimum non-actuating time (ms) at: I∆n; 0,13 s :	D1 -	N/A					
		D2 -						
		D3 -						
	- minimum non-actuating time (ms) at: 2 l _{Δn} ; 0,06 s	D1 -	N/A					
		D2 -						
		D3 -						
	- minimum non-actuating time (ms) at: 5 l _{Δn} ; 0,05 s	D1 -	N/A					
		D2 -						
		D3 -						
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A					
	0,04 s	D2 -						
	5,5 . 6	D3 -						

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Clause	Requirement + Test	Result - Remark	Verdict				
		T					
_	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	h 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 -	N/A				
		D2 -					
		D3 -					
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A				
		D2 -					
		D3 -					
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A				
		D2 -					
		D3 -					
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A				
	applicable):	D2 -					
		D3 -					
	- maximum break time (ms) at: 500 A:	D1 -	N/A				
		D2 -					
		D3 -					
	No value exceeds the relevant specified limiting		N/A				
	value						
	Additional test for type S:						
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	D1 -	N/A				
		D2 -					
		D3 -					
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A				
		D2 -					
		D3 -					
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A				
		D2 -					
		D3 -					

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Clause Requirement + Test Result - Remark								
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A					
	0,04 s:	D2 -						
		D3 -						
	No tripping during tests		N/A					

	TEST SE	OUENC	`F D /1 s	(alames	(D0)						
	1P+N, 63		•		` '	al					
	Tests "E		e A, 100	під, гур	e dellei	<u> </u>					
8.5	Operating characteristics										
0.0	For multiple settings of I _{Δn} tests are made for each										N/A
	setting	pio ootti	1190 01 121	riooto ai	o maao	ioi odoii					14/7
9.9.1	RCCB in	stalled a	as for nor	mal use	, test circ	cuit					P
	according to fig. 4										
9.9.4				epender	nt on line	voltage,					N/A
	each tes	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated									
	line volta	ge; volta	age (V)			:					
	Type	I _N A	I _{ΔN} A	ne		ndard va ting time				al to	1
				ΙΔΝ	2 I _{ΔN}	5 I _{ΔN}	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A		
	Genera	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.	
			0,03	0,3	0,15		0,04	0,04	0,04	break times	
			>0,03	0,3	0,15	0,04		0,04	0,04		
	Ø	≥ 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- actuatin g times	
	a) value to be decided by the manufacturer for this test										
			only mad ation as n				€				
9.9.2	Off-load	tests ma	ade at a t	emperat	ure of 20) ± 5 °C	22 °C				Р
9.9.2.1	Verificati	on of the	e correct	operatio	n in case	e of a ste	ady incr	ease res	idual cui	rrent:	

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Clause	Requirement + Test	Result - Remark	Verdict		
	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s (mA)	I _{Δn} =100mA	Р		
	- tripping current between I _{Δno} and I _{Δn} (mA):	78,1~79,0mA	Р		
9.9.2.2	Verification of the correct operation at closing on resi	idual current			
	- the RCCB closes on I _{Δn} : no value exceeds the specified limiting value of Table 1 (ms)	39	Р		
9.9.2.3	The test circuit being successively calibrated at each specified in Table 1, the test switch S2 and the RCC the test voltage is suddenly established by closing the	B being in the closed position,			
	- maximum break time (ms) at: I _{Δn}	34	Р		
	- maximum break time (ms) at: 2 l _{Δn}	31	Р		
	- maximum break time (ms) at: 5 I _{Δn}		N/A		
	- maximum break time (ms) at: 0,25 A (if applicable)	26	Р		
	- maximum break time (ms) at: 500 A	11	Р		
	No value exceeds the relevant specified limiting value		Р		
9.9.2.4	Verification of the correct operation in case of sudder of values between 5 I _{Δn} and 500A (among the following list: 5A, 10A, 20A, 50A, 100A, 20A, 50A, 100A, 20A, 20A, 50A, 100A, 20A, 20A, 20A, 20A, 20A, 20A, 20A,	•			
	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:5A (value 1 between 5A and 200A)	21	Р		
	- maximum break time (ms) at:10A (value 2 between 5A and 200A)	17	Р		
	- maximum break time (ms) at:20A (value 3 between 5A and 200A)	15	Р		
	- maximum break time (ms) at:50A (value 4 between 5A and 200A)	15	Р		

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Clause	Requirement + Test	Result - Remark	Verdict		
	- maximum break time (ms) at:100A (value 5	14	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	- maximum break time (ms) at:200A (value 6	13	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	No value exceeds the relevant specified limiting		Р		
	value				
	Additional test for type S:				
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s:		N/A		
	- minimum non-actuating time (ms) at: 2 I∆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;		N/A		
	0,04 s				
	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				
	- maximum break time (ms) at: I _{Δn} :	36	Р		
	- maximum break time (ms) at: 2 I _{Δn} :	33	Р		
	- maximum break time (ms) at: 5 I _{Δn} :		N/A		
	- maximum break time (ms) at: 0,25 A (if applicable)	27	Р		
	:				
	- maximum break time (ms) at: 500 A:	12	Р		
	No value exceeds the relevant specified limiting		Р		
	value				
	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 _{Δn} ; 0,06 s		N/A		
	:				

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Clause	Requirement + Test	Result - Remark	Verdict
		1	
	- minimum non-actuating time (ms) at: 5 I _{∆n} ; 0,05 s		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s:	D1 - D2 -	N/A
	No tripping during the tests	D3 -	N/A
9.9.2.5	No tripping during the tests Tests repeated with the RCCB loaded with rated curr	ront:	P N/A
9.9.2.3	- 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 _{Δn} : no value exceeds the specified limiting value of Table 1 (ms):	35	Р
	The switch S1 and the RCCB are in closed position. established by closing S2:	The residual current is	
	- maximum break time (ms) at: I _{Δn} :	35	Р
	- maximum break time (ms) at: 2 l _{Δn} :	29	Р
	- maximum break time (ms) at: 5 l _{Δn} :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable)	32	Р
	- maximum break time (ms) at: 500 A:	11	Р
	No value exceeds the relevant specified limiting value		Р
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s:		N/A
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s		N/A
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A
	- minimum non-actuating time (ms) at: 500 A;		N/A
	No tripping during the tests		N/A
9.9.2.6	b) Tests repeated with the RCCB loaded with rated c	:urrent:	14//1
0.0.2.0	- test current (A): In at a temperature of +40 °C: until		_
	steady state conditions are reached:	63	

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Clause	Requirement + Test	Result - Remark	Verdict
	- cross-sectional area (mm²):	16	_
	The test circuit being successively calibrated at each	of the values of residual current	Р
	specified in Table 1, the test switch S2 and the RCC		
	test voltage is suddenly established by closing the te	est switch S1	
	- maximum break time (ms) at: I _{Δn} :	34	Р
	- maximum break time (ms) at: 2 I _{Δn} :	31	Р
	- maximum break time (ms) at: 5 I _{Δn} :		N/A
	- maximum break time (ms) at: 0,25 A (if applicable)	26	Р
	- maximum break time (ms) at: 500 A	11	Р
	No value exceeds the relevant specified limiting value		Р
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 I _{Δn} for		N/A
	0,06 s:		
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A
	- minimum non-actuating time (ms) at: 500 A;		N/A
	No tripping during the tests		N/A
8.15	Behaviour of RCCBs in case of earth fault curren	its comprising a d.c.	N/A
	component		
9.9.3	Additional verification of correct operation at residua for RCCBs type A	I currents with d.c. components	Р
9.9.3.1	RCCB installed as for normal use, test circuits		P
0.0.0.	according to fig. 5 and 6		·
9.9.4	For RCCBs functionally dependent on line voltage,		N/A
	each test is made at 1,1 and 0,85 times the rated		
	line voltage; voltage (V):		
9.9.3.1	Verification of the correct operation in case of a cont	inuous rise of the residual	
	pulsating direct current (see Table 20):		

0~140mA

- steady increase from zero to: 1,4 $I_{\Delta n}$ for

 $I_{\Delta n} > 0.01 \text{ A with } 1.4 I_{\Delta n} / 30 \text{ A/s (mA)}$

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Clause	Requirement + Test	Result - Remark	Verdict	
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq 0{,}01$ A		N/A	
	with 2 I _{Δn} /30 A/s (mA)			
	- angle $\alpha = 0^{\circ}$ (+/-):	79,1~81,3mA	Р	
	- angle α = 90° (+/-):	79,3~81,7mA	Р	
	- angle α = 135° (+/-):	79,6~81,6mA	Р	
	No value exceeds the relevant specified limiting		Р	
	values			
9.9.3.2	Verification of the correct operation in case of sudde	nly appearing residual pulsating		
	direct currents by closing S2 (angle α = 0°)			
	RCCBs with $I_{\Delta n}$ < 0,03 A:	T		
	- maximum break time (ms) at: 2 $I_{\Delta n}$ (+/-)	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 4 I _{Δn} (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 0,5 A rms (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	RCCBs with $I_{\Delta n} = 0.03$ A:			
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):	27	Р	
	- maximum break time (ms) at: 2,8 I _{∆n} (+/-):	23	Р	
	- maximum break time (ms) at: 0,35 A rms (+/-) .:	13	Р	
	- maximum break time (ms) at: 350 A rms (+/-):	10	Р	
	RCCBs with I∆n > 0,03 A:			
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):	D1 – 189/192	Р	
		D2 – 190/188		
		D3 - 200/204		
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):	D1 – 112/110	Р	
	, , , , ,	D2 – 111/114		
		D3 - 113/115		

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Clause	Requirement + Test	Result - Remark	Verdict
		1	<u> </u>
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-):	D1 - 96/97	Р
		D2 - 100/93	
		D3 - 103/100	
	- maximum break time (ms) at: 350 A rms (+/-):	D1 - 103/100	Р
		D2 - 90/95	
		D3 – 95/97	
	No value exceeds the relevant specified limiting		Р
	value		
9.9.3.3	Verification of the correct operation with the pole un	der test and one other pole	
	loaded with rated current		
	- test current (A): In:	63	_
	- steady increase from zero to: 1,4 I _{∆n} for	0~140mA	Р
	$I_{\Delta n} > 0.01 \text{ A with } 1.4 I_{\Delta n} / 30 \text{ A/s (mA)}$		
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A		N/A
	with 2 I _{∆n} /30 A/s (mA)		
	- angle $\alpha = 0^{\circ}$ (+/-)	78,9~80,9mA	Р
	- angle α = 90° (+/-)	79,1~82,7mA	Р
	- angle α = 135° (+/-):	79,6~81,3mA	P
	No value exceeds the relevant specified limiting		Р
	values		
9.9.3.4	Verification of the correct operation in case of residu	al 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		Р
	to: 1,4 $I_{\Delta n}$ for $I_{\Delta n} > 0,01$ A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		
	- steady increase of pulsating d.c. current from zero		N/A
	to: $2 I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A with $2 I_{\Delta n} / 30$ A/s (mA)		
	- angle α = 0° (+/-) (+/- 6 mA):	78,6~82,3mA	Р
	No value exceeds the relevant specified limiting		Р
	values		

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

					IEC 6	1008-1					
Clause	Requirer	ment + T	est				Resul	t - Rema	rk		Verdict
	For multi	iple setti	ngs of I∆r	tests a	re made	for each					N/A
_	setting										
9.9.1	RCCB installed as for normal use, test circuit									Р	
	according to fig. 4										
9.9.4	For RCCBs functionally dependent on line voltage,									N/A	
	each tes	t is made	e at 1,1 a	ind 0,85	times th	e rated					
_	line volta							1.4			
	Туре	I _N A	I _{ΔN} A	n		ndard va ting time				al to	
				ΙΔΝ	2 I _{ΔN}	5 IAN	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A		
	Genera I	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.	
			0,03	0,3	0,15		0,04	0,04	0,04	break times	
			>0,03	0,3	0,15	0,04		0,04	0,04		
	S	≥ 25	>0,03	0,5	0,2	0,15		0,15	0,15	Max. break times	
				0,13	0,06	0,05		0,04	0,04	Min. non- actuatin g times	
	a) value to be decided by the manufacturer for this test										
			only mad ition as n				Э				
9.9.2	Off-load	tests ma	ide at a t	emperat	ure of 20) ± 5 °C	21 °C				Р
9.9.2.1	Verificati	ion of the	correct	operatio	n in cas	e of a ste	ady incr	ease res	idual cu	rrent:	
	- steady (mA)		e from 0,2				I _{∆n} =30	00mA			Р
	- tripping	current	between	I _{∆no} and	I I∆n (mA)):	235~2	238mA			Р
9.9.2.2	Verificati	ion of the	correct	operatio	n at clos	ing on re	sidual c	urrent			
	- the RC			-			37				Р
	specified	l limiting	value of	Table 1	(ms)	<u></u> :					
9.9.2.3	specified	l in Table	e 1, the te	est switc	h S2 an	d the RC	CB being	g in the o	closed po	al current	
	the test voltage is suddenly established by closing the test switch S1										

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: I _{Δn}	39	Р
	- maximum break time (ms) at: 2 I _{Δn}	34	Р
	- maximum break time (ms) at: 5 I _{Δn}		N/A
	- maximum break time (ms) at: 0,25 A (if	27	Р
	applicable)		
	- maximum break time (ms) at: 500 A	12	Р
	No value exceeds the relevant specified limiting value		Р
9.9.2.4	Verification of the correct operation in case of sudde	n appearance of residual current	
	of values between 5 I∆n and 500A	.,	
	(among the following list: 5A, 10A, 20A, 50A, 100A,	200A):	
	The test switch S1 and the RCCB being in the close	d position, the residual current is	
	suddenly established by closing the test switch S2		
	- maximum break time (ms) at:5A (value 1	22	Р
	between 5A and 200A)		
	According to – AS/NZS 61008.1:2015		
	- maximum break time (ms) at:10A (value 2	19	Р
	between 5A and 200A)		
	According to – AS/NZS 61008.1:2015		
	- maximum break time (ms) at:20A (value 3	16	Р
	between 5A and 200A)		
	According to – AS/NZS 61008.1:2015		
	- maximum break time (ms) at:50A (value 4	14	Р
	between 5A and 200A)		
	According to – AS/NZS 61008.1:2015		
	- maximum break time (ms) at:100A (value 5	12	Р
	between 5A and 200A)		
	According to – AS/NZS 61008.1:2015		
	- maximum break time (ms) at:200A (value 6	14	Р
	between 5A and 200A)		
	According to – AS/NZS 61008.1:2015		
	No value exceeds the relevant specified limiting		Р
	value		
	Additional test for type S:	T	
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
		ı	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s		N/A
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A
	- minimum non-actuating time (ms) at: 500 A;		N/A
	0,04 s:		
	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 specified in Table 1, the test switch S2 and the RCCB test voltage is suddenly established by closing the test	being in the closed position, the	Р
		36	 Р
		34	<u>'</u> Р
	(110)	34	
	- maximum break time (ms) at: 5 I _{Δn}	29	N/A P
		11	Р
	No value exceeds the relevant specified limiting		Р
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{Δn} : 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s		N/A
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
		D2 -	
		D3 -	
	No tripping during the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated curre	nt:	Р
	- test current (A): In, the pole under test and one		
		63	
	, ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	63	
	being established shortly before the test: - cross-sectional area (mm²):	16	

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Requirement + Test	Result - Remark	Verdict		
	37	Р		
·	The residual current is			
		P		
	29	Р		
- maximum break time (ms) at: 5 I _{Δn} :		N/A		
- maximum break time (ms) at: 0,25 A (if applicable)	32	Р		
- maximum break time (ms) at: 500 A:	11	Р		
No value exceeds the relevant specified limiting		Р		
value				
Additional test for type S:				
- minimum non-actuating time (ms) at: I _{Δn} ; 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 _{Δn} ; 0,05 s		N/A		
:				
- minimum non-actuating time (ms) at: 500 A;		N/A		
0,04 s:				
No tripping during the tests		N/A		
b) Tests repeated with the RCCB loaded with rated current:				
		_		
	63			
		_		
		 Р		
		' 		
		N/A		
	27	P		
		Г		
- maximum break time (ms) at: 500 A:	11	P		
	Requirement + Test - the RCCB closes on I _{An} : no value exceeds the specified limiting value of Table 1 (ms)	- the RCCB closes on I _{An} : no value exceeds the specified limiting value of Table 1 (ms)		

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Clause	Requirement + Test	Result - Remark	Verdict		
	No value exceeds the relevant specified limiting		Р		
	value				
	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;		N/A		
	No tripping during the tests		N/A		
8.15	Behaviour of RCCBs in case of earth fault currents comprising a d.c.				
9.9.3	Additional verification of correct operation at residual for RCCBs type A	Il currents with d.c. components	Р		
9.9.3.1	RCCB installed as for normal use, test circuits according to fig. 5 and 6		Р		
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	Р		
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A with 2 $I_{\Delta n}$ /30 A/s (mA)		N/A		
	- angle $\alpha = 0^{\circ}$ (+/-)	232~257mA	Р		
	- angle $\alpha = 90^{\circ} (+/-)$	233~259mA	Р		
	- angle α = 135° (+/-):	230~255mA	Р		
	No value exceeds the relevant specified limiting		Р		
	values	1			

Verification of the correct operation in case of suddenly appearing residual pulsating

direct currents by closing S2 (angle $\alpha = 0^{\circ}$)

RCCBs with $I_{\Delta n} < 0.03$ A:

9.9.3.2

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 $I_{\Delta n}$ (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 4 $I_{\Delta n}$ (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 0,5 A rms (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	RCCBs with $I_{\Delta n} = 0.03 \text{ A}$:	1	
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):		N/A
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):		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 l _{Δn} (+/-):	27	Р
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):	24	Р
	- maximum break time (ms) at: 7 I _{Δn} (+/-):	14	Р
	- maximum break time (ms) at: 350 A rms (+/-):	10	Р
	No value exceeds the relevant specified limiting		Р
	value		
9.9.3.3	Verification of the correct operation with the pole un	der test and one other pole	
	loaded with rated current		
	- test current (A): In:	63	_
	- steady increase from zero to: 1,4 l _{∆n} for	0~420mA	Р
	$I_{\Delta n} > 0.01 \text{ A with } 1.4 I_{\Delta n} / 30 \text{ A/s (mA)}$		
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A		N/A
	with 2 I _{∆n} /30 A/s (mA)		
	- angle $\alpha = 0^{\circ} (+/-)$	229~259mA	Р
	- angle $\alpha = 90^{\circ} (+/-)$	230~256mA	P
	3 - 3 - 5 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7		·
	- angle α = 135° (+/-)	230~255mA	Р

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Clause	Requirement + Test	Result - Remark	Verdict
		T	1
	No value exceeds the relevant specified limiting		Р
	values		
9.9.3.4	Verification of the correct operation in case of residu	al 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		Р
	to: 1,4 $I_{\Delta n}$ for $I_{\Delta n} > 0,01$ A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		
	- steady increase of pulsating d.c. current from zero		N/A
	to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A with 2 $I_{\Delta n}$ /30 A/s (mA)		
	- angle α = 0° (+/-) (+/- 6 mA):	230~252mA	Р
	No value exceeds the relevant specified limiting		Р
	values		

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SE	QUENC	E D (1 s	amples)	(D0+D1)					
	1P+N, 63	В А, Тур	e AC, 30	mA,Ge	neral typ	ре					
	Tests "D	0"									
8.5	Operating	g charact	teristics								
	For multip	ole settin	gs of I∆n	tests are	e made f	or each					N/A
	setting										
9.9.1	RCCB ins	stalled as	s for norr	nal use,	test circ	uit					Р
	according	to fig. 4									
9.9.4	For RCCI	Bs functi	onally de	penden	t on line	voltage,					N/A
	each test is made at 1,1 and 0,85 times the rated										
	line volta	ge; volta	ge (V)			:					
	Type	I _N A	I _{ΔN} A	no		ndard val ting time				al to	
				ΙΔΝ	2 ΙΔΝ	5 IAN	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A		
	General	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.	
			0,03	0,3	0,15		0,04	0,04	0,04	break times	
			>0,03	0,3	0,15	0,04		0,04	0,04		
	S	≥ 25	>0,03	0,5	0,2	0,15	-1	0,15	0,15	Max. break times	-
				0,13	0,06	0,05		0,04	0,04	Min. non- actuatin g times	
	a) value to be decided by the manufacturer for this test										
	b) The te		nly made ion as m								
9.9.2	Off-load t	ests mad	de at a te	emperatu	re of 20	± 5 °C	22 °C				Р
9.9.2.1	Verification	on of the	correct o	peration	n in case	of a stea	ady incre	ase resi	dual curr	ent:	
	- steady i		•				I∆n=30r	mA			Р
	- tripping						21,9~2	2,1mA			Р
9.9.2.2	Verification	on of the	correct o	operation	n at closi	ng on res	idual cu	rrent			

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Clause	Requirement + Test	Result - Remark	Verdict
	- the RCCB closes on $I_{\Delta n}\!:$ no value exceeds the	36	Р
	specified limiting value of Table 1 (ms):		
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 RCC	B being in the closed position, the	
	test voltage is suddenly established by closing the te	est switch S1	
	- maximum break time (ms) at: $I_{\Delta n}$:	37	Р
	- maximum break time (ms) at: 2 I _{Δn} :	28	Р
	- maximum break time (ms) at: 5 I _{Δn} :		N/A
	- maximum break time (ms) at: 0,25 A (if	21	Р
	applicable):		
	- maximum break time (ms) at: 500 A:	11	Р
	No value exceeds the relevant specified limiting		Р
	value		
9.9.2.4	Verification of the correct operation in case of sudde	n appearance of residual current	
	of values between 5 I∆n and 500A		
	(among the following list: 5A, 10A, 20A, 50A, 100A, 200A):		
	The test switch S1 and the RCCB being in the closed	d position, the residual current is	
	suddenly established by closing the test switch S2		
	- maximum break time (ms) at:5A (value 1	15	N/A
	between 5A and 200A):		
	According to – AS/NZS 61008.1:2015		
	- maximum break time (ms) at:10A (value 2	9	N/A
	between 5A and 200A):		
	According to – AS/NZS 61008.1:2015		
	- maximum break time (ms) at:20A (value 3	9	N/A
	between 5A and 200A):		
	According to – AS/NZS 61008.1:2015		
	- maximum break time (ms) at:50A (value 4	9	N/A
	between 5A and 200A):		
	According to – AS/NZS 61008.1:2015		
	- maximum break time (ms) at:100A (value 5	10	N/A
	between 5A and 200A):		
	According to – AS/NZS 61008.1:2015		
	- maximum break time (ms) at:200A (value 6	9	N/A
	between 5A and 200A):		
	According to – AS/NZS 61008.1:2015		

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Clause	Requirement + Test	Result - Remark	Verdict		
			1		
	No value exceeds the relevant specified limiting		Р		
	value				
	Additional test for type S:				
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 -	N/A		
		D2 -			
		D3 -			
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A		
	:	D2 -			
		D3 -			
	- minimum non-actuating time (ms) at: 5 I _{∆n} ; 0,05 s	D1 -	N/A		
	:	D2 -			
		D3 -			
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A		
	0,04 s:	D2 -			
	N	D3 -	N1/A		
0.000	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 te	39	P		
	- maximum break time (ms) at: I _{Δn}	33			
	- maximum break time (ms) at: 5 I _{Δn}	D1 –	P N/A		
	- maximum break time (ms) at 3 14n	D2 –	IN/A		
		D3 –			
	- maximum break time (ms) at: 0,25 A (if	25	P		
	applicable):		'		
	- maximum break time (ms) at: 500 A:	12	Р		
	No value exceeds the relevant specified limiting	·-	P		
	value		•		
	Additional test for type S:				
	- minimum non-actuating time (ms) at: I _{Δn} : 0,13 s :	D1 -	N/A		
	The state of the s	D2 -			
		D3 -			
L	1	1 -			

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Clause	Requirement + Test	Result - Remark	Verdict		
		-			
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	D1 -	N/A		
	······	D2 -			
		D3 -			
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05$ s	D1 -	N/A		
	:	D2 -			
		D3 -			
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A		
	0,04 s:	D2 -			
		D3 -			
	No tripping during the tests		N/A		
9.9.2.5	Tests repeated with the RCCB loaded with rated cur	rrent:	Р		
	- test current (A): In, the pole under test and one		_		
	other pole loaded with rated current, the current	63			
	being established shortly before the test:				
	- cross-sectional area (mm²):	16	_		
	- the RCCB closes on I _{Δn} : no value exceeds the	35	Р		
	specified limiting value of Table 1 (ms):				
	The switch S1 and the RCCB are in closed position.	The residual current is			
	established by closing S2 :				
	- maximum break time (ms) at: I _{Δn} :	35	Р		
	- maximum break time (ms) at: 2 I _{Δn} :	31	Р		
	- maximum break time (ms) at: 5 I _{Δn} :		N/A		
	- maximum break time (ms) at: 0,25 A (if	24	Р		
	applicable):				
	- maximum break time (ms) at: 500 A:	12	Р		
	No value exceeds the relevant specified limiting		Р		
	value				
	Additional test for type S:	1			
	- minimum non-actuating time (ms) at: I _{∆n} ; 0,13 s :	D1 -	N/A		
	detailing time (ma) at 12m, 0, 10 3.	D2 -	14//		
		D3 -			
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A		
	- minimum non-actuating time (ms) at 2 Idn, 0,00 s	D2 -	IN/A		
		D3 -			
		100 -			

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Clause	Requirement + Test	Result - Remark	Verdict	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 - D2 -	N/A	
	- minimum non-actuating time (ms) at: 500 A;	D3 -	N/A	
	0,04 s:	D2 -	IWA	
	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 specified in Table 1, the test switch S2 and the RCC test voltage is suddenly established by closing the test	B being in the closed position, the	Р	
	- maximum break time (ms) at: I _{Δn}	35	Р	
	- maximum break time (ms) at: 2 I _{Δn} :	29	 P	
	- maximum break time (ms) at: 5 I _{Δn} :		N/A	
	- maximum break time (ms) at: 0,25 A (if applicable)	24	Р	
	- maximum break time (ms) at: 500 A:	11	P	
	No value exceeds the relevant specified limiting value		Р	
	Additional test for type S:			
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	D1 - D2 - D3 -	N/A	
	- minimum non-actuating time (ms) at: 2 I _{Δn} for 0,06 s:	D1 - D2 - D3 -	N/A	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 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	

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Clause	Requirement + Test	Result - Remark	Verdict

8.15	Behaviour of RCCBs in case of earth fault curren	its comprising a d.c.	Р
	component		
9.9.3	Additional verification of correct operation at residua	I currents with d.c. components	Р
	for RCCBs type A		
9.9.3.1	RCCB installed as for normal use, test circuits		Р
	according to fig. 5 and 6		
9.9.4	For RCCBs functionally dependent on line voltage,		N/A
	each test is made at 1,1 and 0,85 times the rated		
	line voltage; voltage (V):		
9.9.3.1	Verification of the correct operation in case of a cont	inuous rise of the residual	
	pulsating direct current (see Table 20):	,	
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for	0~42mA	Р
	$I_{\Delta n} > 0.01 \text{ A with } 1.4 I_{\Delta n} / 30 \text{ A/s (mA)}$		
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq 0{,}01$ A		N/A
	with 2 I _{Δn} /30 A/s (mA)		
	- angle α = 0° (+/-):		N/A
	- angle $\alpha = 90^{\circ} (+/-)$:		N/A
	- angle α = 135° (+/-):		N/A
	No value exceeds the relevant specified limiting		N/A
	values		
9.9.3.2	Verification of the correct operation in case of sudde	nly appearing residual pulsating	
	direct currents by closing S2 (angle $\alpha = 0^{\circ}$)		
	RCCBs with I _{Δn} < 0,03 A:		
	- maximum break time (ms) at: 2 I _{Δn} (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 4 I _{Δn} (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 0,5 A rms (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A
		D2 -	
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	RCCBs with $I_{\Delta n} = 0.03 \text{ A}$:		
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):		N/A
_	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):		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:	<u> </u>	
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
9.9.3.3	Verification of the correct operation with the pole und	der test and one other pole	
	loaded with rated current	T	
	- test current (A): In:		_
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for		N/A
	$I_{\Delta n} > 0.01 \text{ A with } 1.4 I_{\Delta n} /30 \text{ A/s (mA)}$		
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq 0,01$ A		N/A
	with 2 I _{Δn} /30 A/s (mA)		
	- angle α = 0° (+/-)		N/A
	- angle α = 90° (+/-):		N/A
	- angle α = 135° (+/-):		N/A
	No value exceeds the relevant specified limiting		N/A
	values		
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		N/A
	to: 1,4 $I_{\Delta n}$ for $I_{\Delta n} > 0,01$ A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		

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Clause	Requirement + Test	Result - Remark	Verdict	
		T		
	- steady increase of pulsating d.c. current from zero		N/A	
	to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A with 2 $I_{\Delta n}$ /30 A/s (mA)			
	- angle α = 0° (+/-) (+/- 6 mA):		N/A	
	No value exceeds the relevant specified limiting		N/A	
	values			

	Tests "D1"		
8.12	RCCBs functionally dependent on line voltage		
	RCCBs functionally dependent on the line voltage,		N/A
	shall operate correctly between 0,85 and 1,1 times		
	their rated voltage; voltage (V):		
	Multipole RCCBs shall have all current paths		N/A
	supplied from the phases and neutral, if any		
9.17	Verification of the behaviour of RCCBs opening auto	omatically in case of failure of the	N/A
	line voltage		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and	D1 -	N/A
	progressively lowered to attain zero within about	D2 -	
	30 s until automatic opening occurs; voltage (V) .:	D3 -	
	- all values less than 0,85 times the rated voltage	D1 -	N/A
	(V):	D2 -	
		D3 -	
	- tripping test at test voltage (V) with $I_{\Delta n}$ and	D1 -	N/A
	operating according to Table 1 (ms)	D2 -	
		D3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	D1 -	N/A
	operating means below Ux:	D2 -	
		D3 -	
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	D1 -	N/A
	opening of the main contacts:	D2 -	
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	a) RCCBs opening without delay: no value		N/A
	exceeds 0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a	a residual current, for RCCBs	
	opening with delay in case of failure of the line volta	ge i	
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un):		
	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	D1 -	N/A
	(mA)	D2 -	
		D3 -	
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA)	D1 -	N/A
		D2 -	
		D3 -	
	The RCCB closes on I _{Δn} : no value exceeds the	D1 -	N/A
	specified limiting value of Table 1 (ms)	D2 -	
		D3 -	
9.9.2.3	The test circuit being successively calibrated at each	h 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	ne test switch S1	
	- maximum break time (ms) at: I _{Δn}	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 2 I _{Δn}	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A
	applicable):	D2 -	
		D3 -	

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Requirement + Test	Result - Remark	Verdict	
- maximum break time (ms) at: 500 A	D1 -	N/A	
	D2 -		
	D3 -		
No value exceeds the relevant specified limiting		N/A	
value			
Additional test for type S:			
- minimum non-actuating time (ms) at: $I_{\Delta n};0,13~s$:	D1 -	N/A	
	D2 -		
	D3 -		
- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	D1 -	N/A	
	D2 -		
	D3 -		
- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A	
	D2 -		
	D3 -		
- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A	
0,04 s:	D2 -		
	D3 -		
No tripping during tests		N/A	
RCCB connected according to fig. 4		N/A	
	h of the values of residual current		
,			
	D1 -	N/A	
- maximum break time (ms) at: 2 lan		N/A	
(, 2 =			
- maximum break time (ms) at: 5 las		N/A	
(1.5) 41 5 141			
	D3 -		
	Requirement + Test - maximum break time (ms) at: 500 A	Requirement + Test - maximum break time (ms) at: 500 A	

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Requirement + Test	Result - Remark	Verdict	
		N/A	
applicable):			
- maximum break time (ms) at: 500 A:		N/A	
	D3 -		
		N/A	
Additional test for type S:			
- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s:		N/A	
	D3 -		
- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A	
:			
- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A	
	D2 -		
	D3 -		
- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A	
0,04 s	D2 -		
	D3 -		
No tripping during tests		N/A	
Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		N/A	
		Р	
		Р	
		Р	
		Р	
	200	Р	
		P	
		<u>.</u> Р	
		•	
	ОК	 Р	
preceding peak		•	
	Requirement + Test - maximum break time (ms) at: 0,25 A (if applicable)	Requirement + Test Result - Remark - maximum break time (ms) at: 0,25 A (if applicable)	

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Clause	Requirement + Test	Result - Remark	Verdict
	The polarity shall be inverted after every two	OK	Р
	applications	00	
	The interval between two consecutive applications	30 s	Р
	shall be about 30 s		
	During the test the RCCB shall not trip:	not trip	Р
	- break time (ms) at: I _{Δn} :	37	Р
9.19.2	Verification of behaviour at surge currents up to 300	00A (8/20μs surge current)	
9.19.2.1	Test conditions		Р
	One pole of the RCCB is submitted to 10 applications of a surge current according to		Р
	the following requirements: Peak value: 3000A +10/-0%	3,0kA	 Р
	Virtual front time: 0,8µs ± 20%	0,8 μs	<u>г</u> Р
	Virtual time of half value: 20µs ± 20%	20 μs	' P
		OK	' P
	Peak of reverse current: less than 30 % of peak value	OK	'
	The polarity shall be inverted after every two	ОК	Р
	applications		
	The interval between two consecutive applications	30s	Р
	shall be about 30 s		
9.19.2.2	S-type: During the test the RCCB shall not trip		N/A
	- break time (ms) at I _{∆n} :		N/A
9.19.2.3	General type: During the test the RCCB may trip.	630	Р
	After any tripping the RCCB shall be re-closed		
	- break time (ms) at I _{Δn}	7	Р
	Power factor obtained:	0,95	_
	Point of initiation: 45° ± 5°	35	Р
	Test sequence: O-t-CO-t-CO on each pole in turn		Р
	excluding the switched neutral pole		
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of fuse F		
	After the tests no damage impairing further use		Р

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.7.3	The leakage current flowing across the open	D1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	D2 - < 0,2 mA	
	exceed 2mA (mA)	D3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test vol	age 2 Un for 1 min:	
	a):	ОК	Р
	b):	ОК	Р
	c):	OK	Р
	d):		Р
	e):		N/A
	No flashover or breakdown:	ОК	Р
	Making and breaking In at Un:	ОК	Р
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	37	Р
	(ms)		
	The polyethylene sheet shows no holes		Р
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		N/A
1	progressively lowered to attain zero within about		
	30 s until automatic opening occurs; voltage (V) .:		
	- all values less than 0,85 times the rated voltage		N/A
	(V)		
	- tripping test at test voltage (V) with I _{∆n} and		N/A
	operating according to Table 1 (ms)		
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual		N/A
	operating means below Ux		
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		N/A
	opening of the main contacts		
	a) RCCBs opening without delay: no value		N/A
	exceeds 0,5 s		

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Clause	Requirement + Test Result - Remark	Verdict						
	b) RCCBs opening with delay: max. and min.	N/A						
	values within the range indicated by the							
	manufacturer							
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	N/A						
	voltage (Un)							
	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 _{Δn} to I _{Δn} within 30 s	N/A						
	(mA)							
	- tripping current between IAno and IAn (mA):	N/A						
	The RCCB closes on I∆n: no value exceeds the	N/A						
	specified limiting value of Table 1 (ms):							
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 _{Δn} :	N/A						
	- maximum break time (ms) at: 2 I _{Δn} :	N/A						
	- maximum break time (ms) at: 5 l _{Δn} :	N/A						
	- maximum break time (ms) at: 0,25 A (if	N/A						
	applicable)							
	- maximum break time (ms) at: 500 A	N/A						
	No value exceeds the relevant specified limiting	N/A						
	value							
	Additional test for type S:							
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s:	N/A						
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	N/A						
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	N/A						
	- minimum non-actuating time (ms) at: 500 A;	N/A						
	0,04 s	. 4// 1						
	No tripping during tests	N/A						
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and	14//-1						
J. 17. 4	one line terminal only being energized in turn:							

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Clause	Requirement + Test	Result - Remark	Verdict				
	RCCB connected according to fig. 4		N/A				
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current						
	specified in Table 1, the test switch S2 and the RCCB being in the closed position,						
	the test voltage is suddenly established by closing the	he test switch S1					
	- maximum break time (ms) at: I _{Δn} :		N/A				
	- maximum break time (ms) at: 2 I _{Δn} :		N/A				
	- maximum break time (ms) at: 5 I _{Δn} :		N/A				
	- maximum break time (ms) at: 0,25 A (if		N/A				
	applicable)						
	- maximum break time (ms) at: 500 A		N/A				
	No value exceeds the relevant specified limiting		N/A				
	value						
	Additional test for type S:						
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s:		N/A				
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s		N/A				
	- minimum non-actuating time (ms) at: 5 l _{Δn} ; 0,05 s		N/A				
	- minimum non-actuating time (ms) at: 500 A;		N/A				
	No tripping during tests		N/A				
9.17.5	Verification of th4						
	e reclosing function of automatically reclosing RCCB	s (under consideration)					
8.14	Behaviour of RCCBs in case of current surges caus		P				
9.19	Verification of behaviour of RCCBs in case of currer voltages		Р				
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring	u wave test)	Р				
311311	One pole of the RCCB is submitted to 10 applications of a surge current according to						
	the following requirements:						
	- 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 μs	' P				
	± 20%	20 μο					
	- each successive reverse peak: about 60% of the preceding peak	ОК	Р				

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Clause	Requirement + Test	Result - Remark	Verdict
	The polarity shall be inverted after every two	ОК	Р
	applications		
	The interval between two consecutive applications	30 s	Р
	shall be about 30 s		
9.11.2.3	Verification of the rated residual making and	630	_
	breaking capacity (A): I _{Δm}		
	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	0,930,98	_
	Power factor obtained	0,97	_
	Point of initiation: 45° ± 5°	45°	Р
	Test sequence: O-t-CO-t-CO on each pole in turn		Р
	excluding the switched neutral pole		
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	D1 - < 0,2mA	Р
	contacts is measured at 1,1 Un and shall not	D2 - < 0,2 mA	
	exceed 2mA (mA)	D3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volt	age 2 Un for 1 min:	
	a) between open contacts:	ОК	Р
	b) between terminals (closed contacts):	ОК	Р
	c) between poles and frame	ОК	Р
	d) between metal parts of the mechanism and		N/A
	the frame:		
	e) RCCBs with a metal enclosure		N/A
	No flashover or breakdown:	ОК	Р
	Making and breaking In at Un	ОК	Р
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	37	Р
	(ms):		
	The polyethylene sheet shows no holes		Р

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Clause	Requirement + Test	Result - Remark	Verdict				

9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage	N/A				
9.17.1	Limiting value of the line voltage (Ux):	N/A				
	- rated voltage applied to the line terminals and	N/A				
	progressively lowered to attain zero within about					
	30 s until automatic opening occurs; voltage (V) .:					
	- all values less than 0,85 times the rated voltage	N/A				
	(V):					
	- tripping test at test voltage (V) with $I_{\Delta n}$ and	N/A				
	operating according to Table 1 (ms)					
	No value exceeds the specified limiting values	N/A				
	Not possible to close the apparatus by manual	N/A				
	operating means below Ux:					
9.17.2	Verification of behaviour in case of failure of the line voltage					
	RCCB supplied with rated voltage, and the line	N/A				
	voltage then switched off					
	Time (ms) interval between switching off and	N/A				
	opening of the main contacts:					
	a) RCCBs opening without delay: no value	N/A				
	exceeds 0,5 s					
	b) RCCBs opening with delay: max. and min.	N/A				
	values within the range indicated by the					
	manufacturer					
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	N/A				
	voltage (Un)					
	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 _{Δn} to I _{Δn} within 30 s	N/A				
	(mA)					
	- tripping current between I _{Δno} and I _{Δn} (mA):	N/A				
	The RCCB closes on I _{Δn} : no value exceeds the	N/A				
	specified limiting value of Table 1 (ms)					

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Clause	Requirement + Test Result - Remark	Verdict
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1	N/A
	- maximum break time (ms) at: I _{Δn}	N/A
	- maximum break time (ms) at: 2 I _{Δn}	N/A
	- maximum break time (ms) at: 5 I _{Δn} :	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 _{Δn} ; 0,13 s :	N/A
	- minimum non actuating time (ms) at: 2 I _{Δn} ; 0,06 s	N/A
	- minimum non actuating time (ms) at: 5 I _{Δn} ; 0,05 s	N/A
	- minimum non actuating time (ms) at: 500 A;	N/A
	0,04 s	N/A
9.17.4	No tripping during tests 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 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 _{Δn} :	N/A
	- maximum break time (ms) at: 2 I _{Δn} :	N/A
	- maximum break time (ms) at: 5 I _{Δn} :	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

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Clause	Requirement + Test	Result - Remark	Verdict
		<u> </u>	
	- minimum non actuating time (ms) at: I _{Δn} ; 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 _{Δn} ; 0,05 s		N/A
	- minimum non actuating time (ms) at: 500 A;		N/A
	0,04 s:		
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically consideration)	reclosing RCCBs (under	N/A
8.11	Test device		
	RCCBs shall be provided with a test device		Р
	Ampere-turns produced when operating the test		Р
	device do not exceed 1,66 times the ampere-turns		
	produced by $I_{\Delta n}$		
	Not possible to energize the circuit on the load side		Р
	by operating the test device when the RCCB is in		
	the open position		
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	ОК	Р
	device actuated 25 times at intervals of 5 s		
	b) test a) repeated at 1,1 times the rated voltage:	ОК	Р
	c) test b) repeated, but only once, the operating	ОК	Р
	means of the test device being held in the closed		
	position for 30 s		
	RCCB operated at each test:	operated	Р
	No change impairing further use:	ОК	Р
8.8	Resistance to mechanical shock and impact	T	
	RCCBs shall have adequate mechanical behaviour		Р
	so as to withstand the stresses imposed during		
	installation and use		
9.12.1.2	Mechanical shock	T	Р
	Mechanical shock: 50 falls of 40 mm on one side;		Р
	50 falls on opposite side C turned through 90°;		
	50 falls on one side; 50 falls on opposite side		

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Clause	Requirement + Test	Result - Remark	Verdict				
	No opening of RCCB during the test:		Р				
9.12.2	Mechanical impact						
9.12.2.1	Impact test (10 blows, height 10 cm): no damage :		Р				
9.12.2.2	RCCBs for rail mounting downward vertical force of		Р				
	50 N for 1 min, upward vertical force of 50 N for						
	1 min						
	RCCB shall not become loose during test and no		Р				
	damage impairing its further use:						
9.12.2.3	2.2.3 RCCBs of plug-in type (under consideration)						
8.13	Behaviour of RCCBs in case of overcurrents in the r	main circuit					
	RCCBs shall not operate under specified		Р				
	conditions of overcurrent						
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	378A, 1s	Р				
	equal to (A): 6 In switched on using a two-pole test						
	switch for 1 s:						
	Test repeated three times with an interval of at	D1 – OK	Р				
	least 1 min:	D2 – OK					
		D3 – OK					
	The RCCB shall not open:	D1 – OK	Р				
		D2 – OK					
		D3 – OK					
	RCCBs functionally dependent on the line voltage		N/A				
	at rated voltage (Un):						
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	D1 -	N/A				
	combination of current paths with an interval of at	D2 -					
	least 1 min	D3 -					
	The RCCB shall not open:	D1 -	N/A				
		D2 -					
		D3 -					

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Clause	Requirement + Test	Result - Remark	Verdict			

RCCBs functionally dependent on the line voltage	N/A
at rated voltage	

	TEST SE		•	- 1	, ,							
	1P+N, 63		e AC, 10	0 mA,Ge	eneral ty	/pe						
0.5	Tests "D											
8.5	Operating characteristics For multiple settings of I _{Δn} tests are made for each											
		ole settir	ngs of I∆n	tests are	e made f	or each					N/A	
	setting											
9.9.1	RCCB ins			nal use,	test circ	uit					Р	
	according											
9.9.4	For RCCI		-	•		_					N/A	
	each test											
	line volta	ge; volta I _N A	ge (V)			: ndard val	uos of h	rook time	and .			
	Type	IN A	IAN A	no		ing time				al to		
				I _{ΔN}	2 I _{ΔN}	5 I _{ΔN}	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A			
	General	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.		
			0,03	0,3	0,15		0,04	0,04	0,04	break		
			>0,03	0,3	0,15	0,04		0,04	0,04	times		
	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- actuatin g 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 t	ests ma	de at a te	emperatu	<u>ure of 2</u> 0	<u>± 5 °C</u>	22 °C				Р	
9.9.2.1	Verification	on of the	correct	pperation	n in case	of a stea	adv incre	ase resid	dual curr	ent:		

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Clause	Requirement + Test	Result - Remark	Verdict			
	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s (mA):	I _{Δn} =100mA	Р			
	- tripping current between I _{∆no} and I _{∆n} (mA):	78,6~79,1mA	Р			
9.9.2.2	Verification of the correct operation at closing on res	idual current				
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms):	37	Р			
9.9.2.3	The test circuit being successively calibrated at each specified in Table 1, the test switch S2 and the RCC the test voltage is suddenly established by closing the	B being in the closed position,				
	- maximum break time (ms) at: I _{Δn} :	35	Р			
	- maximum break time (ms) at: 2 I _{Δn} :	30	Р			
	- maximum break time (ms) at: 5 I _{Δn} :		N/A			
	- maximum break time (ms) at: 0,25 A (if	24	Р			
	applicable):					
	- maximum break time (ms) at: 500 A:	11	Р			
	No value exceeds the relevant specified limiting		Р			
	value					
9.9.2.4	Verification of the correct operation in case of sudden appearance of residual current of values between 5 I _{Δn} 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:5A (value 1 between 5A and 200A): According to – AS/NZS 61008.1:2015	21	Р			
	- maximum break time (ms) at:10A (value 2 between 5A and 200A):	19	Р			
	According to – AS/NZS 61008.1:2015 - maximum break time (ms) at:20A (value 3 between 5A and 200A)	17	Р			
	According to – AS/NZS 61008.1:2015 - maximum break time (ms) at:50A (value 4 between 5A and 200A)	17	Р			

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Clause	Requirement + Test	Result - Remark	Verdict		
	- maximum break time (ms) at:100A (value 5	14	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	- maximum break time (ms) at:200A (value 6	13	N/A		
	between 5A and 200A):				
_	According to – AS/NZS 61008.1:2015				
	No value exceeds the relevant specified limiting		Р		
	value				
	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 _{Δn} ; 0,06 s		N/A		
	- minimum non-actuating time (ms) at: 5 I _{∆n} ; 0,05 s		N/A		
	<u> </u>				
	- minimum non-actuating time (ms) at: 500 A;		N/A		
	0,04 s:				
_	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				
	- maximum break time (ms) at: I _{Δn} :	35	Р		
	- maximum break time (ms) at: 2 I _{∆n} :	34	Р		
	- maximum break time (ms) at: 5 l _{∆n} :		N/A		
	- maximum break time (ms) at: 0,25 A (if	31	Р		
_	applicable):				
	- maximum break time (ms) at: 500 A:	12	Р		
	No value exceeds the relevant specified limiting		Р		
	value				
	Additional test for type S:				
	- minimum non-actuating time (ms) at: I _{Δn} : 0,13 s:		N/A		
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s		N/A		
	- minimum non-actuating time (ms) at: 5 I _{∆n} ; 0,05 s		N/A		
	······································				

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 500 A;		N/A
	0,04 s:		
	No tripping during the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated cur	rent:	Р
	- test current (A): In, the pole under test and one		_
	other pole loaded with rated current, the current	63	
	being established shortly before the test:		
	- cross-sectional area (mm²):	16	_
	- the RCCB closes on $I_{\Delta n}\!\!:$ no value exceeds the	37	Р
	specified limiting value of Table 1 (ms):		
	The switch S1 and the RCCB are in closed position.		
	established by closing S2 :	1	
	- maximum break time (ms) at: I _{Δn} :	37	Р
	- maximum break time (ms) at: 2 I _{Δn} :	30	Р
	- maximum break time (ms) at: 5 I _{Δn} :		N/A
	- maximum break time (ms) at: 0,25 A (if	26	Р
	applicable):		
	- maximum break time (ms) at: 500 A:	11	P
	No value exceeds the relevant specified limiting		Р
	value		
	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 _{Δn} ; 0,06 s		N/A
	:		
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A
	- minimum non-actuating time (ms) at: 500 A;		N/A
	0,04 s:		
	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:	63	_
	until steady state conditions are reached:		
	- cross-sectional area (mm²):	16	

Clause Requirement + Test Result - Remark Vero 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: 1 An	
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 _{Δn}	
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 _{Δn}	
the test voltage is suddenly established by closing the test switch S1 - maximum break time (ms) at: I _{Δn}	
- maximum break time (ms) at: I _{Δn}	
- maximum break time (ms) at: 2 I _{Δn}	
- maximum break time (ms) at: 5 I _{Δn} : - maximum break time (ms) at: 0,25 A (if applicable): - maximum break time (ms) at: 500 A: 11 P No value exceeds the relevant specified limiting value Additional test for type S:	
- maximum break time (ms) at: 0,25 A (if applicable)	
applicable)	
- maximum break time (ms) at: 500 A: 11 P No value exceeds the relevant specified limiting value Additional test for type S:	
No value exceeds the relevant specified limiting value Additional test for type S:	
value Additional test for type S:	
Additional test for type S:	
- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	
- minimum non-actuating time (ms) at: 2 I _{∆n} for N/A	
0,06 s:	
- minimum non-actuating time (ms) at: 5 I _{∆n} ; 0,05 s	
- minimum non-actuating time (ms) at: 500 A;	
0,04 s	
No tripping during the tests N//	
8.15 Behaviour of RCCBs in case of earth fault currents comprising a d.c. P	
component	
9.9.3 Additional verification of correct operation at residual currents with d.c. components for RCCBs type A	
9.9.3.1 RCCB installed as for normal use, test circuits P	
according to fig. 5 and 6	
9.9.4 For RCCBs functionally dependent on line voltage, N/A	
each test is made at 1,1 and 0,85 times the rated	
line voltage; voltage (V):	
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 _{Δn} for	
$I_{\Delta n} > 0.01$ A with 1.4 $I_{\Delta n}$ /30 A/s (mA)	
- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A	
with 2 I _{Δn} /30 A/s (mA)	

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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		N/A		
	values				
9.9.3.2	Verification of the correct operation in case of sudde	enly appearing residual pulsating			
	direct currents by closing S2 (angle α = 0°)				
	RCCBs with $I_{\Delta n}$ < 0,03 A:	T			
	- maximum break time (ms) at: 2 $I_{\Delta n}$ (+/-):	D1 -	N/A		
		D2 -			
		D3 -			
	- maximum break time (ms) at: 4 I _{Δn} (+/-):	D1 -	N/A		
		D2 -			
		D3 -			
	- maximum break time (ms) at: 0,5 A rms (+/-):	D1 -	N/A		
		D2 -			
		D3 -			
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A		
		D2 -			
		D3 -			
	RCCBs with $I_{\Delta n} = 0.03$ A:				
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):		N/A		
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):		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∆n > 0,03 A:				
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):	D1 -	N/A		
		D2 -			
		D3 -			
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):	D1 -	N/A		
	(, 3 2,5)411 (,	D2 -			
		D3 -			
	- maximum break time (ms) at: 7 I _{Δn} (+/-):	D1 -	N/A		
		D2 -	13/73		
		D3 -			

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Clause	Requirement + Test	Result - Remark	Verdict
	1		1
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
9.9.3.3	Verification of the correct operation with the pole und	der test and one other pole	
	loaded with rated current	T	
	- test current (A): In:		_
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for		N/A
	$I_{\Delta n} > 0.01$ A with 1.4 $I_{\Delta n}$ /30 A/s (mA)		
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq 0{,}01$ A		N/A
	with 2 I _{An} /30 A/s (mA)		
	- angle α = 0° (+/-):		N/A
	- angle α = 90° (+/-):		N/A
	- angle α = 135° (+/-):		N/A
	No value exceeds the relevant specified limiting		N/A
	values		
9.9.3.4	Verification of the correct operation in case of residu	al pulsating d.c. currents with	
	angle $\alpha = 0^{\circ}$ superimposed by smooth direct current	of 0,006 A:	
	- steady increase of pulsating d.c. current from zero		N/A
	to: 1,4 $I_{\Delta n}$ for $I_{\Delta n} > 0,01$ A with 1,4 $I_{\Delta n}$ /30 A/s (mA)		
	- steady increase of pulsating d.c. current from zero		N/A
	to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A with 2 $I_{\Delta n}$ /30 A/s (mA)		
	- angle $\alpha = 0^{\circ}$ (+/-) (+/- 6 mA)		N/A
	No value exceeds the relevant specified limiting		N/A
	values		14//

	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	Р	

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Clause	Requiren	nent + Te	est				Result	- Remar	k		Verdict
										T	
9.9.4	For RCCBs functionally dependent on line voltage,									N/A	
	each test	is made	at 1,1 aı	nd 0,85	times the	rated					
	line volta										
	Туре	I _N A	I _{∆N} A	no	Stai n-actuat		lues of b at a resi			al to	
				ΙΔΝ	2 I _{ΔN}	5 I _{ΔN}	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A		
	General	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.	
			0,03	0,3	0,15		0,04	0,04	0,04	break times	
			>0,03	0,3	0,15	0,04		0,04	0,04		
	S	≥ 25	>0,03	0,5	0,2	0,15		0,15	0,15	Max. break times	
				0,13	0,06	0,05		0,04	0,04	Min. non- actuatin g times	
	a) value test	to be de	cided by	the mar	nufacture	r for this					
			nly made tion as m								
9.9.2	Off-load t	ests ma	de at a te	emperati	ure of 20	±5°C	21 °C				Р
9.9.2.1	Verification	on of the	correct o	peration	n in case	of a stea	ady incre	ase resi	dual curi	rent:	
	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s I _{Δn} =300mA (mA)						Р				
	- tripping	current l	oetween	I _{∆no} and	I∆n (mA)	:	231~2	34mA			Р
9.9.2.2	Verification	on of the	correct o	peration	n at closi	ng on re	sidual cu	rrent			
	- the RCC	CB close	s on I _{∆n} : ı	no value	exceeds	s the	36				Р
	specified	limiting	value of	Table 1	(ms)	:					
9.9.2.3	The test of	circuit be	ing succ	essively	calibrate	ed at eac	h of the	values o	f residua	al current	
	specified	in Table	1, the te	st switch	n S2 and	the RCC	CB being	in the cl	osed po	sition,	
	the test v	oltage is	suddenl	y establi	shed by	closing t	he test s	witch S1			
	- maximu	m break	time (ms	s) at: I _{∆n}		:	35				Р
	- maximu	m break	time (ms	s) at: 2 l	\n	:	28				Р
	- maximu	m break	time (ms	s) at: 5 l	\n	:					N/A

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Clause	Requirement + Test	Result - Remark	Verdict		
			_		
	- maximum break time (ms) at: 0,25 A (if	26	Р		
	applicable):				
	- maximum break time (ms) at: 500 A:	11	Р		
	No value exceeds the relevant specified limiting		Р		
	value				
9.9.2.4	Verification of the correct operation in case of sudde	n appearance of residual current			
	of values between 5 $I_{\Delta n}$ and 500A				
	(among the following list: 5A, 10A, 20A, 50A, 100A, 2	200A):			
	The test switch S1 and the RCCB being in the close	d position, the residual current is			
	suddenly established by closing the test switch S2				
	- maximum break time (ms) at:5A (value 1	22	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	- maximum break time (ms) at:10A (value 2	20	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	- maximum break time (ms) at:20A (value 3	15	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	- maximum break time (ms) at:50A (value 4	15	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	- maximum break time (ms) at:100A (value 5	14	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	- maximum break time (ms) at:200A (value 6	14	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	No value exceeds the relevant specified limiting		Р		
	value				
	Additional test for type S:				
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :		N/A		
	- minimum non-actuating time (ms) at: 2 l _{Δn} ; 0,06 s		N/A		
	:		-		
	- minimum non-actuating time (ms) at: 5 l _{Δn} ; 0,05 s		N/A		
	:		14/1		

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Clause	Requirement + Test	Result - Remark	Verdict			
	- minimum non-actuating time (ms) at: 500 A;		N/A			
	0,04 s					
	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 RCC	B being in the closed position,				
	the test voltage is suddenly established by closing the	ne test switch S1				
	- maximum break time (ms) at: I _{Δn} :	38	Р			
	- maximum break time (ms) at: 2 I _{Δn} :	35	Р			
	- maximum break time (ms) at: 5 l _{Δn} :		N/A			
	- maximum break time (ms) at: 0,25 A (if	30	Р			
	applicable):					
	- maximum break time (ms) at: 500 A:	11	Р			
	No value exceeds the relevant specified limiting		Р			
	value					
	Additional test for type S:					
	- minimum non-actuating time (ms) at: I _{Δn} : 0,13 s :		N/A			
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s		N/A			
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A			
	- minimum non-actuating time (ms) at: 500 A;		N/A			
	0,04 s					
	No tripping during the tests		N/A			
9.9.2.5	Tests repeated with the RCCB loaded with rated cur	rent:	Р			
	- test current (A): In, the pole under test and one		_			
	other pole loaded with rated current, the current	63				
	being established shortly before the test:					
	- cross-sectional area (mm²):	16	_			
	- the RCCB closes on I _{Δn} : no value exceeds the	36	P			
	specified limiting value of Table 1 (ms):					
	The switch S1 and the RCCB are in closed position. The residual current is					
	established by closing S2:					
	- maximum break time (ms) at: I _{Δn} :	37	P			
	- maximum break time (ms) at: 2 I _{Δn} :	11	' P			
	maximum break little (1115) at 2 IAn	' '	ı			

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Clause	Requirement + Test	Result - Remark	Verdict			
	- maximum break time (ms) at: 5 I _{Δn} :		N/A			
	- maximum break time (ms) at: 0,25 A (if	27	Р			
	applicable):					
_	- maximum break time (ms) at: 500 A:	11	Р			
	No value exceeds the relevant specified limiting		Р			
	value					
	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 _{Δn} ; 0,06 s		N/A			
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A			
	· · · · · · · · · · · · · · · · · · ·					
	- minimum non-actuating time (ms) at: 500 A;		N/A			
	0,04 s:					
	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:	63	_			
	until steady state conditions are reached:					
	- 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	ne test switch S1				
	- maximum break time (ms) at: I _{Δn} :	36	Р			
	- maximum break time (ms) at: 2 I _{Δn} :	29	Р			
	- maximum break time (ms) at: 5 I _{Δn} :		N/A			
	- maximum break time (ms) at: 0,25 A (if	27	Р			
	applicable):					
	- maximum break time (ms) at: 500 A:	11	Р			
	No value exceeds the relevant specified limiting		Р			
	value					
	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 _{Δn} for		N/A			
	0,06 s					

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Clause	Requirement + Test	Result - Remark	Verdict	
Clause	Requirement + rest	Result - Remark	verdict	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A	
	- minimum non-actuating time (ms) at: 500 A;		N/A	
	0,04 s		N/A	
	The tripping during the toole		1971	
8.15	Behaviour of RCCBs in case of earth fault current component	nts comprising a d.c.	Р	
9.9.3	Additional verification of correct operation at residuation RCCBs type A	I currents with d.c. components	Р	
9.9.3.1	RCCB installed as for normal use, test circuits according to fig. 5 and 6		Р	
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 sudded direct currents by closing S2 (angle $\alpha = 0^{\circ}$)	enly appearing residual pulsating		
	RCCBs with I _{Δn} < 0,03 A:			
	- maximum break time (ms) at: 2 I _{Δn} (+/-):	D1 - D2 -	N/A	
		D3 -		
	- maximum break time (ms) at: 4 I _{Δn} (+/-):	D1 -	N/A	
		D2 -		
		D3 -		

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 0,5 A rms (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	RCCBs with $I_{\Delta n} = 0.03$ A:	T	
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-):		N/A
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):		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 _{Δn} (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 7 I _{Δn} (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A
		D2 -	
		D3 -	
	No value exceeds the relevant specified limiting		N/A
	value		,,, .
9.9.3.3	Verification of the correct operation with the pole und	der test and one other pole	
	loaded with rated current	201 1001 0114 0110 011101 P010	
	- test current (A): In:		_
	- steady increase from zero to: 1,4 I _{∆n} for		N/A
	$I_{\Delta n} > 0.01$ A with 1.4 $I_{\Delta n}$ /30 A/s (mA)		13/73
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A		N/A
	with 2 $I_{\Delta n}$ /30 A/s (mA)		13/73
	- angle $\alpha = 0^{\circ}$ (+/-):		N/A
			N/A
	- angle $\alpha = 90^{\circ} (+/-)$		
	- angle α = 135° (+/-):	1	N/A

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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 angle α = 0° superimposed by smooth direct current	, ,	
	- 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 $I_{\Delta n} \le 0,01$ 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 SE	EQUENC	E D (3+	3+3 san	nples) (C	00+D1+D	02)				
	3P+N, 63	3 А, Тур	e A, 30 r	nA,Gen	eral typ	е					
	Tests "D	00"									
8.5	Operatin	g charac	teristics				_				
	For multi setting	ple setti	ngs of I∆n	tests aı	re made	for each					N/A
9.9.1	RCCB in according			mal use	, test circ	cuit					Р
9.9.4	For RCC each test	t is made	e at 1,1 a	ind 0,85	times th	e rated					N/A
	Туре	I _N A	ΙΔΝ Α		Standard values of break time and non-actuating time at a residual current equal to						
				ΙΔΝ	2 I _{ΔN}	5 I _{ΔN}	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A		
	Genera I	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.	
			0,03	0,3	0,15		0,04	0,04	0,04	break times	
			>0,03	0,3	0,15	0,04		0,04	0,04		
	S	≥ 25	>0,03	0,5	0,2	0,15		0,15	0,15	Max. break times	

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Clause	Requirement + Test				Resul	t - Rema	rk		Verdict
		0,13	0,06	0,05		0,04	0,04	Min. non- actuatin g times	
	a) value to be decided this test	by the ma	nufactur	er for					
	b) The test are only ma the correct operation as	_							
9.9.2	Off-load tests made at a	tempera	ture of 20) ± 5 °C	23 °C				Р
9.9.2.1	Verification of the correct	-			ady incr	ease res	idual cu	rrent:	
	- steady increase from 0				D1 -6-				Р
	(mA)			:	D2 -6-	30			
					D3 -6-	30			
	- tripping current betwee	en I∆no and	d I∆n (mA)):	D1 - 2	2,0~22,6	mA		Р
					D2 - 2	2,6~23,2	mA		
					D3 – 2	4,2~26,5	mA		
9.9.2.2	Verification of the correct	t operation	on at clos	ing on re	sidual c	urrent			
	- the RCCB closes on I_Δ	n: no valu	e exceed	ds the	D1 – 3	9			Р
	specified limiting value of	of Table 1	(ms)	:	D2 – 3	8			
					D3 – 3	8			
9.9.2.3	The test circuit being su	ccessivel	y calibrat	ed at ea	ch of the	values	of residu	al current	
	specified in Table 1, the							osition,	
	the test voltage is sudde						1		
	- maximum break time (ms) at: I∆r	·······	:	D1 – 3				Р
					D2 – 3				
					D3 – 4				
	- maximum break time (ms) at: 2	I ∆n	:	D1 – 3				Р
					D2 – 2 D3 – 2				
	- maximum break time (mc) at: 5	I.		D3 - Z	0			N/A
	- maximum break time (D1 – 1	5			P P
	applicable)	,	•		D2 – 1				1
	αρριιοαδίο/			•••••	D3 – 1				
	- maximum break time (ms) at: 50	00 A		D1 – 9				P
	(-, 00			D2 – 9				
					D3 – 1				

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Clause	Requirement + Test	Result - Remark	Verdict
	No value exceeds the relevant specified limiting		Р
	value		
9.9.2.4	Verification of the correct operation in case of sudde		
	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 close	ed position, the residual current is	
	suddenly established by closing the test switch S2		
	- maximum break time (ms) at:5A (value 1	D1 – 10,3	Р
	between 5A and 200A)	D2 – 9,9	
	According to – AS/NZS 61008.1:2015	D3 – 10,1	
	- maximum break time (ms) at:10A (value	D1 – 10,1	Р
	2 between 5A and 200A):	D2 – 10,2	
	According to – AS/NZS 61008.1:2015	D3 – 8,9	
	- maximum break time (ms) at:20A (value	D1 – 9,8	Р
	3 between 5A and 200A):	D2 – 9,5	
	According to – AS/NZS 61008.1:2015	D3 – 10,2	
	- maximum break time (ms) at:50A (value	D1 – 9,6	Р
	4 between 5A and 200A):	D2 – 9,8	
	According to – AS/NZS 61008.1:2015	D3 – 9,4	
	- maximum break time (ms) at:100A (value	D1 – 9,5	Р
	5 between 5A and 200A):	D2 – 9,1	
	According to – AS/NZS 61008.1:2015	D3 – 10,1	
	- maximum break time (ms) at:200A (value 6	D1 – 9,6	Р
	between 5A and 200A)	D2 – 8,9	
	According to – AS/NZS 61008.1:2015	D3 – 9,1	
	No value exceeds the relevant specified limiting		Р
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	D1 -	N/A
	, , , , , ,	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 I _{∆n} ; 0,06 s	D1 -	N/A
		D2 -	
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05\;\text{s}$	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	
	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 eac	h of the values of residual current	Р
	specified in Table 1, the test switch S2 and the RCC	CB being in the closed position,	
	the test voltage is suddenly established by closing to	he test switch S1	
	- maximum break time (ms) at: I _{Δn} :	D1 – 35	Р
		D2 – 37	
		D3 – 41	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 – 26	Р
	, i	D2 – 29	
		D3 – 26	
	- maximum break time (ms) at: 5 I _{Δn} :		N/A
	- maximum break time (ms) at: 0,25 A (if	D1 – 13	Р
	applicable)	D2 – 15	
		D3 – 18	
	- maximum break time (ms) at: 500 A	D1 – 10,2	Р
	, ,	D2 – 10,1	
		D3 – 10,3	
	No value exceeds the relevant specified limiting		Р
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{Δn} : 0,13 s :	D1 –	N/A
	,	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 I _{∆n} ; 0,06 s	D1 –	N/A
	· · · · · · · · · · · · · · · · · · ·	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 I _{∆n} ; 0,05 s	D1 –	N/A
	- minimum non-actuating time (ms) at. 5 lan, 0,05 s	D2 -	IN/ /T
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 500 A;	D1 –	N/A
	0,04 s:	D2 -	
		D3 -	
	No tripping during the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated cu	rrent:	Р
	- test current (A): In, the pole under test and one	63	_
	other pole loaded with rated current, the current		
	being established shortly before the test		
	- cross-sectional area (mm²):	16	_
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the	D1 – 38	Р
	specified limiting value of Table 1 (ms)	D2 – 34	
		D3 – 38	
	The switch S1 and the RCCB are in closed position	. The residual current is	
	established by closing S2 :		
	- maximum break time (ms) at: I _{Δn} :	D1 – 33	Р
		D2 – 34	
		D3 – 39	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 – 23	Р
	(1.5)	D2 – 30	
		D3 – 24	
	- maximum break time (ms) at: 5 I _{Δn} :		N/A
	- maximum break time (ms) at: 0,25 A (if	D1 – 13	Р
	applicable)	D2 – 13	
		D3 – 14	
	- maximum break time (ms) at: 500 A:	D1 – 9,4	Р
	maximum great time (me) at eee /t minimum.	D2 – 10,2	·
		D3 – 9,6	
	No value exceeds the relevant specified limiting		Р
	value		'
	Additional test for type S:		N/A
		D4	
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 –	N/A
		D2 –	
		D3 –	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 –	N/A
	:	D2 –	
		D3 –	

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Clause	Requirement + Test	Result - Remark	Verdict		
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,\!05~\text{s}$	D1 –	N/A		
	:	D2 –			
		D3 –			
	- minimum non-actuating time (ms) at: 500 A;	D1 –	N/A		
	0,04 s:	D2 –			
		D3 –			
	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 eac	h of the values of residual current	Р		
	specified in Table 1, the test switch S2 and the RC0	CB 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 – 37	Р		
		D2 – 38			
		D3 – 40			
	- maximum break time (ms) at: 2 $I_{\Delta n}$:	D1 – 26	Р		
		D2 – 28			
		D3 – 24			
	- maximum break time (ms) at: 5 $I_{\Delta n}$:		N/A		
	- maximum break time (ms) at: 0,25 A (if	D1 – 12	P		
	applicable):	D2 – 13			
		D3 – 13			
	- maximum break time (ms) at: 500 A	D1 – 18	Р		
		D2 – 16			
		D3 – 13			
	No value exceeds the relevant specified limiting		Р		
	value				
	Additional test for type S:				
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 -	N/A		
		D2 -			
		D3 -			

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$ for	D1 -	N/A
	0,06 s:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05~s$	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	
	No tripping during the tests		N/A
8.15	Behaviour of RCCBs in case of earth fault currer	nts comprising a d.c.	Р
	component		
9.9.3	Additional verification of correct operation at residua	I currents with d.c. components	Р
	for RCCBs type A	·	
9.9.3.1	RCCB installed as for normal use, test circuits		Р
	according to fig. 5 and 6		
9.9.4	For RCCBs functionally dependent on line voltage,		N/A
	each test is made at 1,1 and 0,85 times the rated		
	line voltage; voltage (V):		
9.9.3.1	Verification of the correct operation in case of a cont	tinuous rise of the residual	
	pulsating direct current (see Table 20):		
	- steady increase from zero to: 1,4 I _{Δn} for		Р
	$I_{\Delta n} > 0.01$ A with 1.4 $I_{\Delta n}$ /30 A/s (mA)		
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A		N/A
	with 2 I _{Δn} /30 A/s (mA)		
	- angle $\alpha = 0^{\circ} (+/-)$	D1 – 27,6~29,0mA	Р
	5	D2 – 25,8~27,3mA	
		D3 – 24,4~26,8mA	
	- angle $\alpha = 90^{\circ}$ (+/-):	D1 – 23,7~29,0mA	Р
	3 7 - 7	D2 – 24,2~25,3mA	
		D3 – 21,4~22,2mA	
	- angle α = 135° (+/-)	D1 – 24,2~27,3mA	Р
	3 3 - (/	D2 – 26,0~27,2mA	
		D3 – 22,0~23,0mA	
	No value exceeds the relevant specified limiting		Р
	values		
<u> </u>	1 - 22-0	1	1

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Clause	Requirement + Test	Result - Remark	Verdict		
9.9.3.2	Verification of the correct operation in case of suddenly appearing residual pulsating direct currents by closing S2 (angle α = 0°)				
	RCCBs with I∆n < 0,03 A:				
	- maximum break time (ms) at: 2 I _{Δn} (+/-):	D1 -	N/A		
	maximum break time (ma) at: 2 mm (m) in the maximum break time (ma) at: 2 mm (m)	D2 -	14//		
		D3 -			
	- maximum break time (ms) at: 4 I _{Δn} (+/-):	D1 -	N/A		
	- maximum break time (ms) at: 4 14n (+/-)	D2 -	IN/A		
		D3 -			
	maximum brook time (me) at: 0.5 A rme (1/)	D1 -	N/A		
	- maximum break time (ms) at: 0,5 A rms (+/-):	D2 -	IN/A		
		D3 -			
	maximum brook time (me) at 250 A rms (1/)		NI/A		
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A		
		D2 -			
	DCCDa with L 0.02 Av	D3 -			
	RCCBs with $I_{\Delta n} = 0.03$ A:	D4 04			
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):	D1 - 31	P		
		D2 - 32			
		D3 – 32			
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):	D1 - 28	Р		
		D2 - 28			
		D3 – 27			
	- maximum break time (ms) at: 0,35 A rms (+/-):	D1 - 11	Р		
		D2 - 12			
		D3 - 11			
	- maximum break time (ms) at: 350 A rms (+/-):	D1 – 8,9	Р		
		D2 – 9,0			
	_	D3 – 8,8			
	RCCBs with $I_{\Delta n} > 0.03$ A:	1			
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):	D1 -	N/A		
		D2 -			
		D3 -			
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):	D1 -	N/A		
		D2 -			
		D3 -			

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Clause	Requirement + Test	Result - Remark	Verdict		
			T		
	- maximum break time (ms) at: 7 I _{∆n} (+/-):	D1 -	N/A		
		D2 -			
		D3 -			
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A		
		D2 -			
		D3 -			
	No value exceeds the relevant specified limiting value		Р		
9.9.3.3	Verification of the correct operation with the pole und	der test and one other pole			
	loaded with rated current				
	- test current (A): In	63	_		
	- steady increase from zero to: 1,4 I _{Δn} for		Р		
	$I_{\Delta n} > 0.01$ A with 1.4 $I_{\Delta n}$ /30 A/s (mA)				
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A		N/A		
	with 2 $I_{\Delta n}$ /30 A/s (mA)				
	- angle $\alpha = 0^{\circ}$ (+/-)	D1 – 27,4~28,8mA	Р		
		D2 – 26,0~27,4mA			
		D3 – 24,5~26,7mA			
	- angle $\alpha = 90^{\circ}$ (+/-):	D1 – 23,8~26,3mA	Р		
		D2 – 24,1~25,3mA			
		D3 – 21,5~22,0mA			
	- angle α = 135° (+/-)	D1 – 24,3~27,4mA	Р		
		D2 – 26,1~27,2mA			
		D3 – 22,1~23,1mA			
	No value exceeds the relevant specified limiting		Р		
	values				
9.9.3.4	Verification of the correct operation in case of residual pulsating d.c. currents with				
	angle $\alpha = 0^{\circ}$ superimposed by smooth direct current	of 0,006 A:			
	- steady increase of pulsating d.c. current from zero		Р		
	to: 1,4 $I_{\Delta n}$ for $I_{\Delta n} > 0,01$ A with 1,4 $I_{\Delta n}$ /30 A/s (mA)				
	- steady increase of pulsating d.c. current from zero		N/A		
	to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A with 2 $I_{\Delta n}$ /30 A/s (mA)				
	- angle α = 0° (+/-) (+/- 6 mA)	D1 – 26,6~28,2mA	Р		
		D2 – 26,3~27,6mA			
		D3 – 25,7~26,8mA			

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Clause	Requirement + Test	Result - Remark	Verdict
	No value exceeds the relevant specified limiting values		Р

	Tasta IIDAII		
	Tests "D1"		
8.12	RCCBs functionally dependent on line voltage		
	RCCBs functionally dependent on the line voltage,		N/A
	shall operate correctly between 0,85 and 1,1 times		
	their rated voltage; voltage (V)		
	Multipole RCCBs shall have all current paths		N/A
	supplied from the phases and neutral, if any		
9.17	Verification of the behaviour of RCCBs opening auto	omatically in case of failure of the	N/A
	line voltage		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and	D1 -	N/A
	progressively lowered to attain zero within about	D2 -	
	30 s until automatic opening occurs; voltage (V) .:	D3 -	
	- all values less than 0,85 times the rated voltage	D1 -	N/A
	(V):	D2 -	
		D3 -	
	- tripping test at test voltage (V) with $I_{\Delta n}$ and	D1 -	N/A
	operating according to Table 1 (ms):	D2 -	
		D3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	D1 -	N/A
	operating means below Ux:	D2 -	
		D3 -	
9.17.2	Verification of behaviour in case of failure of the line	voltage	
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	D1 -	N/A
	opening of the main contacts:	D2 -	
		D3 -	
	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		

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Clause	Requirement + Test	Result - Remark	Verdict
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a	a residual current, for RCCBs	
	opening with delay in case of failure of the line volta	ge	
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un):		
	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	D1 -	N/A
	(mA):	D2 -	
		D3 -	
	- tripping current between I _{Δno} and I _{Δn} (mA):	D1 -	N/A
		D2 -	
		D3 -	
	The RCCB closes on I _{Δn} : no value exceeds the	D1 -	N/A
	specified limiting value of Table 1 (ms):	D2 -	
		D3 -	
9.9.2.3	The test circuit being successively calibrated at eac	h 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 _{Δn} :	D1 -	N/A
	` ,	D2 -	
		D3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A
	(1.5)	D2 -	
		D3 -	
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A
	applicable):	D2 -	
		D3 -	
	- maximum break time (ms) at: 500 A:	D1 -	N/A
	maximum broak time (ms) at 300 A	D2 -	13/7
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	
	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		
1	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 _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 2 I _{Δn}	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A
	applicable):	D2 -	
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 500 A:	D1 -	N/A
		D2 -	
		D3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{∆n} ; 0,13 s :	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		N/A
3.14	Behaviour of RCCBs in case of current surges caused by impulse voltages		Р
9.19	Verification of behaviour of RCCBs in case of current surges caused by impulse voltages		Р
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)		Р
-	One pole of the RCCB is submitted to 10 applications of a surge current according to		Р
	the following requirements:		-
	- peak value: 200 A + 10/0%	200	Р
	- virtual front time: 0,5 μs ± 30%	0,5 μs	<u> </u>
	- period of the following oscillatory wave: 10 μs	10 μs	 Р
	± 20%	το μο	•
	- each successive reverse peak: about 60% of the	ОК	Р
	preceding peak		
	The polarity shall be inverted after every two	ОК	Р
	applications		

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Clause	Requirement + Test	Result - Remark	Verdict	
		1		
	The interval between two consecutive applications	30 s	Р	
	shall be about 30 s			
	During the test the RCCB shall not trip:	D1 – not trip	Р	
		D2 – not trip		
		D3 – not trip		
	- break time (ms) at: $I_{\Delta n}$	D1 – 35	Р	
		D2 – 37		
		D3 – 35		
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)			
9.19.2.1	Test conditions		Р	
	One pole of the RCCB is submitted to 10 application	ns of a surge current according to	Р	
	the following requirements:			
	Peak value: 3000A +10/-0%	3,0kA	Р	
	Virtual front time: 0,8µs ± 20%	0,8 µs	Р	
	Virtual time of half value: 20µs ± 20%	20 μs	Р	
	Peak of reverse current: less than 30 % of peak	ОК	Р	
	value			
	The polarity shall be inverted after every two	ОК	Р	
	applications			
	The interval between two consecutive applications	30s	Р	
	shall be about 30 s			
9.19.2.2	S-type: During the test the RCCB shall not trip	D1 -	N/A	
		D2 -		
		D3 -		
	- break time (ms) at I _{Δn} :	D1 -	N/A	
	()	D2 -		
		D3 -		
9.19.2.3	General type: During the test the RCCB may trip.		P	
9.19.2.3	After any tripping the RCCB shall be re-closed			
	- break time (ms) at I _{Δn}	D1 – 37	P	
	Disartania (no) at iai	D2 – 29	•	
		D3 – 36		
	Power factor obtained:	0,95	_	
	Point of initiation: 45° ± 5°	45°	P	
	Test sequence: O-t-CO-t-CO on each pole in turn		' P	
	excluding the switched neutral pole		1	
	Textinum the switched heutral pole			

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Clause	Requirement + Test	Result - Remark	Verdict
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		Г
	fuse F		
	After the tests no damage impairing further use		P
9.7.7.3	The leakage current flowing across the open	D1 - < 0,2 mA	<u>.</u> Р
	contacts is measured at 1,1 Un and shall not	D2 - < 0,2 mA	
	exceed 2mA (mA)	D3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volt		
	a):	D1 -800	Р
		D2 –800	
		D3 -800	
	b):	D1 -800	Р
		D2 –800	
		D3 -800	
	c):	D1 -800	Р
		D2 –800	
		D3 -800	
	d):	D1 -800	Р
		D2 –800	
		D3 –800	
	e):	D1 -	N/A
		D2 -	
		D3 -	
	No flashover or breakdown:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
	Making and breaking In at Un:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
	The RCCB shall trip with a test current of 1,25 I _{Δn}	D1 – 22	Р
	(ms):	D2 – 23	
		D3 – 21	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the		
	line voltage		
9.17.1	Limiting value of the line voltage (Ux):		

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Clause	Requirement + Test	Result - Remark	Verdict		
	- rated voltage applied to the line terminals and	D1 -	N/A		
	progressively lowered to attain zero within about	D2 -	IN/A		
	30 s until automatic opening occurs; voltage (V) .:	D3 -			
	- all values less than 0,85 times the rated voltage	D1 -	N/A		
	(V):	D2 -	14/74		
	(*)	D3 -			
	- tripping test at test voltage (V) with I∆n and	D1 -	N/A		
	operating according to Table 1 (ms):	D2 -			
		D3 -			
	No value exceeds the specified limiting values		N/A		
	Not possible to close the apparatus by manual	D1 -	N/A		
	operating means below Ux:	D2 -			
		D3 -			
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	D1 -	N/A		
	opening of the main contacts	D2 -			
		D3 -			
	a) RCCBs opening without delay: no value exceeds		N/A		
	0,5 s				
	b) RCCBs opening with delay: max. and min.		N/A		
	values within the range indicated by the				
	manufacturer				
9.17.3	Verification of the correct operation, in presence of a	a residual current, for RCCBs			
	opening with delay in case of failure of the line voltage	ge T			
	RCCB connected according to fig. 4 at the rated		N/A		
	voltage (Un)				
	All phases but one switched off by means of S3		N/A		
	During the delay: test of 9.9.2:	T			
9.9.2.1	- steady increase from 0,2 $I_{\Delta n}$ to $I_{\Delta n}$ within 30 s	D1 -	N/A		
	(mA):	D2 -			
		D3 -			
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA):	D1 -	N/A		
		D2 -			
		D3 -			

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Clause	Requirement + Test	Result - Remark	Verdict
	The DOOD elected in Leavening to the	D4	NI/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the	D1 -	N/A
	specified limiting value of Table 1 (ms):	D2 -	
		D3 -	
9.9.2.3	The test circuit being successively calibrated at each		
	specified in Table 1, the test switch S2 and the RCC		
	the test voltage is suddenly established by closing the		
	- maximum break time (ms) at: I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A
	applicable):	D2 -	
		D3 -	
	- maximum break time (ms) at: 500 A:	D1 -	N/A
		D2 -	
		D3 -	
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{∆n} ; 0,13 s :	D1 -	N/A
	25.52ag () a 12ii, 6,10 0 .	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A
		D2 -	. 4// (
		D3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A
	- minimum non-actuating time (ms) at. 5 lan, 0,05 s	D2 -	IN/A
		D3 -	
	minimum non optiminating time (max) at 500 A		NI/A
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s	D2 -	
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
		<u> </u>	
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3	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	h of the values of residual current	
	specified in Table 1, the test switch S2 and the RCC	B being in the closed position,	
	the test voltage is suddenly established by closing the	ne test switch S1	
	- maximum break time (ms) at: $I_{\Delta n}$:	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 5 I _{Δn}	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A
	applicable)	D2 -	
		D3 -	
	- maximum break time (ms) at: 500 A	D1 -	N/A
		D2 -	
		D3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A
		D2 -	
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
			N1/A
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	DI/A
9.17.5	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 _{Δm} :	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:	0,930,98	
	Power factor obtained:	0,95	_
	Point of initiation: 45° ± 5°	45°	Р
	Test sequence: O-t-CO-t-CO on each pole in turn		Р
	excluding the switched neutral pole		
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	D1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	D2 - < 0,2 mA	
	exceed 2mA (mA)	D3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test vol	tage 2 Un for 1 min:	
	a) between open contacts:	D1 -800	Р
		D2 -800	
		D3 -800	
	b) between terminals (closed contacts):	D1 -800	Р
		D2 -800	
		D3 –800	
	c) between poles and frame:	D1 –800	Р
		D2 -800	
		D3 -800	

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Clause	Requirement + Test	Result - Remark	Verdict
	d) between metal parts of the mechanism and	D1 –800	Р
	the frame:	D2 -800	
		D3 -800	
	e) RCCBs with a metal enclosure:	D1 -	N/A
		D2 -	
		D3 -	
	No flashover or breakdown:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
	Making and breaking In at Un:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	D1 – 29	Р
	(ms):	D2 – 24	
		D3 – 23	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening auto	matically in case of failure of the	N/A
9.17.1	Limiting value of the line voltage (Ux):		N/A
	- rated voltage applied to the line terminals and	D1 -	N/A
	progressively lowered to attain zero within about	D2 -	. 47.
	30 s until automatic opening occurs; voltage (V) .:	D3 -	
	- all values less than 0,85 times the rated voltage	D1 -	N/A
	(V):	D2 -	14,71
	(,	D3 -	
	- tripping test at test voltage (V) with I _{∆n} and	D1 -	N/A
	operating according to Table 1 (ms)	D2 -	14/7-4
	operating according to Table 1 (113)	D3 -	
	No value exceeds the enecified limiting values	00-	N/A
	No value exceeds the specified limiting values	D1	N/A
	Not possible to close the apparatus by manual	D1 -	IN/A
	operating means below Ux:	D2 -	
0.47.0	Market and the second s	D3 -	B1/A
9.17.2	Verification of behaviour in case of failure of the line	voitage	N/A
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		

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Clause	Requirement + Test	Result - Remark	Verdict
			D1/A
	Time (ms) interval between switching off and	D1 -	N/A
	opening of the main contacts:	D2 -	
		D3 -	
	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a	a residual current, for RCCBs	N/A
	opening with delay in case of failure of the line volta	ge	
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un):		
	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	D1 -	N/A
	(mA):	D2 -	
		D3 -	
	- tripping current between I _{Δno} and I _{Δn} (mA):	D1 -	N/A
		D2 -	
		D3 -	
	The RCCB closes on I _{Δn} : no value exceeds the	D1 -	N/A
	specified limiting value of Table 1 (ms)	D2 -	
		D3 -	
9.9.2.3	The test circuit being successively calibrated at eac	h of the values of residual current	N/A
	specified in Table 1, the test switch S2 and the RCC		
	the test voltage is suddenly established by closing the		
	- maximum break time (ms) at: I _{Δn}	D1 -	N/A
	(,	D2 -	
		D3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 5 l _{Δn}	D1 -	N/A
	maximum broak time (mb) at 5 14n	D2 -	14/7
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	movimum brook time (me) et 0.25 A (if	D4	N/A
	- maximum break time (ms) at: 0,25 A (if applicable)	D1 - D2 -	IN/A
	арріїсавіе)	D3 -	
	movimum brook time (ma) at 500 A	D1 -	N/A
	- maximum break time (ms) at: 500 A	D2 -	IN/A
		D3 -	
	No value exceeds the relevant specified limiting value	D3 -	N/A
	Additional test for type S:		N/A
	- minimum non actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3	3 or 4 current paths, neutral and	N/A
	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	n of the values of residual current	N/A
	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 _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 5 I _{Δn}	D1 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A
	applicable):	D2 -	
		D3 -	
	- maximum break time (ms) at: 500 A:	D1 -	N/A
		D2 -	
		D3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:	T.	N/A
	- minimum non actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s	D2 -	
		D3 -	
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically	reclosing RCCBs (under	N/A
	consideration)	3 (
8.11	Test device		
	RCCBs shall be provided with a test device		Р
	Ampere-turns produced when operating the test	D1:41 ampere-turns	P
	device do not exceed 2,5 times the ampere-turns	D2:41 ampere-turns	
	produced by I _{Δn}	D3:41 ampere-turns	
	Not possible to energize the circuit on the load side		Р
			F
	by operating the test device when the RCCB is in the open position		
9.16	Verification of the operation of the test device at the	limite of retail values:	

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Clause	Requirement + Test	Result - Remark	Verdict
	a) RCCB at 0,85 times the rated voltage, test	D1 – OK	P
	device actuated 25 times at intervals of 5 s:	D2 – OK	
		D3 – OK	
	b) test a) repeated at 1,1 times the rated voltage:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
	c) test b) repeated, but only once, the operating	D1 – OK	Р
	means of the test device being held in the closed	D2 – OK	
	position for 30 s:	D3 – OK	
	RCCB operated at each test:	D1 – operated	Р
		D2 – operated	
		D3 – operated	
	No change impairing further use:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
8.8	Resistance to mechanical shock and impact		
	RCCBs shall have adequate mechanical behaviour		Р
	so as to withstand the stresses imposed during		
	installation and use		
9.12.1.2	Mechanical shock		Р
	Mechanical shock: 50 falls of 40 mm on one side;		Р
	50 falls on opposite side C turned through 90°;		
	50 falls on one side; 50 falls on opposite side		
	No opening of RCCB during the test	D1 – OK	Р
		D2 – OK	
		D3 – OK	
9.12.2	Mechanical impact		
9.12.2.1	Impact test (10 blows, height 10 cm): no damage :	D1 – OK	Р
	The second of th	D2 – OK	
		D3 – OK	
9.12.2.2	RCCBs for rail mounting downward vertical force of		Р
	50 N for 1 min, upward vertical force of 50 N for		
	1 min		
	RCCB shall not become loose during test and no	D1 – OK	Р
	damage impairing its further use:	D2 – OK	'
	damage impairing its further use	D3 – OK	

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Requirement + Test	Result - Remark	Verdict
RCCBs of plug-in type (under consideration)		P
	main aircuit	<u>'</u>
	Hairi Circuit	P
' '		Р
	(
-	se of a load through a RCCB with	
·		
		N/A
switch for 1 s		
Test repeated three times with an interval of at	D1 –	N/A
least 1 min:	D2 –	
	D3 –	
The RCCB shall not open:	D1 –	N/A
	D2 –	
	D3 –	
RCCBs functionally dependent on the line voltage		N/A
at rated voltage (Un):		
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		Р
Test current (A): 6 In closed by S1 for 1 s:	378A 1s	_
Test repeated three times for each possible	D1 – OK	Р
combination of current paths with an interval of at	D2 – OK	
least 1 min	D3 – OK	
	D1 – OK	Р
	D2 – OK	
RCCBs functionally dependent on the line voltage	-	N/A
		14/73
	RCCBs of plug-in type (under consideration) Behaviour of RCCBs in case of overcurrents in the respective conditions of overcurrent Verification of the limiting value of overcurrent in case 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	RCCBs of plug-in type (under consideration) Behaviour of RCCBs in case of overcurrents in the main circuit RCCBs shall not operate under specified conditions of overcurrent 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

	Tests "D2"		Р
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	_

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Clause	Requirement + Test	Result - Remark	Verdict
	Test voltage 105% of rated phase to neutral	252	
	voltage for the pole exclusively for the neutral		
	Test voltage 105% of rated phase to phase voltage	444V	
	for the other poles		
	Prospective current - 500A or		
	- 10 I _n (A):	630	
	Prospective current (A):	630	_
	Prospective current obtained (A)	639	_
	Power factor	0,930,98	_
	Power factor obtained:	0,96	_
	Point of initiation: $0 \pm 5^{\circ}$ for the first tested pole,		Р
	shifted by 30° for the other poles		
	Test sequence: O-t-CO on each pole in turn		Р
	excluding the switched neutral pole		
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	D1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	D2 - < 0,2 mA	
	exceed 2mA (mA)	D3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volta	age 2 Un for 1 min:	
	a):	D1 - 800	Р
		D2 - 800	
		D3 - 800	
	b):	D1 - 800	Р
		D2 - 800	
		D3 - 800	
	c):	D1 - 800	Р
		D2 - 800	
		D3 - 800	
	d):	D1 - 800	Р
		D2 - 800	
		D3 - 800	

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Clause	Requirement + Test	Result - Remark	Verdict
	e):	D1 -	N/A
		D2 -	
		D3 -	
	No flashover or breakdown:		Р
	Making and breaking In at Un:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	D1 – 32	Р
	(ms):	D2 – 27	
		D3 – 24	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening auto	omatically 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	D1 -	N/A
	progressively lowered to attain zero within about	D2 -	
	30 s until automatic opening occurs; voltage (V) .:	D3 -	
	- all values less than 0,85 times the rated voltage	D1 -	N/A
	(V):	D2 -	
		D3 -	
	- tripping test at test voltage (V) with I∆n and	D1 -	N/A
	operating according to Table 1 (ms)	D2 -	
		D3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	D1 -	N/A
	operating means below Ux:	D2 -	
		D3 -	
9.17.2	Verification of behaviour in case of failure of the line		
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	D1 -	N/A
	opening of the main contacts:	D2 -	,, 1
	21 21 21 21 21 21 21 21 21 21 21 21 21 2	D3 -	
	a) RCCBs opening without delay: no value	-	N/A
	exceeds 0,5 s		14//1

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Clause	Requirement + Test	Result - Remark	Verdict			
	b) RCCBs opening with delay: max. and min.		N/A			
	values within the range indicated by the					
	manufacturer					
9.17.3	Verification of the correct operation, in presence of a	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		N/A			
	voltage (Un):					
	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	D1 -	N/A			
	(mA)	D2 -				
		D3 -				
	- tripping current between I _{Δno} and I _{Δn} (mA):	D1 -	N/A			
		D2 -				
		D3 -				
	The RCCB closes on I _{Δn} : no value exceeds the	D1 -	N/A			
	specified limiting value of Table 1 (ms):	D2 -				
		D3 -				
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 _{Δn} :	D1 -	N/A			
	, ,	D2 -				
		D3 -				
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A			
	, , =	D2 -				
		D3 -				
	- maximum break time (ms) at: 5 I _{Δn} :	D1 -	N/A			
		D2 -	7			
		D3 -				
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A			
	applicable)	D2 -	,, .			
	-11	D3 -				
	- maximum break time (ms) at: 500 A:	D1 -	N/A			
	maximum productino (mo) de ooo // minimum.	D2 -	14//1			
		D3 -				

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Requirement + Test	Result - Remark	Verdict			
		N/A			
	D4	N1/A			
- minimum non-actuating time (ms) at: I _{∆n} ; 0,13 s :		N/A			
		NI/A			
		N/A			
		NI/A			
		N/A			
		N1/A			
		N/A			
0,04 \$					
No tripping during toots	D3 -	N/A			
		N/A			
	h of the values of residual surrent	IN/A			
		N/A			
- maximum break time (ms) at 14h		IN/A			
- maximum break time (ms) at: 2 li-		N/A			
- maximum break time (ms) at 2 mm		IN/A			
- maximum break time (ms) at: 5 las		N/A			
maximum steak time (me) at 8 tan		14/7			
- maximum break time (ms) at: 0.25 A (if		N/A			
· · ·		14/7			
application,					
	Requirement + Test No value exceeds the relevant specified limiting value Additional test for type S: - minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s: - minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s - minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s - minimum non-actuating time (ms) at: 500 A; 0,04 s - No tripping during tests Verification of the correct operation of RCCBs with 3 one line terminal only being energized in turn: RCCB connected according to fig. 4 The test circuit being successively calibrated at each specified in Table 1, the test switch S2 and the RCC	Requirement + Test			

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 500 A:	D1 -	N/A
		D2 -	
		D3 -	
	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 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n};0,06$ s	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05$ s	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	
	No tripping during tests		N/A

	TEST SEQUENCE D (1 sample) (D0+D1) 3P+N, 63 A, Type A, 30 mA,type General										
	Tests "E		e A, 30 I	палуре	Genera	<u> </u>					
8.5	Operatin	g charac	teristics								
	For mult setting	iple settir	ngs of I∆n	tests ar	e made f	or each					N/A
9.9.1	RCCB in			mal use,	, test circ	uit					Р
9.9.4	For RCC each tes	t is made	e at 1,1 a	nd 0,85	times the	e rated					N/A
	Туре	I _N A	Ι _{ΔΝ} Α	no		ndard va ting time				al to	
				ΙΔΝ	2 Ι _{ΔΝ}	5 I _{ΔN}	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A		

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Clause	Requiren	nent + To	est				Result	- Remar	k		Verdict
	Genera	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.	
			0,03	0,3	0,15		0,04	0,04	0,04	break times	
			>0,03	0,3	0,15	0,04		0,04	0,04		
	S	≥ 25	>0,03	0,5	0,2	0,15		0,15	0,15	Max. break times	
				0,13	0,06	0,05		0,04	0,04	Min. non- actuatin g times	
	a) value this test	to be de	ecided by	the ma	nufactur	er for					
	the		only made	_							
9.9.2	Off-load	tests ma	ide at a t	emperat	ure of 20) ± 5 °C	22 °C				Р
9.9.2.1	Verification of the correct operation in case of a stea					ady incre	ady increase residual current:				
	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s (mA)					30mA				Р	
	- tripping current between I _{Δno} and I _{Δn} (mA): 2						21~22,	.3mA			Р
9.9.2.2	Verification of the correct operation at closing on residual current										
	- the RC						37				Р
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										
	- maximu	ım break	time (m	s) at: I∆n		:	38				Р
	- maximu	ım break	k time (m	s) at: 2 I	Δn	:	29				Р
	- maximu	ım break	time (m	s) at: 5 I	Δn	:					N/A
	- maximum break time (ms) at: 0,25 A (if applicable)						23				Р
	- maximum break time (ms) at: 500 A:					12				Р	
	No value	exceed	s the rele	evant spe	ecified lir	miting					Р
9.9.2.4	of values	betwee		nd 500A				arance o	f residua	al current	

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Clause	Requirement + Test	Result - Remark	Verdict

	Ti			
	The test switch S1 and the RCCB being in the close	ed position, the residual current is		
	suddenly established by closing the test switch S2			
	- maximum break time (ms) at:5A (value 1	16	Р	
	between 5A and 200A)			
	According to – AS/NZS 61008.1:2015			
	- maximum break time (ms) at:10A (value	12	Р	
	2 between 5A and 200A)			
	According to – AS/NZS 61008.1:2015			
	- maximum break time (ms) at:20A (value	10	Р	
	3 between 5A and 200A)			
	According to – AS/NZS 61008.1:2015			
	- maximum break time (ms) at:50A (value	10	Р	
	4 between 5A and 200A):			
	According to – AS/NZS 61008.1:2015			
	- maximum break time (ms) at:100A (value	9	Р	
	5 between 5A and 200A):			
	According to – AS/NZS 61008.1:2015			
	- maximum break time (ms) at:200A (value	9	Р	
	6 between 5A and 200A):			
	According to – AS/NZS 61008.1:2015			
	No value exceeds the relevant specified limiting		Р	
	value			
	Additional test for type S:			
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s:		N/A	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s		N/A	
	:			
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A	
	- minimum non-actuating time (ms) at: 500 A;		N/A	
	0,04 s			
	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	h of the values of residual current	P	
	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 _{Δn} :	37	P	

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Clause	Requirement + Test	Result - Remark	Verdict
		Ī	
	- maximum break time (ms) at: 2 I _{Δn} :	30	Р
	- maximum break time (ms) at: 5 I _{Δn} :		N/A
	- maximum break time (ms) at: 0,25 A (if	25	Р
	applicable):		
	- maximum break time (ms) at: 500 A:	12	Р
	No value exceeds the relevant specified limiting		Р
	value		
	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;		N/A
	0,04 s:		
	No tripping during the tests		N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated cu	Р	
	- test current (A): In, the pole under test and one		_
	other pole loaded with rated current, the current	63	
	being established shortly before the test		
	- cross-sectional area (mm²):	16	—
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the	34	Р
	specified limiting value of Table 1 (ms)		
	The switch S1 and the RCCB are in closed position	. The residual current is	
	established by closing S2 :		
	- maximum break time (ms) at: I _{Δn}	38	Р
	- maximum break time (ms) at: 2 I _{Δn} :	29	Р
	- maximum break time (ms) at: 5 I _{Δn} :		N/A
	- maximum break time (ms) at: 0,25 A (if	25	Р
	applicable):		
	- maximum break time (ms) at: 500 A:	11	Р
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :		N/A

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Clause	Requirement + Test Re	esult - Remark	Verdict		
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s		N/A		
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A		
	- minimum non-actuating time (ms) at: 500 A;		N/A		
	No tripping during the tests		N/A		
0.9.2.6	b) Tests repeated with the RCCB loaded with rated curr	rent:			
	- test current (A): In at a temperature of +40 °C:		_		
	until steady state conditions are reached				
	- cross-sectional area (mm²) 16		_		
	The test circuit being successively calibrated at each of	the values of residual current	Р		
	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 _{Δn}		Р		
	- maximum break time (ms) at: 2 I _{Δn}		Р		
	- maximum break time (ms) at: 5 l _{Δn} :		N/A		
	- maximum break time (ms) at: 0,25 A (if applicable)		Р		
	- maximum break time (ms) at: 500 A 11		Р		
	No value exceeds the relevant specified limiting value		Р		
	Additional test for type S:				
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s:		N/A		
	- minimum non-actuating time (ms) at: 2 I _{∆n} for		N/A		
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s		N/A		
	- minimum non-actuating time (ms) at: 500 A;		N/A		
	No tripping during the tests		N/A		
	Pohovious of BCCPs in case of couth fault augments of				

8.15	Behaviour of RCCBs in case of earth fault currents comprising a d.c.	Р
	component	
9.9.3	Additional verification of correct operation at residual currents with d.c. components	Р
	for RCCBs type A	

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Clause	Requirement + Test	Result - Remark	Verdict			
		T				
9.9.3.1	RCCB installed as for normal use, test circuits		Р			
	according to fig. 5 and 6					
9.9.4	For RCCBs functionally dependent on line voltage,		N/A			
	each test is made at 1,1 and 0,85 times the rated					
	line voltage; voltage (V):					
9.9.3.1	Verification of the correct operation in case of a con-	tinuous rise of the residual				
	pulsating direct current (see Table 20):	1				
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for		N/A			
	$I_{\Delta n} > 0.01$ A with 1.4 $I_{\Delta n}$ /30 A/s (mA)					
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq 0{,}01$ A		N/A			
	with 2 I _{∆n} /30 A/s (mA)					
	- angle α = 0° (+/-):		N/A			
	- angle α = 90° (+/-):		N/A			
	- angle α = 135° (+/-):		N/A			
	No value exceeds the relevant specified limiting		N/A			
	values					
9.9.3.2	Verification of the correct operation in case of sudde	enly appearing residual pulsating				
	direct currents by closing S2 (angle $\alpha = 0^{\circ}$)					
	RCCBs with $I_{\Delta n} < 0.03$ A:					
	- maximum break time (ms) at: 2 I _{Δn} (+/-):	D1 -	N/A			
		D2 -				
		D3 -				
	- maximum break time (ms) at: 4 I _{Δn} (+/-):	D1 -	N/A			
		D2 -				
		D3 -				
	- maximum break time (ms) at: 0,5 A rms (+/-):	D1 -	N/A			
		D2 -				
		D3 -				
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A			
		D2 -				
		D3 -				
	RCCBs with $I_{\Delta n} = 0.03$ A:					
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):	D1 -	N/A			
		D2 -				
		D3 -				

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Clause	Requirement + Test	Result - Remark	Verdict			
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):	D1 -	N/A			
		D2 -				
		D3 -				
	- maximum break time (ms) at: 0,35 A rms (+/-) .:	D1 -	N/A			
		D2 -				
		D3 -				
	- maximum break time (ms) at: 350 A rms (+/-):	D1 –	N/A			
		D2 -				
		D3 -				
	RCCBs with $I_{\Delta n} > 0.03$ A:					
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):					
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):					
	- maximum break time (ms) at: 7 I _{Δn} (+/-):					
	- 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 _{∆n} for		N/A			
	$I_{\Delta n} > 0.01$ A with 1.4 $I_{\Delta n}$ /30 A/s (mA)					
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A		N/A			
	with 2 I _{∆n} /30 A/s (mA)					
	- angle α = 0° (+/-)		N/A			
	- angle $\alpha = 90^{\circ} (+/-)$		N/A			
	- angle $\alpha = 135^{\circ}$ (+/-):		N/A			
	No value exceeds the relevant specified limiting		N/A			
	values					
9.9.3.4	Verification of the correct operation in case of residu	al pulsating d.c. currents with				
	angle $\alpha = 0^{\circ}$ superimposed by smooth direct current of 0,006 A:					
	- steady increase of pulsating d.c. current from zero	,	N/A			
	to: 1,4 $I_{\Delta n}$ for $I_{\Delta n} > 0,01$ A with 1,4 $I_{\Delta n}$ /30 A/s (mA)					
	- steady increase of pulsating d.c. current from zero		N/A			
	to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A with 2 $I_{\Delta n}$ /30 A/s (mA)					
	- angle $\alpha = 0^{\circ}$ (+/-) (+/- 6 mA)		N/A			

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

	TEST SE	QUENC	E D (1 sa	amples)	(D0+D1))					
	3P+N, 63	А, Туре	e AC, 30	mA,Ger	neral typ	е					
	Tests "D	0"									
8.5	Operating	g charac	teristics								
	For multip	ole settin	igs of I∆n	tests are	made fo	or each					N/A
	setting										
9.9.1	RCCB ins	stalled as	s for norn	nal use,	test circu	uit					Р
	according	g to fig. 4									
9.9.4	For RCCI	Bs functi	onally de	pendent	on line	voltage,					N/A
	each test	is made	at 1,1 ar	nd 0,85 t	imes the	rated					
	line volta										
	Type	I _N A	I _{ΔN} A	no		ndard va ting time				al to	
				ΙΔΝ	2 Ι _{ΔΝ}	5 I _{ΔN}	5 I _{ΔN} or 0,25A a)	5A- 200A, b)	500A		
	General	Any value	<0,03	0,3	0,15		0,04	0,04	0,04	Max.	
			0,03	0,3	0,15		0,04	0,04	0,04	break times	
			>0,03	0,3	0,15	0,04	-	0,04	0,04		
	S	≥ 25	>0,03	0,5	0,2	0,15	1	0,15	0,15	Max. break times	
				0,13	0,06	0,05		0,04	0,04	Min. non- actuatin g times	
	a) value to be decided by the manufacturer for this test										
			nly made ion as m								
9.9.2	Off-load t	ests mad	de at a te	emperatu	re of 20	±5°C	22 °C				Р
9.9.2.1	Verification	on of the	correct o	peration	in case	of a stea	dy incre	ase resid	dual curr	ent:	

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Clause	Requirement + Test	Result - Remark	Verdict		
	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s	$I_{\Delta n}$ =30mA	Р		
	(mA):				
	- tripping current between I _{Δno} and I _{Δn} (mA):	21,7~22,3mA	Р		
9.9.2.2	Verification of the correct operation at closing on res	idual current			
	- the RCCB closes on $I_{\Delta n}\!\!:$ no value exceeds the	37	Р		
	specified limiting value of Table 1 (ms):				
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 RCC	B being in the closed position, the			
	test voltage is suddenly established by closing the test switch S1				
	- maximum break time (ms) at: I _{Δn} :	38	Р		
	- maximum break time (ms) at: 2 I _{Δn} :	29	Р		
	- maximum break time (ms) at: 5 I _{Δn} :		N/A		
	- maximum break time (ms) at: 0,25 A (if	23	Р		
	applicable):				
	- maximum break time (ms) at: 500 A:	12	Р		
	No value exceeds the relevant specified limiting		Р		
	value				
9.9.2.4	Verification of the correct operation in case of sudder	n appearance of residual current			
	of values between 5 I∆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:5A (value 1	16	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	- maximum break time (ms) at:10A (value 2	12	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	- maximum break time (ms) at:20A (value 3	10	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				
	- maximum break time (ms) at:50A (value 4	10	Р		
	between 5A and 200A):				
	According to – AS/NZS 61008.1:2015				

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Clause	Requirement + Test	Result - Remark	Verdict	
	- maximum break time (ms) at:100A (value 5	9	Р	
	between 5A and 200A):			
	According to – AS/NZS 61008.1:2015			
	- maximum break time (ms) at:200A (value 6	9	Р	
	between 5A and 200A):			
	According to – AS/NZS 61008.1:2015			
	No value exceeds the relevant specified limiting		Р	
	value			
	Additional test for type S:			
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	D1 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A	
	:	D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 5 l _{∆n} ; 0,05 s	D1 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A	
	0,04 s:	D2 -		
		D3 -		
	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	P	
	specified in Table 1, the test switch S2 and the RCC			
	test voltage is suddenly established by closing the te			
	- maximum break time (ms) at: I _{Δn} :	37	Р	
	- maximum break time (ms) at: 2 I _{∆n} :	30	P	
	- maximum break time (ms) at: 5 l _{Δn}	D1 –	 N/A	
	maximum break time (ms) at 5 mm	D2 –	14/74	
		D3 –		
	- maximum break time (ms) at: 0,25 A (if	25	 Р	
	, , , , , , , , , , , , , , , , , , ,		Г	
	applicable)	10		
	- maximum break time (ms) at: 500 A	12	P	
	No value exceeds the relevant specified limiting		Р	
	value			

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Clause	Requirement + Test	Result - Remark	Verdict

	Additional test for type S:	,			
	- minimum non-actuating time (ms) at: $I_{\Delta n}$: 0,13 s :	D1 -	N/A		
		D2 -			
		D3 -			
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	D1 -	N/A		
	:	D2 -			
		D3 -			
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s	D1 -	N/A		
	:	D2 -			
		D3 -			
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A		
	0,04 s	D2 -			
		D3 -			
	No tripping during the tests		N/A		
9.9.2.5	Tests repeated with the RCCB loaded with rated cur	rent:	Р		
	- test current (A): In, the pole under test and one		_		
	other pole loaded with rated current, the current	63			
	being established shortly before the test				
	- cross-sectional area (mm²):	16	_		
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the	34	Р		
	specified limiting value of Table 1 (ms)				
	The switch S1 and the RCCB are in closed position. The residual current is				
	established by closing S2 :				
	- maximum break time (ms) at: I _{Δn}	38	Р		
	- maximum break time (ms) at: 2 I _{Δn} :	29	Р		
	- maximum break time (ms) at: 5 I _{Δn} :		N/A		
	- maximum break time (ms) at: 0,25 A (if	25	Р		
	applicable)				
	- maximum break time (ms) at: 500 A	11	Р		
	No value exceeds the relevant specified limiting		Р		
	value				
	Additional test for type S:				
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	D1 -	N/A		
	3 - 1 (1, 11 = 1, 5, 13 = 1	D2 -			
		D3 -			

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Clause	Requirement + Test	Result - Remark	Verdict	
		D4	NI/A	
	- minimum non-actuating time (ms) at: 2 I _{∆n} ; 0,06 s	D1 -	N/A	
	:	D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A	
	:	D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A	
	0,04 s:	D2 -		
		D3 -		
	No tripping during the tests		N/A	
9.9.2.6	b) Tests repeated with the RCCB loaded with rated of	current:		
	- test current (A): In at a temperature of +40 °C:	63	_	
	until steady state conditions are reached:			
	- 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 te	est switch S1		
	- maximum break time (ms) at: I _{Δn} :	36	Р	
	- maximum break time (ms) at: 2 l _{Δn} :	30	Р	
	- maximum break time (ms) at: 5 l _{Δn} :		N/A	
	- maximum break time (ms) at: 0,25 A (if	21	P	
	applicable):		•	
	- maximum break time (ms) at: 500 A:	11	Р	
	No value exceeds the relevant specified limiting		' P	
	value		ľ	
	Additional test for type S:	D4	N1/A	
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	D1 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 2 I _{∆n} for	D1 -	N/A	
	0,06 s	D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	D1 -	N/A	
	:	D2 -		
		D3 -		

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Clause	Requirement + Test	Result - Remark	Verdict	
	- minimum non-actuating time (ms) at: 500 A; 0,04 s:	D1 - D2 -	N/A	
	No tripping during the tests	D3 -	N/A	
8.15	No tripping during the tests Behaviour of RCCBs in case of earth fault current component	ts comprising a d.c.	P	
9.9.3	Additional verification of correct operation at residua for RCCBs type A	I currents with d.c. components	Р	
9.9.3.1	RCCB installed as for normal use, test circuits according to fig. 5 and 6		Р	
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 cont pulsating direct current (see Table 20):	inuous rise of the residual		
	- 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 $I_{\Delta n} \le 0,01$ 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 $\alpha = 0^{\circ}$)			
	RCCBs with $I_{\Delta n}$ < 0,03 A:			
	- maximum break time (ms) at: 2 I _{Δn} (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 4 I _{Δn} (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 0,5 A rms (+/-):	D1 -	N/A	
		D2 -		
		D3 -		

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Clause	Requirement + Test	Result - Remark	Verdict	
	- maximum break time (ms) at: 350 A rms (+/-):	D1 - D2 -	N/A	
		D3 -		
	RCCBs with $I_{\Delta n} = 0.03$ A:			
	- maximum break time (ms) at: 1,4 I _{Δn} (+/-):		N/A	
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):		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 _{Δn} (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 2,8 I _{Δn} (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 7 I _{Δn} (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 350 A rms (+/-):	D1 -	N/A	
		D2 -		
		D3 -		
	No value exceeds the relevant specified limiting value		N/A	
9.9.3.3	Verification of the correct operation with the pole und with rated current	der test and one other pole loaded		
	- test current (A): In:		_	
	- steady increase from zero to: 1,4 I∆n for		N/A	
	$I_{\Delta n} > 0.01$ A with 1.4 $I_{\Delta n}$ /30 A/s (mA)			
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq 0,01$ A		N/A	
	with 2 I _{Δn} /30 A/s (mA)			
	- angle α = 0° (+/-):		N/A	
	- angle α = 90° (+/-):		N/A	
	- angle α = 135° (+/-):		N/A	
	No value exceeds the relevant specified limiting		N/A	
	values			

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Clause	Requirement + Test	Result - Remark	Verdict	
9.9.3.4	Verification of the correct operation in case of residua	al pulsating d.c. currents with		
	angle $\alpha = 0^{\circ}$ superimposed by smooth direct current	of 0,006 A:		
	- steady increase of pulsating d.c. current from zero		N/A	
	to: 1,4 $I_{\Delta n}$ for $I_{\Delta n} > 0,01$ A with 1,4 $I_{\Delta n}$ /30 A/s (mA)			
	- steady increase of pulsating d.c. current from zero		N/A	
	to: 2 $I_{\Delta n}$ for $I_{\Delta n} \le 0.01$ A with 2 $I_{\Delta n}$ /30 A/s (mA)			
	- angle α = 0° (+/-) (+/- 6 mA):		N/A	
	No value exceeds the relevant specified limiting		N/A	
	values			

	Tests "D1"		
8.12	RCCBs functionally dependent on line voltage		
	RCCBs functionally dependent on the line voltage,		N/A
	shall operate correctly between 0,85 and 1,1 times		
	their rated voltage; voltage (V)		
	Multipole RCCBs shall have all current paths		N/A
	supplied from the phases and neutral, if any		
9.17	Verification of the behaviour of RCCBs opening auto	omatically in case of failure of the	N/A
	line voltage		
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and	D1 -	N/A
	progressively lowered to attain zero within about	D2 -	
	30 s until automatic opening occurs; voltage (V) .:	D3 -	
	- all values less than 0,85 times the rated voltage	D1 -	N/A
	(V):	D2 -	
		D3 -	
	- tripping test at test voltage (V) with $I_{\Delta n}$ and	D1 -	N/A
	operating according to Table 1 (ms)	D2 -	
		D3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	D1 -	N/A
	operating means below Ux:	D2 -	
		D3 -	
9.17.2	Verification of behaviour in case of failure of the line	voltage	
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		

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Clause	Requirement + Test	Result - Remark	Verdict
Γ		<u> </u>	
	Time (ms) interval between switching off and	D1 -	N/A
	opening of the main contacts:	D2 -	
		D3 -	
	a) RCCBs opening without delay: no value		N/A
	exceeds 0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a	a residual current, for RCCBs	
	opening with delay in case of failure of the line volta	ge	
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un)		
	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 _{Δn} to I _{Δn} within 30 s	D1 -	N/A
	(mA)	D2 -	
		D3 -	
	- tripping current between I _{Δno} and I _{Δn} (mA):	D1 -	N/A
		D2 -	
		D3 -	
	The RCCB closes on I _{Δn} : no value exceeds the	D1 -	N/A
	specified limiting value of Table 1 (ms)	D2 -	
		D3 -	
9.9.2.3	The test circuit being successively calibrated at each	h of the values of residual current	
	specified in Table 1, the test switch S2 and the RCC		
	the test voltage is suddenly established by closing the		
	- maximum break time (ms) at: I _{Δn} :	D1 -	N/A
	()	D2 -	
		D3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A
	(110) 311 2 1211	D2 -	
		D3 -	
	- maximum break time (ms) at: 5 l _{Δn} :	D1 -	N/A
	maximum break time (ms) at 3 tan	D2 -	1 W/ /*\
		D3 -	
		רס -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A
	applicable):	D2 -	
		D3 -	
	- maximum break time (ms) at: 500 A:	D1 -	N/A
		D2 -	
		D3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n};0,13~s$:	D1 -	N/A
		D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n};0,\!06~s$	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05~s$	D1 -	N/A
	:	D2 -	
		D3 -	
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A
	0,04 s:	D2 -	
		D3 -	
	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 -	N/A
		D2 -	
		D3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	D1 -	N/A
		D2 -	
		D3 -	

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Clause	Requirement + Test	Result - Remark	Verdict	
		D4	N1/A	
	- maximum break time (ms) at: 5 I _{∆n} :	D1 -	N/A	
		D2 -		
		D3 -		
	- maximum break time (ms) at: 0,25 A (if	D1 -	N/A	
	applicable)	D2 -		
		D3 -		
	- maximum break time (ms) at: 500 A	D1 -	N/A	
		D2 -		
		D3 -		
	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 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	D1 -	N/A	
	:	D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s	D1 -	N/A	
		D2 -		
		D3 -		
	- minimum non-actuating time (ms) at: 500 A;	D1 -	N/A	
	0,04 s:	D2 -		
		D3 -		
	No tripping during tests		N/A	
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under		N/A	
8.14	consideration) Behaviour of RCCBs in case of current surges caused by impulse voltages		 Р	
9.19	Verification of behaviour of RCCBs in case of current surges caused by		<u>.</u> Р	
3.13	impulse voltages		•	
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)		Р	
	One pole of the RCCB is submitted to 10 applications of a surge current according to		Р	
	the following requirements:			
	- peak value: 200 A + 10/0%	200	Р	
	- virtual front time: 0,5 μs ± 30%	0,5 μs	Р	

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Clause	Requirement + Test	Result - Remark	Verdict
	T		
	- period of the following oscillatory wave: 10 μs	10 μs	Р
	± 20%		
	- each successive reverse peak: about 60% of the	ОК	Р
	preceding peak		
	The polarity shall be inverted after every two	ОК	Р
	applications		
	The interval between two consecutive applications	30 s	Р
	shall be about 30 s		
	During the test the RCCB shall not trip:	not trip	Р
	- break time (ms) at: I _{Δn} :	34	Р
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)		
9.19.2.1	Test conditions		Р
	One pole of the RCCB is submitted to 10 applications of a surge current according to		Р
	the following requirements:		
	Peak value: 3000A +10/-0%	3,0kA	Р
	Virtual front time: $0.8 \mu s \pm 20\%$	0,8 μs	Р
	Virtual time of half value: 20 μ s \pm 20%	20 μs	Р
	Peak of reverse current: less than 30 % of peak	ОК	Р
	value		
	The polarity shall be inverted after every two	ОК	Р
	applications		
	The interval between two consecutive applications	30s	Р
	shall be about 30 s		
9.19.2.2	S-type: During the test the RCCB shall not trip		N/A
	- break time (ms) at I _{Δn} :		N/A
9.19.2.3	General type: During the test the RCCB may trip.	630	Р
	After any tripping the RCCB shall be re-closed		
	- break time (ms) at I _{Δn}	7	Р
	Power factor obtained	0,95	_
	Point of initiation: 45° ± 5°	35	Р
	Test sequence: O-t-CO-t-CO on each pole in turn		Р
	excluding the switched neutral pole		

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Clause	Requirement + Test	Result - Remark	Verdict
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	D1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	D2 - < 0,2 mA	
	exceed 2mA (mA)	D3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volt	age 2 Un for 1 min:	
	a):	OK	Р
	b):	OK	Р
	c):	ОК	Р
	d):		Р
	e):		N/A
	No flashover or breakdown	ОК	Р
	Making and breaking In at Un	ОК	Р
	The RCCB shall trip with a test current of 1,25 I _{Δn}	37	Р
	(ms):		
	The polyethylene sheet shows no holes		Р
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		N/A
	progressively lowered to attain zero within about		
	30 s until automatic opening occurs; voltage (V) .:		
	- all values less than 0,85 times the rated voltage		N/A
	(V):		
	- tripping test at test voltage (V) with $I_{\Delta n}$ and		N/A
	operating according to Table 1 (ms)		
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual		N/A
	operating means below Ux		
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		

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Clause	Requirement + Test	Result - Remark	Verdict
	Time (ms) interval between switching off and		N/A
	opening of the main contacts:		
	a) RCCBs opening without delay: no value		N/A
	exceeds 0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
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	ge	
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un):		
	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		N/A
	(mA):		
	- tripping current between IAno and IAn (mA):		N/A
	The RCCB closes on I _{Δn} : no value exceeds the		N/A
	specified limiting value of Table 1 (ms)		
9.9.2.3	The test circuit being successively calibrated at each	n of the values of residual current	
	specified in Table 1, the test switch S2 and the RCC	B being in the closed position,	
	the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: I _{Δn}		N/A
	- maximum break time (ms) at: 2 I _{Δn}		N/A
	- maximum break time (ms) at: 5 l _{Δn}		N/A
	- maximum break time (ms) at: 0,25 A (if		N/A
	applicable):		
	- maximum break time (ms) at: 500 A		N/A
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s		N/A
	- minimum non-actuating time (ms) at: 5 l _{Δn} ; 0,05 s		N/A

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Clause	Requirement + Test Result - Remark	Verdict		
	- minimum non-actuating time (ms) at: 500 A;	N/A		
	0,04 s			
	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 _{Δn}	N/A		
	- maximum break time (ms) at: 2 I _{Δn} :	N/A		
	- maximum break time (ms) at: 5 I _{Δn}	N/A		
	- maximum break time (ms) at: 0,25 A (if	N/A		
	applicable)			
	- maximum break time (ms) at: 500 A	N/A		
	No value exceeds the relevant specified limiting	N/A		
	value			
	Additional test for type S:			
	- minimum non-actuating time (ms) at: I∆n; 0,13 s:	N/A		
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	N/A		
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	N/A		
	- minimum non-actuating time (ms) at: 500 A;	N/A		
	0,04 s			
	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			
9.19	Verification of behaviour of RCCBs in case of current surges caused by impulse			
	voltages			
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)			
	One pole of the RCCB is submitted to 10 applications of a surge current according to			
	the following requirements:			
	- peak value: 200 A + 10/0% 3000A	Р		

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Clause	Requirement + Test	Result - Remark	Verdict
	1	T	
	- virtual front time: 0,5 μs ± 30%	0,8 μs	Р
	- period of the following oscillatory wave: 10 $\ensuremath{\mu s}$	20 μs	Р
	± 20%		
	- each successive reverse peak: about 60% of the	ОК	Р
	preceding peak		
	The polarity shall be inverted after every two	ОК	Р
	applications		
	The interval between two consecutive applications	30 s	Р
	shall be about 30 s		
9.11.2.3	Verification of the rated residual making and	630	
	breaking capacity (A): I _{Δm}		
	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	0,930,98	
	Power factor obtained	0,97	_
	Point of initiation: 45° ± 5°	45°	Р
	Test sequence: O-t-CO-t-CO on each pole in turn		Р
	excluding the switched neutral pole		
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	D1 - < 0,2mA	Р
	contacts is measured at 1,1 Un and shall not	D2 - < 0,2 mA	
	exceed 2mA (mA)	D3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volt	age 2 Un for 1 min:	
	a) between open contacts:	ОК	Р
	b) between terminals (closed contacts):	ОК	Р
	c) between poles and frame:	ОК	Р
	d) between metal parts of the mechanism and		N/A
	the frame		
	e) RCCBs with a metal enclosure:		N/A

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

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Clause	Requirement + Test Res	ult - Remark	Verdict
	- tripping current between I _{Δno} and I _{Δn} (mA):		N/A
	The RCCB closes on I _{Δn} : no value exceeds the		N/A
	specified limiting value of Table 1 (ms):		
9.9.2.3	The test circuit being successively calibrated at each of the	he values of residual current	N/A
	specified in Table 1, the test switch S2 and the RCCB bei	ng in the closed position,	
	the test voltage is suddenly established by closing the test	st switch S1	
	- maximum break time (ms) at: I _{Δn}		N/A
	- maximum break time (ms) at: 2 I _{Δn}		N/A
	- maximum break time (ms) at: 5 I _{∆n} :		N/A
	- maximum break time (ms) at: 0,25 A (if		N/A
	applicable):		
	- maximum break time (ms) at: 500 A		N/A
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		N/A
	- minimum non actuating time (ms) at: I _{Δn} ; 0,13 s:		N/A
	- minimum non actuating time (ms) at: 2 I _{∆n} ; 0,06 s		N/A
	- minimum non actuating time (ms) at: 5 I _{∆n} ; 0,05 s		N/A
	- minimum non actuating time (ms) at: 500 A;		N/A
	0,04 s:		
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4	current paths, neutral and	N/A
	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	ne values of residual current	N/A
	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 _{Δn}		N/A
	- maximum break time (ms) at: 2 l _{Δn} :		N/A
	- maximum break time (ms) at: 5 I _{Δn}		N/A
	- maximum break time (ms) at: 0,25 A (if		N/A
	applicable)		
	- maximum break time (ms) at: 500 A		N/A

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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 _{Δn} ; 0,05 s		N/A
	- minimum non actuating time (ms) at: 500 A;		N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically consideration)	reclosing RCCBs (under	N/A
8.11	Test device		
	RCCBs shall be provided with a test device		Р
	Ampere-turns produced when operating the test		Р
	device do not exceed 1,66 times the ampere-turns		
	produced by I _{Δn}		
	Not possible to energize the circuit on the load side		Р
	by operating the test device when the RCCB is in the open position		
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:	ОК	Р
	b) test a) repeated at 1,1 times the rated voltage:	ОК	Р
	c) test b) repeated, but only once, the operating	ок	Р
	means of the test device being held in the closed		
	position for 30 s:		
	RCCB operated at each test:	operated	Р
	No change impairing further use	ОК	Р
8.8	Resistance to mechanical shock and impact		
	RCCBs shall have adequate mechanical behaviour		Р
	so as to withstand the stresses imposed during		
	installation and use		
9.12.1.2	Mechanical shock		Р

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Clause	Requirement + Test	Result - Remark	Verdict
	<u> </u>		
	Mechanical shock: 50 falls of 40 mm on one side;		Р
	50 falls on opposite side C turned through 90°;		
	50 falls on one side; 50 falls on opposite side		
	No opening of RCCB during the test:		Р
9.12.2	Mechanical impact		
9.12.2.1	Impact test (10 blows, height 10 cm): no damage :		Р
9.12.2.2	RCCBs for rail mounting downward vertical force of		Р
	50 N for 1 min, upward vertical force of 50 N for		
	1 min		
	RCCB shall not become loose during test and no		Р
	damage impairing its further use		
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		Р
	conditions of overcurrent		
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	378A, 1s	Р
	equal to (A): 6 In switched on using a two-pole test		
	switch for 1 s:		
	Test repeated three times with an interval of at	D1 – OK	Р
	least 1 min	D2 – OK	
		D3 – OK	
	The RCCB shall not open:	D1 – OK	Р
		D2 – OK	
		D3 – OK	
	RCCBs functionally dependent on the line voltage		N/A
	at rated voltage (Un)		
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	D1 -	N/A
	combination of current paths with an interval of at	D2 -	
	least 1 min	D3 -	

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

	TEST SEQUENCE E (3 samples)		
	1P+N, 63 A, Type A, 30 mA, General type		
0.7			
8.7	Performance at short-circuit currents		
9.11.2.4	a) Verification of the coordination between the RCC	B and the SCPD	
	Verification of the coordination at the rated		_
	conditional short-circuit current (A): Inc	6000	
	Test circuit according to figure:	9	
	Point of test circuit which is directly earthed:	Neutrals of power supply	
	Grid distance "a" (mm):	60	_
	Silver wire diameter (mm) or fuse:	Ø0,95 mm	_
	Prospective current (A):	6000	_
	Prospective current obtained (A)	6100	_
	Power factor	0,650,70	
	Power factor obtained:	0,68	_
	Point of initiation: 45° ± 5°	4344°	Р
	Verification of I2t (kA2s) and Ip (kA) prior to testing		Р
	((≥1x ≤1,1x values of table 15), RCCB replaced by		
	a connection having negligible impedance		
	Test sequence: O-t-CO	O / CO	Р
	I²t (kA²s); Ip (kA):	E1 – 25,7; 4,32	Р
		E2 – 25,7; 4,43	
		E3 – 27,2; 4,30	
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.7.3	The leakage current flowing across the open	E1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	E2 - < 0,2 mA	
	exceed 2mA (mA)	E3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test vol	tage of 2 Un for 1 min:	
	a):	E1 – 460 V	Р
		E2 – 460 V	
		E3 – 460 V	
	b)	E1 – 460 V	Р
		E2 – 460 V	
		E3 – 460 V	
	c):	E1 – 460 V	Р
		E2 – 460 V	
		E3 – 460 V	
	d):	E1 – 460 V	Р
		E2 – 460 V	
		E3 – 460 V	
	e):	E1 -	N/A
		E2 -	
		E3 -	
	No flashover or breakdown:	E1 – OK	Р
		E2 – OK	
		E3 – OK	
	Making and breaking In at Un:	E1 –63A 230V	Р
		E2 –63A 230V	
		E3 –63A 230V	
	The RCCB shall trip with a test current of 1,25 I _{∆n}	E1 –28	Р
	(ms)	E2 –32	
		E3 –42	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening aut	omatically 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	E1 -	N/A
	progressively lowered to attain zero within about	E2 -	
	30 s until automatic opening occurs; voltage (V) .:	E3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- all values less than 0,85 times the rated voltage	E1 -	N/A
	(V):	E2 -	
		E3 -	
	- tripping test at test voltage (V) with $I_{\Delta n}$ and	E1 -	N/A
	operating according to Table 1 (ms)	E2 -	
		E3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	E1 -	N/A
	operating means below Ux:	E2 -	
		E3 -	
9.17.2	Verification of behaviour in case of failure of the line	voltage	
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	E1 -	N/A
	opening of the main contacts:	E2 -	
		E3 -	
	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3		residual current for RCCBs	
	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	90	N/A
	voltage (Un):		14/74
	All phases but one switched off by means of S3		N/A
			IN/A
2004	During the delay: test of 9.9.2:	F.4	N1/A
9.9.2.1	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s	E1 -	N/A
	(mA)	E2 -	
		E3 -	
	- tripping current between I _{Δno} and I _{Δn} (mA):	E1 -	N/A
		E2 -	
		E3 -	
	The RCCB closes on $I_{\Delta n}$: no value exceeds the	E1 -	N/A
	specified limiting value of Table 1 (ms):	E2 -	
		E3 -	

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Clause	Requirement + Test	Result - Remark	Verdict	
0 0 0 0	The test singuit hairs accessively calibrated at each	h of the velves of recidual surrent		
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 _{Δn} :	E1 -	N/A	
		E2 -		
		E3 -		
	- maximum break time (ms) at: 2 I _{Δn} :	E1 -	N/A	
		E2 -		
		E3 -		
	- maximum break time (ms) at: 5 $I_{\Delta n}$:	E1 -	N/A	
		E2 -		
-		E3 -		
	- maximum break time (ms) at: 0,25 A (if	E1 -	N/A	
	applicable):	E2 -		
		E3 -		
	- maximum break time (ms) at: 500 A:	E1 -	N/A	
		E2 -		
		E3 -		
	No value exceeds the relevant specified limiting		N/A	
	value			
	Additional test for type S:			
	- minimum non-actuating time (ms) at: I _{∆n} ; 0,13 s :	E1 -	N/A	
		E2 -		
		E3 -		
	- minimum non-actuating time (ms) at: 2 I _{∆n} ; 0,06 s	E1 -	N/A	
		E2 -		
		E3 -		
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05~\text{s}$	E1 -	N/A	
	:	E2 -		
		E3 -		
	- minimum non-actuating time (ms) at: 500 A;	E1 -	N/A	
	0,04 s:	E2 -		
		E3 -		
	No tripping during tests		N/A	
9.17.4	Verification of the correct operation of RCCBs with 3	3 or 4 current paths, neutral and		
	one line terminal only being energized in turn:			

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Clause	Requirement + Test	Result - Remark	Verdict	
	RCCB connected according to fig. 4		N/A	
9.9.2.3	The test circuit being successively calibrated at each	n of the values of residual current		
	specified in Table 1, the test switch S2 and the RCC	B being in the closed position,		
	the test voltage is suddenly established by closing the	ne test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$:	E1 -	N/A	
		E2 -		
		E3 -		
	- maximum break time (ms) at: 2 I _{Δn}	E1 -	N/A	
		E2 -		
		E3 -		
	- maximum break time (ms) at: 5 I _{Δn} :	E1 -	N/A	
		E2 -		
		E3 -		
	- maximum break time (ms) at: 0,25 A (if	E1 -	N/A	
	applicable):	E2 -		
		E3 -		
	- maximum break time (ms) at: 500 A:	E1 -	N/A	
		E2 -	,, .	
		E3 -		
	No value exceeds the relevant specified limiting value		N/A	
	Additional test for type S:			
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	E1 -		
	This is a statuting time (me) at tall, e, to e.	E2 -		
		E3 -		
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	E1 -	N/A	
	:	E2 -	14/74	
		E3 -		
	minimum non actuating time (ma) at: E.L.: 0.05 a	E1 -	N/A	
	- minimum non-actuating time (ms) at: 5 I _{∆n} ; 0,05 s		IN/A	
	· · · · · · · · · · · · · · · · · · ·	E2 -		
		E3 -	N.//A	
	- minimum non-actuating time (ms) at: 500 A;	E1 -	N/A	
	0,04 s	E2 -		
		E3 -		
	No tripping during tests		N/A	

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Clause	Requirement + Test	Result - Remark	Verdict
9.17.5	Verification of the reclosing function of automatically	reclosing RCCBs (under	
	consideration)	T	
9.11.2.2	Verification of the rated making and breaking		_
	capacity (A): Im:	630	
	Test circuit according to figure:	7	_
	Residual operating current (A): 10 I _{Δn} :	0,3	_
	Point of test circuit which is directly earthed:	Neutral of power supply	_
	Grid distance "a" (mm):	35	_
	Prospective current (A):	630 A	_
	Prospective current obtained (A):	649 A	_
	Power factor:	0,930,98	_
	Power factor obtained:	0,95	_
	Point of initiation: 45° ± 5°	45°	Р
	Test sequence: CO-t-CO-t-CO	CO-t-CO-t-CO	Р
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	E1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	E2 - < 0,2 mA	
	exceed 2mA (mA)	E3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	a):	E1 – 460 V	Р
		E2 – 460 V	
		E3 – 460 V	
	b):	E1 – 460 V	Р
		E2 – 460 V	
		E3 – 460 V	
	c):	E1 – 460 V	Р
		E2 – 460 V	
		E3 – 460 V	
	d):	E1 – 460 V	Р
		E2 – 460 V	
		E3 – 460 V	

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Clause	Requirement + Test	Result - Remark	Verdict
	e):	E1 -	N/A
		E2 -	
		E3 -	
	No flashover or breakdown	E1 – OK	Р
		E2 – OK	
		E3 – OK	
	Making and breaking In at Un	E1 –63A 230V	Р
		E2 –63A 230V	
		E3 –63A 230V	
	The RCCB shall trip with a test current of 1,25 I _{Δn}	E1 – 32	Р
	(ms):	E2 – 46	
		E3 – 35	
	The polyethylene sheet shows no holes		Р
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	E1 -	N/A
	progressively lowered to attain zero within about	E2 -	
	30 s until automatic opening occurs; voltage (V) .:	E3 -	
	- all values less than 0,85 times the rated voltage	E1 -	N/A
	(V):	E2 -	14// (
	(V)	E3 -	
	- tripping test at test voltage (V) with I∆n and	E1 -	N/A
	operating according to Table 1 (ms)	E2 -	IN/A
	operating according to Table 1 (IIIs)	E3 -	
	No valve evenede the experified limiting valves	E3 -	NI/A
_	No value exceeds the specified limiting values	F4	N/A
	Not possible to close the apparatus by manual	E1 -	N/A
	operating means below Ux:	E2 -	
_		E3 -	
9.17.2	Verification of behaviour in case of failure of the line	voltage	
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	E1 -	N/A
	opening of the main contacts:	E2 -	
		E3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
ı	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a		
	opening with delay in case of failure of the line volta	ge T	
ı	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un):		
	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	E1 -	N/A
	(mA):	E2 -	
		E3 -	
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA):	E1 -	N/A
		E2 -	
		E3 -	
	The RCCB closes on $I_{\Delta n}$: no value exceeds the	E1 -	N/A
	specified limiting value of Table 1 (ms):	E2 -	
		E3 -	
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	he test switch S1	
	- maximum break time (ms) at: I _{Δn} :	E1 -	N/A
		E2 -	
		E3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	E1 -	N/A
		E2 -	
		E3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	E1 -	N/A
		E2 -	
		E3 -	
	- maximum break time (ms) at: 0,25 A (if	E1 -	N/A
	applicable):	E2 -	
		E3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 500 A	E1 -	N/A
		E2 -	
		E3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	E1 -	N/A
		E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	E1 -	N/A
		E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	E1 -	N/A
		E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 500 A;	E1 -	N/A
	0,04 s:	E2 -	
		E3 -	
	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	h of the values of residual current	
	specified in Table 1, the test switch S2 and the RCC		
	the test voltage is suddenly established by closing the test switch S1		
	- maximum break time (ms) at: I _{Δn} :	E1 -	N/A
		E2 -	
		E3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	E1 -	N/A
	(110) 61. 2. (211	E2 -	
		E3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	E1 -	N/A
		E2 -	14/73
		E3 -	

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Clause	Requirement + Test	Result - Remark	Verdict	
	- maximum break time (ms) at: 0,25 A (if	E1 -	N/A	
	applicable):	E2 -		
		E3 -		
	- maximum break time (ms) at: 500 A:	E1 -	N/A	
		E2 -		
		E3 -		
	No value exceeds the relevant specified limiting		N/A	
	value			
	Additional test for type S:			
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	E1 -	N/A	
		E2 -		
		E3 -		
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	E1 -	N/A	
	:	E2 -		
		E3 -		
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	E1 -	N/A	
		E2 -		
		E3 -		
	- minimum non-actuating time (ms) at: 500 A;	E1 -	N/A	
	0,04 s:	E2 -		
		E3 -		
	No tripping during tests		N/A	
9.17.5	Verification of the reclosing function of automatically consideration)	reclosing RCCBs (under		

	TEST SEQUENCE E (3 samples) 3P+N, 63 A, Type A, 30 mA, General type		
8.7	Performance at short-circuit currents		
9.11.2.4	a) Verification of the coordination between the RCC	B and the SCPD	
	Verification of the coordination at the rated		_
	conditional short-circuit current (A): Inc:	6000	
	Test circuit according to figure:	9	_
	Point of test circuit which is directly earthed:	Neutrals of power supply	_
	Grid distance "a" (mm):	40	_
	Silver wire diameter (mm) or fuse	Ø0,95 mm	_

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Clause	Requirement + Test	Result - Remark	Verdict
	Prospective current (A):	6000	
	Prospective current obtained (A):	6100	
	Power factor	0,650,70	_
	Power factor obtained	0,68	
	Point of initiation: 45° ± 5°	4344°	Р
	Verification of I²t (kA²s) and Ip (kA) prior to testing		Р
	((≥1x ≤1,1x values of table 15), RCCB replaced by		
	a connection having negligible impedance		
	Test sequence: O-t-CO	O / CO	Р
	I²t (kA²s); Ip (kA):	E1 – 26,9; 4,30	Р
		E2 – 27,4; 4,18	
		E3 – 25,4; 4,14	
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	E1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	E2 - < 0,2 mA	
	exceed 2mA (mA)	E3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volt		
	a):	E1 – 800 V	Р
	,	E2 – 800 V	
		E3 – 800 V	
	b):	E1 – 800 V	Р
		E2 – 800 V	
		E3 – 800 V	
	c)	E1 – 800 V	Р
		E2 – 800 V	
		E3 – 800 V	
	d):	E1 – 800 V	Р
	,	E2 – 800 V	
		E3 – 800 V	
	e):	E1 -	N/A
	5,	E2 -	14//
		E3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	No flashover or breakdown:	E1 – OK	Р
		E2 – OK	
		E3 – OK	
	Making and breaking In at Un:	E1 –63A 400V	Р
		E2 –63A 400V	
		E3 –63A 400V	
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	E1 –48	Р
	(ms):	E2 –51	
		E3 –43	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening auto	omatically in case of failure of the	
9.17.1	Limiting value of the line voltage (Ux):		
5.17.1	- rated voltage applied to the line terminals and	E1 -	N/A
	progressively lowered to attain zero within about	E2 -	IN//A
	30 s until automatic opening occurs; voltage (V) .:	E3 -	
	- all values less than 0,85 times the rated voltage	E1 -	N/A
	(V)	E2 -	14// (
	(6)	E3 -	
	- tripping test at test voltage (V) with I∆n and	E1 -	N/A
	operating according to Table 1 (ms)	E2 -	
		E3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	E1 -	N/A
	operating means below Ux	E2 -	
	3	E3 -	
9.17.2	Verification of behaviour in case of failure of the line		
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	E1 -	N/A
	opening of the main contacts	E2 -	
		E3 -	
	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		

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Clause	Requirement + Test	Result - Remark	Verdict
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a	a residual current, for RCCBs	
	opening with delay in case of failure of the line volta	ge	
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un):		
	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 _{Δn} to I _{Δn} within 30 s	E1 -	N/A
	(mA):	E2 -	
		E3 -	
	- tripping current between I _{Δno} and I _{Δn} (mA):	E1 -	N/A
		E2 -	
		E3 -	
	The RCCB closes on I _{Δn} : no value exceeds the	E1 -	N/A
	specified limiting value of Table 1 (ms):	E2 -	
		E3 -	
9.9.2.3	The test circuit being successively calibrated at each	h 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 _{Δn} :	E1 -	N/A
		E2 -	
		E3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	E1 -	N/A
	()	E2 -	
		E3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	E1 -	N/A
	maximum produk umo (mo) du o izin imimimimi	E2 -	14/71
		E3 -	
	- maximum break time (ms) at: 0,25 A (if	E1 -	N/A
	applicable):	E2 -	IN/A
	applicable)	E3 -	
	- maximum break time (ms) at: 500 A:	E1 -	N/A
	- maximum break time (ms) at 300 A	E2 -	IN/A
		EZ -	

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Clause	Requirement + Test	Result - Remark	Verdict
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	E1 -	N/A
		E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	E1 -	N/A
	:	E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05$ s	E1 -	N/A
	:	E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 500 A;	E1 -	N/A
	0,04 s	E2 -	
		E3 -	
	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	ne test switch S1	
	- maximum break time (ms) at: I _{Δn} :	E1 -	N/A
		E2 -	
		E3 -	
	- maximum break time (ms) at: 2 l _{Δn} :	E1 -	N/A
	, ,	E2 -	
		E3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	E1 -	N/A
	, , = =-	E2 -	
		E3 -	
	- maximum break time (ms) at: 0,25 A (if	E1 -	N/A
	applicable)	E2 -	
	, ,	E3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	1	T	-
	- maximum break time (ms) at: 500 A:	E1 -	N/A
		E2 -	
		E3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:	T	
	- minimum non-actuating time (ms) at: $I_{\Delta n};0,13~s$:	E1 -	
		E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n};0,06~s$	E1 -	N/A
		E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05~s$	E1 -	N/A
		E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 500 A;	E1 -	N/A
	0,04 s:	E2 -	
		E3 -	
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically	reclosing RCCBs (under	
	consideration)	T	
9.11.2.2	Verification of the rated making and breaking		_
	capacity (A): Im:	630	
	Test circuit according to figure:	12	_
	Residual operating current (A): 10 I _{Δn} :	0,3	_
	Point of test circuit which is directly earthed:	Neutral of power supply	_
	Grid distance "a" (mm):	35	_
	Prospective current (A):	630 A	_
	Prospective current obtained (A):	649 A	_
	Power factor	0,930,98	_
	Power factor obtained:	0,95	_
	Point of initiation: 45° ± 5°	45°	Р
	Test sequence: CO-t-CO-t-CO	CO-t-CO-t-CO	Р
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		

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Clause	Requirement + Test	Result - Remark	Verdict
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	E1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	E2 - < 0,2 mA	
	exceed 2mA (mA)	E3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test vol	age of 2 Un for 1 min:	
	a):	E1 – 800 V	Р
		E2 – 800 V	
		E3 – 800 V	
	b):	E1 – 800 V	Р
		E2 – 800 V	
		E3 – 800 V	
	c):	E1 – 800 V	Р
		E2 – 800 V	
		E3 – 800 V	
	d):	E1 – 800 V	Р
		E2 – 800 V	
		E3 – 800 V	
	e):	E1 -	N/A
		E2 -	
		E3 -	
	No flashover or breakdown	E1 – OK	Р
		E2 – OK	
		E3 – OK	
	Making and breaking In at Un:	E1 –63A 400V	Р
		E2 –63A 400V	
		E3 –63A 400V	
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	E1 – 37	Р
	(ms)	E2 – 41	
		E3 – 32	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening aut	omatically in case of failure of the	
	line voltage		
9.17.1	Limiting value of the line voltage (Ux):		
2	- rated voltage applied to the line terminals and	E1 -	N/A
	progressively lowered to attain zero within about	E2 -	1 11/71
	30 s until automatic opening occurs; voltage (V) .:	E3 -	
	100 3 uniti automatic opening occurs, voltage (V)	LU -	

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Clause	Requirement + Test	Result - Remark	Verdict
			T
	- all values less than 0,85 times the rated voltage	E1 -	N/A
	(V):	E2 -	
		E3 -	
	- tripping test at test voltage (V) with $I_{\Delta n}$ and	E1 -	N/A
	operating according to Table 1 (ms)	E2 -	
		E3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	E1 -	N/A
	operating means below Ux:	E2 -	
		E3 -	
9.17.2	Verification of behaviour in case of failure of the line	voltage	
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	E1 -	N/A
	opening of the main contacts:	E2 -	
		E3 -	
	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		1 1,71
	manufacturer		
9.17.3		residual current for RCCBs	
5.17.0	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		N/A
	voltage (Un)		IN/A
			N/A
	All phases but one switched off by means of S3		IN/A
2001	During the delay: test of 9.9.2:		21/4
9.9.2.1	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s	E1 -	N/A
	(mA)	E2 -	
		E3 -	
	- tripping current between I _{Δno} and I _{Δn} (mA):	E1 -	N/A
		E2 -	
		E3 -	
	The RCCB closes on $I_{\Delta n}$: no value exceeds the	E1 -	N/A
	specified limiting value of Table 1 (ms):	E2 -	
		E3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
0 0 0 0	The test singuit hairs accessively calibrated at each	h of the velves of recidual surrent	
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 _{Δn} :	E1 -	N/A
		E2 -	
		E3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	E1 -	N/A
		E2 -	
		E3 -	
	- maximum break time (ms) at: 5 $I_{\Delta n}$:	E1 -	N/A
		E2 -	
-		E3 -	
	- maximum break time (ms) at: 0,25 A (if	E1 -	N/A
	applicable):	E2 -	
		E3 -	
	- maximum break time (ms) at: 500 A:	E1 -	N/A
		E2 -	
		E3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	E1 -	N/A
		E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n};0,06~\text{s}$	E1 -	N/A
	:	E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s	E1 -	N/A
		E2 -	
		E3 -	
	- minimum non-actuating time (ms) at: 500 A;	E1 -	N/A
	0,04 s:	E2 -	
		E3 -	
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3	3 or 4 current paths, neutral and	
	one line terminal only being energized in turn:		

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Clause	Requirement + Test	Result - Remark	Verdict	
	D00D		N1/A	
	RCCB connected according to fig. 4		N/A	
9.9.2.3	The test circuit being successively calibrated at each			
	specified in Table 1, the test switch S2 and the RCC	,		
	the test voltage is suddenly established by closing the	ne test switch S1		
	- maximum break time (ms) at: I _{Δn}	E1 -	N/A	
		E2 -		
		E3 -		
	- maximum break time (ms) at: 2 I _{Δn} :	E1 -	N/A	
		E2 -		
		E3 -		
	- maximum break time (ms) at: 5 I _{Δn}	E1 -	N/A	
		E2 -		
		E3 -		
	- maximum break time (ms) at: 0,25 A (if	E1 -	N/A	
	applicable):	E2 -		
		E3 -		
	- maximum break time (ms) at: 500 A:	E1 -	N/A	
		E2 -		
		E3 -		
	No value exceeds the relevant specified limiting value		N/A	
	Additional test for type S:			
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	E1 -	N/A	
	Thin man non actualing time (me) at Tall, 0, 10 0.	E2 -	14//	
		E3 -		
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	E1 -	N/A	
		E2 -	IN/A	
	:	E3 -		
			N1/A	
	- minimum non-actuating time (ms) at: 5 I _{∆n} ; 0,05 s	E1 -	N/A	
	·····:	E2 -		
		E3 -		
	- minimum non-actuating time (ms) at: 500 A;	E1 -	N/A	
	0,04 s	E2 -		
		E3 -		
	No tripping during tests		N/A	

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Clause	Requirement + Test	Result - Remark	Verdict	
9.17.5	Verification of the reclosing function of automatically consideration)	reclosing RCCBs (under		

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE F (3 samples)		
	1P+N, 63A, Type A, 30 mA General type		
8.7	Performance at short-circuit currents		
9.11.2.4	Verification of the coordination between the RCCB	and the SCPD	
	b) Verification of the coordination at the rated		_
	making and breaking capacity (A): Im	630 A	
	Test circuit according to figure:	7	_
	Point of test circuit which is directly earthed:	Neutral to power supply	_
	Grid distance "a" (mm):	35	_
	Silver wire diameter (mm) or fuse:	0,75 mm	_
	Prospective current (A):	630A	_
	Prospective current obtained (A):	632 A	_
	Power factor:	0,930,98	_
	Power factor obtained:	0,95	_
	Point of initiation: 45° ± 5°		Р
	Test sequence: O-t-CO-t-CO	O-t-CO-t-CO	Р
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	F1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	F2 - < 0,2 mA	
	exceed 2mA (mA)	F3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test vol	tage of 2 Un for 1 min:	
	a):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	
	b):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	
	c):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	

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Clause	Requirement + Test	Result - Remark	Verdict
	d):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	
	e)	F1 -	N/A
		F2 -	
		F3 -	
	No flashover or breakdown:	F1 – OK	Р
		F2 – OK	
		F3 – OK	
	Making and breaking In at Un:	F1 –63A 230V	Р
		F2 –63A 230V	
		F3 –63A 230V	
	The RCCB shall trip with a test current of 1,25 I _{Δn}	F1 – 42	Р
	(ms):	F2 – 26	
		F3 – 35	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening auto	omatically 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	F1 -	N/A
	progressively lowered to attain zero within about	F2 -	
	30 s until automatic opening occurs; voltage (V) .:	F3 -	
	- all values less than 0,85 times the rated voltage	F1 -	N/A
	(V):	F2 -	
		F3 -	
	- tripping test at test voltage (V) with $I_{\Delta n}$ and	F1 -	N/A
	operating according to Table 1 (ms):	F2 -	
		F3 -	
	No value exceeds the specified limiting values		V
	Not possible to close the apparatus by manual	F1 -	N/A
	operating means below Ux:	F2 -	
		F3 -	
9.17.2	Verification of behaviour in case of failure of the line	voltage	
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		

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Clause	Requirement + Test	Result - Remark	Verdict
		T	
	Time (ms) interval between switching off and	F1 -	N/A
	opening of the main contacts:	F2 -	
		F3 -	
	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a	a residual current, for RCCBs	
	opening with delay in case of failure of the line volta	ge	
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un):		
	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	F1 -	N/A
	(mA):	F2 -	
		F3 -	
	- tripping current between I _{Δno} and I _{Δn} (mA):	F1 -	N/A
		F2 -	
		F3 -	
	The RCCB closes on I _{Δn} : no value exceeds the	F1 -	N/A
	specified limiting value of Table 1 (ms):	F2 -	
		F3 -	
9.9.2.3	The test circuit being successively calibrated at each	n of the values of residual current	
	specified in Table 1, the test switch S2 and the RCC		
	the test voltage is suddenly established by closing the	ne test switch S1	
	- maximum break time (ms) at: I _{Δn} :	F1 -	N/A
	, ,	F2 -	
		F3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
		_	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable):	F2 -	
		F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
		F2 -	
		F3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05$ s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s:	F2 -	
		F3 -	
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3	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 _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict	
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A	
	(**************************************	F2 -		
		F3 -		
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A	
	applicable):	F2 -		
		F3 -		
	- maximum break time (ms) at: 500 A:	F1 -	N/A	
		F2 -		
		F3 -		
	No value exceeds the relevant specified limiting value		N/A	
	Additional test for type S:			
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	F1 -	N/A	
	This is a stanting time (ine) at tall, e, to c.	F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 2 l _{∆n} ; 0,06 s	F1 -	N/A	
		F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 5 l _{∆n} ; 0,05 s	F1 -	N/A	
		F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A	
	0,04 s:	F2 -		
		F3 -		
	No tripping during tests		N/A	
9.17.5	Verification of the reclosing function of automatically consideration)	reclosing RCCBs (under		
9.11.2.4	c) Verification of the coordination at the rated			
	conditional residual short-circuit current (A): I∆c .:	6000		
	Test circuit according to figure:	7	_	
	Point of test circuit which is directly earthed:	Neutral of power supply	_	
	Grid distance "a" (mm):	45	_	
	Silver wire diameter (mm) or fuse:	Ø 0,75 mm Ag	_	
	Prospective current (A):	6000	_	
	Prospective current obtained (A):	6110	_	
	Power factor:	0,650,70		

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Clause	Requirement + Test	Result - Remark	Verdict	
	Power factor obtained:	0,67	_	
	Point of initiation: 45° ± 5°	46°	Р	
	Verification of I ² t (kA ² s) and Ip (kA) prior to testing	$I^2t = 25 \text{ kA}^2\text{s}$	Р	
	(≥1x ≤1,1x values of table 15), RCCB replaced by a	Ip = 4,05 kA		
	connection having negligible impedance			
	Test sequence: O-t-CO-t-CO		Р	
İ	I²t (kA²s); Ip (kA):	F1 – 25,7; 4,08	Р	
		F2 – 15,5; 3,97		
		F3 – 15,3; 3,87		
	During tests no endangering of operator, no		Р	
İ	permanent arcing, no flashover and no melting of			
	fuse F			
	After the tests no damage impairing further use		Р	
9.7.7.3	The leakage current flowing across the open	F1 - < 0,2 mA	Р	
	contacts is measured at 1,1 Un and shall not	F2 - < 0,2 mA		
	exceed 2mA (mA)	F3 - < 0,2 mA		
9.7.3	Dielectric strength test of the main circuit at test volta	age of 2 Un for 1 min:		
	a):	F1 – 460 V	Р	
		F2 – 460 V		
		F3 – 460 V		
	b):	F1 – 460 V	Р	
		F2 – 460 V		
		F3 – 460 V		
	c):	F1 – 460 V	Р	
		F2 – 460 V		
		F3 – 460 V		
	d):	F1 – 460 V	Р	
		F2 – 460 V		
		F3 – 460 V		
	e):	F1 -	N/A	
		F2 -		
		F3 -		
	No flashover or breakdown:	F1 – OK	Р	
		F2 – OK		
		F3 – OK		

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Clause	Requirement + Test	Result - Remark	Verdict
Γ	1		
	Making and breaking In at Un:	F1 – 63A 230V	Р
		F2 – 63A 230V	
		F3 – 63A 230V	
	The RCCB shall trip with a test current of 1,25 I∆n	F1 – 38	Р
	(ms):	F2 – 45	
		F3 – 32	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening auto	omatically in case of failure of the	
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and	F1 -	N/A
	progressively lowered to attain zero within about	F2 -	
	30 s until automatic opening occurs; voltage (V) .:	F3 -	
	- all values less than 0,85 times the rated voltage	F1 -	N/A
	(V)	F2 -	
		F3 -	
	- tripping test at test voltage (V) with I∆n and	F1 -	N/A
	operating according to Table 1 (ms):	F2 -	
		F3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	F1 -	N/A
	operating means below Ux	F2 -	
	3	F3 -	
9.17.2	Verification of behaviour in case of failure of the line voltage		
37777	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	F1 -	N/A
	opening of the main contacts:	F2 -	14//
		F3 -	
	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		1 4// 1
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		1 W/ /*\
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a	recidual current for PCCPs	
3.11.3	·		
	opening with delay in case of failure of the line volta	y e	

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Clause	Requirement + Test	Result - Remark	Verdict
	DCCD connected according to fig. 4 at the rated		NI/A
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un)		
	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	F1 -	N/A
	(mA)	F2 -	
		F3 -	
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA):	F1 -	N/A
		F2 -	
		F3 -	
	The RCCB closes on $I_{\Delta n}$: no value exceeds the	F1 -	N/A
	specified limiting value of Table 1 (ms):	F2 -	
		F3 -	
0.9.2.3	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 _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A
	, ,	F2 -	
		F3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable)	F2 -	
	application, illinois in the second s	F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
	maximum break time (ms) at 500 A	F2 -	111/7
		F3 -	
	No value exceeds the relevant specified limiting value	153-	N/A
	Additional test for type S:		

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Clause	Requirement + Test	Result - Remark	Verdict
	minimum non actuating time (ma) at: L : 0.42 a :	F1 -	N/A
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F2 -	IN/A
		F3 -	
	minimum non actuating time (ma) at: 2 L : 0.06 a	F1 -	N/A
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	F2 -	IN/A
	minimum non actuating time (ma) at 51 × 0.05 a	F3 -	NI/A
	- minimum non-actuating time (ms) at: 5 I _{∆n} ; 0,05 s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s:	F2 -	
		F3 -	
	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 t	ne test switch S1	
	- maximum break time (ms) at: I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A
	· ·	F2 -	
		F3 -	
	- maximum break time (ms) at: 5 l _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable):	F2 -	
		F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
		F2 -	TW/C
		F3 -	
	No value exceeds the relevant appointed limiting	1 U -	N/A
	No value exceeds the relevant specified limiting		IN/ <i>F</i> A
	value		

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Clause	Requirement + Test	Result - Remark	Verdict

	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n};0,06$ s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05$ s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s:	F2 -	
		F3 -	
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under		
	consideration)		

	TEST SEQUENCE F (3 samples)		
8.7	1P+N, 10A, Type A, 300 mA General type Performance at short-circuit currents		
9.11.2.4	Verification of the coordination between the RCCB and the SCPD		
	b) Verification of the coordination at the rated		_
	making and breaking capacity (A): Im:	500 A	
	Test circuit according to figure:	7	_
	Point of test circuit which is directly earthed:	Neutral to power supply	_
	Grid distance "a" (mm):	35	_
	Silver wire diameter (mm) or fuse:	Ø 0,30mm Silver wire	_
	Prospective current (A):	500	_
	Prospective current obtained (A):	515	_
	Power factor:	0,951,00	_
	Power factor obtained:	0,98	_
	Point of initiation: 45° ± 5°		Р
	Test sequence: O-t-CO-t-CO	O-t-CO-t-CO	Р

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Clause	Requirement + Test	Result - Remark	Verdict
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		'
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	F1 - < 0,2 mA	P
	contacts is measured at 1,1 Un and shall not	F2 - < 0,2 mA	
	exceed 2mA (mA)	F3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volt		
	a):	F1 – 460 V	Р
		F2 – 460 V	
1		F3 – 460 V	
	b):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	
	c):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	
	d):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	
	e):	F1 -	N/A
		F2 -	
		F3 -	
	No flashover or breakdown:	F1 – OK	Р
		F2 – OK	
		F3 – OK	
	Making and breaking In at Un:	F1 – 10A 230V	Р
		F2 – 10A 230V	
		F3 – 10A 230V	
	The RCCB shall trip with a test current of 1,25 I _{Δn}	F1 – 56	Р
	(ms):	F2 – 49	
		F3 – 51	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the		
	line voltage		
9.17.1	Limiting value of the line voltage (Ux):		

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Clause	Requirement + Test	Result - Remark	Verdict	
	- rated voltage applied to the line terminals and	F1 -	N/A	
	progressively lowered to attain zero within about	F2 -		
	30 s until automatic opening occurs; voltage (V) .:	F3 -		
	- all values less than 0,85 times the rated voltage	F1 -	N/A	
	(V):	F2 -		
		F3 -		
	- tripping test at test voltage (V) with $I_{\Delta n}$ and	F1 -	N/A	
	operating according to Table 1 (ms):	F2 -		
		F3 -		
	No value exceeds the specified limiting values		V	
	Not possible to close the apparatus by manual	F1 -	N/A	
	operating means below Ux:	F2 -		
		F3 -		
9.17.2	Verification of behaviour in case of failure of the line	voltage		
	RCCB supplied with rated voltage, and the line		N/A	
	voltage then switched off			
	Time (ms) interval between switching off and	F1 -	N/A	
	opening of the main contacts:	F2 -		
		F3 -		
	a) RCCBs opening without delay: no value exceeds		N/A	
	0,5 s			
	b) RCCBs opening with delay: max. and min.		N/A	
	values within the range indicated by the			
	manufacturer			
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 volta	·		
	RCCB connected according to fig. 4 at the rated		N/A	
	voltage (Un)			
	All phases but one switched off by means of S3		N/A	
	During the delay: test of 9.9.2:	1	-	
9.9.2.1	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s	F1 -	N/A	
9.9.2.1	(mA)	F2 -	19/7	
	(y	F3 -		
	- tripping current between I _{Δno} and I _{Δn} (mA):	F1 -	N/A	
	mpping current between Idno and Idn (IIIA)	F2 -	1 11/74	
		F3 -		
		110-		

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Clause	Requirement + Test	Result - Remark	Verdict
		1	
	The RCCB closes on $I_{\Delta n}$: no value exceeds the	F1 -	N/A
	specified limiting value of Table 1 (ms):	F2 -	
		F3 -	
9.9.2.3	The test circuit being successively calibrated at eac	h of the values of residual current	
	specified in Table 1, the test switch S2 and the RCC	B being in the closed position,	
	the test voltage is suddenly established by closing the	he test switch S1	
	- maximum break time (ms) at: $I_{\Delta n}$:	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A
	` ,	F2 -	
		F3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A
	, ,	F2 -	
		F3 -	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable)	F2 -	
	арриоало, пининининининининининининин	F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
	maximum break time (ms) at: 600 / t	F2 -	14/7 (
		F3 -	
	No value exceeds the relevant specified limiting		N/A
	value		IN/A
	Additional test for type S:	F4	NI/A
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s:	F2 -	
		F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3	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	n of the values of residual current	
	specified in Table 1, the test switch S2 and the RCC	B being in the closed position,	
	the test voltage is suddenly established by closing the	ne test switch S1	
	- maximum break time (ms) at: I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 2 I _{Δn}	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 5 l _{Δn}	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable)	F2 -	
		F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
		F2 -	
		F3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	F1 -	N/A
		F2 -	
		F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s:	F2 -	
		F3 -	
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically r	eclosing RCCBs (under	
	consideration)	Т	
9.11.2.4	c) Verification of the coordination at the rated		_
	conditional residual short-circuit current (A): I∆c .:	6000	
	Test circuit according to figure:	9	
	Point of test circuit which is directly earthed:	Neutral of power supply	_
	Grid distance "a" (mm):	40	_
	Silver wire diameter (mm) or fuse:	Ø 0,35 mm Ag	_
	Prospective current (A):	6000	_
	Prospective current obtained (A):	6100	_
	Power factor:	0,650,70	_
	Power factor obtained:	0,68	_
	Point of initiation: 45° ± 5°	46°	Р
	Verification of I2t (kA2s) and Ip (kA) prior to testing		Р
	(≥1x ≤1,1x values of table 15), RCCB replaced by a		
	connection having negligible impedance		
	Test sequence: O-t-CO-t-CO		Р
	I²t (kA²s); Ip (kA)	F1 – 1,76; 1.38	Р
		F2 – 1,78; 1,43	
		F3 – 1,74; 1,43	
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	F1 - < 0,2mA	Р
	contacts is measured at 1,1 Un and shall not	F2 - < 0,2 mA	
	exceed 2mA (mA)	F3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volta	age of 2 Un for 1 min:	
	a):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	

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Clause	Requirement + Test	Result - Remark	Verdict
	b):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	
	c):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	
	d):	F1 – 460 V	Р
		F2 – 460 V	
		F3 – 460 V	
	e):	F1 -	N/A
		F2 -	
		F3 -	
	No flashover or breakdown:	F1 – OK	Р
		F2 – OK	
		F3 – OK	
	Making and breaking In at Un:	F1 –10A 230V	Р
		F2 – 10A 230V	
		F3 – 10A 230V	
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	F1 – 38	Р
	(ms):	F2 – 42	
		F3 – 39	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening auto	omatically in case of failure of the	
9.17.1	Limiting value of the line voltage (Ux):		
	- rated voltage applied to the line terminals and	F1 -	N/A
	progressively lowered to attain zero within about	F2 -	
	30 s until automatic opening occurs; voltage (V) .:	F3 -	
	- all values less than 0,85 times the rated voltage	F1 -	N/A
	(V):	F2 -	
		F3 -	
	- tripping test at test voltage (V) with I∆n and	F1 -	N/A
	operating according to Table 1 (ms):	F2 -	
		F3 -	
	No value exceeds the specified limiting values	-	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Not possible to close the apparatus by manual	F1 -	N/A
	operating means below Ux:	F2 -	
		F3 -	
9.17.2	Verification of behaviour in case of failure of the line	voltage	
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	F1 -	N/A
	opening of the main contacts:	F2 -	
		F3 -	
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a	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		N/A
	voltage (Un):		
	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 _{Δn} to I _{Δn} within 30 s	F1 -	N/A
	(mA)	F2 -	
		F3 -	
	- tripping current between I _{Δno} and I _{Δn} (mA):	F1 -	N/A
		F2 -	
		F3 -	
	The RCCB closes on I _{Δn} : no value exceeds the	F1 -	N/A
	specified limiting value of Table 1 (ms):	F2 -	
		F3 -	
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 _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable):	F2 -	
		F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
		F2 -	
		F3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s	F2 -	
		F3 -	
	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	h 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	-	

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable):	F2 -	
		F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
		F2 -	
		F3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s:	F2 -	
		F3 -	
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically	reclosing RCCBs (under	
	consideration)		

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Clause	Requirement + Test	Result - Remark	Verdict

	TEST SEQUENCE F (3 samples)		
	3P+N, 63A, Type A, 30 mA General type		
8.7	Performance at short-circuit currents		
9.11.2.4	Verification of the coordination between the RCCB	and the SCPD	
	b) Verification of the coordination at the rated		_
	making and breaking capacity (A): Im:	630 A	
	Test circuit according to figure:	12	_
	Point of test circuit which is directly earthed:	Neutral to power supply	_
	Grid distance "a" (mm):	35	_
	Silver wire diameter (mm) or fuse:	0,75 mm Silver wire	_
	Prospective current (A):	630A	_
	Prospective current obtained (A):	643 A	_
	Power factor:	0,930,98	_
	Power factor obtained:	0,97	_
	Point of initiation: 45° ± 5°		Р
	Test sequence: O-t-CO-t-CO	O-t-CO-t-CO	Р
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	F1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	F2 - < 0,2 mA	
	exceed 2mA (mA)	F3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test vol	tage of 2 Un for 1 min:	
	a):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	
	b):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	
	c):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	
	d):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	

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Clause	Requirement + Test	Result - Remark	Verdict
		T	
	e):	F1 -	N/A
		F2 -	
		F3 -	
	No flashover or breakdown:	F1 – OK	Р
		F2 – OK	
		F3 – OK	
	Making and breaking In at Un	F1 –63A 400V	Р
		F2 –63A 400V	
		F3 –63A 400V	
	The RCCB shall trip with a test current of 1,25 I _{Δn}	F1 – 32	Р
	(ms):	F2 – 37	
		F3 – 39	
	The polyethylene sheet shows no holes		Р
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	F1 -	N/A
	progressively lowered to attain zero within about	F2 -	
	30 s until automatic opening occurs; voltage (V) .:	F3 -	
	- all values less than 0,85 times the rated voltage	F1 -	N/A
	(V):	F2 -	
		F3 -	
	- tripping test at test voltage (V) with I∆n and	F1 -	N/A
	operating according to Table 1 (ms):	F2 -	
		F3 -	
	No value exceeds the specified limiting values		V
	Not possible to close the apparatus by manual	F1 -	N/A
	operating means below Ux:	F2 -	
	operating means select ex	F3 -	
9.17.2	Verification of behaviour in case of failure of the line voltage		
-	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		•
	Time (ms) interval between switching off and	F1 -	N/A
	opening of the main contacts:	F2 -	1 1 / /-7
	opening of the main contacts	F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a	a residual current, for RCCBs	
	opening with delay in case of failure of the line volta	ge	
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un):		
	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	F1 -	N/A
	(mA):	F2 -	
		F3 -	
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA):	F1 -	N/A
		F2 -	
		F3 -	
	The RCCB closes on $I_{\Delta n}$: no value exceeds the	F1 -	N/A
	specified limiting value of Table 1 (ms):	F2 -	
		F3 -	
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	ne test switch S1	
	- maximum break time (ms) at: I _{Δn}	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable):	F2 -	
		F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
		T I	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
		F2 -	
		F3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 5 l _{Δn} ; 0,05 s	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s	F2 -	
		F3 -	
	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	n of the values of residual current	
	specified in Table 1, the test switch S2 and the RCC		
	the test voltage is suddenly established by closing the		
	- maximum break time (ms) at: I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A
	(110) 61 2 1211	F2 -	,, .
		F3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A
	maximum broak time (ms) at 3 ian	F2 -	1 1/7
		F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable):	F2 -	
_		F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
		F2 -	
		F3 -	
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	F1 -	N/A
	3 (, , ==, ,	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 2 l _{∆n} ; 0,06 s	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 5 l _{∆n} ; 0,05 s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s:	F2 -	
		F3 -	
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically consideration)	reclosing RCCBs (under	
9.11.2.4	c) Verification of the coordination at the rated		
9.11.2.4	conditional residual short-circuit current (A): I∆c .:	6,0 kA	
	Test circuit according to figure:	11	
	Point of test circuit which is directly earthed:	Neutral	
	Grid distance "a" (mm):	45	
	Silver wire diameter (mm) or fuse:	0,75	
	Prospective current (A)	6,0 kA	
	Prospective current obtained (A)	6,11 kA	_
	Power factor obtained	0,650,70	
	Power factor obtained:	0,67	
	Point of initiation: 45° ± 5°	45°	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Verification of I ² t (kA ² s) and Ip (kA) prior to testing	$I^2t = 25 \text{ kA}^2\text{s}$	Р
	(≥1x ≤1,1x values of table 15), RCCB replaced by a	Ip = 4,05 kA	
	connection having negligible impedance		
	Test sequence: O-t-CO-t-CO		Р
	I²t (kA²s); Ip (kA):	F1 – 15,6; 3,90	Р
		F2 – 25,3; 4,07	
		F3 – 15,5; 3,73	
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	F1 - < 0,2 mA	Р
	contacts is measured at 1,1 Un and shall not	F2 - < 0,2 mA	
	exceed 2mA (mA)	F3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volta	age of 2 Un for 1 min:	
	a):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	
	b):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	
	c):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	
	d):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	
	e):	F1 -	N/A
	,	F2 -	
		F3 -	
	No flashover or breakdown:	F1 – OK	Р
		F2 – OK	
		F3 – OK	
	Making and breaking In at Un:	F1 – 63A 400V	Р
		F2 – 63A 400V	
		F3 – 63A 400V	

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Clause	Requirement + Test	Result - Remark	Verdict
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	F1 – 35	Р
	(ms):	F2 – 37	
		F3 – 33	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening auto	matically 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	F1 -	N/A
	progressively lowered to attain zero within about	F2 -	
	30 s until automatic opening occurs; voltage (V) .:	F3 -	
	- all values less than 0,85 times the rated voltage	F1 -	N/A
	(V):	F2 -	
		F3 -	
	- tripping test at test voltage (V) with I _{∆n} and	F1 -	N/A
	operating according to Table 1 (ms):	F2 -	
		F3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	F1 -	N/A
	operating means below Ux:	F2 -	
		F3 -	
9.17.2	Verification of behaviour in case of failure of the line voltage		
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	F1 -	N/A
	opening of the main contacts:	F2 -	
		F3 -	
	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
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		N/A
	voltage (Un):		
	All phases but one switched off by means of S3		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

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

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	F1 -	N/A
	:	F2 -	IN//A
		F3 -	
	- minimum non-actuating time (ms) at: 5 l _{Δn} ; 0,05 s	F1 -	N/A
		F2 -	14/71
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s:	F2 -	14//
	0,0 1 0	F3 -	
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3	3 or 4 current paths, neutral and	
0.17.1	one line terminal only being energized in turn:	o or i ourront patrio, riodital and	
	RCCB connected according to fig. 4		N/A
9.9.2.3		h of the values of residual current	11/74
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 _{Δn} :	F1 -	N/A
	maximum break time (mb) at 14m	F2 -	14/71
		F3 -	
	- maximum break time (ms) at: 2 l _{Δn} :	F1 -	N/A
	maximum productimo (mo) da 2 mm	F2 -	1471
		F3 -	
	- maximum break time (ms) at: 5 l _{Δn} :	F1 -	N/A
	maximum produk umo (mo) du o han minimum	F2 -	. 47.
		F3 -	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable)	F2 -	,, .
	арриового, политичници	F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
		F2 -	
		F3 -	
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:	1	

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Clause	Requirement + Test	Result - Remark	Verdict	
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 -	N/A	
		F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	F1 -	N/A	
	:	F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n};0,05$ s	F1 -	N/A	
	:	F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A	
	0,04 s:	F2 -		
		F3 -		
	No tripping during tests		N/A	
9.17.5	Verification of the reclosing function of automatically	reclosing RCCBs (under		
	consideration)			

	TEST SEQUENCE F (3 samples)		
	3P+N, 10A, Type A, 300 mA General type		
8.7	Performance at short-circuit currents		
9.11.2.4	Verification of the coordination between the RCCB	and the SCPD	
	b) Verification of the coordination at the rated		_
	making and breaking capacity (A): Im:	500 A	
	Test circuit according to figure:	12	_
	Point of test circuit which is directly earthed:	Neutral to power supply	_
	Grid distance "a" (mm):	35	_
	Silver wire diameter (mm) or fuse:	Ø 0,30mm Silver wire	
	Prospective current (A):	500	_
	Prospective current obtained (A):	515	_
	Power factor:	0,951,00	_
	Power factor obtained:	0,98	_
	Point of initiation: 45° ± 5°		Р
	Test sequence: O-t-CO-t-CO	O-t-CO-t-CO	Р
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of fuse F		

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Clause	Requirement + Test	Result - Remark	Verdict	
	After the tests no damage impairing further use		Р	
9.7.7.3	The leakage current flowing across the open	F1 - < 0,2 mA	Р	
	contacts is measured at 1,1 Un and shall not	F2 - < 0,2 mA		
	exceed 2mA (mA)	F3 - < 0,2 mA		
9.7.3	Dielectric strength test of the main circuit at test vol	tage of 2 Un for 1 min:		
	a):	F1 – 800 V	Р	
		F2 – 800 V		
		F3 – 800 V		
	b):	F1 – 800 V	Р	
		F2 – 800 V		
		F3 – 800 V		
	c):	F1 – 800 V	Р	
		F2 – 800 V		
		F3 – 800 V		
	d):	F1 – 800 V	Р	
		F2 – 800 V		
		F3 – 800 V		
	e):	F1 -	N/A	
		F2 -		
		F3 -		
	No flashover or breakdown:	F1 – OK	Р	
		F2 – OK		
		F3 – OK		
	Making and breaking In at Un:	F1 – 10A 400V	Р	
		F2 – 10A 400V		
		F3 – 10A 400V		
	The RCCB shall trip with a test current of 1,25 $I_{\Delta n}$	F1 – 42	Р	
	(ms)	F2 – 31		
		F3 – 35		
	The polyethylene sheet shows no holes		Р	
9.17	Verification of the behaviour of RCCBs opening aut	omatically in case of failure of the		
	line voltage	,		
9.17.1	Limiting value of the line voltage (Ux):			
2	- rated voltage applied to the line terminals and	F1 -	N/A	
	progressively lowered to attain zero within about	F2 -	14/74	
	30 s until automatic opening occurs; voltage (V) .:	F3 -		
	100 3 uniti automatic opening occurs, voitage (V)			

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Clause	Requirement + Test	Result - Remark	Verdict
			D1/A
	- all values less than 0,85 times the rated voltage	F1 -	N/A
	(V):	F2 -	
		F3 -	
	- tripping test at test voltage (V) with I _{∆n} and	F1 -	N/A
	operating according to Table 1 (ms):	F2 -	
		F3 -	
	No value exceeds the specified limiting values		V
	Not possible to close the apparatus by manual	F1 -	N/A
	operating means below Ux:	F2 -	
		F3 -	
9.17.2	Verification of behaviour in case of failure of the line	voltage	
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	F1 -	N/A
	opening of the main contacts:	F2 -	
		F3 -	
	a) RCCBs opening without delay: no value exceeds		N/A
	0,5 s		
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
9.17.3	Verification of the correct operation, in presence of a	a residual current, for RCCBs	
	opening with delay in case of failure of the line volta		
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un)		
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		14,7 (
9.9.2.1	- steady increase from 0,2 I _{Δn} to I _{Δn} within 30 s	F1 -	N/A
9.9.2.1	(mA):	F2 -	IN/A
	(IIIA)		
	tripping current between L and L (mA)	F3 -	N/A
	- tripping current between I _{Δno} and I _{Δn} (mA):	F1 -	IN/A
		F2 -	
	TI DOOD I	F3 -	B1/4
	The RCCB closes on I _{∆n} : no value exceeds the	F1 -	N/A
	specified limiting value of Table 1 (ms):	F2 -	
		F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict	
9.9.2.3	The test circuit being successively calibrated at each	h of the values of residual current		
0.0.2.0	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 _{Δn} :	F1 -	N/A	
	- maximum break time (ms) at tan	F2 -	N/A	
		F3 -		
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A	
	- maximum break time (ms) at 2 1 _{An}	F2 -	IN/A	
		F3 -		
	and the second s		NI/A	
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A	
		F2 -		
		F3 -	D1/A	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A	
	applicable):	F2 -		
		F3 -		
	- maximum break time (ms) at: 500 A:	F1 -	N/A	
		F2 -		
		F3 -		
	No value exceeds the relevant specified limiting		N/A	
	value			
	Additional test for type S:			
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 -	N/A	
		F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	F1 -	N/A	
	:	F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s	F1 -	N/A	
	:	F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A	
	0,04 s	F2 -		
		F3 -		
	No tripping during tests		N/A	
9.17.4	Verification of the correct operation of RCCBs with 3	3 or 4 current paths, neutral and		
	one line terminal only being energized in turn:			

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Clause	Requirement + Test	Result - Remark	Verdict	
	D00D		N1/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 S2 and the RCC	B being in the closed position,		
	the test voltage is suddenly established by closing the	ne test switch S1		
	- maximum break time (ms) at: $I_{\Delta n}$:	F1 -	N/A	
		F2 -		
		F3 -		
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A	
		F2 -		
		F3 -		
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A	
		F2 -		
		F3 -		
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A	
	applicable):	F2 -		
	арриолого, политичний	F3 -		
	- maximum break time (ms) at: 500 A:	F1 -	N/A	
	maximum break time (ma) at: 000 %	F2 -	14// (
		F3 -		
	No value exceeds the relevant specified limiting	10-	N/A	
	No value exceeds the relevant specified limiting		IN/A	
	value			
	Additional test for type S:			
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s:	F1 -	N/A	
		F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	F1 -	N/A	
	:	F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 5 $I_{\Delta n}$; 0,05 s	F1 -	N/A	
	:	F2 -		
		F3 -		
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A	
	0,04 s:	F2 -		
		F3 -		
	No tripping during tests		N/A	

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Clause	Requirement + Test	Result - Remark	Verdict
9.17.5	Verification of the reclosing function of automatically r consideration)	reclosing RCCBs (under	
9.11.2.4	c) Verification of the coordination at the rated		_
	conditional residual short-circuit current (A): I∆c .:	6,0 kA	
	Test circuit according to figure	11	_
	Point of test circuit which is directly earthed:	Neutral	_
	Grid distance "a" (mm):	40	_
	Silver wire diameter (mm) or fuse:	0,35	_
	Prospective current (A):	6,0 kA	_
	Prospective current obtained (A)	6,10 kA	_
	Power factor	0,650,70	_
	Power factor obtained	0,68	_
	Point of initiation: 45° ± 5°	46°	Р
	Verification of I2t (kA2s) and Ip (kA) prior to testing		Р
	(≥1x ≤1,1x values of table 15), RCCB replaced by a		
	connection having negligible impedance		
	Test sequence: O-t-CO-t-CO		Р
	I²t (kA²s); Ip (kA):	F1 – 1,95; 1,33	Р
		F2 – 2,32; 1,39	
		F3 – 2,08; 1,36	
	During tests no endangering of operator, no		Р
	permanent arcing, no flashover and no melting of		
	fuse F		
	After the tests no damage impairing further use		Р
9.7.7.3	The leakage current flowing across the open	F1 - < 0,2mA	Р
	contacts is measured at 1,1 Un and shall not	F2 - < 0,2 mA	
	exceed 2mA (mA)	F3 - < 0,2 mA	
9.7.3	Dielectric strength test of the main circuit at test volta	age of 2 Un for 1 min:	
	a):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	
	b):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	

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Clause	Requirement + Test	Result - Remark	Verdict
	c):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	
	d):	F1 – 800 V	Р
		F2 – 800 V	
		F3 – 800 V	
	e):	F1 -	N/A
		F2 -	
		F3 -	
	No flashover or breakdown:	F1 – OK	Р
		F2 – OK	
		F3 – OK	
	Making and breaking In at Un:	F1 –16A 400V	Р
		F2 – 16A 400V	
		F3 – 16A 400V	
	The RCCB shall trip with a test current of 1,25 I _{Δn}	F1 – 38	Р
	(ms):	F2 – 32	
		F3 – 33	
	The polyethylene sheet shows no holes		Р
9.17	Verification of the behaviour of RCCBs opening auto	omatically 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	F1 -	N/A
	progressively lowered to attain zero within about	F2 -	
	30 s until automatic opening occurs; voltage (V) .:	F3 -	
	- all values less than 0,85 times the rated voltage	F1 -	N/A
	(V)	F2 -	
		F3 -	
	- tripping test at test voltage (V) with I∆n and	F1 -	N/A
	operating according to Table 1 (ms):	F2 -	
		F3 -	
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual	F1 -	N/A
	operating means below Ux:	F2 -	
		F3 -	
9.17.2	Verification of behaviour in case of failure of the line	_	

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Clause	Requirement + Test	Result - Remark	Verdict
	RCCB supplied with rated voltage, and the line		N/A
	voltage then switched off		
	Time (ms) interval between switching off and	F1 -	N/A
	opening of the main contacts:	F2 -	
		F3 -	
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min.		N/A
	values within the range indicated by the		
	manufacturer		
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	ge	
	RCCB connected according to fig. 4 at the rated		N/A
	voltage (Un)		
	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 _{Δn} to I _{Δn} within 30 s	F1 -	N/A
	(mA)	F2 -	
		F3 -	
	- tripping current between I _{Δno} and I _{Δn} (mA):	F1 -	N/A
		F2 -	
		F3 -	
	The RCCB closes on I _{Δn} : no value exceeds the	F1 -	N/A
	specified limiting value of Table 1 (ms):	F2 -	
		F3 -	
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 _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 2 I _{Δn}	F1 -	N/A
		F2 -	
		F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 5 I _{∆n} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable)	F2 -	
		F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
		F2 -	
		F3 -	
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		
	- minimum non-actuating time (ms) at: I _{Δn} ; 0,13 s :	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 2 I _{Δn} ; 0,06 s	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s	F2 -	
		F3 -	
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3	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 _{Δn} :	F1 -	N/A
	maximum broak timo (ms) at tan	F2 -	1 1/71
		F3 -	

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Clause	Requirement + Test	Result - Remark	Verdict
	- maximum break time (ms) at: 2 I _{Δn} :	F1 -	N/A
	mannan areas and (may an 2 han	F2 -	
		F3 -	
	- maximum break time (ms) at: 5 I _{Δn} :	F1 -	N/A
		F2 -	
		F3 -	
	- maximum break time (ms) at: 0,25 A (if	F1 -	N/A
	applicable)	F2 -	
		F3 -	
	- maximum break time (ms) at: 500 A:	F1 -	N/A
		F2 -	
		F3 -	
	No value exceeds the relevant specified limiting		N/A
	value		
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 2 $I_{\Delta n}$; 0,06 s	F1 -	N/A
		F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 5 I _{Δn} ; 0,05 s	F1 -	N/A
	:	F2 -	
		F3 -	
	- minimum non-actuating time (ms) at: 500 A;	F1 -	N/A
	0,04 s:	F2 -	
		F3 -	
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically	reclosing RCCBs (under	
	consideration)		

	TEST SEQUENCE G (3 samples)			
	1P+N, 63A, Type AC, 30 mA General type			
9.22	Verification of reliability			
9.22.1	Climatic test based on Clause 4 of IEC 60068	3-2-3:2000 and IEC 60068-3-4	:	
	- number of cycles: 28	28		Р

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Clause	Requirement + Test	Result - Remark	Verdict	
1		T	T	
	- test temperature: upper temperature 55 °C ± 2 °C	55	Р	
	Initial verification:		Р	
9.9.2.3	- maximum break time at I _{Δn} (ms)	G1 – 33	Р	
		G2 – 34		
		G3 – 34		
	No value exceeds the specified limiting value		Р	
	Additional test for type S:			
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	G1 -	N/A	
		G2 -		
		G3 -		
	No tripping during tests		N/A	
	Climatic test: no tripping during 28 cycles test:	G1 – OK	Р	
		G2 – OK		
		G3 – OK		
	Final verification: the RCCB shall trip with a test	G1 – 31	Р	
	current of 1,25 I _{Δn} (ms):	G2 – 24		
		G3 – 27		

	TEST SEQUENCE G (3 samples) 1P+N, 10A, Type A, 300 mA General type		
9.22	Verification of reliability		
9.22.1	Climatic test based on Clause 4 of IEC 60068-2-3:20	000 and IEC 60068-3-4:	
	- number of cycles: 28	28	Р
	- test temperature: upper temperature 55 °C ± 2 °C	55	Р
	Initial verification:		Р
9.9.2.3	- maximum break time at I _{Δn} (ms):	G1 – 37	Р
		G2 – 38	
		G3 – 35	
	No value exceeds the specified limiting value		Р
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	G1 -	N/A
		G2 -	
		G3 -	
	No tripping during tests		N/A

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Clause	Requirement + Test	Result - Remark	Verdict		
	Climatic test: no tripping during 28 cycles test:	G1 – OK	Р		
		G2 – OK			
		G3 – OK			
	Final verification: the RCCB shall trip with a test	G1 – 26	Р		
	current of 1,25 I _{Δn} (ms):	G2 – 29			
		G3 – 31			

	TEST SEQUENCE G (3 samples)		
	3P+N,63 A, Type AC 30 mA General type		
9.22	Verification of reliability		
9.22.1	Climatic test based on Clause 4 of IEC 60068-2-3:20	000 and IEC 60068-3-4:	
	- number of cycles: 28	28	Р
	- test temperature: upper temperature 55 °C ± 2 °C	55	Р
	Initial verification:		Р
9.9.2.3	- maximum break time at I _{Δn} (ms)	G1 – 36	Р
		G2 – 34	
		G3 – 33	
	No value exceeds the specified limiting value		Р
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	G1 -	N/A
		G2 -	
		G3 -	
	No tripping during tests		N/A
	Climatic test: no tripping during 28 cycles test:	G1 – OK	Р
		G2 – OK	
		G3 – OK	
	Final verification: the RCCB shall trip with a test	G1 – 25	Р
	current of 1,25 I _{Δn} (ms):	G2 – 30	
		G3 – 27	

	TEST SEQUENCE G (3 samples)		
	3P+N, 10A, Type A, 300 mA General type		
9.22	Verification of reliability		
9.22.1	Climatic test based on Clause 4 of IEC 60068-2-3:20	000 and IEC 60068-3-4:	
	- number of cycles: 28	28	Р

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Clause	Requirement + Test	Result - Remark	Verdict
		T	
	- test temperature: upper temperature 55 °C ± 2 °C	55	Р
	Initial verification:		Р
9.9.2.3	- maximum break time at I _{Δn} (ms)	G1 – 34	Р
		G2 – 38	
		G3 – 33	
	No value exceeds the specified limiting value		Р
	Additional test for type S:		
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :	G1 -	N/A
		G2 -	
		G3 -	
	No tripping during tests		N/A
	Climatic test: no tripping during 28 cycles test:	G1 – OK	Р
		G2 – OK	
		G3 – OK	
	Final verification: the RCCB shall trip with a test	G1 – 27	Р
	current of 1,25 I _{Δn} (ms):	G2 – 30	
		G3 – 34	

TEST SEQUENCE H (3 samples)	-
3P+N, 63 A, Type A, 30 mA, type General	

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Table 4-T.1.1	Harmonics, inter harmonics	No requirements1)	Р
Table 4-T.1.2	Signaling voltages Under consideration		Р
Table 5-T.2.3	Voltage surges 1,2/50µs – 4 kV peak (IEC 61000-4-5)		
	Test results of test sequence H:		
	see test report No. :	See 180600073SHA	
	Testing location / address:	Building No.86,1198	

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE I (3 samples)		-
	3P+N, 63 A, Type A,30 mA type General		
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Table 5-T.2.1	Conducted sine-wave form voltages or currents (IEC 61000-4-6)		Р
Table 5-T.2.5	Radiated radio-frequency disturbances (IEC 61000-4-3)		Р
Table 5-T.2.2	Electrical fast transient burst (IEC 61000-4-4)		Р
	see test report No.	See 180600073SHA	
	Testing location / address:	Building No.86.1198 Qinzhou	
		Road(North),Shanghai	
		200233,China	
	TEST SEQUENCE J (3 samples)		-
	3P+N, 63 A, Type A, 30 mA, type General		
Table 5-T.2.6			
Table 5-1.2.6	Conducted common mode disturbances in the frequency range lower than 150 kHz		Р
Table 6-T3.1	Electrostatic discharges		Р
	Test results of test sequence J:		
	see test report No.	See 180600073SHA	
	Testing location / address :	Building No.86,1198 Qinzhou	
		Road(North),Shanghai	
		200233,China	

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX A (NORMATIVE)				
	Test sequence and number of samples to be submitted for certification purposes Table A.1 - Test sequences			
Te seque		Clause or subclause	Test (or inspection)	
9.3 Indelibility 8.1.3 Clearance 9.15 Trip free m 9.4 Reliability 9.5 Reliability 9.6 Protection 9.13 Resistance 8.1.3 Clearance		8.1.1 8.1.2 9.3 8.1.3 9.15 9.4 9.5 9.6 9.13		
A	2	9.14	Resistance to abnormal heat and to fire	
В		9.7.7.4 9.7.7.5 b) 9.7.1 9.7.2 9.7.3 9.7.4 9.7.7.2 9.7.5 9.7.6 9.8 9.22.2 9.23	Resistance of the insulation of open contacts and basic insulation against an impulse voltage in normal conditions Verification of the behaviour of components bridging the basic insulation Resistance to humidity Insulation resistance of the main circuit Dielectric strength of the main circuit Insulation resistance an dielectric strength of auxiliary circuits Verification of clearances with the impulse withstand voltage Secondary circuit of detection transformers Capability of control circuits connected to the main circuits etc. Temperature-rise Reliability at 40°C Ageing of electronic components	
С	;	9.10	Mechanical and electrical endurance	
	D ₀	9.9	Residual operating characteristics	
D	D ₁	9.17 9.19 9.11.2.3 a)b) 9.16 9.12 9.18	Behaviour in case of failure of the line voltage Unwanted tripping Behaviour in case of surge currents Performance at I Test device Resistance to mechanical shock and impact Non-operating current under overcurrent conditions	
	D_2	9.11.2.3 c)	Verification of the suitability of RCCBs for use in IT-systems	
E		9.11.2.4 a)	Coordination at Inc	
		9.11.2.2	Performance at I _m	
F	.	9.11.2.4 b)	Coordination at I _m	
		9.11.2.4 c)	Coordination at I∆c	
G	}	9.22.1	Reliability (climatic tests)	
Н	a)	IEC 61543 Table 4 - T1.1 IEC 61543 Table 4 -	Harmonics, interharmonics Signalling voltage Surges	

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Clause	Requirement + Test	Result - Remark	Verdict

	T1.2 IEC 61543 Table 5 - T2.3	
I	IEC 61543 Table 5 - T2.1 IEC 61543 Table 5 - T2.5 IEC 61543 Table 5 - T2.2	Conducted sine-wave voltages or currents Radiated electromagnetic field Fast transients (burst)
J	IEC 61543 Table 5 - T2.6 IEC 61543 Table 6 - T3.1	Conducted common mode disturbances in the frequency range lower than 150 kHz Electrostatic discharges

a) For devices containing a continuously operating oscillator, the test of CISPR 14-1 shall be carried out on the samples prior to the

tests of this sequence.
b) This test may be done on separate samples.

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Clause	Requirement + Test	Result - Remark	Verdict

Table A.2 - Number of samples for full test procedure			
Test sequence ^a	Number of samples	Minimum number of accepted samples ^b	Maximum number of samples for repeated tests
A ₁	1	1	
A ₂	3	2	3
В	3	2	3
С	3	2	3
D	3	2 ^d	3
D ₂	3	3	3
Е	3	2 ^d	3
F	3	2 ^d	3
G	3	2	3
H e	3	2	3
l e	3	2	3
J e	3	2	3

- a) In total a maximum of three test sequences may be repeated.
- b) It is assumed that a sample which has not passed a test has not met the requirements due to workmanship or assembly defects which are not representative of the design.
- c) In the case of repeated tests, all test results must be acceptable.
- d) All samples shall meet the requirements in 9.9.2.1, 9.9.2.2, 9.9.2.3, 9.9.2.4, 9.9.2.5 and 9.11.2.3, as appropriate. In addition, permanent arcing or flashover between poles or between poles and frame shall not occur in any sample during tests of 9.11.2.2, 9.11.2.4 a), 9.11.2.4 b) or 9.11.2.4 c).
- e) At the manufacturer's request, the same set of samples may be subjected to more than one of these test sequences.

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Clause	Requirement + Test	Result - Remark	Verdict

Table A.3 - Number of samples for simplified test procedure			
Test sequence	Number of sa	amples according to the number	per of poles a) g)
	2-poles ^{b) c)}	3-poles d) f) i)	4-poles e)
A ₁	1 max. rating I_N min. rating $I_{\Delta N}$	1 max. rating I_N min. rating $I_{\Delta N}$	1 max. rating I_N min. rating $I_{\Delta N}$
A ₂	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
В	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
С	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
D ₀ + D ₁	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
D ₀		1 for all other ratings of I _{ΔN}	
D ₂	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I _N min. rating I _{∆N}	3 max. rating I _N min. rating I _{∆N}
E	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
F	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
	3 min. rating I_N max. rating $I_{\Delta N}$	3 min. rating I_N max. rating $I_{\Delta N}$	3 min. rating I_N max. rating $I_{\Delta N}$
G i)	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
	3 min. rating I_N max. rating $I_{\Delta N}$	3 min. rating I_N max. rating $I_{\Delta N}$	3 min. rating I_N max. rating $I_{\Delta N}$
Н			3 h) samples of the same rating IN chosen at random min. rating I
I			3 $^{\rm h)}$ samples of the same rating $I_{\rm N}$ chosen at random min. rating $I_{\Delta \rm N}$
J			$3^{h)}$ samples of the same rating I_N chosen at random min. rating $I_{\Delta N}$

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

relevant test. In the repeated test all test results must be acceptable.

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

c) Also applicable to 1-pole RCCBs with uninterrupted neutral and 2-pole RCCBs with 1 protected pole.

d) Also applicable to 3-pole RCCBs with two protected poles

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Clause	Requirement + Test	Result - Remark	Verdict

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

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Clause	Requirement + Test	Result - Remark	Verdict	

Table A.4 - Test sequences for RCCBs of different classification according to 4.6					
Test sequence	Number of samples according to the number of poles a)				
	2-pole ^{b) c)}	3-pole ^{e)}	4-pole d)		
D ₀ + D ₁	1 max. rating I _N min. rating I _{∆N}	1 max. rating I _N min. rating I _{∆N}	1 max. rating I _N min. rating I _{AN}		
D ₀	1 for all other ratings of I _{ΔN} with max. I _{ΔN}				

- a) If a test is to be repeated according to the minimum performance criteria of clause A.2, a new set of samples is used for the relevant test. In the repeated test all test results must be acceptable.
- b) If only 3-pole or 4-pole RCCBs are submitted, this column shall also apply to a set of samples with the smallest number of poles.
- c) Also applicable to 1-pole RCCBs with uninterrupted neutral.
- d) Also applicable to 3-pole RCCBs with uninterrupted neutral.
- e) This column is omitted when 4-pole RCCBs are being tested.

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Clause	Requirement + Test	Result - Remark	Verdict	

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

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Clause	Requirement + Test	Result - Remark	Verdict	

ANNEX C ARRANGEMENT FOR THE DETECTION OF THE EMISSION OF IONIZED GASES DURING SHORT-CIRCUIT TESTS	
The device under test is mounted as shown in figure C.1, which may require adapting to the specific design of the device, and in accordance with the manufacturer's instructions.	Р
When required (i.e. during "O" operations), a clear polyethylene sheet (0.05 ± 0.01) mm thick, of a size at least 50 mm larger, in each direction, than the overall dimensions of the front face of the device but not less than 200 mm × 200 mm, is fixed and reasonably stretched in a frame, placed at a distance of 10 mm from	Р
 either the maximum projection of the operating means of a device without recess for the operating means; 	Р
 or the rim of a recess for the operating means of a device with recess for the operating means. 	Р
The sheet should have the following physical properties:	Р
Density at 23 °C: 0,92 ± 0,05 g/cm ³	
Melting-point: 110 °C – 120 °C.	
When required, a barrier of insulating material, at least 2 mm thick, is placed, as shown in figure C.1, between the arc vent and the polyethylene sheet to prevent damage of the sheet due to hot particles emitted from the arc vent.	Р
When required, a grid (or grids) according to figure C.2 is (are) placed at a distance of "a" mm from each arc vent side of the device.	Р
The grid circuit (see figure C.3) shall be connected to the points B and C (see figures 7 or 8, as applicable).	Р
The parameters for the grid circuit are as follows:	Р
Resistor R': 1,5 Ω	Р
Copper wire F': length 50 mm, and diameter in accordance with 9.11.2.1 f 1).	Р

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Clause	Requirement + Test	Result - Remark	Verdict	

	ANNEX D ROUTINE TESTS				-
D.1	General				
	The tests specified in this standard are intended to reveal, as far as safety is concerned, unacceptable variations in material or manufacture.				N/A
	In general, further tests have to be made to ensure that every RCCB conforms with the samples that withstood the tests of this standard, according to the experience gained by the manufacturer.				N/A
D.2	Tripping test				
	A residual current is passed through each pole of the RCCB in turn. The RCCB shall not trip at a current less than or equal to 0,5 $I_{\Delta N}$, but it shall trip at $I_{\Delta N}$ within a specified time (see Table 1).	[ms]	[ms]	[ms]	N/A
					N/A
	The test current shall be applied at least five times to each RCCB and shall be applied at least twice to each pole.				N/A
D.3	Electric strength test				
	A voltage of substantially sine-wave form of 1 500 V having a frequency of 50 Hz/60 Hz is applied for 1 s as follows:				N/A
	a) with the RCCB in the open position, between each pair of terminals which are electrically connected together when the RCCB is in closed position				N/A
	b) for RCCBs not incorporating electronic components, with the RCCB in the closed position, between each pole in turn and the others connected together				N/A
	c) for RCCBs incorporating electronic components, with the RCCB in the open position, either between all incoming terminals of poles in turn or between all outgoing terminals of poles in turn, depending on the position of the electronic components.				N/A
	No flashover or breakdown shall occur				N/A
D.4	Performance of the test device				
	With the RCCB in the closed position, and connected to a supply at the appropriate voltage, the test device, when operated, shall open the RCCB.				N/A
	Where the test device is intended to operate at more than one value of rated voltage, the test shall be made at the lowest value of rated voltage.				N/A

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Clause	Requirement + Test	Result - Remark	Verdict	

J	ANNEX J Particular requirements for RCCBs with screwless type terminals for external copper conductors	
J.1	THIS ANNEX APPLIES TO RCCBS WITHIN THE SCOPE OF CLAUSE 1, EQUIPPED WITH SCREWLESS TERMINALS, FOR CURRENT NOT EXCEEDING 20 A PRIMARILY SUITABLE FOR CONNECTING UNPREPARED (SEE J.3.6) COPPER CONDUCTORS OF CROSS-SECTION UP TO 4 MM ² .	
J.6	Marking and other product information	
	in addition to clause 6:	N/A
	universal terminals:	N/A
	no markings	N/A
	non-universal terminals:	N/A
	terminals for rigid-solid conductors marked by "sol"	N/A
	terminals for rigid (solid and stranded) conductors marked by "r"	N/A
	terminals for flexible conductors marked by "f"	N/A
	Marking on the RCCB or	N/A
	if the space available is not sufficient on the smallest package unit or in technical information	N/A
	Marking indicating the length of insulation to be removed before insertion of the conductor into the terminal shown on the RCBO	N/A
	Manufacturer shall provide information in his literature, on the maximum number of conductors which may be clamped.	N/A
J.8	Standard conditions for operating in service and for installation	
	clause 8 applies with the following modifications: in 8.1.5, only 8.1.5.1, 8.1.5.2, 8.1.5.3, 8.1.5.6 and 8.1.5.7 apply	N/A
	Compliance is checked by inspection and by the tests of J.9.1 and J.9.2 of this annex, instead of 9.4 and 9.5.	N/A
J.8.1	Connection or disconnection of conductors	N/A
	The connection or disconnection of conductors shall be made:	N/A
	- by the use of a general purpose tool or by a convenient device integral with the terminal to open it and to assist the insertion or the withdrawal of the conductors (e.g. for universal terminals)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict		
	- or, for rigid conductors by simple insertion. For the disconnection of the conductors an operation other than a pull on the conductor shall be necessary (e.g. for push-wire terminals).		N/A		
	Universal terminals shall accept rigid (solid or stranded) and flexible unprepared conductors.		N/A		
	Non-universal terminals shall accept the types of conductors declared by the manufacturer.		N/A		
	Compliance is checked by inspection and by the tests of J.9.1 and J.9.2.		N/A		
J.8.2	Dimensions of connectable conductors		N/A		
	The dimensions of connectable conductors are given in Table J.1.		N/A		
	The ability to connect these conductors shall be checked by inspection and by the tests of J.9.1 and J.9.2.		N/A		
J.8.3	Connectable cross-sectional areas		N/A		
	nominal cross-sections to be clamped acc. table J.2		N/A		
	compliance checked by inspection and tests of J.9.1 and J.9.2.		N/A		
J.8.5	Design and construction of terminals		N/A		
	terminals so designed and constructed that:				
	- each conductor clamped individually		N/A		
	during operation of connection or disconnection the conductors can be connected or disconnected either at the same time or separately		N/A		
	- inadequate insertion of the conductor is avoided		N/A		
	It shall be possible to clamp securely any number of conductors up to the maximum provided for		N/A		
	compliance checked by inspection and tests of J.9.1 and J.9.2.		N/A		
J.8.6	Resistance to ageing		N/A		
	compliance checked by the test of J.9.3.		N/A		
J.9	Tests				
	Clause 9 applies, by replacing 9.4 and 9.5 by the following tests		N/A		
J.9.1	Test of reliability of screwless terminals				
J.9.1.1	Reliability of screwless system		N/A		
	three terminals of poles of new samples, with copper conductors of the rated cross sectional area in accordance with Table J.2, types of conductors in accordance with J.8.1.		N/A		

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Clause	Requirement + Test	Result - Remark	Verdict		
	The connection and subsequent disconnection shall be made five times with:		N/A		
	Min. cross-section (mm²):	mm²	N/A		
	Max. cross-section (mm²):	mm²	N/A		
	new conductors used each time, except for the fifth time, when the conductor used for the fourth insertion is clamped at the same place. Before insertion into the terminal, wires of stranded rigid conductors re-shaped and wires of flexible conductors twisted to consolidate the ends.		N/A		
	After each insertion, the conductor being inserted rotated 90 ° along its axis at the level of the clamped section and subsequently disconnected.		N/A		
	After tests, the terminal not damaged in such a way as to impair its further use.		N/A		
J.9.1.2	Test of reliability of connection		N/A		
	three terminals of poles of new samples, with copper conductors of the rated cross sectional area in accordance with Table J.2, types of conductors in accordance with J.8.1.		N/A		
	Before insertion into the terminal, wires of stranded rigid conductors and flexible conductors reshaped and wires of flexible conductors twisted to consolidate the ends.		N/A		
	possible to fit the conductor into the terminal without undue force in the case of universal terminals and with the force necessary by hand in the case of push-wire terminals.		N/A		
	conductor pushed as far as possible into the terminal or inserted so that adequate connection is obvious.		N/A		
	Min. cross-section (mm²):	mm²	N/A		
	Max. cross-section (mm²):	mm²	N/A		
	After the test, no wire of the conductor shall have escaped outside the terminal.		N/A		
J.9.2	Tests of reliability of terminals for external conductors: mechanical strength		N/A		
	three terminals of poles of new samples fitted with new conductors of the type and of the minimum and maximum cross-sectional areas acc. Table J.2.		N/A		
	Min. cross-section (mm²):	mm²	N/A		
	Max. cross-section (mm²):	mm²	N/A		
	wires of stranded rigid conductors and flexible conductors reshaped and wires of flexible conductors twisted to consolidate the ends.		N/A		
	Pull for 1 min, min. cross-section (N):	N	N/A		

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Clause	Requirement + Test	Result - Remark		Verdict	
	Pull for 1 min, max. cross-section (N):	N			N/A
	During the test no noticeable move of conductor	1			N/A
J.9.3	Cycling test				N/A
<u> </u>	Universal, rigid conductors - 3 samples Universal, flexible conductors - 3 samples				N/A
	Non-universal, solid conductors - 3 samples				N/A
	Non-universal, rigid (solid) stranded conductors - 3 samples Non-universal, rigid (stranded) stranded conductors - 3 samples				N/A
	Non-universal, flexible conductors - 3 samples				N/A
	Cross-section (mm²)	mm²			N/A
	Test current I _N (A):	Α			N/A
	samples subjected to 192 temperature cycles				N/A
	Voltage drop after 192 cycles:				
	voltage drop, measured at each terminal, at the end of the 192 nd cycle, exceeded not the smaller of the two following values:				N/A
	– 22,5 mV				N/A
	- 1,5 times the value measured after the 24th cycle				N/A
		sample 1	sample 2	sample 3	
		[mV]	[mV]	[mV]	
	- rigid solid conductors:				N/A
	- rigid stranded conductors				N/A
	- flexible conductors				N/A
	Voltage drop after 24 th cycle:				
		sample 1	sample 2	sample 3	
		[mV]	[mV]	[mV]	
	- rigid solid conductors:				N/A
	- rigid stranded conductors:				N/A
	- flexible conductors:				N/A
	after this test: no changes evidently impairing further use, such as cracks, deformations or the like.				N/A

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Clause	Requirement + Test	Result - Remark	Verdict	

K	Р	articular requirements	ANNEX K s for RCCBs with flat of	quick-connect terminations	
K.1	quick width for co	This annex applies to RCCBs within the scope of Clause 1, equipped with flat quick-connect terminations consisting of a male tab (see K.3.2) with nominal width 6,3 mm and thickness0,8 mm, to be used with a mating female connector for connecting electrical copper conductors according to the manufacturer's instructions, for rated currents up to and including 16 A.			
K.6	Marki	ng and other product inf	ormation		
	in add	dition to clause 6, additions):	on after the lettered		
	IEC 6	nation regarding the fem 1210 and type of condu ven in the manufacturers	ctor to be used shall		N/A
	I) mar	nufacturer's name or tra	de mark		N/A
	m) typ	oe reference			N/A
	col	ormation on cross-section our code of insulated feature (c)			N/A
	o) the	use of only silver or tin-	-plated copper alloys		N/A
K.8	Requi	irements for construction	n and operation		
	Claus	e 8 applies, with the foll	owing exceptions:		N/A
		ause 8.1.3 applies, the fitted to the male tabs o			N/A
	replac	ce the contents of 8.1.5	by the following:		N/A
K.8.2	Termi	nals for external conduc	otors		N/A
K.8.2.1	metal condu	tabs and female connect having mechanical stre activity and resistance to eir intended use.	ngth, electrical		N/A
K.8.2.2	the th up to NOTE includ	ominal width of the male ickness 0,8 mm, applica and including 16 A. E 1:The use for rated cu ling s accepted in BE, FR, I	able to rated currents		N/A
	those	imensions of the male to specified in Table K.3 a nd K.5			N/A
	'	Dimensions of tabs a	ccording Table K.3	Measured in mm	
		Minimum [mm]	Maximum [mm]		
Α	Dimple	0,7	1,0		N/A
	Hole	0,5	1,0		N/A
В	Dimple	7,8 min			N/A
	Hole	7,8 min			N/A

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Clause	Requ	irement + Test		Result - R	emark		Verdict
	T	T	T	Γ			N/A
С	Dimple	0,77	0,84				N/A
	Hole	0,77	0,84				N/A
D	Dimple	6,20	6,40				N/A
	Hole	6,20	6,40				
Е	Dimple	3,6	4,1				N/A
	Hole	4,3	4,7				N/A
F	Dimple	1,6	2,0				N/A
	Hole	1,6	2,0				N/A
J	Dimple	8°	12°				N/A
	Hole	8°	12°				N/A
M	Dimple	2,2	2,5				N/A
	Hole						
N	Dimple	1,8	2,0				N/A
	Hole						
Р	Dimple	0,7	1,8				N/A
	Hole	0,7	1,8				N/A
Q	Dimple	8,9 min					N/A
	Hole	8,9 min					N/A
		nsions of the female cor on are given in Figure k					N/A
					request acc. table K.3	measured value	
				B ₃ max	7,8mm		N/A
				L ₂ max	3,5mm		N/A
< .9	Tests	3					
	claus	e 9 applies with the follo	wing modifications:				N/A
	repla	ce the contents of 9.5 by	the following text:				N/A
C.9.1	Mech	anical overload-force					N/A
		done on 10 terminals of rmal use when wiring tal					N/A
		push force, and success gradually applied to the CCB					N/A
	Push	96N					N/A
	Pull 8	38N					N/A
		amage occurred to the to the to the to	ab or to the RCCB in				N/A
		on to 9.8.3:					N/A

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Clause	Requirement + Test	Result - Remark	Verdict		
	Fine -wire thermocouples shall be placed in such a way as not to influence the contact or the connection area. An example of placement is shown in fig K.1		N/A		

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Clause	Requirement + Test	Result - Remark	Verdict

L	ANNEX L Specific requirements for RCCBs with screw untreated aluminium conductors and with alumi use with copper or with aluminium	inium screw-type terminals for	
L.6	Marking and other product information		
	In addition to clause 6 the following apply:		N/A
	Terminal marking according table L.1, on the RCCB, near the terminals		N/A
	Conductor types accepted:		N/A
	Copper only	None	N/A
	Aluminium only	"Al"	N/A
	Aluminium and copper	"Al/Cu"	N/A
	Other information concerning the number of conductors, screw torque (if different from table 10) and cross-section shall be indicated on the RCCB	Nm mm²	N/A
L.7	Standard conditions for operation in service		
	Clause 7 applies		N/A
L.8	Constructional requirements		
	Clause 8 applies with the following exceptions:		N/A
8.1.5.2	add the following text at the end of 8.1.5.2:		N/A
	For connection of aluminium conductors, RCCBs shall be provided with screw-type terminals allowing the connection of conductors having nominal cross-sections as shown in table L.2		N/A
	Terminals for the connection of aluminium conductors and terminals of aluminium for the connection of copper or aluminium conductors shall have mechanical strength adequate to withstand the tests of 9.4, with the test conductors tightened with the torque indicated in table 11, or with the torque specified by the manufacturer, which shall never be lower than that specified in table 11.		N/A
	Compliance is checked by inspection, by measurement and by fitting in turn one conductor of the smallest and one of the largest cross-section areas as specified		N/A
8.1.5.4	replace the text of 8.1.5.4 by the following:		N/A
	Terminals shall allow the conductors to be connected without special preparation		N/A
	Compliance is checked by inspection and by the tests of L.9		N/A
L.9	Tests		

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Clause	Requirement + Test	Result - Remar	k	Verdict
		<u> </u>		
	Clause 9 applies with the following modifications/additions:			N/A
	For the tests which are influenced by the material of the terminal and the type of conductor that can be connected, the test conditions of table L.3 are applied			N/A
	Additionally the test of L.9.2 is carried out on terminals separated from the RCCB			N/A
9.2	Current cycling test			N/A
	This test is carried out on separate terminals			N/A
9.2.3	Test arrangement			N/A
	The general arrangement of the samples shall be as shown in figure L.1			N/A
	90 % of torque stated by the manufacturer or selected in table 10 used for the specimens	torque: Nm		N/A
	The test is carried out with conductors according to	cross-section:	mm ²	N/A
	table L.5. The length of the test conductor from the point of entry to the screw-type terminal specimens to the equalizer shall be as in table L.6	minimum condi mm	uctor length:	
	Cross section of equalizer not greater than that given in table L.7	max. cross-sec	ction: mm²	N/A
9.2.5	Test method and acceptance criteria			N/A
	Test loop subjected to 500 cycles of 1h current-on and 1h current-off, starting at an a.c. current value of 1,12 times the test current value determined in table L.8	test current: A		N/A
	Near the end of each current-on period of the first 24 cycles, the current shall subsequently be adjusted to raise the temperature of the reference conductor to 75°C			N/A
	At the end of the 25 th cycle the test current shall be adjusted the last time and the stable temperature shall be recorded as the first measurement. No further adjustment of test current for the remainder of the test			N/A
	Temperatures recorded for at least one cycle of each working day, and after approximately 25, 50, 75, 100, 125, 175, 225, 275, 350, 425 and 500 cycles			N/A
	For each screw-type terminal:			N/A
	- the temperature rise shall not exceed 110 K			N/A
	- the stability factor Sf shall not exceed ± 10 °C			N/A
	ambient air temperature: °C			N/A
		max. temperature rise [K]	max. stability factor Sf [°C]	

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Clause	Requirement + Test	Result - Remark	Verdict			
	Terminal 1		N/A			
	Terminal 2		N/A			
	Terminal 3		N/A			
	Terminal 4		N/A			
	Terminal 5		N/A			
	Terminal 6		N/A			
	Terminal 7		N/A			
	Terminal 8		N/A			

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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

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

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	CENELEC COMMON MODIFICATIONS (EN)		
	GENERAL		
9.11	Short circuit tests		
9.11.2.1 d)	Value of power frequency recovery voltage shall be equal to 110% of the rated voltage		
9.11.2.1 b)	Tolerances and test quantities		
	voltage (including recovery voltage): 0, -5%		
	TEST SEQUENCE "A ₁ "		
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	Р
b)	Type designation, catalogue number or serial number	JEL1	Р
c)	Rated voltage(s) with the symbol ~	240V~(1P+N)	Р

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Clause	Requirement + Test	Result - Remark	Verdict

		415V~(3P+N)	
d)	Rated frequency, if the RCCB is designed for frequencies other than 50Hz	50/60Hz	Р
e)	rated current	63A	Р
f)	Rated residual operating current ($I_{\Delta n}$) in A or in mA	30mA	Р
h) *)	Rated making and breaking capacity (I _m)	630A	Р
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
0)	Operating means of the test device, by the letter T (It is recommended to advise the user to test the device regularly)		Р
p)	Wiring diagram unless the correct mode of operation is evident		Р
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 \cong	≥ĭ	Р
s)	RCCBs according to 4 Z2 marked with the symbol (snowflake enclosing -25)		Р
t)	Indication of the terminal for the neutral with "N"	"N"	Р
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

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	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	Р
	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		Р
	Terminals for neutral circuit N	"N"	Р
	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	<u> </u>	Р
	The base for plug-in RCCBs shall be marked with the following:		N/A
	- rated current or maximum rated current		N/A

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	- trade mark		N/A
	Marking indelible, easy legible and not on removable parts		Р
	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		Р
	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. Z 2	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.		Р
	- 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.		Р
	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.		Р
8.	REQUIREMENTS FOR CONSTRUCTION AND OP	ERATION	
8.1	Mechanical design		-
8.1.1	General		-
modify	Not possible to alter the operating characteristics by means of external		Р

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	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	Р
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	Р
	Compliance is checked by inspection and by the tests as relevant for the type of connection:	Р
	9.5 for screw-type terminals	Р
	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	-or terminals for external untreated aluminium	-
delete	-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 screwin 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	_

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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 "A2"	-
9.14	Glow-wire test	-
add	Small parts, where each surface lies completely within a circle of 15 mm diameter, or where any part of the surface lies outside a 15 mm diameter circle and it is not possible to fit a circle of 8 mm diameter on any of the surfaces, are not subjected to the test of this subclause (see Figure Z7 for diagrammatic representation).	Р

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	TEST SEQUENCE "B"	B1	B2	В3	
8	REQUIREMENTS FOR CONSTRUCTION AND OP	ERATION			
8.3	Dielectric properties and isolating capability				
	RCCBs have adequate dielectric properties				
9.7 modify	Test of dielectric properties and isolating capabi	ility			
9.7.7.4.1 modify	rated impulse withstand voltage [kV]:	4kV			
	see level of test laboratory [m]	Sea level			
	test voltage (acc. Table 22, modified) [kV]:	6,2kV			
9.7.7.4.3 modify	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB				
9.7.2 modify	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:	B1 [MΩ]	B2 [MΩ]	B3 [MΩ]	
	a) between the terminals which are electrically	>500	>500	>500	Р
	connected together when the RCCB is in the closed position \geq 2 $M\Omega$	M Ω	ΜΩ	MΩ	
	b) between each pole and the others connected	>500	>500	>500	Р
	together (electronic components, connected between poles being disconnected) $\geq 2~M\Omega$	M Ω	MΩ	MΩ	
	c) with the RCCB in the closed position,	>500	>500	>500	Р
	between all poles connected together and the frame, including a metal foil in contact with the outer surface of the housing of insulation material but with the terminal area kept free $\geq 5~M\Omega$	ΜΩ	ΜΩ	M Ω	
	d) between the frame and a metal foil in contact with the inner surface of the lining of insulating material				N/A
9.7.3 modify	Dielectric strength of the main circuit measured with an AC voltage (45-65Hz) for 1 min:			•	

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Clause	Requirement + Test		Resu	lt - Rer	nark	Verdict
	a)2000 V					Р
	b) (electronic components, connected between poles being disconnected) 2000 V					Р
	c)2000 V					Р
	d)2500 V					N/A
	No flashover or breakdown					Р
9.7.7.2 modify	delete in table 16 the line beginning with "2,5" rated impulse withstand voltage [kV]:	4KV				Р
	see level of test laboratory [m]	SEA	LEVE	L		Р
	test voltage (acc. Table 16) [kV]:	4,9K\	V			Р
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any					P
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB					Р
9.23 modify	Verification of ageing					-
	TEST SEQUENCE "C"		C1	C2	C3	
	TESTS C ₁		CI	C2	<u> </u>	
8	REQUIREMENTS FOR CONSTRUCTION AND OP	EDATI	ION			
8.6	Mechanical and electrical endurance	ENAII	IOIN			
6.0	RCCBs shall be capable of performing an adequate number of mechanical and electrical operations.					P
9.10.3 modify:	After test:					
	a)					Р
	b)					Р
	c)					Р
	d)					N/A
	TEST SEQUENCE "D"		D1	D2	D3	
	TESTS D ₀					

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9.9.1 delete:	For multiple settings of I _{An} tests are made for each setting				
	TESTS D ₁				
8	REQUIREMENTS FOR CONSTRUCTION AND OF	PERATIC	N		
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 failure of the line voltage	automa	itically in c	ase of	-
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.l _{ΔN} :	1,25.l∆	_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 $U_{\rm x}$				N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the	e line vo	ltage		
	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	to		ms	N/A

manufacturer

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	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	630	
	breaking capacity (A): $I_{\Delta m}$:		
9.7.3 modify	Dielectric strength test of the main circuit at test	voltage 2 Un for 1 min:	
	a):	D1 -OK	Р
		D2 -OK	
		D3 -OK	
	b):	D1 -OK	Р
		D2 -OK	
		D3 -OK	
	c):	D1 -OK	Р
		D2 -OK	
		D3 -OK	
	d):	D1 -	N/A
		D2 -	
		D3 -	
	No flashover or breakdown:	D1 -OK	Р
		D2 -OK	
		D3 -OK	
8.11 replace by:	Test device		
	RCCBs provided with a test device		Р
	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 $I_{\Delta N}$		Р
	RCCBs with rated residual current other than 30	mA:	
	Ampere-turns produced when operating the test device do not exceed 2,5 times the ampere turns produced by $I_{\Delta N}$		N/A

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Clause	Requirement + Test	Result - Remark	Verdict	
	Not possible to energize the circuit on the load side by operating the test device when the RCCB is in the open position		Р	
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;		Р	
	- 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		Р	
	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 coverplate.		N/A	
	RCCB shall not become loose during test and	D1 -OK	Р	
	no damage impairing its further use:	D2 -OK		
		D3 -OK		
9.12.2.3 replace by:	Plug-in type RCCBs, the holding in position of which depends solely on their connections, are mounted, complete with the appropriate plug-in base but without cables being connected and without any cover-plate, on a vertical rigid wall. A force of 20 N is applied to the RCCB portion at a point equidistant between the plug-in connections, without jerks for 1 min (see Figure Z4).		N/A	
	TESTS "D2"			
9.11.2.3c) modify:	Test voltage 110% of rated phase to neutral voltage for the pole exclusively for the neutral		Р	
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:			

E1 -OK

E2 -OK

E3 -OK

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Clause	Requirement + Test	Result - Remark	Verdict		
	b):	E1 -OK E2 -OK E3 -OK	Р		
	c):	E1 -OK E2 -OK E3 -OK	P		
	d):	E1 - E2 - E3 -	N/A		
	No flashover or breakdown:	E1 -OK E2 -OK E3 -OK	Р		
	TEST SEQUENCE E (3 samples)				
9.11.2.4a)	Verification of the coordination at the rated conditional short-circuit current (A): Inc	6000			
modify:	After the tests no damage impairing further use		Р		
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	Р		
	b):	E1 -OK E2 -OK E3 -OK	Р		
	c):	E1 -OK E2 -OK E3 -OK	P		
	d):	E1 -	N/A		

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		E2 -				
		E3 -				
	No flashover or breakdown:	E1 -N	0		Р	
		E2 -NO E3 -NO				
9.17	Verification of the behaviour of RCCBs opening failure of the line voltage		ase of			
9.17.1 replace by:	Limiting value of the line voltage U _x				N/A	
	U _N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]		
	All values less than 0,7 U _N					
	Tripping test:					
	Test voltage (V)	V				
	Residual current 1,25.I _{ΔN}	1,25.1	ΔN = 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					
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		•	•		
	<u> </u>	1			+	

to

N/A

N/A

ms

Values within the range indicated by

RCCBs classified 4.1.2.1b): switch off at U_N

manufacturer

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9.17.4 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) 9.11.2.2 Verification of the rated making and breaking capacity (A): Im		Voltage off and on at the line side:				
Seplace by:		No automatically closing				N/A
verification of the rated making and breaking capacity (A): Im		of a residual current, the neutral and one line ter				
### After the tests no damage impairing further use ###	9.11.2.2		630A		Р	
Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min: a)	nodify:					
a)	-	Dielectric strength test of the main circuit at test				
E3 - OK		a):	E1 - OK			Р
b)			E2 - OK	,		
b)			E3 - OK	,		
E3 - OK E1 - OK E2 - OK E3 - OK		b):	E1 - OK			Р
c)			E2 - OK			
c)			E3 - OK			
E3 - OK		c):	E1 - OK			Р
d)			E2 - OK			
No flashover or breakdown: E1 - No flashover or breakdown: E1 - OK E2 - OK E3 - OK E3 - OK O.17 Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage O.17.1 Limiting value of the line voltage Ux			E3 - OK			
No flashover or breakdown: E1 - OK E2 - OK E3 - Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage Limiting value of the line voltage U _x		d):	E1 -			N/A
No flashover or breakdown: E1 - OK E2 - OK E3 - OK Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage Limiting value of the line voltage U _x			E2 -			
No flashover or breakdown: E1 - OK E2 - OK No.17 Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage Limiting value of the line voltage U _x			E3 -			
D.17 Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage D.17.1 Limiting value of the line voltage U _x		No flashover or breakdown:	E1 - OK	Р		
7.17 Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage 2.17.1 Limiting value of the line voltage U _x			E2 - OK			
failure of the line voltage 2.17.1 Limiting value of the line voltage U _x			E3 - OK			
5 ^).17	-	automat	cically in ca	ase of	
l l		Limiting value of the line voltage U _x				
U _N applied to the line terminals and [V] [V] - progressively lowered to attain zero within			[V]	[V]	[V]	

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	about 30s until automatic opening occurs				
					N/A
	All values less than 0,7 U _N				N/A
	Tripping test:				-
	Test voltage (V):	V			
	Residual current 1,25.I _{ΔN} :	1,25.I _{∆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 $\ensuremath{\text{U}}_x$			•	N/A
9.17.2 replace by:	Verification of behaviour in case of failure of the	line volt	age		
	RCCB supplied with U_N and line voltage, then switched off				
	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 wi of a residual current, the neutral and one line ter (replace the title by)		-	-	
	TEST SEQUENCE F (3 samples)				
9.11.2.4b)	Verification of the coordination at the rated	6000			
	making				
	and breaking capacity (A): Im:				_
modify:	After the tests no damage impairing further use				Р
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				

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Clause	Requirement + Test	Result - Remark			Verdict
	a):	F1 - Ok	<		P
	b):	F3 - Ok F1 - Ok F2 - Ok F3 - Ok	(P
	c):	F1 - Ok F2 - Ok F3 - Ok	(P
	d):	F1 - F2 - F3 -	`		N/A
	No flashover or breakdown:	F1 - Ok F2 - Ok F3 - Ok	<		Р
9.17	Verification of the behaviour of RCCBs opening failure of the line voltage	automa	tically in ca	ase of	
9.17.1 replace by:	Limiting value of the line voltage U _x				N/A
	U _N applied to the line terminals and progressively lowered to attain zero within about 30s until automatic opening occurs	[V]	[V]	[V]	
	All values less than 0,7 U _N				
	Tripping test:				
	Test voltage (V)	V			
	Residual current 1,25.I _{ΔN}	1,25.I _{ΔN}	_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 $\boldsymbol{U}_{\boldsymbol{x}}$				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
9.17.2 replace by:	Verification of behaviour in case of failure of the	line volt	age		
	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:				1
	No automatically closing				N/A
9.17.4 replace by:	Verification of the correct operation of RCCBs wi of a residual current, the neutral and one line ter (replace the title by)		-	•	
9.11.2.4c)	Verification of the coordination at the rated	630A	Р		
	conditional residual short-circuit current (A):				
modify:	After the tests no damage impairing further use				
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				
	a):	F1 -OK			Р
		F2 -OK			
		F3 -OK			
	b):	F1 - OK			Р
		F2 - OK			
		F3 - OK			
	c):	F1 - OK			Р
		F2 - OK			

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Clause	Requirement + Test	Result - Remark	Verdict

		F3 - OK				
	d):	F1 - OK		N/A		
		F2 - OK				
	F3 - OK					
	No flashover or breakdown:	F1 - OK	F1 - OK			
		F2 - OK				
		F3 - OK				
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 _{ΔN} :	1,25.I _{∆N}				
	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 $\ensuremath{\text{U}_{x}}$		N/A			
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					
	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					

N/A

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Clause	Requirement + Test		Resu	lt - Rema	ark	Verdict
	T	1				1
	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 wi of a residual current, the neutral and one line ter (replace the title by)					
modify:	TEST SEQUENCE "G ₀ "		G₀1	G₀2	G₀3	
9.22	Verification of reliability					
9.22.1	Climatic test					Р
	TEST SEQUENCE "G ₁ " (add the new test sequence)		G₁1	G₁2	G ₁3	
8	REQUIREMENTS FOR CONSTRUCTION AND OP	ERATI	ION			
add: 8.Z1	Behaviour of RCCBs at low ambient air tempera	ture				
	RCCBs for use between -25°C and +40°C operate reliably at low ambient air temperature					Р
add: 9.Z1	Verification of the correct operation at low amb RCCBs for use at temperatures between -25° C and +40° C	ient ai	ir tem	nperatur	e for	
	RCCBs mounted in enclosure with degree of protection IP 55 and connected for normal use					Р
	RCCBs in a test chamber at +23°C \pm 2°C and rH 90% \pm 3%					Р
	RCCBs in ON-position without load					Р
	Five test cycles performed acc. to figure Z6					Р
	No tripping during cycles					Р
	At the end of last 6 h period at -25°C an a.c. residual current is passed through one pole (see figure 4a)					P
	- general type:	[m	s]	[ms]	[ms]	
	break time at 1,25 $I_{\Delta N}$ not exceeding the value for $I_{\Delta N}$ in table 1	31	1	24	26	Р
	- S-type:	[m	s]	[ms]	[ms]	
		1				

break time at 2,5 $I_{\Delta N}$ not exceeding the value

for

2 $I_{\Delta N}$ in table 1

				•		
	IEC 61008-1H- ATTACHM	ENT				
Clause	ause Requirement + Test		Resu	ılt - Remar	k	Verdict
						•
	Additionally for RCCBs of type A:					-
	Break time with pulsating d.c. residual currents of					-
	- 1,25 I _{ΔN} (general type)	37,5r	nΑ			Р
	- 2,5 I _{ΔN} (S-type)					N/A
	Multiplied by:	[m	s]	[ms]	[ms]	
	1,4 for I _{∆N} > 0,01 A	2!	5	28	21	Р
	2 for $I_{\Delta N} \le 0.01 A$					N/A
	at α = 0°el (test circuit figure 4b)					Р
	After test possible to switch on the RCCB without presence of residual current					Р

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

			ANNEX A (NORMATIVE) replace table A.1 by:	
Test sequence and number of samples to be submitted for certification purposes Table A.1 - Test sequences				
Test s	equence	Clause or subclause	Test (or inspection)	
	Aı	6 8.1.1 8.1.2 9.3 8.1.3 9.15 9.4 9.5 9.6 9.13 8.1.3 9.25	Marking General Mechanism Indelibility of marking Clearance and creepage distances (external parts only) Trip free mechanism Reliability of screws, current-carrying parts and connections Reliability of terminals for external conductors Protection against electric shock Resistance to heat Clearances and creepage distances (internal parts) Resistance to rusting	
	A ₂	9.14	Resistance to abnormal heat and to fire	
	В	9.7.7.4 9.7.7.5 b) 9.7.1 9.7.2 9.7.3 9.7.4 9.7.7.2 9.7.5 9.7.6 9.8 9.22.2 9.23	Resistance of the insulation of open contacts and basic insulation against an impulse voltage in normal conditions Verification of the behaviour of components bridging the basic insulation Resistance to humidity Insulation resistance of the main circuit Dielectric strength of the main circuit Insulation resistance an dielectric strength of auxiliary circuits Verification of clearances with the impulse withstand voltage Secondary circuit of detection transformers Capability of control circuits connected to the main circuits etc. Temperature-rise Reliability at 40°C Ageing of electronic components	
	С	9.10	Mechanical and electrical endurance	
	D ₀	9.9	Residual operating characteristics	
D	D ₁	9.17 9.19 9.11.2.3 a)b) 9.16 9.12 9.18	Behaviour in case of failure of the line voltage Unwanted tripping Behaviour in case of surge currents Performance at I _{Am} Test device Resistance to mechanical shock and impact Non-operating current under overcurrent conditions	
	D ₂	9.11.2.3 c)	Verification of the suitability of RCCBs for use in IT-systems	
	E	9.11.2.4 a)	Coordination at I _{nc}	
		9.11.2.2	Performance at I _m	
	F	9.11.2.4 b)	Coordination at I _m	
		9.11.2.4 c)	Coordination at $I_{\Delta c}$	
	G₀	9.22.1	Reliability (climatic tests)	
	G₁	9.Z1	Verification of correct operation at low Ambient air temperature of RCCBs for use of -25°C to +40°C	
ŀ	H ^{a)}	IEC 61543 Table 4 -T1.1 IEC 61543 Table 4 -T1.2 IEC 61543 Table 5 -T2.3	Harmonics, interharmonics Signalling voltage Surges	
	I	IEC 61543 Table 5 -T2.1 IEC 61543 Table 5 -T2.5 IEC 61543 Table 5 -T2.2	Conducted sine-wave voltages or currents Radiated high-frequency phenomena Fast transients (burst)	
	J	IEC 61543 Table 5 - T2.6 IEC 61543 Table 6 -T3.1	Conducted common mode disturbances in the frequency range lower than 150 kHz Electrostatic discharges	

b) This test may be done on separate samples.

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Clause	Requirement + Test	I	Result - Remark	Verdict

	replace table A.2 by:						
	Table A.2 - Number of samples for full test procedure						
Test sequence a	Number of samples	Minimum number of accepted samples b	Maximum number of samples for repeated tests c				
Α	1+3 ^f	1+3 ^f					
В	3	2	3				
С	3	2	3				
D	3	2 ^d	3				
D ₂	3	3	3				
Е	3	2 ^d	3				
F	3	2 ^d	3				
G_0	3	2	3				
G ₁	3	2	3				
H ^e	3	2	3				
e	3	2	3				
J e	3	2	3				

- a) In total a maximum of three test sequences may be repeated.
- b) It is assumed that a sample which has not passed a test has not met the requirements due to workmanship or assembly defects which are not representative of the design.
- c) In the case of repeated tests, all test results must be acceptable.
- d) All samples shall meet the requirements in 9.9.2.1, 9.9.2.2, 9.9.2.3, 9.9.2.4, 9.9.2.5 and 9.11.2.3, as appropriate. In addition, permanent arcing or flashover between poles or between poles and frame shall not occur in any sample during tests of 9.11.2.2, 9.11.2.4 a), 9.11.2.4 b) or 9.11.2.4 c).
- e) At the manufacturer's request, the same set of samples may be subjected to more than one of these test sequences.
- f) Test 9.14 shall applied to 3 additional new samples

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Clause	Requirement + Test	Result - Remark	Verdict

	<u> </u>	ble A.3 by:	
Та	ble A.3 - Number of sample	es for simplified test proce	dure
Test sequence	Number of samp	les according to the numb	er of poles a) g)
	2-poles b) c)	3-poles d) f) i)	4-poles e)
A ₁ ^{j)}	1 max. rating I_N min. rating $I_{\Delta N}$	1 max. rating I_N min. rating $I_{\Delta N}$	1 max. rating I_N min. rating $I_{\Delta N}$
A ₂	3 max. rating I _N min. rating I _{△N}	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
В	3 max. rating I _N min. rating I _{∆N}	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
С	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
D ₀ + D ₁	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
D_0		1 for all other ratings of $I_{\Delta N}$	
D ₂	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
Е	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
F	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
	3 min. rating I_N max. rating $I_{\Delta N}$	3 min. rating I_N max. rating $I_{\Delta N}$	3 min. rating I_N max. rating $I_{\Delta N}$
G_0 $^{j1)}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
G_1 h)	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$	3 max. rating I_N min. rating $I_{\Delta N}$
	3 min. rating I_N max. rating $I_{\Delta N}$	3 min. rating I_N max. rating $I_{\Delta N}$	3 min. rating I_N max. rating $I_{\Delta N}$
Н			3 ^{h)} samples of the sa rating I _N chosen at randor min. rating I _{AN}
I			3 ^{h)} samples of the sa rating I _N chosen at randor min. rating I _{AN}
J			3 ^{h)} samples of the sa rating I _N chosen at rando min. rating I _{ΔN}

- a) If a test is to be repeated according to the minimum performance criteria of clause A.2, a new set of samples is used for the relevant test. In the repeated test all test results must be acceptable.
- b) If only 3-pole or 4-pole RCCBs are submitted, this column shall also apply to a set of samples with the smallest number of poles.
- c) deleted
- d) deleted
- e) deleted
- f) This column is omitted when 4-pole RCCBs have been tested.
- g) If only one value of $I_{\Delta N}$ is submitted, min. rating $I_{\Delta N}$ and max. rating $I_{\Delta N}$ are replaced by $I_{\Delta N}$.
- h) Only the highest number of pole.
- i) deleted

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- Three additional samples of the minimum number of poles, with ratings I_n and I_{ΔN} chosen at random, shall be used for the test of 9.14.
- j1) if the requirement to test max. rating In and minimum rating $I_{\Delta N}$ does not cover all the possible range of RCBOs, the minimum

 $I_{\Delta N}$ shall in any case be chosen for the test.

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	IEC 61008-1 ATTACHMI	ENT	
Clause	Requirement + Test	Result - Remark	Verdict
	ANNEX J Particular requirements for RCCBs with screwless type terminals for external copper conductors		
J.1 <i>modify:</i>	This annex applies to RCCBs within the scope of Clause 1, equipped with universal screwless terminals, for current not exceeding 20 A primarily suitable for connecting unprepared (see J.3.6) copper conductors of cross-section up to 4 mm ² .		
J.6 modify:	Marking		
	non-universal terminals (if accepted by Special National Conditions):		
	terminals for rigid-solid conductors marked by "sol"		
	terminals for rigid (solid and stranded) conductors marked by "r"		
	terminals for flexible conductors marked by "f"		
	ANNEX K Particular requirements for RCCBs with flat of	uick-connect terminations	
K.8.2.2 modify:	The nominal width of the male tab is 6,3 mm and the thickness 0,8 mm, applicable to rated currents up to and including 16 A. NOTE 1:The use for rated currents up to and including 20 A is accepted in BE, FR, IT, PT, ES and US		
	ANNEX L Specific requirements for RCCBs with screw- untreated aluminium conductors and with alum for use with copper or with alumin	ninium screw-type terminals	
	DELETE ANNEX L		
	ANNEX ZB		
	Special national condi	tions	
	Germany, Switzerland		
	The use of RCCBs of type AC is not permitted		
	Ireland		

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	IEC 61008-1 A	ТТАСНМЕ	NT	
Clause	Requirement + Test		Result - Remark	Verdict
	EN 61008-1 (referred to as Part 1) is applicable with the modifications given below. For RCCBs, functionally dependant on line voltage IEC 61008-2-2 applies in conjunction with Part 1.			
	ANNI A-devi	EX ZC iations		
	Austria			
	subclause 4.1, Table Z1 is not valid in A	Austria		
	Belgium			
	The Belgian regulation for Electrical Ins RCCB's ≤ 40 A installed at the head-end upstream the first overcurrent protection than 22,5 kA ² s at 3000 A and shall be acfollowing data: "3000 A, 22,5 kA ² s".	d in housel on, shall w	hold electrical installation, ithstand an l ² t value not less	
	This marking shall remain visible after installation.			
	For additional test sequences E and F see:	Attachme	ent:	

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

TABLE Z3 – REQUIREMENTS FOR MARKING

		Marking on the RCCB itself			Product information in the catalogue
	Each RCCB shall be marked in a durable manner with all or, for small apparatus, part of the following data: The minimum requirements are indicated by the symbol "X"	If, for small devices the space available does not allow all the data to be marked, at least the following information shall be marked and visible when the device is installed.	The following information may be marked on the side or on the back of the device and be visible only before the device is installed.	Alternatively the following information may be on the inside of any cover which has to be removed in order to connect the supply wires.	Any remaining information not marked shall be given in the manufacturer's catalogues.
a)	The manufacturer's name or trademark		Х		
b)	Type designation, catalogue number or serial number		Х		
c)	Rated voltage(s) with the symbol ~		Х		
d)	Rated frequency, if the RCCB is designed for frequencies other than 50Hz		Х		
e)	rated current	Х			
f)	Rated residual operating current (I_{Δ^n}) in A or in mA	Х			
h)	rated making and breaking capacity (I _m)				X (*)
j)	The degree of protection (only if different from IP20)				×
k)	The position of use, if necessary		Х		
1)	Rated residual making and breaking capacity ($I_{\Delta m}$), if different from rated short-circuit capacity (I_m)				X (*)
m)	The symbol S (S in a square) for type S devices	Х			
n)	symbol of the method of operation according to Table Z1 of 4.1 if the RCCB is functionally dependent on the line voltage		х	Х	
0)	Operating means of the test device, by the letter T (**)	×			
p)	Wiring diagram unless the correct mode of operation is evident		Х	Х	
r)	Operating characteristic in presence of residual currents with d.c. components				
	- RCCBs of type AC with the symbol		Х		

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Clause	Requirement + Test	Result - Remark	Verdict	

	- RCCBs of type A with the symbol	Х		
s)	RCCBs according to 4 Z2 marked with the symbol (snowflake enclosing -25)		Х	
t)	Indication of the terminal for the neutral with "N"		Х	
u)	Additional marking of performance to other standards or additional requirements according to 6.Z2		X	

 $I_{\Delta m}$ and I_m (if different of $I_{\Delta m}$) may be anywhere on the device or in the catalogue but shall be together It is recommended to advise the user to test the device regularly

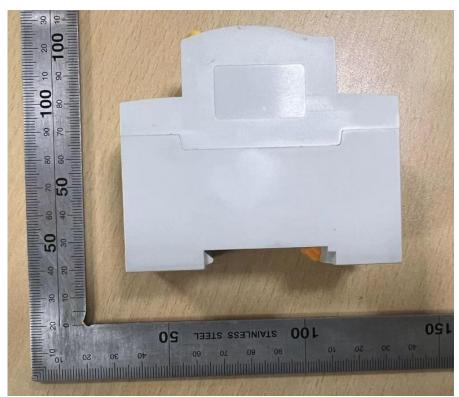


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Attachment 2

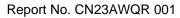
Photograph documentation:



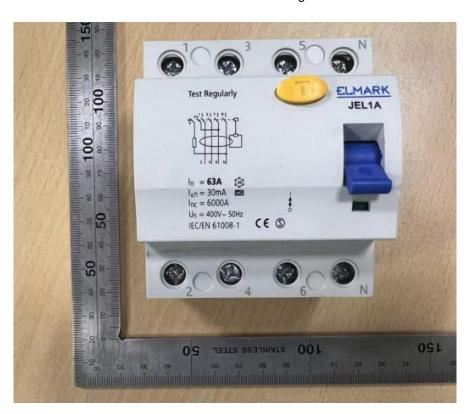


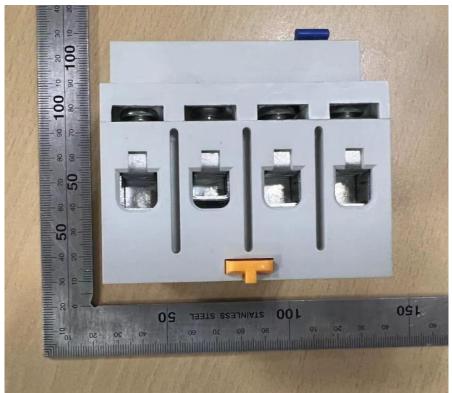






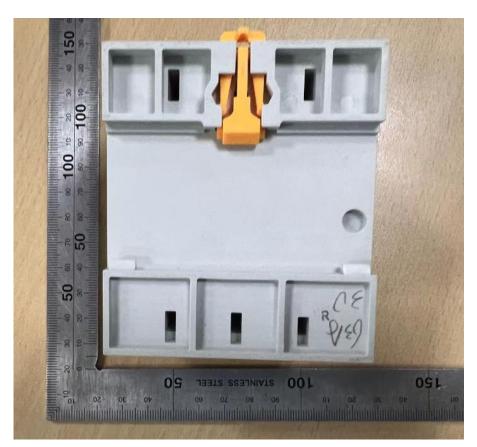








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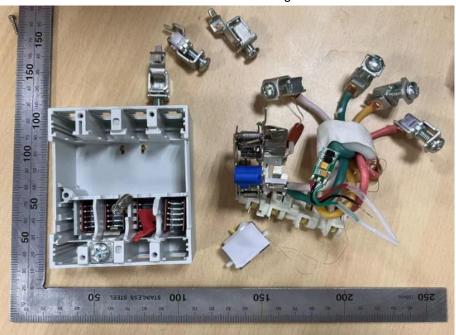






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END of TEST REPORT