



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.	3325601.50
Date of issue	2022-09-19
Total number of pages	24
Name of Testing Laboratory preparing the Report	DEKRA Testing Services (Zhejiang) Co., Ltd.
Applicant's name	GACIA ELECTRICAL APPLIANCE CO., LTD
Address	No.1 Nanxijiang Road, Daqiao Industrial Zone, Beibaixiang Town, Yueqing, 325603 Zhejiang, China
Test specification:	
Standard	IEC 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 2020-04-17
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Test item description :	Circuit-breakers for overcurrent protection
Trade Mark(s) :	GACIA
Manufacturer :	GACIA ELECTRICAL APPLIANCE CO., LTD No.1 Nanxijiang Road, Daqiao Industrial Zone, Beibaixiang Town, Yueqing, 325603 Zhejiang, China
Model/Type reference :	M80N, M100N, PN8H, PN8HQ, PN8N, PN8NQ, PN8L, PN8LQ
Ratings :	1P+N (N pole without overcurrent protection) 50 / 60 Hz, Ue: 240 Vac In= 6, 10, 16, 20, 25, 32, 40 A, type B and C Ics = Icn = 6 kA, the grid distance "a": 45 mm Energy limiting class 3 according to EN 60898-1:2019

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

Summary of testing:

The following samples were chosen for the type test according to annex C of IEC/EN 60898-1 in this report.

Tests performed (name of test and test clause):

No.	Model	Current (A)	Number of poles	Type	Voltage	Test sequence
1#	M80N	40	1P+N	C	240	A1 (cl. 6 and 9.3)
2#-4#	M80N	40	1P+N	C	240	A2
5#-7#	M80N	40	1P+N	C	240	B
8#-10#	M80N	40	1P+N	C	240	E1

Notes:

1. This report is based on and shall be read in conjunction with test reports no. 3307344.50 issued on 2015-02-04, 3303233.50 issued on 2012-05-02 and 3301074.50 issued on 2010-03-09.

2. This report is issued due to that:

- The address of applicant / manufacturer / factory is changed to "No.1 Nanxijiang Road, Daqiao Industrial Zone, Beibaixiang Town, Yueqing, 325603 Zhejiang, China".
- IEC 60898-1:2015+AMD1:2019 and EN 60898-1:2019 are considered, the above tests were carried out to verify the compliance.

Testing location:

All tests were conducted in:

DEKRA Testing Services (Zhejiang) Co., Ltd.

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

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

N/A

☒ **The product fulfils the requirements of**

IEC 60898-1:2015+AMD1:2019

EN 60898-1: 2019, test result refers to annex 1 of this report.

Copy of marking plate:



M80N, 1P+N, C40

Test item particulars : Circuit-breakers for overcurrent protection	
Classification of installation and use : fixed	
Supply Connection : single phase	
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 : 2022-08-04	
Date (s) of performance of tests : 2022-08-05 to 2022-09-15	
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☒ comma / ☐ point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60947-2:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : GACIA ELECTRICAL APPLIANCE CO., LTD No.1 Nanxijiang Road, Daqiao Industrial Zone, Beibaixiang Town, Yueqing, 325603 Zhejiang, China	
General product information and other remarks:	
The grid distance "a": 45 mm.	

Test item particulars	Circuit-breakers for overcurrent protection		
Type of circuit-breaker	M80N, M100N, PN8H, PN8HQ, PN8N, PN8NQ, PN8L, PN8LQ		
Number of poles	☐ 1-P ☐ 3-P	☒ 1-P+N ☐ 3-P+N	☐ 2-P ☐ 4-P
Protection against external influences	☐ enclosed ☒ unenclosed		
Method of mounting	☐ surface	☒ flush	☒ panel board
Method of connection	☒ not associated with the mechanical mounting ☐ associated with the mechanical mounting		
Type of terminal	☒ screw ^{a)} ☒ pillar ^{a)} ☐ cage ^{a) b)} ☐ lug ☐ screw less ^{a)} ☐ flat quick connect ^{a)} ☐ plug-in ☐ screw-in ^{a)} copper conductors ^{b)} aluminium conductors		
Instantaneous tripping current	☒ B ☒ C ☐ D		
I ² t characteristic	Energy limiting class 3 according to EN 60898-1:2019		
Value of rated operational voltage (Ue)	☐ 120 V ☐ 230 V ☒ 240 V ☐ 120/240 V ☐ 230/400 V ☐ 400 V ☐ 240/415 V ☐ 415 V		
Value of rated current (In)	6, 10, 16, 20, 25, 32, 40 A		
Value of rated frequency	☒ 50 Hz ☒ 60 Hz		
Ambient air temperature (°C)	☒ 30°C ☐ 40°C ☐ Other ____°C		
Rated short-circuit capacity (Icn)	☐ 1,5 kA ☐ 3 kA ☐ 4,5 kA ☒ 6 kA ☐ 10 kA ☐ 15 kA ☐ 20 kA ☐ 25 kA		
Rated impulse withstand voltage (Uimp)	☐ 2,5 kV ☒ 4 kV ☐ declared ____kV		

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A ₁ “ 1 SAMPLE	1#	--
		1P+N, C40	
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		P
	a) Manufacturer's name or trade mark	GACIA	P
	b) Type designation, catalogue number or other serial number.....	M80N	P
	c) Rated voltage (V).....	240 V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping.....	C40	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 I _n see table 2)		N/A
	k) Rated impulse withstand voltage U _{imp} if it is 2,5 kV		N/A
	l) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (I _{cn} 1), if different from I _{cn}		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	a), b), c), d), e), f) are marked on the front	P
	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	g) is on the front	P
	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)		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 position shall be clearly indicated - 0 I -		P

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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		P
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 9.3)		P

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
	TESTS „A₂“ 3 samples	2#	3#	4#	--	
		1P+N, C40				
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	
	If it is not possible to perform the test on the complete end product, it is acceptable, according to IEC 60695-2-11:2014, 4.3, to remove the part under its entirety and test it separately				P	
	external parts retaining current-carrying parts and parts of the protective circuit in position (960 ± 15) °C	Housing body			P	
		960 °C	960 °C	960 °C		
	all other external parts (650 ± 10) °C	Switch knob			P	
		650 °C	650 °C	650 °C		
	No visible flames, no sustained glowing, or	Switch knob			P	
	flames and glowing extinguish within 30 s after removal	Housing body			P	
		1,0 s	1,5 s	2,0 s		
	No ignition of tissue paper or scorching of the pinewood board				P	

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples	5#	6#	7#	--
		1P+N, C40			
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 (Uimp)				N/A
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.				N/A
9.7	Test of dielectric properties				P
9.7.5.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage (suitability for isolation)				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 kV			--
	sea level of test laboratory [m]:	Sea level			--
	test voltage (acc. Table 15) [kV]:	6,2 kV			--
	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

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	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.				P
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
	Before being placed in the humidity cabinet, the sample is brought to a temperature between T °C and T °C +4 °C				P
9.7.1.3	Test procedure.				P
	The sample is kept in the cabinet for 48 h.				P
	In order to achieve the specified conditions within the cabinet, it is necessary to ensure constant circulation of the air within and, in general, to use a cabinet which is thermally insulated				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
	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:	5#	6#	7#	P
	a) In open position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position, in turn on each pole $\geq 2 \text{ M}\Omega$	500 M Ω	500 M Ω	500 M Ω	P
	b) in closed position, between each pole in turn and the others connected together, electronic components connected between current paths being disconnected $\geq 2 \text{ M}\Omega$	500 M Ω	500 M Ω	500 M Ω	P
	c) in closed position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$	500 M Ω	500 M Ω	500 M Ω	P

IEC 60898-1															
Clause	Requirement + Test	Result - Remark	Verdict												
	d) for circuit-breakers with metal enclosure having an internal lining of insulating material, between the frame and a metal foil in contact with the inner surface of the lining of the insulating material including bushings and similar devices $\geq 5 \text{ M}\Omega$		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												
	with electronic components, if any, being disconnected for the test		P												
	a) 2000 V		P												
	b) 2000 V		P												
	c) 2000 V		P												
	d) 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^{+100} V DC after 1 min:		--												
	Where electronic components connected to the main circuit in normal service are used, the temporary connections for test shall be made so that no voltage between the incoming and outgoing sides of the components		N/A												
	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		--
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												

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	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		N/A
	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		N/A
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
	rated impulse withstand voltage [kV]:		--
	see level of test laboratory [m]:		--
	test voltage (acc. Table 14) [kV]:		--

IEC 60898-1				
Clause	Requirement + Test	Result - Remark		
	a) in turn between each pole and the other poles connected together, electronic components connected between current paths being disconnected			N/A
	b) between all poles connected together and the frame including a metal foil or part in contact with the outer surface of the housing of insulating material but with the terminal areas kept completely free to avoid flashover between terminals and the metal foil			N/A
	c) for circuit-breakers with a metal enclosure having an internal lining of insulating material, between the frame and a metal foil in contact with the inner surface of the lining of insulating material, including bushings and similar devices			N/A
	No disruptive discharges during the test			N/A
	If, however, only one such disruptive discharge occurs, ten additional impulses having the same polarity as that which caused the disruptive discharge are applied, the connections being the same as those with which the failure occurred			N/A
	No further disruptive discharge shall occur			N/A
8.4	Temperature rise			P
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 10 mm ²		
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	40,0 A		
	Ambient air temperature	24,3 °C		
	Parts Temperature rise [K]	5#	6#	7#
	Terminal N, up side	40 K	44 K	42 K
	Terminal L, up side	40 K	43 K	41 K
	Terminal N, down side	42 K	41 K	39 K
	Terminal L, down side	43 K	42 K	37 K
	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	12 K	12 K	11 K
	External metallic parts of operating means...25 K			N/A

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface.....60 K	36 K	39 K	36 K	P
9.8.5	Measurement of power losses				P
	Power loss do not exceed the values stated in table 8	7,5 W			P
	Test current: $I_n = \text{---} \text{ A}$ (reach the steady state value)	40,0 A			P
	Loaded one pole after the other				P
	Max. power loss: 7,5 W	5#	6#	7#	P
	L	4,4 W	4,5 W	4,3 W	
	N	3,8 W	3,9 W	3,8 W	
8.5	Uninterrupted duty				--
	Circuit-breakers operate reliable even after long service				P
9.9	28 day test				--
	28 cycles - 21 h with current - 3 h without current cross sectional area. $\text{---} \text{ mm}^2$	40,0 A 10 mm^2			P
	During the first period of current flow the temperature of the terminals shall be measured				P
	Ambient air temperature:	22,2 °C			P
	Parts Temperature rise [K]	5#	6#	7#	P
	Terminals for external connections K				P
	Terminal N, up side	43 K	49 K	48 K	
	Terminal L, up side	45 K	48 K	51 K	
	Terminal N, down side	45 K	47 K	50 K	
	Terminal L, down sid	45 K	48 K	48 K	
	During the last period of current flow the temperature of the terminals shall be measured				P
	Ambient air temperature	23,1 °C			P
	Parts Temperature rise [K]	5#	6#	7#	P
	Terminals for external connections K				P
	Terminal N, up side	47 K	50 K	49 K	
	Terminal L, up side	47 K	48 K	50 K	
	Terminal N, down side	47 K	48 K	50 K	
	Terminal L, down sid	47 K	50 K	49 K	
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 8.8) by more than 15 K				P
	Test current 1,45 $I_n = \text{---} \text{ A}$	58,0 A			P

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	- Tripping within	5#	6#	7#	P
	- 1 h (≤ 63 A)	49 s	34 s	51 s	P
	- 2 h (> 63 A)				N/A

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E1“ 3 samples	8#	9#	10#	--
		1P+N, C40			
9.12.11.4.2	Test E₁: Test at service short-circuit capacity				P
	Service short-circuit capacity (I _{cs}).....:	6000 A			--
	Test circuit: figure	Figure 3			--
	Test voltage 1,05 Un	256,6 V			--
	Prospective current.....:	6000 A			--
	Prospective current obtained	6096 A			--
	Power factor	0,65 - 0,7			--
	Power factor obtained.....:	0,67			--
	Sequence	O - O - CO			--
	T (min).....:	3 min			--
9.12.9.2	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
9.12.9.3	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	8#	9#	10#	--
		3,8 kA	3,5 kA	3,6 kA	
	Max. I ² t ≤ 63 (kA ² s)	8#	9#	10#	--
		31,2 kA ² s	20,8 kA ² s	26,4 kA ² s	
	- 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= _____ V. The circuit – breaker is in the open position	264 V			P

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA	8#	9#	10#	P
	N L	< 1,4 mA < 1,4 mA	< 1,4 mA < 1,4 mA	< 1,4 mA < 1,4 mA	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)	1500 V			P
	a)				P
	b)				P
	c)				P
	d) 2000 V				N/A
	Test current 0.85 x non-tripping current (1,13 I _N)	38,4 A			P
	- Passed for 1 h				P
	- Passed for 2 h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5 s	58,0 A			P
		8#	9#	10#	P
	Tripping within ☒ 1 hour / ☐ 2 hour	32 s	133 s	84 s	

IEC60898_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Annex 1

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		
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	CENELEC COMMON MODIFICATIONS (EN)	P
Test item particulars:	Circuit-breakers for overcurrent protection	P
Type of circuit-breaker	M80N	P
Energy limiting class	☒ Class 3	P
Value of rated operational voltage (Ue) and number of poles	☐ 120 V ☐ 230 V ☒ 240 V ☐ 120/240 V ☐ 230/400 V ☐ 400 V ☐ 415 V ☐ 240/415 V	P
Value of rated short-circuit capacities above 10 000 A up to and including 25 000 A	☐ 15000 A ☐ 20000 A ☐ 25000 A	N/A
Rated impulse withstand voltage (Uimp)	4 kV	P

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 a rectangle	P
	h) calibration temperature, if different from 30°C		N/A
	m) Energy limiting class in a square in accordance with annex ZA.	3 in a rectangle	P
	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		N/A
	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

	Short-circuit tests		--
9.12	General		--
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		--
	Voltage (including recovery voltage): 0, -5%		P
9.12.9.1	A circuit-breaker tested according to 9.12.9.2 needs not be tested according to 9.12.9.3.		P
9.12.9.2	In case no information is available, two grids, one above and one below the circuit-breaker, shall be used.		P
	For test currents up to and including 3000 A, the distance "a" is 35 mm.		P

IEC60898_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

	Sequence C		--
9.11.1	For single-pole circuit-breakers rated 230 / 400 V the test is made at 230 V.	Refer to 3307344.50	P
9.11.3	Dielectric strength reduced to 900 V	Refer to 3307344.50	P

	Sequence C₂: Short-circuit test on circuit-breakers for use in IT systems		--
9.12.11.2.2	Test voltage 105 % of 415 V	Refer to 3307344.50	P

	TESTS „E₁“		--
9.12.11.4.2	Test E ₁ : Test at service short-circuit capacity	See main part of this report	P

	TESTS „E₂“		--
9.12.11.4.3	Test E ₁ : Test at service short-circuit capacity		N/A

	TESTS „E₃“		--
9.12.11.4.4	Test: E ₃ (Test at making and breaking capacity on an individual pole (I _{cn1}))	Refer to 3307344.50	P

IEC60898_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	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		--
J.3.3	Austria, Belgium, Denmark, France, Germany, Italy, Portugal, Spain and Sweden		--
	Only universal screwless type terminals are accepted.		--
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.		--
K.8.2.2	Belgium, Italy and Spain		--
	The use for rated currents up to and including 20 A is accepted		--

Photographs

Front view of C40



Front view of C6