Test Report issued under the responsibility of:

TEST REPORT
IEC 60947-2
Low-voltage switchgear and controlgear - Part 2: Circuit-breakers

Report Number.	**00901-CB2021-QC-099302-M1**
Date of issue	**2022-04-22**
Total number of pages	**44**
Name of Testing Laboratory preparing the Report	**Shanghai Testing & Inspection Institute for Electrical Equipment Co., Ltd. (STIEE)**
Applicant's name	**Zhejiang CHINT Electrics Co.,Ltd.**
Address	**No.1, CHINT Road, CHINT Industrial Zone, North Baixiang, Yueqing, Zhejiang Province, P.R.China**
Test specification:	
Standard	IEC 60947-2:2016, AMD1:2019
Test procedure	CB Scheme
Non-standard test method	N/A
Test Report Form No.	IEC60947_2J
Test Report Form(s) Originator	DEKRA Certification B.V.
Master TRF	Dated 2020-03-31

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
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Test item description ..... :	**Moulded Case Circuit-breaker**
Trade Mark(s)..... :	**CHINT**
Manufacturer ..... :	**Zhejiang CHINT Electrics Co.,Ltd./** **No.1, CHINT Road, CHINT Industrial Zone, North Baixiang, Yueqing, Zhejiang Province, P.R.China**
Model/Type reference ..... :	**NM8N-400HV, NM8N-630HV**
Ratings ..... :	**See page 12**

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒	**CB Testing Laboratory:**	**Shanghai Testing & Inspection Institute for Electrical Equipment Co., Ltd. (STIEE)**	
Testing location/ address.....:		**505 Wu Ning Rd, Shanghai 200063, P.R.China**	
Tested by (name, function, signature).....:		**Kang Ning/Engineer**	康宁
Approved by (name, function, signature)...:		**Zeng Jingjing/Senior Enginner**	曾婧婧
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address.....:			
Tested by (name, function, signature):			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address.....:			
Tested by (name + signature) .....:			
Witnessed by (name, function, signature)..:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address.....:			
Tested by (name, function, signature):			
Witnessed by (name, function, signature)..:			
Approved by (name, function, signature)...:			
Supervised by (name, function, signature) :			

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

Summary of testing:

In case of alternative test programs for circuit breakers with a different number of poles, the following program is used:

☒ **Programme 1 (three pole fully tested)**

☐ **Programme 2 (four pole fully tested)**

☐ **Alternative program not applicable**

Tests performed (name of test and test clause):

Type	Ue	In	Pole	Sequence
#01, NM8N-630HV	AC1150V	630A	3P	I
#02, NM8N-630HV	AC690V	400A	3P	II, III

Testing location:

Shanghai Testing & Inspection Institute for Electrical Equipment Co., Ltd. (STIEE)

505 Wu Ning Rd, Shanghai 200063, P.R.China

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

☐ **The product fulfils the requirements of _____ (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)**

Statement concerning the uncertainty of the measurement systems used for the tests: N/A

(may be required by the product standard or client)

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

Procedure number, issue date and title:

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

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

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

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

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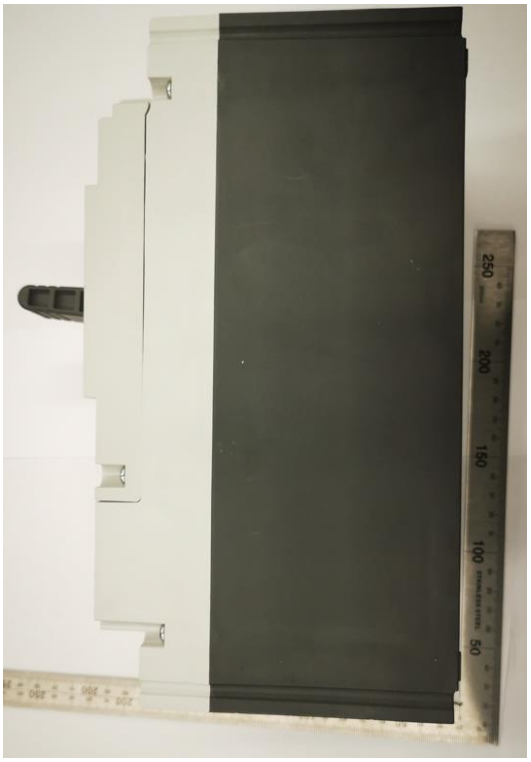
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Test item particulars: test item vs. test requirements	
3. Classification	
3.1. Selectivity category: (A or B)..... :	A
3.2. Interruption medium: (air, vacuum, gas break) ..... :	Air
3.3. Design: (open construction, moulded case)..... ..... :	Moulded case
3.4. Method of controlling the operation mechanism: (dependent manual, independent manual, dependent power, independent power, stored energy operation) ..... :	Independent manual
3.5. Suitability for isolation: (suitable, not suitable) .... :	Suitable
3.6. Provision for maintenance: (maintainable, non-maintainable) ..... :	Non-maintainable
3.7. Method of installation: (fixed, plug-in, withdrawable .... :	Fixed
3.8. Degree of protection of enclosure: (IP code) ..... :	IP20
4.7. Type of release (thermo-magnetic / electronic)..... :	Thermo-magnetic, Electromagnetic
4.8. Integral fuses (integrally fused circuit-breakers) Type and characteristics of SCPD..... :	N/A
7.3 Electromagnetic compatibility (EMC) Environment A or B ..... :	N/A
Circuit-breaker for use on phase-earthed systems ..... :	N/A
Circuit-breaker for use in IT systems ..... :	Yes
Rated and limiting values, main circuit .... :	
- rated operational voltage: U_e (V) ..... :	AC690V, AC800V, AC1000V, AC1150V
- rated insulation voltage: U_i (V) ..... :	1250V
- rated impulse withstand voltage: U_{imp} (kV) ..... :	12kV
- rated current: I_n (A) ..... :	250A, 315A, 350A, 400A, 500A, 630A
- kind of current..... :	AC
- conventional free air thermal current: I_{th} (A) ..... :	250A, 315A, 350A, 400A, 500A, 630A
- conventional enclosed thermal current: I_{the} (A) ..... :	N/A
- current rating for four-pole circuit-breakers: (A) ..... :	
- number of poles..... :	3P
- rated frequency: (Hz) ..... :	50/60Hz
- integral fuses (rated values)..... :	N/A
Rated duty :	
- eight-hour duty..... :	N/A
- uninterrupted duty: I_u (A) ..... :	250A, 315A, 350A, 400A, 500A, 630A

Short-circuit characteristic :	
rated short-time making capacity: I_{cm} (kA) .....:	AC690V: Type C: 105kA, Type S: 176kA; AC800V: Type C: 75.6kA, Type S: 105kA; AC1000V: Type C: 50kA, Type S: 73.5kA; AC1150V: Type C: 17kA, Type S: 17kA
rated ultimate short-circuit breaking capacity: I_{cu} (kA) .. ..:	AC690V: Type C: 50kA, Type S: 80kA; AC800V: Type C: 36kA, Type S: 50kA; AC1000V: Type C: 25kA, Type S: 35kA; AC1150V: Type C: 10kA, Type S: 10kA
rated service short-circuit breaking capacity: I_{cs} (kA).....:	AC690V: Type C: 50kA, Type S: 80kA; AC800V: Type C: 36kA, Type S: 50kA; AC1000V: Type C: 15kA, Type S: 20kA; AC1150V: Type C: 10kA, Type S: 10kA
rated short-time withstand current: I_{cw} (kA/s) .....:	N/A
Control circuits : Electrical control circuits :	
- kind of current: (AC, DC) .....:	N/A
- rated frequency: (Hz).....:	N/A
- rated control circuit voltage: U_c (nature, frequency, V) ....:	N/A
- rated control supply voltage: U_s (nature, frequency V) ....:	N/A
Air supply control circuits: (pneumatic or electro-pneumatic) :	
- rated pressure and its limit .....:	N/A
- volumes of air, at atmospheric pressure, required for each closing and each opening operation .....:	N/A

Auxiliary circuits :	
Rated and limiting values, auxiliary circuits .....:	
- rated operational voltage U_e (V) .....:	AC-15: Ue/Ie: AC110V/5A, AC240V/4A, AC415V/2A; DC-13: DC110V/0.25A, DC220V/0.25A
- rated insulation voltage: U_i (V) .....:	500V
- rated operational current: I_e (A) .....:	AC-15: Ue/Ie: AC110V/5A, AC240V/4A, AC415V/2A; DC-13: DC110V/0.25A, DC220V/0.25A
- kind of current .....:	AC/DC
- rated frequency: (Hz) .....:	50/60Hz
- number of circuits .....:	1NO1NC
- number and kind of contact elements .....:	1NO1NC
- rated uninterrupted current: I_u (A) .....:	N/A
- utilization category: (AC, DC, current and voltage) .....:	AC-15, DC13
Short-circuit characteristic :	
- Rated conditional short-circuit current (kA) .....:	1kA
- kind of protective device .....:	RL6-25/6A

Releases :	
1) shunt release .....:	Yes
2) Over-current release.....:	Yes
a) instantaneous.....:	Yes
b) definite time delay.....:	N/A
c) inverse time delay.....:	Yes
- independent of previous load .....:	N/A
- dependent on previous load; (for example thermal type release).....:	Yes
3) Undervoltage release (for opening) .....:	Yes
4) Closing releases .....:	N/A
5) Other releases .....:	N/A
Characteristics :	
1) Shunt release and undervoltage release (for opening), and closing release .....:.....:	
- rated control circuit voltage: U_c (nature, frequency, V) ....:	AC48V, AC110V, AC220~240V, AC380~415V, DC24V, DC48V, DC110~120V, DC220V
- kind of current .....:	AC/DC
- rated frequency: (if AC) .....:	50/60Hz
2) Over-current release.....:	
- rated current.....:	250A, 315A, 350A. 400A, 500A, 630A
- kind of current .....:	AC
- rated frequency: (if AC) .....:	50/60Hz
- current setting (or range of settings) .....:	Thermo-magnetic:Ii=(5~6~7~8~9~10)In±20%, Ir=(0.7~0.8~0.9~1)In Electromagnetic: Ii=(9-10-11-12-13-14)In ± 20%
- time settings (or range of settings).....:	N/A

Test item particulars..... :	
Classification of installation and use..... :	N/A
Supply Connection..... :	N/A
..... :	
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 .....:	2022-03-03
Date (s) of performance of tests.....:	2022-03-04~2022-03-15
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 IECEE 02:	
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) .....:	NOARK Electrics (Shanghai) Co., Ltd. No. 3857 Sixian Road, Songjiang District, Shanghai, P.R.China

Remark:

This test report must be read in conjunction with the original test report 00901-CB2021CQC-099302.

The latest CB certificate No. is CN55015.

The latest test report 00901-CB2021CQC-099302, dated 2021-09-24 was modified on 2022-04-22 to include the following changes:

Serial No.	Item	Before change	After change
1	Ue	AC800V, AC1000V, AC1150V	AC690V, AC800V, AC1000V, AC1150V
2	Icu	AC800V: Type C: 36kA, Type S: 50kA; AC1000V: Type C: 25kA, Type S: 35kA; AC1150V: Type C: 10kA, Type S: 10kA	AC690V: Type C: 50kA, Type S: 80kA; AC800V: Type C: 36kA, Type S: 50kA; AC1000V: Type C: 25kA, Type S: 35kA; AC1150V: Type C: 10kA, Type S: 10kA
3	Ics	AC800V: Type C: 36kA, Type S: 50kA; AC1000V: Type C: 15kA, Type S: 20kA; AC1150V: Type C: 10kA, Type S: 10kA	AC690V: Type C: 50kA, Type S: 80kA; AC800V: Type C: 36kA, Type S: 50kA; AC1000V: Type C: 15kA, Type S: 20kA; AC1150V: Type C: 10kA, Type S: 10kA
4	Type of release	Thermo-magnetic	Thermo-magnetic, Electromagnetic
5	current setting (or range of settings)	Ii=(5~6~7~8~9~10)In±20%, Ir=(0.7~0.8~0.9~1)In	Thermo-magnetic:Ii=(5~6~7~8~9~10)In±20%, Ir=(0.7~0.8~0.9~1)In Electromagnetic: Ii=(9-10-11-12-13-14)In ± 20%

General product information and other remarks:

NM8N-400HV, NM8N-630HV
Uimp: 12kV;
Ui: 1250V;
Ue: AC690V, AC800V, AC1000V, AC1150V;
In: 250A, 315A, 350A, 400A, 500A, 630A;
Over-current release type: Thermal-magnetic, Electromagnetic;
Ics: See table below;
Icu: See table below;
Selectivity category: A;
Rated frequency: 50/60Hz;
Suitable for isolation;
3P;
Auxiliary contact: AX21-M8, AL21-M8;
1NO1NC;
Ith: 5A;
AC-15: Ue/Ie: AC110V/5A, AC240V/4A, AC415V/2A;
DC-13: Ue/Ie: DC110V/0.25A, DC220V/0.25A;
Electronic accessories complied with Annex N:
Undervoltage release(Model type: UVT22-M8): AC48V, AC110V, AC220~240V, AC380~415V, DC24V, DC48V, DC110~120V, DC220V

In	Ue	Icu(kA)		Ics(kA)	
		C	S	C	S
250A, 315A, 350A, 400A, 500A, 630A	AC690V	50	80	50	80
	AC800V	36	50	36	50
	AC1000V	25	35	15	20
	AC1150V	10	10	10	10

Type explanation:

NM8N □ HV □
① ② ③ ④
①General code for MCCB
②Code for construction break: 630,400
③Code for high-voltage
④Code for breaking capacity: C, S

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.3	**TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (#01 NM8N-630HV 3P Ue: AC1150V In: 630A Electromagnetic)**		
8.3.3.2	Test of tripping limits and characteristic		
8.3.3.2.2	Short circuit releases		
	Sample no:	#01	
	Rated operational voltage: Ue (V)	AC1150V	
	Rated current: In (A)	630A	
	Ambient temperature 10-40 °C :	+26	P
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.		P
	Range of adjustable setting current. (A)	9~14In	P
	Time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Electromagnetic over current releases		
	Test current: 80% of the rated, or **minimum** adjustable setting current: (A)	4.54kA	P
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:	 >0.2s >0.2s >0.2s -	P
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:	 - - - -	N/A
	Test current: 120% of the rated, or **minimum** adjustable setting current: (A)	6.81kA	P
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:	L-L 23ms 26ms 24ms -	P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:	 - - - -	N/A

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Test current: 80% of the **maximum** adjustable setting current: (A)	7.57kA	P
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:	 >0.2s >0.2s >0.2s -	P
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:	 - - - -	N/A
	Test current: 120% of the **maximum** adjustable setting current: (A)	10.6kA	P
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:	L-L 22ms 25ms 26ms -	P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:	 - - - -	N/A
	Test current: tripping current declared for single pole operation (A)	6.80kA/10.7kA	P
	Operating time: < 0,2 s in case of instantaneous release: L1: L2: L3: N:	 24ms/24ms 21ms/24ms 27ms/21ms -	P
	Operating time: < twice time delay stated by manufacturer in case of definite time delay releases L1: L2: L3: N:	 - - - -	N/A
	Electronic over current releases		
	For circuit-breakers with an electronic over current release, the operation of the short-circuit releases shall be verified by one test only on each pole individually.		N/A
	Test current: 80% of the rated, or **minimum** adjustable setting current: (A)		N/A

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Operating time: >0,2s in case of instantaneous releases: L1: L2: L3: N:	- - - -	N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:	- - - -	N/A
	Test current: 120% of the rated, or **minimum** adjustable setting current: (A)		N/A
	Operating time: <0,2s in case of instantaneous releases: L1: L2: L3: N:	- - - -	N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:	- - - -	N/A
	Test current: 80% of the **maximum** adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases: L1: L2: L3: N:	- - - -	N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:	- - - -	N/A
	Test current: 120% of the **maximum** adjustable setting current: (A)		N/A
	Operating time: <0,2s in case of instantaneous releases: L1: L2: L3: N:	- - - -	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:	 - - - -	N/A
8.3.3.2.3	Overload releases		
a)	Instantaneous or definite time-delay releases		
	Sample no:		
	Rated operational voltage: Ue (V)		
	Rated current: In (A)		
	Ambient temperature 10-40 °C :		N/A
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.		N/A
	Range of adjustable setting current. (A)		N/A
	Time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 90% of the rated, or minimum adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 90% of the maximum adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 110% of the rated, or minimum adjustable setting current: (A) circuit-breaker with neutral pole: 1,2x110% (A)		N/A
	Operating time: <0,2s in case of instantaneous releases:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Test current: 110% of the maximum adjustable setting current: (A) circuit-breaker with neutral pole: 1,2x110% (A)		N/A
	Operating time: <0,2s in case of instantaneous releases		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
b)	Inverse time delay releases		
	Sample no:	#01	
	Rated operational voltage: Ue (V)	AC1150V	
	Rated current: In (A)	630A	
	For releases dependent of ambient air temperature: Reference temperature		MA
	Test ambient temperature (°C)		N/A
	For releases dependent on ambient air temperature, the operating characteristics shall be verified at the reference temperature, the release being energized on all phase poles. If the test made at a different ambient temperature, a correction shall be made in accordance with the manufacturer's correction temperature/current data		N/A
	For thermal-magnetic releases independent of ambient temperature: Tests shall be made at 30°C and 20°C or 40°C, the release being energized on all phase poles		N/A
	For electronic releases, the operating characteristic shall be verified at the ambient temperature of the test room (see 6.1.1 of IEC 60947-1), the release being energised on all phase poles.		N/A
	Test ambient air temperature:		N/A
	Range of adjustable setting current: (A)		N/A
	Releases, dependent of ambient air temperature: Reference temperature (°C)		N/A
	Thermal Magnetic releases, independent of ambient air temperature: at 30°C		N/A
	Test current: 105% of the rated, or **minimum** adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test current: 130% of the rated, or **minimum** adjustable setting current: (A)		N/A
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	Test current: 105% of the **maximum** adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the **maximum** adjustable setting current: (A)		N/A
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	Thermal Magnetic releases, independent of ambient air temperature: at 20°C or 40°C		
	Test ambient air temperature:		N/A
	Test current: 105% of the rated, or **minimum** adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the rated, or **minimum** adjustable setting current: (A)		N/A
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	Test current: 105% of the **maximum** adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the **maximum** adjustable setting current: (A)		N/A
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.		N/A

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	An additional test, at a current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer		
	Releases, dependent of ambient air temperature: Reference temperature (°C)		N/A
	Releases, independent of ambient air temperature: at 30°C		N/A
	Test ambient air temperature:		N/A
	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)		N/A
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)		N/A
	Releases, independent of ambient air temperature: at 20°C or 40°C		
	Test ambient air temperature:		N/A
	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)		N/A
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)		N/A
8.3.3.2.4	Additional test for definite time-delay releases		
a)	Time delay		
	Test is made at a current equal to 1,5 times the current setting. If the test current overlaps with another tripping characteristic (e.g. an instantaneous tripping characteristic), the trip setting and the test current shall be reduced as necessary to prevent premature tripping.		
	overload releases: (all phase poles loaded)		N/A
	for circuit-breakers having an identified neutral pole provided with an overload release, the test current for this release shall be 1,5 times the current setting;		N/A
	short-circuit releases		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Electromagnetic release: two poles in series carrying the test current, using successively all possible combinations of poles having a short-circuit release.		N/A
	Electronic releases: on one pole chosen at random.		N/A
	Test current: 1,5 times of the rated, or **minimum** adjustable setting current: (A)		N/A
	Operating time, overload releases: (s)		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electromagnetic): (s) L1-L2: L1-L3: L2-L3:		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electronic): (s)L L2: L3:		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Test current: 1,5 times of the **maximum** adjustable setting current: (A)		N/A
	Operating time, overload releases: (s)		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electromagnetic): (s) L1-L2: L1-L3: L2-L3:		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electronic): (s)L L2: L3:		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
b)	Non-tripping duration		
	Firstly, the test current equal to 1,5 times the current setting is maintained for a time interval equal to the non-tripping duration stated by the manufacturer.		
	Then, the current is reduced to the rated current and maintained at this value for twice the time-delay stated by the manufacturer. The circuit-breaker shall not trip.		
	overload releases: (all phase poles loaded)		N/A
	for circuit-breakers having an identified neutral pole provided with an overload release, the test current for this release shall be 1,5 times the current setting;		N/A
	short-circuit releases		N/A
	Electromagnetic release: two poles in series carrying the test current, using successively all possible combinations of poles having a short-circuit release.		N/A
	Electronic releases: on one pole chosen at random.		N/A
	Test current: 1,5 times of the **minimum** adjustable setting current: (A)		N/A
	non-tripping duration stated by the manufacturer for overload release: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release thermal magnetic: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release electronic: (s)		N/A
	Time duration of current when reduced to the rated current: shall be twice the delay-time stated by the manufacturer: (s)		N/A
	Rated current		N/A
	Operating time, overload releases: the circuit-breaker does not trip:		N/A
	Operating time, short-circuit releases (electromagnetic), shall not trip: (s) L1-L2: L1-L3: L2-L3:		N/A
	Operating time, short-circuit releases (electronic), shall not trip: (s) L1: L2: L3:		N/A
	Test current: 1,5 times of **maximum** adjustable setting current: (A)		N/A
	non-tripping duration stated by the manufacturer for overload release: (s)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	non-tripping duration stated by the manufacturer for short-circuit release thermal magnetic: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release electronic: (s)		N/A
	Time duration of current when reduced to the rated current: shall be twice the delay-time stated by the manufacturer: (s)		N/A
	Rated current		N/A
	Operating time, overload releases: the circuit-breaker does not trip:		N/A
	Operating time, short-circuit releases (electromagnetic), shall not trip: (s) L1-L2: L1-L3: L2-L3:		N/A
	Operating time, short-circuit releases (electronic), shall not trip: (s) L1: L2: L3:		N/A
8.3.3.3	Test of dielectric properties, impulse withstand voltage:		
8.3.3.4 part1	The 1,2/50µs impulse voltage shall be applied five times for each polarity at intervals of 1s minimum		
	- rated impulse withstand voltage (kV) :	12kV	P
	- sea level of the laboratory:	4m	P
	- test Uimp main circuits (kV) :	15.0	P
	- test Uimp auxiliary circuits (kV) :		N/A
	- test Uimp control circuits (kV) :		N/A
	- test Uimp on open main contacts (equipment suitable for isolating) (kV) :	18.5kV	P
a)	Application of test voltage		P
	i) Between all terminals of the main circuit connected together (incl. control and auxiliary circuits connected to the main circuit) and the enclosure or mounting plate, with the contacts in all normal positions of operation.		P
	ii) Between each pole of the main circuit and the other poles connected together and to the enclosure or mounting plate, with the contacts in all normal positions of operation.		P
	iii) Between each control and auxiliary circuit not normally connected to the main circuit and: - the main circuit		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- other circuits		P
	- exposed conductive parts		P
	- enclosure of mounting plate		P
	iv) equipment suitable for isolation		P
	equipment not suitable for isolation		P
	- no unintentional disruptive discharge during the test's		P
	Test of dielectric properties, power frequency withstand voltage:		
	- rated insulation voltage (V) :	1250V	P
	- main circuits, test voltage for 1 min (V)	2500V	P
	- auxiliary circuits, test voltage for 1 min (V)		N/A
	- control circuits, test voltage for 1 min (V)		N/A
8.3.3.2.2	Application of test voltage		
1)	with circuit-breaker in the closed position		
	- between all live parts of all poles connected together and the frame of the circuit-breaker .		P
	- between each pole and all the other poles connected to the frame of the circuit-breaker		P
2)	with the circuit-breaker in the open position and, additionally, in the tripped position, if any.		P
	- between all live parts of all poles connected together and the frame of the circuit-breaker.		P
	- between the terminals of one side connected together and the terminals of the other side connected together.		P
b)	Control and auxiliary circuits		
1)	- between all the control and auxiliary circuits which are not normally connected to the main circuit, connected together, and the frame of the circuit-breaker.		N/A
2)	- where appropriate, between each part of the control an auxiliary circuits which may be isolated from the other parts during normal operation and all the other parts connected together.		N/A
	No unintentional disruptive discharge during the tests		N/A
(i)	the normal positions of operation include the tripped position, if any;		N/A
(ii)	circuits incorporating solid-state devices connected to the main circuit shall be disconnected for the test;		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
(iii)	circuit-breakers not declared as suitable for isolation shall be tested with the test voltage applied across the poles of the main circuit, the line terminals being connected together and the load terminals being connected together.		N/A
(iv)	For circuit-breaker suitable for isolation, the leakage current shall be measured through each pole with the contacts in the open position, at a test voltage of 1,1 Ue, and shall not exceed 0,5mA.	1.25V 0.005mA	P
(v)	circuit-breakers having a rated insulation voltage greater than 1 000 V a.c. shall be tested at a voltage of Ui + 1 200 V a.c. r.m.s. or 2 Ui whichever is the greater		N/A
(vi)	withdrawable circuit-breakers shall be subject to verification of impulse withstand voltage and shall be applied between the withdrawable unit's main contacts and their associated fixed contacts, in the disconnected position.		N/A
8.3.3.4	Mechanical operation and operational performance capability		
8.3.3.4.2	Construction and mechanical operation		
8.3.3.4.2.1	Construction		
	A withdrawable circuit-breaker shall be checked for the requirements stated in 7.1.2		N/A
	A circuit-breaker with stored energy operation shall be checked for compliance with 7.2.1.1.6, regarding the charge indicator and the direction of operation of manual energy storing		N/A
8.3.3.4.2.2	Mechanical operation		
	A circuit-breaker with dependent power operation shall comply with the requirements stated in 7.2.1.1.4		N/A
	A circuit-breaker with dependent power operation shall operate with the operating mechanism charged to the minimum and maximum limits stated by the manufacturer		N/A
	A circuit-breaker with stored energy operation shall comply with the requirements stated in 7.2.1.6 with the auxiliary supply voltage at 85% and 110% of the rated control supply voltage.		N/A
	It shall also be verified that the moving contacts cannot be moved from the open position when the operating mechanism is charged to slightly below the full charge as evidenced by the indicating device		N/A
	For a trip-free circuit-breaker it shall not be possible to maintain the contacts in the touching or closed position when the tripping release is in the position to trip the circuit-breaker		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If the closing and opening times of a circuit-breaker are stated by the manufacturer, such times shall comply with the stated values		N/A
8.3.3.4.2.3	Undervoltage releases		
	Undervoltage releases shall comply with the requirements of 7.2.1.3 of Part 1. For this purpose, the release shall be fitted to a circuit-breaker having the maximum current rating for which the release is suitable		N/A
i)	Drop out voltage		
	It shall be verified that the release operates to open the circuit-breaker between the voltage limits specified		N/A
	The voltage shall be reduced from rated voltage at a rate to reach 0 V in approximately 30 s		N/A
	The test for the lower limit is made without current in the main circuit and without previous heating of the release coil		N/A
	In the case of a release with a range of rated voltages, this test applies to the maximum voltage of the range		N/A
	The test for the upper limit is made starting from a constant temperature corresponding to the application of rated control supply voltage to the release and rated current in the main poles of the circuit-breaker		N/A
	This test may be combined with the temperature-rise test of 8.3.3.7		N/A
	In the case of a release with a range of rated voltages, this test is made at both the minimum and maximum rated control supply voltages		N/A
ii)	Test for limits of operation		
	Starting with the circuit-breaker open, at the temperature of the test room, and with the supply voltage at 30% rated maximum control supply voltage, it shall be verified that the circuit-breaker cannot be closed by the operation of the actuator		N/A
	When the supply voltage is raised to 85% of the minimum control supply voltage, it shall be verified that the circuit-breaker can be closed by the operation of the actuator		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
iii)	Performance under overvoltage conditions		
	With the circuit-breaker closed and without current in the main circuit, it shall be verified that the undervoltage release will withstand the application of 110% rated control supply voltage for 4 h without impairing its functions		N/A
8.3.3.4.2.4	Shunt releases		
	Shunt releases shall comply with the requirements of 7.2.1.4 of Part 1. For this purpose, the release shall be fitted to a circuit-breaker having the maximum rated current for which the release is suitable		N/A
	It shall be verified that the release will operate to open the circuit-breaker at 70% rated control supply voltage when tested at an ambient temperature of + 55 °C ± 2 °C without current in the main poles of the circuit-breaker		N/A
	In the case of a release having a range of rated control supply voltages, the test voltage shall be 70% of the minimum rated control supply voltage		N/A
8.3.3.4.3	Operational performance capability without current.		
	Type designation or serial number catalogue reference	NM8N-630HVCS	
	Sample no:	#01	
	Rated current In (A)	630A	
	Rated operational voltage: Ue (V)	AC1150V	
	Rated control supply voltage of closing releases: Uc (V)	-	
	Rated control supply voltage of shunt releases: Uc (V)		
	Rated control supply voltage undervoltage releases: Uc (V)		
	Ambient temperature 10-40 °C :	+26℃	P
	Number of operating cycles per hour	60	P
	Number of cycles without current (total) (closing releases energized at the rated Uc)	4000	P
	Number of cycles without current (without releases)		N/A
	Applied voltage of closing releases (V)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	10% of total cycles for circuit-breaker with fitted shunt release: (50% at the beginning- and 50% at the end of the test.) Energized at the rated Uc		N/A
	Applied voltage: shunt releases (V)		N/A
	10% of total cycles for circuit-breaker with undervoltage releases: (50% at the beginning- and 50% at the end of the test.) Energized at the minimum rated Uc		N/A
	10 attempts to close the breaker without applied voltage at the undervoltage releases. (Shall not possible to close the circuit-breaker.)		N/A
	Applied voltage: undervoltage releases (V)		N/A
	In the case of circuit-breakers fitted with electrical or pneumatic closing devices, these devices shall be supplied at their rated control supply voltage or at their rated pressure.		N/A
	Precautions shall be taken to ensure that the temperature rises of the electrical components do not exceed the value indicated in tab. 7.		N/A
8.3.3.4.4	Operational performance capability with current.		
	Rated current: In (A)	630A	
	Maximum rated operational voltage: Ue (V)	AC1150V	
	Conductor cross-sectional area (mm^2) :	2[185]mm^2	P
	Number of operating cycles per hour	60	P
	Number of cycles with current (total) (closing releases energized at the rated Uc)	1000	P
	Applied voltage: closing releases (V)		N/A
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload setting at maximum and short-circuit setting at minimum.		N/A
	Conditions, make/break operations:		P
	- test voltage U/Ue = 1,0 (V) .....L1: .....L2: L3:	1.15kV 1.15kV 1.16kV	P
	- test current I/Ie = 1,0 (A).....L1: .....L2: L3:	632A 632A 632A	P
	- power factor/time constant:	0.83	P
	- frequency: (Hz)	50Hz	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- on-time (ms):	526ms	P
	- off-time (s):	60s	P
	In the case of circuit-breakers fitted with electrical or pneumatic closing devices, these devices shall be supplied at their rated control supply voltage or at their rated pressure.		N/A
	Precautions shall be taken to ensure that the temperature rises of the electrical components do not exceed the value indicated in tab. 7.		P
8.3.3.4.5	Additional test of operational performance capability without current for withdrawable circuit-breaker.		
	Number of operations cycles : 100		N/A
	After test, the isolating contacts, withdrawable mechanism and interlocks shall be suitable for further service.		N/A
8.3.3.5	Overload performance		
	this test applies to circuit-breaker of rated current up to and including 630 A		
	Type designation or serial number catalogue reference	NM8N-630HVCS	
	Sample no:	#01	
	Rated current In (A)	630A	
	Rated operational voltage: Ue (V)	AC1150V	
	Rated control supply voltage of closing releases: Uc (V)	-	
	Rated control supply voltage of shunt releases: Uc (V)	-	
	Rated control supply voltage undervoltage releases: Uc (V)	-	
	Ambient temperature 10-40 °C :	+26℃	P
	Maximum rated operational voltage: Ue (V)	AC1150V	P
	Number of operating cycles per hour	60	P
	Number of cycles with current (total) (closing releases energized at the rated Uc)	12	P
	Applied voltage: closing releases (V)		N/A
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload/short-circuit settings at maximum.		N/A
	Conditions, overload operations:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	1.22kV 1.22kV 1.22kV	P
	- test current AC/DC: I/Ie = 6,0/2.5 (A) .....L1: .....L2: L3:	 3.79kA 3.79kA 3.79kA	P
	- power factor/time constant:	0.51	P
	- Number of cycles manually opened: 9		P
	- Number of cycles automatically opened by an overload release: 3		P
	for circuit-breakers having a short-circuit release of a maximum setting less than the test current		
	all 12 operations automatic		N/A
	If the testing means do not withstand the let-through energy occurring during the automatic operation		
	– 12 manual operations – three additional operations with automatic opening, made at any convenient voltage		N/A
	- frequency: (Hz)	50Hz	P
	- on-time max 2s:	527ms	P
	Operating rate if different from Table 8		N/A
8.3.3.6	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V for 5 seconds	AC2.28kV	P
	- no breakdown or flashover	No	P
	For circuit-breaker suitable for isolation, the leakage current shall be measured through each pole with the contacts in the open position, at a test voltage of 1,1 Ue, and shall not exceed 2 mA.	Test voltage: 1.26kV Leakage current: 0.011mA	P
8.3.3.7	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.		P
	Temperature rise of main circuit terminals ≤ 80 K (K) :	See table: temperature rise measurement	P
	conductor cross-sectional area (mm^2) :	2[185]mm^2/1mm^2	P
	test current Ie (A) :	632A	P

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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.8	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
8.3.3.9	Verification of undervoltage(AC48V 50/60Hz) and shunt releases(AC48V 50/60Hz)		
	Circuit-breaker fitted with undervoltage releases. The release shall not operate at 70% of the minimum control supply voltage -		P
	and shall operate at 35% of the maximum control supply voltage.		P
	Circuit-breaker fitted with shunt releases. The release shall operate at 70% of the minimum rated control supply voltage. Test made at room temperature.		P
8.3.3.10	Verification of the main contact position for circuit-breakers for isolation		P
	actuating force for opening (N) ..... :	42.5N	—
	test force with blocked main contacts for 10 s (N) :	200N	—
	Dependent power operation		N/A
	Supply voltage of 110% of rated voltage (V)…….:		N/A
	Three attempts of 5 s to operate the equipment at intervals of 5 min.		N/A
	Independent power operation		N/A
	Three attempts to operate the equipment by the stored energy.		N/A
	Lock ability of driving mechanism in OFF-position at test force and blocked main contacts ..... :		N/A
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	**TEST SEQUENCE II/III (Ics=Icu): (#02 NM8N-630HV 3P Ue: AC690V In: 630A Thermo-magnetic)**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or catalogue reference	NM8N-630HVCS	
	Sample no:	#02	
	Rated current: In (A)	630A	
	Corresponding rated voltage: Ue (V)	AC690V	
	Rated service short-circuit breaking capacity: (kA)	50kA	
	Rated control supply voltage of closing releases: Uc (V)	-	
	Rated control supply voltage of shunt release: Uc (V)	-	
	Rated control supply voltage of undervoltage releases: Uc (V)	-	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		N/A
	Closing releases energized with 85% at the rated Uc: (V)		N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.		P
	Test made in free air:	+40℃	P
	Distances of the metallic screen's: (all sides)	Back: 0mm Front: 0mm Top: 0mm Bottom: 0mm Left: 0mm Right: 0mm	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal		P
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65		P
	- size of hole: <30mm^2		P
	- finish: bare or conductive plating		P
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Fuse ”F”: copper wire: diameter 0,8 mm, 50 mm long		P
	Circuit is earthed at: (load-star- or supply-star point)	Load-star	P
	Conductor cross-sectional area (mm^2) :	2[185]mm^2	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)		N/A
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤10min	P
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	5min32s 5min16s 5min38s -	P
8.3.4.2	Test of rated service short-circuit breaking capacity		P
	Test sequence of operation: O – t – CO – t – CO		P
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	726V 726V 726V	P
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:	 81.6kA 81.6kA 81.6kA	P
	power factor/time constant :	0.20	P
	- Factor ”n”	2.2	P
	- peak test current (A) :	182kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	20.5kA 18.7kA 31.7kA	P
	- Joule integral I^2dt (kA^2s) .....L1: .....L2: L3:	836kA^2s 660kA^2s 1.97MA^2s	P
	Pause, t: (min)	3	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	27.0kA 28.3kA 15.0kA	P
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:	1.60MA²s 1.54MA²s 281kA²s	P
	Pause, t: (min)	3	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	24.3kA 12.6kA 14.9kA	P
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:	1.03MA²s 206kA²s 402kA²s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	630A	
	Maximum rated operational voltage: Ue (V)	AC690V	
	Conductor cross-sectional area (mm²) :	2[185]mm²	
	Number of operating cycles per hour	60	P
	Number (5% of the number given in column 4, tab. 8) of cycles with current (total) (closing releases energized at the rated Uc)	50	P
	Applied voltage: closing releases (V)		N/A
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload setting at maximum and short-circuit setting at minimum.		P
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,0 (V) .....L1: .....L2: L3:	691V 691V 691V	P
	- test current I/Ie = 1,0 (A).....L1: .....L2: L3:	632A 632A 632A	P
	- power factor/time constant:	0.82	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- frequency: (Hz)	50Hz	P
	- on-time (ms):	500ms	P
	- off-time (s):	60s	P
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V		P
	- no breakdown or flashover		P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1,1 Ue)	760V 0.009mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.		P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	See table: temperature rise measurement	P
	conductor cross-sectional area (mm^2) :	2[185]mm^2	P
	test current Ie (A) :	633A	P
8.3.4.6	Verification of overload releases		
	Test current: 1,45 times the value of their current setting at the reference temperature: (A)	917A	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	3min36s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2,5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤10min	P
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	3min20s 3min02s 3min25s -	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.2	**MARKING**		
7.1	**CONSTRUCTION**		
8	**TESTS**		
8.3.4	**TEST SEQUENCE II (Ics): Rated service short-circuit breaking capacity**		
8.3.5	**TEST SEQUENCE III (Icu): Rated ultimate short-circuit breaking capacity**		
8.3.6	**TEST SEQUENCE IV (Icw): Rated short-time withstand current**		
8.3.7	**TEST SEQUENCE V: Performance of integrally fused circuit-breakers**		
8.3.9	**Critical d.c. load current test**		
Annex B	**Circuit-breakers incorporating residual current protection**		
Annex C	**Individual pole short-circuit test sequence**		
Annex D	**Additional requirements for circuit-breakers intended for connection of aluminium conductors**		
Annex F	**Additional tests for circuit-breakers with electronic over-current protection**		
Annex H	**Individual pole short-circuit test sequence**		
Annex J	**Electromagnetic compatibility (EMC) – Requirements and test methods for circuit-breakers**		
Annex L	**Circuit-breakers not fulfilling the requirements for overcurrent protection**		
Annex M	**Modular residual current devices (without integral current breaking device)**		

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Clause	Requirement + Test	Result - Remark	Verdict

Annex N	**Electromagnetic compatibility (EMC) –** **Additional requirements and test methods for devices not covered by Annexes B, F and M**	
	See report	

Annex O	**Instantaneous trip circuit-breakers (ICB)**	

Annex P	**DC circuit-breakers for use in photovoltaic (PV) applications**	

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Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Heating Test (#01)					P
	Test voltage (V) .....:	**2V**				—
	Ambient (˚C).....:	**+14**				—
Thermocouple Locations		**Max. temperature measured, (˚C)**				**Max. temperature limit, (˚C)**
		L1	L2	L3	N	
Line terminal		56	61	59	/	80
Load terminal		55	57	57	/	80
Handle		12				35
Enclosure		30				50
Back		35				60
Supplementary information:N/A						

	TABLE: Heating Test (#02)					P
	Test voltage (V) .....:	**2V**				—
	Ambient (˚C).....:	**+15**				—
Thermocouple Locations		**Max. temperature measured, (˚C)**				**Max. temperature limit, (˚C)**
		L1	L2	L3	N	
Line terminal		60	64	65	/	80
Load terminal		59	63	63	/	80
Supplementary information:N/A						

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Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Heating test, resistance method					N/A
	Test voltage (V) :					—
	Ambient, t1 (°C) :					—
	Ambient, t2 (°C) :					—
Temperature rise of winding		**R1 (Ω)**	**R2 (Ω)**	**ΔT (K)**	**Max. dT (K)**	**Insulation class**
Supplementary information:						

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Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Dielectric Strength (#01)		P
Test voltage applied between:		**Test potential applied (V)**	**Breakdown / flashover (Yes/No)**
between all the terminals of the main circuit connected together (including the control and auxiliary circuits connected to the main circuit) and the enclosure or mounting plate, with the contacts in all normal positions of operation		2500V	No
between each pole of the main circuit and the other poles connected together and to the enclosure ore mounting plate with the contacts in all normal positions of operation		2500V	No
between each control and auxiliary circuit not normally connected to the main circuit and: - the main circuit - the other circuits - the exposed conductive parts - the enclosure or mounting plate		/	/
Supplementary information:			

	TABLE: Dielectric Strength (#02)		P
Test voltage applied between:		**Test potential applied (V)**	**Breakdown / flashover (Yes/No)**
between all the terminals of the main circuit connected together (including the control and auxiliary circuits connected to the main circuit) and the enclosure or mounting plate, with the contacts in all normal positions of operation		1380V	No
between each pole of the main circuit and the other poles connected together and to the enclosure ore mounting plate with the contacts in all normal positions of operation		1380V	No
between each control and auxiliary circuit not normally connected to the main circuit and: - the main circuit - the other circuits - the exposed conductive parts - the enclosure or mounting plate		/	/
Supplementary information:			

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Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Electrical Data (in normal conditions)					N/A
fuse #	**I rated (A)**	**U (V)**	**P (W)**	**I (mA)**	**I fuse (mA)**	**condition/status**
Supplementary information:						

	TABLE: Power Input Deviation				N/A
Input deviation of/at:	**P rated (W)**	**P measured (W)**	**Δ P**	**Required Δ P**	**Remark**
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

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

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

	TABLE: Clearance And Creepage Distance Measurements (NM8N-630HVCS)					N/A
clearance cl and creepage distance dcr at/of:	**Up (V)**	**U r.m.s. (V)**	**Required cl (mm)**	**cl (mm)**	**required dcr (mm)**	**dcr (mm)**
Supplementary information:						

	TABLE: Distance Through Insulation Measurements				N/A
Distance through insulation di at/of:	**U r.m.s. (V)**	**Test voltage (V)**	**Required di (mm)**	**di (mm)**	

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

	TABLE: Ball Pressure Test of Thermoplastics		N/A
Allowed impression diameter (mm) :			**—**
Object/ Part No./ Material	**Manufacturer/ trademark**	**Test temperature (°C)**	**Impression diameter (mm)**
Supplementary information:			

	TABLE: Needle- flame test (NFT)				N/A
Object/ Part No./ Material	**Manufacturer/ trademark**	**Duration of application of test flame (ta); (s)**	**Ignition of specified layer Yes/No**	**Duration of burning (tb) (s)**	**Verdict**
Supplementary information: **NFT not relevant (or applicable) for Parts of material classified as V-0 or V-1** **NFT not relevant (or applicable) for Base material of PCBs classified as V-0 or if relevant VTM-0**					

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Clause	Requirement + Test	Result - Remark	Verdict

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

	TABLE: Threaded Part Torque Test			N/A
Threaded part identification		Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Supplementary information:				

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Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Over-voltage and Under-voltage Test				N/A
Test	**Operating condition**	**Rated voltage (V)**	**Test voltage (V)**	**Temperature (oC)**	**Comments**
Supplementary information:					

	TABLE: Critical components information				N/A
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity1)**
- Description:					
- Description:					
- Description:					
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					