Wuhan Qianyuyuan E-commerce Co., Ltd

TEST REPORT

Prepared For :	NUOMAK Technology Co., Ltd. Wengyang Industrial Zone, Yueqing City, Zhejiang Province
Product Name:	MCB
Trade mark:	NUOMAK
Model :	BD1-63
Add. Model :	/
Prepared By :	BST Testing (Shenzhen) Co.,Ltd. No.7,New Era Industrial Zone, Guantian, Bao'an District, Shenzhen, Guangdong, China
Test Date:	Feb.25, 2026 - Mar.03, 2026
Date of Report :	Mar.03, 2026
Report No.:	XDAD22326773703031043AR

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TEST REPORT IEC 60898-1-2015 Electrical accessories – Circuit-breakers for overcurrent protection for household and similar installations – Part 1: Circuit-breakers for a.c. operation		
Testing laboratory	:	BST Testing (Shenzhen) Co.,Ltd.
Address	:	No.7, New Era Industrial Zone, Guantian, Bao' an District, Shenzhen, Guangdong, China.
Testing location	:	BST Testing (Shenzhen) Co.,Ltd.
Applicant	:	NUOMAK Technology Co., Ltd.
Address	:	Wengyang Industrial Zone, Yueqing City, Zhejiang Province
Standard	:	IEC 60898-1-2015
Procedure deviation	:	N/A.
Non-standard test method	:	N/A.
Type of test object	:	MCB
Trademark	:	See page 1
Model/type reference	:	BD1-63
Manufacturer	:	NUOMAK Technology Co., Ltd.
Address	:	Wengyang Industrial Zone, Yueqing City, Zhejiang Province

Possible test case verdicts :		
test case does not apply to the test object	:	N(.A.)
test object does meet the requirement	:	P(ass)
test object does not meet the requirement	:	F(ail)

General remarks:	
"(see remark #)" refers to a remark appended to the report. "(see appended table)" refers to a table appended to the report. Throughout this report a comma is used as the decimal separator. The test results presented in this report relate only to the object tested. This report shall not be reproduced except in full without the written approval of the testing laboratory.	Attached with: A. photo documentation

Artwork of Marking Label

MCB
Model:BD1-63

Rating: 6A-63A AC240V/AC440V 50/60HZ

NUOMAK Technology Co., Ltd.

IEC 60898-1-2015			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A“ 1 SAMPLE	A1': 240 V, C40 - cl. 6 A1: 240 V, C40 – test data taken from report 3301074.50 for other clauses	--
6	**MARKING AND OTHER INFORMATION**	A1'	--
	Circuit-breaker marked with:		P
	a) Manufacturer's name or trademark ..... :	GACIA	P
	b)Type designation, catalogue number or other identification number ..... :	M80N	P
	c) Rated voltage (V)..... :	240 V	P
	d) Rated current (A) ..... :	40 A	P
	e) Rated frequency (Hz) ..... :	50 / 60 Hz	P
	f) Rated short circuit capacity (A) ..... :	6000 in a rectangle	P
	g) Wiring diagram		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		N/A
	Symbol for instantaneous tripping current	C	P
	Symbol for nature of supply	~	P
	Marking for rated current and for instantaneous tripping shall be readily visible when CB is installed		P
	Other markingshall be easily discernible		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
	Energy limiting class	3	P
	I^2t characteristic (documentation)		P
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		P
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off positionshall be clearly indicated - 0 I -	O I	P

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Clause	Requirement + Test	Result - Remark	Verdict
	For push-button CB the off push-buttonshall either be red or be marked with the symbol ´0´		N/A
	Red not used for other push-button		N/A
	This symbolshall be easily discernible		P
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Markingshall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 8.3)		P
8.	**REQUIREMENTS FOR CONSTRUCTION AND OPERATION**	A1	P
8.1.1	**General**		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		N/A
	The switched neutral shall close before and open after the protected pole (s)		P
	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.		P
	The action of the mechanismshall not be influenced by the position of enclosures		P

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Clause	Requirement + Test	Result - Remark	Verdict
	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**		P
8.1.3	**Clearances [mm] see table 4**		P
	1.between live parts (of the main circuits) which are separated when the CB is in off position..... :	5,1 mm > 4,0 mm	P
	2.between live parts of different polarity ..... :	5,2 mm > 3,0 mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV..... :		N/A
	4. between live parts and		P
	- accessible surfaces of operating means ..... :	5,0 mm > 3,0 mm	P
	- screws or other means for fixing covers ..... :		N/A
	- surface on which the base is mounted..... :	5,1 mm > 3,0 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) . :	8,3 mm > 3,0 mm	P
	5.between metal parts of mechanism and:		N/A
	- accessible metal parts..... :		N/A
	- screws or other means for fixing the circuit breaker..... :		N/A
	- metal frames supporting the base (flush type) . :		N/A
8.1.3	**Creepage distances [mm] (see table 4)**		P
	Material group	☒ IIIa ☐ II ☐ I	P
	1.between live parts (of the main circuits) which are separated when the CB is in off position..... :	5,1 mm > 4,0 mm	P
	2.between live parts of different polarity ..... :	6,3 mm > 3,0 mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV..... :		N/A
	4. between live parts and		P
	- accessible surfaces of operating means ..... :	5,0 mm > 4,0 mm	P
	- screws or other means for fixing covers ..... :		N/A
	- surface on which the base is mounted..... :	7,4 mm > 4,0 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) . :	8,3 mm > 4,0 mm	P
	5.between metal parts of mechanism and:		N/A
	- accessible metal parts..... :		N/A
	- screws or other means for fixing the circuit breaker..... :		N/A
	- metal frames supporting the base (flush type) . :		N/A
8.1.4	**Screws, current-carrying parts and connections**		P
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		N/A
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)		N/A
	- 5 times (screw Ø / torque Nm)	Ø 4,0 mm 1,2 Nm	P
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		N/A
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		P
	- copper		P
	- alloy 58% copper for worked cold parts		N/A
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
8.1.5	**Terminals for external conductors**		P
8.1.5.1	Terminals ensure correct connection of conductors (Test acc. to cl. 9.5 or annex J or K)	cl. 9.5	P
9.5	Torque Ø 4,0 mm 1,2 Nm max. sect. 16 mm²		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.5.1	Pull test: max sect. 16 mm² Pull 90 N for 1 min min sect. 1,0 mm² Pull 50 N for 1 min During the test conductor does not move noticeably		P
9.5.2	min sect. 1,0 mm² max sect.16 mm² Torque (2/3)= 0,8 Nm The conductor shows no damage		P
9.5.3	Nominal cross-section from 1,0 to 16 mm² No of wires 7 Ø of wires 2,14 mm Torque (2/3) = 0,8 Nm No of wires 7 Ø of wires 0,67 mm Torque (2/3) = 0,8 Nm After the test no wire escaped outside		P
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P
	Rated current (A) / Range of nominal cross sections to be clamped (mm²) < 13: 1 to 2,5 > 13 < 16: 1 to 4 > 16 < 25: 1,5 to 6 > 25 < 32: 2,5 to 10 > 32 < 50: 4 to 16 > 50 < 80: 10 to 25 > 80 < 100: 16 to 35 > 100 < 125: 25 to 50	1 - 16 mm²	P
	It is required that, for current ratings up to and including 50 A terminals are designed to clamp solid conductors as well as rigid stranded conductors; the use of flexible conductors is permitted	The terminals of the circuit-breaker in this series (from 6 A to 40 A) are identical.	P
	Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm² up to 6 mm² are designed to clamp solid conductors only.		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

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.4	Terminals for I_N < 32 A allow the connection of conductors without special preparation	The terminals of the circuit-breaker in this series (from 6 A to 40 A) are identical.	P
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.1)		P
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.2)		P
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.1)		P
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.3)		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
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 of tapping screw 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	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s), shall be reliable and have adequate stability		N/A
8.1.7.1	Plug-in type circuit-breakers, the holding in position 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
8.1.7.2	Plug-in type circuit-breakers, the holding in position 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
8.2	**Protection against electric shock**		P
	Live parts not accessible in normal use		P

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Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	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		P
9.6	**Test of protection against electric shock**		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
7.10	**Resistance to heat**		P
	CB sufficiently resistant to heat		P
9.14	**Test of resistance to heat**		P
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

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Clause	Requirement + Test	Result - Remark	Verdict
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	Housing body Impression: 1,0 mm	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 Ø of impression < 2 mm	Switch knob Impression: 0,8 mm	P
8.11	Resistance to abnormal heat and to fire		P
	External parts of insulating materialshall not ignite or spread fire under fault or overload conditions		P
9.15	**Resistance to abnormal heat and to fire**		P
	Glow wire test: No visible flame, no sustained glowing or flames and glowing extinguish within 30 s		P
	external parts retaining current-carrying parts and parts of the protective circuit in position ..... (960 ± 15)°C	Housing body	P
	all other external parts ..... (650 ± 10)°C	Switch knob	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 „B“ 3 SAMPLES	B-1~3: C40	--
8.3	**Dielectric properties and isolating capability**		P
	CB shall have adequate dielectric properties and shall ensure isolation:		P
8.3.1	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
8.3.2	Isolating capability		P

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Clause	Requirement + Test	Result - Remark			Verdict
	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 9.7.6.1 and 9.7.6.3.				P
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)				P
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.6.2.	Uimp = 4 kV			P
9.7	**Test of dielectric properties and isolating capability**				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	R.H. = 95% T = 25 °C			P
9.7.1.3	Test procedure:				P
	The sample is kept in the cabinet for 48 h.				P
9.7.1.4	Condition of the circuit-breaker after the test				P
	After this treat, the sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3				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:				P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position > 2 MΩ	B-1	B-2	B-3	P
		≥ 500 MΩ	≥ 500 MΩ	≥ 500 MΩ	
	b) in off-position, between each pole in turn and the others connected together > 2 MΩ	≥ 500 MΩ	≥ 500 MΩ	≥ 500 MΩ	P
	c) in on-position, between all poles connected together and the frame > 5 MΩ	≥ 500 MΩ	≥ 500 MΩ	≥ 500 MΩ	P
	d) between metal parts of mechanism and the frame > 5 MΩ	≥ 500 MΩ	≥ 500 MΩ	≥ 500 MΩ	P
	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

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Clause	Requirement + Test	Result - Remark	Verdict
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 in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2	2000 V	P
	a) 2000 V		P
	b) 2000 V		P
	c) 2000 V		P
	d) 2000 V		P
	e) 2500 V		N/A
9.7.4	Dielectric strength of the auxiliary and control circuits		N/A
	For these tests, the main circuitshall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:		N/A
	1) Between all the auxiliary or control circuits and the frame U = ____ V		N/A
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together U = [1000 V if Ui < 60 V or 2Ui + 1000 V if Ui > 60 V]		N/A
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		P
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		P
	The 1,2/50µs impulse voltageshall be applied three times for each polarity at intervals of 1s minimum		P
	- rated impulse withstand voltage (kV) :	4 kV	P
	- sea level of the laboratory:	Sea level	P
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13) ..... :	6,2 kV	P
	- no unintentional disruptive discharge during the test's		P
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		P
	The 1,2/50µs impulse voltageshall be applied three times for each polarity at intervals of 1s minimum		P
	- rated impulse withstand voltage (kV) :	4 kV	P
	- sea level of the laboratory:	Sea level	P
	- test Uimp main circuits (see table 14) :	4,9 kV	P
	Application of test voltage		P
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		P

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Clause	Requirement + Test	Result - Remark			Verdict
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)				P
	- no unintentional disruptive discharge during the test's				P
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)				P
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2, or 9.12.11.3, or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position	U = 264 V			P
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA	B-1	B-2	B-3	P
		≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
8.4	**Temperature rise**				P
	Temperature rise does not exceed the limiting values stated in table V:				P
9.8.2	Test current: I_N= (reach the steady-state value) Four-pole CB's: ☐ 1) Three poles loaded 2) One pole and neutral pole loaded ☐ 1) Four-poles loaded	40 A			P
	Ambient air temperature..... :	23,1 °C			P
	Parts ..... Temperature rise [K]	B-1	B-2	B-3	P
	Terminal L1, up side	27 K	30 K	25 K	
	Terminal L1, downside	25 K	33 K	34 K	
	Terminal N, up side	28 K	31 K	29 K	
	Terminal N, downside	27 K	31 K	34 K	
	Terminals for external connections..... 60				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 poles..... 40	3 K	5 K	5 K	P
	External metallic parts of operating means 25				N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface..... 60	26 K	22 K	26 K	P
9.8.5	**Measurement of power losses**				P
	Power loss do not exceed the values stated in table 15	7,5 W			P

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current: I_N = _____ A (reach the steady state value)	40 A			P
	Loaded one pole after the other				P
	Max. power loss : W	B-1	B-2	B-3	P
	L1	1,7 W	2,5 W	1,7 W	
	N	4,2 W	4,3 W	4,2 W	
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. ____ mm²	40 A 10 mm²			P
	During the test no tripping during the last period, temperature riseshall be measured				P
	Ambient air temperature..... :	24,0 °C			P
	Parts ..... Temperature rise [K]				P
	Terminals for external connections.....	B-1	B-2	B-3	P
	Terminal L1, up side	36 K	38 K	32 K	
	Terminal L1, downside	31 K	37 K	37 K	
	Terminal N, up side	33 K	39 K	35 K	
	Terminal N, downside	35 K	36 K	42 K	
	Test current 1,45 I_N	58,0 A			P
	- Tripping within	B-1	B-2	B-3	P
	- 1h (< 63 A)	243 s	314 s	325 s	P
	- 2h (> 63 A)				N/A
8.4	**Temperature rise**	B-4~6: C32, 30mA - cl. 9.8			--
	Temperature rise does not exceed the limiting values stated in table V:				P
9.8.2	Test current: I_N= (reach the steady-state value) Four-pole CB's: ☐ 1) Three poles loaded 2) One pole and neutral pole loaded ☐ 1) Four-poles loaded	40 A			P
	Ambient air temperature..... :	21,3 °C			P
	Parts ..... Temperature rise [K]	B-4	B-5	B-6	P
	Terminal L1, up side	38 K	43 K	40 K	
	Terminal L1, downside	36 K	41 K	36 K	

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Clause	Requirement + Test	Result - Remark			Verdict
	Terminal N, up side	38 K	41 K	42 K	
	Terminal N, downside	40 K	38 K	38 K	
	Terminals for external connections..... 60				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 poles..... 40	15 K	16 K	15 K	P
	External metallic parts of operating means 25				N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface..... 60	44 K	42 K	47 K	P
9.8.5	**Measurement of power losses**				P
	Power loss do not exceed the values stated in table 15	7,5 W			P
	Test current: I_N = _____ A (reach the steady state value)	40 A			P
	Loaded one pole after the other				P
	Max. power loss : W	B-4	B-5	B-6	P
	L1	5,6 W	5,5 W	5,2 W	
	N	3,7 W	3,9 W	3,8 W	
	TESTS „C“ 3 +3 samples	C1-1~3: C40.			--
8.7	**Test $C_{1:....}$ Mechanical and electrical endurance**				--
	Circuit-breakershall be capable to perform an adequate number of cycles with rated current				P
9.11.1	General test conditions				P
	Test: Test Voltage _____V (rated voltage) Test Current _____A (rated current) Power factor _____(0,85-0,9) Cross sect. area ____mm²	 240,3 V 41,8 A 0,88 10 mm²			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				P
	During the test the circuit-breakershall be operated as in normal use.				P

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Clause	Requirement + Test	Result - Remark			Verdict
9.11.3	**Condition of the circuit-breaker after the test**				P
	Following the test 9.11.2 the sampleshall not show:				P
	- undue wear				P
	- discrepancy between the position of the moving contacts and corresponding position of the Indicating device	No discrepancy			P
	- damage to the enclosure permitting access to live parts by test finger (see 9.6	No damage			P
	- loosening of electrical or mechanical connections	No loosen			P
	- seepage of sealing compound				N/A
	Moreover test current .....2,55 I_N_____A	102,0 A			P
	Opening time not less 1 s or more than	C1-1	C1-2	C1-3	P
	- 60 s (< 32 A)				N/A
	- 120 s (> 32 A)	18 s	23 s	19 s	P
	Dielectric strength reduced to 1500 V *)see Annex 1				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			P
	- 500 A or 10 In	508,1 A			P
	Test voltage 1,1 Un	253,8 V			P
	Power factor 0,93-0,98	0,98			P
9.12.9.1	Test in free air copper wire F': ☒ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 35 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm				N/A
	I_{Peak} (A) max. value	C1-1	C1-2	C1-3	P
		0,67 kA	0,69 kA	0,69 kA	
	Sequence: 6 x "0" and 3x "CO"				P
	Max. I^2t< 63 kA^2s (according to EN60898-1)	C1-1	C1-2	C1-3	P
		1,68 kA^2s	1,59 kA^2s	1,71 kA^2s	

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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:				P
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 9.7.6.3, each poleis supplied at a voltage 1,1 times Un.= V. The circuit –breaker is in the open position	U=264 V			P
	The leakage current shall not exceed 2 mA	C1-1	C1-2	C1-3	P
	L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	N	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)	1500 V			P
	a)				P
	b)				P
	c)				P
	d)				N/A
	e) 2000 V				N/A
9.12.11.2.2	**Test C_2 :Short-circuit test on circuit-breakers rated 230 V, or 240 V or 230/400 V for verifying for use in IT systems**				--
	Test current:	Obtained			P
	- 500 A or 1,2 times the upper limit of the standard	509,6 A			P
	Test voltage 1,1 Un	439,6 V			P
	Power factor 0,93-0,98	0,96			P
9.12.9.1	Test in free air copper wire F': ☒ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 35 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm				N/A
	I_{Peak} (A) max. value	C2-1	C2-2	C2-3	P
		0,62 kA	0,61 kA	0,61 kA	

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Clause	Requirement + Test	Result - Remark			Verdict
	Sequence: "O" + "CO" on each protected pole				P
	Shifted point 30 ° on the other protected pole	C2-1	C2-2	C2-3	P
	Max. I^2t< 63 kA^2s (according to EN60898-1)	1,66 kA^2s	1,51 kA^2s	1,54 kA^2s	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:				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 9.7.6.3, each poleis supplied at a voltage 1,1 times Un.= V. The circuit –breaker is in the open position	U=264 V			P
	The leakage current shall not exceed 2 mA	C2-1	C2-2	C2-3	P
	L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	N	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)	1500 V			P
	a)				P
	b)				P
	c)				P
	d)				N/A
	e) 2000 V				N/A
	TESTS „D"	D0+D1-1~3: C40			--
8.6	**Automatic operation**				--
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_O**				--
	I_N (A)	40 A			P
	Sect. (mm^2)	10 mm^2			P
	Instantaneous tripping current	☐ B ☒ C ☐ D			P
9.10.1	Test of time-current characteristic				P
9.10.1.1	Test current 1,13 I_N (A) starting from cold for:	45,2 A			P
	- 1 h (I_N < 63 A)				P

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Clause	Requirement + Test	Result - Remark			Verdict
	- 2 h (I_N > 63 A)				N/A
	No tripping				P
	Then steadily increased within 5 s to 1,45 I_N (A)	58,0 A			P
	- Tripping within	D0+D1-1	D0+D1-2	D0+D1-3	P
	- 1h (< 63 A)	276 s	10 s	98 s	P
	- 2h (> 63 A)				N/A
9.10.1.2	Test current 2,55 I_N (A) starting from cold for:	102 A			P
	opening time not less than 1 s or more than	D0+D1-1	D0+D1-2	D0+D1-3	P
	- 60 s				N/A
	- 120 s	13 s	13 s	12 s	P
9.10.2	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.2.1	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 Un(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
9.10.2.2	For circuit-breakers of the B – Type				N/A
	Test current 3I_N (A), starting from cold				N/A
	Opening time:				N/A
	≥ 0,1 s				N/A
	Test current 5 I_N (A), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.2.3	☒For circuit-breakers of the C – Type				P
	Test current 5I_N (A), starting from cold	200 A			P
	Opening time:	D0+D1-1	D0+D1-2	D0+D1-3	P
	≥ 0,1 s	2 s	2 s	2 s	P
	Test current 10 I_N (A), starting from cold	400 A			P
	Tripping less than 0,1 s	D0+D1-1	D0+D1-2	D0+D1-3	P
		9 ms	7 ms	8 ms	
9.10.2.4	☐ For circuit-breakers of the D – Type				N/A
	Test current 10I_N (A), starting from cold				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Opening time:				N/A
	≥ 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				N/A
	Tripping less than 0,1 s				N/A
9.10.3	Test of effect of single pole loading on the tripping characteristic of multipole circuit-breakers:				N/A
	Test current 1,1 It (A), (two pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A
9.10.4	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2)°C below the ambient air reference temperature	-5 °C			P
	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	D0+D1-1	D0+D1-2	D0+D1-3	P
	- 1h	68 s	18 s	41 s	P
	- 2h				N/A
	b) Ambient temperature of (40 ± 2)°C	40 °C			P
	Test current I_N (A)	40 A			P
	No tripping within				P
	- 1h				P
	- 2h				N/A
	TESTS: D_1				--
8.9	**Resistance to mechanical shock and impact**				P

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Clause	Requirement + Test	Result - Remark	Verdict
	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
9.13.2	Mechanical impact		P
9.13.2.1	All types:		P
	- Impact test: 10 blows-height 10 cm, no damage		P
9.13.2.2	Screw-in types:		N/A
	- Torque 2,5 Nm for 1 min, no damage		N/A
9.13.2.3	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
9.13.2.4	Plug-in types		N/A
	The circuit-breaker are mounted in there 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 17).		N/A
	During this test the circuit-breaker partshall 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)	1550 A	P
	Power factor	0,97	P
	Test voltage 1,05 Un	253,8 V	P
	Test circuit: figure	Figure 4a for 6O + 3CO	P
	T (min)	3 min	P
9.12.9.1	Test in free air copper wire F': ☒ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 35 mm	P

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Clause	Requirement + Test	Result - Remark			Verdict
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm				N/A
	Sequence	6O + 3CO			P
	I_{Peak} (A) max. value	D0+D1-1	D0+D1-2	D0+D1-3	P
	L	1,77 kA	1,69 kA	1,73 kA	
	N	1,77 kA	1,69 kA	1,73 kA	
	I^2t < 63 kA^2s	D0+D1-1	D0+D1-2	D0+D1-3	P
	Max. I^2t < 63 kA^2s L1	6,39 kA^2s	5,91 kA^2s	5,77 kA^2s	
	N	6,39 kA^2s	5,91 kA^2s	5,77 kA^2s	
	- 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:				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 9.7.6.3, each poleis supplied at a voltage 1,1 times Un.= 253 V. The circuit – breaker is in the open position	D0+D1-1	D0+D1-2	D0+D1-3	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	P
	N	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)	1500 V			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)	38,4 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	63,8 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	D0+D1-1	D0+D1-2	D0+D1-3	P

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Clause	Requirement + Test	Result - Remark			Verdict
		447 s	209 s	312 s	
	TESTS „D“	C type, 1 for all other rated current B type, 1 for all rated current (only 9.10.2)			--
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_O**				P
	I_N (A)	D0-1	D0-2	D0-3	P
		C6	C10	C16	
		D0-4	D0-5	D0-6	
		C20	C25	C32	
		D0-7	D0-8	D0-9	
		B6	B10	B16	
		D0-10	D0-11	D0-12	
		B20	B25	B32	
		D0-13			
		B40			
	Sect. (mm²)	D0-1	D0-2	D0-3	P
		1 mm²	1,5 mm²	2,5 mm²	
		D0-4	D0-5	D0-6	
		2,5 mm²	4 mm²	6 mm²	
		D0-7	D0-8	D0-9	
		1 mm²	1,5 mm²	2,5 mm²	
		D0-10	D0-11	D0-12	
		2,5 mm²	4 mm²	6 mm²	
		D0-13			
		10 mm²			
	Instantaneous tripping current	☒ B	☒ C	☐ D	P
9.10.1	Test of time-current characteristic				P
9.10.1.1	Test current 1,13 I_N (A) starting from cold for:	D0-1	D0-2	D0-3	P
		6,78 A	11,3 A	18,1 A	
		D0-4	D0-5	D0-6	
		22,6 A	28,3 A	36,2 A	

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Clause	Requirement + Test	Result - Remark			Verdict
	- 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)	D0-1	D0-2	D0-3	P
		8,7 A	14,5 A	22,4 A	
		D0-4	D0-5	D0-6	
		29,0 A	36,3 A	46,4 A	
	- Tripping within				P
	- 1h (< 63 A)	D0-1	D0-2	D0-3	P
		449 s	15 s	61 s	
		D0-4	D0-5	D0-6	
		20 s	44 s	86 s	
	- 2h (> 63 A)				N/A
9.10.1.2	Test current 2,55 I_N (A) starting from cold for:	D0-1	D0-2	D0-3	P
		15,3 A	25,5 A	40,8 A	
		D0-4	D0-5	D0-6	
		51,0 A	63,7 A	81,6 A	
	opening time not less than 1 s or more than				P
	- 60 s	D0-1	D0-2	D0-3	
		11 s	10 s	6 s	
		D0-4	D0-5	D0-6	
		8 s	8 s	11 s	
	- 120 s				N/A
9.10.2	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.2.1	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 Un(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
9.10.2.2	☒For circuit-breakers of the B – Type				P

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current $3I_N$ (A), starting from cold	D0-7	D0-8	D0-9	P
		18 A	30 A	48 A	
		D0-10	D0-11	D0-12	
		60 A	75 A	96 A	
		D0-13			
		120 A			
	Opening time:				P
	≥ 0,1s	D0-7	D0-8	D0-9	P
		2 s	5 s	4 s	
		D0-10	D0-11	D0-12	
		4 s	3 s	7 s	
		D0-13			
		5 s			
	Test current 5 I_N (A), starting from cold	D0-7	D0-8	D0-9	P
		30,2 A	50,4 A	80,8 A	
		D0-10	D0-11	D0-12	
		100,5 A	125 A	160 A	
		D0-13			
		201 A			
	Tripping less than 0,1 s	D0-7	D0-8	D0-9	P
		27,1 ms	13,1 ms	24,8 ms	
		D0-10	D0-11	D0-12	
		24,0 ms	23,8 ms	16,0 ms	
		D0-13			P
		16,4 ms			
9.10.2.2	☒For circuit-breakers of the C – Type				P
	Test current $5I_N$ (A), starting from cold	D0-1	D0-2	D0-3	P
		30 A	50 A	80 A	
		D0-4	D0-5	D0-6	
		100 A	125 A	160 A	
	Opening time:				P
	≥ 0,1s	D0-1	D0-2	D0-3	P
		3 s	2 s	1 s	
		D0-4	D0-5	D0-6	

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Clause	Requirement + Test	Result - Remark			Verdict
		1 s	2 s	2 s	
	Test current 10 I_N (A), starting from cold	D0-1	D0-2	D0-3	P
		60 A	100 A	160 A	
		D0-4	D0-5	D0-6	
		200 A	250 A	320 A	
	Tripping less than 0,1 s	D0-1	D0-2	D0-3	P
		7 ms	11 ms	9 ms	
		D0-4	D0-5	D0-6	
		7 ms	8 ms	9 ms	
	opening time not less than 1 s or more than				P
	- 60 s	D0-1	D0-2	D0-3	P
		10 s	7 s	8 s	
		D0-4	D0-5	D0-6	
		7 s	6 s	11 s	
	- 120 s				
9.10.2.4	☒For circuit-breakers of the D – Type				N/A
	Test current 10I_N (A), starting from cold				N/A
	Opening time:				N/A
	≥ 0,1s				N/A
	Test current 20 I_N (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.3	Test of effect of single pole loading on the tripping characteristic of multipole circuit-breakers:				N/A
	Test current 1,1 It (A), (two pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold				N/A
	Tripping within				N/A
	-1h				N/A
	- 2h				N/A
9.10.4	Test of effect of ambient temperature on the tripping characteristics				P

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Clause	Requirement + Test	Result - Remark			Verdict
	a) Ambient temperature of (35 ± 2)°C below the ambient air reference temperature	-5 °C			P
	Test current 1,13 I_N (A)	D0-1	D0-2	D0-3	P
		6,78 A	11,3 A	18,1 A	
		D0-4	D0-5	D0-6	
		22,6 A	28,3 A	36,2 A	
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,9 I_N (A) within 5s	D0-1	D0-2	D0-3	P
		11,4 A	19,0 A	30,4 A	
		D0-4	D0-5	D0-6	
		38,0 A	47,5 A	60,8 A	
	Tripping within				P
	- 1h	D0-1	D0-2	D0-3	P
		29 s	34 s	20 s	
		D0-4	D0-5	D0-6	
		16 s	16 s	30 s	
	- 2h				N/A
	b) Ambient temperature of (40 ± 2)°C	40 °C			P
	Test current I_N (A)	D0-1	D0-2	D0-3	P
		6 A	10 A	16 A	
		D0-4	D0-5	D0-6	
		20 A	25 A	35 A	
	No tripping within				P
	- 1h				P
	- 2h				N/A
	TESTS „E1“ 3 SAMPLES	E1'-1~3: C40			--
8.12.11.4.2	Test: E1 :Test at service short-circuit capacity				--
	Service short-circuit capacity..... :	6 000 A			P
	Test circuit: figure:	Figure 4a			P
	Prospective current ..... :	6 000 A			P
	Prospective current obtained..... :	6 086 A			P
	Test voltage 1,05 Un	253,9 V			P
	Power factor:	0,65~0,70			P
	Power factor obtained..... :	0,69			P

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Clause	Requirement + Test	Result - Remark			Verdict
	Sequence ..... :	Table 19 of IEC 60898-1			P
	T (min) ..... :	3 min			P
9.12.9.1	Test in free air copper wire F': ☒ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm				N/A
	I_{Peak} (kA) max. value..... :	E1'-1	E1'-2	E1'-3	P
	L1	2,7 kA	3,0 kA	2,7 kA	
	N	2,7 kA	3,0 kA	2,7 kA	
	I^2t < 63 kA^2s (according to EN60898-1)	E1'-1	E1'-2	E1'-3	P
	Max. I^2t < 63 kA^2s L1	16,8 kA^2s	13,8 kA^2s	15,8 kA^2s	
	N	16,8 kA^2s	13,8 kA^2s	15,8 kA^2s	
	- 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:				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 9.7.6.3, each poleis supplied at a voltage 1,1 times Un.= 264 V. The circuit – breaker is in the open position	E1'-1	E1'-2	E1'-3	P
	The leakage current shall not exceed 2 mA L1	0,006 mA	0,006 mA	0,006 mA	
	N	0,006 mA	0,005 mA	0,006 mA	
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)				P
	a)				P
	b)				P
	c)				P
	d)				N/A
	e) 2000 V				N/A

IEC 60898-1-2015					
Clause	Requirement + Test	Result - Remark			Verdict
	Test current 0,85x non tripping current (1,13 I_N)	38,4 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	63,8 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1'-1	E1'-2	E1'-3	P
		67 s	62 s	99 s	
	TESTS „E1“ 3 SAMPLES	E1'-4~6: C6			--
8.12.11.4.2	**Test: E_1 :Test at service short-circuit capacity**				--
	Service short-circuit capacity..... :	6 000 A			P
	Test circuit: figure:	Figure 4a			P
	Prospective current ..... :	6 000 A			P
	Prospective current obtained..... :	6 086 A			P
	Test voltage 1,05 Un	253,9 V			P
	Power factor:	0,65~0,70			P
	Power factor obtained..... :	0,69			P
	Sequence ..... :	Table 19 of IEC 60898-1			P
	T (min) ..... :	3 min			P
9.12.9.1	Test in free air copper wire F': ☒ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	“a” = 45 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm				N/A
	I_{Peak} (kA) max. value..... :	E1'-4	E1'-5	E1'-6	P
	L1	2,1 kA	1,9 kA	2,2 kA	
	N	2,1 kA	1,9 kA	2,2 kA	
	I^2t < 40 kA^2s (according to EN60898-1)	E1'-4	E1'-5	E1'-6	P
	Max. I^2t < 40 kA^2s L1	9,4 kA^2s	7,1 kA^2s	8,4 kA^2s	
	N	9,4 kA^2s	7,1 kA^2s	8,4 kA^2s	
	- 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

IEC 60898-1-2015					
Clause	Requirement + Test	Result - Remark			Verdict
	After the test:				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 9.7.6.3, each poleis supplied at a voltage 1,1 times Un.= 264 V. The circuit – breaker is in the open position	E1'-4	E1'-5	E1'-6	P
	The leakage current shall not exceed 2 mA L1	0,006 mA	0,006 mA	0,006 mA	
	N	0,006 mA	0,006 mA	0,006 mA	
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)				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)	5,8 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	9,6 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1'-4	E1'-5	E1'-6	P
		11 s	17 s	23 s	
	TESTS „E2" 3 samples				N/A
	Annex E				--
	Annex J				--
	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
	Annex K				--
	Particular requirements for circuit-breakers with flat quick-connect terminations				N/A
	Annex L				--
	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

Annex1

ATTACHMENT TO TEST REPORT IEC 60898-1

Electrical accessories -

Circuit-breakers for overcurrent protection for household and similar installations -

Part 1: Circuit-breakers for a.c. operation

Differences according to ..... : EN 60898-1-2019			
	CENELEC COMMON MODIFICATIONS (EN)		--
Test item particulars.....	Circuit-breakers for overcurrent protection		
Type of circuit-breaker ..... :	CZ30-32		
Energy limiting class ..... :	☐ Class 1	☒ Class 3	
Value of rated operational voltage (Ue) ..... :	☐ 230 V ☐ 230/400 V ☐ 240/415 V	☒ 240 V ☐ 400 V ☐ 415 V	
Rated impulse withstand voltage (Uimp)	4 kV		
	Requirements for construction and operation		
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
	GENERAL		--
9.12	**Short-circuit tests**		P
9.12.2	Value of the power frequency recovery voltage shall be equal to 110 % of the rated voltage.		P
9.12.3	Tolerances on test quantities		P
	voltage (including recovery voltage) : 0, -5%		P
	TESTS „A“ 1 sample	See main part of this report	--
6	**MARKING AND OTHER INFORMATION**		--
6.1	**Standard marking:**		--
	f) Rated short circuit capacity in A within a rectangle, without symbol “A”		P
	h) calibration temperature, if different from 30°C		N/A
	j) Energy limiting class in a square in accordance with annex ZA.	3	P
	k) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (Icn1), if different from Icn	Same as Icn	N/A
6.2	**Additional marking**		N/A

	Additional marking to other standards (EN or IEC or other) is allowed under the follow conditions:		--
	- the circuit-breakershall comply with all the requirements of the additional standard;		--
	- the relevant standard to which the additional marking refers shall be indicated adjacent to this marking and shall be clearly differentiated or separated from the standard marking according to cl. 6.1		--
	Compliance is checked by inspection and by carrying out all the test sequences required by the relevant standard. Equivalent or less severe test sequences need not be repeated.		N/A
6.3	**Guidance table for marking**		P
	EACH MCB SHALL BE MARKED IN A DURABLE MANNER WITH ALL OR, FOR SMALL APPARATUS, ACCORDING TABLE FOR MARKING		P
	TESTS „C“ 3 + 3 SAMPLES	See main part of this report	--
9.11.3	Dielectric strength reduced to 900 V	Tested at 1500 V	P
	TESTS „C“ 3 + 3 SAMPLES	See main part of this report	--
9.11.3	Dielectric strength reduced to 900 V	Tested at 1500 V	P
	TESTS „D“ 3 samples	D0+D1-1~3: C40	--
9.10	**Tests: D_O**	See main part of this report	P
	If the tests are made in a test chamber, it shall be made in still air; the volume of the chamber shall not affect the test results.		P
9.10.2.2	☐ For circuit-breakers of the B – Type	See main part of this report	N/A
	Test current $3I_N$ (A), starting from cold	_____A	N/A
	Opening time:	[s] [s] [s]	N/A
	- 0,1s < t < 45s (< 32A)		N/A
	- 0,1s < t < 90s (> 32A)		N/A
	Moreover the CB shall perform following test:		N/A
9.10.1.2	Test current 2,55 I_N (A) starting from cold for:	_____ A	N/A
	opening time not less than 1 s or more than	[s] [s] [s]	N/A
	- 60 s (< 32 A)		N/A
	- 120 s (> 32 A)		N/A
9.10.2.3	☒ For circuit-breakers of the C – Type		P
	Test current $5I_N$ (A), starting from cold	_____A	P
	Opening time:	[s] [s] [s]	P
	- 0,1s < t < 15 s (< 32A)		N/A

	- 0,1s < t < 30 s (> 32A)				P
	Moreover the CB shall perform following test:				P
9.10.1.2	Test current 2,55 I_N (A) starting from cold for:	102 A			P
	opening time not less than 1 s or more than	D0+D1 -1	D0+D1-2	D0+D1 - 3	P
	- 60 s (< 32 A)				N/A
	- 120 s (> 32 A)	11 s	9 s	10 s	P
9.10.2.4	☐ 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]	N/A
	- 0,1s < t < 4s (10 A < In < 32 A)				N/A
	- 0,1s < t < 10s (10 A ≥ In > 32A)				N/A
	Test current 20 I_N (A) starting from cold				N/A
	Tripping less than 0,1 s				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current 2,55 I_N (A) starting from cold for:	_____A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s (< 32 A)				N/A
	- 120 s (> 32 A)				N/A
	TESTS „D“	C type, 1 for all other rated current - - Test data taken from report 3301074.50. B type, 1 for all rated current (only 9.10.2) - Test data taken from report 3301074.50.			--
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_O**				P
	I_N (A)	D0-1	D0-2	D0-3	P
		C6	C10	C16	
		D0-4	D0-5	D0-6	
		C20	C25	C32	
		D0-7	D0-8	D0-9	
		B6	B10	B16	
		D0-10	D0-11	D0-12	
		B20	B25	B32	

		D0-13			
		D0-7	D0-8	D0-9	
	Sect. (mm²)	D0-1	D0-2	D0-3	P
		1 mm²	1,5 mm²	2,5 mm²	
		D0-4	D0-5	D0-6	
		2,5 mm²	4 mm²	6 mm²	
		D0-7	D0-8	D0-9	
		1 mm²	1,5 mm²	2,5 mm²	
		D0-10	D0-11	D0-12	
		2,5 mm²	4 mm²	6 mm²	
		D0-13			
		10 mm²			
	Instantaneous tripping current	☒ B C ☐ D ☒			P
9.10.1	Test of time-current characteristic				P
9.10.1.1	Test current 1,13 I_N (A) starting from cold for:	D0-1	D0-2	D0-3	P
		6,78 A	11,3 A	18,1 A	
		D0-4	D0-5	D0-6	
		22,6 A	28,3 A	36,2 A	
	- 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)	D0-1	D0-2	D0-3	P
		8,7 A	14,5 A	22,4 A	
		D0-4	D0-5	D0-6	
		29,0 A	36,3 A	46,4 A	
	- Tripping within				P
	- 1h (< 63 A)	D0-1	D0-2	D0-3	P
		449 s	15 s	61 s	
		D0-4	D0-5	D0-6	
		20 s	44 s	86 s	
	- 2h (> 63 A)				N/A
9.10.1.2	Test current 2,55 I_N (A) starting from cold for:	D0-1	D0-2	D0-3	P
		15,3 A	25,5 A	40,8 A	
		D0-4	D0-5	D0-6	
		51,0 A	63,7 A	81,6 A	

	opening time not less than 1 s or more than				P
	- 60 s	D0-1	D0-2	D0-3	
		11 s	10 s	6 s	
		D0-4	D0-5	D0-6	
		8 s	8 s	11 s	
	- 120 s				N/A
9.10.2	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.2.1	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 Un(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
9.10.2.2 *)	☒ For circuit-breakers of the B – Type				P
	Test current $3I_N$ (A), starting from cold	D0-7	D0-8	D0-9	P
		18 A	30 A	48 A	
		D0-10	D0-11	D0-12	
		60 A	75 A	96 A	
		D0-13			
		120 A			
	Opening time:				P
	- 0,1s < t *(< 45s (< 32A)*	D0-7	D0-8	D0-9	P
		2 s	5 s	4 s	
		D0-10	D0-11	D0-12	
		4 s	3 s	7 s	
	- 0,1s < t *(< 90s (> 32A)*	D0-13			P
		5 s			
	Test current 5 I_N (A), starting from cold	D0-7	D0-8	D0-9	P
		30,2 A	50,4 A	80,8 A	
		D0-10	D0-11	D0-12	
		100,5 A	125 A	160 A	
		D0-13			

		201 A			
	Tripping less than 0,1 s	D0-7	D0-8	D0-9	P
		27,1 ms	13,1 ms	24,8 ms	
		D0-10	D0-11	D0-12	
		24,0 ms	23,8 ms	16,0 ms	
		D0-13			
		16,4s			
9.10.1.2	Test current 2,55 I_N (A) starting from cold for:	D0-7	D0-8	D0-9	P
		15,3 A	25,5 A	40,8 A	
		D0-10	D0-11	D0-12	
		51,0 A	63,7 A	81,6 A	
		D0-13			
		102 A			
	opening time not less than 1 s or more than				P
	- 60 s	D0-7	D0-8	D0-9	P
		9 s	7 s	11 s	
		D0-10	D0-11	D0-12	
		15 s	9 s	8 s	
	- 120 s	D0-13			P
		7 s			
9.10.2.2	☒ For circuit-breakers of the C – Type				P
	Test current 5I_N (A), starting from cold	D0-1	D0-2	D0-3	P
		30 A	50 A	80 A	
		D0-4	D0-5	D0-6	
		100 A	125 A	160 A	
	Opening time:				P
	- 0,1s < t *[< 15s (< 32A)*	D0-1	D0-2	D0-3	P
		3 s	2 s	1 s	
		D0-4	D0-5	D0-6	
		1 s	2 s	2 s	
	- 0,1s < t *[< 30s (> 32A)*				N/A
	Test current 10 I_N (A), starting from cold	D0-1	D0-2	D0-3	P
		60 A	100 A	160 A	
		D0-4	D0-5	D0-6	
		200 A	250 A	320 A	
	Tripping less than 0,1 s	D0-1	D0-2	D0-3	P

		7 ms	11 ms	9 ms	
		D0-4	D0-5	D0-6	
		7 ms	8 ms	9 ms	
9.10.1.2	Test current 2,55 I_N (A) starting from cold for:	D0-1	D0-2	D0-3	P
		15,3 A	25,5 A	40,8 A	
		D0-4	D0-5	D0-6	
		51,0 A	63,7 A	81,6 A	
	opening time not less than 1 s or more than				P
	- 60 s	D0-1	D0-2	D0-3	P
		10 s	7 s	8 s	
		D0-4	D0-5	D0-6	
		7 s	6 s	11 s	
	- 120 s				
9.10.2.4	For circuit-breakers of the D – Type				N/A
	Test current 10I_N (A), starting from cold				N/A
	Opening time:				N/A
	- 0,1s < t *[< 4s (< 32A)*				N/A
	- 0,1s < t *[< 8s (> 32A)*				N/A
	Test current 20 I_N (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.1.2	Test current 2,55 I_N (A) starting from cold for:				N/A
	opening time not less than 1 s or more than				N/A
	- 60 s				N/A
	- 120 s				N/A
9.10.3	Test of effect of single pole loading on the tripping characteristic of multipole circuit-breakers:				N/A
	Test current 1,1 It (A), (two pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	L 1				

	L 2				
	L 3				
	L4(N)				
	- 2h				N/A
9.10.4	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2)°C below the ambient air reference temperature	-5 °C			P
	Test current 1,13 I_N (A)	D0-1	D0-2	D0-3	P
		6,78 A	11,3 A	18,1 A	
		D0-4	D0-5	D0-6	
		22,6 A	28,3 A	36,2 A	
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,9 I_N (A) within 5s	D0-1	D0-2	D0-3	P
		11,4 A	19,0 A	30,4 A	
		D0-4	D0-5	D0-6	
		38,0 A	47,5 A	60,8 A	
	Tripping within				P
	- 1h	D0-1	D0-2	D0-3	P
		29 s	34 s	20 s	
		D0-4	D0-5	D0-6	
		16 s	16 s	30 s	
	- 2h				N/A
	b) Ambient temperature of (40 ± 2)°C	40 °C			P
	Test current I_N (A)	D0-1	D0-2	D0-3	P
		6 A	10 A	16 A	
		D0-4	D0-5	D0-6	
		20 A	25 A	35 A	
	No tripping within				P
	- 1h				P
	- 2h				N/A
	TESTS „E1“ 3 SAMPLES	E1'-7~9: B40			--
8.12.11.4 . 2	**Test: E_1 :Test at service short-circuit capacity**				--

	Service short-circuit capacity ..... :	6 000 A			P
	Test circuit: figure:	Figure 4a			P
	Prospective current..... :	6 000 A			P
	Prospective current obtained..... :	6 086 A			P
	Test voltage 1,05 Un	253,9 V			P
	Power factor:	0,65~0,70			P
	Power factor obtained..... :	0,69			P
	Sequence ..... :	Table 19 of IEC 60898-1			P
	T (min) ..... :	3 min			P
9.12.9.1	Test in free air copper wire F': ☒ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm				N/A
	I_{Peak} (kA) max. value ..... :	E1'-7	E1'-8	E1'-9	P
	L1	2,9 kA	3,0 kA	3,0 kA	
	N	2,9 kA	3,0 kA	3,0 kA	
	I^2t < 54 kA^2s	E1'-7	E1'-8	E1'-9	P
	Max. I^2t < 54 kA^2s L1	18,5 kA^2s	13,0 kA^2s	16,2 kA^2s	
	N	18,5 kA^2s	13,0 kA^2s	16,2 kA^2s	
	- 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:				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 9.7.6.3, each poleis supplied at a voltage 1,1 times Un.= 264 V. The circuit – breaker is in the open position	E1'-7	E1'-8	E1'-9	P
	The leakage current shall not exceed 2 mA L1	0,006 mA	0,006 mA	0,006 mA	
	N	0,006 mA	0,006 mA	0,006 mA	

	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)				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)	38,4 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	63,8 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1'-7	E1'-8	E1'-9	P
		18 s	53 s	46 s	
	TESTS „E1“ 3 SAMPLES	E1'-10~12: B32			--
8.12.11.4.2	**Test: E_1 :Test at service short-circuit capacity**				--
	Service short-circuit capacity ..... :	6 000 A			P
	Test circuit: figure:	Figure 4a			P
	Prospective current..... :	6 000 A			P
	Prospective current obtained..... :	6 086 A			P
	Test voltage 1,05 Un	253,9 V			P
	Power factor:	0,65~0,70			P
	Power factor obtained..... :	0,69			P
	Sequence ..... :	Table 19 of IEC 60898-1			P
	T (min) ..... :	3 min			P
9.12.9.1	Test in free air copper wire F': ☒ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	“a” = 45 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm				N/A
	I_{Peak} (kA) max. value ..... :	E1'-10	E1'-11	E1'-12	P
	L1	2,9 kA	3,0 kA	3,0 kA	
	N	2,9 kA	3,0 kA	3,0 kA	
	I^2t < 45 kA^2s	E1'-10	E1'-11	E1'-12	P

	Max. I²t < 45 kA²s L1	14,1 kA²s	11,1 kA²s	15,3 kA²s	
	N	14,1 kA²s	11,1 kA²s	15,3 kA²s	
	- 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:				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 9.7.6.3, each poleis supplied at a voltage 1,1 times Un.= 264 V. The circuit – breaker is in the open position	E1'-10	E1'-11	E1'-12	P
	The leakage current shall not exceed 2 mA L1	0,006 mA	0,006 mA	0,006 mA	
	N	0,006 mA	0,006 mA	0,006 mA	
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)				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)	30,7 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	51,0 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1'-10	E1'-11	E1'-12	P
		20 s	19 s	38 s	
	TESTS „E1“ 3 SAMPLES	E1'-13~15: B16			--
8.12.11.4 . 2	**Test: E_1 :Test at service short-circuit capacity**				--
	Service short-circuit capacity ..... :	6 000 A			P
	Test circuit: figure:	Figure 4a			P
	Prospective current..... :	6 000 A			P

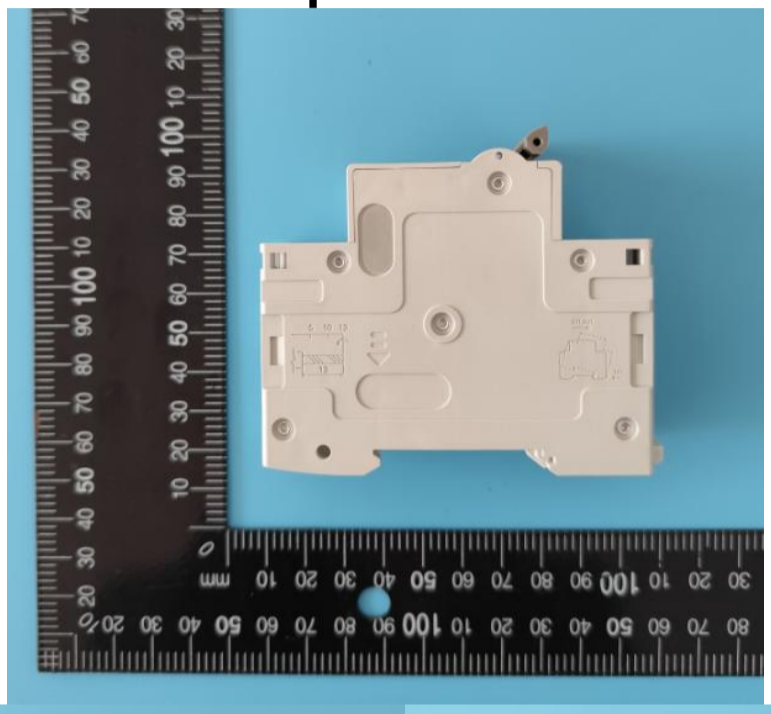
	Prospective current obtained..... :	6 086 A			P
	Test voltage 1,05 Un	253,9 V			P
	Power factor:	0,65~0,70			P
	Power factor obtained..... :	0,69			P
	Sequence ..... :	Table 19 of IEC 60898-1			P
	T (min) ..... :	3 min			P
9.12.9.1	Test in free air copper wire F': ☒ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm				N/A
	I_{Peak} (kA) max. value ..... :	E1'-13	E1'-14	E1'-15	P
	L1	2,8 kA	2,7 kA	2,7 kA	
	N	2,8 kA	2,7 kA	2,7 kA	
	I^2t < 35 kA^2s	E1'-13	E1'-14	E1'-15	P
	Max. I^2t < 35 kA^2s L1	11,4 kA^2s	9,5 kA^2s	9,8 kA^2s	
	N	11,4 kA^2s	9,5 kA^2s	9,8 kA^2s	
	- 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:				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 9.7.6.3, each poleis supplied at a voltage 1,1 times Un.= 264 V. The circuit – breaker is in the open position	E1'-13	E1'-14	E1'-15	P
	The leakage current shall not exceed 2 mA L1	0,005 mA	0,006 mA	0,005 mA	
	N	0,005 mA	0,006 mA	0,006 mA	
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)				P

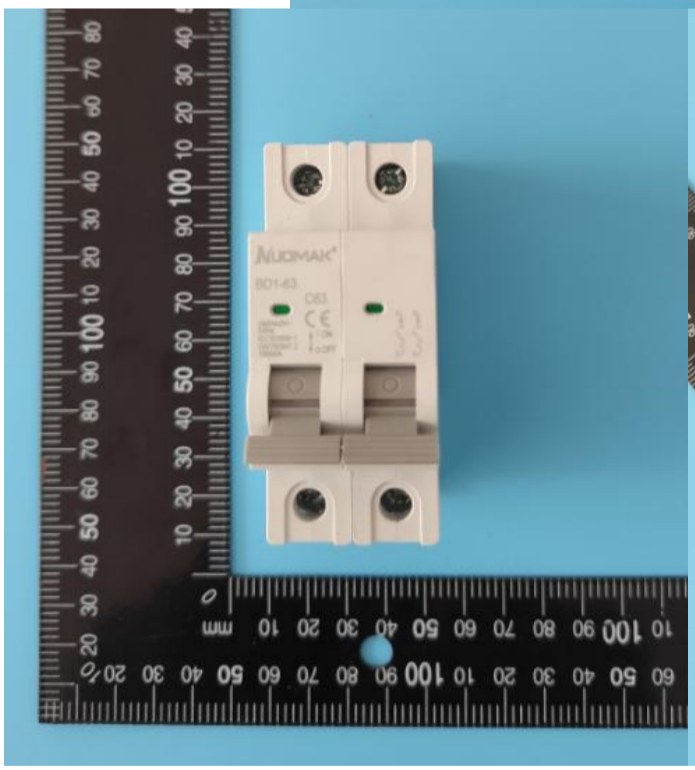
	a)				P
	b)				P
	c)				P
	d)				N/A
	e) 2000 V				N/A
	Test current 0,85x non tripping current (1,13 I_N)	15,4 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_N) within 5s	25,5 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1'-13	E1'-14	E1'-15	P
		40 s	57 s	61 s	
	TESTS „E_3“	E3-1~3: C40- test data taken from report 3301074.50.			--
9.12.11.4 . 4	**Test: E_3 (Test at making and breaking capacity on a individual pole (Icn1)**				P
	Service short-circuit capacity ..... :	6 000 A			P
	Test circuit: figure ..... :	Figure 3			P
	Prospective current..... :	6 000 A			P
	Prospective current obtained..... :	6 030 A			P
	Test voltage 1,1 Un	253,8 V			P
	Power factor ..... :	0,65~0,70			P
	Power factor obtained..... :	0,67			P
	Sequence ..... :	Table 22 of IEC 60898-1			P
	T (min) ..... :	3 min			P
9.12.9.1	Test in free air copper wire F': ☒ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm				N/A
	I_{Peak} (A) max. value ..... :	E3-1	E3-2	E3-3	P
		3,48 kA	2,93 kA	3,74 kA	
	I^2t < 63 kA^2s	E3-1	E3-2	E3-3	P
	Max. I^2t < 63 kA^2s L1	23,9 kA^2s	38,2 kA^2s	26,1 kA^2s	
	N				
	- No permanent arcing				P

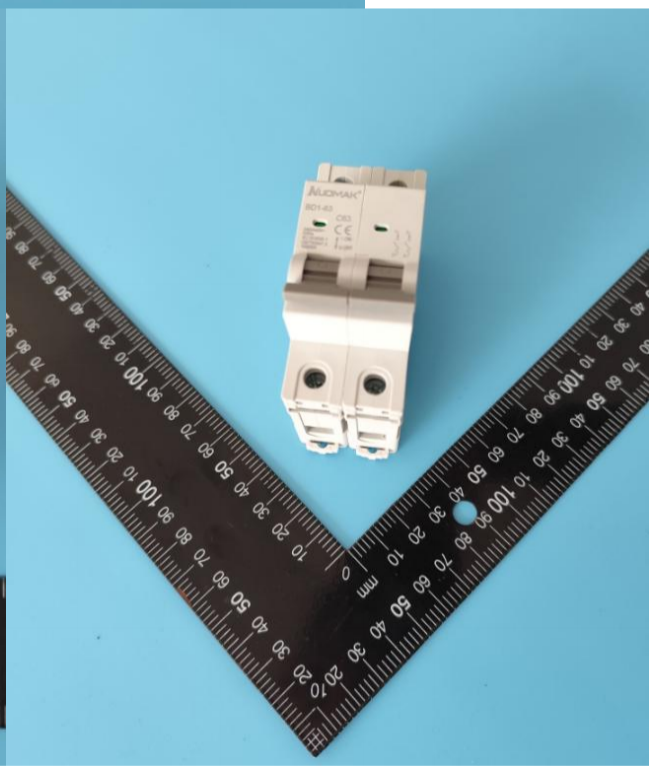
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F,				P
	- Polyethylene foil shows no holes				P
	After the test:				P
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each poleis supplied at a voltage 1,1 times Un.= 264 V. The circuit – breaker is in the open position	E3-1	E3-2	E3-3	P
	The leakage current shall not exceed 2 mm L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	P
	N	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	P
	Electric strength test:				P
	Test voltage 900 V (see 9.7.3)				P
	a)				P
	b)				P
	c)				P
	d)				N/A
	e) 2000 V				N/A
	Test current 2,8 I_N	112 A			P
	Tripping within > 0,1 s up to	E3-1	E3-2	E3-3	P
	- 60 s				N/A
	- 120 s	19 s	24 s	15 s	P
	Annex ZC (normative)				--
	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, Denmark, Netherlands, Norway and Switzerland**				
	The upper limit of current for use of screw less terminals is 16 A				
J.3.3	**Austria, Belgium, Denmark, France, Germany, Italy, Portugal, Spain, Sweden, Switzerland, and United Kingdom**				
	Only universal screwless type terminals are accepted.				
K1	**BELGIUM, FRANCE, ITALY, PORTUGAL, SPAIN, AND UNITED KINGDOM**				
	The use of circuit-breakers with flat quick-connect terminations for rated currents up to and including 20 A is accepted.				

K.8.2.2	**BELGIUM, FRANCE, ITALY, PORTUGAL, SPAIN, AND UNITED KINGDOM**	
	The use for rated currents up to and including 20 A	

Sample Photos







End of Report