



Test Report issued under the responsibility of:



TEST REPORT
IEC 60898-1
Circuit-breakers for over current protection for
household and similar installations
Part 1 - Circuit-breakers for a.c. operation

Report Number..... : CN23Y8T0 001

Date of issue..... : 25.10.2023

Total number of pages 129

Name of Testing Laboratory preparing the Report Hunan Electric Research Institute Testing Group Co.,Ltd.

Applicant's name Elmark Industries SC

Address..... 2 Dobrudzha blvd.,Dobrich,BULGARIA

Test specification:

Standard IEC 60898-1:2015, AMD1:2019

Test procedure CB Scheme

Non-standard test method N/A

Test Report Form No. IEC60898_1E

Test Report Form(s) Originator DEKRA Certification B.V.

Master TRF Dated 2021-10-17

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

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Test item description	Circuit Breaker for overcurrent protection
Trade Mark.....	
Manufacturer	MAXGE ELECTRIC TECHNOLOGY CO., LTD.
Model/Type reference.....	C61N,C62N,C63N,C64N
Ratings.....	Ue:230/400VAC(1P);230VAC(1P+N);400VAC(2,3,3P+N,4P) In: 1/2/4/6/10/16/20/25/32/40/50/63A; C-type; Uimp: 4,0kV; Icn=Ics=6,0kA; Icn1=Icn;

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):				
<input checked="" type="checkbox"/>	CB Testing Laboratory:	Hunan Electric Research Institute Testing Group Co.,Ltd.		
Testing location/ address..... :		199 Xinxiangxi Road, Xiangxiang Kunlunqiao, Xiangtan, Hunan Province, China		
Tested by (name, function, signature)		<table border="1"> <tr> <td>Test engineer</td> <td></td> </tr> </table>	Test engineer	
Test engineer				
Approved by (name, function, signature)		<table border="1"> <tr> <td>Reviewer</td> <td></td> </tr> </table>	Reviewer	
Reviewer				
<input type="checkbox"/>	Testing procedure: CTF Stage 1:			
Testing location/ address..... :				
Tested by (name, function, signature)				
Approved by (name, function, signature)				
<input type="checkbox"/>	Testing procedure: CTF Stage 2:			
Testing location/ address..... :				
Tested by (name + signature)				
Witnessed by (name, function, signature)				
Approved by (name, function, signature)				
<input type="checkbox"/>	Testing procedure: CTF Stage 3:			
<input type="checkbox"/>	Testing procedure: CTF Stage 4:			
Testing location/ address..... :				
Tested by (name, function, signature)				
Witnessed by (name, function, signature)				
Approved by (name, function, signature)				
Supervised by (name, function, signature)				

List of Attachments (including a total number of pages in each attachment):**Attachment 1: Photo documentation – 6 pages****Summary of testing:**

The model C61N,C62N,C63N,C64N according to table C.3 of Annex A, following ratings products were subject relevant test accordingly.

Sample allocation and test items according to IEC 60898-1 and EN 60898-1

Test sample Rating				Test sequence								
Pole	Curve	In [A]	Class	A	B	C1	C2	D0+D1	D0	E1	E2	E3
1P	C	63	-	1+3	3	3	3	3	-	6	-	-
1P	C	50	-	-	-	-	-	-	1	-	-	-
1P	C	40	-	-	-	-	-	-	1	-	-	-
1P	C	32	-	-	-	-	-	-	1	-	-	-
1P	C	25	-	-	-	-	-	-	1	-	-	-
1P	C	20	-	-	-	-	-	-	1	-	-	-
1P	C	16	-	-	-	-	-	-	1	-	-	-
1P	C	10	-	-	-	-	-	-	1	-	-	-
1P	C	8	-	-	-	-	-	-	1	-	-	-
1P	C	6	-	-	-	-	-	-	1	-	-	-
1P	C	4	-	-	-	-	-	-	1	-	-	-
1P	C	2	-	-	-	-	-	-	1	-	-	-
1P	C	1	-	-	-	-	-	-	1	6	-	-
2P	C	63	-	-	-	-	2	-	-	3	-	-
2P	C	1	-	-	-	-	-	-	-	3	-	-
4P	C	63	-	1+3	3	3	3	3	-	3	-	-
4P	C	1	-	-	-	-	-	-	-	3	-	-

Tests performed (name of test and test clause):**Test results are based on Intertek CB report****No.180600078SHA-001****and Hunan Electric Research Institute CB report****No. CN23Y8T0 001****Testing location:****Intertek Testing Services Shanghai****Test Sequence B**

C63; 1POLE (3 SAMPLE) page 32

C63 ;4POLE (3 SAMPLE) page 38

Test Sequence C1+C2

C63; 1POLE (6 SAMPLE) page 44

C63; 2POLE (2 SAMPLE) page 47

C63; 4POLE (6 SAMPLE) page 48

Test Sequence D0+D1

C63; 1POLE (3 SAMPLE) page 52

Test Sequence D0

C50; 1POLE (1 SAMPLE) page 62

C40; 1POLE (1 SAMPLE) page 65

C32; 1POLE (1 SAMPLE) page 68

C25; 1POLE (1 SAMPLE) page 71

C20; 1POLE (1 SAMPLE) page 74

C16; 1POLE (1 SAMPLE) page 76

C10; 1POLE (1 SAMPLE) page 79

C6; 1POLE (1 SAMPLE) page 82

C4; 1POLE (1 SAMPLE) page 88

C3; 1POLE (1 SAMPLE) page 91

C2; 1POLE (1 SAMPLE) page 94

C1; 1POLE (1 SAMPLE) page 97

Test Sequence E1

C63; 1POLE (6 SAMPLES) page 99

C1; 1POLE (6 SAMPLES) page 102

C63; 2POLE (3 SAMPLES) page 105

C1 ; 2POLE (3 SAMPLES) page 107

<u>Test Sequence A</u>		Testing location: Hunan Electric Research Institute Testing Group Co.,Ltd.
C63; 1POLE (1+3 SAMPLE)	page 10	
C63; 4POLE (1+3 SAMPLE)	page 31	
<u>Test Sequence D0+D1</u>		
C63; 4POLE (3 SAMPLE)	page 57	
<u>Test Sequence E1</u>		
C63; 4POLE (3 SAMPLES)	page 108	
C1; 4POLE (3 SAMPLES)	page 110	

Summary of compliance with National Differences (List of countries addressed):**EU Group Differences**

☒ The product fulfils the requirements of EN60898-1:2019 .

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
page 126

**Hunan Electric Research
Institute Testing Group Co.,Ltd.**

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

☒ **Statement not required by the standard used for type testing**

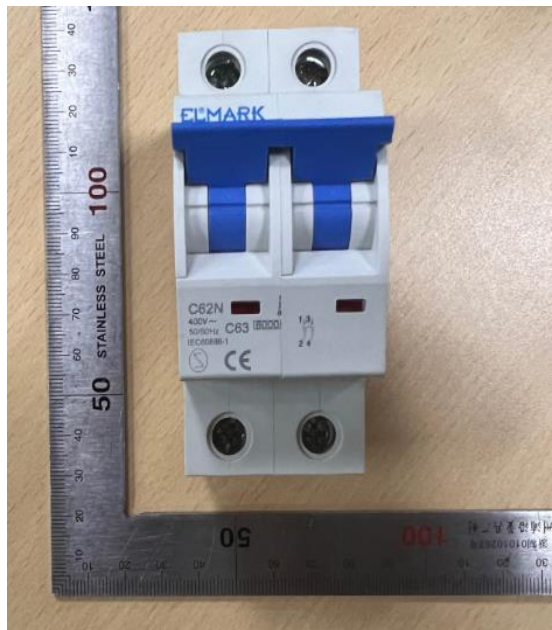
(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)

Copy of marking plate

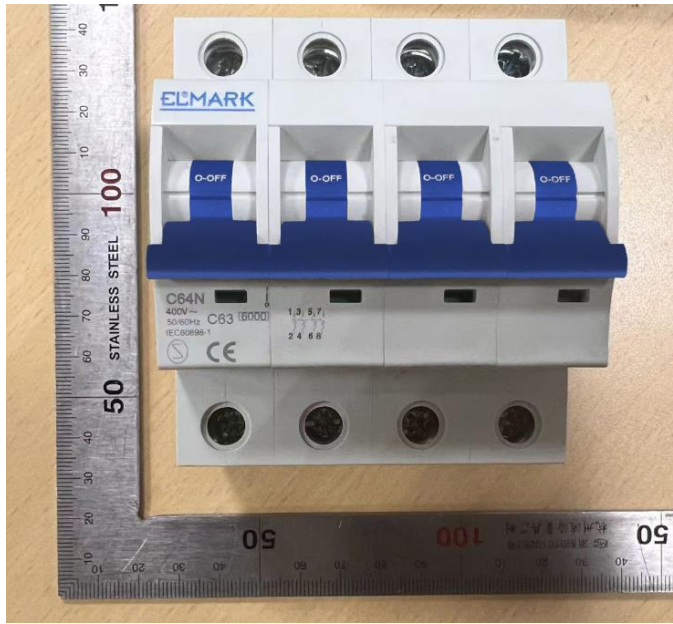
With sample of C1, 1P



With sample of C63, 2P




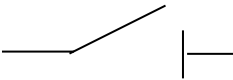
With sample of C63, 4P



Test item particulars.....: MCB	
Classification of installation and use.....: Circuit Breaker for overcurrent protection	
Supply Connection: not associated with the mechanical mounting:	
Possible test case verdicts: - test case does not apply to the test object.....: N/A - test object does meet the requirement.....: P (Pass) - test object does not meet the requirement.....: F (Fail)	
Testing.....: Date of receipt of test item: 15.08.2023 Date (s) of performance of tests: 15.08.2023 to 23.09.2023	
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 <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60898-1:	
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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies): MAXGE ELECTRIC TECHNOLOGY CO., LTD. NO. 299 EAST CHANGHONG ROAD DEQING ECONOMIC ZONE, WUKANG DEQING, 313200 Zhejiang P.R. China	
General product information and other remarks: The family products C61N,C62N,C63N,C64N are series product, according to Annex C in IEC / EN 60898-1. Ratings: Rated voltage 1P: Ue = 230/400VAC Rated voltage 1P+N: Ue = 230VAC Rated voltage 2P/3P/3P+N/4P: Ue = 400V AC Rated current In: In= 1/2/4/6/10/16/20/25/32/40/50/63A Instantaneous characteristic: C-type Short-circuit Capacity: Icn=Ics=6,0kA	

Test item particulars	
Type of circuit-breaker	Circuit Breaker for overcurrent protection
Number of poles	<input checked="" type="checkbox"/> 1-P <input checked="" type="checkbox"/> 1-P+N <input checked="" type="checkbox"/> 2-P <input checked="" type="checkbox"/> 3-P <input checked="" type="checkbox"/> 3-P+N <input checked="" type="checkbox"/> 4-P
Protection against external influences	<input type="checkbox"/> enclosed <input checked="" type="checkbox"/> unenclosed
Method of mounting	<input type="checkbox"/> surface <input type="checkbox"/> flush <input checked="" type="checkbox"/> panel board
Method of connection	<input checked="" type="checkbox"/> not associated with the mechanical mounting <input type="checkbox"/> associated with the mechanical mounting
Type of terminal	<input checked="" type="checkbox"/> screw ^{a) b)} <input checked="" type="checkbox"/> pillar ^{a) b)} <input type="checkbox"/> cage ^{a) b)} <input type="checkbox"/> plug <input type="checkbox"/> screw less ^{a)} <input type="checkbox"/> flat quick connect ^{a)} <input type="checkbox"/> plug-in <input type="checkbox"/> screw-in ^{a)} copper conductors ^{b)} aluminium conductors
Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D
I ² t characteristic	
Value of rated operational voltage (Ue)	<input type="checkbox"/> 120 V <input type="checkbox"/> 230 V <input type="checkbox"/> 240 V <input type="checkbox"/> 120/240 V <input checked="" type="checkbox"/> 230/400 V <input checked="" type="checkbox"/> 400 V <input type="checkbox"/> 240/415 V <input type="checkbox"/> 415 V
Value of rated current (In)	1-63A
Value of rated frequency	<input checked="" type="checkbox"/> 50 Hz <input type="checkbox"/> 60 Hz
Ambient air temperature (°C)	<input checked="" type="checkbox"/> 30°C <input type="checkbox"/> 40°C <input type="checkbox"/> Other _____ °C
Rated short-circuit capacity (Icn)	<input type="checkbox"/> 1,5 kA <input type="checkbox"/> 3 kA <input type="checkbox"/> 4,5 kA <input checked="" type="checkbox"/> 6 kA <input type="checkbox"/> 10 kA <input type="checkbox"/> 15 kA <input type="checkbox"/> 20 kA <input type="checkbox"/> 25 kA
Rated impulse withstand voltage (Uimp)	<input type="checkbox"/> 2,5 kV <input checked="" type="checkbox"/> 4 kV <input type="checkbox"/> declared ____ kV

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A1“ 1 SAMPLE FOR C63, 1P		--
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		--
	a) Manufacturer's name or trade mark.....:	Trademark: 	P
	b) Type designation, catalogue number or other serial number.....:	C61N	P
	c) Rated voltage (V).....:	230/400V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping.....:	C63	P
	e) Rated frequency (Hz)	50Hz/60Hz	P
	f) Rated short circuit capacity (A)	6kA	P
	g) Wiring diagram	See copy of marking plate	P
	h) Ambient air temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) For D-type circuit-breakers: the maximum instantaneous tripping current, if higher than 20 In see table 2)		N/A
	k) Rated impulse withstand voltage Uimp if it is 2,5 kV	4,0 kV	P
	l) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (Icn1), if different from Icn		N/A
	Marking d) shall be readily visible when the CB is installed		P
	If, for small devices, the available space is insufficient, markings a), b), c), e), f), h), j) and l) may be put on the side or on the back of the CB		N/A
	Marking g) may be on the inside of any cover which has to be removed in order to connect the supply wires but shall not be on a label loosely attached to the CB		N/A

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Any other information not marked shall be given in the manufacturer's documentation		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	I ² t characteristic (documentation)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 I -		P
	For push-button CB the off push-button shall either be red or be marked with the symbol '0'		N/A
	Red not used for other push-button		N/A
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	For rail-mounted circuit-breakers, appropriate rail(s) shall be indicated in the manufacturer's documentation		N/A
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 9.3)		P
8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		P
	Circuit-breakers shall be so designed and constructed that, in normal use, their performance is reliable and without danger to the user or surroundings		P
8.1.2	Mechanism		P
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		P
	The switched neutral shall close before and open after the protected pole (s)		N/A

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P
	Indication visible from the outside		P
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts; operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		N/A
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position.		N/A
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances and operation		P
	The minimum required clearances and creepage distances are based on the CB being designed for operating in an environment with pollution degree 2		P
	Parts of PCBs connected to live parts and protected against pollution by the use of a type 2 protection according to IEC 60664-3 are exempted from this verification		N/A

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The insulating materials are classified into material groups on the basis of their comparative tracking index (CTI) according to IEC 60664-1		N/A
	For clearances on printed wiring material, footnote 3 in Table F.2 of IEC 60664-1:2007 applies. For creepage distances on printed wiring material, the distances from Table F.4 of IEC 60664-1:2007 for pollution degree 1 can be applied only if protected with a coating meeting IEC 60664-3 requirements and tests		N/A
8.1.3.1	Clearances		P
	Compliance for item 1 in Table 4 is checked by measurement and by the test of 9.7.5.4. The test is carried out with samples not submitted to the humidity treatment described in 9.7.1		P
	Compliance as regards items 2 and 4 in Table 4 is checked by measurement and, if the clearances are reduced, by the tests of 9.7.5.2		P
	The clearances of items 2 and 4 (except accessible surface after installation) may be reduced provided that the measured clearances are not shorter than the minimum allowed in IEC 60664-1 for homogenous field conditions.		P
	In this case, compliance as regards items 2 and 4 is always checked by the test of 9.7.5.2		P
	Compliance as regards item 3 in Table 4 is checked by measurement		P
	Minimum clearances (see table 4)		P
	Clearances [mm] Uimp		--
	4 kV (see table 4) 2,5 kV (see table 4)	<input checked="" type="checkbox"/> <input type="checkbox"/>	--
		minimum clearances 4,0 [mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	5,92mm	P
	2.between live parts of different polarity.....	Single pole	P
	3.between circuits supplied from different sources, one of which being PELV or SELV	no such part	N/A
	4.between live parts and		P
	- accessible surfaces of operating means.....	16,2 mm	P
	- screws or other means for fixing covers	-	N/A
	- surface on which the base is mounted.....	15,1 mm	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- screws or other means for fixing the circuit breaker	-	N/A
	- metal covers or boxes	-	N/A
	- other accessible metal parts		N/A
	- metal frames supporting the base (flush-type) .:	-	N/A
8.1.3.2	Creepage distances		P
	Compliance as regards items 1, 2, 3 and 4 of Table 4 is checked by measurement		
	Minimum creepage distances (see table 4)		
	Material group	<input type="checkbox"/> III _b <input checked="" type="checkbox"/> III _a <input type="checkbox"/> II <input type="checkbox"/> I	--
		minimum creepage distances 4,0[mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	14,8 mm	P
	2.between live parts of different polarity	Single pole	P
	3.between circuits supplied from different sources, one of which being PELV or SELV	no such part	N/A
	4.between live parts and		P
	- accessible surfaces of operating means	21,9 mm	P
	- screws or other means for fixing covers	-	N/A
	- surface on which the base is mounted	16,7mm	P
	- screws or other means for fixing the circuit breaker	-	N/A
	- metal covers or boxes	-	N/A
	- other accessible metal parts		N/A
	- metal frames supporting the base (flush-type) .:		N/A
8.1.3.3	Solid insulation		P
	Compliance is checked by the tests according to 9.7.2, 9.7.3, 9.7.4 and 9.7.5, as applicable		P
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 of the CB not of the thread-cutting type		N/A
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)	Ø__mm__Nm (see table 11) Ø__mm__Nm	N/A

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 5 times (screw Ø / torque Nm)	Ø_7__mm_2,5__Nm (see table 11) Ø__mm__Nm	P
	After test connections have not become loose nor electrical function impaired		P
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection: contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		N/A
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		N/A
	- alloy 58% copper for worked cold parts	For contact	P
	- alloy 50% copper for other parts		N/A
	- other metal	Zn plated Steel for screw	P
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.16).		N/A
	The requirements of this subclause do not apply to contacts, magnetic circuits, heater elements, bimetals, shunts, electronic components, including printed circuit board or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
	Compliance is checked by inspection in accordance with the manufacturer's declaration		P
8.1.5	Terminals for external conductors		--
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		--
	by tests of clause 9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on CBs included in this document		N/A
	by the tescots of Annexes J, K		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	Torque test:		P
	- torque (Nm); diameter (mm).....:		--


IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- torque (Nm); diameter (mm).....:		--
	- torque (Nm); diameter (mm).....:		--
	- max. cross-sectional area (mm ²).....:		--
9.5.2	Pull test:		P
	Terminals shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.		--
	Min. cross-section solid / stranded / flexible (mm ²).....:	1mm ² for solid / flexible construction 1,5mm ² for stranded construction	--
	Max. cross-section solid / stranded / flexible (mm ²).....:	6mm ² for solid construction 25mm ² for stranded construction 16mm ² for flexible construction	--
	Torque $\frac{2}{3}$ (Nm)	1,67	--
	Pull for 1 min solid / stranded / flexible (N).....:	60-100N	P
	During the test no noticeable move of conductor		P
9.5.3	Torque test:		P
	- torque $\frac{2}{3}$ (Nm).....:	1,67Nm	--
	- min. cross-sectional area (mm ²).....:	1mm ²	--
	- max. cross-sectional area (mm ²).....:	25mm ²	--
	The conductor shows no undue damage nor severed strands		P
	Terminals have not worked loose and no damage		P
9.5.4	Terminals fitted with the largest cross-section area specified in Table 5, for stranded copper conductor.		P
	Max. cross-section stranded (mm ²).....:	25mm ²	--
	Torque $\frac{2}{3}$ (Nm)	1,67Nm	--
	After the test no strand of conductor escaped outside		P
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P


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Clause	Requirement + Test		Result - Remark	Verdict
	Rated current (A) sections	Range of nominal cross to be clamped* (mm²) Rigid (solid or stranded) conductors	Flexible conductors	P
	≤ 13	1 to 2,5	1 to 2,5	
	> 13 ≤ 16	1 to 4	1 to 4	
	> 16 ≤ 25	1,5 to 6	1,5 to 6	
	> 25 ≤ 32	2,5 to 10	2,5 to 6	
	> 32 ≤ 50	4 to 16	4 to 10	
	> 50 ≤ 80	10 to 25	10 to 16	
	> 80 ≤ 100	16 to 35	16 to 25	
	> 100 ≤ 125	24 to 50	25 to 35	
	*It is required that, for current ratings up to and including 50 A, terminals be designed to clamp solid conductors as well as rigid stranded conductors. Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm² up to 6 mm² be designed to clamp solid conductors only.			N/A
	- or terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors according to Annex L.			N/A
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)			P
8.1.5.4	Terminals for I _N ≤ 32 A allow the connection of conductors without special preparation			P
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.2)			P
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.3)			P
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.2)			P
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.4)			P
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)			P
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening			N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.11	Pillar terminals shall allow full insertion and reliable clamping of the conductor		N/A
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be the thread cutting type		P
8.1.6	Non-interchangeability		N/A
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Mechanical mounting of plug-in circuit-breakers		N/A
8.1.7.1	The mechanical mounting of plug-in circuit-breakers, the retention of which does not depend solely on their plug-in connection(s), shall be reliable and have adequate stability		N/A
8.1.7.2	Plug-in type circuit-breakers, the retention of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.3	Plug-in type circuit-breakers, the retention of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.14	Electromagnetic Immunity		P
	Circuit-breakers for overcurrent protection for household and similar installations are not sensitive to normal electromagnetic disturbance and therefore no immunity tests are required		P
8.15	Electromagnetic emission		P
	Electromagnetic disturbance can only be generated by circuit-breakers for overcurrent protection for household and similar installations during occasional switching or automatic breaking operations. The duration of the disturbances is of the order of milliseconds		P
	The frequency, the level and the consequences of these emissions are considered as part of the normal electromagnetic environment of low-voltage installations. Therefore the requirements for electromagnetic emissions are deemed to be satisfied and no verifications are necessary		P

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Clause	Requirement + Test	Result - Remark	Verdict
8.2	Protection against electric shock		P
	Live parts not accessible in normal use		P
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed, - adequate thickness and - mechanical strength		P
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type), screws or other means for fixing the base		P
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		N/A
8.1.3	Creepage distances [mm] (see table 4)		P
	Internal parts only	See above	N/A
9.6	Test of protection against electric shock		P
	This verification is applicable to those parts of circuit breakers which are exposed to the operator when mounted as for normal use		P
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N		P
8.10	Resistance to heat		P
	CB sufficiently resistant to heat		P
9.14	Test of resistance to heat		P

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Clause	Requirement + Test	Result - Remark	Verdict	
9.14.1	Test:		P	
	- without removable covers 1 h (100 ± 2) °C		P	
	- removable covers 1 h (70 ± 2) °C		N/A	
	After the test no access to live parts, marking still legible		P	
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	Impression: 1,02mm for enclosure	P	
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position) T = (70 ± 2)°C or T = ____ °C = (40 ± 2)°C + max. temperature rise of sub-clause 9.8 Ø of impression ≤ 2 mm		P	
8.12	Resistance to rusting		P	
	Ferrous parts adequately protected against rusting		P	
9.16	Test of resistance to rusting:		P	
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P	
	- 10 min immersed in a 10% solution of chloride in water at 20°C		P	
	- 10 min at 95% humidity at 20°C		P	
	- 10 min at 100°C		P	
	No sign of rust		P	
	TESTS „A₂“ 3 samples For C63, 1P	A₂₋₁	A₂₋₂	A₂₋₃
8.11	Resistance to abnormal heat and to fire			P
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions			P
9.15	Resistance to abnormal heat and to fire			P
	Test performed on a complete CB			P
	external parts retaining current-carrying parts and parts of the protective circuit in position (960 ± 15)°C			P
	all other external parts (650 ± 10)°C			M/A
	No visible flames, no sustained glowing, or			N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	flames and glowing extinguish within 30 s after removal		P
	No ignition of tissue paper or scorching of the pinewood board		P
	TESTS „A1“ 1 SAMPLE FOR C63, 4P		--
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		--
	a) Manufacturer's name or trade mark.....	Trademark: 	P
	b) Type designation, catalogue number or other serial number	C64N	P
	c) Rated voltage (V).....	400V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping.....	C63	P
	e) Rated frequency (Hz)	50/60Hz	P
	f) Rated short circuit capacity (A)	10000A	P
	g) Wiring diagram	See copy of marking plate	P
	h) Ambient air temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) For D-type circuit-breakers: the maximum instantaneous tripping current, if higher than 20 In see table 2)		N/A
	k) Rated impulse withstand voltage Uimp if it is 2,5 kV	4,0 kV	P
	l) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (Icn1), if different from Icn		N/A
	Marking d) shall be readily visible when the CB is installed		P
	If, for small devices, the available space is insufficient, markings a), b), c), e), f), h), j) and l) may be put on the side or on the back of the CB		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Marking g) may be on the inside of any cover which has to be removed in order to connect the supply wires but shall not be on a label loosely attached to the CB		N/A
	Any other information not marked shall be given in the manufacturer's documentation		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	I ² t characteristic (documentation)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 I -		P
	For push-button CB the off push-button shall either be red or be marked with the symbol '0'		N/A
	Red not used for other push-button		N/A
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	For rail-mounted circuit-breakers, appropriate rail(s) shall be indicated in the manufacturer's documentation		N/A
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 9.3)		P
8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		P
	Circuit-breakers shall be so designed and constructed that, in normal use, their performance is reliable and without danger to the user or surroundings		P
8.1.2	Mechanism		P
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P
	Indication visible from the outside		P
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts; operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		N/A
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position.		N/A
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances and operation		P
	The minimum required clearances and creepage distances are based on the CB being designed for operating in an environment with pollution degree 2		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Parts of PCBs connected to live parts and protected against pollution by the use of a type 2 protection according to IEC 60664-3 are exempted from this verification		N/A
	The insulating materials are classified into material groups on the basis of their comparative tracking index (CTI) according to IEC 60664-1		N/A
	For clearances on printed wiring material, footnote 3 in Table F.2 of IEC 60664-1:2007 applies. For creepage distances on printed wiring material, the distances from Table F.4 of IEC 60664-1:2007 for pollution degree 1 can be applied only if protected with a coating meeting IEC 60664-3 requirements and tests		N/A
8.1.3.1	Clearances		P
	Compliance for item 1 in Table 4 is checked by measurement and by the test of 9.7.5.4. The test is carried out with samples not submitted to the humidity treatment described in 9.7.1		P
	Compliance as regards items 2 and 4 in Table 4 is checked by measurement and, if the clearances are reduced, by the tests of 9.7.5.2		P
	The clearances of items 2 and 4 (except accessible surface after installation) may be reduced provided that the measured clearances are not shorter than the minimum allowed in IEC 60664-1 for homogenous field conditions.		P
	In this case, compliance as regards items 2 and 4 is always checked by the test of 9.7.5.2		P
	Compliance as regards item 3 in Table 4 is checked by measurement		P
	Minimum clearances (see table 4)		P
	Clearances [mm] Uimp		--
	4 kV (see table 4) 2,5 kV (see table 4)	<input checked="" type="checkbox"/> <input type="checkbox"/>	--
		minimum clearances 4,0 [mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	5,98 mm	P
	2.between live parts of different polarity.....	16,4mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV	no such part	N/A
	4.between live parts and		P
	- accessible surfaces of operating means.....	16,3 mm	P
	- screws or other means for fixing covers	-	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- surface on which the base is mounted..... :	14,3 mm	P
	- screws or other means for fixing the circuit breaker	-	N/A
	- metal covers or boxes	-	N/A
	- other accessible metal parts		N/A
	- metal frames supporting the base (flush-type) . :	-	N/A
8.1.3.2	Creepage distances		P
	Compliance as regards items 1, 2, 3 and 4 of Table 4 is checked by measurement		
	Minimum creepage distances (see table 4)		
	Material group	<input type="checkbox"/> III _b <input checked="" type="checkbox"/> III _a <input type="checkbox"/> II <input type="checkbox"/> I	--
		minimum creepage distances 4,0[mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	15,1 mm	P
	2.between live parts of different polarity..... :	19,7	P
	3.between circuits supplied from different sources, one of which being PELV or SELV	no such part	N/A
	4.between live parts and		P
	- accessible surfaces of operating means..... :	22,1 mm	P
	- screws or other means for fixing covers	-	N/A
	- surface on which the base is mounted..... :	17,5 mm	P
	- screws or other means for fixing the circuit breaker	-	N/A
	- metal covers or boxes	-	N/A
	- other accessible metal parts		N/A
	- metal frames supporting the base (flush-type) . :		N/A
8.1.3.3	Solid insulation		P
	Compliance is checked by the tests according to 9.7.2, 9.7.3, 9.7.4 and 9.7.5, as applicable		P
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 of the CB not of the thread-cutting type		N/A
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)	Ø__mm__Nm (see table 11) Ø__mm__Nm	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 5 times (screw Ø / torque Nm)	Ø_7,0__mm_2,5__Nm (see table 11) Ø__mm__Nm	P
	After test connections have not become loose nor electrical function impaired		P
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection: contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		N/A
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		N/A
	- alloy 58% copper for worked cold parts	For contact	P
	- alloy 50% copper for other parts		N/A
	- other metal	Zn plated Steel for screw	P
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.16).		N/A
	The requirements of this subclause do not apply to contacts, magnetic circuits, heater elements, bimetals, shunts, electronic components, including printed circuit board or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
	Compliance is checked by inspection in accordance with the manufacturer's declaration		P
8.1.5	Terminals for external conductors		--
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		--
	by tests of clause 9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on CBs included in this document		N/A
	by the tescots of Annexes J, K		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	Torque test:		P
	- torque (Nm); diameter (mm).....:	2,0	--

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Clause	Requirement + Test	Result - Remark	Verdict
	- torque (Nm); diameter (mm).....:		--
	- torque (Nm); diameter (mm).....:		--
	- max. cross-sectional area (mm ²).....:	25	--
9.5.2	Pull test:		P
	Terminals shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.		--
	Min. cross-section solid / stranded / flexible (mm ²).....:	1mm ² for solid / flexible construction 1,5mm ² for stranded construction	--
	Max. cross-section solid / stranded / flexible (mm ²).....:	6mm ² for solid construction 25mm ² for stranded construction 16mm ² for flexible construction	--
	Torque ² / ₃ (Nm)	1,67	--
	Pull for 1 min solid / stranded / flexible (N).....:	50-100N	P
	During the test no noticeable move of conductor		P
9.5.3	Torque test:		P
	- torque ² / ₃ (Nm).....:	1,67Nm	--
	- min. cross-sectional area (mm ²).....:	1mm ²	--
	- max. cross-sectional area (mm ²).....:	25mm ²	--
	The conductor shows no undue damage nor severed strands		P
	Terminals have not worked loose and no damage		P
9.5.4	Terminals fitted with the largest cross-section area specified in Table 5, for stranded copper conductor.		P
	Max. cross-section stranded (mm ²).....:	25mm ²	--
	Torque ² / ₃ (Nm)	1,67Nm	--
	After the test no strand of conductor escaped outside		P
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P

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Clause	Requirement + Test		Result - Remark	Verdict
	Rated current (A) sections	Range of nominal cross to be clamped* (mm²) Rigid (solid or stranded) conductors	Flexible conductors	P
	≤ 13	1 to 2,5	1 to 2,5	
	> 13 ≤ 16	1 to 4	1 to 4	
	> 16 ≤ 25	1,5 to 6	1,5 to 6	
	> 25 ≤ 32	2,5 to 10	2,5 to 6	
	> 32 ≤ 50	4 to 16	4 to 10	
	> 50 ≤ 80	10 to 25	10 to 16	
	> 80 ≤ 100	16 to 35	16 to 25	
	> 100 ≤ 125	24 to 50	25 to 35	
	*It is required that, for current ratings up to and including 50 A, terminals be designed to clamp solid conductors as well as rigid stranded conductors. Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm² up to 6 mm² be designed to clamp solid conductors only.			N/A
	- or terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors according to Annex L.			N/A
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)			P
8.1.5.4	Terminals for I _N ≤ 32 A allow the connection of conductors without special preparation			P
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.2)			P
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.3)			P
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.2)			P
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.4)			P
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)			P
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening			N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.11	Pillar terminals shall allow full insertion and reliable clamping of the conductor		N/A
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be the thread cutting type		P
8.1.6	Non-interchangeability		N/A
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Mechanical mounting of plug-in circuit-breakers		N/A
8.1.7.1	The mechanical mounting of plug-in circuit-breakers, the retention of which does not depend solely on their plug-in connection(s), shall be reliable and have adequate stability		N/A
8.1.7.2	Plug-in type circuit-breakers, the retention of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.3	Plug-in type circuit-breakers, the retention of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.14	Electromagnetic Immunity		P
	Circuit-breakers for overcurrent protection for household and similar installations are not sensitive to normal electromagnetic disturbance and therefore no immunity tests are required		P
8.15	Electromagnetic emission		P
	Electromagnetic disturbance can only be generated by circuit-breakers for overcurrent protection for household and similar installations during occasional switching or automatic breaking operations. The duration of the disturbances is of the order of milliseconds		P
	The frequency, the level and the consequences of these emissions are considered as part of the normal electromagnetic environment of low-voltage installations. Therefore the requirements for electromagnetic emissions are deemed to be satisfied and no verifications are necessary		P

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Clause	Requirement + Test	Result - Remark	Verdict
8.2	Protection against electric shock		P
	Live parts not accessible in normal use		P
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed, - adequate thickness and - mechanical strength		P
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type), screws or other means for fixing the base		P
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		N/A
8.1.3	Creepage distances [mm] (see table 4)		P
	Internal parts only	See above	N/A
9.6	Test of protection against electric shock		P
	This verification is applicable to those parts of circuit breakers which are exposed to the operator when mounted as for normal use		P
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N		P
8.10	Resistance to heat		P
	CB sufficiently resistant to heat		P
9.14	Test of resistance to heat		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.14.1	Test:		P
	- without removable covers 1 h (100 ± 2) °C		P
	- removable covers 1 h (70 ± 2) °C		N/A
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	Impression: 1,02mm for enclosure	P
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position) T = (70 ± 2)°C or T = ____ °C = (40 ± 2)°C + max. temperature rise of sub-clause 9.8 Ø of impression ≤ 2 mm		P
8.12	Resistance to rusting		P
	Ferrous parts adequately protected against rusting		P
9.16	Test of resistance to rusting:		P
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of chloride in water at 20°C		P
	- 10 min at 95% humidity at 20°C		P
	- 10 min at 100°C		P
	No sign of rust		P
	TESTS „A₂“ 3 samples For C63, 4P	A₂₋₁ A₂₋₂ A₂₋₃	
8.11	Resistance to abnormal heat and to fire		P
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions		P
9.15	Resistance to abnormal heat and to fire		P
	Test performed on a complete CB		P
	external parts retaining current-carrying parts and parts of the protective circuit in position (960 ± 15)°C		P
	all other external parts (650 ± 10)°C		M/A
	No visible flames, no sustained glowing, or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	flames and glowing extinguish within 30 s after removal		P
	No ignition of tissue paper or scorching of the pinewood board		P
	TESTS „B“ 3 samples C63; 1POLE	B₁ B₂ B₃	
8.3	Dielectric properties and isolating capability		P
8.3.1	CB shall have adequate dielectric properties and shall ensure isolation:		P
8.3.2	Dielectric strength at power frequency		P
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		P
8.3.3	Isolating capability		P
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.5.1 and 9.7.5.3.		P
8.3.4	Dielectric strength at rated impulse withstand voltage (U _{imp})		
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.		P
9.7	Test of dielectric properties and isolating capability		P
9.7.5.4	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 CB 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 CB under test connected to the impulse generator.		P
	rated impulse withstand voltage [kV]:	4,0kV	--
	sea level of test laboratory [m]:	5 m	--
	test voltage (acc. Table 15) [kV]:	6,2kV	--
9.7.5.4.2	CB in open position (contacts in open position)		P
	The impulses are applied between:		--

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Clause	Requirement + Test	Result - Remark	Verdict
	the line terminals connected together and the load terminals connected together		P
9.7.5.4.3	CB in closed position		P
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		P
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		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
9.7.1	Resistance to humidity		-
9.7.1.1	Preparation of the circuit-breaker for test		-
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.		N/A
9.7.1.2	Test conditions		P
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93...94 % T = 21,5...22,5 °C	P
9.7.1.3	Test procedure.		P
	The sample is kept in the cabinet for 48 h.		P
9.7.1.4	Conditions of the circuit breaker after the tests.		P
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3, 9.7.4 and 9.7.5.2		P
9.7.2	Insulation resistance of the main circuit		P
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ] [MΩ] [MΩ]	P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$		P
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$		N/A
	c) in on-position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$		P

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Clause	Requirement + Test	Result - Remark	Verdict												
	d) between metal parts of mechanism and the frame ≥ 5 MΩ		N/A												
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material ≥ 5 MΩ		N/A												
9.7.3	Dielectric strength of the main circuit		P												
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified is applied for 1 min between the parts indicated in 9.7.2		P												
	a) 2000 V		P												
	b) 2000 V		N/A												
	c) 2000 V		P												
	d) 2000 V		N/A												
	e) 2500 V		N/A												
	No flashover or breakdown		P												
9.7.4	Insulation resistance and dielectric strength of the auxiliary circuits		N/A												
	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:		--												
	1) between all auxiliary circuits and the frame (MΩ) ≥ 2 MΩ		N/A												
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together (MΩ) ≥ 2 MΩ		N/A												
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:		--												
	<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												
9.7.5.1	General testing procedure for the impulse withstand voltage tests		P												

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Clause	Requirement + Test	Result - Remark	Verdict
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2 μ s, and a time to half-value of 50 μ s		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
	The surge impedance of the test apparatus 500 Ω and surge protective devices disconnected before testing or		P
	When carrying out tests on a circuit-breaker incorporating components across the parts under test (e.g. surge protective components), an impulse generator with a virtual impedance of 2 Ω shall be used		P
	The shape of the impulses is adjusted with the circuit-breaker under test connected to the impulse generator. For this purpose, appropriate voltage dividers and voltage sensors shall be used		P
	For a circuit-breaker incorporating components across the parts under test (e.g. surge protective components), the shape of the impulses is adjusted without connection of the CB to the impulse generator		P
9.7.5.2	Verification of clearances with the impulse withstand voltage		N/A
	If the measurement of clearances of items 2 and 4 in Table 4 shows a reduction of the required length, this test applies.		N/A
	The test is carried out on an CB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2 μ s, and a time to half-value of 50 μ s		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	test performed with:		--
	-surge impedance of the test apparatus $\leq 500\Omega$ 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

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Clause	Requirement + Test	Result - Remark			Verdict
	rated impulse withstand voltage [kV]:	4,0kV			--
	see level of test laboratory [m]:	5m			--
	test voltage (acc. Table 14) [kV]:	Utest =4,97 kV			--
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB				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):				--
	b) between each pole and the others connected together				-
	c) between all poles connected together and the frame				P
	d) between metal parts of the mechanism and the frame				P
	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				P
8.4	Temperature rise				P
	Temperature rise does not exceed the limiting values stated in table 6:	sect. __16__ mm²			P
9.8.2	Test current: I _N = (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = _63__A			P
	Ambient air temperature	Tamb= __22,6__ °C			P
	Parts Temperature rise [K]	[K]	[K]	[K]	P
	L1	38	49	39	P
	L2				

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Clause	Requirement + Test	Result - Remark			Verdict
	Terminals for external connections60 K				P
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles40 K	11	10	11	P
	External metallic parts of operating means ...25 K	31,2	33,5	32,0	P
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface60 K	35	41	37	P
9.8.5	Measurement of power losses	B ₁	B ₂	B ₃	P
	Power loss do not exceed the values stated in table 8				P
	Test current: I _N =63 A (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : ____13____ W	W	W	W	P
	L1	3,99	4,83	4,04	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
8.5	Uninterrupted duty				P
	Circuit-breakers operate reliable even after long service				P
9.9	28 day test				P
	28 cycles - 21 h with current - 3 h without current Cross-sectional area. __16__ mm ²	I _N = __63__ A			P
	During the test no tripping during the last period, temperature rise shall be measured				P
	Ambient air temperature	22,0°C			P
	Parts Temperature rise [K]	[K]	[K]	[K]	--
	L1	47	56	48	P
	L2				
	Terminals for external connections				P
	The temperature rise does not exceed the value measured during the temperature rise test (sub-clause 9.8) by more than 15 K				P
	Test current 1,45 I _N =91,35 A	91,5A			P

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Clause	Requirement + Test	Result - Remark			Verdict
	- Tripping within	[s]	[s]	[s]	P
	- 1h (≤ 63 A)	104s	77s	88s	P
	- 2h (> 63 A)				N/A
	TESTS „B“ 3 samples C63; 4POLE	B₁	B₂	B₃	
8.3	Dielectric properties and isolating capability				P
8.3.1	CB shall have adequate dielectric properties and shall ensure isolation:				P
8.3.2	Dielectric strength at power frequency				P
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				P
8.3.3	Isolating capability				P
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.5.1 and 9.7.5.3.				P
8.3.4	Dielectric strength at rated impulse withstand voltage (U _{imp})				
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.				P
9.7	Test of dielectric properties and isolating capability				P
9.7.5.4	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 CB fixed on a metal support				P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2 μ s, and a time to half-value of 50 μ s				P
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.				P
	rated impulse withstand voltage [kV]:	4,0kV			--
	sea level of test laboratory [m]:	5 m			--
	test voltage (acc. Table 15) [kV]:	6,2kV			--
9.7.5.4.2	CB in open position (contacts in open position)				P
	The impulses are applied between:				--
	the line terminals connected together and the load terminals connected together				P

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.5.4.3	CB in closed position		P
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		P
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		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
9.7.1	Resistance to humidity		P
9.7.1.1	Preparation of the circuit-breaker for test		P
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.		N/A
9.7.1.2	Test conditions		P
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93...94 % T = 21,5...22,5 °C	P
9.7.1.3	Test procedure.		P
	The sample is kept in the cabinet for 48 h.		P
9.7.1.4	Conditions of the circuit breaker after the tests.		P
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3, 9.7.4 and 9.7.5.2		P
9.7.2	Insulation resistance of the main circuit		P
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ] [MΩ] [MΩ]	P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$		P
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$		N/A
	c) in on-position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$		P
	d) between metal parts of mechanism and the frame $\geq 5 \text{ M}\Omega$		N/A

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Clause	Requirement + Test	Result - Remark	Verdict												
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$		N/A												
9.7.3	Dielectric strength of the main circuit		P												
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified is applied for 1 min between the parts indicated in 9.7.2		P												
	a) 2000 V		P												
	b) 2000 V		P												
	c) 2000 V		P												
	d) 2000 V		N/A												
	e) 2500 V		N/A												
	No flashover or breakdown		P												
9.7.4	Insulation resistance and dielectric strength of the auxiliary circuits		N/A												
	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:		--												
	1) between all auxiliary circuits and the frame ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		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 ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A												
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:		--												
	<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>$> 30 \leq 50$</td><td>1000</td></tr><tr><td>$> 50 \leq 110$</td><td>1500</td></tr><tr><td>$> 110 \leq 250$</td><td>2000</td></tr><tr><td>$> 250 \leq 500$</td><td>2500</td></tr></table>	Rated voltage of auxiliary circuits (a.c. or d.c.)	Test voltage (V)	≤ 30	600	$> 30 \leq 50$	1000	$> 50 \leq 110$	1500	$> 110 \leq 250$	2000	$> 250 \leq 500$	2500	V	--
Rated voltage of auxiliary circuits (a.c. or d.c.)	Test voltage (V)														
≤ 30	600														
$> 30 \leq 50$	1000														
$> 50 \leq 110$	1500														
$> 110 \leq 250$	2000														
$> 250 \leq 500$	2500														
	1) between all auxiliary circuits and the frame		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												
9.7.5.1	General testing procedure for the impulse withstand voltage tests		P												

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Clause	Requirement + Test	Result - Remark	Verdict
	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
	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
	The surge impedance of the test apparatus 500Ω and surge protective devices disconnected before testing or		P
	When carrying out tests on a circuit-breaker incorporating components across the parts under test (e.g. surge protective components), an impulse generator with a virtual impedance of 2Ω shall be used		P
	The shape of the impulses is adjusted with the circuit-breaker under test connected to the impulse generator. For this purpose, appropriate voltage dividers and voltage sensors shall be used		P
	For a circuit-breaker incorporating components across the parts under test (e.g. surge protective components), the shape of the impulses is adjusted without connection of the CB to the impulse generator		P
9.7.5.2	Verification of clearances with the impulse withstand voltage		N/A
	If the measurement of clearances of items 2 and 4 in Table 4 shows a reduction of the required length, this test applies.		N/A
	The test is carried out on an CB 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 CB under test connected 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

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Clause	Requirement + Test	Result - Remark		
	rated impulse withstand voltage [kV]:	4,0kV		
	see level of test laboratory [m]:	5m		
	test voltage (acc. Table 14) [kV]:	U _{test} = 4,97 kV		
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any			
	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 CB			
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):			
	b) between each pole and the others connected together			
	c) between all poles connected together and the frame			
	d) between metal parts of the mechanism and the frame			
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material			
	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.			
	no disruptive discharges during the test			
8.4	Temperature rise			
	Temperature rise does not exceed the limiting values stated in table 6:	sect. ____16____ mm ²		
9.8.2	Test current: I _N = (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = ____63____ A		
	Ambient air temperature.....:	T _{amb} = ____23,5____ °C		
	Parts Temperature rise [K]	[K]	[K]	[K]
	L1	55	53	54
	L2	57	56	58

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Clause	Requirement + Test	Result - Remark			Verdict
		58	57	58	
		57	56	55	
	Terminals for external connections60 K				P
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles40 K	21	22	23	P
	External metallic parts of operating means ...25 K	-	-	-	P
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface60 K	54	53	56	P
9.8.5	Measurement of power losses	B ₁	B ₂	B ₃	P
	Power loss do not exceed the values stated in table 8				P
	Test current: I _N =63 A (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : ____13__ W	W	W	W	P
	L1	5,10	4,95	5,04	P
	L2	5,23	5,31	5,34	
	L3	5,30	5,24	5,32	
	L4(N)	5,26	5,17	5,11	
8.5	Uninterrupted duty				P
	Circuit-breakers operate reliable even after long service				P
9.9	28 day test				P
	28 cycles - 21 h with current - 3 h without current Cross-sectional area. __16__ mm ²	I _N = __63__ A			P
	During the test no tripping during the last period, temperature rise shall be measured				P
	Ambient air temperature..... :	23,0°C			P
	Parts Temperature rise [K]	[K]	[K]	[K]	--
	Terminals for external connections	68	65	66	P
	The temperature rise does not exceed the value measured during the temperature rise test (sub-clause 9.8) by more than 15 K				P

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current 1,45 I _N =91,35 A	91,5A			P
	- Tripping within	[s]	[s]	[s]	P
	- 1h (≤ 63 A)	127	94	119	P
	- 2h (> 63 A)				N/A
	TESTS „C₁“ 3 +3 samples C63, 1POLE				P
8.7	Test „C₁“ Mechanical and electrical endurance	C₁₋₁	C₁₋₂	C₁₋₃	P
	Circuit-breaker shall be capable to perform an adequate number of cycles with rated current				P
9.11.1	General test conditions				P
	Test: Test Voltage <u>240</u> V (rated voltage) Test Current <u>63</u> A (rated current) Power factor <u> </u> (0,85-0,9) Par. resistor <u> </u> (Ω) Cross sect. area 16mm ²	Obtained 242 V 63,3 A 0,87			P
9.11.2	Test procedure				P
	The circuit-breaker is submitted to 4000 operating cycles with rated current.	4000 cycles			P
	- I _N ≤ 32 A: 2 s on - 13 s off				N/A
	- I _N > 32 A: 2 s on - 28 s off	I _N = 63 A			P
	During the test the circuit-breaker shall be operated as in normal use.				P
9.11.3	Conditions of the circuit breaker after the tests.				P
	Following the test 9.11.2 the sample shall not show:				P
	- undue wear				P
	- discrepancy between the position of the moving contacts and corresponding position of the Indicating device				P
	- damage to the enclosure permitting access to live parts by test finger (see 9.6)				P
	- loosening of electrical or mechanical connections				P
	- seepage of sealing compound				P
	Moreover test current2,55 I _N ___A	161,0A			N/A
	Opening time not less 1 s or more than	[s]	[s]	[s]	P
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)	27,0s	24,0s	26,0s	P
	Dielectric strength reduced to 1500 V	1500 V; 1 min; 100 mA			P

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Clause	Requirement + Test	Result - Remark			Verdict
9.12.11.2	Test at reduced short-circuit currents				P
9.12.11.2.1	Test on all circuit-breakers				P
9.12.11.2.1	Test at reduced short-circuit currents: Fig. 3				P
	Test current:	Obtained			--
	- 500 A or 10 In	I test= <u>642</u> A			--
	Test voltage 1,05 Un	Un = <u>255</u> V			--
	Power factor 0,93-0,98	<u>0,94</u>			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	"a" = <u>35</u> mm			P
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	I _{Peak} (A) max. value	878A	879	878	--
	Sequence: 6 x "O" and 3 x "CO"	[kA²s]	[kA²s]	[kA²s]	--
	Max. I²t ≤ _____ kA²s	3,81	4,42	3,70	P
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12	Verification of the circuit-breaker after short-circuit tests				P
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.= <u>440</u> V. The circuit – breaker is in the open position	C ₁₋₁ [mA]	C ₁₋₂ [mA]	C ₁₋₃ [mA]	P
	The leakage current shall not exceed 2 mA L1	< 0,01	< 0,01	< 0,01	P
	L2	-	-	-	N/A
	L3	-	-	-	N/A
	L4(N)	-	-	-	N/A
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)				P
	b)				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	c)				P
	d)				N/A
	e) 2000 V				N/A
9.12.11.2.2	Test „C₂“ Short-circuit test on circuit-breakers for use in IT systems (3 sample)				P
	Test current:				P
	- 500 A or 1,2 times the upper limit of the standard range of instantaneous tripping (see table 2) whichever is the higher, but < 2500 A. When tripping exceed 20 In the current adjusted at 1,2 times the upper limit even when higher 2500 A	762A 0,96			P
	Test voltage 1,05 Un	436V			P
	Power factor 0,93-0,98	0,97			P
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = <u>35 mm</u>			P
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	I _{Peak} (A) max. value	1,07 kA	1,07kA	1,07kA	--
	Sequence: "0" + "CO" on each protected pole	[kA2s]	[kA2s]	[kA2s]	--
	Shifted point 30 ° on the other protected pole	C₂₋₁	C₂₋₂	C₂₋₃	--
	Max. I ² t ≤ _____ kA ² s L1 L2 L3 L4	5,86	4,63	4,77	P
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un.=440V. The circuit – breaker is in the open position	C₂₋₁ [mA]	C₂₋₂ [mA]	C₂₋₃ [mA]	P
	The leakage current shall not exceed 2 mA L1	< 0,1	< 0,1	< 0,1	P
	L2	-	-	-	N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	L3	-	-	-	N/A
	L4(N)	-	-	-	N/A
	Electric strength test:	1500 V, 1 min, 100 mA			P
	Test voltage 1500 V (see 8.7.2)				P
	a)				P
	b)				N/A
	c)				P
	d)				N/A
	e) 2000 V				N/A

	TESTS „C ₂ “ 2 samples C63, 2POLE			P	
9.12.11.2.2	Test „C ₂ “ Short-circuit test on circuit-breakers for use in IT systems (3 sample)			P	
	Test current:			P	
	- 500 A or 1,2 times the upper limit of the standard range of instantaneous tripping (see table 2) whichever is the higher, but < 2500 A. When tripping exceed 20 In the current adjusted at 1,2 times the upper limit even when higher 2500 A	762A 0,96		P	
	Test voltage 1,05 Un	436V		P	
	Power factor 0,93-0,98	0,96		P	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = <u>35 mm</u>		P	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: ____x____x____mm		N/A	
	I _{Peak} (A) max. value	1,07kA 1,07kA		--	
	Sequence: "0" + "CO" on each protected pole	[kA2s]	[kA2s]	[kA2s]	--
	Shifted point 30 ° on the other protected pole	C ₂₋₁	C ₂₋₂	C ₂₋₃	--
	Max. I²t ≤ _____kA²s L1 L2 L3 L4	4,96 5,73	5,68 4,64		P
	- No permanent arcing			P	
	- No flash-over between poles or between poles and frame			P	
	- No blowing of the fuses F and F'			P	
	- Polyethylene foil shows no holes			P	

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Clause	Requirement + Test	Result - Remark			Verdict
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times $U_n=440V$. The circuit – breaker is in the open position	C₂₋₁ [mA]	C₂₋₂ [mA]	C₂₋₃ [mA]	P
	The leakage current shall not exceed 2 mA L1	< 0,01	< 0,01		P
	L2	< 0,01	< 0,01		P
	L3	-	-	-	N/A
	L4(N)	-	-	-	N/A
	Electric strength test:	1500 V, 1 min, 100 mA			P
	Test voltage 1500 V (see 8.7.2)				P
	a)				P
	b)				P
	c)				P
	d)				N/A
	e) 2000 V				N/A

TESTS „C ₁ “ 3 +3 samples C63, 4POLE					P
8.7	Test „C₁“ Mechanical and electrical endurance	C₁₋₁	C₁₋₂	C₁₋₃	P
	Circuit-breaker shall be capable to perform an adequate number of cycles with rated current				P
9.11.1	General test conditions				P
	Test: Test Voltage <u>415</u> V (rated voltage) Test Current <u>63</u> A (rated current) Power factor <u> </u> (0,85-0,9) Par. resistor <u> </u> (Ω) Cross sect. area 16mm ²	Obtained 402 V 63,1 A 0,86			P
9.11.2	Test procedure				P
	The circuit-breaker is submitted to 4000 operating cycles with rated current.				P
	- $I_n \leq 32$ A: 2 s on - 13 s off				N/A
	- $I_n > 32$ A: 2 s on - 28 s off	$I_n = 63$ A			P
	During the test the circuit-breaker shall be operated as in normal use.				P
9.11.3	Conditions of the circuit breaker after the tests.				P
	Following the test 9.11.2 the sample shall not show:				P

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Clause	Requirement + Test	Result - Remark			Verdict
	- undue wear				P
	- discrepancy between the position of the moving contacts and corresponding position of the Indicating device				P
	- damage to the enclosure permitting access to live parts by test finger (see 9.6)				P
	- loosening of electrical or mechanical connections				P
	- seepage of sealing compound				P
	Moreover test current2,55 I _N ___A	161A			N/A
	Opening time not less 1 s or more than	[s]	[s]	[s]	P
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)	58	57	56	P
	Dielectric strength reduced to 1500 V	1500 V; 1 min; 100 mA			P
9.12.11.2	Test at reduced short-circuit currents				P
9.12.11.2.1	Test on all circuit-breakers				P
9.12.11.2.1	Test at reduced short-circuit currents: Fig. 3				P
	Test current:	Obtained			--
	- 500 A or 10 I _N	I test= <u>632</u> A			--
	Test voltage 1,05 U _n	U _n = <u>246</u> V			--
	Power factor 0,93-0,98	<u>0,96</u>			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	"a" = <u>35</u> mm			P
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: ____x____x____mm			N/A
	I _{Peak} (A) max. value	909A	909A	909A	--
	Sequence: 6 x "O" and 3 x "CO"	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. I ² t ≤ _____ kA ² s	3,45	3,25	3,82	P
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12	Verification of the circuit-breaker after short-circuit tests				P

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Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n = 440$ V. The circuit – breaker is in the open position	C_{1-1} [mA]	C_{1-2} [mA]	C_{1-3} [mA]	P
	The leakage current shall not exceed 2 mA L1	< 0,01	< 0,01	< 0,01	P
	L2	< 0,01	< 0,01	< 0,01	P
	L3	< 0,01	< 0,01	< 0,01	P
	L4(N)	< 0,01	< 0,01	< 0,01	P
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)				P
	b)				N/A
	c)				P
	d)				N/A
	e) 2000 V				N/A
9.12.11.2.2	Test „C₂“ Short-circuit test on circuit-breakers for use in IT systems (1 sample)				P
	Test current:				P
	- 500 A or 1,2 times the upper limit of the standard range of instantaneous tripping (see table 2) whichever is the higher, but < 2500 A. When tripping exceed 20 In the current adjusted at 1,2 times the upper limit even when higher 2500 A	762A 0,96			P
	Test voltage 1,05 U_n	436V			P
	Power factor 0,93-0,98	0,97			P
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = <u>35 mm</u>			P
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	I_{Peak} (A) max. value	1,08 kA			--
	Sequence: "0" + "CO" on each protected pole	[kA2s]	[kA2s]	[kA2s]	--
	Shifted point 30 ° on the other protected pole	C_{2-1}	C_{2-2}	C_{2-3}	--
	Max. $I^2t \leq$ _____ kA ² s L1	4,74			P
	L2	5,34			
	L3	4,82			
	L4	4,01			

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Clause	Requirement + Test	Result - Remark			Verdict
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times $U_n=440V$. The circuit – breaker is in the open position	C₂₋₁ [mA]	C₂₋₂ [mA]	C₂₋₃ [mA]	P
	The leakage current shall not exceed 2 mA L1	6,18	-	-	P
	L2	6,33	-	-	P
	L3	6,37	-	-	P
	L4(N)	6,29	-	-	P
	Electric strength test:	1500 V, 1 min, 100 mA			P
	Test voltage 1500 V (see 8.7.2)				P
	a)				P
	b)				P
	c)				P
	d)				N/A
	e) 2000 V				N/A

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Clause	Requirement + Test		Result - Remark	Verdict
	TESTS „D“ 1 sample		C63; 1POLE	P
8.6	Automatic operation			P
8.6.1	Standard time-current zone			P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.			P
9.10	Tests „D₀“	D₀₋₁ D₀₋₂ D₀₋₃		P
	I _N (A)	63A		--
	Sect. (mm ²)	16mm ²		--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		--
9.10.1	General			P
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results			P
9.10.2	Test of time-current characteristic			P
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:		71,2A	P
	- 1 h (I _N ≤ 63 A)			P
	- 2 h (I _N > 63 A)			N/A
	No tripping			P
	Then steadily increased within 5 s to 1,45 I _N (A)		91,4A	P
	- Tripping within		[min] [min] [mini]	--
	- 1h (≤ 63 A)		3,3 2,7 3,8	P
	- 2h (> 63 A)			N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:		161A	P
	opening time not less than 1 s or more than		[s] [s] [s]	--
	- 60 s (≤ 32 A)			N/A
	- 120 s (> 32 A)		29s 26s 27s	P
9.10.3	Test of instantaneous tripping and of correct opening of the contacts			P
9.10.3.1	General test conditions			P
	For the lower values of the test current the test is made once, at any convenient voltage.			P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.			P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min			P
	The tripping time of the O operation is measured			P
	After each operation the indicating means shall show the open position of the contacts			P

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	___ 315 ___ A	P
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s	4,9 3,9 4,8	P
	Test current $10 I_N$ (A), starting from cold	___ 634 ___ A	N/A
	Tripping less than 0,1 s	7,6ms 7,8ms 8,0ms	P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test current 1,1 It (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = _____-5_____°C	P
	Test current 1,13 I _N (A)	____71,2____A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	____120____A	P
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	190 172 239	P
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = ____40_____°C	N/A
	Test current I _N (A)	63	P
	No tripping within		--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A
	Tests „D1“	D1-1 D1-2 D1-3	P
8.9	Resistance to mechanical shock and impact		P
	CB shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use		P
9.13.1	Mechanical shock		P
	- 50 falls on two sides of vertical board C		P
	- Vertical board turned 90°		P
	- 50 falls on two sides of vertical board C		P
	During the test the circuit-breakers shall not open		P

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Clause	Requirement + Test	Result - Remark		
9.13.2	Mechanical impact			P
9.13.2.2	All types:			P
	- Impact test: 10 blows-height 10 cm, no damage			P
9.13.2.3	Screw-in types:			N/A
	- Torque 2,5 Nm for 1 min, no damage			N/A
9.13.2.4	CB intended to be mounted on a rail			P
	- downward vertical 50 N for 1 min			P
	- upward vertical 50 N for 1 min, no damage			P
9.13.2.5	Plug-in types			N/A
	The circuit-breaker are mounted in their normal position, complete with plug-in base but without cables and any cover plate			N/A
	A force of 20 N applied for 1min to the circuit-breaker (see fig 16).			N/A
	During this test the circuit-breaker part shall not become loose from the base and shall not show damage impairing further use.			N/A
9.12.11.3	Test at 1500 A:			P
	Prospective current of 1500 A - power factor 0,93 to 0,98			P
	Prospective current obtained (A)	1,54 kA		
	Power factor	0,96		
	Test voltage 1,05 Un	246 V		
	Test circuit: figure	3/5		
	T (min)	3 min		
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = 35 mm		
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: x x mm		
	Sequence	6 O – 2 CO - O		
	I _{Peak} (A) max. value	1,97kA	1,86kA	1,87kA
	I ² t ≤ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]
	Max. I ² t ≤ kA ² s	L1 8,74	L2 11,2	L3 9,71
		L4(N) —	—	—
	- No permanent arcing			P

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Clause	Requirement + Test	Result - Remark			Verdict
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n = 440\text{ V}$. The circuit – breaker is in the open position	D₁₋₁ [mA]	D₁₋₂ [mA]	D₁₋₃ [mA]	--
	The leakage current shall not exceed 2 mA L1	<0,01	<0,01	<0,01	P
	L2				N/A
	L3				N/A
	L4(N)				N/A
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)				P
	b)				N/A
	c)				P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I_N)	<u>60,6</u> A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_N) within 5s	<u>101</u> A			P
		D₁₋₁ [min]	D₁₋₂ [min]	D₁₋₃ [min]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	103	56	37	P

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Clause	Requirement + Test	Result - Remark		Verdict
	TESTS „D“ 1 sample	C63; 4POLE		P
8.6	Automatic operation			P
8.6.1	Standard time-current zone			P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.			P
9.10	Tests „D₀“	D₀₋₁	D₀₋₂	D₀₋₃
	I _N (A)	63A		--
	Sect. (mm ²)	16mm ²		--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		--
9.10.1	General			P
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results			P
9.10.2	Test of time-current characteristic			P
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:	71,2A		P
	- 1 h (I _N ≤ 63 A)			P
	- 2 h (I _N > 63 A)			N/A
	No tripping			P
	Then steadily increased within 5 s to 1,45 I _N (A)	91,4A		P
	- Tripping within	[min] [min] [mini]		--
	- 1h (≤ 63 A)	5min42s 6min09s 5min30s		P
	- 2h (> 63 A)			N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:	161A		P
	opening time not less than 1 s or more than	[s] [s] [s]		--
	- 60 s (≤ 32 A)			N/A
	- 120 s (> 32 A)	22,9s 24,7s 23,4s		P
9.10.3	Test of instantaneous tripping and of correct opening of the contacts			P
9.10.3.1	General test conditions			P
	For the lower values of the test current the test is made once, at any convenient voltage.			P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.			P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min			P
	The tripping time of the O operation is measured			P
	After each operation the indicating means shall show the open position of the contacts			P

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	_____315_____A	P
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s	10,4s 8,49s 7,96s	P
	Test current $10 I_N$ (A), starting from cold	_____640_____A	P
	Tripping less than 0,1 s		P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:	161A	P
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)	27,3s 24,9s 25,5s	P
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test current 1,1 It (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold	___110___A	P
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)	3min41s 3min24s 3min14s	P
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = ____-5____°C	P
	Test current 1,13 I _N (A)	___71,2___A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	___120___A	P
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	3min01s 2min49s 3min14s	P
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = ____40____°C	N/A
	Test current I _N (A)	63	P
	No tripping within		--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A
	Tests „D1“	D1-1 D1-2 D1-3	P
8.9	Resistance to mechanical shock and impact		P
	CB shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use		P
9.13.1	Mechanical shock		P
	- 50 falls on two sides of vertical board C		P
	- Vertical board turned 90°		P
	- 50 falls on two sides of vertical board C		P
	During the test the circuit-breakers shall not open		P

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Clause	Requirement + Test	Result - Remark		
9.13.2	Mechanical impact			P
9.13.2.2	All types:			P
	- Impact test: 10 blows-height 10 cm, no damage			P
9.13.2.3	Screw-in types:			N/A
	- Torque 2,5 Nm for 1 min, no damage			N/A
9.13.2.4	CB intended to be mounted on a rail			P
	- downward vertical 50 N for 1 min			P
	- upward vertical 50 N for 1 min, no damage			P
9.13.2.5	Plug-in types			N/A
	The circuit-breaker are mounted in their normal position, complete with plug-in base but without cables and any cover plate			N/A
	A force of 20 N applied for 1min to the circuit-breaker (see fig 16).			N/A
	During this test the circuit-breaker part shall not become loose from the base and shall not show damage impairing further use.			N/A
9.12.11.3	Test at 1500 A:			P
	Prospective current of 1500 A - power factor 0,93 to 0,98			P
	Prospective current obtained (A)	1,54 kA		
	Power factor	0,95		
	Test voltage 1,05 Un	425 V		
	Test circuit: figure	3/5		
	T (min)	3 min		
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = 35 mm		
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: x x mm		
	Sequence	6 O – 2 CO - O		
	I _{Peak} (A) max. value	2,11kA	2,11kA	2,11kA
	I ² t ≤ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]
	Max. I ² t ≤ kA ² s	L1 8,83	8,83	8,83
		L2		
		L3		
		L4(N)		
	- No permanent arcing			P

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Clause	Requirement + Test	Result - Remark			Verdict
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n = 425 \text{ V}$. The circuit – breaker is in the open position	D₁₋₁ [mA]	D₁₋₂ [mA]	D₁₋₃ [mA]	--
	The leakage current shall not exceed 2 mA L1	<0,01	<0,01	<0,01	P
	L2	<0,01	<0,01	<0,01	P
	L3	<0,01	<0,01	<0,01	P
	L4(N)	<0,01	<0,01	<0,01	P
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)				P
	b)				P
	c)				P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I_N)	<u>60,5</u> A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_N) within 5s	<u>101</u> A			P
		D₁₋₁ [min]	D₁₋₂ [min]	D₁₋₃ [min]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	4min07s	4min22s	4min29s	P

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „D“ 1 sample	C50; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „D₀“	D₀₋₁₄	P
	I _N (A)	50A	--
	Sect. (mm ²)	10mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:	56,5A	P
	- 1 h (I _N ≤ 63 A)		P
	- 2 h (I _N > 63 A)		N/A
	No tripping		N/A
	Then steadily increased within 5 s to 1,45 I _N (A)	72,5A	P
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	148s	P
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:	128A	P
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)	16s	p
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P
	After each operation the indicating means shall show the open position of the contacts		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____ A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____ A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	_____ 250 _____ A	P
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		P
	Test current $10 I_N$ (A), starting from cold	_____ 500 _____ A	N/A
	Tripping less than 0,1 s	8,34	P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____ A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test current 1,1 It (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = ____-5____ °C	P
	Test current 1,13 I _N (A)	____56,5____A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	____95,0____A	P
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	126	P
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = ____40____ °C	P
	Test current I _N (A)	50A	P
	No tripping within		--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „D“ 1 sample	C40; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „D₀“	D₀₋₁₅	P
	I _N (A)	40A	--
	Sect. (mm ²)	10mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		P
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:	45,2A	P
	- 1 h (I _N ≤ 63 A)		P
	- 2 h (I _N > 63 A)		N/A
	No tripping		P
	Then steadily increased within 5 s to 1,45 I _N (A)	58,0A	P
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	117s	P
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:	102s	P
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)	12s	
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P
	After each operation the indicating means shall show the open position of the contacts		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	_____ 201 _____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s	1,70s	P
	Test current $10 I_N$ (A), starting from cold	_____ 401 _____ A	N/A
	Tripping less than 0,1 s	8,12ms	P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A
	Test current 1,1 It (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = ____ -5 ____ °C	N/A
	Test current 1,13 I _N (A)	____ 45,2 ____ A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	____ 76,0 ____ A	P
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	98s	P
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = ____ 40 ____ °C	P
	Test current I _N (A)	40A	P
	No tripping within		--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „D“ 1 sample	C32; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „D₀“	D₀₋₁₆	P
	I _N (A)	32A	--
	Sect. (mm ²)	6mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		P
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:	36,2A	P
	- 1 h (I _N ≤ 63 A)		P
	- 2 h (I _N > 63 A)		N/A
	No tripping		N/A
	Then steadily increased within 5 s to 1,45 I _N (A)	46,4A	P
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	36s	P
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:	81,6A	P
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	16s	P
	- 120 s (> 32 A)		N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P
	After each operation the indicating means shall show the open position of the contacts		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	___ 160 ___ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s	1,64s	P
	Test current $10 I_N$ (A), starting from cold	___ 320 ___ A	P
	Tripping less than 0,1 s	17ms	P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test current 1,1 It (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = _____-5_____°C	P
	Test current 1,13 I _N (A)	____36,2____A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	____60,8____A	P
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	29s	P
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = ____40_____°C	P
	Test current I _N (A)	32A	P
	No tripping within		--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „D“ 1 sample	C25; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „D₀“	D₀₋₁₇	P
	I _N (A)	<u>25</u> A	--
	Sect. (mm ²)	<u>4</u> mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:	25A	P
	- 1 h (I _N ≤ 63 A)	28,3s	P
	- 2 h (I _N > 63 A)		N/A
	No tripping		N/A
	Then steadily increased within 5 s to 1,45 I _N (A)		P
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:	63,8A	P
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	16s	P
	- 120 s (> 32 A)		N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P
	After each operation the indicating means shall show the open position of the contacts		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	___ 125 ___ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s	1,02s	P
	Test current $10 I_N$ (A), starting from cold	___ 250 ___ A	N/A
	Tripping less than 0,1 s	7,24ms	P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test current 1,1 It (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = ____-5____ °C	P
	Test current 1,13 I _N (A)	____28,3____ A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	____47,5____ A	P
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	53	P
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = ____40____ °C	P
	Test current I _N (A)	25A	P
	No tripping within		--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „D“ 1 sample	C20; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „D₀“	D₀₋₁₈	P
	I _N (A)	<u>20</u> A	--
	Sect. (mm ²)	<u>2,5</u> mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:		P
	- 1 h (I _N ≤ 63 A)	22,7A	P
	- 2 h (I _N > 63 A)		N/A
	No tripping		P
	Then steadily increased within 5 s to 1,45 I _N (A)	29,0A	P
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	38s	P
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:	51,0A	P
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	14s	P
	- 120 s (> 32 A)		N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P

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Clause	Requirement + Test	Result - Remark	Verdict
	After each operation the indicating means shall show the open position of the contacts		P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	___ 100___A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s	1,58s	P
	Test current $10 I_N$ (A), starting from cold	___ 201___ A	N/A
	Tripping less than 0,1 s	8,15ms	P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A
	Test current 1,1 It (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = ____ -5 ____ °C	P
	Test current 1,13 I _N (A)	____ 22,6 ____ A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	____ 38 ____ A	P
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	37	P
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = ____ 40 ____ °C	P
	Test current I _N (A)		P
	No tripping within		--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A
	TESTS „D“ 1 sample C16; 1POLE		P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.10	Tests „D₀“	D₀₋₁₉	P
	I _N (A)	<u>16</u> A	--
	Sect. (mm ²)	<u>2,5</u> mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:	18,1	P
	- 1 h (I _N ≤ 63 A)		P
	- 2 h (I _N > 63 A)		N/A
	No tripping		P
	Then steadily increased within 5 s to 1,45 I _N (A)	23,2	P
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	121	P
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:		P
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		P
	- 120 s (> 32 A)		N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P
	After each operation the indicating means shall show the open position of the contacts		P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current 3I _N (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	≥ 0,1 s		N/A
	Test current 5 I _N (A), starting from cold	_____A	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Tripping less than 0,1 s		N/A
*)	Test current 2,55 I _N (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current 5I _N (A), starting from cold	___ 80 ___ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s	9,62s	P
	Test current 10 I _N (A), starting from cold	___ 161 ___ A	N/A
	Tripping less than 0,1 s	9,62ms	P
9.10.2.2 *)	Test current 2,55 I _N (A) starting from cold for:	40,8A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	14,0s	P
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current 10I _N (A), starting from cold	___ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current 20 I _N (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	___ A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current 2,55 I _N (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A
	Test current 1,1 I _t (A), (two pole) starting from cold	___ A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test current 1,2 It (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = ____ -5 ____ °C	P
	Test current 1,13 I _N (A)	____ 18,1 ____ A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	____ 30,4 ____ A	P
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)	108	P
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = ____ 40 ____ °C	P
	Test current I _N (A)	16	P
	No tripping within		--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A
	TESTS „D“ 1 sample	C10; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	I_N (A)	<u>10</u> A	--
	Sect. (mm ²)	<u>1,5</u> mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current 1,13 I_N (A) starting from cold for:		P
	- 1 h ($I_N \leq 63$ A)		P
	- 2 h ($I_N > 63$ A)		N/A
	No tripping		P
	Then steadily increased within 5 s to 1,45 I_N (A)		P
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I_N (A) starting from cold for:		P
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		P
	- 120 s (> 32 A)		N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U_n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P
	After each operation the indicating means shall show the open position of the contacts		P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current 3 I_N (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current 5 I_N (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
*)	Test current 2,55 I _N (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current 5I _N (A), starting from cold	___ 50 ___ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		P
	Test current 10 I _N (A), starting from cold	___ 100 ___ A	N/A
	Tripping less than 0,1 s	9,41ms	P
9.10.2.2 *)	Test current 2,55 I _N (A) starting from cold for:	25,5A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	11,9s	P
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current 10I _N (A), starting from cold	_____ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current 20 I _N (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____ A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current 2,55 I _N (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A
	Test current 1,1 I _t (A), (two pole) starting from cold	_____ A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test current 1,2 It (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = _____ °C	P
	Test current 1,13 I _N (A)	_____A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	_____A	P
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = _____ °C	P
	Test current I _N (A)		P
	No tripping within		--
	- 1h (≤ 63 A)		P
	- 2h (> 63 A)		N/A

	TESTS „D“ 1 sample	C6; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „D ₀ “	D ₀₋₂₁	P
	I _N (A)	30,1A	--
	Sect. (mm ²)	1,0mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current $1,13 I_N$ (A) starting from cold for:		N/A
	- 1 h ($I_N \leq 63$ A)		N/A
	- 2 h ($I_N > 63$ A)		N/A
	No tripping		N/A
	Then steadily increased within 5 s to $1,45 I_N$ (A)		N/A
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.2.2	Test current $2,55 I_N$ (A) starting from cold for:		N/A
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U_n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P
	After each operation the indicating means shall show the open position of the contacts		P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--

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Clause	Requirement + Test	Result - Remark	Verdict
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	___ 30,1 ___ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		P
	Test current $10 I_N$ (A), starting from cold	___ 60,1 ___ A	N/A
	Tripping less than 0,1 s	9,25ms	P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:	15,3A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	16,1s	P
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____ A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____ A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current $1,2 I_t$ (A), (three pole or four pole) starting from cold	_____ A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.5	Test of effect of ambient temperature on the tripping characteristics		N/A
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = _____ °C	N/A
	Test current 1,13 I _N (A)	_____ A	N/A
	- Passed for 1h		N/A
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	_____ A	N/A
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = _____ °C	N/A
	Test current I _N (A)		N/A
	No tripping within		--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A

	TESTS „D“ 1 sample	C5; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „Do“	D ₀₋₂₂	P
	I _N (A)	5,0A	--
	Sect. (mm ²)	1,0mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:		N/A
	- 1 h (I _N ≤ 63 A)		N/A
	- 2 h (I _N > 63 A)		N/A
	No tripping		N/A
	Then steadily increased within 5 s to 1,45 I _N (A)		N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	- Tripping within	[min]	[min]	[mini]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:				N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.3.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A
	Test current 3I _N (A), starting from cold	_____A			--
	Opening time:	[s]	[s]	[s]	--
	≥ 0,1 s				N/A
	Test current 5 I _N (A), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
	Test current 2,55 I _N (A) starting from cold for:	A			N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current 5I _N (A), starting from cold	___ 25 ___A			N/A
	Opening time:	[s]	[s]	[s]	--
	≥ 0,1 s				P
	Test current 10 I _N (A), starting from cold	___ 50,1 ___ A			N/A
	Tripping less than 0,1 s	5,04ms			P
9.10.2.2 *)	Test current 2,55 I _N (A) starting from cold for:	10,2A			N/A

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Clause	Requirement + Test	Result - Remark	Verdict
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	13,4s	P
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current $1,2 I_t$ (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		N/A
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = _____ °C	N/A
	Test current $1,13 I_N$ (A)	_____A	N/A
	- Passed for 1h		N/A
	- Passed for 2h		N/A
	Current is then steadily increased to $1,9 I_N$ (A) within 5s	_____A	N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Tripping within	[min]	[min]	[mini]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T =_____°C			N/A
	Test current I _N (A)				N/A
	No tripping within				--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A

	TESTS „D“ 1 sample	C4; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „D₀“	D₀₋₂₂	P
	I_N (A)	4,0A	--
	Sect. (mm ²)	1,0mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current 1,13 I_N (A) starting from cold for:		N/A
	- 1 h ($I_N \leq 63$ A)		N/A

	- 2 h ($I_N > 63$ A)		N/A
	No tripping		N/A
	Then steadily increased within 5 s to 1,45 I_N (A)		N/A
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I_N (A) starting from cold for:		N/A
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 120 s (> 32 A)		N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U_n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P
	After each operation the indicating means shall show the open position of the contacts		P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
	Test current 2,55 I_N (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	___ 20,1 ___ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		P
	Test current $10 I_N$ (A), starting from cold	___ 40,1 ___ A	N/A
	Tripping less than 0,1 s	8,43ms	P
9.10.2.2 *)	Test current 2,55 I_N (A) starting from cold for:	10,2A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	13,4s	P
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--

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Clause	Requirement + Test	Result - Remark	Verdict
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current $1,2 I_t$ (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		N/A
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = _____ °C	N/A
	Test current $1,13 I_N$ (A)	_____A	N/A
	- Passed for 1h		N/A
	- Passed for 2h		N/A
	Current is then steadily increased to $1,9 I_N$ (A) within 5s	_____A	N/A
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = _____ °C	N/A
	Test current I_N (A)		N/A
	No tripping within		--
	- 1h (≤ 63 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 2h (> 63 A)		N/A
	TESTS „D“ 1 sample	C3; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „D₀“	D₀₋₂₃	P
	I _N (A)	<u>3,0</u> A	--
	Sect. (mm ²)	<u>1,0</u> mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:		N/A
	- 1 h (I _N ≤ 63 A)		N/A
	- 2 h (I _N > 63 A)		N/A
	No tripping		N/A
	Then steadily increased within 5 s to 1,45 I _N (A)		N/A
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:		N/A
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P

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Clause	Requirement + Test	Result - Remark	Verdict
	After each operation the indicating means shall show the open position of the contacts		P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	___ 15 ___A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		P
	Test current $10 I_N$ (A), starting from cold	___ 30,1 ___ A	N/A
	Tripping less than 0,1 s	10,7ms	P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:	7,66A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	14,2s	P
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A
	Test current 1,1 I _t (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A
	Test current 1,2 I _t (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		N/A
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = _____ °C	N/A
	Test current 1,13 I _N (A)	_____A	N/A
	- Passed for 1h		N/A
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	_____A	N/A
	Tripping within	[min] [min] [mini]	--
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = _____ °C	N/A
	Test current I _N (A)		N/A
	No tripping within		--
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „D“ 1 sample	C2; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „D₀“	D₀₋₂₄	P
	I _N (A)	<u>2,0</u> A	--
	Sect. (mm ²)	<u>1,0</u> mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:		N/A
	- 1 h (I _N ≤ 63 A)		N/A
	- 2 h (I _N > 63 A)		N/A
	No tripping		N/A
	Then steadily increased within 5 s to 1,45 I _N (A)		N/A
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:		N/A
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P
	After each operation the indicating means shall show the open position of the contacts		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	___ 10 ___ A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		P
	Test current $10 I_N$ (A), starting from cold	___ 20,1 ___ A	N/A
	Tripping less than 0,1 s	9,75ms	P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:	5,10A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	16,5s	P
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test current 1,1 I _t (A), (two pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	Test current 1,2 I _t (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		N/A
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = _____ °C	N/A
	Test current 1,13 I _N (A)	_____A	N/A
	- Passed for 1h		N/A
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	_____A	N/A
	Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = _____ °C	N/A
	Test current I _N (A)		N/A
	No tripping within		--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „D“ 1 sample	C1; 1POLE	P
8.6	Automatic operation		P
8.6.1	Standard time-current zone		P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.		P
9.10	Tests „D₀“	D₀₋₂₅	P
	I _N (A)	<u>1,0</u> A	--
	Sect. (mm ²)	<u>1,0</u> mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	--
9.10.1	General		N/A
	If the test is made in a test chamber, it shall be made in still air; the volume of the test chamber shall be such as not to affect the test results		N/A
9.10.2	Test of time-current characteristic		N/A
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:		N/A
	- 1 h (I _N ≤ 63 A)		N/A
	- 2 h (I _N > 63 A)		N/A
	No tripping		N/A
	Then steadily increased within 5 s to 1,45 I _N (A)		N/A
	- Tripping within	[min] [min] [mini]	--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)		N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:		N/A
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts		P
9.10.3.1	General test conditions		P
	For the lower values of the test current the test is made once, at any convenient voltage.		P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.		P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min		P
	The tripping time of the O operation is measured		P

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Clause	Requirement + Test	Result - Remark	Verdict
	After each operation the indicating means shall show the open position of the contacts		P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type		N/A
	Test current $3I_N$ (A), starting from cold	_____A	--
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $5 I_N$ (A), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
*)	Test current $2,55 I_N$ (A) starting from cold for:	A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	___ 5 ___A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		P
	Test current $10 I_N$ (A), starting from cold	___ 10,0 ___ A	N/A
	Tripping less than 0,1 s	9,82ms	P
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:	2,55A	N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)	14,6s	P
	- 120 s (> 32 A)		N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	--
	$\geq 0,1$ s		N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A	N/A
	Tripping less than 0,1 s		N/A
9.10.2.2 *)	Test current $2,55 I_N$ (A) starting from cold for:		N/A
*see Annex 1 acc. EN60898-1	opening time not less than 1 s or more than	[s] [s] [s]	--
	- 60 s (≤ 32 A)		N/A
	- 120 s (> 32 A)		N/A

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Clause	Requirement + Test	Result - Remark		
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:			N/A
	Test current 1,1 It (A), (two pole) starting from cold	_____A		N/A
	Tripping within	[min] [min] [min]		--
	- 1h (≤ 63 A)			N/A
	- 2h (> 63 A)			N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold	_____A		N/A
	Tripping within	[min] [min] [min]		--
	- 1h (≤ 63 A)			N/A
	- 2h (> 63 A)			N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics			N/A
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = _____ °C		N/A
	Test current 1,13 I _N (A)	_____A		N/A
	- Passed for 1h			N/A
	- Passed for 2h			N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	_____A		N/A
	Tripping within	[min] [min] [mini]		--
	- 1h (≤ 63 A)			N/A
	- 2h (> 63 A)			N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	T = _____ °C		N/A
	Test current I _N (A)			N/A
	No tripping within			--
	- 1h (≤ 63 A)			N/A
	- 2h (> 63 A)			N/A

	TESTS „E ₁ “ 3 samples C63, 1POLE,				P
9.12.11.4.2	Test E ₁ : Test at service short-circuit capacity	E ₁₋₁	E ₁₋₂	E ₁₋₃	P
	Service short-circuit capacity (Ics)	6,0kA			--
	Test circuit: figure	3			--
	Test voltage 1,05 Un	246V			--
	Prospective current	6,0kA			--
	Prospective current obtained	6,07 kA			--

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Clause	Requirement + Test	Result - Remark			Verdict
	Power factor	0,65...0,70			--
	Power factor obtained	0,67			--
	Sequence	O – O – CO			--
	T (min)	3 min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = 45 mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: x x mm			--
	I _{Peak} (A) max. value	4,86kA	4,86kA	4,86kA	--
	I ² t ≤ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. I ² t ≤ kA ² s	L1	L2	L3	P
		L2	—	—	
		L3	—	—	
		L4(N)	—	—	
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times U _n . = 440 V. The circuit – breaker is in the open position	E ₁₋₁ [mA]	E ₁₋₂ [mA]	E ₁₋₃ [mA]	--
	The leakage current shall not exceed 2 mA	L1	L2	L3	P
		L2			N/A
		L3			N/A
		L4(N)			N/A
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)				P
	b)				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	c)				P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,8 A			--
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	101 A			--
		E ₁₋₁ [min]	E ₁₋₂ [min]	E ₁₋₃ [min]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	33s	19s	71s	P
9.12.11.4.2	Test „E₁“(Test at service short-circuit capacity) three phase tests for single circuit-breakers	E₁₋₄	E₁₋₅	E₁₋₆	P
	Service short-circuit capacity (I _{cs})	6,0 kA			--
	Test circuit: figure	3			--
	Test voltage 1,05 U _n	420 V			--
	Prospective current	6,0 kA			--
	Prospective current obtained	6,06 kA			--
	Power factor	0,65-0,70			--
	Power factor obtained	0,68			--
	Sequence	3/5			--
	T (min)	3 min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	"a" = 45 mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: x x mm			P
	I _{Peak} (A) max. value	4,47 kA			P
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P

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Clause	Requirement + Test	Result - Remark			Verdict
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n = \underline{\quad 440 \quad}$ V. The circuit – breaker is in the open position	E₁₋₄ [mA]	E₁₋₅ [mA]	E₁₋₆ [mA]	--
	The leakage current shall not exceed 2 mA L1	<0,01	<0,01	<0,01	P
	L2	-	-	-	N/A
	L3	-	-	-	N/A
	L4(N)	-	-	-	N/A
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.3)				P
	a)				P
	b)				N/A
	c)				P
	d) 2000 V				P
	Test current 0.85x non-tripping current (1,13 I_N)	<u>60,8</u> A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_N) within 5s	<u>101</u> A			P
		E₁₋₄ [min]	E₁₋₅ [min]	E₁₋₆ [min]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	18s	10s	47s	P

TESTS „E ₁ “ 3 samples C1, 1POLE,					P
9.12.11.4.2	Test E₁: Test at service short-circuit capacity	E₁₋₁	E₁₋₂	E₁₋₃	P
	Service short-circuit capacity (Ics)	<u>6,0kA</u>			--
	Test circuit: figure	<u>3</u>			--
	Test voltage 1,05 U_n	<u>246V</u>			--
	Prospective current	<u>6,0kA</u>			--
	Prospective current obtained	<u>6,07 kA</u>			--
	Power factor	<u>0.65...0.70</u>			--
	Power factor obtained	<u>0,67</u>			--
	Sequence	<u>O – O – CO</u>			--
	T (min)	<u>3</u> min			--

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Clause	Requirement + Test	Result - Remark			Verdict
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = __45__ mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____x_____x_____mm			--
	I_{Peak} (A) max. value	393A	393A	393A	--
	$I^2t \leq$ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. $I^2t \leq$ _____ kA ² s	<u>0,48</u>	<u>0,206</u>	<u>0,275</u>	P
	L1	_____	_____	_____	
	L2	_____	_____	_____	
	L3	_____	_____	_____	
	L4(N)	_____	_____	_____	
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n =$ __440__ V. The circuit – breaker is in the open position	E₁₋₁ [mA]	E₁₋₂ [mA]	E₁₋₃ [mA]	--
	The leakage current shall not exceed 2 mA L1	<0,01	<0,01	<0,01	P
	L2				N/A
	L3				N/A
	L4(N)				N/A
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)				P
	b)				N/A
	c)				P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I_N)	<u>0,97</u> A			--
	- Passed for 1h				P
	- Passed for 2h				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	1,60 A			--
		E ₁₋₁ [min]	E ₁₋₂ [min]	E ₁₋₃ [min]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	103s	197s	128s	P
9.12.11.4.2	Test „E ₁ “(Test at service short-circuit capacity) three phase tests for single circuit-breakers	E ₁₋₄	E ₁₋₅	E ₁₋₆	P
	Service short-circuit capacity (I _{cs})	6,0 kA			--
	Test circuit: figure	3			--
	Test voltage 1,05 U _n	420 V			--
	Prospective current	6,0 kA			--
	Prospective current obtained	6,06 kA			--
	Power factor	0,65-0,70			--
	Power factor obtained	0,68			--
	Sequence	3/5			--
	T (min)	3 min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	"a" = 45 mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: x x mm			P
	I _{Peak} (A) max. value	357 A			P
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times U _n . = 440 V. The circuit – breaker is in the open position	E ₁₋₄ [mA]	E ₁₋₅ [mA]	E ₁₋₆ [mA]	--
	The leakage current shall not exceed 2 mA L1	<0,01	<0,01	<0,01	P
	L2	-	-	-	N/A
	L3	-	-	-	N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	L4(N)	-	-	-	N/A
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.3)				P
	a)				P
	b)				N/A
	c)				P
	d) 2000 V				P
	Test current 0.85x non-tripping current (1,13 I _N)	___0,96___ A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	___1,60___ A			P
		E₁₋₄ [min]	E₁₋₅ [min]	E₁₋₆ [min]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	59s	67s	100s	P

	TESTS „E ₁ “ 3 samples C63, 2POLE,				P
9.12.11.4.2	Test E₁: Test at service short-circuit capacity	E₁₋₁	E₁₋₂	E₁₋₃	P
	Service short-circuit capacity (I _{cs})	<u>6,0kA</u>			--
	Test circuit: figure	<u>3</u>			--
	Test voltage 1,05 Un	<u>426V</u>			--
	Prospective current	<u>6,0kA</u>			--
	Prospective current obtained	<u>6,07kA</u>			--
	Power factor	<u>0,65...0,70</u>			--
	Power factor obtained	<u>0,67</u>			--
	Sequence	<u>O – O – CO</u>			--
	T (min)	___3___ min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = ___45___ mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--
	I _{Peak} (A) max. value	5,08kA	5,08kA	5,08kA	--
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--

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Clause	Requirement + Test	Result - Remark			Verdict	
	Max. $I^2t \leq \text{_____ kA}^2\text{s}$	L1 L2 L3 L4(N)	<u>88,2</u> _____ _____ _____	<u>82,0</u> _____ _____ _____	<u>63,6</u> _____ _____ _____	P
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P	
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n = \text{___} 440 \text{___ V}$. The circuit – breaker is in the open position	E_{1-1} [mA]	E_{1-2} [mA]	E_{1-3} [mA]	--	
	The leakage current shall not exceed 2 mA	L1	<0,01	<0,01	<0,01	P
		L2	<0,01	<0,01	<0,01	P
		L3	-	-	-	N/A
		L4(N)	-	-	-	N/A
	Electric strength test:				P	
	Test voltage 1500 V (see 9.7.2)				P	
	a)				P	
	b)				N/A	
	c)				P	
	d)				N/A	
	e) 2000 V				N/A	
	Test current 0.85x non-tripping current (1,13 I_N)	<u>61,0</u> A			--	
	- Passed for 1h				P	
	- Passed for 2h				N/A	
	Current is then steadily increased to 1,1 x tripping current (1,45 I_N) within 5s	<u>101</u> A			--	
		E_{1-1} [min]	E_{1-2} [min]	E_{1-3} [min]	--	
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	<u>1,1</u>	<u>4,2</u>	<u>1,7</u>	P	

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E₁“ 3 samples C1, 2POLE,				P
9.12.11.4.2	Test E₁: Test at service short-circuit capacity	E₁₋₁	E₁₋₂	E₁₋₃	P
	Service short-circuit capacity (Ics)	6,0kA			--
	Test circuit: figure	3			--
	Test voltage 1,05 Un	426V			--
	Prospective current	6,0kA			--
	Prospective current obtained	6,02 kA			--
	Power factor	0,65...0,70			--
	Power factor obtained	0,67			--
	Sequence	O – O – CO			--
	T (min)	3 min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = 45 mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: x x mm			--
	I _{Peak} (A) max. value	412A	412A	412A	--
	I ² t ≤ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. I ² t ≤ kA ² s L1 L2 L3 L4(N)	0,355 — — —	0,467 — — —	0,346 — — —	P
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.= 440 V. The circuit – breaker is in the open position	E ₁₋₁ [mA]	E ₁₋₂ [mA]	E ₁₋₃ [mA]	--

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Clause	Requirement + Test	Result - Remark			Verdict	
	The leakage current shall not exceed 2 mA	L1	<0,01	<0,01	<0,01	P
		L2	<0,01	<0,01	<0,01	P
		L3	-	-	-	N/A
		L4(N)	-	-	-	N/A
	Electric strength test:				P	
	Test voltage 1500 V (see 9.7.2)				P	
	a)				P	
	b)				N/A	
	c)				P	
	d)				N/A	
	e) 2000 V				N/A	
	Test current 0.85x non-tripping current (1,13 I _N)	___0,97___ A			--	
	- Passed for 1h				P	
	- Passed for 2h				N/A	
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	___1,60___ A			--	
		E ₁₋₁ [min]	E ₁₋₂ [min]	E ₁₋₃ [min]	--	
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	2,6	1,8	1,1	P	

	TESTS „E ₁ “ 3 samples C63, 4POLE				P
9.12.11.4.2	Test E ₁ : Test at service short-circuit capacity	E ₁₋₁	E ₁₋₂	E ₁₋₃	P
	Service short-circuit capacity (I _{cs})	6,0kA			--
	Test circuit: figure	3			--
	Test voltage 1,05 Un	425V			--
	Prospective current	6,0kA			--
	Prospective current obtained	6,10 kA			--
	Power factor	0,65...0,70			--
	Power factor obtained	0,68			--
	Sequence	O – O – CO			--
	T (min)	___3___ min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	“a” = __45__ mm			--

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Clause	Requirement + Test	Result - Remark			Verdict
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____x_____x_____mm			--
	I_{Peak} (A) max. value	4,66kA	4,48kA	5,16kA	--
	$I^2t \leq$ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. $I^2t \leq$ _____ kA ² s	L1 <u>110</u>	L2 <u>66</u>	L3 <u>76,9</u>	P
		L2 _____	_____	_____	
		L3 _____	_____	_____	
		L4(N) _____	_____	_____	
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n =$ <u>440</u> V. The circuit – breaker is in the open position	E_{1-1} [mA]	E_{1-2} [mA]	E_{1-3} [mA]	--
	The leakage current shall not exceed 2 mA	L1 <0,01	<0,01	<0,01	P
		L2 <0,01	<0,01	<0,01	P
		L3 <0,01	<0,01	<0,01	P
		L4(N) <0,01	<0,01	<0,01	P
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)				P
	b)				N/A
	c)				P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I_N)	<u>60,5</u> A			--
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_N) within 5s	<u>100</u> A			--

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Clause	Requirement + Test	Result - Remark			Verdict
		E₁₋₁ [min]	E₁₋₂ [min]	E₁₋₃ [min]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	<u>6min04s</u>	<u>5min47s</u>	<u>5min54s</u>	P
	TESTS „E₁“ 3 samples C1, 4POLE				P
9.12.11.4.2	Test E₁: Test at service short-circuit capacity	E₁₋₁	E₁₋₂	E₁₋₃	P
	Service short-circuit capacity (I _{cs})	<u>6,0kA</u>			--
	Test circuit: figure	<u>3</u>			--
	Test voltage 1,05 Un	<u>425V</u>			--
	Prospective current	<u>6,0kA</u>			--
	Prospective current obtained	<u>6,10kA</u>			--
	Power factor	<u>0,65...0,70</u>			--
	Power factor obtained	<u>0,69</u>			--
	Sequence	<u>O – O – CO</u>			--
	T (min)	<u>3</u> min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	“a” = <u>45</u> mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: ____x____x____mm			--
	I _{Peak} (A) max. value	<u>1,49kA</u>	<u>1,34kA</u>	<u>1,42kA</u>	--
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. I ² t ≤ _____ kA ² s L1 L2 L3 L4(N)	<u>3,94</u> ____ ____ ____	<u>3,43</u> ____ ____ ____	<u>3,94</u> ____ ____ ____	P
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P

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Clause	Requirement + Test	Result - Remark			Verdict
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n = \underline{\quad 440 \quad}$ V. The circuit – breaker is in the open position	E₁₋₁ [mA]	E₁₋₂ [mA]	E₁₋₃ [mA]	--
	The leakage current shall not exceed 2 mA L1	<0,01	<0,01	<0,01	P
	L2	<0,01	<0,01	<0,01	P
	L3	<0,01	<0,01	<0,01	P
	L4(N)	<0,01	<0,01	<0,01	P
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)				P
	b)				N/A
	c)				P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I_N)	<u>0,97</u> A			--
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_N) within 5s	<u>1,62</u> A			--
		E₁₋₁ [min]	E₁₋₂ [min]	E₁₋₃ [min]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	<u>7min31s</u>	<u>8min04s</u>	<u>7min55s</u>	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Annex E		N/A
	Special requirements for auxiliary circuits for safety extra-low voltage		N/A
8.1.3	Clearances and creepage distances		N/A
	Additional note to table 4 NOTE 4 live parts in auxiliary circuits intended to be connected to safety extra low voltages shall be separated from circuits with higher voltages in accordance with the requirements of 411.1.3.3 of IEC 60364-4-41		--
	Compliance is checked by inspection		N/A
9.7.4	Dielectric strength of the auxiliary circuits		N/A
	Note: A test for circuits intended for connection to safety extra-low voltage is under consideration		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Annex J		N/A
	Particular requirements for circuit-breakers with screw less type terminals for external copper conductors (In not exceeding 20 A, cross-sectional area up to 4 mm ²)		N/A
J.6	Marking		N/A
	Universal terminals		--
	- no marking		N/A
	Non-universal		--
	- declared for rigid-solid conductors	marked with: "sol"	N/A
	- declared for rigid(solid and stranded)	marked with: "r"	N/A
	- declared for flexible conductors	Marked with: "f"	N/A
	The markings should appear on the circuit-breaker or, if available space is not sufficient, on smallest package unit or in technical information		N/A
	Indication of length of insulation to be removed on the circuit-breaker.....	_____mm	N/A
J.7	Standard conditions for operation in service		N/A
	Clause 7 applies		N/A
J.8	Constructional requirements		N/A
	Clause 8 applies with the follow modifications:		N/A
	In clause 8.1.5 only –5.1, -5.2. –5.3, - 5.6 and - 5.7 apply		N/A
	Compliance is checked by inspection and by the tests of J.9.1 and J.9.2		N/A
J.8.1	Connection or disconnection of conductors		N/A
	The connection or disconnection shall be made by:		N/A
	A general purpose tool or by a convenient device integral with the terminal or		N/A
	for rigid conductors by simple insertion		N/A
	For disconnection an operation other than a pull shall be necessary (push-wire terminals)		N/A
	Universal terminals shall accept rigid (solid or stranded and flexible unprepared conductors		N/A
	Non-universal terminals shall accept conductors declared by the manufacturer		N/A
	Compliance is checked by inspection and by the tests of J.9.1 and J.9.2		N/A
J.8.2	Dimensions of connectable conductors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The dimensions of connectable conductors are given in table J.1		N/A
	The ability to connect these conductors shall be checked by inspection and by the tests of J.9.1 and J.9.2		N/A
J.8.3	Connectable cross-sectional areas		N/A
	The nominal cross-sections to be clamped are given in table J.2		N/A
	Compliance is checked by inspection and by the tests of J.9.1 and J.9.2		N/A
J.8.4	Insertion and connection of conductors		N/A
	The insertion and disconnection of the conductors shall be made in accordance with the manufacturer's instructions		N/A
J.8.5	Design and construction of terminals		N/A
	Terminals shall be designed and constructed that:		N/A
	- each conductor is clamped individually		N/A
	- connection or disconnection connectors connected or disconnected separate or same		N/A
	- inadequate insertion of the conductor is avoided		N/A
	Compliance is checked by inspection and by the tests of J.9.1 and J.9.2		N/A
J.8.6	The terminals shall be resistant to ageing		N/A
	Compliance is checked by the tests of J.9.3		N/A
J.9	Tests		--
	Clause 9 applies, by replacing 9.4 and 9.5 by the follow		N/A
J.9.1	Test of reliability of screw less terminals		N/A
J.9.1.1	Reliability of screw less system		N/A
	5 times connection and disconnection		N/A
	3 rigid conductors min. cross-section max. cross-section	_____mm ² _____mm ²	N/A
	3 flexible conductors min. cross-section max. cross-section	_____mm ² _____mm ²	N/A
	After tests, the terminal shall not be damage in such a way as to impair its further use		N/A
J.9.1.2	Test of reliability of connection		N/A
	3 terminals of poles of new sample are fitted with new copper conductors according table J.2		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	rigid conductors min. cross-section max. cross-section	_____ mm ² _____ mm ²	N/A
	flexible conductors min. cross-section max. cross-section	_____ mm ² _____ mm ²	N/A
	Each conductor is either pushed as far as possible into the terminal or shall be inserted so that adequate connection is obvious		N/A
	After tests, no wire of the conductor shall have escaped outside the terminals		N/A
J.9.2	Tests of reliability of terminals for external conductors: Mechanical strength		N/A
	Three terminals of new samples are fitted with new conductors of the type and of the minimum and maximum cross sectional area according table J.2.		N/A
	Each conductor is subjected to a pull force of value shown in table J.3. for 1 min		N/A
	Terminal screw torque : $\frac{2}{3}$ of table 11	_____ Nm	N/A
	rigid conductors min. cross-section max. cross-section	_____ mm ² / _____ N _____ mm ² / _____ N	N/A
	flexible conductors min. cross-section max. cross-section	_____ mm ² / _____ N _____ mm ² / _____ N	N/A
	During the test the conductor shall not slip out of the terminal		N/A
J.9.3	Cycling test		N/A
	The test is carried out with new copper conductors having a cross sectional area according table 10	_____ mm ²	N/A
	The test is carried out on new samples(a sample is one pole, the number of which is defined below, according the type of terminal		N/A
	- universal terminals for rigid (solid and stranded) and flexible conductors	3 + 3 samples	N/A
	- non-universal terminals for solid conductors only	3 samples	N/A
	-- non- universal terminals for rigid (solid and stranded) conductors	3 + 3 samples	N/A
	- non-universal terminals for flexible conductors only	3 samples	N/A
	The conductors are connected in series as in normal use to each of the three samples as defined on fig. J.1.		N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	The sample is provided with a hole or equivalent in order to measure the voltage drop on the terminal				N/A
	The test arrangement is placed in a heating cabinet which is initially on 20°C				N/A
	Except the cooling period the test current (rated current) is applied to the circuit	I test _____ A			N/A
	The samples shall be subjected to 192 temperature cycles, each cycle having a duration of +/- 1 hour				N/A
	Description of the temperature cycle: In 20 min raised to 40°C, maintained for 10 min, then cool down in 20 min to 30 °C, maintained for 10 min. For measurement of the voltage drop it is allowed to cool down to 20 °C				N/A
	The maximum voltage drop, measured on each terminal, at the end of the 192 nd cycle, with Inom. shall not exceed the smaller of the two following values <ul style="list-style-type: none"> - either 22,5 mV - or 1,5 times the value measured after the 24 cycle 	Uv max. _____ mV			N/A
	Sample after 24 cycles: rigid conductors (mV) flexible conductors (mV)	J ₁ _____ _____	J ₂ _____ _____	J ₃ _____ _____	N/A
	Sample after 192 cycles: rigid conductors (mV) flexible conductors (mV)	J ₁ _____ _____	J ₂ _____ _____	J ₃ _____ _____	N/A
	After this test the samples shall show no changes evidently impairing further use, such as cracks, deformations or like				N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Annex K		N/A
	Particular requirements for circuit-breakers with flat quick-connect terminations		--
K.6	Marking		N/A
	The whole of clause 6 applies		N/A
	Addition after the lettered item k		--
	The following information regarding the female connector according to IEC 61210 and the type of conductor to be used shall be given in the manufacturer's instructions		N/A
	a) manufacturers name or trade mark		--
	b) type reference		N/A
	c) information on cross-sections of conductors and colour code of insulating female connectors (see table K.1)		N/A
	d) the use of only silver or tin-plated copper alloys		N/A
K.7	Standard conditions for operation in service		N/A
	Clause 7 applies		N/A
K.8	Constructional requirements		N/A
	Clause 8 applies with the follow modifications:		N/A
	replacement of 8.1.3 by:		N/A
K.8.1	Clearances and creepage distances (see annex B)		N/A
	Subclause 8.1.3 applies, the female connectors being fitted to the male tabs of the circuit-breaker		N/A
	Replacement of 8.1.5 by:		N/A
K.8.2	Terminals for external conductors		N/A
K.8.2.1	Male tabs and female connectors shall be of a metal having mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use		N/A
K.8.2.2	The nominal width of 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
	The dimensions of the male tab shall comply with those specified in table K.3 and in figures K.2, K3, K4, K5, where the dimensions A, B, C, D, E, F, J, M, N and Q are mandatory		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The dimensions of the female connector which may be fitted-on are given in figure K.6 and in table K.4		N/A
	Compliance is checked by inspection and by measurement	See table on page _____	N/A
K.8.2.3	Male tabs shall be securely retained		N/A
	Compliance is checked by the mechanical overload test of K.9.1		N/A
K.9	Tests		N/A
	Clause 9 applies, with follow modifications:		N/A
	Replacement of 9.5 by:		N/A
K.9.1	Mechanical overload-force		N/A
	10 terminals of circuit-breakers, mounted as normal use are subjected to a axial push force and successively the axial pull force specified in table K2 applied to male tab once	push force 96 N pull force 88 N	N/A
	No damage which could impair further use shall occur to the tab or to the circuit-breaker in which the tab is integrated		N/A
	Addition to 9.8.3:		N/A
	Fine –wire thermocouples shall be placed in such a way as not to influence the contact or the connection area. An example of placement is shown in fig K.1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

		Dimensions of tabs according Table K.3		Measured in mm	Verdict
		Minimum	Maximum		N/A
A	Dimple	0,7	1,0	_____	N/A
	Hole	0,5	1,0	_____	N/A
B	Dimple	7,8 min		_____	N/A
	Hole	7,8 min		_____	N/A
C	Dimple	0,77	0,84	_____	N/A
	Hole	0,77	0,84	_____	N/A
D	Dimple	6,20	6,40	_____	N/A
	Hole	6,20	6,40	_____	N/A
E	Dimple	3,6	4,1	_____	N/A
	Hole	4,3	4,7	_____	N/A
F	Dimple	1,6	2,0	_____	N/A
	Hole	1,6	2,0	_____	N/A
J	Dimple	8°	12°	_____	N/A
	Hole	8°	12°	_____	N/A
M	Dimple	2,2	2,5	_____	N/A
	Hole	---	---	---	---
N	Dimple	1,8	2,0	_____	N/A
	Hole	---	---	---	---
P	Dimple	0,7	1,8	_____	N/A
	Hole	0,7	1,8	_____	N/A
Q	Dimple	8,9 min	---	_____	N/A
	Hole	8,9 min	---	_____	N/A
B3			7,8 max	_____	N/A
L2			3,5 max	_____	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

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

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Clause	Requirement + Test	Result - Remark	Verdict
L.9	Tests		N/A
	Clause 9 applies with the following modifications/additions:		N/A
	For the tests which are influenced by the material of the terminal and the type of conductor that can be connected, the test conditions of table L.3 are applied		N/A
	Additionally the test of L.9.2 is carried out on terminals separated from the circuit-breaker		N/A
L.9.2	Current cycling test		N/A
	This test is carried out on separate terminals		N/A
	The general arrangement of the samples shall be as shown in figure L.1		N/A
	90 % of torque stated by the manufacturer or selected in table 11 used for the specimens	torque: _____ Nm	N/A
	The test is carried out with conductors according to table L.5. The length of the test conductor from the point of entry to the screw-type terminal specimens to the equalizer shall be as in table L.6	cross-section: _____ mm ² minimum conductor length: _____ mm	N/A
	Cross section of equalizer not greater than that given in table L.7	max. crosssection _____ mm ²	N/A
L.9.2.5	Test method and acceptance criteria		N/A
	Test loop subjected to 500 cycles of 1h current-on and 1h current-off, starting at an a.c. current value of 1,12 times the test current value determined in table L.8	test current: _____ A	N/A
	Near the end of each current-on period of the first 24 cycles, the current shall subsequently be adjusted to raise the temperature of the reference conductor to 75°C		N/A
	At the end of the 25 th cycle the test current shall be adjusted the last time and the stable temperature shall be recorded as the first measurement. No further adjustment of test current for the remainder of the test		N/A
	Temperatures recorded for at least one cycle of each working day, and after approximately 25, 50, 75, 100, 125, 175, 225, 350, 425 and 500 cycles		N/A
	For each screw-type terminal		N/A
	- the temperature rise shall not exceed 110 K		N/A
	- the stability factor Sf shall not exceed ± 10 °C		N/A

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Clause	Requirement + Test	Result - Remark		Verdict
	ambient air temperature: _____ °C	max. temperature rise [K]	max. stability factor Sf [°C]	N/A
	Terminal 1			N/A
	Terminal 2			N/A
	Terminal 3			N/A
	Terminal 4			N/A
	Terminal 5			N/A
	Terminal 6			N/A
	Terminal 7			N/A
	Terminal 8			N/A

	TABLE: Heating Test		P
	Test voltage (V)		—
	Ambient (°C)		—
Thermocouple Locations	max. temperature measured, (K)	max. temperature limit, (K)	
Supplementary information: Refer to test sequence B of this test report about temperature rise			

	TABLE: Dielectric Strength		P
Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)	
Supplementary information: Refer to test sequence B of this test report about Dielectric Strength			

	TABLE: insulation resistance measurements		N/A
Insulation resistance R between:	R (MΩ)	Required R (MΩ)	
Between mains poles (primary fuse disconnected)		N/A	
Between parts separated by basic or supplementary insulation		N/A	
Between parts separated by double or reinforced insulation		N/A	
Supplementary information:			

	TABLE: Impact Resistance			N/A
Impacts per surface	Surface tested	Impact energy (Nm)	Comments	
Supplementary information:				

TABLE: Clearance And Creepage Distance Measurements						P
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
Supplementary information:						
Refer to test sequence A of this test report about Clearance And Creepage Distance						

	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm) :		2		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Supplementary information:				
Refer to test sequence A of this test report about Ball Pressure Test of Thermoplastics				

TABLE: Needle- flame test (NFT)					N/A
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict

Supplementary information:

NFT not relevant (or applicable) for Parts of material classified as V-0 or V-1

NFT not relevant (or applicable) for Base material of PCBs classified as V-0 or if relevant VTM-0

TABLE: Resistance to heat and fire - Glow wire tests								P
Object/ Part No./ Material	Manufacturer / trademark	Glow wire test (GWT); (°C)						Verdict
		550	650		750		960	
			te	ti	te	ti		
Object/ Part No./ Material	Manufacturer / trademark	Glow-wire flammability index (GWFI), °C				GW ignition temp. (GWIT), °C		Verdict
		550	650	750	850	675	775	
		--	--	--				
The test specimen passed the glow wire test (GWT) with no ignition [(te – ti) ≤ 2s] (Yes/No) :								P
If no, then surrounding parts passed the needle-flame test of annex E (Yes/No)..... :								N/A
The test specimen passed the test by virtue of most of the flaming material being withdrawn with the glow-wire (Yes/No)? :								N/A
Ignition of the specified layer placed underneath the test specimen (Yes/No)..... :								N/A
Supplementary information:								
550 °C GWT not relevant (or applicable) to parts of material classified at least HB40 or if relevant HBF								
The GWIT pre-selection option, the 850 °C GWFI pre-selection option, and the 850 °C GWT are not relevant (or applicable) for attended appliances.								
Refer to test sequence A of this test report about Resistance to heat and fire								

TABLE: Threaded Part Torque Test				P
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)	
Supplementary information:				
Refer to test sequence A of this test report about mechanism.				

IEC60898_1D ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60898-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Circuit-breakers for over current protection for household and similar installations Part 1 - Circuit-breakers for a.c. operation		
Differences according to.....: EN 60898-1:2019		
Attachment Form No.....: EU_GD_IEC60898_1D		
Attachment Originator: DEKRA Certification B.V.		
Master Attachment.....: 2019-06-18		
Copyright © 2019 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.		
	CENELEC COMMON MODIFICATIONS (EN)	-
Test item particulars:		-
Type of circuit-breaker	C61N,C62N,C63N,C64N	-
Energy limiting class	<input checked="" type="checkbox"/> Class 1 <input type="checkbox"/> Class 3	-
Value of rated operational voltage (Ue) and number of poles	<input checked="" type="checkbox"/> 230 V <input checked="" type="checkbox"/> 1 P <input checked="" type="checkbox"/> 230/400 V <input checked="" type="checkbox"/> 1 P + N <input checked="" type="checkbox"/> 400 V <input checked="" type="checkbox"/> 2 P <input checked="" type="checkbox"/> 3 P <input checked="" type="checkbox"/> 3 P + N <input checked="" type="checkbox"/> 4 P	P
Value of rated short-circuit capacities above 10 000 A up to and including 25 000 A	<input type="checkbox"/> 15000 A <input type="checkbox"/> 20000 A <input type="checkbox"/> 25000 A	N/A
Rated impulse withstand voltage (Uimp)	4 kV	-

IEC60898_1D ATTACHMENT				
Clause	Requirement + Test	Result - Remark		Verdict
	Sequence A₁			
6	MARKING AND OTHER INFORMATION			--
6.1	Standard marking:			--
	f) Rated short circuit capacity in A within a rectangle, without symbol "A"	6000 in rectangle		P
	h) calibration temperature, if different from 30°C			P
	m)Energy limiting class in a square in accordance with annex ZA.			N/A
	lcn and the energy limiting class, when applied, marked both on the device and combined			P
	Irrespective of type (B, C or D), the manufacturer published in his literature the I ² t characteristic			P
	For rail mounting circuit-breakers, appropriate rail(s) are indicated in manufacturer's documentation.			P
6.2	Additional marking			--
	Additional marking to other standards (EN or IEC or other) is allowed under the follow conditions:			--
	- the circuit-breaker complies with all the requirements of the additional standard;			--
	- the relevant standard to which the additional marking refers is indicated adjacent to this marking and is clearly differentiated or separated from the standard marking according to cl. 6.1			--
6.3	Guidance table for marking			--
	Each CB shall be marked in a durable manner with all or, for small apparatus, according the guidance table for marking.			P
9.6	TEST OF PROTECTION AGAINST ELECTRIC SHOCK			--
	In case of knock-outs the test finger is applied with a force of 10 N			N/A
	Sequence C	C₁	C₂	C₃
9.11.1	For single-pole circuit-breakers rated 230/400 V the test is made at 230 V.			P
9.11.3	Dielectric strength reduced to 900 V			P

IEC60898_1D ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

	Sequence C₂ : Short-circuit test on circuit-breakers for use in IT systems		--
9.12.11.2.2	Test voltage 105 % of 400 V	_____ V	P

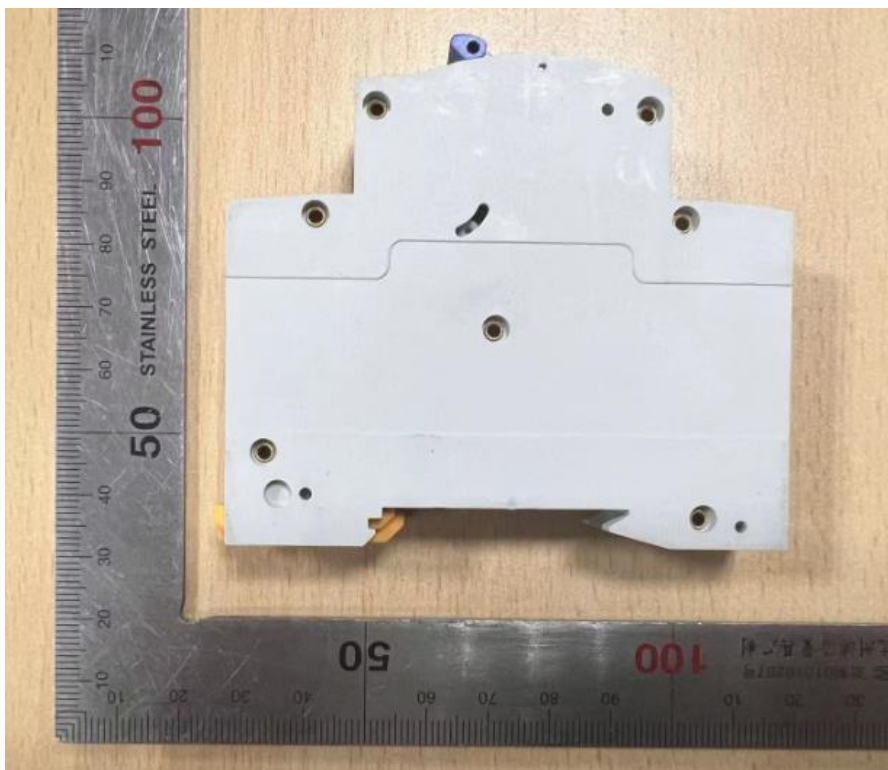
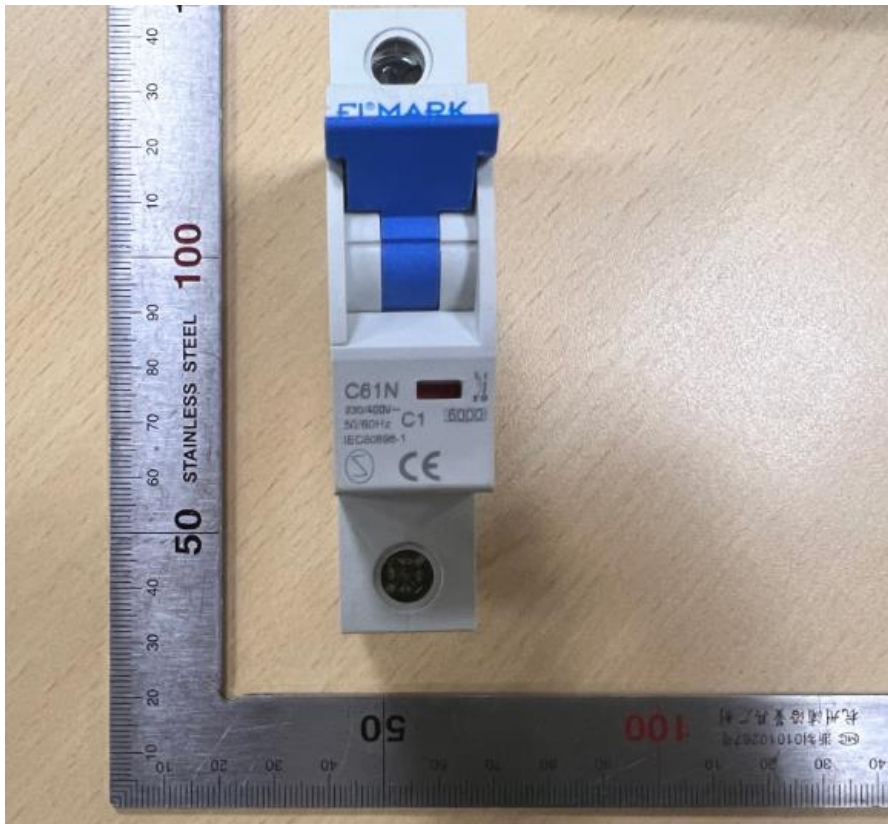
	Sequence D		
9.10	Tests: D₀	D₀₋₁ D₀₋₂ D₀₋₃	P
	If the tests are made in a test chamber, it is made in still air; the volume of the chamber has no influence on the test results.		P
9.10.3.2	<input checked="" type="checkbox"/> For circuit-breakers of the B – Type		P
	Test current 3I _n (A), starting from cold	_____ A	P
	Opening time:	[s] [s] [s]	P
	- 0,1 s ≤ t ≤ 45 s (≤ 32A)		P
	- 0,1 s ≤ t ≤ 90 s (> 32A)		P
9.10.2.2	Test current 2,55 I _n (A) starting from cold for:	_____ A	P
	opening time not less than 1 s or more than	[s] [s] [s]	P
	- 60 s (≤ 32 A)		P
	- 120 s (> 32 A)		P
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type		P
	Test current 5 I _n (A), starting from cold	_____ A	P
	Opening time:	[s] [s] [s]	P
	- 0,1 s ≤ t ≤ 15 s (≤ 32A)		P
	- 0,1 s ≤ t ≤ 30 s (> 32A)		P
9.10.2.2	Test current 2,55 I _n (A) starting from cold for:	_____ A	P
	opening time not less than 1 s or more than	[s] [s] [s]	P
	- 60 s (≤ 32 A)		P
	- 120 s (> 32 A)		P
9.10.3.4	<input checked="" type="checkbox"/> For circuit-breakers of the D – Type		P
	Test current 10 I _n (A), starting from cold	_____ A	P
	Opening time:	[s] [s] [s]	P
	- 0,1 s ≤ t ≤ 4 s (10 A < I _n ≤ 32 A)		P
	- 0,1 s ≤ t ≤ 8 s (10 A ≥ I _n > 32A)		P
	Test current 20 I _n (A) starting from cold		P
	Tripping less than 0,1 s		P

IEC60898_1D ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.10.2.2	Test current 2,55 I _n (A) starting from cold for:	_____ A	P
	opening time not less than 1 s or more than	[s] [s] [s]	P
	- 60 s (\leq 32 A)		P
	- 120 s ($>$ 32 A)		P

	Annex ZC	
	EN 60898-1	
	Special national conditions	
	For the countries in which the relevant special national conditions apply these provisions are normative, for other countries they are informative.	
J.1	Austria, Czech Republic, Netherlands, Norway and Switzerland	
	The upper limit of current for use of screwless terminals is 16 A	N/A
J.3.3	Austria, Belgium, Denmark, France, Germany, Italy, Portugal, Spain and Sweden	
	Only universal screwless type terminals are accepted.	N/A
K.1	Belgium, Italy and Spain	
	The use of circuit-breakers with flat quick-connect terminations for rated currents up to and including 20 A is accepted.	N/A
K.8.2.2	Belgium, Italy and Spain	
	The use for rated currents up to and including 20 A is accepted	N/A

Photographs

Outer construction of C1,1P:



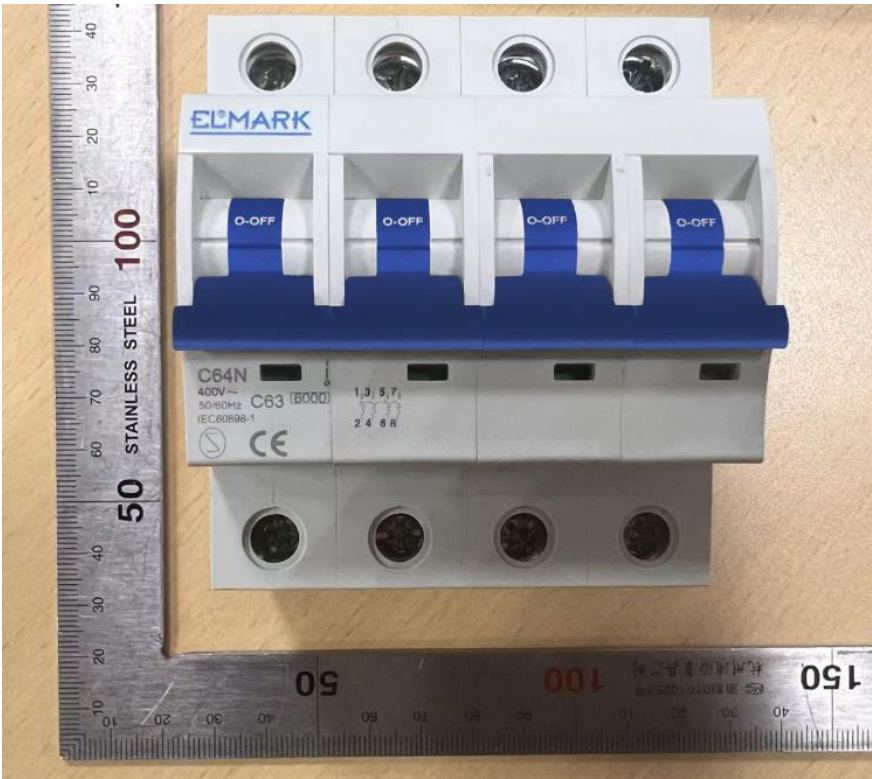


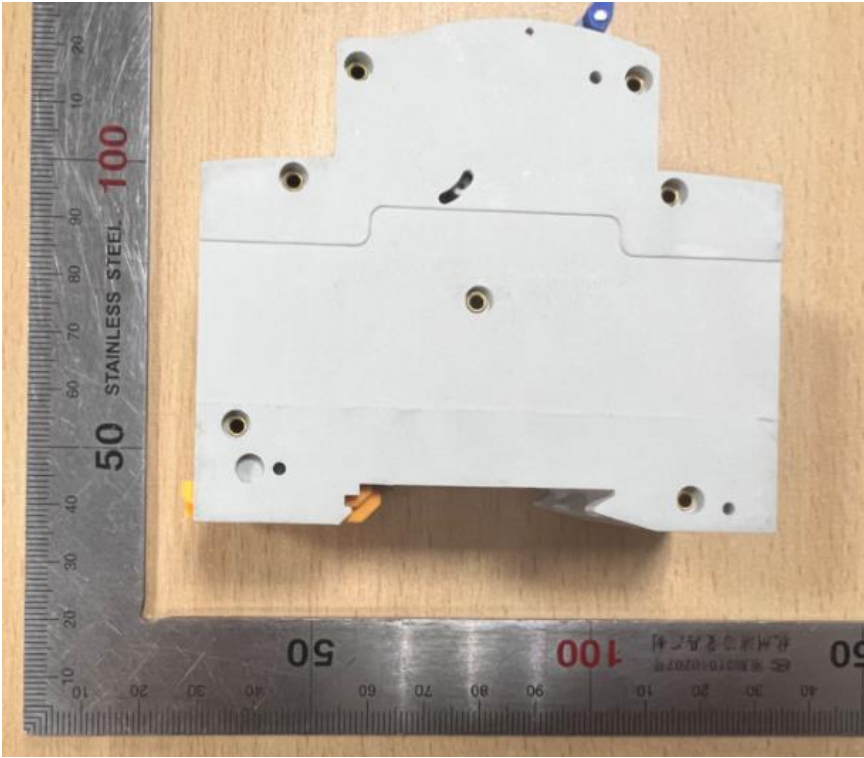
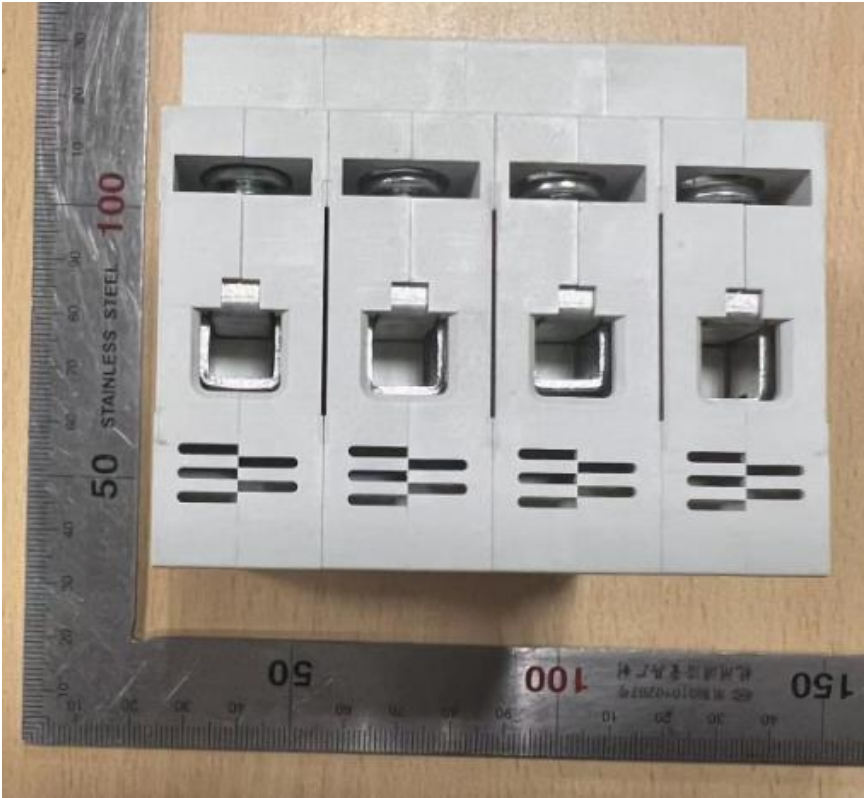
Outer construction of C63,2P:



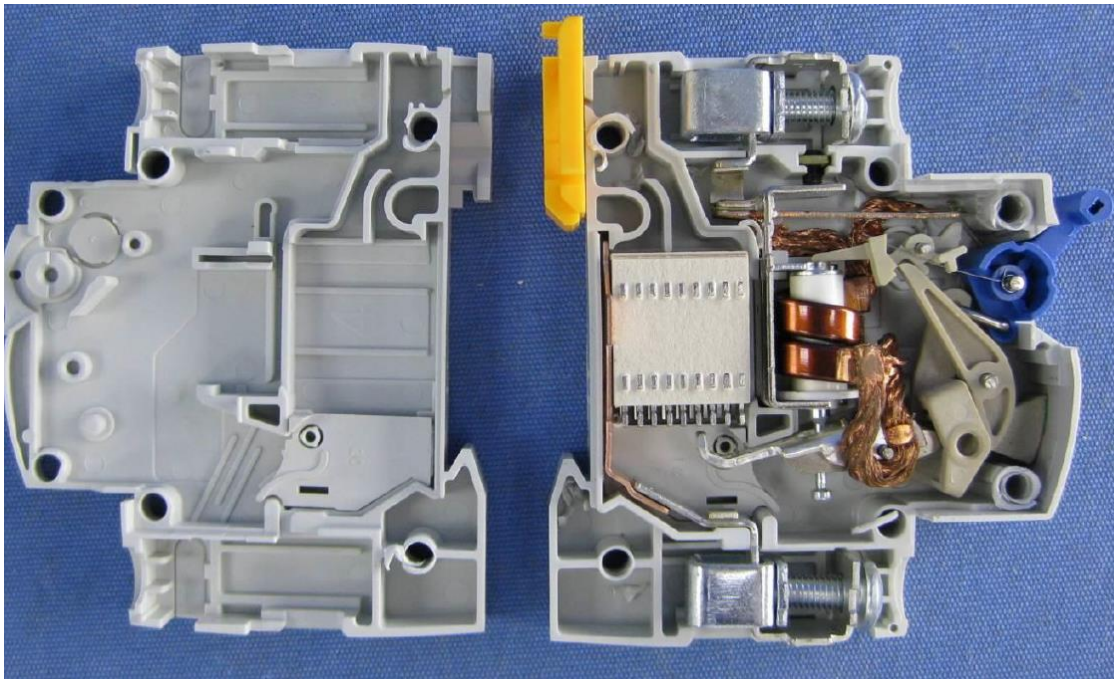


Outer construction of C63,4P:





Inter construction :



End