



Test Report issued under the responsibility of:



TEST REPORT IEC 61008-1 Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) Part 1: General rules	
Report Number.....:	3317036.50
Date of issue	2020-08-19
Total number of pages	154
Name of Testing Laboratory preparing the Report	DEKRA Testing Services (Zhejiang) Co., Ltd.
Applicant's name	GACIA Electrical Appliance Co., Ltd.
Address	No.1 Nanxijiang Road, Daqiao Industrial Zone, Beibaixiang Town, Yueqing, 325603 Zhejiang, China
Test specification:	
Standard	IEC 61008-1:2010 (Third Edition) +A1:2012+A2:2013 used in conjunction with IEC 61008-2-1:1990 (First Edition) or IEC 61008-2-2:1990 (First Edition)
Test procedure.....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No.:	IEC61008_1H
Test Report Form(s) Originator.....:	OVE
Master TRF	Dated 2015-11
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General disclaimer:

The test results presented in this report relate only to the object tested.

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Test item description	Residual current operated circuit-breakers without integral overcurrent protection (RCCB)
Trade Mark	GACIA
Manufacturer	GACIA Electrical Appliance Co., Ltd. No.1 Nanxijiang Road, Daqiao Industrial Zone, Beibaixiang Town, Yueqing, 325603 Zhejiang, China
Model/Type reference	PR8HM, PR8HE, PR8NM, PR8NE, R80M, R80M-R, R80E
Ratings	1P+N, 3P+N Ue: 230 Vac for 1P+N, 400 Vac for 3P+N, 50 / 60 Hz In: 16, 25, 40, 63, 80, 100 A I _{Δn} : 100, 300 mA for all In, 30 mA for In: 16, 25, 40, 63 A Type A and AC I _{Δm} = I _m = 1 kA I _{nc} = I _{Δc} = 10 kA

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ CB Testing Laboratory:	DEKRA Testing Services (Zhejiang) Co., Ltd.	
Testing location/ address.....:	No.5, Changjiang Road, Great Bridge Industrial Park, North Baixiang, Wenzhou, Zhejiang, 325603, P.R. China	
☐ Associated CB Testing Laboratory:	N/A	
Testing location/ address.....:	N/A	
Tested by (name, function, signature).....:	Ray Zhu	
Approved by (name, function, signature)..:	Eric Wang	
☐ Testing procedure: CTF Stage 1:	N/A	
Testing location/ address.....:	N/A	
Tested by (name, function, signature).....:	N/A	
Approved by (name, function, signature)..:	N/A	
☐ Testing procedure: CTF Stage 2:	N/A	
Testing location/ address.....:	N/A	
Tested by (name + signature)	N/A	
Witnessed by (name, function, signature) :	N/A	
Approved by (name, function, signature)..:	N/A	
☐ Testing procedure: CTF Stage 3:	N/A	
☐ Testing procedure: CTF Stage 4:	N/A	
Testing location/ address.....:	N/A	
Tested by (name, function, signature).....:	N/A	
Witnessed by (name, function, signature) :	N/A	
Approved by (name, function, signature)..:	N/A	
Supervised by (name, function, signature) :	N/A	

Summary of testing:						
The following samples were chosen for the type test according to annex A of IEC / EN 61008-1.						
No.	Current	$I_{\Delta n}$	Number of poles	Test voltage	Type	Test sequence
1#	100 A	100 mA	1P+N	230 V	A	A1 (cl. 6, 9.4, 9.5 and 9.25)
2#	100 A	100 mA	3P+N	400 V	A	
3#	63 A	30 mA	1P+N	230 V	A	
4#	63 A	30 mA	3P+N	400 V	A	
5#-7#	100 A	100 mA	1P+N	230 V	A	A2
8#-10#	100 A	100 mA	3P+N	400 V	A	
11#-13#	63 A	30 mA	1P+N	230 V	A	
14#-16#	63 A	30 mA	3P+N	400 V	A	
17#-19#	100 A	100 mA	1P+N	230 V	A	B (cl. 9.7)
20#-22#	100 A	100 mA	3P+N	400 V	A	
23#-25#	63 A	30 mA	1P+N	230 V	A	
26#-28#	63 A	30 mA	3P+N	400 V	A	
29#-31#	100 A	100 mA	1P+N	230 V	A	D0+D1 (cl. 9.19)
32#-34#	100 A	100 mA	3P+N	400 V	A	
35#-37#	63 A	30 mA	1P+N	230 V	A	
38#-40#	63 A	30 mA	3P+N	400 V	A	
41#	100 A	100 mA	1P+N	230 V	AC	
42#	100 A	100 mA	3P+N	400 V	AC	
43#	63 A	30 mA	1P+N	230 V	AC	
44#	63 A	30 mA	3P+N	400 V	AC	
45#	63 A	300 mA	1P+N	230 V	A	D0
46#-48#	100 A	100 mA	1P+N	230 V	A	E
49#-51#	100 A	100 mA	3P+N	400 V	A	
52#-54#	63 A	30 mA	1P+N	230 V	A	
55#-57#	63 A	30 mA	3P+N	400 V	A	

Notes:

1. This report is based on and shall be read in conjunction with test reports no. 3305104.50 issued on 2013-11-22 and 3302524.50 issued on 2012-06-13.
2. This report is issued due to that:
 - The address of applicant / manufacturer / factory is changed to "No.1 Nanxijiang Road, Daqiao Industrial Zone, Beibaixiang Town, Yueqing, 325603 Zhejiang, China".
 - A1: 2012, A2: 2013 of IEC 61008-1:2010 and A1: 2014, A2: 2014, A11: 2015 and A12: 2017 of EN 61008-1:2012 are considered.
 - The above tests were carried out to verify the compliance.
 - The colour of the marking, test device and operation means was changed from orange back to blue, which is identical in test report 3302524.50.
 - Type references PR8HM, PR8HE, PR8NM, PR8NE, R80M, R80M-R and R80E are identical except marking. All tests conducted on PR8HM are deemed to cover the others.

Testing locations:

All the tests were conducted in:

DEKRA Testing Services (Zhejiang) Co., Ltd.

No.5, Changjiang Road, Great Bridge Industrial Park, North Baixiang,
Wenzhou, Zhejiang, 325603, P.R. China

Summary of compliance with National Differences

European standard deviation is considered, RCCB complies with the requirement, and test result refers to annex 1 of this report.

☒ **The product fulfils the requirements of**

IEC 61008-1:2010 + A1:2012 + A2:2013,

IEC 61008-2-1:1990

EN 61008-1:2012 + A1:2014 + A2:2014 + A11:2015 + A12:2017,

EN 61008-2-1:1994 + A11:1998

Copy of marking plate



1P+N



1P+N

Copy of marking plate



3P+N



3P+N

Test item particulars	Residual current operated circuit-breakers without integral overcurrent protection (RCCB)
Classification of RCCBs functionally dependent on the line voltage.....	No
Opening automatically in case of failure of the line voltage	/
- reclosing automatically when the line voltage is restored	/
- not reclosing automatically when the line voltage is restored	/
Not opening automatically in case of failure of the line voltage.....	/
- able to trip in a hazardous situation arising on failure of line voltage	/
- not able to trip in a hazardous situation arising on failure of line voltage	/
Type of RCCB	
- type AC	Yes
- type A	Yes
- independent of the line voltage.....	Yes
- dependent on the line voltage	No
- without time delay	Yes
- with time delay: type S	No
- enclosed.....	No
- unenclosed.....	Yes
- IP number	IP20
- for fixed installation	Yes
- for mobile installation	No
Number of poles.....	1P+N, 3P+N
Ambient air temperature (°C).....	-25 °C to 40 °C
Method of mounting.....	Flush type
Method of connection	The connections of which are not associated with the mechanical mounting
Rated residual operating current (A)	100, 300 mA for all In, 30 mA for In: 16, 25, 40, 63 A
Rated current (A).....	16, 25, 40, 63, 80, 100 A
Rated voltage (V)	230 Vac for 1P+N, 400 Vac for 3P+N
Rated impulse withstand voltage (U _{imp})	4 kV
Nature of supply	AC
Rated frequency (Hz)	50 / 60 Hz

Rated making and breaking capacity (A)	1 kA
Rated residual making and breaking capacity (A)	1 kA
Rated conditional short-circuit current (A)	10 kA
Rated conditional residual short-circuit current (A)...	10 kA
Type of terminal	Pillar terminal for copper conductors
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.....	2020-05
Date (s) of performance of tests	2020-05
General remarks:	
"(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.	
Throughout this report a ☒ comma / ☐ point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : GACIA Electrical Appliance Co., Ltd. No.1 Nanxijiang Road, Daqiao Industrial Zone, Beibaixiang Town, Yueqing, 325603 Zhejiang, China	
General product information:	
The technical data of the RCCB is listed on page 8 and page 9 of this report. The grid distance "a": 50 mm.	

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE A1 (1 sample)	PR8HM, 100 A, 100 mA, 1P+N, type A 1#	--
6.	Marking		P
	a) manufacturer's name or trademark	GACIA	P
	b) type designation, catalogue number or serial number	PR8HM	P
	c) rated voltage(s) (V)	230 V~	P
	d) rated frequency (Hz)	50 / 60 Hz	P
	e) rated current (A)	100 A	P
	f) rated residual operating current (A)	100 mA	P
	h) rated making and breaking capacity (A)	1000 A	P
	j) degree of protection		N/A
	k) position of use		N/A
	l) rated residual making and breaking capacity (A)	Same as Im	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	T	P
	p) wiring diagram		P
	q) operating characteristic		P
	Marking on the RCCB itself or on nameplate or nameplates attached to the RCCB and located so that for small devices at least e), f), o) and q) (only for type A) are legible when the RCCB is installed :		P
	Joule integral withstand capacity (A ² s)	As per Table 18 of the standard	P
	Peak current withstand capacity (A)	As per Table 18 of the standard	P
	Time delay when opening in case of failure of the line voltage (s)		N/A
	Open position indicated by "0" and closed position by "I"	O / I	P
	For push-buttons the OFF push-button shall either be red or marked with "0"		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If necessary to distinguish between supply and load terminals they shall be clearly marked :		N/A
	Terminals for neutral conductor marked by "N"		P
	Terminals for protective conductor marked by [symbol IEC 417-5019 a]		N/A
	Marking indelible, easy legible and not on removable parts		P
9.3	Test: 15 s with water, 15 s with hexane		P
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		P
	- no markings		P
	For non-universal terminals:		N/A
	- terminals for rigid-solid conductors only, marked by the letters "s" or "sol"		N/A
	- terminals for rigid (solid and stranded) conductors only, marked by the letter "r"		N/A
	marking on the RCCB or if the space available is not sufficient, on the smallest package unit or in technical information		N/A
8.1.4	Screws, current-carrying parts and connections		P
8.1.4.1	Connections withstand mechanical stresses occurring in normal use		P
	Screws for mounting the RCCB are not of thread-cutting type		P
9.4	Screws and nuts which are operated when mounting and connecting comply with the test of 9.4		P
	Torque test:		P
	- torque (Nm); 5/10 times; diameter (mm) :	2,5 Nm, 5 times, Ø 6 mm	P
	- torque (Nm); 5/10 times; diameter (mm) :		N/A
	- torque (Nm); 5/10 times; diameter (mm) :		N/A
8.1.4.2	Screws with a thread of insulating material operated when mounting the RCCB: correct introduction ensured		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.4.3	Electrical connections: contact pressure not transmitted through insulating material unless there is sufficient resilience in the metallic parts		P
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		P
	- an alloy 58% copper for parts worked cold		N/A
	- an alloy 50% copper for other parts		N/A
	- other metal		N/A
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.25).		P
	The requirements of this subclause do not apply to: contacts, magnetic circuits, heater elements, bimetals, shunts, parts of electronic devices or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
8.1.5	Terminals for external conductors		P
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		P
	9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on RCCBs included in the standard		N/A
	by the tests of Annexes J, K or L		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	Torque test:		P
	- torque (Nm); diameter (mm) : 2,5 Nm, Ø 6 mm		P
	- torque (Nm); diameter (mm) :		N/A
	- torque (Nm); diameter (mm) :		N/A
	- max. cross-sectional area (mm ²) : Stranded: 35 mm ²		--
9.5.1	Pull test:		P
	Terminal shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.	Rigid (solid or stranded) and flexible	--

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Min. cross-section solid / stranded / flexible (mm ²).....:	Solid: 1 mm ² Stranded: 1,5 mm ² Flexible: 1 mm ²	--
	Max. cross-section solid / stranded / flexible (mm ²).....:	Solid: 6 mm ² Stranded: 35 mm ² Flexible: 25 mm ²	--
	Torque ² / ₃ (Nm).....:	1,66 Nm	--
	Pull for 1 min solid / stranded / flexible (N).....:	Solid max sect. 6 mm ² Pull 60 N for 1 min Stranded max sect. 35 mm ² Pull 100 N for 1 min Flexible max sect. 25 mm ² Pull 100 N for 1 min Solid min sect. 1 mm ² Pull 50 N for 1 min Stranded min sect. 1,5 mm ² Pull 50 N for 1 min Flexible min sect. 1 mm ² Pull 50 N for 1 min	P
	During the test no noticeable move of conductor		P
9.5.2	Torque test:		P
	- torque (2/3) (Nm)	1,66 Nm	--
	- min. cross-sectional area (mm ²)	Stranded: 35 mm ²	--
	- max. cross-sectional area (mm ²)	Solid: 1 mm ²	--
	The conductor shows no damage		P
	Terminals have not worked loose and no damage		P
9.5.3	Terminals fitted with the largest cross-section area specified in Table 6, for stranded and/or flexible copper conductor.	Stranded: 35 mm ² Flexible: 25 mm ²	--
	Max. cross-section stranded (mm ²)	35 mm ²	--
	Max. cross-section flexible (mm ²).....:	25 mm ²	--
	Torque ² / ₃ (Nm).....:	1,66 Nm	--
	After the test no strand of conductor escaped outside		P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.25	Test of resistance to rusting:	Connection terminal	--
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of ammonium chloride in water at 20°C±5°C		P
	- 10 min in a box containing air saturated with moisture at 20°C±5°C		P
	- 10 min at 100°C		P
	No sign of rust		P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE A1 (1 sample)	PR8HM, 100 A, 100 mA, 3P+N, type A	--
		2#	
6.	Marking		P
	a) manufacturer's name or trademark	GACIA	P
	b) type designation, catalogue number or serial number	PR8HM	P
	c) rated voltage(s) (V)	400 V~	P
	d) rated frequency (Hz)	50 / 60 Hz	P
	e) rated current (A)	100 A	P
	f) rated residual operating current (A)	100 mA	P
	h) rated making and breaking capacity (A)	1000 A	P
	j) degree of protection		N/A
	k) position of use		N/A
	l) rated residual making and breaking capacity (A)	Same as Im	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	T	P
	p) wiring diagram		P
	q) operating characteristic		P
	Marking on the RCCB itself or on nameplate or nameplates attached to the RCCB and located so that for small devices at least e), f), o) and q) (only for type A) are legible when the RCCB is installed :		P
	Joule integral withstand capacity (A ² s)	As per Table 18 of the standard	P
	Peak current withstand capacity (A)	As per Table 18 of the standard	P
	Time delay when opening in case of failure of the line voltage (s)		N/A
	Open position indicated by "0" and closed position by "I"	O / I	P
	For push-buttons the OFF push-button shall either be red or marked with "0"		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If necessary to distinguish between supply and load terminals they shall be clearly marked :		N/A
	Terminals for neutral conductor marked by "N"		P
	Terminals for protective conductor marked by [symbol IEC 417-5019 a]		N/A
	Marking indelible, easy legible and not on removable parts		P
9.3	Test: 15 s with water, 15 s with hexane		P
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		P
	- no markings		P
	For non-universal terminals:		N/A
	- terminals for rigid-solid conductors only, marked by the letters "s" or "sol"		N/A
	- terminals for rigid (solid and stranded) conductors only, marked by the letter "r"		N/A
	marking on the RCCB or if the space available is not sufficient, on the smallest package unit or in technical information		N/A
8.1.4	Screws, current-carrying parts and connections		P
8.1.4.1	Connections withstand mechanical stresses occurring in normal use		P
	Screws for mounting the RCCB are not of thread-cutting type		P
9.4	Screws and nuts which are operated when mounting and connecting comply with the test of 9.4		P
	Torque test:		P
	- torque (Nm); 5/10 times; diameter (mm) :	2,5 Nm, 5 times, Ø 6 mm	P
	- torque (Nm); 5/10 times; diameter (mm) :		N/A
	- torque (Nm); 5/10 times; diameter (mm) :		N/A
8.1.4.2	Screws with a thread of insulating material operated when mounting the RCCB: correct introduction ensured		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.4.3	Electrical connections: contact pressure not transmitted through insulating material unless there is sufficient resilience in the metallic parts		P
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		P
	- an alloy 58% copper for parts worked cold		N/A
	- an alloy 50% copper for other parts		N/A
	- other metal		N/A
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.25).		P
	The requirements of this subclause do not apply to: contacts, magnetic circuits, heater elements, bimetals, shunts, parts of electronic devices or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
8.1.5	Terminals for external conductors		P
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		P
	9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on RCCBs included in the standard		N/A
	by the tests of Annexes J, K or L		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	Torque test:		P
	- torque (Nm); diameter (mm) : 2,5 Nm, Ø 6 mm		P
	- torque (Nm); diameter (mm) :		N/A
	- torque (Nm); diameter (mm) :		N/A
	- max. cross-sectional area (mm ²) : Stranded: 35 mm ²		--
9.5.1	Pull test:		P
	Terminal shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.	Rigid (solid or stranded) and flexible	--

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Min. cross-section solid / stranded / flexible (mm ²).....:	Solid: 1 mm ² Stranded: 1,5 mm ² Flexible: 1 mm ²	--
	Max. cross-section solid / stranded / flexible (mm ²).....:	Solid: 6 mm ² Stranded: 35 mm ² Flexible: 25 mm ²	--
	Torque ² / ₃ (Nm).....:	1,66 Nm	--
	Pull for 1 min solid / stranded / flexible (N).....:	Solid max sect. 6 mm ² Pull 60 N for 1 min Stranded max sect. 35 mm ² Pull 100 N for 1 min Flexible max sect. 25 mm ² Pull 100 N for 1 min Solid min sect. 1 mm ² Pull 50 N for 1 min Stranded min sect. 1,5 mm ² Pull 50 N for 1 min Flexible min sect. 1 mm ² Pull 50 N for 1 min	P
	During the test no noticeable move of conductor		P
9.5.2	Torque test:		P
	- torque (2/3) (Nm)	1,66 Nm	--
	- min. cross-sectional area (mm ²)	Stranded: 35 mm ²	--
	- max. cross-sectional area (mm ²)	Solid: 1 mm ²	--
	The conductor shows no damage		P
	Terminals have not worked loose and no damage		P
9.5.3	Terminals fitted with the largest cross-section area specified in Table 6, for stranded and/or flexible copper conductor.	Stranded: 35 mm ² Flexible: 25 mm ²	--
	Max. cross-section stranded (mm ²)	35 mm ²	--
	Max. cross-section flexible (mm ²).....:	25 mm ²	--
	Torque ² / ₃ (Nm).....:	1,66 Nm	--
	After the test no strand of conductor escaped outside		P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.25	Test of resistance to rusting:	Connection terminal	--
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of ammonium chloride in water at 20°C±5°C		P
	- 10 min in a box containing air saturated with moisture at 20°C±5°C		P
	- 10 min at 100°C		P
	No sign of rust		P

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE A1 (1 sample)	PR8HM, 63 A, 30 mA, 1P+N, type A 3#	--
6.	Marking		P
	a) manufacturer's name or trademark	GACIA	P
	b) type designation, catalogue number or serial number	PR8HM	P
	c) rated voltage(s) (V)	230 V~	P
	d) rated frequency (Hz)	50 / 60 Hz	P
	e) rated current (A)	63 A	P
	f) rated residual operating current (A)	30 mA	P
	h) rated making and breaking capacity (A)	1000 A	P
	j) degree of protection		N/A
	k) position of use		N/A
	l) rated residual making and breaking capacity (A)	Same as Im	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	T	P
	p) wiring diagram		P
	q) operating characteristic		P
	Marking on the RCCB itself or on nameplate or nameplates attached to the RCCB and located so that for small devices at least e), f), o) and q) (only for type A) are legible when the RCCB is installed :		P
	Joule integral withstand capacity (A ² s)	As per Table 18 of the standard	P
	Peak current withstand capacity (A)	As per Table 18 of the standard	P
	Time delay when opening in case of failure of the line voltage (s)		N/A
	Open position indicated by "0" and closed position by "I"	O / I	P
	For push-buttons the OFF push-button shall either be red or marked with "0"		N/A

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If necessary to distinguish between supply and load terminals they shall be clearly marked :		N/A
	Terminals for neutral conductor marked by "N"		P
	Terminals for protective conductor marked by [symbol IEC 417-5019 a]		N/A
	Marking indelible, easy legible and not on removable parts		P
9.3	Test: 15 s with water, 15 s with hexane		P
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		P
	- no markings		P
	For non-universal terminals:		N/A
	- terminals for rigid-solid conductors only, marked by the letters "s" or "sol"		N/A
	- terminals for rigid (solid and stranded) conductors only, marked by the letter "r"		N/A
	marking on the RCCB or if the space available is not sufficient, on the smallest package unit or in technical information		N/A
8.1.4	Screws, current-carrying parts and connections		P
8.1.4.1	Connections withstand mechanical stresses occurring in normal use		P
	Screws for mounting the RCCB are not of thread-cutting type		P
9.4	Screws and nuts which are operated when mounting and connecting comply with the test of 9.4		P
	Torque test:		P
	- torque (Nm); 5/10 times; diameter (mm) :	2,5 Nm, 5 times, Ø 6 mm	P
	- torque (Nm); 5/10 times; diameter (mm) :		N/A
	- torque (Nm); 5/10 times; diameter (mm) :		N/A
8.1.4.2	Screws with a thread of insulating material operated when mounting the RCCB: correct introduction ensured		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.4.3	Electrical connections: contact pressure not transmitted through insulating material unless there is sufficient resilience in the metallic parts		P
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		P
	- an alloy 58% copper for parts worked cold		N/A
	- an alloy 50% copper for other parts		N/A
	- other metal		N/A
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.25).		P
	The requirements of this subclause do not apply to: contacts, magnetic circuits, heater elements, bimetals, shunts, parts of electronic devices or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
8.1.5	Terminals for external conductors		P
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		P
	9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on RCCBs included in the standard		N/A
	by the tests of Annexes J, K or L		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	Torque test:		P
	- torque (Nm); diameter (mm) : 2,5 Nm, Ø 6 mm		P
	- torque (Nm); diameter (mm) :		N/A
	- torque (Nm); diameter (mm) :		N/A
	- max. cross-sectional area (mm ²) : Stranded: 25 mm ²		--
9.5.1	Pull test:		P
	Terminal shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.	Rigid (solid or stranded) and flexible	--

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Clause	Requirement + Test	Result - Remark	Verdict
	Min. cross-section solid / stranded / flexible (mm ²).....:	Solid: 1 mm ² Stranded: 1,5 mm ² Flexible: 1 mm ²	--
	Max. cross-section solid / stranded / flexible (mm ²).....:	Solid: 6 mm ² Stranded: 25 mm ² Flexible: 16 mm ²	--
	Torque ² / ₃ (Nm).....:	1,66 Nm	--
	Pull for 1 min solid / stranded / flexible (N).....:	Solid max sect. 6 mm ² Pull 60 N for 1 min Stranded max sect. 25 mm ² Pull 100 N for 1 min Flexible max sect. 16 mm ² Pull 90 N for 1 min Solid min sect. 1 mm ² Pull 50 N for 1 min Stranded min sect. 1,5 mm ² Pull 50 N for 1 min Flexible min sect. 1 mm ² Pull 50 N for 1 min	P
	During the test no noticeable move of conductor		P
9.5.2	Torque test:		P
	- torque (2/3) (Nm)	1,66 Nm	--
	- min. cross-sectional area (mm ²)	Stranded: 25 mm ²	--
	- max. cross-sectional area (mm ²)	Solid: 1 mm ²	--
	The conductor shows no damage		P
	Terminals have not worked loose and no damage		P
9.5.3	Terminals fitted with the largest cross-section area specified in Table 6, for stranded and/or flexible copper conductor.	Stranded: 25 mm ² Flexible: 16 mm ²	--
	Max. cross-section stranded (mm ²)	25 mm ²	--
	Max. cross-section flexible (mm ²).....:	16 mm ²	--
	Torque ² / ₃ (Nm).....:	1,66 Nm	--
	After the test no strand of conductor escaped outside		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.25	Test of resistance to rusting:	Connection terminal	--
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of ammonium chloride in water at 20°C±5°C		P
	- 10 min in a box containing air saturated with moisture at 20°C±5°C		P
	- 10 min at 100°C		P
	No sign of rust		P

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE A1 (1 sample)	PR8HM, 63 A, 30 mA, 3P+N, type A	--
		4#	
6.	Marking		P
	a) manufacturer's name or trademark	GACIA	P
	b) type designation, catalogue number or serial number	PR8HM	P
	c) rated voltage(s) (V)	400 V~	P
	d) rated frequency (Hz)	50 / 60 Hz	P
	e) rated current (A)	63 A	P
	f) rated residual operating current (A)	30 mA	P
	h) rated making and breaking capacity (A)	1000 A	P
	j) degree of protection		N/A
	k) position of use		N/A
	l) rated residual making and breaking capacity (A)	Same as Im	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	T	P
	p) wiring diagram		P
	q) operating characteristic		P
	Marking on the RCCB itself or on nameplate or nameplates attached to the RCCB and located so that for small devices at least e), f), o) and q) (only for type A) are legible when the RCCB is installed :		P
	Joule integral withstand capacity (A ² s)	As per Table 18 of the standard	P
	Peak current withstand capacity (A)	As per Table 18 of the standard	P
	Time delay when opening in case of failure of the line voltage (s)		N/A
	Open position indicated by "0" and closed position by "I"	O / I	P
	For push-buttons the OFF push-button shall either be red or marked with "0"		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If necessary to distinguish between supply and load terminals they shall be clearly marked :		N/A
	Terminals for neutral conductor marked by "N"		P
	Terminals for protective conductor marked by [symbol IEC 417-5019 a]		N/A
	Marking indelible, easy legible and not on removable parts		P
9.3	Test: 15 s with water, 15 s with hexane		P
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		P
	- no markings		P
	For non-universal terminals:		N/A
	- terminals for rigid-solid conductors only, marked by the letters "s" or "sol"		N/A
	- terminals for rigid (solid and stranded) conductors only, marked by the letter "r"		N/A
	marking on the RCCB or if the space available is not sufficient, on the smallest package unit or in technical information		N/A
8.1.4	Screws, current-carrying parts and connections		P
8.1.4.1	Connections withstand mechanical stresses occurring in normal use		P
	Screws for mounting the RCCB are not of thread-cutting type		P
9.4	Screws and nuts which are operated when mounting and connecting comply with the test of 9.4		P
	Torque test:		P
	- torque (Nm); 5/10 times; diameter (mm) :	2,5 Nm, 5 times, Ø 6 mm	P
	- torque (Nm); 5/10 times; diameter (mm) :		N/A
	- torque (Nm); 5/10 times; diameter (mm) :		N/A
8.1.4.2	Screws with a thread of insulating material operated when mounting the RCCB: correct introduction ensured		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.4.3	Electrical connections: contact pressure not transmitted through insulating material unless there is sufficient resilience in the metallic parts		P
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		P
	- an alloy 58% copper for parts worked cold		N/A
	- an alloy 50% copper for other parts		N/A
	- other metal		N/A
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.25).		P
	The requirements of this subclause do not apply to: contacts, magnetic circuits, heater elements, bimetals, shunts, parts of electronic devices or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
8.1.5	Terminals for external conductors		P
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		P
	9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on RCCBs included in the standard		N/A
	by the tests of Annexes J, K or L		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	Torque test:		P
	- torque (Nm); diameter (mm) : 2,5 Nm, Ø 6 mm		P
	- torque (Nm); diameter (mm) :		N/A
	- torque (Nm); diameter (mm) :		N/A
	- max. cross-sectional area (mm ²) : Stranded: 25 mm ²		--
9.5.1	Pull test:		P
	Terminal shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.	Rigid (solid or stranded) and flexible	--

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Clause	Requirement + Test	Result - Remark	Verdict
	Min. cross-section solid / stranded / flexible (mm ²).....:	Solid: 1 mm ² Stranded: 1,5 mm ² Flexible: 1 mm ²	--
	Max. cross-section solid / stranded / flexible (mm ²).....:	Solid: 6 mm ² Stranded: 25 mm ² Flexible: 16 mm ²	--
	Torque ² / ₃ (Nm).....:	1,66 Nm	--
	Pull for 1 min solid / stranded / flexible (N).....:	Solid max sect. 6 mm ² Pull 60 N for 1 min Stranded max sect. 25 mm ² Pull 100 N for 1 min Flexible max sect. 16 mm ² Pull 90 N for 1 min Solid min sect. 1 mm ² Pull 50 N for 1 min Stranded min sect. 1,5 mm ² Pull 50 N for 1 min Flexible min sect. 1 mm ² Pull 50 N for 1 min	P
	During the test no noticeable move of conductor		P
9.5.2	Torque test:		P
	- torque (2/3) (Nm)	1,66 Nm	--
	- min. cross-sectional area (mm ²)	Stranded: 25 mm ²	--
	- max. cross-sectional area (mm ²)	Solid: 1 mm ²	--
	The conductor shows no damage		P
	Terminals have not worked loose and no damage		P
9.5.3	Terminals fitted with the largest cross-section area specified in Table 6, for stranded and/or flexible copper conductor.	Stranded: 25 mm ² Flexible: 16 mm ²	--
	Max. cross-section stranded (mm ²)	25 mm ²	--
	Max. cross-section flexible (mm ²).....:	16 mm ²	--
	Torque ² / ₃ (Nm).....:	1,66 Nm	--
	After the test no strand of conductor escaped outside		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.25	Test of resistance to rusting:	Connection terminal	--
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of ammonium chloride in water at 20°C±5°C		P
	- 10 min in a box containing air saturated with moisture at 20°C±5°C		P
	- 10 min at 100°C		P
	No sign of rust		P

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE A₂ (3 samples)	PR8HM, 100 A, 100 mA, 1P+N, type A	--
		5#-7#	
8.10	Resistance to abnormal heat and fire		P
	External parts of insulating material shall not be liable to ignite and to spread fire under fault or overload conditions		P
9.14	Glow wire test		P
	Test performed on a complete RCCB		P
	Glow-wire test: (960 + 15) °C for external parts of insulating material retaining current-carrying parts or parts of the protective circuit in position	Housing body	P
	Glow-wire test: (650 + 10) °C for all other external parts insulating material	Switch knob	P
	No visible flames, no sustained glowing, or	Switch knob	P
	flames and glowing extinguish within 30 s after removal	Housing body 5#: 0,5 s 6#: 0,5 s 7#: 1,0 s	P
	No ignition of tissue paper or scorching of the pinewood board		P

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE A₂ (3 samples)	PR8HM, 100 A, 100 mA, 3P+N, type A	--
		8#-10#	
8.10	Resistance to abnormal heat and fire		P
	External parts of insulating material shall not be liable to ignite and to spread fire under fault or overload conditions		P
9.14	Glow wire test		P
	Test performed on a complete RCCB		P
	Glow-wire test: (960 + 15) °C for external parts of insulating material retaining current-carrying parts or parts of the protective circuit in position	Housing body	P
	Glow-wire test: (650 + 10) °C for all other external parts insulating material	Switch knob	P
	No visible flames, no sustained glowing, or	Switch knob	P
	flames and glowing extinguish within 30 s after removal	Housing body 8#: 1,0 s 9#: 0,5 s 10#: 0,5 s	P
	No ignition of tissue paper or scorching of the pinewood board		P

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE A₂ (3 samples)	PR8HM, 63 A, 30 mA, 1P+N, type A	--
		11#-13#	
8.10	Resistance to abnormal heat and fire		P
	External parts of insulating material shall not be liable to ignite and to spread fire under fault or overload conditions		P
9.14	Glow wire test		P
	Test performed on a complete RCCB		P
	Glow-wire test: (960 + 15) °C for external parts of insulating material retaining current-carrying parts or parts of the protective circuit in position	Housing body	P
	Glow-wire test: (650 + 10) °C for all other external parts insulating material	Switch knob	P
	No visible flames, no sustained glowing, or	Switch knob	P
	flames and glowing extinguish within 30 s after removal	Housing body 11#: 0,5 s 12#: 1,0 s 13#: 1,0 s	P
	No ignition of tissue paper or scorching of the pinewood board		P

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE A₂ (3 samples)	PR8HM, 63 A, 30 mA, 3P+N, type A	--
		14#-16#	
8.10	Resistance to abnormal heat and fire		P
	External parts of insulating material shall not be liable to ignite and to spread fire under fault or overload conditions		P
9.14	Glow wire test		P
	Test performed on a complete RCCB		P
	Glow-wire test: (960 + 15) °C for external parts of insulating material retaining current-carrying parts or parts of the protective circuit in position	Housing body	P
	Glow-wire test: (650 + 10) °C for all other external parts insulating material	Switch knob	P
	No visible flames, no sustained glowing, or	Switch knob	P
	flames and glowing extinguish within 30 s after removal	Housing body 14#: 1,0 s 15#: 0,5 s 16#: 0,5 s	P
	No ignition of tissue paper or scorching of the pinewood board		P

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE B (3 samples)	PR8HM, 100 A, 100 mA, 1P+N, type A 17#-19#	--
8	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		--
8.3	Dielectric properties and isolating capability		--
	RCCBs have adequate dielectric properties		P
9.7	Test of dielectric properties and isolating capability		--
9.7.7.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		P
	These tests are not preceded by the humidity treatment described in 9.7.1.		P
	The test is carried out on an RCCB fixed on a metal support		P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		P
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		P
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A
	rated impulse withstand voltage [kV]:	4 kV	--
	see level of test laboratory [m]	Sea level	--
	test voltage (acc. Table 22) [kV]:	6,2 kV	--
9.7.7.4.2	RCCB in open position (contacts in open position)		P
	The impulses are applied between:		P
	the line terminals connected together and the load terminals connected together		P
9.7.7.4.3	RCCB in closed position		P
	All components bridging the basic insulation disconnected	No components bridging the basic insulation	N/A
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		P

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Clause	Requirement + Test	Result - Remark	Verdict
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		P
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		P
	no disruptive discharges during the test		P
9.7.7.5	VERIFICATION OF THE BEHAVIOUR OF COMPONENTS BRIDGING THE BASIC INSULATION		--
	A new RCCB sample is tested		N/A
	Test only performed on RCCBs, where components bridging the basic insulation have been disconnected during the impulse voltage test of 9.7.7.4.3		N/A
	test voltage $1200V+U_0$		N/A
	The voltage is applied during 5s between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the prospective conductor(s), if any		N/A
	after test, no component bridging the basic insulation should show a visible alteration.		N/A
	Then, the equipment is connected to the mains acc. manufacturer's instruction		N/A
	The RCCB shall trip with a test current of $1,25 I_{\Delta N}$		--
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1 .		N/A
9.7.1	RESISTANCE TO HUMIDITY		P
9.7.1.1	Parts which can be removed without a tool are removed, spring lids kept open, inlet openings are left open and if knock-outs one is opened.		P
9.7.1.2	Test conditions: 48 h in humidity cabinet RH = 91% to 95% T = 20 to 30°C $\pm 1^\circ\text{C}$	T = 25,0 °C RH = 95%	--
9.7.1.4	The samples show no damage		P

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:	17# [MΩ]	18# [MΩ]	19# [MΩ]	--
	a) between the terminals which are electrically connected together when the RCCB is in the closed position..... $\geq 2 \text{ M}\Omega$	500	500	500	P
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected) $\geq 2 \text{ M}\Omega$	500	500	500	P
	c) with the RCCB in the closed position, between all poles connected together and the frame, including a metal foil in contact with the outer surface of the housing of insulation material but with the terminal area kept free $\geq 5 \text{ M}\Omega$	500	500	500	P
	d) between metal parts of the mechanism and the frame $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material $\geq 5 \text{ M}\Omega$				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				P
	b) electronic components disconnected 2000 V				P
	c) electronic components disconnected 2000 V				P
	d) electronic components disconnected 2000 V				N/A
	e) electronic components disconnected 2500 V				N/A
	No flashover or breakdown				P
9.7.4	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:				--
	1) between all auxiliary circuits and the frame (MΩ)..... $\geq 2 \text{ M}\Omega$				N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together (MΩ) $\geq 2 \text{ M}\Omega$				N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:				--

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

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

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Clause	Requirement + Test					Result - Remark					Verdict
				$I_{\Delta N}$	$2 I_{\Delta N}$	$5 I_{\Delta N}$	$5 I_{\Delta N}$ or 0,25A a)	5A-200A, b)	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non-actuating times	--
	a) value to be decided by the manufacturer for this test						500 mA				--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2.3	Verification of the correct operation in case of sudden appearance of residual current by closing S_1 , (S_2 and RCCB in closed position):						17#	18#	19#		P
	Maximum break times at:						[ms]	[ms]	[ms]		--
	- $I_{\Delta N}$ (ms)						22 ms	22 ms	23 ms		P
	- $2 I_{\Delta N}$ (ms)						19 ms	16 ms	16 ms		P
	- $5 I_{\Delta N}$ or (ms)						11 ms	15 ms	12 ms		P
	- 0,25 A (ms)										N/A
	- 500A (ms)						7 ms	9 ms	9 ms		P
	No value exceeds the relevant specified limiting value										P
	Additional test for type S:										--
	Minimum non-actuating time at:										--
	- $I_{\Delta N}$ (ms).....0,13 s										N/A
	- $2 I_{\Delta N}$ (ms).....0,06 s										N/A
	- $5 I_{\Delta N}$ (ms).....0,05 s										N/A
	- 500 A (ms).....0,04 s										N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE B (3 samples)	PR8HM, 100 A, 100 mA, 3P+N, type A 20#-22#	--
8	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		--
8.3	Dielectric properties and isolating capability		--
	RCCBs have adequate dielectric properties		P
9.7	Test of dielectric properties and isolating capability		--
9.7.7.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		P
	These tests are not preceded by the humidity treatment described in 9.7.1.		P
	The test is carried out on an RCCB fixed on a metal support		P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		P
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		P
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A
	rated impulse withstand voltage [kV]:	4 kV	--
	see level of test laboratory [m]	Sea level	--
	test voltage (acc. Table 22) [kV]:	6,2 kV	--
9.7.7.4.2	RCCB in open position (contacts in open position)		P
	The impulses are applied between:		P
	the line terminals connected together and the load terminals connected together		P
9.7.7.4.3	RCCB in closed position		P
	All components bridging the basic insulation disconnected	No components bridging the basic insulation	N/A
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		P

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Clause	Requirement + Test	Result - Remark	Verdict
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		P
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		P
	no disruptive discharges during the test		P
9.7.7.5	VERIFICATION OF THE BEHAVIOUR OF COMPONENTS BRIDGING THE BASIC INSULATION		--
	A new RCCB sample is tested		N/A
	Test only performed on RCCBs, where components bridging the basic insulation have been disconnected during the impulse voltage test of 9.7.7.4.3		N/A
	test voltage $1200V+U_0$		N/A
	The voltage is applied during 5s between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the prospective conductor(s), if any		N/A
	after test, no component bridging the basic insulation should show a visible alteration.		N/A
	Then, the equipment is connected to the mains acc. manufacturer's instruction		N/A
	The RCCB shall trip with a test current of $1,25 I_{\Delta N}$		--
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1 .		N/A
9.7.1	RESISTANCE TO HUMIDITY		P
9.7.1.1	Parts which can be removed without a tool are removed, spring lids kept open, inlet openings are left open and if knock-outs one is opened.		P
9.7.1.2	Test conditions: 48 h in humidity cabinet RH = 91% to 95% T = 20 to 30°C $\pm 1^\circ\text{C}$	T = 25,0 °C RH = 95%	--
9.7.1.4	The samples show no damage		P

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:	20# [MΩ]	21# [MΩ]	22# [MΩ]	--
	a) between the terminals which are electrically connected together when the RCCB is in the closed position..... $\geq 2 \text{ M}\Omega$	500	500	500	P
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected) $\geq 2 \text{ M}\Omega$	500	500	500	P
	c) with the RCCB in the closed position, between all poles connected together and the frame, including a metal foil in contact with the outer surface of the housing of insulation material but with the terminal area kept free $\geq 5 \text{ M}\Omega$	500	500	500	P
	d) between metal parts of the mechanism and the frame $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material $\geq 5 \text{ M}\Omega$				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				P
	b) electronic components disconnected 2000 V				P
	c) electronic components disconnected 2000 V				P
	d) electronic components disconnected 2000 V				N/A
	e) electronic components disconnected 2500 V				N/A
	No flashover or breakdown				P
9.7.4	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:				--
	1) between all auxiliary circuits and the frame (MΩ) $\geq 2 \text{ M}\Omega$				N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together (MΩ) $\geq 2 \text{ M}\Omega$				N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:				--

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

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

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Clause	Requirement + Test					Result - Remark					Verdict
				$I_{\Delta N}$	$2 I_{\Delta N}$	$5 I_{\Delta N}$	$5 I_{\Delta N}$ or 0,25A a)	5A- 200A, b)	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non- actuati ng times	--
	a) value to be decided by the manufacturer for this test						500 mA				--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2.3	Verification of the correct operation in case of sudden appearance of residual current by closing S_1 , (S_2 and RCCB in closed position):						20#	21#	22#		P
	Maximum break times at:						[ms]	[ms]	[ms]		--
	- $I_{\Delta N}$ (ms)						26 ms	23 ms	19 ms		P
	- $2 I_{\Delta N}$ (ms)						19 ms	19 ms	12 ms		P
	- $5 I_{\Delta N}$ or (ms)						15 ms	16 ms	12 ms		P
	- 0,25 A (ms)										N/A
	- 500A (ms)						9 ms	11 ms	9 ms		P
	No value exceeds the relevant specified limiting value										P
	Additional test for type S:										--
	Minimum non-actuating time at:										--
	- $I_{\Delta N}$ (ms).....0,13 s										N/A
	- $2 I_{\Delta N}$ (ms).....0,06 s										N/A
	- $5 I_{\Delta N}$ (ms).....0,05 s										N/A
	- 500 A (ms).....0,04 s										N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE B (3 samples)	PR8HM, 63 A, 30 mA, 1P+N, type A 23#-25#	--
8	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		--
8.3	Dielectric properties and isolating capability		--
	RCCBs have adequate dielectric properties		P
9.7	Test of dielectric properties and isolating capability		--
9.7.7.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		P
	These tests are not preceded by the humidity treatment described in 9.7.1.		P
	The test is carried out on an RCCB fixed on a metal support		P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		P
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		P
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A
	rated impulse withstand voltage [kV]:	4 kV	--
	see level of test laboratory [m]	Sea level	--
	test voltage (acc. Table 22) [kV]:	6,2 kV	--
9.7.7.4.2	RCCB in open position (contacts in open position)		P
	The impulses are applied between:		P
	the line terminals connected together and the load terminals connected together		P
9.7.7.4.3	RCCB in closed position		P
	All components bridging the basic insulation disconnected	No components bridging the basic insulation	N/A
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		P

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Clause	Requirement + Test	Result - Remark	Verdict
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		P
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		P
	no disruptive discharges during the test		P
9.7.7.5	VERIFICATION OF THE BEHAVIOUR OF COMPONENTS BRIDGING THE BASIC INSULATION		--
	A new RCCB sample is tested		N/A
	Test only performed on RCCBs, where components bridging the basic insulation have been disconnected during the impulse voltage test of 9.7.7.4.3		N/A
	test voltage $1200V+U_0$		N/A
	The voltage is applied during 5s between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the prospective conductor(s), if any		N/A
	after test, no component bridging the basic insulation should show a visible alteration.		N/A
	Then, the equipment is connected to the mains acc. manufacturer's instruction		N/A
	The RCCB shall trip with a test current of $1,25 I_{\Delta N}$		--
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1 .		N/A
9.7.1	RESISTANCE TO HUMIDITY		P
9.7.1.1	Parts which can be removed without a tool are removed, spring lids kept open, inlet openings are left open and if knock-outs one is opened.		P
9.7.1.2	Test conditions: 48 h in humidity cabinet RH = 91% to 95% T = 20 to 30°C $\pm 1^\circ\text{C}$	T = 25,0 °C RH = 95%	--
9.7.1.4	The samples show no damage		P

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:	23# [MΩ]	24# [MΩ]	25# [MΩ]	--
	a) between the terminals which are electrically connected together when the RCCB is in the closed position..... $\geq 2 \text{ M}\Omega$	500	500	500	P
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected) $\geq 2 \text{ M}\Omega$	500	500	500	P
	c) with the RCCB in the closed position, between all poles connected together and the frame, including a metal foil in contact with the outer surface of the housing of insulation material but with the terminal area kept free $\geq 5 \text{ M}\Omega$	500	500	500	P
	d) between metal parts of the mechanism and the frame $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material $\geq 5 \text{ M}\Omega$				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				P
	b) electronic components disconnected 2000 V				P
	c) electronic components disconnected 2000 V				P
	d) electronic components disconnected 2000 V				N/A
	e) electronic components disconnected 2500 V				N/A
	No flashover or breakdown				P
9.7.4	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:				--
	1) between all auxiliary circuits and the frame (MΩ) $\geq 2 \text{ M}\Omega$				N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together (MΩ) $\geq 2 \text{ M}\Omega$				N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:				--

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

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

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Clause	Requirement + Test					Result - Remark					Verdict
				$I_{\Delta N}$	$2 I_{\Delta N}$	$5 I_{\Delta N}$	$5 I_{\Delta N}$ or 0,25A a)	5A- 200A, b)	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non- actuati ng times	--
	a) value to be decided by the manufacturer for this test						150 mA				--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2.3	Verification of the correct operation in case of sudden appearance of residual current by closing S_1 , (S_2 and RCCB in closed position):						23#	24#	25#		P
	Maximum break times at:						[ms]	[ms]	[ms]		--
	- $I_{\Delta N}$ (ms)						26 ms	22 ms	26 ms		P
	- $2 I_{\Delta N}$ (ms)						19 ms	18 ms	19 ms		P
	- $5 I_{\Delta N}$ or (ms)						15 ms	12 ms	16 ms		P
	- 0,25 A (ms)										N/A
	- 500A (ms)						10 ms	12 ms	10 ms		P
	No value exceeds the relevant specified limiting value										P
	Additional test for type S:										--
	Minimum non-actuating time at:										--
	- $I_{\Delta N}$ (ms).....0,13 s										N/A
	- $2 I_{\Delta N}$ (ms).....0,06 s										N/A
	- $5 I_{\Delta N}$ (ms).....0,05 s										N/A
	- 500 A (ms).....0,04 s										N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE B (3 samples)	PR8HM, 63 A, 30 mA, 3P+N, type A 26#-28#	--
8	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		--
8.3	Dielectric properties and isolating capability		--
	RCCBs have adequate dielectric properties		P
9.7	Test of dielectric properties and isolating capability		--
9.7.7.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		P
	These tests are not preceded by the humidity treatment described in 9.7.1.		P
	The test is carried out on an RCCB fixed on a metal support		P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		P
	The shape of the impulses is adjusted with the RCCB under test connected to the impulse generator.		P
	For RCCBs with incorporated surge arresters that cannot be disconnected, the shape of the impulses is adjusted without connection of the RCCB to the impulse generator.		N/A
	rated impulse withstand voltage [kV]:	4 kV	--
	see level of test laboratory [m]	Sea level	--
	test voltage (acc. Table 22) [kV]:	6,2 kV	--
9.7.7.4.2	RCCB in open position (contacts in open position)		P
	The impulses are applied between:		P
	the line terminals connected together and the load terminals connected together		P
9.7.7.4.3	RCCB in closed position		P
	All components bridging the basic insulation disconnected	No components bridging the basic insulation	N/A
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		P

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Clause	Requirement + Test	Result - Remark	Verdict
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB		P
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		P
	no disruptive discharges during the test		P
9.7.7.5	VERIFICATION OF THE BEHAVIOUR OF COMPONENTS BRIDGING THE BASIC INSULATION		--
	A new RCCB sample is tested		N/A
	Test only performed on RCCBs, where components bridging the basic insulation have been disconnected during the impulse voltage test of 9.7.7.4.3		N/A
	test voltage $1200V+U_0$		N/A
	The voltage is applied during 5s between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the prospective conductor(s), if any		N/A
	after test, no component bridging the basic insulation should show a visible alteration.		N/A
	Then, the equipment is connected to the mains acc. manufacturer's instruction		N/A
	The RCCB shall trip with a test current of $1,25 I_{\Delta N}$		--
	Test switch S_2 and RCCB in the closed position, test voltage established by closing the test switch S_1 .		N/A
9.7.1	RESISTANCE TO HUMIDITY		P
9.7.1.1	Parts which can be removed without a tool are removed, spring lids kept open, inlet openings are left open and if knock-outs one is opened.		P
9.7.1.2	Test conditions: 48 h in humidity cabinet RH = 91% to 95% T = 20 to 30°C $\pm 1^\circ\text{C}$	T = 25,0 °C RH = 95%	--
9.7.1.4	The samples show no damage		P

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:	26# [MΩ]	27# [MΩ]	28# [MΩ]	--
	a) between the terminals which are electrically connected together when the RCCB is in the closed position..... $\geq 2 \text{ M}\Omega$	500	500	500	P
	b) between each pole and the others connected together (electronic components, connected between current path being disconnected) $\geq 2 \text{ M}\Omega$	500	500	500	P
	c) with the RCCB in the closed position, between all poles connected together and the frame, including a metal foil in contact with the outer surface of the housing of insulation material but with the terminal area kept free $\geq 5 \text{ M}\Omega$	500	500	500	P
	d) between metal parts of the mechanism and the frame..... $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material $\geq 5 \text{ M}\Omega$				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				P
	b) electronic components disconnected..... 2000 V				P
	c) electronic components disconnected..... 2000 V				P
	d) electronic components disconnected..... 2000 V				N/A
	e) electronic components disconnected..... 2500 V				N/A
	No flashover or breakdown				P
9.7.4	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:				--
	1) between all auxiliary circuits and the frame (MΩ)..... $\geq 2 \text{ M}\Omega$				N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together (MΩ) $\geq 2 \text{ M}\Omega$				N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:				--

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

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

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Clause	Requirement + Test					Result - Remark					Verdict
				$I_{\Delta N}$	$2 I_{\Delta N}$	$5 I_{\Delta N}$	$5 I_{\Delta N}$ or 0,25A a)	5A- 200A, b)	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non- actuati ng times	--
	a) value to be decided by the manufacturer for this test						150 mA				--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2.3	Verification of the correct operation in case of sudden appearance of residual current by closing S_1 , (S_2 and RCCB in closed position):						26#	27#	28#		P
	Maximum break times at:						[ms]	[ms]	[ms]		--
	- $I_{\Delta N}$ (ms)						22 ms	12 ms	22 ms		P
	- $2 I_{\Delta N}$ (ms)						19 ms	16 ms	19 ms		P
	- $5 I_{\Delta N}$ or (ms)						15 ms	15 ms	15 ms		P
	- 0,25 A (ms)										N/A
	- 500A (ms)						11 ms	12 ms	9 ms		P
	No value exceeds the relevant specified limiting value										P
	Additional test for type S:										--
	Minimum non-actuating time at:										--
	- $I_{\Delta N}$ (ms).....0,13 s										N/A
	- $2 I_{\Delta N}$ (ms).....0,06 s										N/A
	- $5 I_{\Delta N}$ (ms).....0,05 s										N/A
	- 500 A (ms).....0,04 s										N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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

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Clause	Requirement + Test		Result - Remark	
	TEST SEQUENCE D (3 samples)		PR8HM, 100 A, 100 mA, 1P+N, type A	--
			29#-31#	
8.14	Behaviour of RCCBs in case of current surges caused by impulse voltages			P
9.19	Verification of behaviour of RCCBs in case of current surges caused by impulse voltages			P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)			P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:			P
	- peak value: 200 A + 10/0%			P
	- virtual front time: 0,5 µs ± 30%			P
	- period of the following oscillatory wave: 10 µs ± 20%			P
	- each successive reverse peak: about 60% of the preceding peak			P
	The polarity shall be inverted after every two applications			P
	The interval between two consecutive applications shall be about 30 s			P
	During the test the RCCB shall not trip	No trip		P
	- maximum break time (ms) at: $I_{\Delta n}$	29#	30#	31#
		23 ms	22 ms	18 ms
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)			P
9.19.2.1	Test conditions			P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:			P
	Peak value: 3000A +10/-0%			P
	Virtual front time: 0,8µs ± 20%			P
	Virtual time of half value: 20µs ± 20%			P
	Peak of reverse current: less than 30 % of peak value			P
	The polarity shall be inverted after every two applications			P

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Clause	Requirement + Test	Result - Remark			Verdict
	The interval between two consecutive applications shall be about 30 s				P
9.19.2.2	S-type: During the test the RCCB shall not trip				N/A
	- break time (ms) at $I_{\Delta n}$				N/A
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed	No trip			P
	- maximum break time (ms) at $I_{\Delta n}$	29#	30#	31#	P
		23 ms	21 ms	18 ms	

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Clause	Requirement + Test		Result - Remark	
	TEST SEQUENCE D (3 samples)		PR8HM, 100 A, 100 mA, 3P+N, type A	--
			32#-34#	
8.14	Behaviour of RCCBs in case of current surges caused by impulse voltages			P
9.19	Verification of behaviour of RCCBs in case of current surges caused by impulse voltages			P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)			P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:			P
	- peak value: 200 A + 10/0%			P
	- virtual front time: 0,5 µs ± 30%			P
	- period of the following oscillatory wave: 10 µs ± 20%			P
	- each successive reverse peak: about 60% of the preceding peak			P
	The polarity shall be inverted after every two applications			P
	The interval between two consecutive applications shall be about 30 s			P
	During the test the RCCB shall not trip	No trip		P
	- maximum break time (ms) at: $I_{\Delta n}$	32#	33#	P
		19 ms	18 ms	
		34#	22 ms	
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)			P
9.19.2.1	Test conditions			P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:			P
	Peak value: 3000A +10/-0%			P
	Virtual front time: 0,8µs ± 20%			P
	Virtual time of half value: 20µs ± 20%			P
	Peak of reverse current: less than 30 % of peak value			P
	The polarity shall be inverted after every two applications			P

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Clause	Requirement + Test	Result - Remark			Verdict
	The interval between two consecutive applications shall be about 30 s				P
9.19.2.2	S-type: During the test the RCCB shall not trip				N/A
	- break time (ms) at $I_{\Delta n}$				N/A
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed	No trip			P
	- maximum break time (ms) at $I_{\Delta n}$	32#	33#	34#	P
		23 ms	19 ms	22 ms	

IEC 61008-1					
Clause	Requirement + Test		Result - Remark		Verdict
	TEST SEQUENCE D (3 samples)		PR8HM, 63 A, 30 mA, 1P+N, type A		--
			35#-37#		
8.14	Behaviour of RCCBs in case of current surges caused by impulse voltages				P
9.19	Verification of behaviour of RCCBs in case of current surges caused by impulse voltages				P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)				P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:				P
	- peak value: 200 A + 10/0%				P
	- virtual front time: 0,5 µs ± 30%				P
	- period of the following oscillatory wave: 10 µs ± 20%				P
	- each successive reverse peak: about 60% of the preceding peak				P
	The polarity shall be inverted after every two applications				P
	The interval between two consecutive applications shall be about 30 s				P
	During the test the RCCB shall not trip :	No trip			P
	- maximum break time (ms) at: I _{Δn} :	35#	36#	37#	P
		19 ms	18 ms	19 ms	
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)				P
9.19.2.1	Test conditions				P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:				P
	Peak value: 3000A +10/-0%				P
	Virtual front time: 0,8µs ± 20%				P
	Virtual time of half value: 20µs ± 20%				P
	Peak of reverse current: less than 30 % of peak value				P
	The polarity shall be inverted after every two applications				P

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Clause	Requirement + Test	Result - Remark			Verdict
	The interval between two consecutive applications shall be about 30 s				P
9.19.2.2	S-type: During the test the RCCB shall not trip				N/A
	- break time (ms) at $I_{\Delta n}$				N/A
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed	No trip			P
	- maximum break time (ms) at $I_{\Delta n}$	35#	36#	37#	P
		22 ms	23 ms	23 ms	

IEC 61008-1					
Clause	Requirement + Test		Result - Remark		Verdict
	TEST SEQUENCE D (3 samples)		PR8HM, 63 A, 30 mA, 3P+N, type A		--
			38#-40#		
8.14	Behaviour of RCCBs in case of current surges caused by impulse voltages				P
9.19	Verification of behaviour of RCCBs in case of current surges caused by impulse voltages				P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)				P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:				P
	- peak value: 200 A + 10/0%				P
	- virtual front time: 0,5 µs ± 30%				P
	- period of the following oscillatory wave: 10 µs ± 20%				P
	- each successive reverse peak: about 60% of the preceding peak				P
	The polarity shall be inverted after every two applications				P
	The interval between two consecutive applications shall be about 30 s				P
	During the test the RCCB shall not trip :		No trip		P
	- maximum break time (ms) at: I _{Δn} :		38#	39#	P
			22 ms	22 ms	
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)				P
9.19.2.1	Test conditions				P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:				P
	Peak value: 3000A +10/-0%				P
	Virtual front time: 0,8µs ± 20%				P
	Virtual time of half value: 20µs ± 20%				P
	Peak of reverse current: less than 30 % of peak value				P
	The polarity shall be inverted after every two applications				P

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Clause	Requirement + Test	Result - Remark			Verdict
	The interval between two consecutive applications shall be about 30 s				P
9.19.2.2	S-type: During the test the RCCB shall not trip				N/A
	- break time (ms) at $I_{\Delta n}$				N/A
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed	No trip			P
	- maximum break time (ms) at $I_{\Delta n}$	38#	39#	40#	P
		26 ms	23 ms	22 ms	

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE D (3 samples)	PR8HM, 100 A, 100 mA, 1P+N, type AC	--
		41#	
8.14	Behaviour of RCCBs in case of current surges caused by impulse voltages		P
9.19	Verification of behaviour of RCCBs in case of current surges caused by impulse voltages		P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	- peak value: 200 A + 10/0%		P
	- virtual front time: 0,5 µs ± 30%		P
	- period of the following oscillatory wave: 10 µs ± 20%		P
	- each successive reverse peak: about 60% of the preceding peak		P
	The polarity shall be inverted after every two applications		P
	The interval between two consecutive applications shall be about 30 s		P
	During the test the RCCB shall not trip	No trip	P
	- maximum break time (ms) at: $I_{\Delta n}$	30 ms	P
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)		P
9.19.2.1	Test conditions		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	Peak value: 3000A +10/-0%		P
	Virtual front time: 0,8µs ± 20%		P
	Virtual time of half value: 20µs ± 20%		P
	Peak of reverse current: less than 30 % of peak value		P
	The polarity shall be inverted after every two applications		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The interval between two consecutive applications shall be about 30 s		P
9.19.2.2	S-type: During the test the RCCB shall not trip		N/A
	- break time (ms) at $I_{\Delta n}$:		N/A
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed	No trip	P
	- maximum break time (ms) at $I_{\Delta n}$:	30 ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE D (3 samples)	PR8HM, 100 A, 100 mA, 3P+N, type AC	--
		42#	
8.14	Behaviour of RCCBs in case of current surges caused by impulse voltages		P
9.19	Verification of behaviour of RCCBs in case of current surges caused by impulse voltages		P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	- peak value: 200 A + 10/0%		P
	- virtual front time: 0,5 µs ± 30%		P
	- period of the following oscillatory wave: 10 µs ± 20%		P
	- each successive reverse peak: about 60% of the preceding peak		P
	The polarity shall be inverted after every two applications		P
	The interval between two consecutive applications shall be about 30 s		P
	During the test the RCCB shall not trip	No trip	P
	- maximum break time (ms) at: $I_{\Delta n}$	26 ms	P
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)		P
9.19.2.1	Test conditions		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	Peak value: 3000A +10/-0%		P
	Virtual front time: 0,8µs ± 20%		P
	Virtual time of half value: 20µs ± 20%		P
	Peak of reverse current: less than 30 % of peak value		P
	The polarity shall be inverted after every two applications		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The interval between two consecutive applications shall be about 30 s		P
9.19.2.2	S-type: During the test the RCCB shall not trip		N/A
	- break time (ms) at $I_{\Delta n}$		N/A
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed	No trip	P
	- maximum break time (ms) at $I_{\Delta n}$	19 ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE D (3 samples)	PR8HM, 63 A, 30 mA, 1P+N, type AC	--
		43#	
8.14	Behaviour of RCCBs in case of current surges caused by impulse voltages		P
9.19	Verification of behaviour of RCCBs in case of current surges caused by impulse voltages		P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	- peak value: 200 A + 10/0%		P
	- virtual front time: 0,5 µs ± 30%		P
	- period of the following oscillatory wave: 10 µs ± 20%		P
	- each successive reverse peak: about 60% of the preceding peak		P
	The polarity shall be inverted after every two applications		P
	The interval between two consecutive applications shall be about 30 s		P
	During the test the RCCB shall not trip	No trip	P
	- maximum break time (ms) at: $I_{\Delta n}$	30 ms	P
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)		P
9.19.2.1	Test conditions		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	Peak value: 3000A +10/-0%		P
	Virtual front time: 0,8µs ± 20%		P
	Virtual time of half value: 20µs ± 20%		P
	Peak of reverse current: less than 30 % of peak value		P
	The polarity shall be inverted after every two applications		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The interval between two consecutive applications shall be about 30 s		P
9.19.2.2	S-type: During the test the RCCB shall not trip		N/A
	- break time (ms) at $I_{\Delta n}$:		N/A
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed	No trip	P
	- maximum break time (ms) at $I_{\Delta n}$:	26 ms	P

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE D (3 samples)	PR8HM, 63 A, 30 mA, 3P+N, type AC	--
		44#	
8.14	Behaviour of RCCBs in case of current surges caused by impulse voltages		P
9.19	Verification of behaviour of RCCBs in case of current surges caused by impulse voltages		P
9.19.1	Current surge test for all RCCBs (0,5µs/100kHz ring wave test)		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	- peak value: 200 A + 10/0%		P
	- virtual front time: 0,5 µs ± 30%		P
	- period of the following oscillatory wave: 10 µs ± 20%		P
	- each successive reverse peak: about 60% of the preceding peak		P
	The polarity shall be inverted after every two applications		P
	The interval between two consecutive applications shall be about 30 s		P
	During the test the RCCB shall not trip	No trip	P
	- maximum break time (ms) at: $I_{\Delta n}$	22 ms	P
9.19.2	Verification of behaviour at surge currents up to 3000A (8/20µs surge current)		P
9.19.2.1	Test conditions		P
	One pole of the RCCB is submitted to 10 applications of a surge current according to the following requirements:		P
	Peak value: 3000A +10/-0%		P
	Virtual front time: 0,8µs ± 20%		P
	Virtual time of half value: 20µs ± 20%		P
	Peak of reverse current: less than 30 % of peak value		P
	The polarity shall be inverted after every two applications		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The interval between two consecutive applications shall be about 30 s		P
9.19.2.2	S-type: During the test the RCCB shall not trip		N/A
	- break time (ms) at $I_{\Delta n}$:		N/A
9.19.2.3	General type: During the test the RCCB may trip. After any tripping the RCCB shall be re-closed	No trip	P
	- maximum break time (ms) at $I_{\Delta n}$:	23 ms	P

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Clause	Requirement + Test						Result - Remark				Verdict
	TEST SEQUENCE D0 (1 sample)						PR8HM, 63 A, 300 mA, 1P+N, type A				--
							45#				
	Tests “D0”										P
8.5	Operating characteristics										P
	For multiple settings of $I_{\Delta n}$ tests are made for each setting										N/A
9.9.1	RCCB installed as for normal use, test circuit according to fig. 4										P
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V) :										N/A
	Type	I_N A	$I_{\Delta n}$ A	Standard values of break time and non-actuating time at a residual current equal to						--	
				$I_{\Delta n}$	$2 I_{\Delta n}$	$5 I_{\Delta n}$	$5 I_{\Delta n}$ or 0,25A a)	5A-200A, b)	500A		--
	General	Any value	<0,03	0,3	0,15	--	0,04	0,04	0,04	Max. break times	--
			0,03	0,3	0,15	--	0,04	0,04	0,04		--
			>0,03	0,3	0,15	0,04	--	0,04	0,04		--
	S	≥ 25	>0,03	0,5	0,2	0,15	--	0,15	0,15	Max. break times	--
				0,13	0,06	0,05	--	0,04	0,04	Min. non-actuating times	--
	a) value to be decided by the manufacturer for this test						1500 mA				--
	b) The test are only made during verification of the correct operation as mentioned in 9.9.2.4										--
9.9.2	Off-load tests made at a temperature of 20 ± 5 °C						21,5 °C - 23,8 °C				P
9.9.2.1	Verification of the correct operation in case of a steady increase residual current:										P
	- steady increase from $0,2 I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA) :						60 mA - 300 mA				P

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Clause	Requirement + Test		Result - Remark	Verdict
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA) ..	50 Hz	213,3 - 215,6 mA	P
		60 Hz	213,0 - 217,1 mA	
9.9.2.2	Verification of the correct operation at closing on residual current			P
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1, maximum break time (ms)	50 Hz	21 ms	P
		60 Hz	18 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			P
	- maximum break time (ms) at: $I_{\Delta n}$	50 Hz	26 ms	P
		60 Hz	19 ms	
	- maximum break time (ms) at: $2 I_{\Delta n}$	50 Hz	16 ms	P
		60 Hz	15 ms	
	- maximum break time (ms) at: $5 I_{\Delta n}$	50 Hz	19 ms	P
		60 Hz	16 ms	
	- maximum break time (ms) at: 0,25 A (if applicable)			N/A
	- maximum break time (ms) at: 500 A	50 Hz	13 ms	P
		60 Hz	12 ms	
	No value exceeds the relevant specified limiting value			P
9.9.2.4	Verification of the correct operation in case of sudden appearance of residual current of values between $5 I_{\Delta n}$ and 500A (among the following list: 5A, 10A, 20A, 50A, 100A, 200A):			P
	The test switch S1 and the RCCB being in the closed position, the residual current is suddenly established by closing the test switch S2			P
	- maximum break time (ms) at: <u>5</u> A (value 1 between 5A and 200A)	50 Hz	19 ms	P
		60 Hz	15 ms	
	- maximum break time (ms) at: <u>100</u> A (value 2 between 5A and 200A)	50 Hz	5 ms	P
		60 Hz	4 ms	

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Clause	Requirement + Test	Result - Remark	Verdict
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		N/A
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: $2 I_{\Delta n}$; 0,06 s :		N/A
	- minimum non-actuating time (ms) at: $5 I_{\Delta n}$; 0,05 s :		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s :		N/A
	No tripping during tests		N/A
9.9.2.6	a) Tests repeated at a temperature of -5 °C:		P
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		P
	- maximum break time (ms) at: $I_{\Delta n}$ 50 Hz 19 ms		P
	60 Hz 22 ms		
	- maximum break time (ms) at: $2 I_{\Delta n}$ 50 Hz 17 ms		P
	60 Hz 15 ms		
	- maximum break time (ms) at: $5 I_{\Delta n}$ 50 Hz 16 ms		P
	60 Hz 19 ms		
	- maximum break time (ms) at: 0,25 A (if applicable) :		N/A
	- maximum break time (ms) at: 500 A 50 Hz 13 ms		P
	60 Hz 16 ms		
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		N/A
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: $2 I_{\Delta n}$; 0,06 s :		N/A

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Clause	Requirement + Test		Result - Remark	Verdict
	- minimum non-actuating time (ms) at: $5 I_{\Delta n}$; 0,05 s :			N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s :			N/A
	No tripping during the tests			N/A
9.9.2.5	Tests repeated with the RCCB loaded with rated current:			P
	- test current (A): I_n , the pole under test and one other pole loaded with rated current, the current being established shortly before the test :		63 A	--
	- cross-sectional area (mm ²) :		16 mm ²	--
	- the RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1, maximum break time (ms)	50 Hz	20 ms	P
	The switch S1 and the RCCB are in closed position. The residual current is established by closing S2 :			P
	- maximum break time (ms) at: $I_{\Delta n}$	50 Hz	22 ms	P
	- maximum break time (ms) at: $2 I_{\Delta n}$	50 Hz	20 ms	P
	- maximum break time (ms) at: $5 I_{\Delta n}$	50 Hz	15 ms	P
	- maximum break time (ms) at: 0,25 A (if applicable) :			N/A
	- maximum break time (ms) at: 500 A	50 Hz	19 ms	P
	No value exceeds the relevant specified limiting value			P
	Additional test for type S:			N/A
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :			N/A
	- minimum non-actuating time (ms) at: $2 I_{\Delta n}$; 0,06 s :			N/A
	- minimum non-actuating time (ms) at: $5 I_{\Delta n}$; 0,05 s :			N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s :			N/A
	No tripping during the tests			N/A

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Clause	Requirement + Test		Verdict
9.9.2.6	b) Tests repeated with the RCCB loaded with rated current:		P
	- test current (A): I_n at a temperature of +40 °C: until steady state conditions are reached	63 A	--
	- cross-sectional area (mm ²)	16 mm ²	--
	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		P
	- maximum break time (ms) at: $I_{\Delta n}$	50 Hz 15 ms	P
		60 Hz 22 ms	
	- maximum break time (ms) at: $2 I_{\Delta n}$	50 Hz 22 ms	P
		60 Hz 15 ms	
	- maximum break time (ms) at: $5 I_{\Delta n}$	50 Hz 19 ms	P
		60 Hz 12 ms	
	- maximum break time (ms) at: 0,25 A (if applicable)		N/A
	- maximum break time (ms) at: 500 A	50 Hz 15 ms	P
		60 Hz 13 ms	
	No value exceeds the relevant specified limiting value		P
	Additional test for type S:		N/A
	- minimum non-actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non-actuating time (ms) at: $2 I_{\Delta n}$ for 0,06 s		N/A
	- minimum non-actuating time (ms) at: $5 I_{\Delta n}$; 0,05 s		N/A
	- minimum non-actuating time (ms) at: 500 A; 0,04 s		N/A
	No tripping during the tests		N/A
8.15	Behaviour of RCCBs in case of earth fault currents comprising a d.c. component		P
9.9.3	Additional verification of correct operation at residual currents with d.c. components for RCCBs type A		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.9.3.1	RCCB installed as for normal use, test circuits according to fig. 5 and 6		P
9.9.4	For RCCBs functionally dependent on line voltage, each test is made at 1,1 and 0,85 times the rated line voltage; voltage (V)		N/A
9.9.3.1	Verification of the correct operation in case of a continuous rise of the residual pulsating direct current (see Table 20):		P
	- steady increase from zero to: $1,4 I_{\Delta n}$ for $I_{\Delta n} > 0,01 \text{ A}$ with $1,4 I_{\Delta n} / 30 \text{ A/s (mA)}$		P
	- steady increase from zero to: $2 I_{\Delta n}$ for $I_{\Delta n} \leq 0,01 \text{ A}$ with $2 I_{\Delta n} / 30 \text{ A/s (mA)}$		N/A
	- angle $\alpha = 0^\circ (+/-)$	50 Hz 200,0 - 343,7 mA 60 Hz 203,2 - 315,6 mA	P
	- angle $\alpha = 90^\circ (+/-)$	50 Hz 173,9 - 382,5 mA 60 Hz 240,1 - 311,0 mA	P
	- angle $\alpha = 135^\circ (+/-)$	50 Hz 222 - 325 mA 60 Hz 241 - 308 mA	P
	No value exceeds the relevant specified limiting values		P
9.9.3.2	Verification of the correct operation in case of suddenly appearing residual pulsating direct currents by closing S2 (angle $\alpha = 0^\circ$)		P
	RCCBs with $I_{\Delta n} < 0,03 \text{ A}$:		N/A
	- maximum break time (ms) at: $2 I_{\Delta n} (+/-)$		N/A
	- maximum break time (ms) at: $4 I_{\Delta n} (+/-)$		N/A
	- maximum break time (ms) at: $0,5 \text{ A rms (+/-)}$..		N/A
	- maximum break time (ms) at: 350 A rms (+/-) . :		N/A
	RCCBs with $I_{\Delta n} = 0,03 \text{ A}$:		N/A
	- maximum break time (ms) at: $1,4 I_{\Delta n} (+/-)$		N/A
	- maximum break time (ms) at: $2,8 I_{\Delta n} (+/-)$		N/A
	- maximum break time (ms) at: $0,35 \text{ A rms (+/-)}$:		N/A
	- maximum break time (ms) at: 350 A rms (+/-) . :		N/A
	RCCBs with $I_{\Delta n} > 0,03 \text{ A}$:		P

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Clause	Requirement + Test		Result - Remark	Verdict
	- maximum break time (ms) at: 1,4 $I_{\Delta n}$ (+/-)	50 Hz	48 ms	P
		60 Hz	40 ms	
	- maximum break time (ms) at: 2,8 $I_{\Delta n}$ (+/-)	50 Hz	19 ms	P
		60 Hz	23 ms	
	- maximum break time (ms) at: 7 $I_{\Delta n}$ (+/-)	50 Hz	18 ms	P
		60 Hz	15 ms	
	- maximum break time (ms) at: 350 A rms (+/-)	50 Hz	11 ms	P
		60 Hz	12 ms	
	No value exceeds the relevant specified limiting value			P
9.9.3.3	Verification of the correct operation with the pole under test and one other pole loaded with rated current			P
	- test current (A): I_n		63 A	--
	- steady increase from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n} > 0,01$ A with 1,4 $I_{\Delta n}$ /30 A/s (mA)			P
	- steady increase from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq 0,01$ A with 2 $I_{\Delta n}$ /30 A/s (mA)			N/A
	- angle $\alpha = 0^\circ$ (+/-)	50 Hz	204,6 - 340,1 mA	P
		60 Hz	248,6 - 319,6 mA	
	- angle $\alpha = 90^\circ$ (+/-)	50 Hz	173,0 - 275,1 mA	P
		60 Hz	241,0 - 304,0 mA	
	- angle $\alpha = 135^\circ$ (+/-)	50 Hz	233 - 332 mA	P
		60 Hz	241 - 312 mA	
	No value exceeds the relevant specified limiting values			P
9.9.3.4	Verification of the correct operation in case of residual pulsating d.c. currents with angle $\alpha = 0^\circ$ superimposed by smooth direct current of 0,006 A:			P
	- steady increase of pulsating d.c. current from zero to: 1,4 $I_{\Delta n}$ for $I_{\Delta n} > 0,01$ A with 1,4 $I_{\Delta n}$ /30 A/s (mA)			P
	- steady increase of pulsating d.c. current from zero to: 2 $I_{\Delta n}$ for $I_{\Delta n} \leq 0,01$ A with 2 $I_{\Delta n}$ /30 A/s (mA)			N/A

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Clause	Requirement + Test		Result - Remark	Verdict
	- angle $\alpha = 0^\circ$ (+/-) (+/- 6 mA)	50 Hz	Max: 334,8 mA	P
		60 Hz	Max: 310,0 mA	
	No value exceeds the relevant specified limiting values			P

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE E (3 samples)	PR8HM, 100 A, 100 mA, 1P+N, type A 46#-48#	--
8.7	Performance at short-circuit currents		P
9.11.2.4	a) Verification of the coordination between the RCCB and the SCPD		P
	Verification of the coordination at the rated conditional short-circuit current (A): Inc	10 kA	--
	Test circuit according to figure	7	--
	Point of test circuit which is directly earthed	Load-star	--
	Grid distance "a" (mm)	50 mm	--
	Silver wire diameter (mm) or fuse	Silver wire: 0,9 mm	--
	Test voltage 1,05 Un	243,5 V	--
	Prospective current (A)	10 kA	--
	Prospective current obtained (A)	10,1 kA	--
	Power factor	0,45 - 0,5	--
	Power factor obtained	0,46	--
	Point of initiation: $45^\circ \pm 5^\circ$		P
	Verification of I^2t (kA ² s) and I_p (kA) prior to testing ($\geq 1x \leq 1,1x$ values of table 15), RCCB replaced by a connection having negligible impedance	I_p : 6,2 kA I^2t : 52,4 kA ² s	P
	Test sequence: O-t-CO		P
	I_p (kA); I^2t (kA ² s)	Max measured value: 46#: 6,3 kA, 50,5 kA ² s 47#: 6,2 kA, 51,9 kA ² s 48#: 6,2 kA, 51,2 kA ² s	P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA	46#	47#	48#	P
		253 V			
	L	< 1,4 mA	< 1,4 mA	< 1,4 mA	P
	N	< 1,4 mA	< 1,4 mA	< 1,4 mA	
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a)	460 V			P
	b)	460 V			P
	c)	460 V			P
	d)				N/A
	e)				N/A
	No flashover or breakdown	No flashover and breakdown			P
	Making and breaking In at Un	231,1 V, 101,8 A			P
	The RCCB shall trip with a test current of 1,25 I _{Δn}	46#	47#	48#	P
	(ms)	18 ms	21 ms	26 ms	
	The polyethylene sheet shows no holes				P
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage				N/A
9.17.1	Limiting value of the line voltage (Ux):				N/A
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) :				N/A
	- all values less than 0,85 times the rated voltage (V)				N/A
	- tripping test at test voltage (V) with I _{Δn} and operating according to Table 1 (ms)				N/A
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below Ux				N/A
9.17.2	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with rated voltage, and the line voltage then switched off				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Time (ms) interval between switching off and opening of the main contacts		N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		N/A
	RCCB connected according to fig. 4 at the rated voltage (U_n)		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from $0,2 I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA)		N/A
	- tripping current between $I_{\Delta n0}$ and $I_{\Delta n}$ (mA)		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms)		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		N/A
	- maximum break time (ms) at: $I_{\Delta n}$		N/A
	- maximum break time (ms) at: $2 I_{\Delta n}$		N/A
	- maximum break time (ms) at: $5 I_{\Delta n}$		N/A
	- maximum break time (ms) at: 0,25 A (if applicable)		N/A
	- maximum break time (ms) at: 500 A		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		N/A
	- minimum non actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A

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

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Clause	Requirement + Test	Result - Remark			Verdict
9.11.2.2	Verification of the rated making and breaking capacity (A): I_m	1000 A			--
	Test circuit according to figure	7			--
	Residual operating current (A): $10 I_{\Delta n}$	1000 mA			--
	Point of test circuit which is directly earthed	Load-star			--
	Grid distance "a" (mm)	35 mm			--
	Test voltage $1,05 U_n$	243,2 V			--
	Prospective current (A)	1000 A			--
	Prospective current obtained (A)	1015 A			--
	Power factor	0,93 - 0,98			--
	Power factor obtained	0,94			--
	Point of initiation: $45^\circ \pm 5^\circ$				P
	Test sequence: CO-t-CO-t-CO				P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F				P
	After the tests no damage impairing further use				P
9.7.7.3	The leakage current flowing across the open contacts is measured at $1,1 U_n$ and shall not exceed 2mA	46#	47#	48#	P
		253 V			
		L < 1,4 mA	< 1,4 mA	< 1,4 mA	P
		N < 1,4 mA	< 1,4 mA	< 1,4 mA	
9.7.3	Dielectric strength test of the main circuit at test voltage of $2 U_n$ for 1 min:				P
	a)	460 V			P
	b)	460 V			P
	c)	460 V			P
	d)				N/A
	e)				N/A
	No flashover or breakdown				P
	Making and breaking I_n at U_n	231,7 V, 103,1 A			P
	The RCCB shall trip with a test current of $1,25 I_{\Delta n}$ (ms)	46#	47#	48#	P
		17 ms	29 ms	18 ms	
	The polyethylene sheet shows no holes				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage		N/A
9.17.1	Limiting value of the line voltage (U_x):		N/A
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) :		N/A
	- all values less than 0,85 times the rated voltage (V)		N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms)		N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below U_x		N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		N/A
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts		N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		N/A
	RCCB connected according to fig. 4 at the rated voltage (U_n)		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from $0,2 I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA)		N/A
	- tripping current between $I_{\Delta n0}$ and $I_{\Delta n}$ (mA)		N/A

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

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

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Clause	Requirement + Test	Result - Remark		
	TEST SEQUENCE E (3 samples)	PR8HM, 100 A, 100 mA, 3P+N, type A 49#-51#		
8.7	Performance at short-circuit currents			
9.11.2.4	a) Verification of the coordination between the RCCB and the SCPD			
	Verification of the coordination at the rated conditional short-circuit current (A): Inc	10 kA		
	Test circuit according to figure	7		
	Point of test circuit which is directly earthed	Load-star		
	Grid distance "a" (mm)	50 mm		
	Silver wire diameter (mm) or fuse	Silver wire: 0,9 mm		
	Test voltage 1,05 Un	426,7 V		
	Prospective current (A)	10 kA		
	Prospective current obtained (A)	10,1 kA		
	Power factor	0,45 - 0,5		
	Power factor obtained	0,49		
	Point of initiation: 45° ± 5°			
	Verification of I ² t (kA ² s) and I _p (kA) prior to testing ((≥1x ≤1,1x values of table 15), RCCB replaced by a connection having negligible impedance	I _p : 6,2 kA I ² t : 52,4 kA ² s		
	Test sequence: O-t-CO			
	I _p (kA); I ² t (kA ² s)	Max measured value: 49#: 6,5 kA, 52,1 kA ² s 50#: 6,3 kA, 52,3 kA ² s 51#: 6,3 kA, 50,6 kA ² s		
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F			
	After the tests no damage impairing further use			
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA	49#	50#	51#
		440 V		

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Clause	Requirement + Test		Result - Remark			Verdict
		L1	< 1,4 mA	< 1,4 mA	< 1,4 mA	P
		L2	< 1,4 mA	< 1,4 mA	< 1,4 mA	
		L3	< 1,4 mA	< 1,4 mA	< 1,4 mA	
		N	< 1,4 mA	< 1,4 mA	< 1,4 mA	
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:					P
	a)		800 V			P
	b)		800 V			P
	c)		800 V			P
	d)					N/A
	e)					N/A
	No flashover or breakdown		No flashover and breakdown			P
	Making and breaking In at Un		401,9 V, 101,3 A			P
	The RCCB shall trip with a test current of 1,25 I _{Δn} (ms)		49#	50#	51#	P
			31 ms	27 ms	23 ms	
	The polyethylene sheet shows no holes					P
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage					N/A
9.17.1	Limiting value of the line voltage (Ux):					N/A
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) :					N/A
	- all values less than 0,85 times the rated voltage (V)					N/A
	- tripping test at test voltage (V) with I _{Δn} and operating according to Table 1 (ms)					N/A
	No value exceeds the specified limiting values					N/A
	Not possible to close the apparatus by manual operating means below Ux					N/A
9.17.2	Verification of behaviour in case of failure of the line voltage					N/A
	RCCB supplied with rated voltage, and the line voltage then switched off					N/A
	Time (ms) interval between switching off and opening of the main contacts					N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		N/A
	RCCB connected according to fig. 4 at the rated voltage (U_n)		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from $0,2 I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA)		N/A
	- tripping current between $I_{\Delta n0}$ and $I_{\Delta n}$ (mA)		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms)		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		N/A
	- maximum break time (ms) at: $I_{\Delta n}$		N/A
	- maximum break time (ms) at: $2 I_{\Delta n}$		N/A
	- maximum break time (ms) at: $5 I_{\Delta n}$		N/A
	- maximum break time (ms) at: 0,25 A (if applicable)		N/A
	- maximum break time (ms) at: 500 A		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		N/A
	- minimum non actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non actuating time (ms) at: $2 I_{\Delta n}$; 0,06 s		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non actuating time (ms) at: $5 I_{\Delta n}$; 0,05 s :		N/A
	- minimum non actuating time (ms) at: 500 A; 0,04 s :		N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		N/A
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		N/A
	- maximum break time (ms) at: $I_{\Delta n}$:		N/A
	- maximum break time (ms) at: $2 I_{\Delta n}$:		N/A
	- maximum break time (ms) at: $5 I_{\Delta n}$:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) :		N/A
	- maximum break time (ms) at: 500 A :		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		N/A
	- minimum non actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non actuating time (ms) at: $2 I_{\Delta n}$; 0,06 s :		N/A
	- minimum non actuating time (ms) at: $5 I_{\Delta n}$; 0,05 s :		N/A
	- minimum non actuating time (ms) at: 500 A; 0,04 s :		N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		N/A
9.11.2.2	Verification of the rated making and breaking capacity (A): I_m :	1000 A	--

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Clause	Requirement + Test	Result - Remark			Verdict
	Test circuit according to figure :	7			--
	Residual operating current (A): $10 I_{\Delta n}$:	1000 mA			--
	Point of test circuit which is directly earthed :	Load-star			--
	Grid distance "a" (mm) :	35 mm			--
	Test voltage 1,05 Un :	425,4 V			--
	Prospective current (A) :	1000 A			--
	Prospective current obtained (A) :	1055 A			--
	Power factor :	0,93 - 0,98			--
	Power factor obtained :	0,96			--
	Point of initiation: $45^{\circ} \pm 5^{\circ}$				P
	Test sequence: CO-t-CO-t-CO				P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F				P
	After the tests no damage impairing further use				P
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA	49#	50#	51#	P
		440 V			
	L1	< 1,4 mA	< 1,4 mA	< 1,4 mA	P
	L2	< 1,4 mA	< 1,4 mA	< 1,4 mA	
	L3	< 1,4 mA	< 1,4 mA	< 1,4 mA	
	N	< 1,4 mA	< 1,4 mA	< 1,4 mA	
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a) :	800 V			P
	b) :	800 V			P
	c) :	800 V			P
	d) :				N/A
	e) :				N/A
	No flashover or breakdown				P
	Making and breaking In at Un :	401,2 V, 100,9 A			P
	The RCCB shall trip with a test current of $1,25 I_{\Delta n}$ (ms) :	49#	50#	51#	P
		22 ms	26 ms	15 ms	
	The polyethylene sheet shows no holes				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage		N/A
9.17.1	Limiting value of the line voltage (U_x):		N/A
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) :		N/A
	- all values less than 0,85 times the rated voltage (V)		N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms)		N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below U_x		N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		N/A
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts		N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		N/A
	RCCB connected according to fig. 4 at the rated voltage (U_n)		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from $0,2 I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA)		N/A
	- tripping current between $I_{\Delta n0}$ and $I_{\Delta n}$ (mA)		N/A

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

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

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST SEQUENCE E (3 samples)	PR8HM, 63 A, 30 mA, 1P+N, type A	--
		52#-54#	
8.7	Performance at short-circuit currents		P
9.11.2.4	a) Verification of the coordination between the RCCB and the SCPD		P
	Verification of the coordination at the rated conditional short-circuit current (A): Inc	10 kA	--
	Test circuit according to figure	7	--
	Point of test circuit which is directly earthed	Load-star	--
	Grid distance "a" (mm)	50 mm	--
	Silver wire diameter (mm) or fuse	Silver wire: 0,7 mm	--
	Test voltage 1,05 Un	243,5 V	--
	Prospective current (A)	10 kA	--
	Prospective current obtained (A)	10,1 kA	--
	Power factor	0,45 - 0,5	--
	Power factor obtained	0,46	--
	Point of initiation: $45^\circ \pm 5^\circ$		P
	Verification of I^2t (kA ² s) and I_p (kA) prior to testing ($\geq 1x \leq 1,1x$ values of table 15), RCCB replaced by a connection having negligible impedance	I_p : 4,6 kA I^2t : 25,7 kA ² s	P
	Test sequence: O-t-CO		P
	I_p (kA); I^2t (kA ² s)	Max measured value: 52#: 4,6 kA, 26,1 kA ² s 53#: 4,7 kA, 25,6 kA ² s 54#: 4,6 kA, 25,8 kA ² s	P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		P
	After the tests no damage impairing further use		P

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA	52#	53#	54#	P
		253 V			
	L	< 1,4 mA	< 1,4 mA	< 1,4 mA	P
	N	< 1,4 mA	< 1,4 mA	< 1,4 mA	
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:				P
	a)	460 V			P
	b)	460 V			P
	c)	460 V			P
	d)				N/A
	e)				N/A
	No flashover or breakdown	No flashover and breakdown			P
	Making and breaking In at Un	231,8 V, 63,6 A			P
	The RCCB shall trip with a test current of 1,25 I _{Δn}	52#	53#	54#	P
	(ms)	23 ms	16 ms	16 ms	
	The polyethylene sheet shows no holes				P
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage				N/A
9.17.1	Limiting value of the line voltage (U _x):				N/A
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) :				N/A
	- all values less than 0,85 times the rated voltage (V)				N/A
	- tripping test at test voltage (V) with I _{Δn} and operating according to Table 1 (ms)				N/A
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U _x				N/A
9.17.2	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with rated voltage, and the line voltage then switched off				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Time (ms) interval between switching off and opening of the main contacts		N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		N/A
	RCCB connected according to fig. 4 at the rated voltage (U_n)		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from $0,2 I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA)		N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA)		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms)		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		N/A
	- maximum break time (ms) at: $I_{\Delta n}$		N/A
	- maximum break time (ms) at: $2 I_{\Delta n}$		N/A
	- maximum break time (ms) at: $5 I_{\Delta n}$		N/A
	- maximum break time (ms) at: 0,25 A (if applicable)		N/A
	- maximum break time (ms) at: 500 A		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		N/A
	- minimum non actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A

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

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Clause	Requirement + Test	Result - Remark			Verdict
9.11.2.2	Verification of the rated making and breaking capacity (A): I_m	1000 A			--
	Test circuit according to figure	7			--
	Residual operating current (A): $10 I_{\Delta n}$	300 mA			--
	Point of test circuit which is directly earthed	Load-star			--
	Grid distance "a" (mm)	35 mm			--
	Test voltage $1,05 U_n$	243,2 V			--
	Prospective current (A)	1000 A			--
	Prospective current obtained (A)	1015 A			--
	Power factor	0,93 - 0,98			--
	Power factor obtained	0,94			--
	Point of initiation: $45^\circ \pm 5^\circ$				P
	Test sequence: CO-t-CO-t-CO				P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F				P
	After the tests no damage impairing further use				P
9.7.7.3	The leakage current flowing across the open contacts is measured at $1,1 U_n$ and shall not exceed 2mA	52#	53#	54#	P
		253 V			
		L < 1,4 mA	< 1,4 mA	< 1,4 mA	P
		N < 1,4 mA	< 1,4 mA	< 1,4 mA	
9.7.3	Dielectric strength test of the main circuit at test voltage of $2 U_n$ for 1 min:				P
	a)	460 V			P
	b)	460 V			P
	c)	460 V			P
	d)				N/A
	e)				N/A
	No flashover or breakdown				P
	Making and breaking I_n at U_n	231,6 V, 63,2 A			P
	The RCCB shall trip with a test current of $1,25 I_{\Delta n}$ (ms)	52#	53#	54#	P
		17 ms	24 ms	19 ms	
	The polyethylene sheet shows no holes				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage		N/A
9.17.1	Limiting value of the line voltage (U_x):		N/A
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) :		N/A
	- all values less than 0,85 times the rated voltage (V)		N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms)		N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below U_x		N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		N/A
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts		N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		N/A
	RCCB connected according to fig. 4 at the rated voltage (U_n)		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from $0,2 I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA)		N/A
	- tripping current between $I_{\Delta n0}$ and $I_{\Delta n}$ (mA)		N/A

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

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

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Clause	Requirement + Test	Result - Remark		
	TEST SEQUENCE E (3 samples)	PR8HM, 63 A, 30 mA, 3P+N, type A		
		55#-57#		
8.7	Performance at short-circuit currents			
9.11.2.4	a) Verification of the coordination between the RCCB and the SCPD			
	Verification of the coordination at the rated conditional short-circuit current (A): Inc	10 kA		
	Test circuit according to figure	7		
	Point of test circuit which is directly earthed	Load-star		
	Grid distance "a" (mm)	50 mm		
	Silver wire diameter (mm) or fuse	Silver wire: 0,7 mm		
	Test voltage 1,05 Un	426,7 V		
	Prospective current (A)	10 kA		
	Prospective current obtained (A)	10,1 kA		
	Power factor	0,45 - 0,5		
	Power factor obtained	0,49		
	Point of initiation: $45^\circ \pm 5^\circ$			
	Verification of I^2t (kA ² s) and I_p (kA) prior to testing ($\geq 1x \leq 1,1x$ values of table 15), RCCB replaced by a connection having negligible impedance	I_p : 4,6 kA I^2t : 25,7 kA ² s		
	Test sequence: O-t-CO			
	I_p (kA); I^2t (kA ² s)	Max measured value: 55#: 4,6 kA, 25,8 kA ² s 56#: 4,5 kA, 25,6 kA ² s 57#: 4,6 kA, 25,7 kA ² s		
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F			
	After the tests no damage impairing further use			
9.7.7.3	The leakage current flowing across the open contacts is measured at 1,1 Un and shall not exceed 2mA	55#	56#	57#
		440 V		

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Clause	Requirement + Test		Result - Remark			Verdict
		L1	< 1,4 mA	< 1,4 mA	< 1,4 mA	P
		L2	< 1,4 mA	< 1,4 mA	< 1,4 mA	
		L3	< 1,4 mA	< 1,4 mA	< 1,4 mA	
		N	< 1,4 mA	< 1,4 mA	< 1,4 mA	
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:					P
	a) :		800 V			P
	b) :		800 V			P
	c) :		800 V			P
	d) :					N/A
	e) :					N/A
	No flashover or breakdown :		No flashover and breakdown			P
	Making and breaking In at Un :		401,8 V, 63,9 A			P
	The RCCB shall trip with a test current of 1,25 I _{Δn} (ms) :		55#	56#	57#	P
			24 ms	17 ms	19 ms	
	The polyethylene sheet shows no holes					P
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage					N/A
9.17.1	Limiting value of the line voltage (Ux):					N/A
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) :					N/A
	- all values less than 0,85 times the rated voltage (V) :					N/A
	- tripping test at test voltage (V) with I _{Δn} and operating according to Table 1 (ms) :					N/A
	No value exceeds the specified limiting values					N/A
	Not possible to close the apparatus by manual operating means below Ux :					N/A
9.17.2	Verification of behaviour in case of failure of the line voltage					N/A
	RCCB supplied with rated voltage, and the line voltage then switched off					N/A
	Time (ms) interval between switching off and opening of the main contacts :					N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		N/A
	RCCB connected according to fig. 4 at the rated voltage (U_n)		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from $0,2 I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA)		N/A
	- tripping current between $I_{\Delta no}$ and $I_{\Delta n}$ (mA)		N/A
	The RCCB closes on $I_{\Delta n}$: no value exceeds the specified limiting value of Table 1 (ms)		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		N/A
	- maximum break time (ms) at: $I_{\Delta n}$		N/A
	- maximum break time (ms) at: $2 I_{\Delta n}$		N/A
	- maximum break time (ms) at: $5 I_{\Delta n}$		N/A
	- maximum break time (ms) at: 0,25 A (if applicable)		N/A
	- maximum break time (ms) at: 500 A		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		N/A
	- minimum non actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non actuating time (ms) at: $2 I_{\Delta n}$; 0,06 s		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- minimum non actuating time (ms) at: $5 I_{\Delta n}$; 0,05 s :		N/A
	- minimum non actuating time (ms) at: 500 A; 0,04 s :		N/A
	No tripping during tests		N/A
9.17.4	Verification of the correct operation of RCCBs with 3 or 4 current paths, neutral and one line terminal only being energized in turn:		N/A
	RCCB connected according to fig. 4		N/A
9.9.2.3	The test circuit being successively calibrated at each of the values of residual current specified in Table 1, the test switch S2 and the RCCB being in the closed position, the test voltage is suddenly established by closing the test switch S1		N/A
	- maximum break time (ms) at: $I_{\Delta n}$:		N/A
	- maximum break time (ms) at: $2 I_{\Delta n}$:		N/A
	- maximum break time (ms) at: $5 I_{\Delta n}$:		N/A
	- maximum break time (ms) at: 0,25 A (if applicable) :		N/A
	- maximum break time (ms) at: 500 A :		N/A
	No value exceeds the relevant specified limiting value		N/A
	Additional test for type S:		N/A
	- minimum non actuating time (ms) at: $I_{\Delta n}$; 0,13 s :		N/A
	- minimum non actuating time (ms) at: $2 I_{\Delta n}$; 0,06 s :		N/A
	- minimum non actuating time (ms) at: $5 I_{\Delta n}$; 0,05 s :		N/A
	- minimum non actuating time (ms) at: 500 A; 0,04 s :		N/A
	No tripping during tests		N/A
9.17.5	Verification of the reclosing function of automatically reclosing RCCBs (under consideration)		N/A
9.11.2.2	Verification of the rated making and breaking capacity (A): I_m :	1000 A	--

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Clause	Requirement + Test	Result - Remark			Verdict
	Test circuit according to figure :	7			--
	Residual operating current (A): $10 I_{\Delta n}$:	300 mA			--
	Point of test circuit which is directly earthed :	Load-star			--
	Grid distance "a" (mm) :	35 mm			--
	Test voltage $1,05 U_n$:	425,4 V			--
	Prospective current (A) :	1000 A			--
	Prospective current obtained (A) :	1055 A			--
	Power factor :	0,93 - 0,98			--
	Power factor obtained :	0,96			--
	Point of initiation: $45^\circ \pm 5^\circ$				P
	Test sequence: CO-t-CO-t-CO				P
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F				P
	After the tests no damage impairing further use				P
9.7.7.3	The leakage current flowing across the open contacts is measured at $1,1 U_n$ and shall not exceed 2mA	55#	56#	57#	P
		440 V			
	L1	< 1,4 mA	< 1,4 mA	< 1,4 mA	P
	L2	< 1,4 mA	< 1,4 mA	< 1,4 mA	
	L3	< 1,4 mA	< 1,4 mA	< 1,4 mA	
	N	< 1,4 mA	< 1,4 mA	< 1,4 mA	
9.7.3	Dielectric strength test of the main circuit at test voltage of $2 U_n$ for 1 min:				P
	a) :	800 V			P
	b) :	800 V			P
	c) :	800 V			P
	d) :				N/A
	e) :				N/A
	No flashover or breakdown				P
	Making and breaking I_n at U_n :	401,7 V, 63,6 A			P
	The RCCB shall trip with a test current of $1,25 I_{\Delta n}$ (ms) :	55#	56#	57#	P
		16 ms	21 ms	20 ms	
	The polyethylene sheet shows no holes				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.17	Verification of the behaviour of RCCBs opening automatically in case of failure of the line voltage		N/A
9.17.1	Limiting value of the line voltage (U_x):		N/A
	- rated voltage applied to the line terminals and progressively lowered to attain zero within about 30 s until automatic opening occurs; voltage (V) :		N/A
	- all values less than 0,85 times the rated voltage (V)		N/A
	- tripping test at test voltage (V) with $I_{\Delta n}$ and operating according to Table 1 (ms)		N/A
	No value exceeds the specified limiting values		N/A
	Not possible to close the apparatus by manual operating means below U_x		N/A
9.17.2	Verification of behaviour in case of failure of the line voltage		N/A
	RCCB supplied with rated voltage, and the line voltage then switched off		N/A
	Time (ms) interval between switching off and opening of the main contacts		N/A
	a) RCCBs opening without delay: no value exceeds 0,5 s		N/A
	b) RCCBs opening with delay: max. and min. values within the range indicated by the manufacturer		N/A
9.17.3	Verification of the correct operation, in presence of a residual current, for RCCBs opening with delay in case of failure of the line voltage		N/A
	RCCB connected according to fig. 4 at the rated voltage (U_n)		N/A
	All phases but one switched off by means of S3		N/A
	During the delay: test of 9.9.2:		N/A
9.9.2.1	- steady increase from $0,2 I_{\Delta n}$ to $I_{\Delta n}$ within 30 s (mA)		N/A
	- tripping current between $I_{\Delta n0}$ and $I_{\Delta n}$ (mA)		N/A

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

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

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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					
Test sequence		Clause or subclause	Test (or inspection)		
A ₁		6 8.1.1 8.1.2 9.3 8.1.3 9.15 9.4 9.5 9.6 9.13 8.1.3 9.25	Marking General Mechanism Indelibility of marking Clearance and creepage distances (external parts only) Trip free mechanism Reliability of screws, current-carrying parts and connections Reliability of terminals for external conductors Protection against electric shock Resistance to heat Clearances and creepage distances (internal parts) Resistance to rusting		
A ₂		9.14	Resistance to abnormal heat and to fire		
B		9.7.7.4 9.7.7.5 ^{b)} 9.7.1 9.7.2 9.7.3 9.7.4 9.7.7.2 9.7.5 9.7.6 9.8 9.22.2 9.23	Resistance of the insulation of open contacts and basic insulation against an impulse voltage in normal conditions Verification of the behaviour of components bridging the basic insulation Resistance to humidity Insulation resistance of the main circuit Dielectric strength of the main circuit Insulation resistance an dielectric strength of auxiliary circuits Verification of clearances with the impulse withstand voltage Secondary circuit of detection transformers Capability of control circuits connected to the main circuits etc. Temperature-rise Reliability at 40°C Ageing of electronic components		
C		9.10	Mechanical and electrical endurance		
D	D ₀	9.9	Residual operating characteristics		
	D 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 _{Δm} 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) 9.11.2.2	Coordination at I _{nc} Performance at I _m
		F		9.11.2.4 b) 9.11.2.4 c)	Coordination at I _m Coordination at I _{Δc}

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

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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 ^c
A ₁	1	1	--
A ₂	3	2	3
B	3	2	3
C	3	2	3
D	3	2 ^d	3
D ₂	3	3	3
E	3	2 ^d	3
F	3	2 ^d	3
G	3	2	3
H ^e	3	2	3
I ^e	3	2	3
J ^e	3	2	3
a) In total a maximum of three test sequences may be repeated. b) It is assumed that a sample which has not passed a test has not met the requirements due to workmanship or assembly defects which are not representative of the design. c) In the case of repeated tests, all test results must be acceptable. d) All samples shall meet the requirements in 9.9.2.1, 9.9.2.2, 9.9.2.3, 9.9.2.4, 9.9.2.5 and 9.11.2.3, as appropriate. In addition, permanent arcing or flashover between poles or between poles and frame shall not occur in any sample during tests of 9.11.2.2, 9.11.2.4 a), 9.11.2.4 b) or 9.11.2.4 c). e) At the manufacturer's request, the same set of samples may be subjected to more than one of these test sequences.			

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Clause	Requirement + Test	Result - Remark	Verdict

Table A.3 - Number of samples for simplified test procedure			
Test sequence	Number of samples according to the number of poles ^{a) g)}		
	2-poles ^{b) c)}	3-poles ^{d) f) i)}	4-poles ^{e)}
A ₁	1 max. rating I _N min. rating I _{ΔN}	1 max. rating I _N min. rating I _{ΔN}	1 max. rating I _N min. rating I _{ΔN}
A ₂	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
B	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
C	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
D ₀ + D ₁	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
D ₀	1 for all other ratings of I _{ΔN}		
D ₂	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
E	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
F	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}
G ^{j)}	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}
H	3 ^{h)} samples of the same rating I _N chosen at random min. rating I _{ΔN}		
I	3 ^{h)} samples of the same rating I _N chosen at random min. rating I _{ΔN}		
J	3 ^{h)} samples of the same rating I _N chosen at random 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			

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Clause	Requirement + Test	Result - Remark	Verdict

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 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 I_N 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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Table A.4 - Test sequences for RCCBs of different classification according to 4.6			
Test sequence	Number of samples according to the number of poles ^{a)}		
	2-pole ^{b) c)}	3-pole ^{e)}	4-pole ^{d)}
$D_0 + D_1$	1 max. rating I_N min. rating $I_{\Delta N}$	1 max. rating I_N min. rating $I_{\Delta N}$	1 max. rating I_N min. rating $I_{\Delta N}$
D_0	1 for all other ratings of $I_{\Delta N}$ with max. $I_{\Delta N}$		
a) If a test is to be repeated according to the minimum performance criteria of clause A.2, a new set of samples is used for the relevant test. In the repeated test all test results must be acceptable. b) If only 3-pole or 4-pole RCCBs are submitted, this column shall also apply to a set of samples with the smallest number of poles. c) Also applicable to 1-pole RCCBs with uninterrupted neutral. d) Also applicable to 3-pole RCCBs with uninterrupted neutral. e) This column is omitted when 4-pole RCCBs are being tested.			

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Clause	Requirement + Test	Result - Remark	Verdict
	ANNEX B DETERMINATION OF CLEARANCES AND CREEPAGE DISTANCES		--
B.1	General		P
	In determining clearances and creepage distances, it is recommended that the following points should be considered.		P
B.2	Orientation and location of a creepage distance		P
	If necessary, the manufacturer shall indicate the intended orientation of the equipment or component in order that creepage distances are not adversely affected by the accumulation of pollution for which they were not designed.		P
B.3	Creepage distances where more than one material is used		P
	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.		P
B.4	Creepage distances split by floating conductive part		P
	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).		P
B.5	Measurement of creepage distances and clearances		P
	In determining creepage distances according to IEC 60664-1, the dimension X, specified in the following examples, has a minimum value of 1,0 mm for pollution degree 2.		P
	If the associated clearance is less than 3 mm, the minimum dimension X may be reduced to one third of this clearance.		P
	The methods of measuring creepage distances and clearances are indicated in Example 1 to 11. These cases do not differentiate between gaps and grooves or between types of insulation.		P
	The following assumptions are made:		P
	- any recess is assumed to be bridged with an insulating link having a length equal to the specified width X and being placed in the most unfavourable position (see Example 3);		P
	- where the distance across a groove is equal to or larger than the specified width X, the creepage distance is measured along the contours of the groove (see Example 3);		P
	- creepage distances and clearances measured between parts which can assume different positions in relation to each other, are measured when these parts are in their most unfavourable position.		P

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

IEC 61008-1			
Clause	Requirement + Test	Result - Remark	Verdict
	ANNEX D ROUTINE TESTS		--
	ANNEX J Particular requirements for RCCBs with screwless type terminals for external copper conductors		--
	ANNEX K Particular requirements for RCCBs with flat quick-connect terminations		--
	ANNEX L Specific requirements for RCCBs with screw-type terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors		--

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Annex 1

ATTACHMENT TO TEST REPORT IEC 61008-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs)	
Differences according to	EN 61008-1:2012+A1:2014+A2:2014+A11:2015+A12:2017
Attachment Form No.....	EU_GD_IEC61008_1H
Attachment Originator	OVE
Master Attachment.....	Dated 2015-11
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	CENELEC COMMON MODIFICATIONS (EN)		--
	GENERAL		--
9.11	Short circuit tests	Refer to main part of this report	--
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 "A₁"		--
6	MARKING (REPLACE CLAUSE 6 BY)		--
6.21	STANDARD MARKING		--
	EACH RCCB SHALL BE MARKED IN A DURABLE MANNER ACCORDING TO THE FOLLOWING TABLE Z3.		P
	RCCB MARKED WITH:		--
a)	The manufacturer's name or trademark	GACIA	P
b)	Type designation, catalogue number or serial number	PR8HM	P
c)	Rated voltage(s) with the symbol ~	400 V~	P
d)	Rated frequency, if the RCCB is designed for frequencies other than 50Hz	50 / 60 Hz	P
e)	rated current	100 A	P
f)	Rated residual operating current ($I_{\Delta n}$) in A or in mA	100 mA	P
h) *)	Rated making and breaking capacity (I_m)	1000 A	P

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Clause	Requirement + Test	Result - Remark	Verdict
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)		N/A
m)	The symbol S (S in a square) for type S devices		N/A
n)	symbol of the method of operation according to Table Z1 of 4.1 if the RCCB is functionally dependent on the line voltage		N/A
o)	Operating means of the test device, by the letter T (It is recommended to advise the user to test the device regularly)	T	P
p)	Wiring diagram unless the correct mode of operation is evident		P
r)	Operating characteristic in presence of residual currents with d.c. components		--
	- RCCBs of type AC with the symbol 		N/A
	- RCCBs of type A with the symbol 		P
s)	RCCBs according to 4 Z2 marked with the symbol (snowflake enclosing -25)		P
t)	Indication of the terminal for the neutral with "N"		P
u)	Additional marking of performance to other standards or additional requirements according to 6.Z2		N/A
	*) $I_{\Delta m}$ and I_m (if different of $I_{\Delta m}$) may be anywhere on the device or in the catalogue but shall be together.		P
	If a degree of protection higher than IP20 is marked on the device, it shall comply with it, whichever the method of installation. If the higher degree of protection is obtained only by a specific method of installation and/or with the use of specific accessories this shall be specified in the manufacturers literature		N/A
	The manufacturer shall state the Joule integral I^2t and the peak current I_p withstand capability of the RCCB. Where this are not stated, minimum values as given in table 15 apply.		P
	RCCB classified acc. 4.1.2.1: Time delay when opening in case of failure of the line voltage (s) :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	RCCB's other than operated by means of push button, open position indicated by "0" and closed position by "I"		P
	Additional national symbols are allowed Provisionally the use of national indications only is allowed These indication visible when RCCB is installed		N/A
	For push-buttons the OFF push-button shall either be red and/or marked with "O"		N/A
	RED shall not be uses for any other push-button		N/A
	If a push-button is used for closing the contacts and is evidently identified as such, its depressed position is sufficient to indicate the closed position.		N/A
	If a single push-button is used for closing and opening the contacts and is identified as such, the button remaining in its depressed position is sufficient to indicate the closed position. On the other hand, if the button does not remain depressed, an additional means indicating the position of the contacts shall be provided.		N/A
	If necessary to distinguish between supply and load terminals they shall be clearly marked		N/A
	Terminals for neutral circuit N		P
	Terminal for protective conductor		N/A
	The suitability for isolation, which is provided by all RCCBs of this standard, may be indicated by the symbol on the device		P
	The base for plug-in RCCBs shall be marked with the following:		N/A
	- rated current or maximum rated current		N/A
	- trade mark		N/A
	Marking indelible, easy legible and not on removable parts		P
	Labels not easy to remove and no curling. Test acc. to cl. 9.3: 15 s with water and 15 s with hexane		P
	For universal terminals (rigid-solid, rigid-stranded and flexible conductors:		P
	- no markings		P
	For non-universal terminals:		N/A
	- terminals for rigid-solid conductors only, marked by the letters "s" or "sol"		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- terminals for rigid (solid and stranded) conductors only, marked by the letter "r"		N/A
	marking on the RCCB or if the space available is not sufficient, on the smallest package unit or in technical information		N/A
6.Z2	additional marking		--
	Additional marking to other standards (EN or IEC or other) or additional requirements are allowed under the following conditions:		N/A
	- The RCCB shall comply with all the requirements of the additional standard.		N/A
	- The relevant standards to which the additional marking refers shall be indicated adjacent to this marking and shall be clearly differentiated or separated from the standard marking according to 6.Z.1.		N/A
	Compliance is checked by inspection and by carrying out all the test sequences required by the relevant standard. Equivalent or less severe test sequences need not be repeated.		N/A
9.4 <i>add</i>	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		--
<i>modify</i>	In this standard, only terminals for copper conductors are considered		P
	Compliance is checked by inspection and by the tests as relevant for the type of connection:	Refer to main part of this report	P
	9.5 for screw-type terminals	Refer to main part of this report	P
	by specific tests for plug-in or bolt-on RCCBs included in the standard		N/A
	by the tests of Annexes Jor K		N/A
8.1.5.2 <i>delete</i>	or terminals for external untreated aluminium conductors and with aluminium screw type terminals for use with copper or with aluminium conductors according to Annex L.		N/A
8.1.Z1 <i>add</i>	Non-interchangeability		N/A

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	For RCCBs intended to be mounted on bases forming a unit therewith (plug-in type or screw-in type) it shall not be possible, without the aid of a tool, to replace a RCCB when mounted and wired as for normal use by another of the same make having a higher rated current. Compliance is checked by inspection.		N/A
8.1.Z2 <i>add</i>	Mechanical mounting of plug-in type RCCBs		N/A
	The mechanical mounting of plug-in type RCCBs, the holding in position of which does not depend solely on their plug-in connection(s), shall be reliable and have adequate stability.		N/A
8.1.Z2.1 <i>add</i>	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 <i>add</i>	Plug-in type RCCBs, the holding in position of which depends solely on their plug-in connection(s)		N/A
	Compliance of the mechanical mounting is checked by the relevant tests of 9.12.		N/A
	TEST SEQUENCE "A ₂ "		--
9.14	GLOW-WIRE TEST		--
<i>add</i>	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).		N/A

IEC61008_1H - ATTACHMENT					
Clause	Requirement + Test			Result - Remark	
	TEST SEQUENCE "B"			--	
8	requirements for construction and operation			--	
8.3	DIELECTRIC PROPERTIES AND ISOLATING CAPABILITY			--	
	RCCBs have adequate dielectric properties			Refer to main part of this report	
9.7 <i>MODIFY</i>	TEST OF DIELECTRIC PROPERTIES AND ISOLATING CAPABILITY			--	
9.7.7.4.1 <i>MODIFY</i>	rated impulse withstand voltage [kV]:			4 kV, refer to main part of this report	
	see level of test laboratory [m]			--	
	test voltage (acc. Table 22, <i>modified</i>) [kV]:			--	
9.7.7.4.3 <i>MODIFY</i>	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			Refer to main part of this report	
	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			Refer to main part of this report	
9.7.2 <i>modify</i>	Insulation resistance of the main circuit measured between 30 and 60 min after this treatment with 500 V DC after 5 s:			Refer to main part of this report	
	a) between the terminals which are electrically connected together when the RCCB is in the closed position..... $\geq 2 \text{ M}\Omega$			P	
	b) between each pole and the others connected together (electronic components, connected between poles being disconnected)..... $\geq 2 \text{ M}\Omega$			P	
	c) with the RCCB in the closed position, between all poles connected together and the frame, including a metal foil in contact with the outer surface of the housing of insulation material but with the terminal area kept free $\geq 5 \text{ M}\Omega$			P	
	d) between the frame and a metal foil in contact with the inner surface of the lining of insulating material $\geq 5 \text{ M}\Omega$			N/A	
9.7.3 <i>modify</i>	Dielectric strength of the main circuit measured with an AC voltage (45-65Hz) for 1 min:			Refer to main part of this report	
	a) 2000 V			P	
	b) (electronic components, connected between poles being disconnected) 2000 V			P	

IEC61008_1H - ATTACHMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	c) 2000 V				P
	d) 2500 V				N/A
	No flashover or breakdown				P
9.7.7.2 <i>modify</i>	delete in table 16 the line beginning with “2,5” rated impulse withstand voltage [kV]:	4 kV, refer to main part of this report			P
	see level of test laboratory [m]				N/A
	test voltage (acc. Table 16) [kV]:				N/A
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the RCCB				N/A
	TEST SEQUENCE "D"				--
	TEST D ₀				--
9.9.1 <i>delete:</i>	For multiple settings of I_{Δn} tests are made for each setting				N/A
	TEST D ₁				--
	TEST SEQUENCE E				--
9.11.2.4a)	Verification of the coordination at the rated conditional short-circuit current (A): Inc	Refer to main part of this report			P
<i>modify:</i>	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:	Refer to main part of this report			P
	a) :				P
	b) :				P
	c) :				P
	d) :				N/A
	No flashover or breakdown :				P
9.17	VERIFICATION OF THE BEHAVIOUR OF RCCBS OPENING AUTOMATICALLY IN CASE OF FAILURE OF THE LINE VOLTAGE				--

IEC61008_1H - ATTACHMENT					
Clause	Requirement + Test	Result - Remark			Verdict
9.17.1 <i>replace by:</i>	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				--
					N/A
	All values less than $0,7 U_N$				N/A
	Tripping test:				N/A
	Test voltage (V)				--
	Residual current $1,25 I_{\Delta N}$				--
	Time corresponding to value for $I_{\Delta N}$ in table 1				--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 <i>replace by:</i>	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer				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 <i>replace by:</i>	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 (<i>replace the title by</i>)				N/A
9.11.2.2	Verification of the rated making and breaking capacity (A): I_m	Refer to main part of this report			P
<i>modify:</i>	After the tests no damage impairing further use				P
9.7.3	Dielectric strength test of the main circuit at test voltage of $2 U_n$ for 1 min:	Refer to main part of this report			P

IEC61008_1H - ATTACHMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	a)				P
	b)				P
	c)				P
	d)				N/A
	No flashover or breakdown				P
9.17	VERIFICATION OF THE BEHAVIOUR OF RCCBS OPENING AUTOMATICALLY IN CASE OF FAILURE OF THE LINE VOLTAGE				--
9.17.1 <i>replace by:</i>	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				--
	All values less than $0,7 U_N$				N/A
	Tripping test:				N/A
	Test voltage (V)				--
	Residual current $1,25 \cdot I_{\Delta N}$				--
	Time corresponding to value for $I_{\Delta N}$ in table 1				--
	No value exceeds the specified limiting values				N/A
	Not possible to close the apparatus by manual operating means below U_x				N/A
9.17.2 <i>replace by:</i>	Verification of behaviour in case of failure of the line voltage				N/A
	RCCB supplied with U_N and line voltage, then switched off				N/A
	Time interval between switching off and opening of the main contacts:	[ms]	[ms]	[ms]	--
a)	RCCBs opening without delay				N/A
	- no value exceeds 0,5 s				N/A
	- no tripping shall occur if the voltage is switched off for a time not exceeding 0,03 s				N/A
b)	RCCBs opening with delay				N/A
	Values within the range indicated by manufacturer				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

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.17.4 <i>replace by:</i>	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 (<i>replace the title by</i>)		N/A

IEC61008_1H - ATTACHMENT				
Clause	Requirement + Test		Result - Remark	Verdict
replace table A.1 by:				
ANNEX A (NORMATIVE)				
Test sequence and number of samples to be submitted for certification purposes Table A.1 - Test sequences				
Test sequence	Clause or subclause	Test (or inspection)		
A ₁	6 8.1.1 8.1.2 9.3 8.1.3 9.15 9.4 9.5 9.6 9.13 8.1.3 9.25	Marking General Mechanism Indelibility of marking Clearance and creepage distances (external parts only) Trip free mechanism Reliability of screws, current-carrying parts and connections Reliability of terminals for external conductors Protection against electric shock Resistance to heat Clearances and creepage distances (internal parts) Resistance to rusting		
A ₂	9.14	Resistance to abnormal heat and to fire		
B	9.7.7.4 9.7.7.5 ^{b)} 9.7.1 9.7.2 9.7.3 9.7.4 9.7.7.2 9.7.5 9.7.6 9.8 9.22.2 9.23	Resistance of the insulation of open contacts and basic insulation against an impulse voltage in normal conditions Verification of the behaviour of components bridging the basic insulation Resistance to humidity Insulation resistance of the main circuit Dielectric strength of the main circuit Insulation resistance an dielectric strength of auxiliary circuits Verification of clearances with the impulse withstand voltage Secondary circuit of detection transformers Capability of control circuits connected to the main circuits etc. Temperature-rise Reliability at 40°C Ageing of electronic components		
C	9.10	Mechanical and electrical endurance		
D	D ₀	9.9	Residual operating characteristics	
	D 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 _{Δm} 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 _{Δc}		
G ₀	9.22.1	Reliability (climatic tests)		
G ₁	9.Z1	Verification of correct operation at low Ambient air temperature of RCCBs for use of -25°C to +40°C		
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		
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.				

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<i>replace table A.2 by:</i>			
Table A.2 - Number of samples for full test procedure			
Test sequence a	Number of samples	Minimum number of accepted samples b	Maximum number of samples for repeated tests c
A	1+3 ^f	1+3 ^f	--
B	3	2	3
C	3	2	3
D	3	2 ^d	3
D ₂	3	3	3
E	3	2 ^d	3
F	3	2 ^d	3
G ₀	3	2	3
G ₁	3	2	3
H ^e	3	2	3
I ^e	3	2	3
J ^e	3	2	3
a) In total a maximum of three test sequences may be repeated. b) It is assumed that a sample which has not passed a test has not met the requirements due to workmanship or assembly defects which are not representative of the design. c) In the case of repeated tests, all test results must be acceptable. d) All samples shall meet the requirements in 9.9.2.1, 9.9.2.2, 9.9.2.3, 9.9.2.4, 9.9.2.5 and 9.11.2.3, as appropriate. In addition, permanent arcing or flashover between poles or between poles and frame shall not occur in any sample during tests of 9.11.2.2, 9.11.2.4 a), 9.11.2.4 b) or 9.11.2.4 c). e) At the manufacturer's request, the same set of samples may be subjected to more than one of these test sequences. f) Test 9.14 shall applied to 3 additional new samples			

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Clause	Requirement + Test	Result - Remark	Verdict

replace table A.3 by:			
Table A.3 - Number of samples for simplified test procedure			
Test sequence	Number of samples according to the number of poles a) g)		
	2-poles b) c)	3-poles d) f) i)	4-poles e)
A ₁ ^{j)}	1 max. rating I _N min. rating I _{ΔN}	1 max. rating I _N min. rating I _{ΔN}	1 max. rating I _N min. rating I _{ΔN}
A ₂	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
B	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
C	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
D ₀ + D ₁	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
D ₀	1 for all other ratings of I _{ΔN}		
D ₂	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
E	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
F	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}
G ₀ ^{j1)}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN}
G ₁ ^{h)}	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}	3 max. rating I _N min. rating I _{ΔN} 3 min. rating I _N max. rating I _{ΔN}
H	3 ^{h)} samples of the same rating I _N chosen at random min. rating I _{ΔN}		
I	3 ^{h)} samples of the same rating I _N chosen at random min. rating I _{ΔN}		
J	3 ^{h)} samples of the same rating I _N chosen at random 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 _{ΔN} is submitted, min. rating I _{ΔN} and max. rating I _{ΔN} are replaced by I _{ΔN} .			
h) Only the highest number of pole.			
i) deleted			
j) 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 I _N and minimum rating I _{ΔN} does not cover all the possible range of RCBOs, the minimum I _{ΔN} shall in any case be chosen for the test.			

IEC61008_1H - ATTACHMENT			
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 MM².		N/A
J.6 <i>modify:</i>	MARKING		--
	non-universal terminals (if accepted by Special National Conditions):		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
	ANNEX K Particular requirements for RCCBs with flat quick-connect terminations		--
K.8.2.2 <i>modify:</i>	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		N/A
	ANNEX L Specific requirements for RCCBs with screw-type terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors		--
	DELETE ANNEX L		N/A
	ANNEX ZB Special national conditions		--
Germany	The use of RCCBs of type AC is not permitted		N/A
	ANNEX ZC A-deviations		--
Austria	subclause 4.1, Table Z1 is not valid in Austria		N/A

IEC61008_1H - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Table Z3 – Requirements for marking

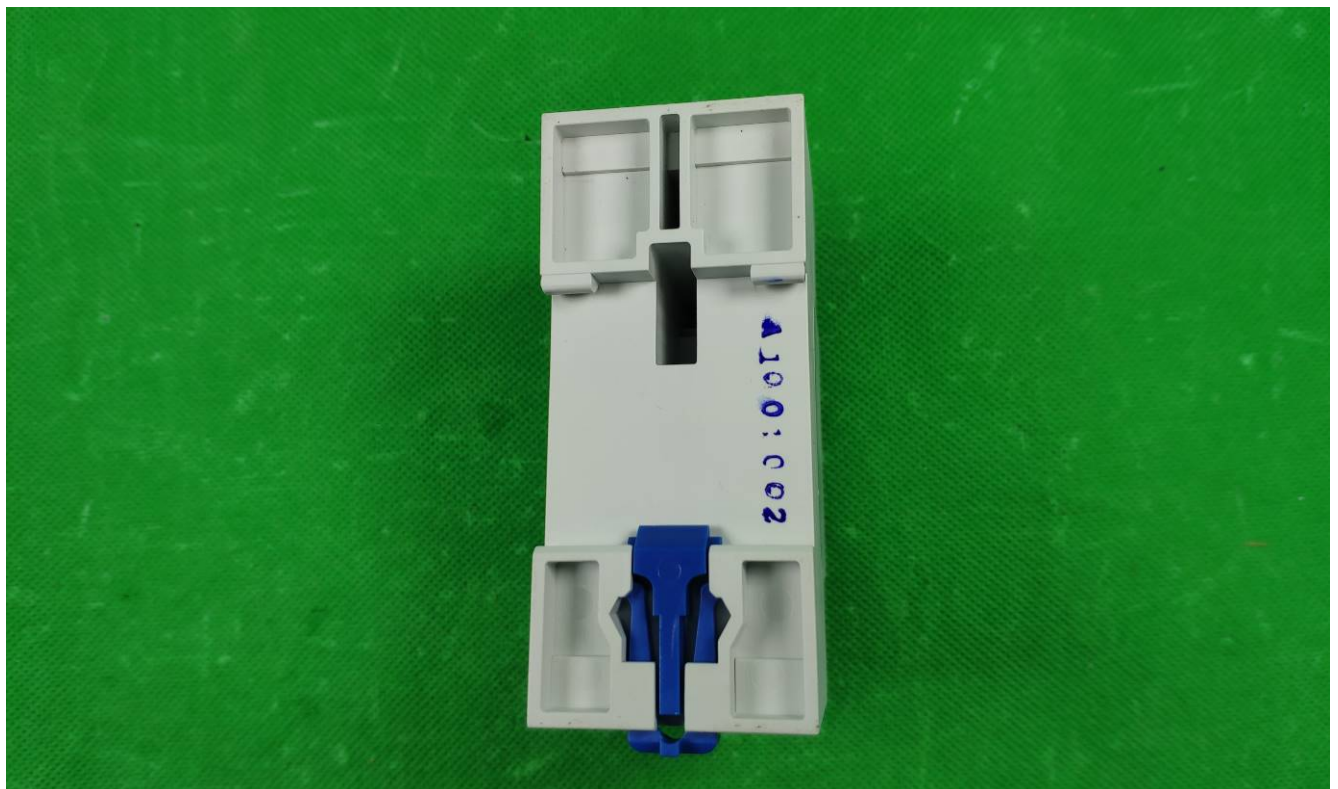
		Marking on the RCCB itself			Product information in the catalogue
	Each RCCB shall be marked in a durable manner with all or, for small apparatus, part of the following data: The minimum requirements are indicated by the symbol "X"	If, for small devices the space available does not allow all the data 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		X		
b)	Type designation, catalogue number or serial number		X		
c)	Rated voltage(s) with the symbol ~		X		
d)	Rated frequency, if the RCCB is designed for frequencies other than 50Hz		X		
e)	rated current	X			
f)	Rated residual operating current ($I_{\Delta n}$) in A or in mA	X			
h)	rated making and breaking capacity (I_m)				X (*)
j)	The degree of protection (only if different from IP20)				X
k)	The position of use, if necessary		X		
l)	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	X			
n)	symbol of the method of operation according to Table Z1 of 4.1 if the RCCB is functionally dependent on the line voltage		X	X	
o)	Operating means of the test device, by the letter T (**)	X			
p)	Wiring diagram unless the correct mode of operation is evident		X	X	
r)	Operating characteristic in presence of residual currents with d.c. components				
	- RCCBs of type AC with the symbol 		X		
	- RCCBs of type A with the symbol 	X			
s)	RCCBs according to 4 Z2 marked with the symbol (snowflake enclosing -25)		X		
t)	Indication of the terminal for the neutral with "N"		X		
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

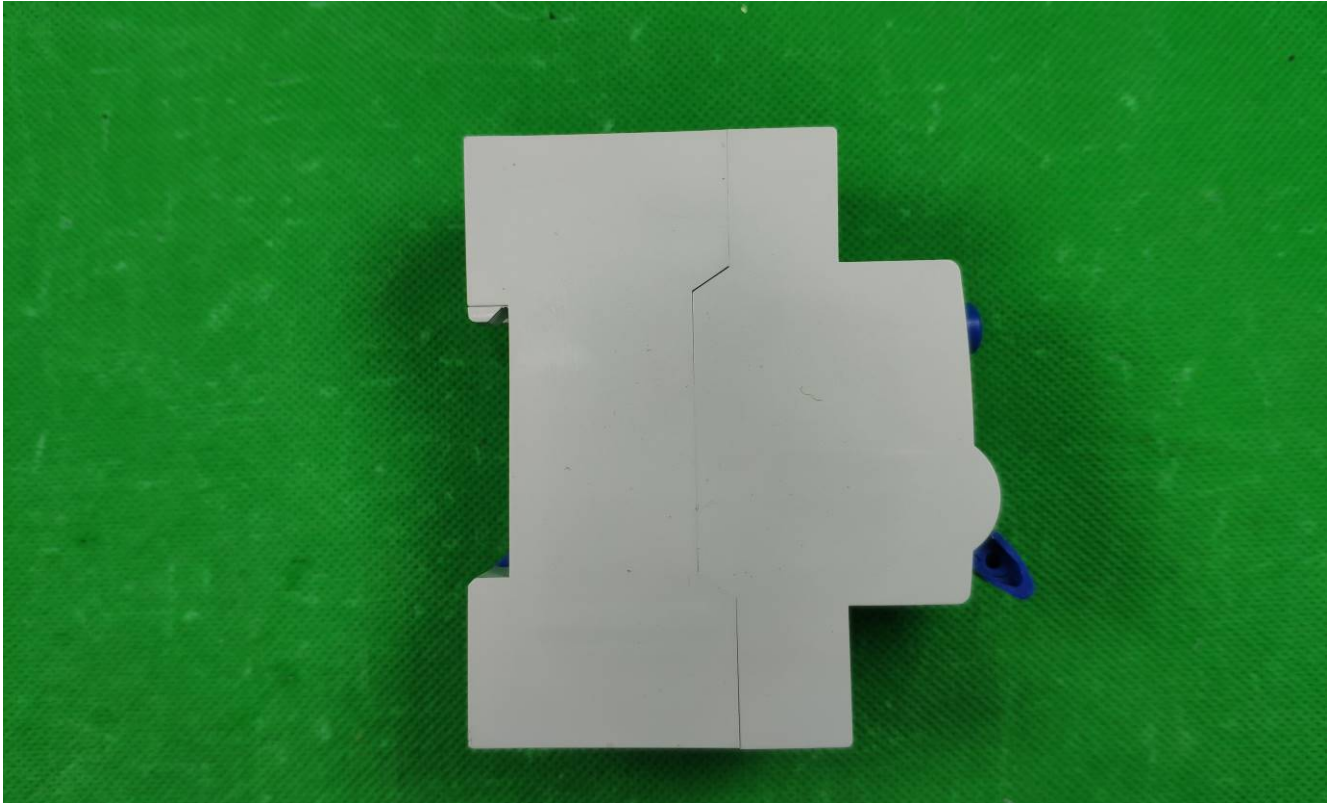
**) It is recommended to advise the user to test the device regularly

Photos:

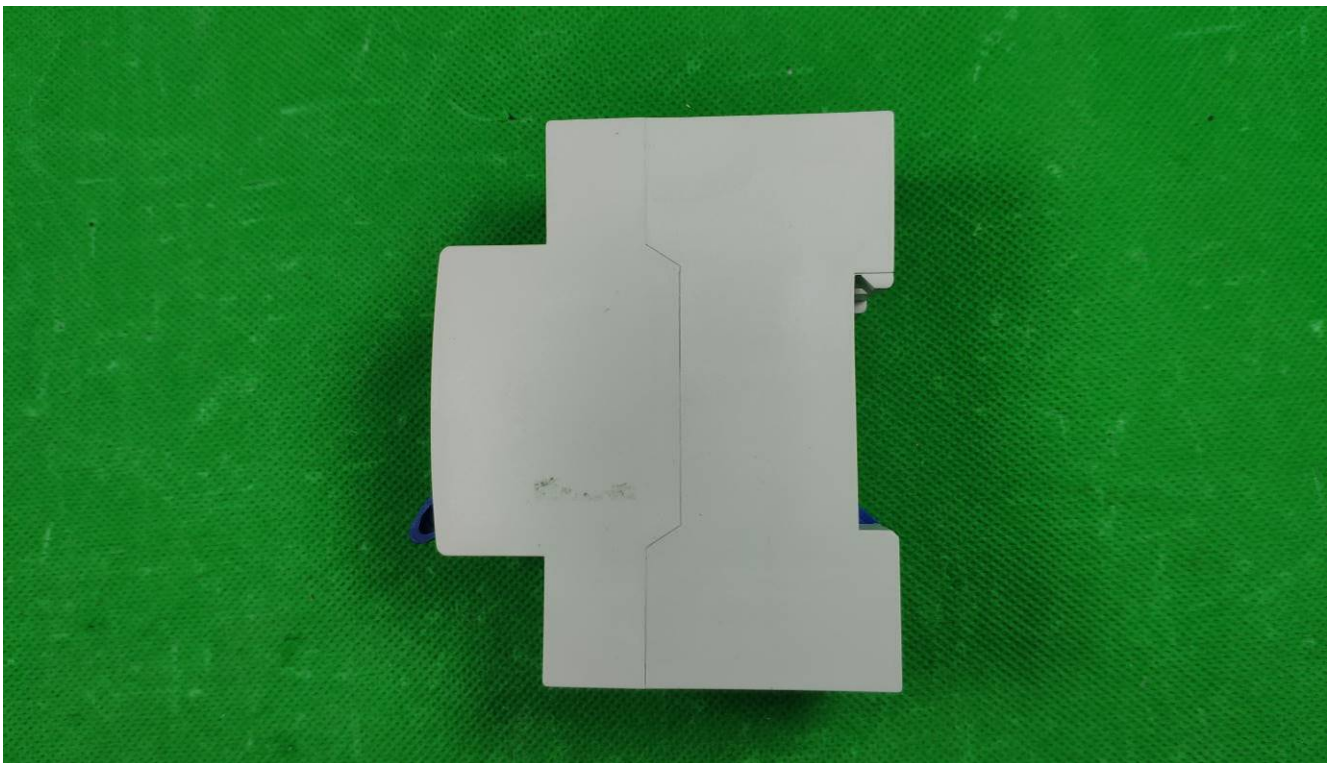
Front view, PR8HM / 1P+N / 100 A / 100 mA / A type



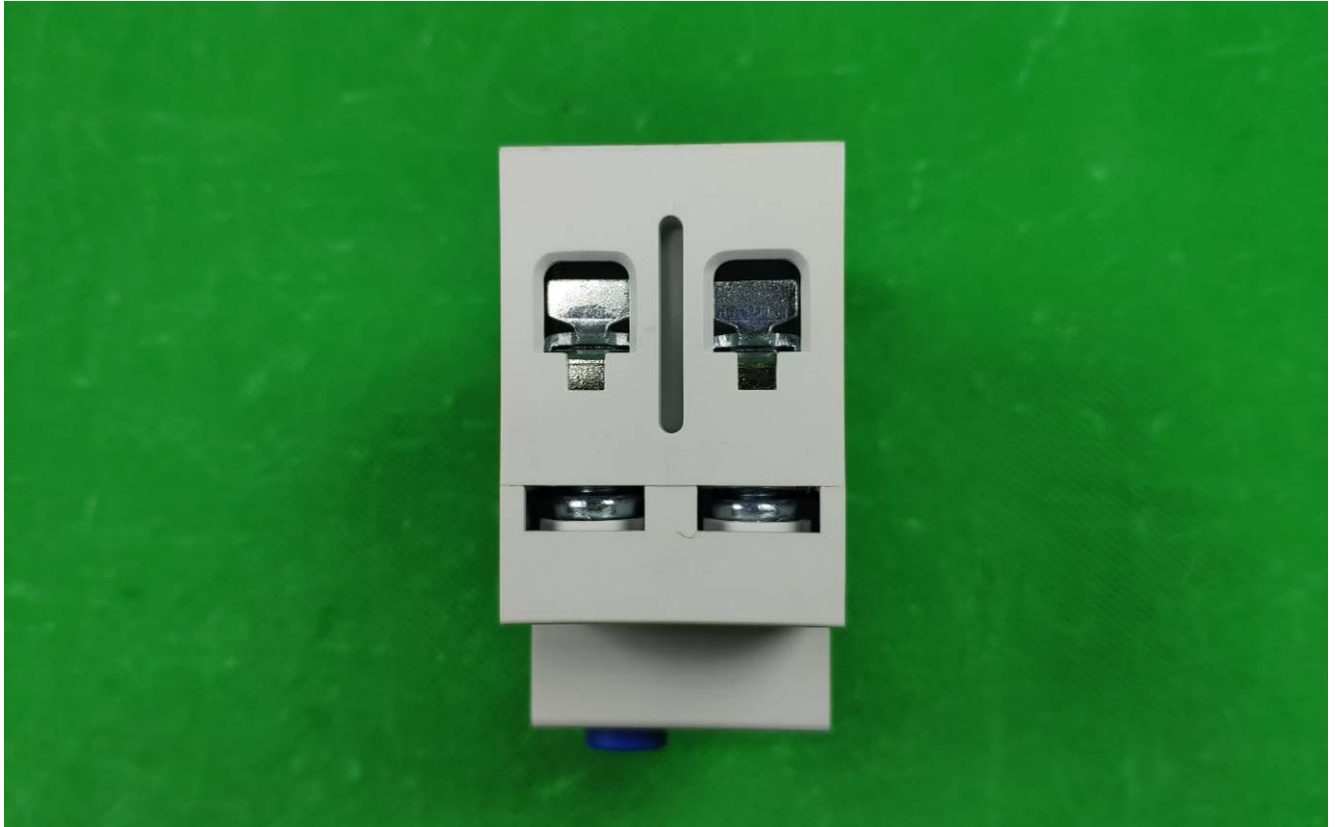
Back view, PR8HM / 1P+N / 100 A / 100 mA / A type



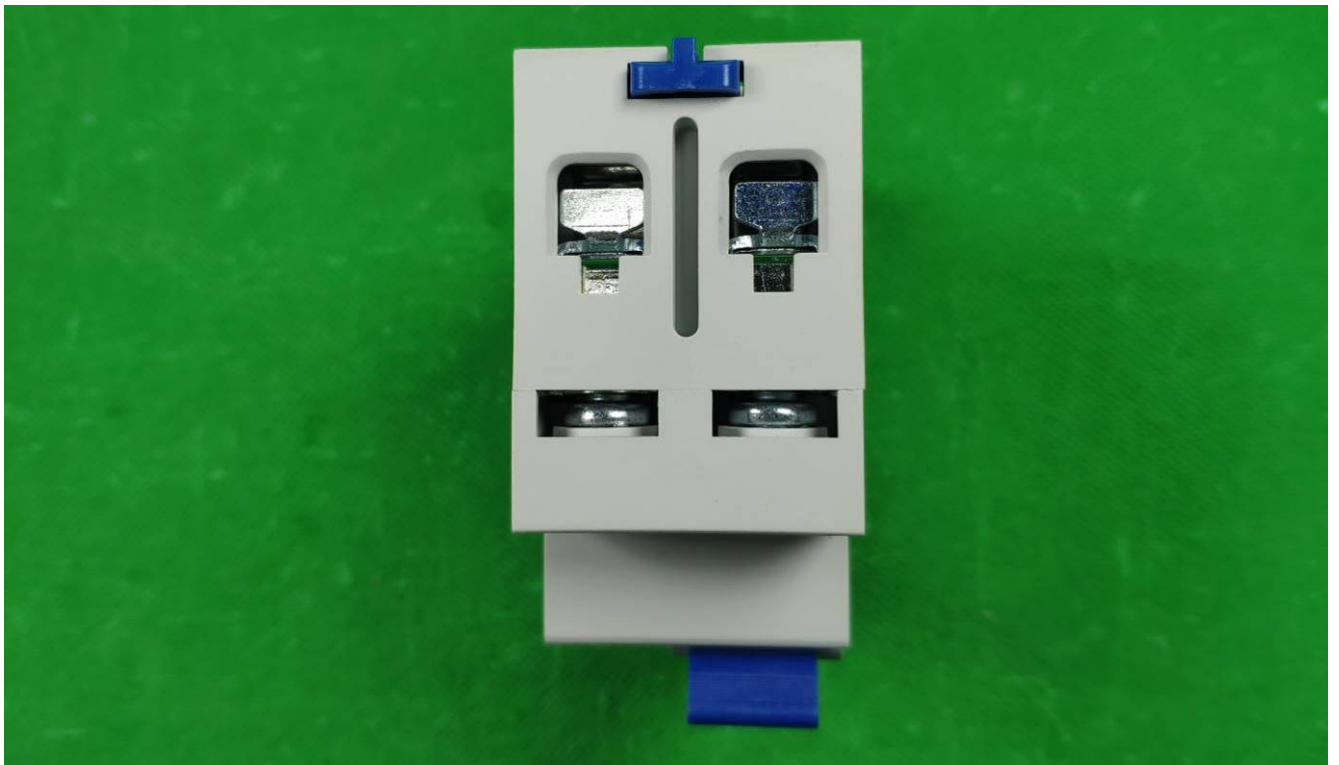
Side view, PR8HM / 1P+N / 100 A / 100 mA / A type



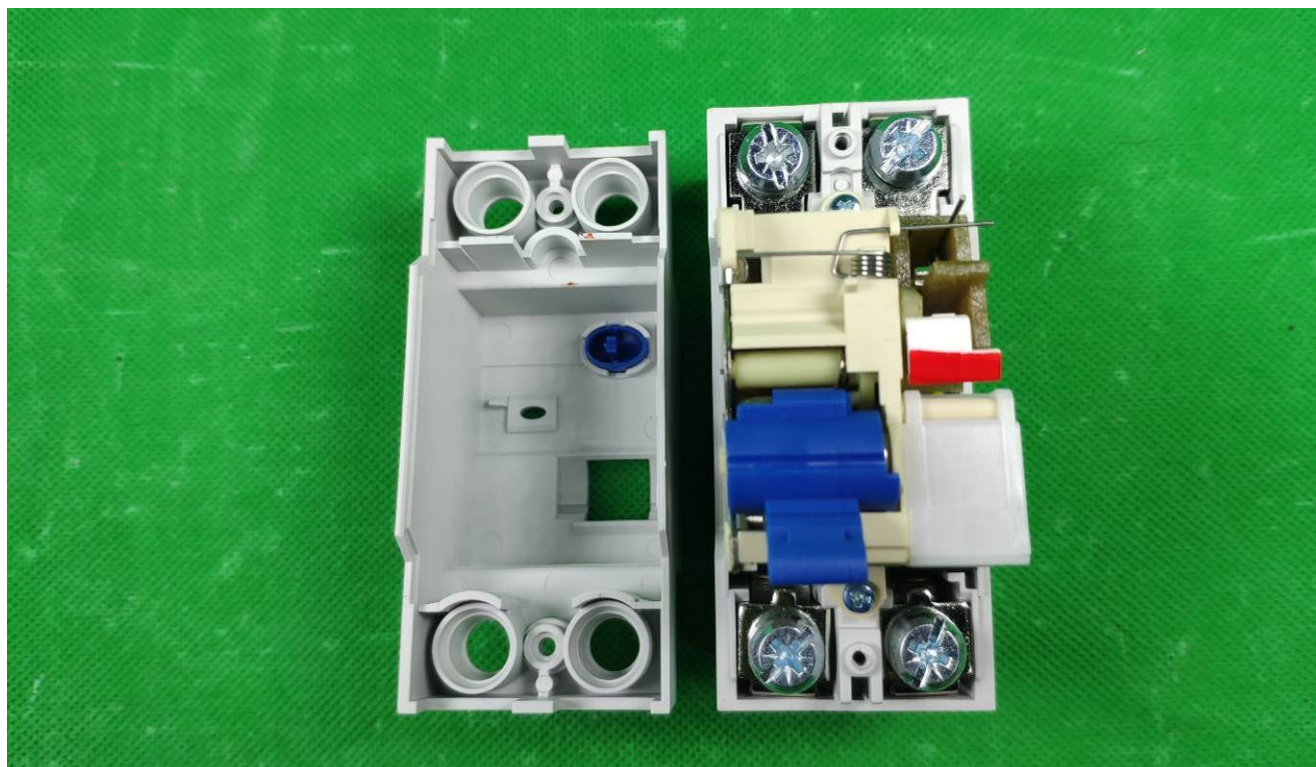
Side view, PR8HM / 1P+N / 100 A / 100 mA / A type



Top view, PR8HM / 1P+N / 100 A / 100 mA / A type



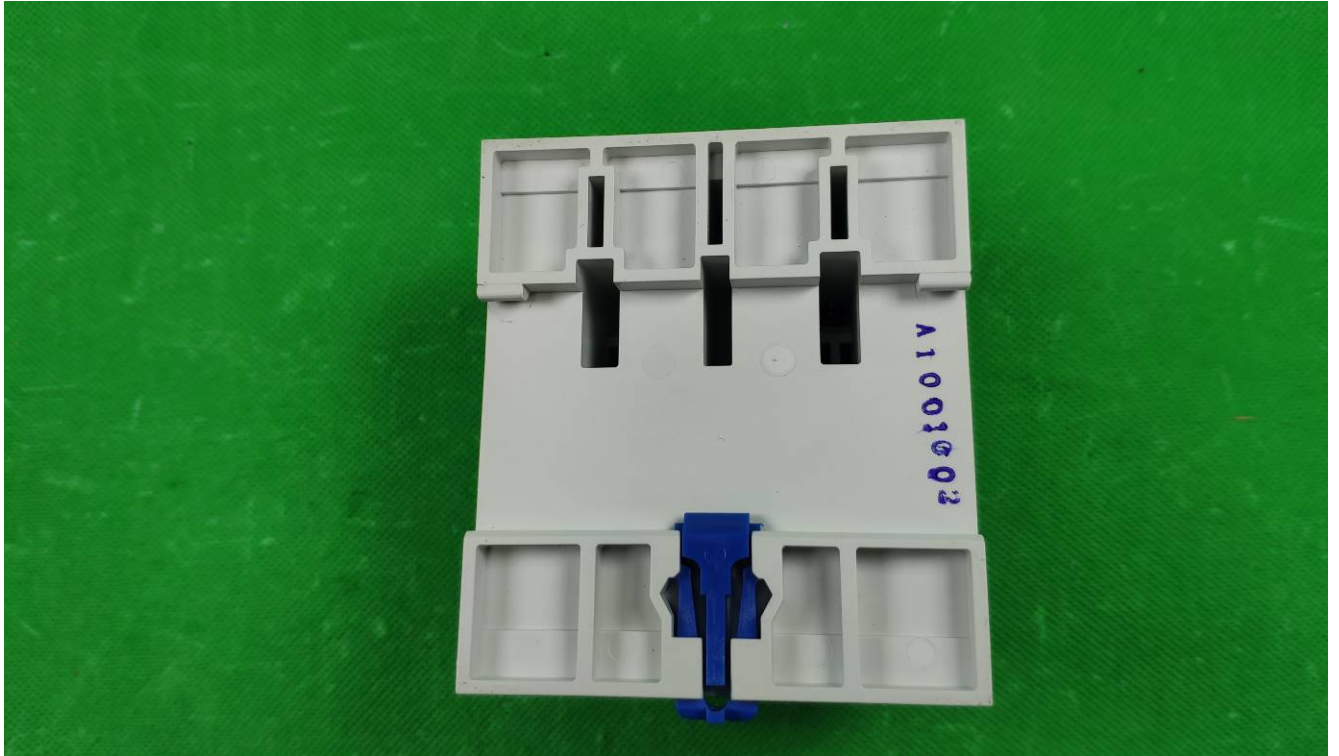
Bottom view, PR8HM / 1P+N / 100 A / 100 mA / A type



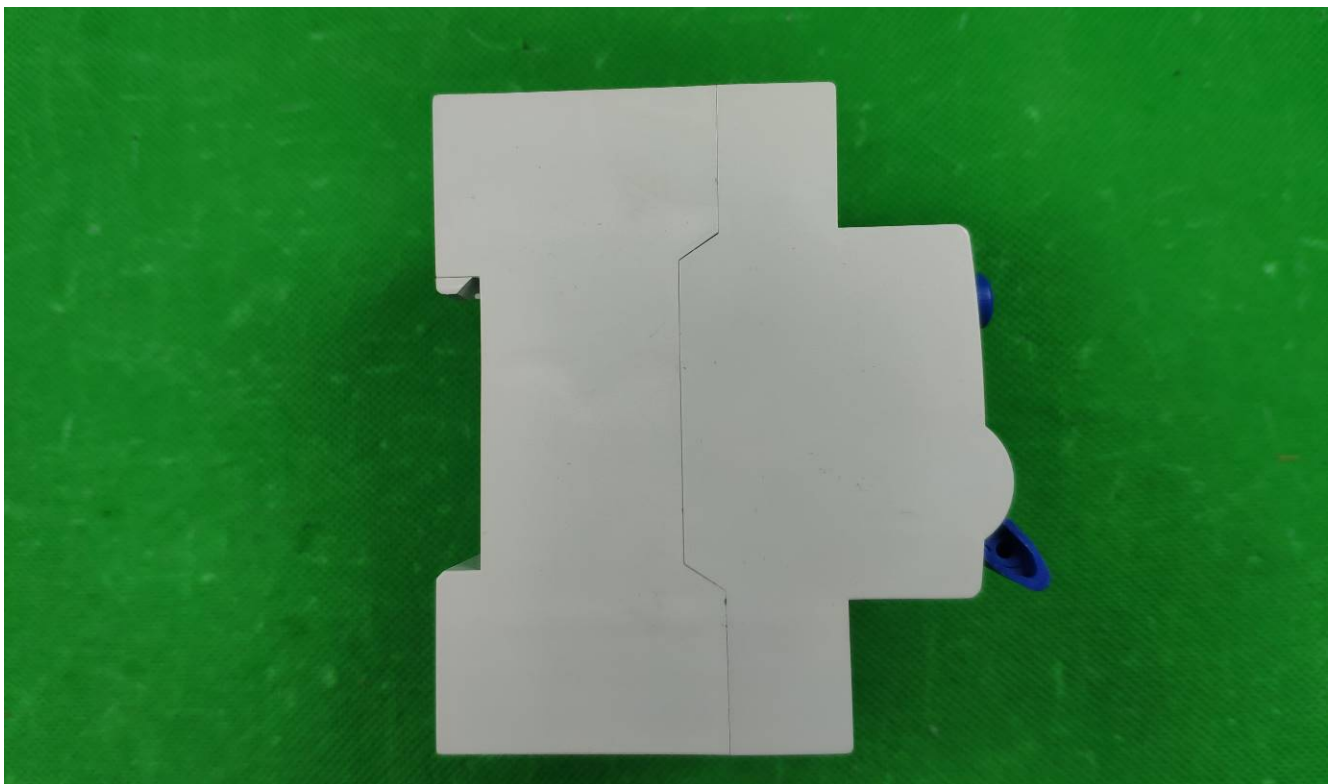
Internal view, PR8HM / 1P+N / 100 A / 100 mA / A type



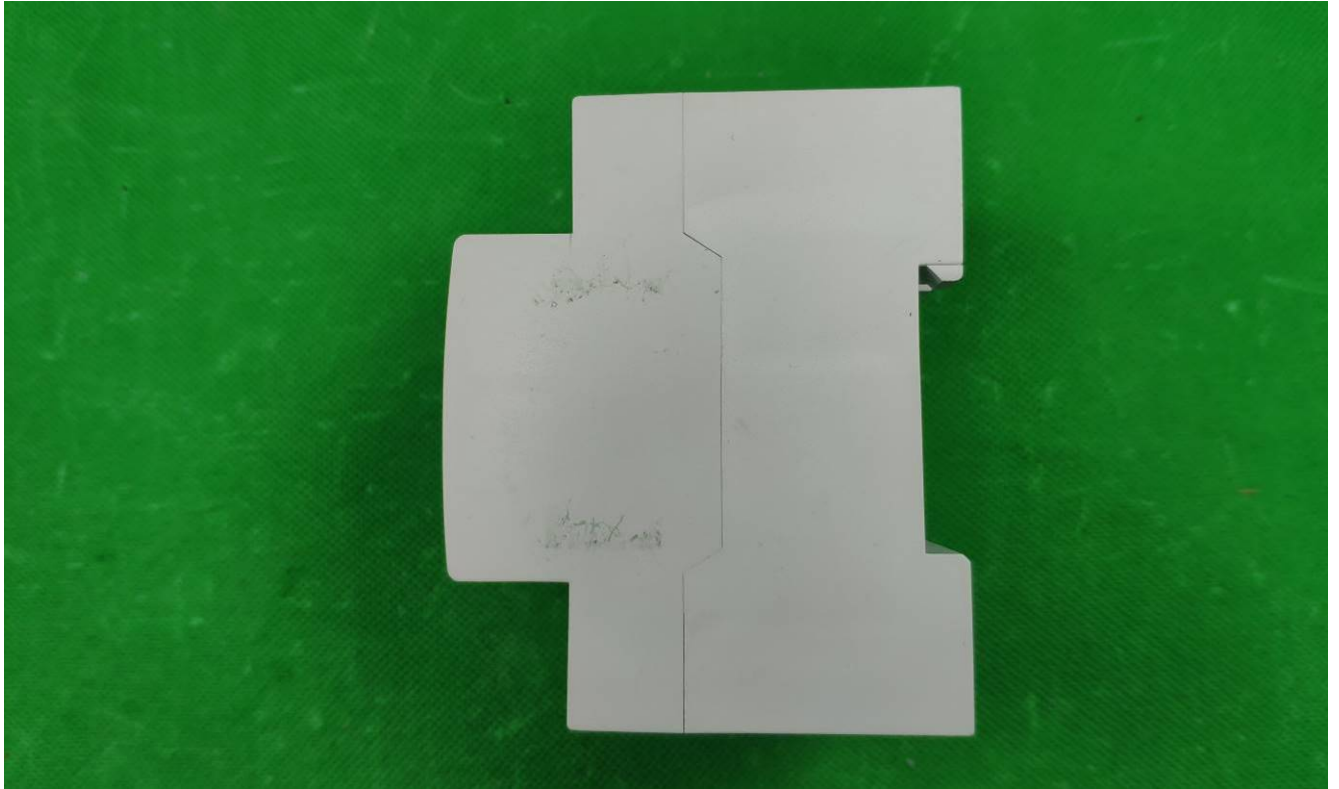
Front view, PR8HM / 3P+N / 100 A / 100 mA / A type



Back view, PR8HM / 3P+N / 100 A / 100 mA / A type



Side view, PR8HM / 3P+N / 100 A / 100 mA / A type



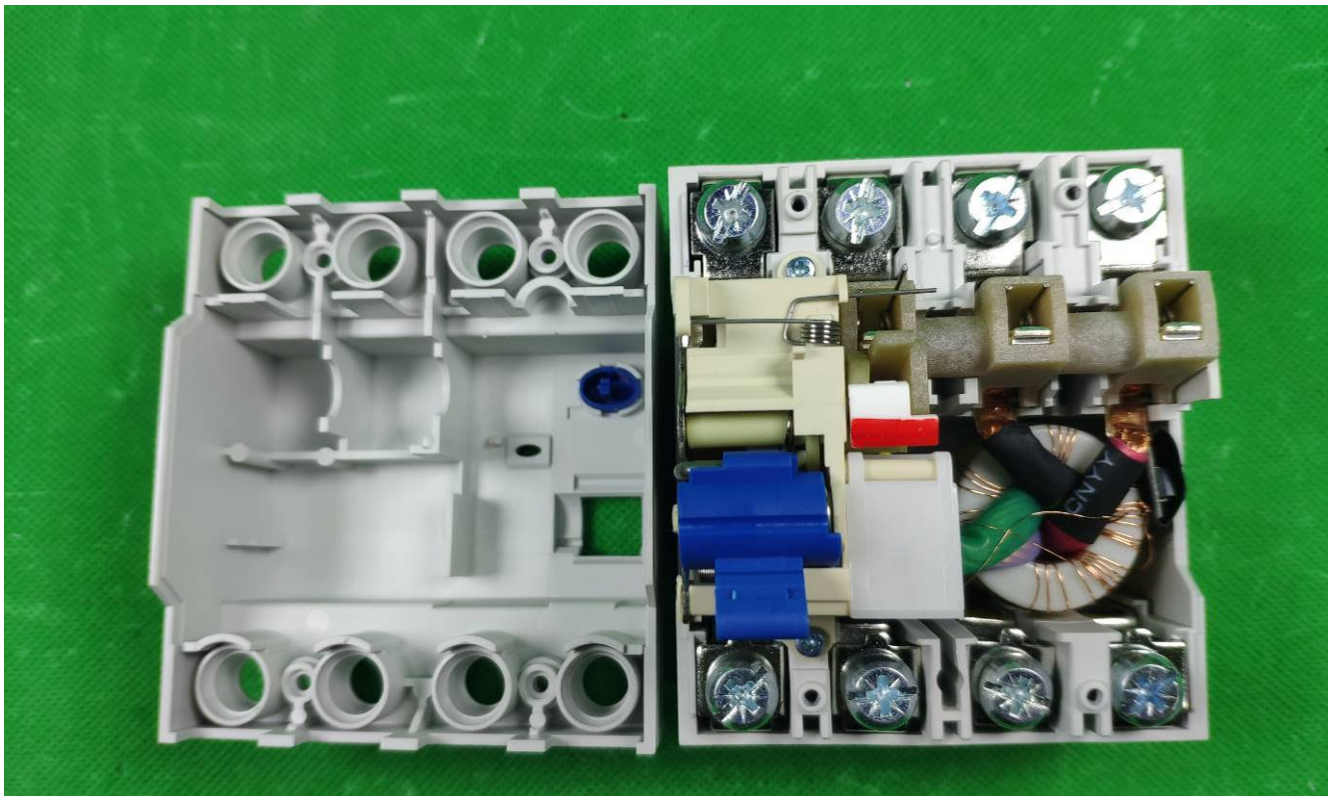
Side view, PR8HM / 3P+N / 100 A / 100 mA / A type



Top view, PR8HM / 3P+N / 100 A / 100 mA / A type



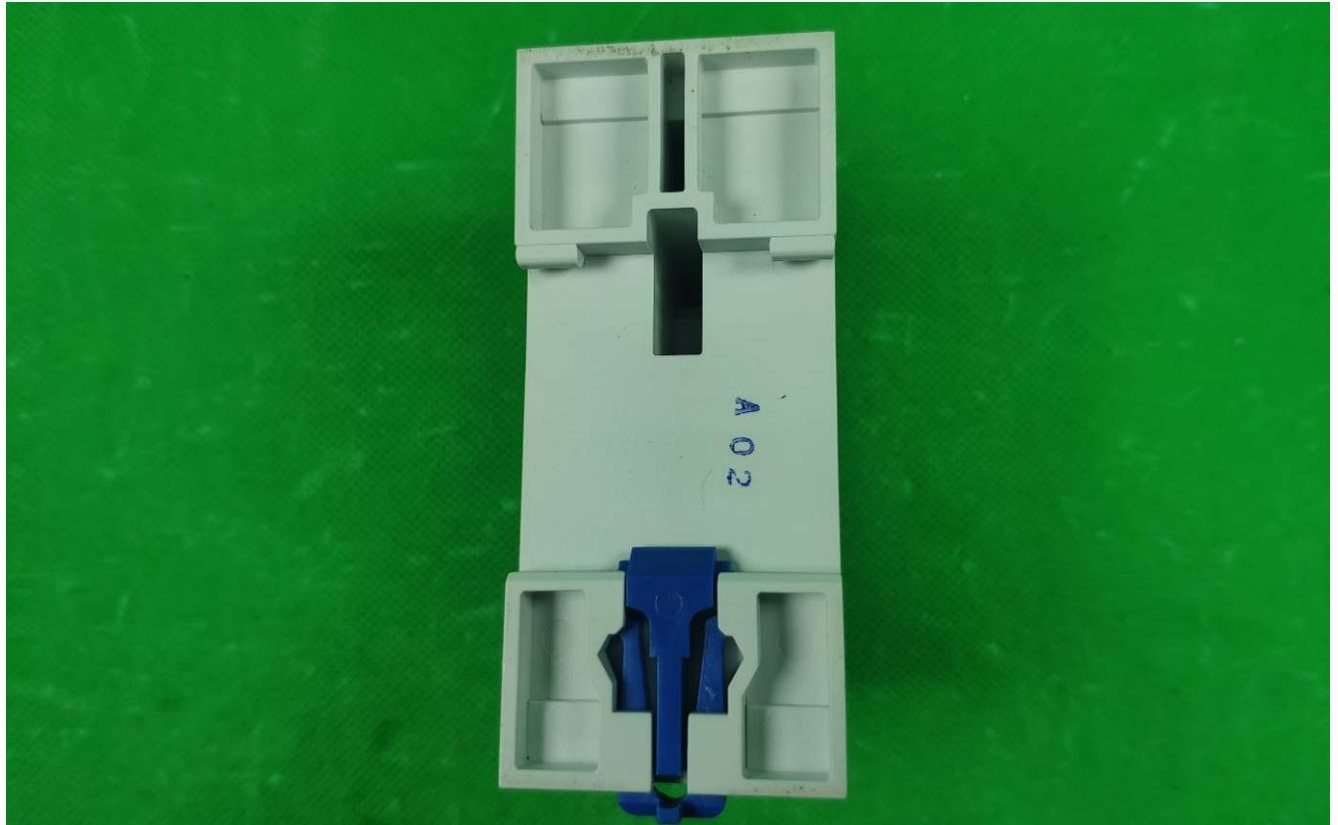
Bottom view, PR8HM / 3P+N / 100 A / 100 mA / A type



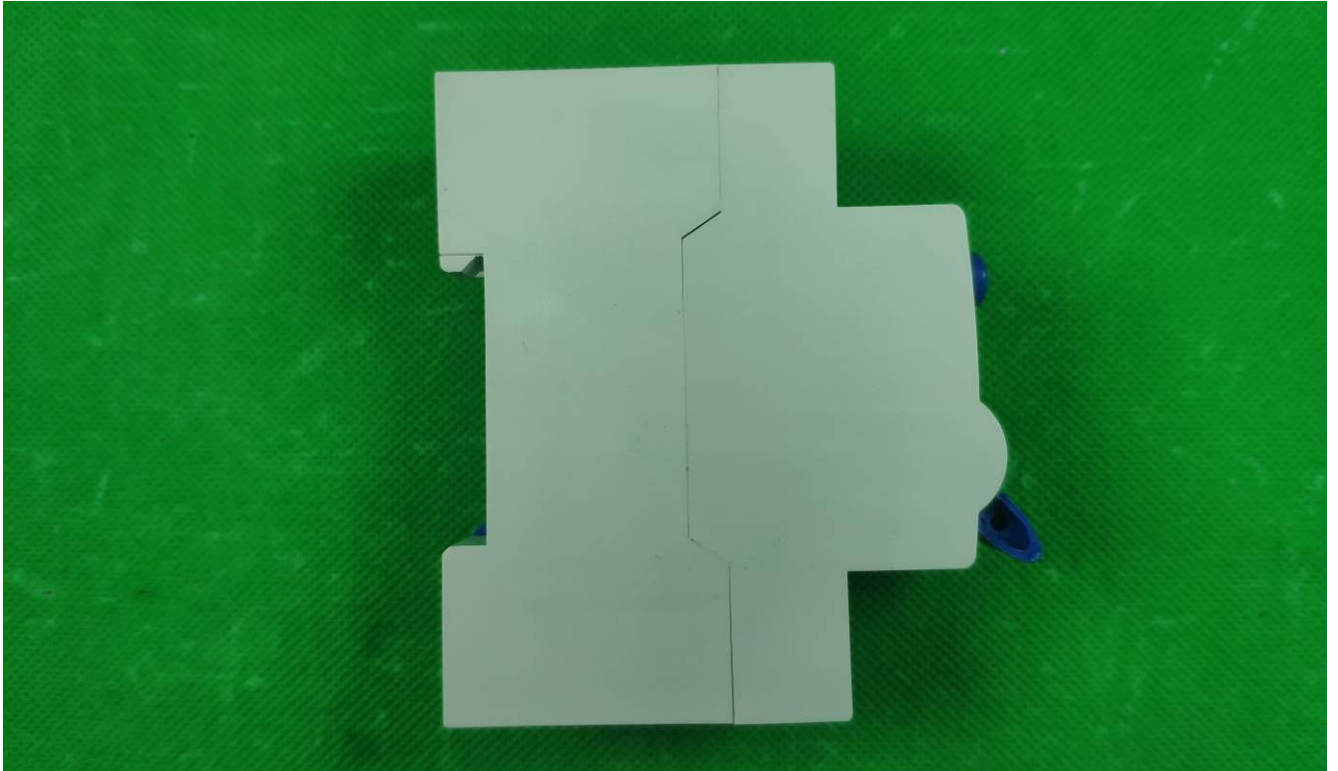
Internal view, PR8HM / 3P+N / 100 A / 100 mA / A type



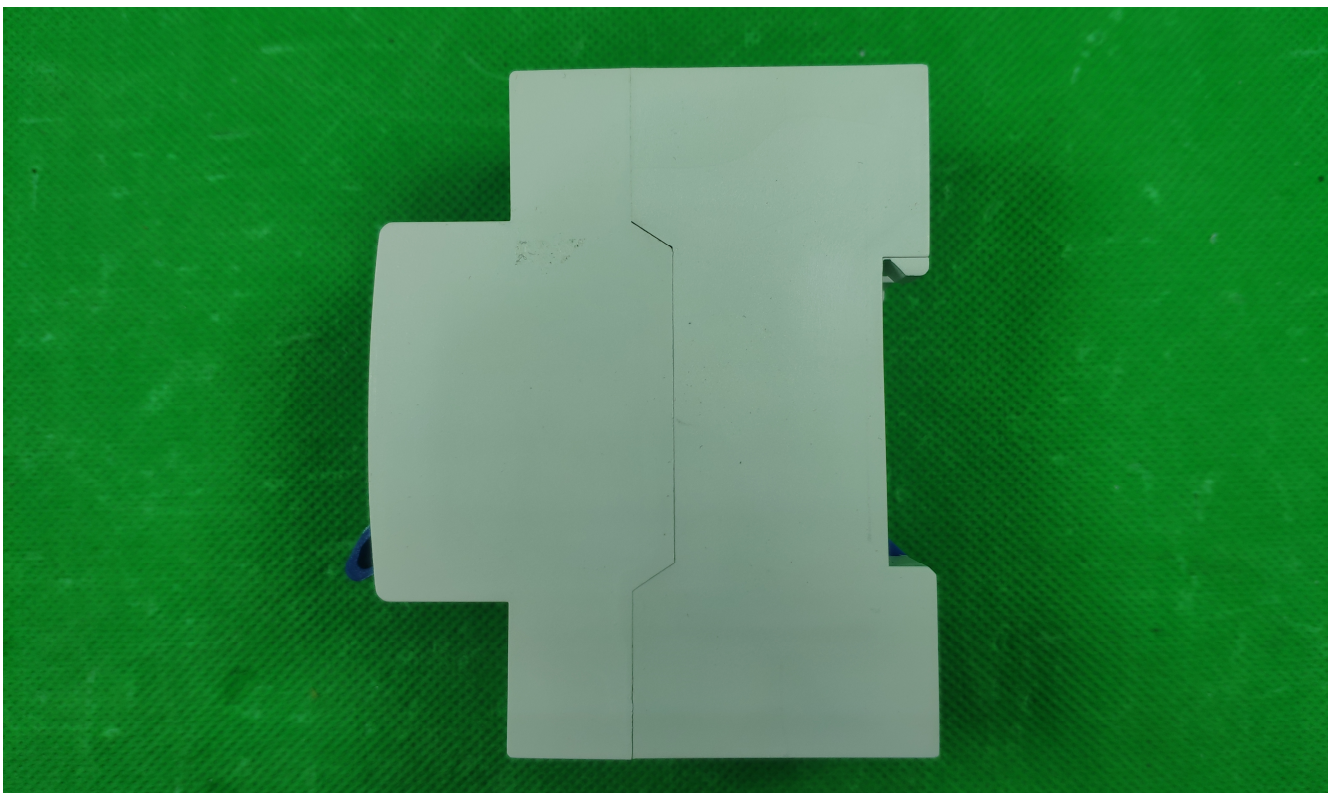
Front view, PR8HM / 1P+N / 63 A / 30 mA / A type



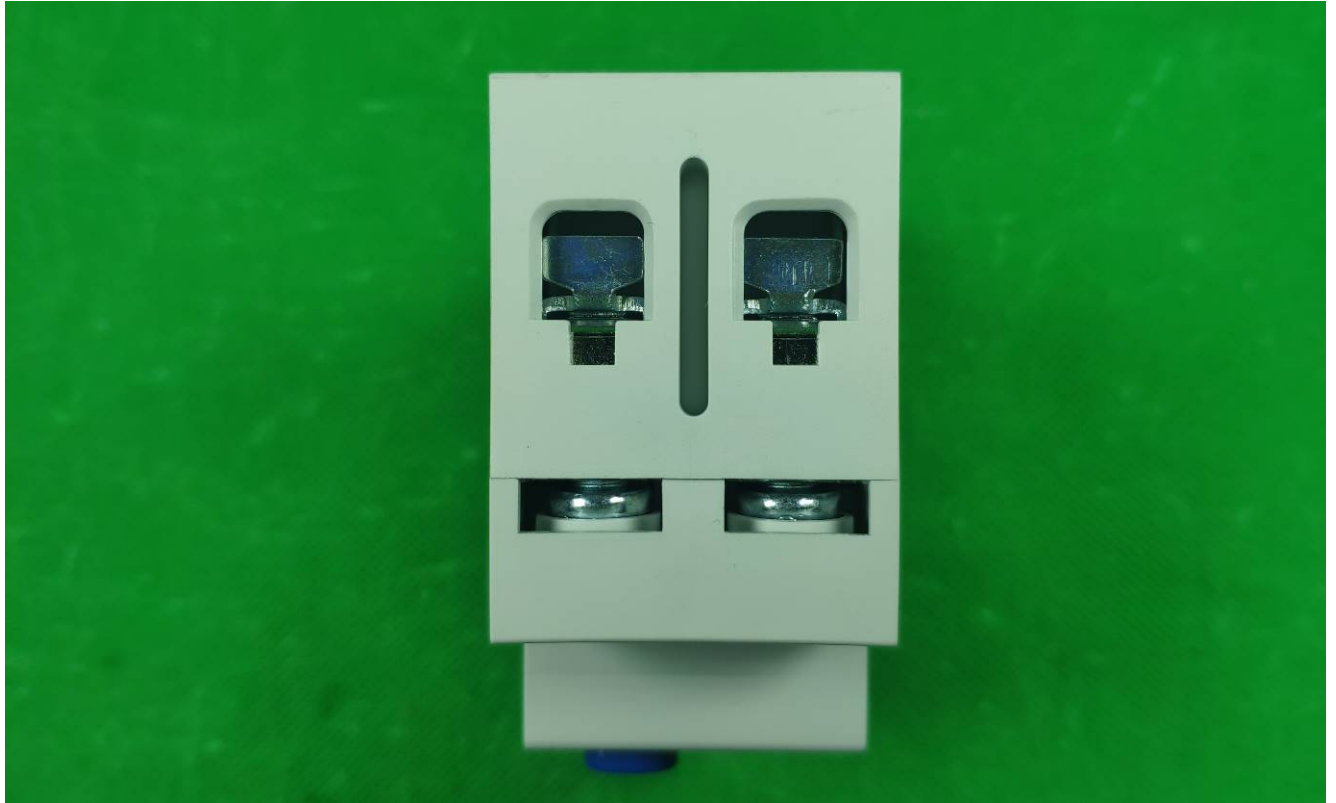
Back view, PR8HM / 1P+N / 63 A / 30 mA / A type



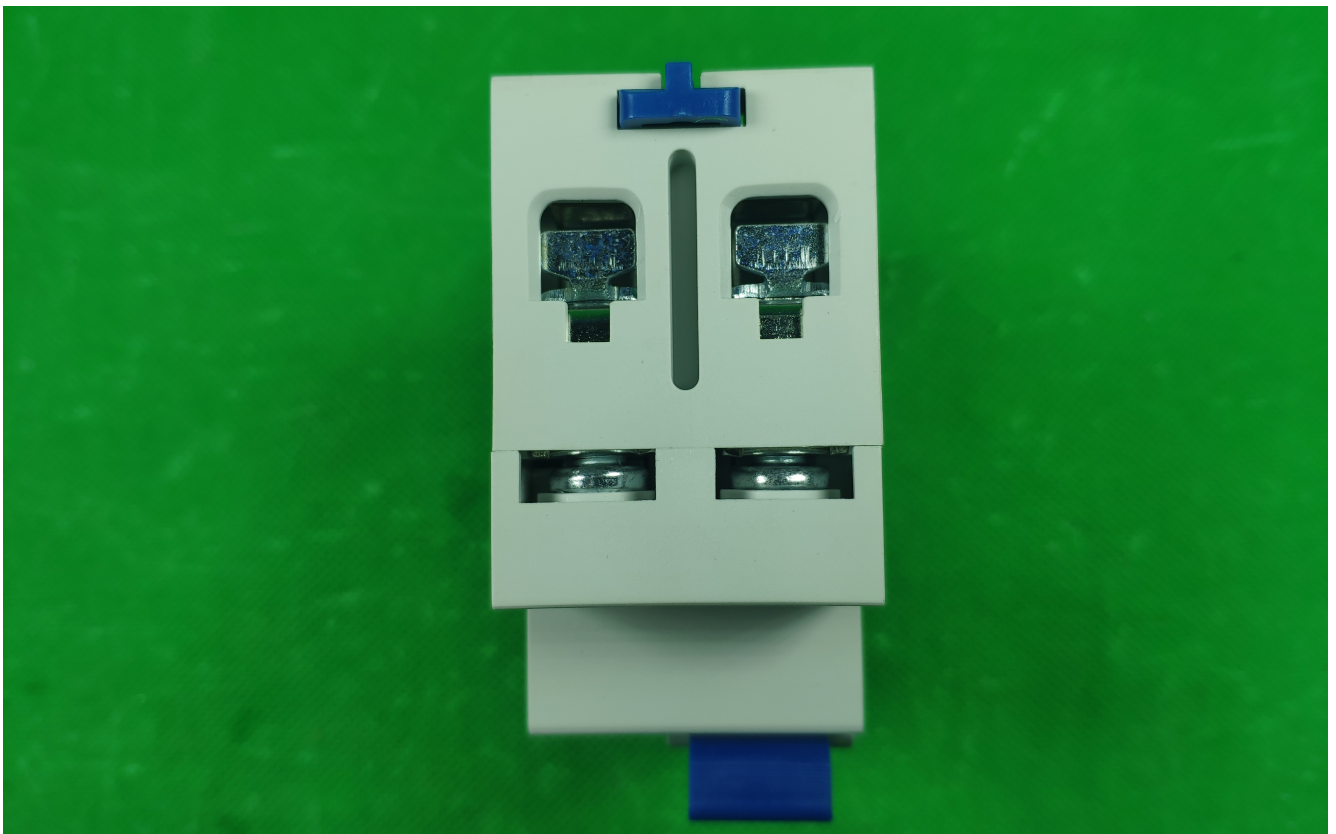
Side view, PR8HM / 1P+N / 63 A / 30 mA / A type



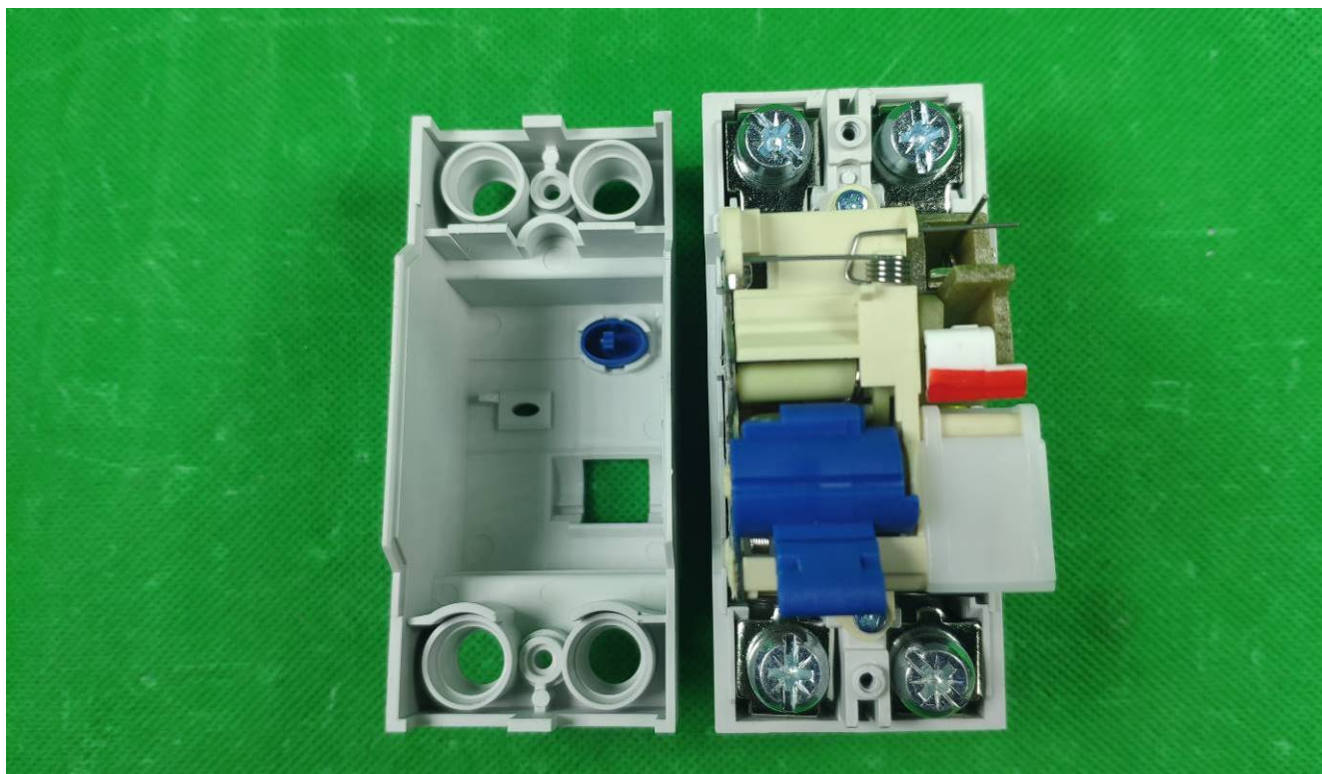
Side view, PR8HM / 1P+N / 63 A / 30 mA / A type



Top view, PR8HM / 1P+N / 63 A / 30 mA / A type



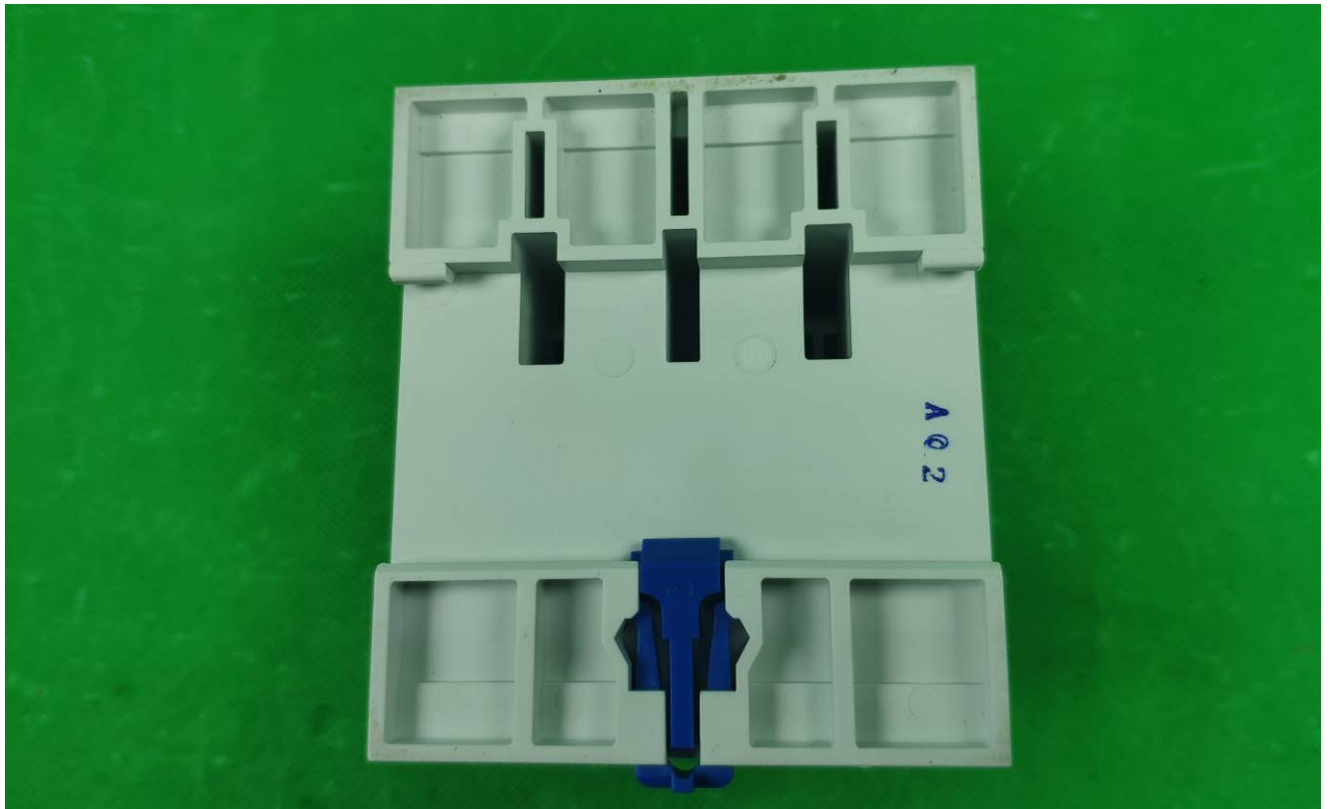
Bottom view, PR8HM / 1P+N / 63 A / 30 mA / A type



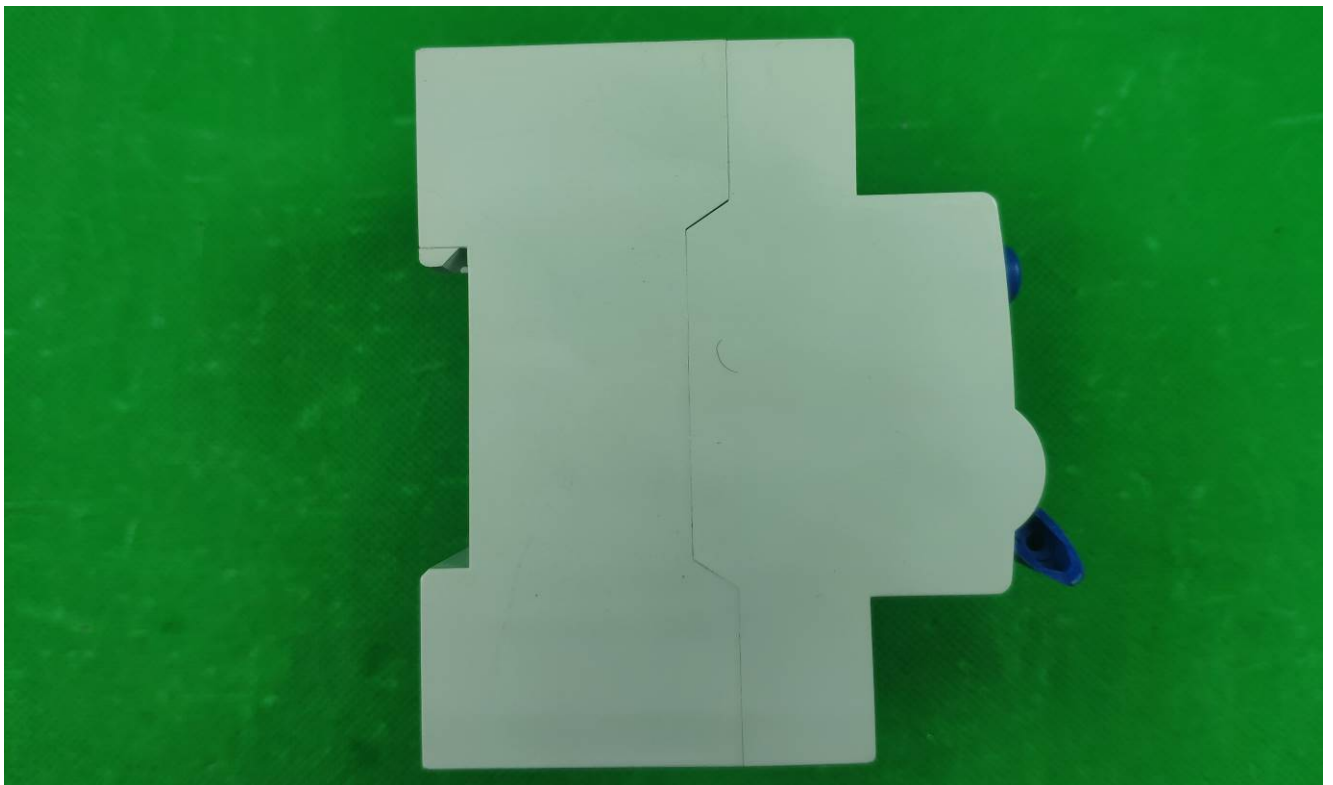
Internal view, PR8HM / 1P+N / 63 A / 30 mA / A type



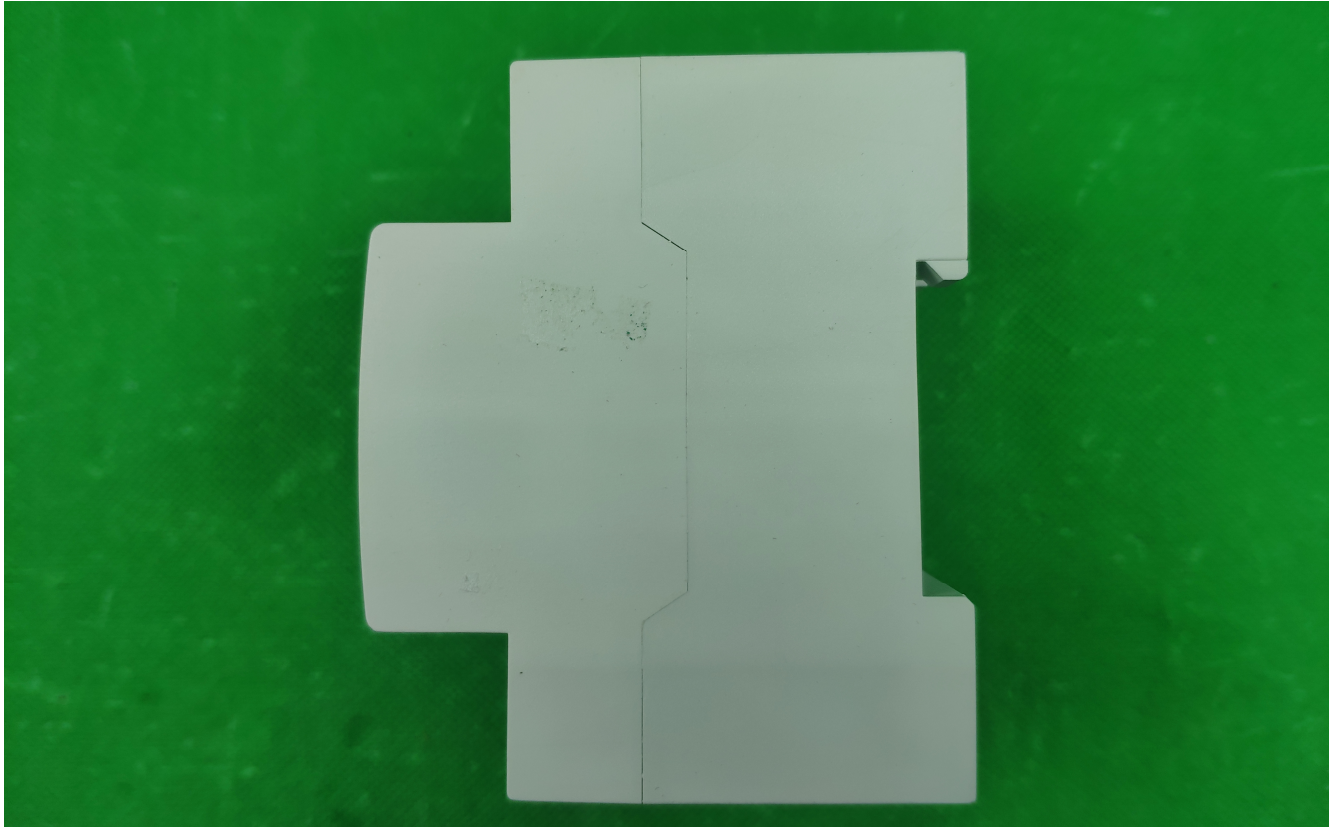
Front view, PR8HM / 3P+N / 63 A / 30 mA / A type



Back view, PR8HM / 3P+N / 63 A / 30 mA / A type



Side view, PR8HM / 3P+N / 63 A / 30 mA / A type



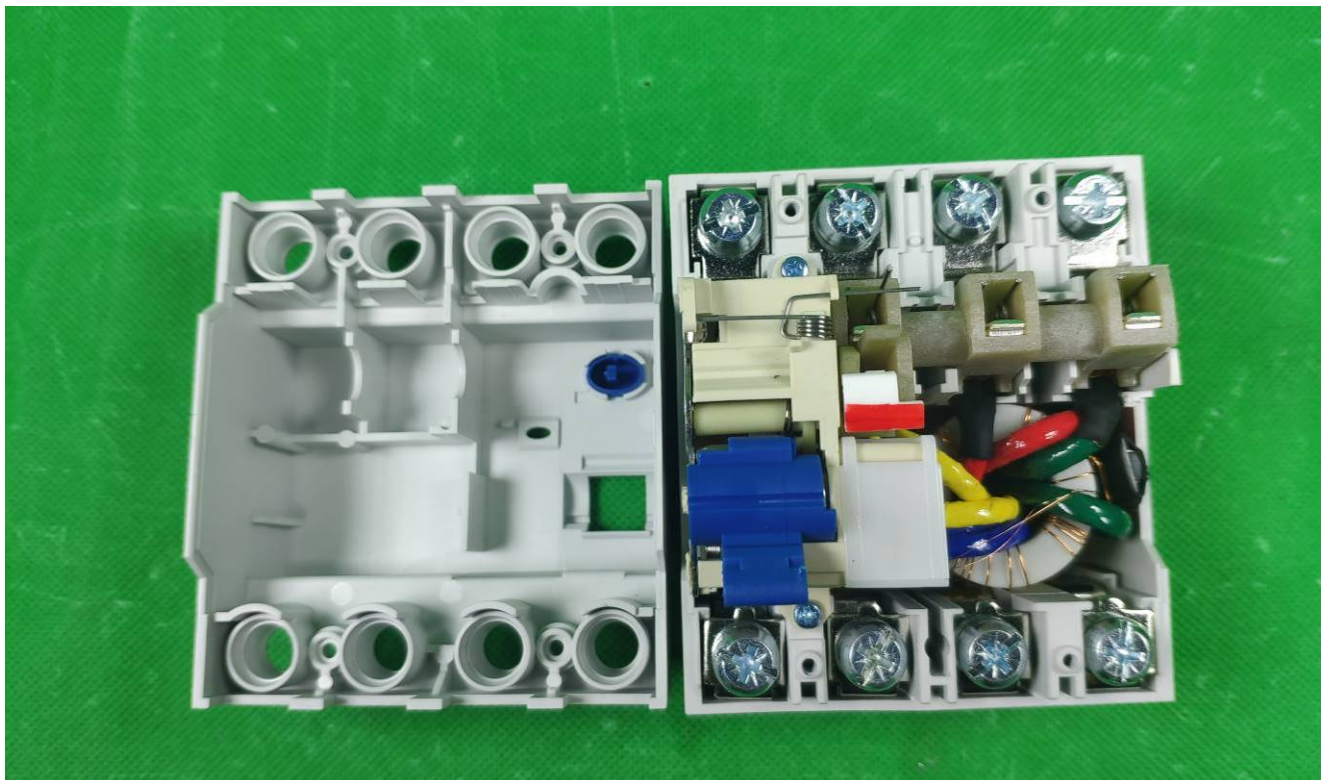
Side view, PR8HM / 3P+N / 63 A / 30 mA / A type



Top view, PR8HM / 3P+N / 63 A / 30 mA / A type



Bottom view, PR8HM / 3P+N / 63 A / 30 mA / A type



Internal view, PR8HM / 3P+N / 63 A / 30 mA / A type