Technical Construction File

EN IEC 60947-4-1:2019, EN 60947-2:2017+A1:2020

Low-voltage switchgear and controlgear - Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor-starters Part 2: Circuit-breakers

TCF Reference No..... :	TLZJ23101751578
Prepared by (+ signature)..... :	Stephen Zhang / Testing Engineer .....
Approved by (+ signature)..... :	Cosco Yu / Technical Manager .....
Date of issue..... :	October 19,2023
The third party..... :	Shanghai Global Testing Services Co., Ltd.
Address..... :	Floor 2nd, Building D-1, No. 128, Shenfu Road, Minhang District, Shanghai, China.
Reviewing procedure ..... :	CE
Applicant's name..... :	Zhejiang Changcheng Trading Co., Ltd.
Address..... :	DianHou Village, Liushi Town, Yueqing City, Zhejiang, China
Manufacturer's name..... :	Changcheng Electrical Group Zhejiang Technology Co., Ltd.
Address..... :	DianHou Village, Liushi Town, Yueqing City, Zhejiang, China
Factory's name..... :	Same as manufacturer
Address..... :	Same as manufacturer
TCF specification:	
Standard..... :	☒ EN IEC 60947-4-1:2019, EN 60947-2:2017+A1:2020
Non-standard TCF method…….. :	N/A
Review item description..... :	Motor Protection Circuit Breaker
Trade Mark..... :	/
Model/Type reference..... :	YCP5-25-ME, YCP5-80-ME, YCP6-32P
Main Model..... :	YCP5-25-ME07
Ratings (for the Electrical Equipment) …….. :	1.6-2.5A
Other information	N/A

Review item particulars(for the Electrical Equipment)..... :	
Classification of installation and use.....:	Stationary
Supply Connection.....:	Terminal
Electrical safety class..... :	/
IP number..... :	/
Switch.....:	Yes
Thermostat.....:	No
Thermal cut-out..... :	No
Electronic circuit..... :	\
Timer..... :	No
Heating elements.....:	No
Motor..... :	No
Low voltage motor..... :	No
Accessories provided..... :	Yes
Portable appliance.....:	No
Attachment type..... :	No
Possible review case verdicts:	
-review case does not apply to the test object..... :	N/A
- review object does meet the requirement..... :	P(Pass)
- review object does not meet the requirement.....:	F(Fail)
Reviewing.....:	
Date of receipt of review item.....:	October 09,2023
Date (s) of performance of reviews..... :	October 09,2023 to October 19,2023

General remarks:

The review results presented in this report relate only to the object reviewed.
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"(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.

General product information:

Motor Protection Circuit Breaker
YCP5-25-ME07
Review condition:
Temperature: 25°C
Relative humidity: 60%
The review sample was a pre-production sample.

Copy of marking plate and summary of review results (information/comments):	
Motor Protection Circuit Breaker Model: YCP5-25-ME07 Changcheng Electrical Group Zhejiang Technology Co., Ltd.	CE

Summary of reviewing:

-The reviewed sample is found to comply with EN IEC 60947-4-1:2019, EN 60947-2:2017+A1:2020

General notes on tests:

This review report include the following page(s):

National deviation of EU have been considered.

Annex I: Photo Documentation, 2 page(s).

EN IEC 60947-4-1			
6.2	**MARKING**		**-**
	Data shall be preferably marked on the equipment:		-
	a – manufacturer's name or trade mark	Changcheng Electrical Group Zhejiang Technology Co., Ltd.	P
	b – type designation or serial number		P
	c - number of this standard, if the manufacturer claims compliance	60947	P
	k - IP code, in case of an enclosed equipment		N
	Data shall be included on the nameplate, or on the equipment, or in the manufacturer's published literature:		P
	d – rated operational voltages		P
	e - utilization category and rated operational currents (or rated powers), at the rated operational voltages of the equipment		P
	f - either the value of the rated frequency/ies, or the indication d.c. (or symbol) ..... :		P
	g - rated duty with the indication of the class of intermittent duty, if any		P
	Associated values:		P
	h - rated marking and breaking capacities (these indications may be replaced, where applicable, by the indication of the utilization category, see table 7)		P
	Safety an installation:		P
	i – rated insulation voltage		P
	j – rated impulse withstand voltage		P
	l – pollution degree		P
	m – rated conditional short-circuit current and type of co-ordination of contactor or starter and type, current rating and characteristics of the associated SCPD:		P
	m – rated conditional short-circuit current of the combination starter or the protected starter		P
	n – switching overvoltages		P
	Control circuits		P

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	The following information concerning control circuits shall be placed either on the coil or on the equipment:		P
	o – rated control circuit voltage (Uc), nature of current and rated frequency		P
	p - if necessary, nature of current, rated frequency and rated control supply voltages (Us)		P
	Air supply systems for starter or contactors operated by compressed air		P
	Q – rated supply systems of the compressed air and limits of variation of this pressure, if they are different from those specified in 8.2.1.2		N
	Auxiliary circuits:		-
	r – ratings of auxiliary circuits		N
	Overload relays and releases:		N
	s – characteristics according to 5.7		N
	Additional information for certain types of contactor and starter:		N
	Rheostatic starters:		N
	t – circuit diagram		N
	u – severity of start, see 5.3.5.5.1		N
	v – starting time, see 5.3.5.5.1		N
	Auto-transformer starters:		-
	w – rated starting voltage(s), i.e. voltage(s) at the tapping terminals		N
	Vacuum contactors and starters:		N
	x – maximum permissible altitude of the site of installation, if less than 2000 m		N
	EMC		-
	y – environment B or A: see 7.3.1 of part 1		P
	z – special requirements, if applicable, for example shielded or twisted conductors		P
	Sub clause 5.2 of part 1 applies to contactors, starters and overload relays with the following additions:		-
	Data under items d) to x in 6.1.2 shall be included on the nameplate or on the equipment or in the manufacturer’s published literature:		P

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	In case of electronically controlled electromagnets, information other than given in o) and p) of 6.1.2 may also be necessary: see 5.5 and annex E		P
	Data under items c) and k) in 6.1.2 shall preferably be marked on the equipment		P
6.3	**Instruction for installation, operation and maintenance**		**-**
	The manufacture shall specify, in his documents or catalogues:		P
	- the conditions for installation, operation and maintenance, if any, of the equipment during operation and after a fault		P
	- the specify the measures to be taken with regard to EMC, if any,		P
	- equipment only suitable in environment A shall provided with the following notice		P
	- if necessary, the instructions for transport, installation and operation of the equipment shall indicate the measures that are particular importance for the proper and correct installation, commissioning and operation of the equipment.		P
	- manufacturer advice on the measures to be taken in the event of a short-circuit		P
	In case of protected starters (see 3.2.8), the manufacturer shall also provide the necessary mounting and wiring instruction		P
8.1	**CONSTRUCTION**		
8.1.1	Materials (see 7.1.1)		P
	Resistance to abnormal heat and fire (according to 7.1.1.1 of IEC 60947-1) of insulating current-carrying parts		P
7.10	Resistance to heat		
	CB sufficiently resistant to heat		P
9.14	**Test of resistance to heat**		
9.14.1	Test:		P
	- without removable covers..... 1 h (100 ± 2) °C		P

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	- removable covers..... 1 h (70 ± 2) °C		P
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm		P
8.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position T = (70 ± 2)°C or T = ___ °C = (40 ± 2)°C + max. temperature rise of sub-clause 8.8 Ø of impression ≤ 2 mm		P
8.11	Resistance to abnormal heat and to fire		-
	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		-
	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		P
	all other external parts ..... (650 ± 10)°C		P
8.12	Resistance to rusting		-
	Ferrous parts adequately protected against rusting		P
9.16	Test of resistance to rusting:		P
	- 10 min immersed in a cold chemica		P
			P
	No sign of rust		P
8.1.2	Current-carrying parts and their connection (see 7.1.2)		P
8.1.3	**CLEARANCES AND CREEPAGE DISTANCES**		P
	CLAUSE 7.1.3 OF IEC 60947 APPLIES		**P**
7.1.3	Clearances		P
	Rated impulse withstand voltage		P
	Creepage distances		P
	Pollution degree ..... :		—

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	Comparative tracking index (V) .....:		—
	Material group .....:		—
	Rated insulation voltage Ui (V) .....:		—
	Minimum creepage distances (mm) ..... :		—
	Measured creepage distances (mm) .....:		P
	In case Uimp is not indicated		P
8.1.4	**Actuator**		P
	Sub-clause 7.1.4 of part 1 applies when the actuator is manually operated with the following addition:		—
	The operating handle of the manually operated switching device of combination starter shall be provided with means for padlocking it in the OFF position.		P
8.1.4.1	Insulation		P
8.1.4.2	Direction of movement		P
8.1.4.3	Mounting		P
	Actuators mounted on removable panels or opening doors are so designed that when the panels are replaced or doors closed the actuator will engage correctly with the associated mechanism		P
8.1.5	**INDICATION OF CONTACT POSITION**		-
8.1.5.1	Indication means, see 7.1.5.1 part 1 applies to manually operated starters		P
8.1.5.2	Indication by the actuator, see 7.1.5.1 part 1		P
8.1.6	**Additional safety requirements for equipment suitable for isolation,** see clause 7.1.6.1 part 1 applies and the additions marked with *)		-
7.1.6.1	Additional constructional requirements:		P
	- marking according to 5.2.		P
	- indication of the position of the contacts		P
	- construction of the actuating mechanism		P
	- minimum clearances across open contacts (see Table XIII, Part 1) (mm) .....:		—
	- measured clearances (mm) .....:		P
	- test Uimp across gap (kV) ..... :		P

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	*) Devices provided with positions like trip position or stand-by positions which are not the indicated open position shall be clearly marked.		P
	*) An indicator having only one position of rest shall not be considered as appropriate to indicate the position of the main contact.		P
8.1.6.2	Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers:		-
	Auxiliary switch is rated according to IEC 60947-5-1 (unless the equipment is rated AC-23)		P
	Time interval between opening of the contacts of the auxiliary contact and the contacts of the main poles: =20 ms ..... :		—
	Measured time interval (ms) ..... :		P
	During the closing operation the contacts of the auxiliary switch closes after or simultaneously with the contacts of the main poles		P
8.1.6.3	Supplementary requirements for equipment provided with means for padlocking the open position:		P
	The locking means is so designed that it cannot be removed with the appropriate padlock(s) installed		p
	Test force F applied to the actuator in an attempt to operate to the closed position (N) .....:		—
	Rated impulse withstand voltage (kV) .....:		—
	Test Uimp on open main contacts at the test force		P
8.1.7	**Terminals**		-
7.1.7.1	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength	(see 8.2.4 below)	P
	Terminal connections shall be such that necessary contact pressure is maintained	(see 8.2.4 below)	P
	Terminals shall be so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal	(see 8.2.4 below)	P
	Terminal shall not allow the conductor to be displaced or to be displaced themselves in a manner detrimental to the operator of equipment and the insulation voltage shall not be reduced below the rated value	(see 8.2.4 below)	P

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	If required by application, terminals and conductors may be connected by means of cable lugs for copper conductors only		P
8.2.4	**Mechanical properties of terminals**		**-**
8.2.4.2	Mechanical strength of terminals		P
	maximum cross-sectional area of conductor (mm²) .....:		-
	diameter of thread (mm) .....:		-
	torque (Nm) ..... :		-
	5 times on 2 separate clamping units		-
8.2.4.3	Testing for damage to and accidental loosening of conductor (flexion test)		-
	conductor of the smallest cross-sectional area (mm²) .....:		-
	number of conductor of the smallest cross section .....:		-
	diameter of bushing hole (mm) ..... :		
	height between the equipment and the platen (mm) ..... :		-
	mass at the conductor(s) (kg) .....:		-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		P
8.2.4.4	Pull-out test		P
	force (N) ..... :		
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		P
	Flexion test		P
	conductor of the largest cross-sectional area (mm²) .....:		-
	number of conductor of the largest cross-sectional .....:		-
	diameter of bushing hole (mm) ..... :		-
	height between the equipment and the platen (mm) ..... :		-
	mass at the conductor(s) (kg) .....:		-

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	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		P
	Pull-out test		P
	force (N) .....:		-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		P
	Flexion test		P
	conductor of the largest and smallest cross-sectional area (mm²) .....:		-
	number of conductor of the smallest cross sectional, number of conductor of the largest cross sectional .....:		-
	diameter of bushing hole (mm) .....:		-
	height between the equipment and the platen (mm) .....:		-
	mass at the conductor(s) (kg) .....:		-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		P
	Pull-out test		P
	force (N) .....:		-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		P
7.1.7.2	Connecting capacity		P
	type of conductors .....:		-
	minimum cross-sectional area of conductor (mm²) .....:		-
	maximum cross-sectional area of conductor (mm²) .....:		-
	number of conductors simultaneously connectable to the terminal .....:		-
7.1.7.3	Connection		P
	terminals for connection to external conductors shall be readily accessible during installation		P

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	clamping screws and nuts shall not serve to fix any other component		P
8.1.7.4	**Terminal identification and marking,**		P
8.1.7.4	Subclause 7.1.7.4 of part 1 applies with the additional requirements of annex A		P
	terminal intended exclusively for the neutral conductor		P
	protective earth terminal		P
	other terminals		P
8.1.8	**Additional requirements for equipment provided with a neutral pole**		-
	Subclause 7.1.8 of part 1 applies		P
	marking of neutral pole		P
	The switched neutral pole shall not break before and shall not make after the other poles		P
	Conventional thermal current of neutral pole		P
	If a pole having an appropriate short-circuit breaking and making capacity is used as a neutral pole, then all poles, including the neutral pole, may operate substantially together.		P
	Equipment having a value Ith < 63 A, this value shall be identical for all poles		P
	For Ith > 63 A, the neutral pole may have a value of Ith different from that of the other poles, but not less than the half that value or 63 A, whichever is the higher.		P
8.1.9	**Provisions for protective earthing**		-
	Subclause 7.1.9 of part 1 applies		P
7.1.9.1	The exposed conductive parts shall be electrically interconnected and connected to a protective earth terminal		P
7.1.9.2	The protective earth terminal shall be readily accessible		P
	The protective earth terminal shall be suitably protected against corrosion		P

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	The electrical continuity between the exposed conductive parts of the protective earth terminal and the metal sheathing of connecting conductors		P
	The protective earth terminal shall have no other functions		P
7.1.9.3	Protective earth terminal marking and identification		P
8.1.10	**Enclosure for equipment**		-
7.1.10.1	Design		-
	Subclause 7.1.9 of part 1 applies with the follow additions		P
	Starting resistors mounted within an enclosure shall be so located or guarded that issuing heat is not detrimental to other apparatus and materials within the enclosure.		P
	For the specified case of combination starters, the cover or door shall be interlocked so that it cannot be opened without manually operated device being in open position.		P
	However, provision may be made to open the door or cover with the manually operated switching device in the ON position by use of a tool.		P
	The enclosure, when it is opened: all parts requiring access for installation and maintenance are readily accessible		P
	Sufficient space shall be provided inside the enclosure		P
	The fixed parts of a metal enclosure shall be electrically connected to the other exposed conductive parts of the equipment and connected to a terminal which enables them to be earthed or connected to a protective conductor		P

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	Under no circumstances shall a removable metal part of the enclosure be insulated from the part carrying the earth terminal when the removable part is in place		P
	The removable parts of the enclosure shall be firmly secured to the fixed parts by a device such that they cannot be accidentally loosened or detached owing to the effects of operation of the equipment or vibrations		P
	When an enclosure is so designed as to allow the covers to be opened without the use of tools, means shall be provided to prevent loss of the fastening devices		P
7.1.10.2	Insulation		-
	If, in order to prevent accidental contact between a metallic enclosure and live parts, the enclosure is partly or completely lined with insulating material, then this lining shall be securely fixed to the enclosure		P
8.1.11	**Degree of protection of enclosed contactors and starters**		N
	Subclause 7.1.11 of part 1 applies		N
	Degree of protection ..... :		N
	Test for first characteristic		N
	Test for first numeral ..... :		—
			-
	Test for second numeral ..... :		—
9.3.1.a	**TEST SEQUENCE I**		**-**
	- verification of temperature rise (Clause 9.3.3.3.)		**P**
	- verification of operation and operating limits (Clause 9.3.3.1 and 9.3.3.2)		**P**
	- verification of dielectric properties (Clause 9.3.3.4)		**P**
9.3.3.3	**Temperature rise**		P
	Subclause 8.3.3.3. of part 1 applies		-
	ambient temperature 10-40 °C ..... :		—
	Contactor		-
	test enclosure W x H x D (mm x mm x mm) ..... :		—

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	material of enclosure ..... :		—
9.3.3.3.4	Main circuits, test conditions:		-
	Subclause 8.3.3.4 of part 1 applies with following addition		-
	loaded as stated in 8.2.2.4		-
	- setting of the maximum current setting..... :		-
	- setting overload relay..... :		-
	- conventional thermal current Ith (A) .....:		—
	- conventional enclosed thermal current Ithe (A) . :		—
	- cable/busbar cross-section (mm²) / (mm) ..... :		—
	- temperature rise of main circuit terminals (K) .... :	<	—
9.3.3.3.5	Control circuit, test conditions:		-
	Subclause 8.3.3.5. of part 1 applies with following addition		-
	The temperature rise shall be measures during the test of 9.3.3.3.4		-
	- conventional thermal current Ith (A) at their rated voltage.....:		-
	- conventional enclosed thermal current Ithe (A) . :		-
	- cable/busbar cross-section (mm²) / (mm) ..... :		-
	- temperature rise of control circuit (K) ..... :	<	P
9.3.3.3.6	Coils and electromagnets circuit, test conditions:		-
	a) Uninterrupted and eight-hour duty windings (8.2.2.6.1)		P
	The temperature rise shall be measures during the test of 9.3.3.3.4		P
	- rated control supply voltage Us (V) .....:		—
	- class of insulating material ..... :		—
	- uninterrupted or eight-hour duty windings		P
	- temperature rise of control circuit terminals (K) . :		P
	b) Intermittent duty windings (8.2.2.6.2)		P
	- no current flowing though the main circuit		P
	- rated control supply voltage Us (V) .....:		—
	- class of insulating material ..... :		—
	- intermittent duty class.....:		P
	- close open operating cycle.....:		P

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	- on-load factor.....:		P
	- temperature rise of control circuit terminals (K) . :	<40	P
	c) temporary or periodic duty (8.2.2.6.3)		P
	- no current flowing though the main circuit		P
	- rated control supply voltage Us (V) .....:		—
	- class of insulating material ..... :		—
	- close open operating cycle.....:		P
	- on-load time..... :		P
	- temperature rise of control circuit terminals (K) . :		P
9.3.3.3.7	Auxiliary circuit, test conditions:		P
	Normally loaded with their maximum rated operational current at any convenient voltage		P
	The temperature rise shall be measures during the test of 9.3.3.3.4		P
	- conventional thermal current Ith (A).....:		P
	- conventional enclosed thermal current Ithe (A) . :		P
	- cable/busbar cross-section (mm²) / (mm) ..... :		P
	- cable cross-section (mm²) .....:		—
	- temperature rise of auxiliary circuit terminals (K) ..... :		P
9.3.3.3.8	Starting resistors for rheostatic rotor starters test conditions:		P
	Normally loaded with their current value I_m		P
	Number of starts per hour..... :		P
	Rated duty..... :		P
	Starting characteristic		P
	- cable/busbar cross-section (mm²) / (mm) ..... :		P
	- cable cross-section (mm²) .....:		P
	- temperature rise of starting resistor terminals (K) ..... :	See table 3 of part 1	P
	- temperature rise of starting resistor enclosure (K)	See table 3 of part 1	P
	- temperature rise of issuing air (K)	See table 3 of part 1	P
9.3.3.3.9	Auto-transformers for two-step auto-transformers starters		P
	Normally loaded with max. Starting current multiplied with 0,8 x $^{\text{starting voltage}}/_{\text{Ue}}$		P

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	Number of starts per hour..... :		P
	Rated duty..... :		P
	Starting characteristic..... :		P
	- cable/busbar cross-section (mm²) / (mm) ..... :		P
	Temperature rise of:		P
	- windings (K)	See table 5 (+15 %)	P
	- operating means (K) .....:	See table 3 of part 1	P
	- parts intended to be touched but not hand held (K)	See table 3 of part 1	P
	- parts which need not be touched during normal operation (K)	See table 3 of part 1	P
9.3.3	**Performance under no load, normal load and overload conditions**		-
9.3.3.1	**Operation**		-
	For starter only:		P
	reference ambient temperature(i.e. +20 °C :		P
	Rated full load current (A) :		P
	No tripping after 3 operations when stator has reached thermal equilibrium at minimum and maximum settings		P
	For overload relay with combined stop and reset actuating mechanism only		P
	With closed contactor, the resetting mechanism shall be operated and this shall cause the contactor drop out		P
	For overload relay with either a reset or separate stop and reset mechanism only		P
	With closed contactor and resetting mechanism in the reset position, the tripping mechanism shall be operated and the contactor shall have been caused to drop out		P
9.3.3.2	**OPERATING LIMITS**		-
9.3.3.2.1	Power-operated equipment:		P
8.2.1.2.1	Electromagnetic contactors and starters		P
	rated control supply voltage Us (V) ..... :		—
	frequency (Hz) ..... :		—
	declared ambient temperature(>40 °C) for 100% Us.....:		P

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	limits of close satisfactorily at any value between 85% and 110% of rated control supply voltage Us .....:		P
	limits of drop out and open fully are: 75% to 20% for a.c. and 75% to 10% for d.c. .....:		P
	ambient temperature(-5 °C) for 100% Us		P
	limits of close satisfactorily at any value between 85% and 110% of rated control supply voltage Us .....:		P
	Limits of drop out and open fully are: 75% to 20% for a.c. and 75% to 10% for d.c. .....:		P
8.2.1.2.2	Contactors and starters with electronically controlled electromagnet		P
	Rated control supply voltage Us (V) .....:		—
	Frequency (Hz) .....:		—
	Declared ambient temperature(>40 °C) for 100% Us		P
	Limits of close satisfactorily at any value between 85% and 110% of rated control supply voltage Us .....:		P
	Limits of drop out and open fully are: 75% to 20% for a.c. and 75% to 10% for d.c. .....:		P
	Ambient temperature(-5 °C) for 100% Us		P
	Limits of close satisfactorily at any value between 85% and 110% of rated control supply voltage Us .....:		P
	Limits of drop out and open fully are: 75% to 20% for a.c. and 75% to 10% for d.c. .....:		P
8.2.1.2.3	Electro-pneumatic contactors and starters		P
	Rated air supply pressure(Bar) .....:		—
	Declared ambient temperature(>40 °C) for 100% of the rated air supply pressure(Bar)		P
	Limits of close satisfactorily at any value between 85% and 110% of rated air supply pressure(Bar) .....:		P

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	Limits of drop out and open fully are: 75% to 10% of rated air supply pressure(Bar) .....:		P
	Ambient temperature(-5 °C) for 100% of the rated air supply pressure(Bar)		P
	Limits of close satisfactorily at any value between 85% and 110% of rated air supply pressure(Bar) :		P
	Limits of drop out and open fully are: 75% to 10% for the rated air supply pressure(Bar) .....:		P
8.2.1.2.4	Capacitive drop out test		P
	A capacitor shall be inserted in series in the supply circuit U_s, the total length of the connecting conductors being = 3 m.		P
s	The capacitor is short-circuit by a switch of neglible impedance.		P
	The supply voltage shall then be adjusted to 110 % U_s.....:		P
	The value of the capacitor shall be calculated: C (nF) = 30 + 200000 / (f x U_s) .....:		P
	Verification of the drop out of the contactor when the switch is operated to the open position.....:		P
9.3.3.2.2	Relays and releases		-
8.2.1.3	Operation of under-voltage relays and releases		P
	type of under-voltage relay ..... :		P
	Rated control supply voltage(U).....:		P
	Frequency (Hz).....:		P
	Limits of drop out and fully open at slowly falling voltage are 70 % and 35 % of the rated voltage..... :		P
	Prevent to close if supply voltage < 35 % of the rated voltage..... :		P
	Limits of close satisfactorily at any value between 85 % and 110 %.....:		P
8.2.1.4	Shunt-coil operated releases (shunt trip)		-
	Tripping of shunt release measured during the tripping operation between 70 % and 110 % of the rated control supply voltage and if a.c. at rated frequency.....:		**P**

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8.2.1.5	Conditions for thermal and time-delay magnetic overload relays only:		**P**
8.2.1.5.1	Limits of operation of time-delay overload relays when all poles are energized		**P**
	type of time-delay overload relay ..... :		**-**
	trip class ..... :		**-**
	current setting .....:		**-**
	ambient temperature (°C) ..... :		**-**
	test enclosure W x H x D (mm x mm x mm) .....:		**-**
	cable/busbar cross-section (mm²) / (mm) ..... :		**-**
	at A times of current setting, tripping shall not occur in less than 2 h starting from the cold state; test current .....:		**-**
	when the current is subsequently raised to B times the current setting, tripping shall occur in less than 2 h; test current .....:		**-**
	for class 10A overload relays energized at C times the current, tripping shall occur in less than 2 min, starting from thermal equilibrium at the current setting; test current .....:		**-**
	For class 10, 20 or 30 overload relays energized at C times the current, tripping shall occur in less than 2, 8 or 12 min, starting from thermal equilibrium at the current setting; class; test current; tripping time .....:		-
	At D times the current setting, tripping shall occur within the tripping time (s) < Tp <, starting from the cold state; test current; tripping time Tp (s) ....:		-
	ambient temperature: - 5 °C ..... :		P
	at A times of current setting, tripping shall not occur in less than 2 h starting from the cold state; test current .....:		-
	when the current is subsequently raised to B times the current setting, tripping shall occur in less than 2 h; test current .....:		-
	for class 10A overload relays energized at C times the current, tripping shall occur in less than 2 min, starting from thermal equilibrium at the current setting; test current .....:		-

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	for class 10, 20 or 30 overload relays energized at C times the current, tripping shall occur in less than 2, 8 or 12 min, starting from thermal equilibrium at the current setting; class; test current; tripping time .....:		-
	at D times the current setting, tripping shall occur within the tripping time (s) < Tp <, starting from the cold state; test current; tripping time Tp (s) ....:		-
	ambient temperature: + 40 °C .....:		-
	at A times of current setting, tripping shall not occur in less than 2 h starting from the cold state; test current .....:		-
	when the current is subsequently raised to B times the current setting, tripping shall occur in less than 2 h; test current .....:		-
	for class 10A overload relays energized at C times the current, tripping shall occur in less than 2 min, starting from thermal equilibrium at the current setting; test current .....:		-
	for class 10, 20 or 30 overload relays energized at C times the current, tripping shall occur in less than 2, 8 or 12 min, starting from thermal equilibrium at the current setting; class; test current; tripping time .....:		-
	at D times the current setting, tripping shall occur within the tripping time (s) < Tp <, starting from the cold state; test current; tripping time Tp (s) ....:		-
	Limits of operation of three-pole thermal overload relays energized on two poles:		-
	ambient temperature (°C) ..... :		-
	the relay energized on three poles, at A times the current setting, tripping shall not occur in less than 2 h, starting from the cold state; test current :		-
			-

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	when the value of the current flowing in two poles is increased to B times the current setting and the third pole deenergized, tripping shall occur in less than 2 h; current value; test current .....:							-
								-
8.2.1.5.3	Limits of operation of instantaneous magnetic overload relays							P
	For all values of the current setting, instantaneous magnetic overload relays shall trip with an accuracy of ± 10% of the value of the published current value corresponding to the current setting							P
	Magnetic settings……..:							P
	Accuracy ± 10% of the value……..:							P
8.2.1.5.4	Limits of operation of automatic change over by under-current relays							P
	- for star-delta starters from star to delta, and - for auto-transformer starters from the starting to the ON position							P
	The lowest drop-out of an under-current relay shall be not greater than 1,5, times the actual current setting of the overload relay which is active in the starting or star connection.							P
	The under-current real shall be able to carry any value of current , from its lowest current setting to stalled current in the starting position or the star connection, for the tripping times determined by the overload relays at its highest current setting							P
9.3.3.4	Test of dielectric properties, impulse withstand voltage (Uimp indicated):							P
	- verification by measurement of clearances instead of testing							P
	- rated impulse withstand voltage (V) .....:							—
	- test Uimp main circuits (kV) ..... :							P
	- test Uimp auxiliary circuits (kV) ..... :							P
	Test of dielectric properties, dielectric withstand voltage (Uimp not indicated):							-
	- rated insulation voltage (V) .....:							—

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	- main circuits, test voltage for 5 s (V) .....:		P
	- control and auxiliary circuits, test voltage for 5-s (V) ..... :		P
	- circuits of equipment include devices such as motors, instruments ect, test voltage for 5 s (V) ...:		P
	Equipment suitable for isolation		P
	The leakage current shall be measured through each pole with the contacts in open position(< 0,5 mA)		P
9.3.1.B	**TEST SEQUENCE II**		**-**
	- verification of read making and breaking capacities, change-over ability and reversibility, where applicable (Clause 9.3.3.5.)		**P**
	- verification of conventional operational performance (Clause 9.3.3.6)		**P**
9.3.3.5	**Making and breaking capacity**		**P**
	Conditions, **make operations** only..... :		P
	Type of product.....:		P
	utilization category ..... :		—
	Control voltage 25 times at 110% and 25 times at 85% for AC-3 and AC-4		P
	rated operational voltage Ue (V) .....:		—
	rated operational current Ie (A) or power (kW) .....:		—
	- test voltage U/Ue = 1,05 (V) .....:		—
	- test current I/Ie = ____ (A) .....:		—
	- power factor/time constant ..... :		—
	- on-time (ms) .....:		—
	- off-time (s) ..... :		—
	- number of make operations ..... :		P
	Behaviour and condition during and after the test:		P
	- no permanent arcing		P
	- no flash-over between poles		P
	- no blowing of the fusible element in the earth circuit		P
	- no welding of the contacts		P

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	- the contacts shall operate when the contactor or starter is switched by the applicable method of control		P
	Conditions, **make/break operations** only.....:		P
	Type of product.....:		P
	utilization category .....:		-
	rated operational voltage Ue (V) .....:		-
	rated operational current Ie (A) or power (kW) .....:		-
	For starters incorporated two contactors, 2 contactor shall be used with the follow sequence: Close A – open A – close B – open B- off period		-
	- test voltage U/Ue = 1,05 (V) .....:		—
	- test current I/Ie = ____ (A) .....:		—
	- power factor/time constant .....:		—
	- on-time (ms) .....:		—
	- off-time (s) .....:		—
	Characteristic of transient recovery voltage for AC-3 and AC-4 only:		P
	oscillatory frequency (kHz) .....:		—
	Measured oscillatory frequency (kHz) .....:		P
	Factory .....:		P
	Behaviour and condition during and after the test:		P
	- no permanent arcing		P
	- no flash-over between poles		P
	- no blowing of the fusible element in the earth circuit		P
	- no welding of the contacts		P
	- the contacts shall operate when the contactor or starter is switched by the applicable method of control		P
9.3.3.6	Operational performance capability:		P
	Type of product.....:		P
	utilization category .....:		—
	rated operational voltage Ue (V) .....:		—
	rated operational current Ie (A) or power (kW) .....:		—
	Conditions, make/break operations:		P

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	- test voltage U/Ue = 1,05 (V) .....:		—
	- test current I/Ie = (A) ..... :		—
	- power factor/time constant ..... :		—
	- on-time (ms) .....:		—
	- off-time (s) ..... :		—
	- number of make/break operations ..... :		P
	Characteristic of transient recovery voltage for AC-3 and AC-4 only:		P
	oscillatory frequency (kHz) ..... :		—
	Measured oscillatory frequency (kHz) .....:		P
	Factor y ..... :		P
	Behaviour and condition during and after the test:		P
	- no permanent arcing		P
	- no flash-over between poles		P
	- no blowing of the fusible element in the earth circuit		P
	- no welding of the contacts		P
	- the contacts shall operate when the contactor or starter is switched by the applicable method of control		P
8.3.3.4	Dielectric verification		P
	test voltage (2 Ui) for 1 min. (V) ..... :		P
	No flashover or breakdown		P
8.3.3.5	Leakage current equipment suitable for isolation		P
	test voltage (1,1 Ue) (V) ..... :		P
	Leakage current: ≤ 2 mA /pole ..... :		P
8.3.4	**TEST SEQUENCE III**		**P**
			P
	- Performance under short-circuit conditions (Clause 9.3.4)		**P**
			P
9.3.4	Performance under short-circuit conditions		P
	Contactors or starter and the associated SCPD, or combination or protected starter are subjected to tests 9.3.4.2.1 and 9.3.4.2.2.		P
	Maximum Ie and of maximum for AC-3 are covered		P

EN IEC 60947-4-1			
	Rated control supply voltage..... :		P
9.3.4.2.1	Test at de prospective current "r":		P
	Type of product.....:		P
	Test circuit, figure 9, 19, 11, 12.....:		P
	type of SCPD ..... :		—
	ratings of SCPD, co-ordination type 1 .....:		—
	ratings of SCPD, co-ordination type 2 .....:		—
	rated operational current Ie (A) AC-3 ..... :		—
	prospective current "r" (kA) (table 12).....:		—
	test voltage (V) .....:		—
	r.m.s. test current (A) .....:		—
	peak current (A) .....:		—
	power factor		P
	1. one breaking operation of SCPD with all the switching devices closed prior to the test I^2dt (kA^2s) .....:		—
	2. one breaking operation of SCPD by closing the contactor or starter on to the short-circuit .....:		—
	Behaviour of the equipment during the test		P
	Both types of co-ordination (all devices):		P
	A - the fault current has been successfully interrupted by the SCPD or the combination starter and the fuse or fusible element, or solid connection between the enclosure and supply shall not have melted		P
	B - the door or cover of the enclosure has not been blown open and it is possible to open the door or cover		P
	C - there is no damage to the conductors or terminals and the conductors have not been separated from the terminals		P
	D - there is no cracking or breaking of an insulating base to the extent that the integrity of mounting of a live part is impaired		P
	Both types of co-ordination (combination starters and protected starters only):		P

EN IEC 60947-4-1			
	E - the circuit breaker or the switch is capable of being opened manually by its operating means		P
	F - neither end of the SCPD is completely separated from its mounting means to an exposed conductive part		P
	G - if a circuit breaker with rated ultimate short-circuit breaking capacity less than the rated conditional short-circuit current assigned to the combination or protected starter is employed, the circuit breaker shall be tested to trip:		P
	1) circuit breaker with instantaneous trip relays or releases, at 120% of the trip current		P
	2) circuit breaker with overload relays or releases, at 250% of the rated current of the circuit breaker		P
	Type 1 co-ordination (all devices):		P
	H - there has been no discharge of parts beyond the enclosure. The starter may be inoperative after each operation		P
	Type 1 co-ordination (combination and protected starters only):		P
	I - dielectric verification test voltage (2 Ue) for 1 min (V) but not less than 1000V ..... :		—
	Type 2 co-ordination (all devices):		P
	J - no damage to the overload relay or other parts has occurred, except that welding of contactor or starter contacts is permitted, if they are easily separated without significant deformation		P
	K - the tripping of the overload relay shall be conform to the published tripping characteristics, before and after the test		P
	L - dielectric verification test voltage (2 Ue) for 5 sec but not less than 1000V ..... :		P
	Leakage current equipment suitable for isolation		P
	test voltage (1,1 Ue) (V) ..... :		P
	Leakage current: ≤ 2 mA /pole ..... :		P
8.3.4.2.2	Test at the rated conditional short-circuit current "Iq"		P

EN IEC 60947-4-1			
	Type of product.....:		P
	Test circuit, figure 9, 19, 11, 12.....:		P
	type of SCPD ..... :		—
	ratings of SCPD, co-ordination type 1 .....:		—
	ratings of SCPD, co-ordination type 2 .....:		—
	rated operational current Ie (A) AC-3 ..... :		—
	prospective current "Iq" (kA) .....:		—
	test voltage (V) .....:		—
	r.m.s. test current (A) .....:		—
	peak current (A) .....:		—
	power factor		P
	1. one breaking operation of SCPD with all the switching devices closed prior to the test I^2dt (A^2s) .....:		—
	2. one breaking operation of SCPD by closing the contactor or starter on to the short-circuit .....:		—
	3. one breaking operation of SCPD by closing the switching device on to the short-circuit .....:		—
	Behaviour of the equipment during the test		P
	Both types of co-ordination (all devices):		P
	A - the fault current has been successfully interrupted by the SCPD or the combination starter and the fuse or fusible element, or solid connection between the enclosure and supply shall not have melted		P
	B - the door or cover of the enclosure has not been blown open and it is possible to open the door or cover		P
	C - there is no damage to the conductors or terminals and the conductors have not been separated from the terminals		P
	D - there is no cracking or breaking of an insulating base to the extent that the integrity of mounting of a live part is impaired		P
	Both types of co-ordination (combination starters and protected starters only):		P

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	E - the circuit breaker or the switch is capable of being opened manually by its operating means		P
	F - neither end of the SCPD is completely separated from its mounting means to an exposed conductive part		P
	G - if a circuit breaker with rated ultimate short-circuit breaking capacity less than the rated conditional short-circuit current assigned to the combination or protected starter is employed, the circuit breaker shall be tested to trip:		P
	1) circuit breaker with instantaneous trip relays or releases, at 120% of the trip current		P
	2) circuit breaker with overload relays or releases, at 250% of the rated current of the circuit breaker		P
	Type 1 co-ordination (all devices):		P
	H - there has been no discharge of parts beyond the enclosure. The starter may be inoperative after each operation		P
	Type 1 co-ordination (combination and protected starters only):		P
	I - dielectric verification test voltage (2 Ue) for 1 min (V) but not less than 1000V ..... :		—
	Type 2 co-ordination (all devices):		P
	J - no damage to the overload relay or other parts has occurred, except that welding of contactor or starter contacts is permitted, if they are easily separated without significant deformation		P
	K - the tripping of the overload relay shall be conform to the published tripping characteristics, before and after the test		P
	L - dielectric verification test voltage (2 Ue) for 5 s but not less than 1000V ..... :		P
	Leakage current equipment suitable for isolation		-
	test voltage (1,1 Ue) (V) ..... :		-
	Leakage current: ≤ 2 mA /pole ..... :		P

	TEST SEQUENCE IV	**-**
	- Verification of ability to withstand overload currents: Clause 9.3.5 (applicable for contactors only)	**P**

8.3.5	Verification of ability to withstand overload currents		**P**
	Overload current withstand capability of contactors AC-3 and AC-4:		P
	ambient temperature (°C) ..... :		—
	rated operational current Ie (A) max. AC- 3 ..... :		—
	test current (Ie) (A) ..... :		—
	duration of test: 10 s ..... :		—
	After the test, the contactor shall be substantially in the same condition as before the test (visual inspection)		P

	TEST SEQUENCE V	**-**

	- Verification of mechanical properties of terminals: Clause 8.2.4 **- Verification of degrees of protection of enclosed contactors and starters (see annex C of part 1**	**P**

8.2.4	Verification of mechanical properties of terminals		P
		See construction	P
Annex C	Verification of degrees of protection of enclosed contactors and starters		P
		See construction	P

	TEST SEQUENCE Annex B	**-**

	- Mechanical durability B2 **Single 8 test** **Double 3 test** **- Electrical durability B3**	**P**

Annex B2	**Mechanical durability**		-
	Single 8 test		P
	Double 3 test		P
Annex B3	**Electrical durability**		-
			P

	TEST SEQUENCE Annex F	**-**

	Requirements for auxiliary contact linked with power contact (mirror contact)		**-**
			-

	TEST SEQUENCE EMC tests	**P**

	Immunity		P
	Emission		P

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5.2	MARKING		-
a)	The following data shall be marked on the circuit-breaker itself or on a name plate or nameplates attached to the circuit-breaker, and located in a place such that they are visible and legible when the circuit-breaker is installed.		-
	- rated current:		P
	- suitability for isolation, if applicable, with the symbol ^--"j y	Compliance	P
	- indication of the open and closed position: with O and I respectively, if symbols are used	Compliance	P
b)	Marking on equipment not needed to be visible after mounting:		-
	- manufacturer's name or trademark	Changcheng Electrical Group Zhejiang Technology Co., Ltd.	P
	- type designation or serial number	–	P
	- IEC 60947-2 if the manufacturer compliance with this standard.	IEC 60947-2	P
	- utilization category		P
	- rated operational voltage(s) Ue		P
	- Circuit-breaker for use in IT systems: Circuit-breaker for which all values of rated voltage have not been tested according to annex H or are not covered by such testing, shall be identified by the symbol® which shall be market on the circuit-breaker immediately following these values of rated voltage	Compliance	P
	- value (or range) of the rated frequency and/or the indication DC (or symbol)		P
	- rated service short-circuit breaking capacity. Ics		P
	- rated ultimate short-circuit breaking capacity. Icu		P
	- rated short-time withstand current, (lew) and associated short-time delay, for utilization category B	-	N/A
	- line and load terminals, unless their connection is immaterial	-	N/A
	- neutral pole terminals, if applicable, by the letter N	-	N/A
	- protective earth terminal, where applicable, by the symbol acc. 7.1.9.3 of part 1	-	N/A
	- ref. temperature for non-compensated thermal releases, if different from 30°C		P
c)	Marked on the circuit-breaker as specified in item b), or shall be made available in the manufacturer's published information:		-
	- rated short-circuit making capacity (Icm) (if higher than specified in 4.3.5.1	–	P
	- rated insulation voltage. (Ui) if higher than the maximum rated operational voltage)	–	P
	- rated impulse withstand voltage (Uimp), when	–	P

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	declared.		
	- pollution degree if other than 3	-	N/A
	- conventional enclosed thermal current (Ithe) if different from the rated current:	-	N/A
	- IP Code, where applicable:		P
	- minimum enclosure size and ventilation data (if any) to which marked ratings apply:	-	N/A
	- details of minimum distance between circuit-breaker and earthed metal parts for circuit-breaker intended for use without enclosure:	Compliance	P
	- r.m.s sensing if applicable, according to F.4.1.1	-	N/A
	- suitability for environment A or B		P
d)	The following data concerning the opening and closing devices of the circuit-breaker shall be placed either on their own nameplates or on the nameplate of the circuit- breaker:		-
	- rated control circuit voltage of the closing device, and rated frequency for AC:	-	N/A
	- rated control circuit voltage of the shunt release and/or of the under-voltage release, and rated frequency:	-	N/A
	- rated current of indirect over-current releases:	-	N/A
	- number and type of auxiliary contacts and kind of current, rated frequency (if AC) and rated voltages of the auxiliary switches, if different from those of the main circuit.		N/A
e)	Terminal shall be clearly and permanently identified in acc. with IEC 60445 and annex L:		-
	- line terminal	-	N/A
	- load terminal	-	N/A
	- neutral pole terminal "N"	-	N/A
	- protective earth terminal ®	-	N/A
	- terminal of coils (A/B)	-	N/A
7.1	CONSTRUCTION		
7.1.1	Withdrawable circuit-breaker	-	N/A
	In the disconnected position (main- and auxiliary circuits)		-
	Isolating distances for circuit-breaker suitable for isolating warranted:	-	N/A
	Mechanism fitted with a reliable indicating device with indicates the position of the isolating contacts.	-	N/A
	Mechanism fitted with interlocks witch only permit the isolating contacts to be separate or re-closed when main contacts are open	-	N/A
	Mechanism fitted with interlock witch only permit the main contacts to be closed when the isolating contacts are fully closed.	-	N/A
	Mechanism fitted with interlock witch only permit the main contacts to be closed when in disconnected position.	-	N/A
	The isolating distances between the isolating contacts cannot be inadvertently reduced.	-	N/A

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7.1.1.1	Resistance to abnormal heat and fire		P
7.1.2	Current-carrying parts and their connection	Compliance	P
7.1.3	Clearences and creepage distances:		-
	For circuit-breakers for which the manufacturer has declared a value of rated impulse withstand voltage. (Uimp.)		-
	Clearances distances:		-
	- Uimp is given as:	–	-
	- max. value of rated operational voltage to earth	–	-
	- nominal voltage of supply system:	-	-
	- overvoltage category:		-
	- pollution degree:		-
	- field-in or homogeneous:		-
	- minimum clearances (mm):		-
	- measured clearances (mm):		P
	Creepage distances:		-
	- rated insulation voltage Ui (V)		-
	- pollution degree		-
	- comparative tracking index (V)		-
	- material group		-
	Minimum creepage distances (mm)		-
	Measured creepage distances (mm)		P
7.1.4 parti	Actuator		-
7.1.4.1 part 1	Insulation		-
	The actuator of the equipment shall be insulated from the live parts for the rated insulation voltage and, if applicable, the rated impulse withstand voltage	Compliance	P
	If it is made of metal, it shall be capable of being satisfactorily connected to a protective conductor unless it is provided with additional reliable insulation		N/A
	If it is made of or covered by insulating material, any internal metal part, which might become accessible in the event of insulation failure, shall also be insulated from live parts for the rated insulation voltage	Compliance	P
7.1.4.2	Direction of movement		-
	The direction of operation for actuators of devices shall normally conform to IEC 60447.	Compliance	P
	Where devices cannot conform to these requirements, e.g. due to special applications or alternative mounting positions, they shall be clearly marked such that there is no doubt as to	Compliance	P

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	the "I" and "O" positions and the direction of operation		
7.1.5 parti	Indication of contact position		-
7.1.5.1 part 1	Indicating means		-
	When an equipment is provided with means for indicating the closed and open positions, these positions shall be unambiguous and clearly indicated	Compliance	P
	This is done by means of a position indicating device (see 2.3.18)	Compliance	P
	If symbols are used, they shall indicate the closed and open position respectively, in accordance with IEC 60417-2:		-
	- 60417-2-IEC-5007 1 On (power)	Compliance	P
	- 60417-2-IEC-5007 O Off (power)	Compliance	P
	For equipment operated by means of two pushbuttons, only the push-button designated for the opening operation shall be red or marked with the symbol "O"		N/A
	Red colour shall not be used for any other pushbutton	-	N/A
	The colours of other push-buttons, illuminated push-buttons and indicator lights shall be in accordance with IEC 60073	-	N/A
7.1.5.2 part 1	Indication by the actuator		
	When the actuator is used to indicate the position of the contacts, it shall automatically take up or stay, when released, in the position corresponding to that of the moving contacts; in this case, the actuator shall have two distinct rest positions corresponding to those of the moving contacts, but for automatic opening a third distinct position of the actuator may be provided		P
7.1.6	Additional safety requirements for equipment suitable for isolation		-
7.1.6.1	Additional constructional requirements for equipment suitable for isolation (Ue > 50 V):		-
	Equipment suitable for isolation shall provide in the open position an isolation distance in acc. with the requirements necessary to satisfy the isolating function. Indication of the main contacts shall be provide by one or more of the following means:		-
	- the position of the actuator	Compliance	P
	- a separate mechanical indicator	-	N/A
	- visibility of the moving contacts	-	N/A
	When means are provided or to lock the equipment in the open position, locking only be possible when contacts are in the open position	-	N/A
	Actuator front-plate fitted to the equipment in a manner witch ensures correct contact position indication and locking	-	N/A

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	The indicated open position is the only position in witch the specified isolation distances between the contacts is ensured.	Compliance	P
	- minimum clearances across open contacts (see Table XIII, Parti) (mm):		
	- measured clearances (mm):		P
	- test Uimp across gap (kV):		P
7.1.6.2	Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers:		
	auxiliary switch shall be rated according to IEC 60 947-5-1	-	N/A
	If equipment suitable for isolation is provided with an auxiliary switch for the purpose of electrical interlocking with contactor (s) or circuit-breaker(s) and intended to be used in motor circuits, the following requirements shall apply unless the equipment is rated for AC-23 utilization category		N/A
	The time interval between the opening of the contacts of the auxiliary switch and the contacts of the main poles shall be sufficient to ensure that the associated contactor or circuit-breaker interrupts the current before the main poles of the equipment open		N/A
	Unless otherwise stated in the manufacturer's technical literature, the time interval shall be not less than 20 ms when the equipment is operated according to the manufacturer" instructions		N/A
	Compliance shall be verified by measuring the time interval between the instant of opening of the auxiliary switch and the instant of opening of the main poles under no-load conditions when the equipment is operated according to the manufacturer's instructions		N/A
	During the closing operation the contacts of the auxiliary switch shall close after or simultaneously with the contacts of the main poles	-	N/A
	A suitable opening time interval may also be provided by an intermediate position (between the ON and OFF position) at which the interlocking contact(s) is (are) open and the main poles remain closed		N/A
7.1.6.3	Supplementary requirements for equipment provided with means for padlocking the open position:		-
	the locking means shall be designed in such a way that it cannot be removed with the appropriate padlock(s) installed	-	N/A
	Alternatively, the design may provide padlockable means to prevent access to the actuator	-	N/A
	test force F applied to the actuator in an attempt to operate to the closed position (N):	-	N/A
	rated impulse withstand voltage (kV):	-	N/A
	test Uimp on open main contacts at the test force	-	N/A

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7.1.7	Terminals		-
7.1.7.1	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength	Compliance	P
	Terminal connections shall be such that necessary contact pressure is maintained	Compliance	P
	Terminals shall be so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal	Compliance	P
	Terminal shall not allow the conductor to be displaced or to be displaced themselves in a manner detrimental to the operator of equipment and the insulation voltage shall not be reduced below the rated value	Compliance	P
7.1.7.2	Connection capacity		-
	type of conductors:		P
	minimum cross-sectional area of conductor (mm^2):	–	P
	maximum cross-sectional area of conductor (mm^2):	–	P
	number of conductors simultaneously connectable to the terminal:		P
7.1.7.3	Connection		
	terminals for connection to external conductors shall be readily accessible during installation	Compliance	P
	clamping screws and nuts shall not serve to fix any other component	Compliance	P
7.1.7.4	Terminal identification and marking		-
	terminal intended exclusively for the neutral conductor	-	N/A
	protective earth terminal	-	N/A
	other terminals	-	N/A
7.1.8 parti	Additional requirements for equipment provided with a neutral pole		
	When an equipment is provided with a pole intended only for connecting the neutral, this pole shall be clearly identified to that effect by the letter N (see 7.1.7.4.).		N/A
	A switched neutral pole shall break not before and shall make not after the other poles	-	N/A
	For equipment having a value of conventional thermal current (free air or enclosed, see 4.3.2.1 and 4.3.2.2) not exceeding 63 A, this value shall be identical for all poles		N/A
	For higher conventional thermal current values, the neutral pole may have a value of conventional thermal current different from that of the other poles, but not less than half that value or 63 A, whichever is the higher		N/A
	if a pole with a appropriate making and breaking capacity is used as a neutral pole, then all poles, incl. the neutral pole, shall operate substantially together.		N/A
7.1.9	Provisions for protective earthing		
7.1.9.1	The exposed conductive parts (e.g. chassis, framework and fixed parts of metal enclosures)		N/A

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	other than those which cannot constitute a danger shall be electrically interconnected and connected to a protective earth terminal for connection to an earth electrode or to an external protective conductor		
part 1	This requirement can be met by the normal structural parts providing adequate electrical continuity and applies whether the equipment is used on its own or incorporated in an assembly		N/A
	Exposed conductive parts are considered not to constitute a danger if they cannot be touched on large areas or grasped with the hand or if they are of small size (approximately 50 mm x 50 mm) or are so located as to exclude any contact with live parts		N/A
7.1.9.2 part 1	Protective earth terminal		-
	The protective earth terminal shall be readily accessible and so placed that the connection of the equipment to the earth electrode or to the protective conductor is maintained when the cover or any other removable part is removed		N/A
	The protective earth terminal shall be suitably protected against corrosion	-	N/A
	In the case of equipment with conductive structures, enclosures, etc., means shall be provided, if necessary, to ensure electrical continuity between the exposed conductive parts the equipment and the metal sheathing of connecting conductors		N/A
	The protective earth terminal shall have no other function, except when it is intended to be connected to a PEN conductor (see 2.1.1.5 - Note). In this case, it shall also have the function of a neutral terminal in addition to meeting the requirements applicable to the protective earth terminal		N/A
7.1.9.3	Protective earth terminal marking and identification		-
	The protective earth terminal shall be clearly and permanently identified by its marking	-	N/A
	The identification shall be achieved by colour (green-yellow mark) or by the notation PE, or PEN, as applicable, in accordance with IEC 60445, subclause 5.3, or, in the case of PEN, by a graphical symbol for use on equipment		N/A
	Graphical symbol to be used: 60417-2-IEC-5019® Protective earth (ground) in accordance with IEC 60417-2		N/A
7.1.10	Enclosure for equipment		-
7.1.10.1	Design		-
	The enclosure, when it is opened: all parts requiring access for installation and maintenance are readily accessible	-	N/A
	Sufficient space shall be provided inside the enclosure	-	N/A

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	The fixed parts of a metal enclosure shall be electrically connected to the other exposed conductive parts of the equipment and connected to a terminal which enables them to be earthed or connected to a protective conductor		N/A
	Under no circumstances shall a removable metal part of the enclosure be insulated from the part carrying the earth terminal when the removable part is in place		N/A
	The removable parts of the enclosure shall be firmly secured to the fixed parts by a device such that they cannot be accidentally loosened or detached owing to the effects of operation of the equipment or vibrations		N/A
	When an enclosure is so designed as to allow the covers to be opened without the use of tools, means shall be provided to prevent loss of the fastening devices		N/A
	If the enclosure is used for mounting push-buttons, it shall not be possible to remove the buttons from the outside of the enclosure	-	N/A
7.1.10.2	Insulation		
	If, in order to prevent accidental contact between a metallic enclosure and live parts, the enclosure is partly or completely lined with insulating material, then this lining shall be securely fixed to the enclosure		N/A
7.1.11	Degree of protection of enclosed equipment		-
	Degree of protection.		-
	Test for first characteristic.		-
	Test for first numeral		N/A
	Test for second characteristic		
	Test for second numeral		N/A
7.1.12 part 1	Conduit pull-out, torque and bending with metallic conduits		-
	Polymeric enclosures of equipment, whether integral or not, provided with threaded conduit entries, intended for the connection of extra heavy duty, rigid threaded metal conduits complying with IEC 60981, shall withstand the stresses occurring during its installation such as pull-out, torque, bending		N/A
7.2	Performance requirements		-
7.2.1	Operating condition		-
7.2.1.1	Closing		-
	For a circuit-breaker to be closed safely on to the making current corresponding to its rated short-circuit making capacity, it is essential that it should be operated with the same speed and the same firmness as during the type test for proving the short-circuit making capacity	Compliance	P
7.2.1.1.1	Dependent manual closing		-
	For a circuit-breaker having a dependent manual closing mechanism, it is not possible to assign a short-circuit making capacity rating irrespective of		N/A

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	the conditions of mechanical operation		
	Such a circuit-breaker should not be used in circuits having a prospective peak making current exceeding 10 kA	-	N/A
	However, this does not apply in the case of a circuit-breaker having a dependent manual closing mechanism and incorporating an integral fast- acting opening release which causes the circuit- breaker to break safely, irrespective of the speed and firmness with which it is closed on to prospective peak currents exceeding 10 kA; in this case, a rated short-circuit making capacity can be assigned		N/A
7.2.1.1.2	Independent manual closing		-
	A circuit-breaker having an independent manual closing mechanism can be assigned a short-circuit making capacity rating irrespective of the conditions of mechanical operation	Compliance	P
7.2.1.1.3	Dependent power closing		-
	At 110% of the rated control supply voltage, the closing operation performed on no-load shall not cause any damage to the circuit-breaker.	-	N/A
	At 85% of the rated control supply voltage, the closing operation shall be performed when the current established by the circuit-breaker is equal to its rated making capacity within the limits allowed by the operation of its relays or releases and, if a maximum time is stated for the closing operation, in a time not exceeding this maximum time limit.		N/A
7.2.1.1.4	Independent power closing		
	A circuit-breaker having an independent power closing operation can be assigned a rated short-circuit making capacity irrespective of the conditions of power closing		N/A
	Means for charging the operating mechanism, as well as the closing control components, shall be capable of operating in accordance with the manufacturer's specification		N/A
7.2.1.1.5	Stored energy closing		-
	Capable ensuring closing of the circuit-breaker in any condition between no-load and its rated making capacity	-	N/A
	- when the stored energy is retained within the circuit-breaker, a device is provided witch indicates when the storing mechanism is fully charged.	-	N/A
	- means for charging the operating mechanism and closing control components operates when auxiliary supply voltage is between 85% and 110% of the rated control supply voltage.		N/A
	- not possible for the moving contacts to move	-	N/A

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	from the open position, unless the charge is sufficient for satisfactory completion of the closing operation.		
	- by manually operated circuit-breaker is the direction of operation indicated,		N/A
	(not for circuit-breaker with an independent manual closing operation.)		N/A
	- For trip free circuit-breaker it shall not be possible to maintain the contacts in the touching or closed position when the release is in the position to trip the circuit-breaker.		N/A
7.2.1.2	Opening		-
7.2.1.2.1	Circuit-breakers which open automatically shall be trip-free and, unless otherwise agreed between manufacturer and user, shall have their energy for the tripping operation stored prior to the completion of the closing operation		N/A
7.2.1.2.2	Opening by undervoltage releases		-
7.2.1.3.a part 1	Operating voltage		-
	An under-voltage relay or release, when associated with a switching device, shall operate to open the equipment even on a slowly falling voltage within the range between 70% and 35% of its rated voltage		N/A
	An under-voltage relay or release shall prevent the closing of the equipment when the supply voltage is below 35% of the rated voltage of the relay or release; it shall permit closing of the equipment at supply voltages equal to or above 85% of its rated value		N/A
	Unless otherwise stated in the relevant product standard, the upper limit of the supply voltage shall be 110% of its rated value	-	N/A
7.2.1.3.b part 1	Operating time		-
	For a time-delay under-voltage relay or release, the time-lag shall be measured from the instant when the voltage reaches the operating value until the instant when the relay or release actuates the tripping device of the equipment		N/A
7.2.1.2.3	Opening by shunt releases	-	N/A
7.2.1.4 part 1	Limits of operation of shunt releases		-
	A shunt release for opening shall cause tripping under all operating conditions of an equipment when the supply voltage of the shunt release measured during the tripping operation remains between 70% and 110% of the rated control supply voltage and, if a.c., at the rated frequency		N/A
7.2.1.5 part 1	Limits of operation of current operated relays and released		-
	Limits of operation of current operated relays and releases shall be stated in the relevant product	-	N/A

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	standard		
7.2.1.2.4	Opening by over-current releases		-
a)	Opening under short-circuit conditions		-
	The short-circuit release shall cause tripping of the circuit-breaker with an accuracy of 20% of the tripping current value of the current setting for all values of the current setting of the short-circuit current release	Compliance	P
	Where necessary for over-current co-ordination the manufacturer shall provide information (usually curves) showing	-	N/A
	- maximum cut-off (let-through) peak current as a function of prospective current (r.m.s. symmetrical)	Compliance	P
	- *I2t* characteristics for circuit-breakers of utilization category A and, if applicable, B for circuit-breakers with instantaneous override (see not to 8.3.5)	Compliance	P
b)	Opening under overload conditions		-
1)	Instantaneous or definite time-delay operation	-	N/A
	The release shall cause tripping of the circuit-breaker with an accuracy of + 10% of the tripping current value of the current setting for all values of current setting of the overload release		N/A
2)	Inverse timer-delay operation		-
	At the reference temperature and at 1,05 times the current setting with the conventional non-tripping current, the opening release being energized on all poles, tripping shall not occur in less than the conventional time from the cold state, i.e. with the circuit-breaker at the reference temperature	Compliance	P
	Moreover, when at the end of the conventional time the value of current is immediately raised to 1,30 times the current setting, i.e. with the conventional tripping current, tripping shall then occur in less than the conventional time later	Compliance	P
	If a release is declared by the manufacturer as substantially independent of ambient temperature, the current values of table 6 shall apply within the temperature band declared by the manufacturer, within a tolerance of 0,3%/K	Compliance	P
	The width of the temperature band shall be at least 10 K on either side of the reference temperature	Compliance	P
7.2.4.2	Operational performance capability		
7.2.4.2 part 1	The operational performance off-load for which the tests are made with the control circuits energized and the main circuit not energized, in order to demonstrate that the equipment meets the operating conditions specified at the upper and lower limits of supply voltage and/or pressure specified for the control circuit during closing and opening operations	Compliance	P
	The operational performance on-load during	Compliance	P

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	which the equipment shall make and break the specified current corresponding, where relevant, to its utilization category for the number of operations stated in the relevant product standard		
8	TESTS		-
8.2.4	Mechanical properties of terminals		-
	Mechanical strength of terminals		-
	maximum cross-sectional area of conductor (mm2):	-	-
	diameter of thread (mm):		-
	torque (Nm):		-
	5 times on 2 separate clamping units Nm		P
	Testing for damage to and accidental loosening of conductor (flexion test)		-
	conductor of the smallest cross-sectional area (mm2):	-	-
	number of conductor of the smallest cross section :	-	-
	diameter of bushing hole (mm):	-	-
	height between the equipment and the platen :	-	-
	mass at the conductor(s) (kg):	-	-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit	-	N/A
	Pull-out test		-
	force (N):		-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	-	N/A
	conductor of the largest cross-sectional area (mm2):	-	-
	number of conductor of the largest cross section :	-	-
	diameter of bushing hole (mm):	-	-
	height between the equipment and the platen :	-	-
	mass at the conductor(s) (kg):	-	-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit	-	N/A
	Pull-out test		-
	force (N):	-	-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	-	N/A
	conductor of the largest and smallest cross-sectional area (mm2):	-	-
	number of conductor of the smallest cross section, number of conductor of the largest cross section :	-	-
	diameter of bushing hole (mm):	-	-
	height between the equipment and the platen :	-	-
	mass at the conductors) (kg):	-	-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit	-	N/A
	Pull-out test		-
	force (N):	-	-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	-	N/A

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8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS		-
8.3.3.1	Tripping limits and characteristic		-
8.3.3.1.2	Opening under short-circuit conditions		-
	Manufacturer's name or trademark	Changcheng Electrical Group Zhejiang Technology Co., Ltd.	-
	Type designation or serial number	–	-
	Sample no:	–	-
	Rated operational voltage: Ue (V)		-
	Rated current: In (A)		-
	Ambient temperature 10-40 °C :		P
	Value of the tripping current declared by the manufacturer for a single pole, at witch value they shall operate.	–	P
	Range of adjustable setting current. (A)	–	P
	Time delay stated by the manufacturer, in the case of definite time delay releases.	-	N/A
	Test current: 80% of the rated, or minimum adjustable setting current: (A)		P
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:		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/A
	Test current: 80% of the maximum adjustable setting current: (A)		P
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:		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/A
	Test current: 120% of the rated, or minimum adjustable setting current: (A)		P
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:		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/A
	Test current: 120% of the maximum adjustable setting current: (A)		P
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:		P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay		N/A

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	releases: L1-L2: L1-L3: L2-L3:		
	Test current: tripping current declared for single pole operation (A)		P
	Operating time: < 20 ms in case of instantaneous release: L1: L2: L3:		P
	Operating time: < twice time delay stated by manufacturer in case of definite time delay releases L1: L2: L3:		N/A
8.3.3.1.3	Opening under overload conditions		-
a)	Instantaneous or definite time-delay releases		-
	Manufacturer's name or trademark	-	-
	Type designation or serial number	-	-
	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 witch 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
	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	-	N/A

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	releases		
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.	-	N/A
b)	Inverse time delay releases		-
	Manufacturer's name or trademark	Changcheng Electrical Group Zhejiang Technology Co., Ltd.	-
	Type designation or serial number	–	-
	Sample no:	–	-
	Rated operational voltage: Ue (V)		-
	Rated current: In (A)	–	-
	For releases dependent of ambient air temperature: Reference temperature		P
	Test ambient temperature (°C)		P
	If test made at a difference ambient temperature: Acc. Manufacturer's correction temperature/current data:		P
	Range of adjustable setting current: (A)		P
	For releases independent of ambient temperature: Test made at 30°C and/or at 20/40°C	-	N/A
	Test ambient air temperature:	-	N/A
	Releases, dependent of ambient air temperature: Reference temperature (°C)		P
	Releases, independent of ambient air temperature: at 30°C	-	N/A
	Test current: 105% of the rated, or minimum adjustable setting current: (A)		P
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		P
	Test current: 130% of the rated, or minimum adjustable setting current: (A)		P
	Conventional tripping time: <1 h when In < 63A, <2h when In > 63 A		P
	Test current: 105% of the maximum adjustable setting current: (A)		P
	Conventional non-tripping time: 1 h when In < 63A, 2h when In > 63 A		P
	Test current: 130% of the maximum adjustable setting current: (A)		P
	Conventional tripping time: <1 h when In < 63A, <2h when In > 63 A		P
	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
	Conventional tripping time: <1 h when In < 63A, <2h when In > 63 A	-	N/A

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	Test current: 105% of the maximum adjustable setting current: (A)	-	N/A
	Conventional non-tripping time: 1 h when In < 63A, 2h when In > 63 A	-	N/A
	Test current: 130% of the maximum adjustable setting current: (A)	-	N/A
	Conventional tripping time: <1 h 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, independent of ambient air temperature: at 30°C	-	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)		P
	Tripping time acc. Time/current characteristic of the releases conform to the curves provided by the manufacturer, (within the stated tolorances)		P
	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 tolorances)	-	N/A
8.3.3.1.4	Additional test for definite time-delay releases		-
a)	Time delay		-
	Test is made at a current equal to 1,5 times the current setting		-
	overload releases: (all phase poles loaded)	-	N/A
	short-circuit releases:		N/A
	two poles in series carrying the test current, using successively all possible combinations of poles having a short-circuit release.		-
	Test current: 1,5 times of the rated, or minimum adjustable setting current: (A)	-	N/A
	Ooeratina time, overload releases: *(s)*	-	N/A
	Time-delay: between the limits stated by the manufacturer:	-	N/A
	Ooeratina time, short-circuit releases: (s) L1-L2: L1-L3: L2-L3:	-	N/A
	Time-delay: between the limits stated by the	-	N/A

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	manufacturer:		
	Test current: 1,5 times of the maximum adjustable setting current: (A)	-	N/A
	Operatinq time, overload releases: (s)	-	N/A
	Time-delay: between the limits stated by the manufacturer:	-	N/A
	Ooeratinq time, short-circuit releases: (s) L1-L2: L1-L3: L2-L3:	-	N/A
	Time-delay: between the limits stated by the manufacturer:	-	N/A
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.		-
	overload releases: (all phase poles loaded)	-	N/A
	short-circuit releases: two poles in series carrying the test current, using successively all possible combinations of poles having a short-circuit release.		N/A
	Test current: 1,5 times of the rated, or minimum adjustable setting current: (A)	-	N/A
	Time interval: non-tripping duration stated by the manufacturer: (s)	-	N/A
	Ooeratina time, overload releases: the circuit-breaker does not trip:	-	N/A
	Ooeratina time, short-circuit releases: the circuit-breaker does not trip: L1-L2: L1-L3: L2-L3:		N/A
	Test current: 1,5 times of maximum adjustable setting current: (A)	-	N/A
	Time interval: non-tripping duration stated by the manufacturer: (s)	-	N/A
	Ooeratina time, overload releases: the circuit-breaker does not trip:	-	N/A
	Ooeratina time, short-circuit releases: the circuit-breaker does not trip: L1-L2: L1-L3: L2-L3:		N/A
	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.		-
	Test current: of the rated, or minimum adjustable setting current: (A)	-	N/A
	Time interval: twice the delay-time stated by the manufacturer: (s)	-	N/A
	Ooeratinq time, overload releases: the circuit-breaker does not trip:	-	N/A
	Ooeratinq time, short-circuit releases: the circuit-breaker does not trip: L1-L2: L1-L3: L2-L3:		N/A
	Test current: maximum adjustable setting current: (A)	-	N/A
	Ooeratinq time, overload releases: the circuit-	-	N/A

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	breaker does not trip:		
	Ooeratina time, short-circuit releases: the circuit-breaker does not trip: L1-L2: L1-L3: L2-L3:		N/A
8.3.3.2	Test of dielectric properties, impulse withstand voltage (Uimp indicated):		-
8.3.3.4 parti	The 1 ,2/50|JS impulse voltage shall be applied five times for each polarity at intervals of 1s minimum		-
	- rated impulse withstand voltage (kV):		P
	- sea level of the laboratory:		P
	- test Uimp main circuits (kV):		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):		P
a)	Application of test voltage		-
	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.	Compliance	P
	ii) Between all terminals 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.	compliance	P
	iii) Between each control and auxiliary circuit not normally connected to the main circuit and: - the main circuit	Compliance	P
	- other circuits	-	N/A
	- exposed conductive parts	-	N/A
	- enclosure of mounting plate	-	N/A
	iv) equipment suitable for isolation	Compliance	P
	equipment not suitable for isolation	-	N/A
	- no unintentional disruptive discharge during the test's	Compliance	P
	Test of dielectric properties, dielectric withstand voltage (Uimp not indicated):		-
	- rated insulation voltage (V) :	-	N/A
	- main circuits, test voltage for 1 min (V)	-	N/A
	- 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.	-	N/A
	- between each pole and all the other poles connected to the frame of the circuit-breaker	-	N/A
2)	with the circuit-breaker in the open position and, additionally, in the tripped position, if any.	-	N/A
	- between all live parts of all poles connected together and the frame of the circuit-breaker.	-	N/A
	- between the terminals of one side connected together and the terminals of the other side connected together.	-	N/A

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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 test's	-	N/A
8.3.3.2	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.		N/A
8.3.3.3	Mechanical operation and operational performance capability		-
8.3.3.3.2	Construction and mechanical operation		-
a)	Construction		-
	A withdrawable circuit-breaker shall be checked for the requirements stated in 7.1.1	-	N/A
	A circuit-breaker with stored energy operation shall be checked for compliance with 7.2.1.1.5, regarding the charge indicator and the direction of operation of manual energy storing		N/A
b)	Mechanical operation		-
	A circuit-breaker with dependent power operation shall comply with the requirements stated in 7.2.1.1.3	-	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 7.2.1.5 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
	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
c)	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

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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 8.3.3.6	-	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
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
d)	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 whren 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
8.3.3.3.3	Operational performance capability without current.		-
	Type designation or serial number	_	-

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	Sample no:	–	-
	Rated current In (A)		-
	Rated operational voltage: Ue (V)		-
	Rated control supply voltage of closing mechanism: Uc (V)	-	-
	Rated control supply voltage of shunt releases: Uc(V)	-	-
	Rated control supply voltage undervoltage releases: Uc (V)	-	-
	Ambient temperature 10-40 °C :		P
	Number of operating cycles per hour		P
	Number of cycles without current (total) (closing mechanism energized at the rated Uc)	-	N/A
	Number of cycles without current (without releases)		P
	Applied voltage: closing mechanism (V)	-	N/A
	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 cycles without applied voltage at the undervoltage releases. (Shall not possible to close the circuit-breaker.)	-	N/A
	Applied voltage: undervoltage releases (V)	-	N/A
	Electrical components do not exceed the value indicated in tab. 7.	Compliance	P
8.3.3.3.4	Operational performance capability with current.		-
	Rated current: In (A)		-
	Maximum rated operational voltage: Ue (V)		-
	Conductor cross-sectional area (mm^2):	–	P
	Number of operating cycles per hour	–	P
	Number of cycles with current (total) (closing mechanism energized at the rated Uc)	–	P
	Applied voltage: closing mechanism (V)		P
	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:		
	- test voltage U/Ue = 1,0 (V) L1: L2:		P
	L3:		
	- test current I/Ie = 1,0 (A)L1: L2:		P
	L3:		

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	- power factor/time constant:		P
	- frequency: (Hz)		P
	- on-time (ms):		P
	- off-time (s):		P
	Electrical components do not exceed the value indicated in tab. 7.	Compliance	P
8.3.3.3.5	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
8.3.3.4	Overload performance		-
	this test applies to circuit-breaker of rated current up to and including 630 A		-
	Type designation or serial number		-
	Sample no:	–	-
	Rated current In (A)		-
	Rated operational voltage: Ue (V)		-
	Rated control supply voltage of closing mechanism: Uc (V)	-	-
	Rated control supply voltage of shunt releases: Uc (V)	-	-
	Rated control supply voltage undervoltage releases: Uc (V)	-	-
	Ambient temperature 10-40 °C :		P
	Number of operating cycles per hour	–	P
	Maximum rated operational voltage: Ue (V)		P
	Number of operating cycles per hour		N/A
	Number of cycles with current (total) (closing mechanism energized at the rated Uc)	-	N/A
	Applied voltage: closing mechanism (V)	-	N/AP
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload/short-circuit settings at maximum.	-	N/A
	Conditions, overload operations:		-
	- test voltage U/Ue = 1,05 (V) L1: L2: L3:		P
	- test current AC/DC: I/Ie = 6,0/2.5 (A) L1: L2: L3:		P
	- power factor/time constant:		P
	- Number of cycles manually opened: 9		P
	- Number of cycles automatically opened by an overload release: 3		P
	- frequency: (Hz)		P
	- on-time max 2s:		P
8.3.3.5	Verification of dielectric withstand		-
	- equal to twice the rated operational voltage with a minimum of		P
	- no breakdown or flashover	No	P

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	- the leaking current for circuit-breaker suitable for isolation: (<2mA/1.1 Ue)		P
8.3.3.6	Verification of temperature-rise		
	- the values of temperature-rise do not exceed the those specified in tab. 7.		P
	Temperature rise of main circuit terminals < 80 K (K):		P
	conductor cross-sectional area (mm^2):		P
	test current Ie (A):		P
8.3.3.7	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)		P
	Conventional tripping time: <1 h when In < 63A, <2h when In > 63 A		P
8.3.3.8	Verification of undervoltage and shunt releases		-
	Circuit-breaker fitted with undervoltage releases. The release shall not operate at 70% of the minimum control supply voltage -		N/A
	and shall operate at 35% of the maximum control supply voltage.	-	N/A
	Circuit-breaker fitted with shunt releases. The release shall operate at 70% of the minimum rated control supply voltage. Test made at room temperature.		N/A
8.3.3.9	Verification of the main contact position for circuit-breakers for isolation		-
	actuating force for opening (N).....		-
	test force with blocked main contacts for 10 s (N).:		-
	Dependent power operation		-
	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		-
	Three attempts to operate the equipment by the stored energy.	-	N/A
	Lockability 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	Compliance	P
8.3.4	TEST SEQUENCE II (Ics):		P
8.3.4.1	Test of rated service short-circuit breaking capacity		-
	Test sequence of operation: O -1 - CO -1 - CO		-
	Type designation or serial number	-	-
	Sample no:	-	-
	Rated current: In (A)	-	-
	Rated operational voltage: Ue (V)	-	-
	Rated service short-circuit breaking capacity: (kA)	-	-
	Rated control supply voltage of closing mechanism: Uc (V)	-	-
	Rated control supply voltage of shunt release: Uc (V)	-	-
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time	-	N/A

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	settings at maximum.		
	closing mechanism energized with 85% at the rated Uc: (V)	-	N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.	-	N/A
	Test made in free air:	-	N/A
	Distances of the metallic screen's: (all sides)	-	N/A
	The characteristics of the metallic screen:		
	- woven wire mesh	-	N/A
	- perforated metal	-	N/A
	- expanded metal	-	N/A
	- ratio hole area/total area: 0,45-0,65	-	N/A
	- size of hole: <30mm^2	-	N/A
	- finish: bare or conductive plating	-	N/A
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:	-	N/A
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long	-	N/A
	Circuit is earthed at: (load-star- or supply-star point)	-	N/A
	Conductor cross-sectional area (mm^2):	-	N/A
	If terminals unmarked: line connected at: (underside/upside)	-	N/A
	Tightening torques: (Nm)	-	N/A
	Test sequence of operation: O -1 - CO -1 - CO		-
	- test voltage U/Ue = 1,05 (V) - L1: - L2:	-	N/A
	- L3:		-
	- r.m.s. test current AC/DC: (A) - L1:		N/A
	- L2:		-
	- L3:		-
	power factor/time constant:	-	N/A
	- Factor "n"	-	N/A
	- peak test current (A):	-	N/A
	Test sequence "O"		-
	- max. let-through current: (kApeak) L1: L2:	-	N/A
	L3:		-
	-Joule integral I^2dt(A^2s) L1: L2:	-	N/A
	L3:		-
	Pause, t: (min)	-	N/A
	Test sequence "CO"		
	- max. let-through current: (kApeak) L1: L2:	-	N/A
	L3:		-
	-Joule integral I^2dt(A^2s)	-	N/A

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	L1: L2:		
	L3:		-
	Pause, t: (min)	-	N/A
	Test sequence "CO"		
	max. let-through current: (kApeak) L1: L2:	-	N/A
	L3:		-
	Joule integral $I^2dt(A^2s)$ L1: L2:	-	N/A
	L3:		-
	Melting of the fusible element	-	N/A
	Holes in the PE-sheet for test sequence "O"	-	N/A
	Cracks observed	-	N/A
8.3.4.2	Operational performance capability with current.		-
	Rated current: In (A)	-	-
	Maximum rated operational voltage: Ue (V)	-	-
	Conductor cross-sectional area (mm^2):	-	-
	Number of operating cycles per hour	-	N/A
	Number (5% of the number given in columm 4, tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	-	N/A
	Applied voltage: closing mechanism (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:		-
	- test voltage U/Ue = 1,0 (V) L1: L2:	-	N/A
	L3:		-
	-testcurrent I/Ie = 1,0 (A) L1: L2:	-	N/A
	L3:		-
	- power factor/time constant:	-	N/A
	- frequency: (Hz)	-	N/A
	- on-time (ms):	-	N/A
	- off-time (s):	-	N/A
	Electrical components do not exceed the value indicated in tab. 7.	-	N/A
8.3.4.3	Verification of dielectric withstand		-
	- equal to twice the rated operational voltage with a minimum of	-	N/A
	- no breakdown or flashover	-	N/A
	- the leaking current for circuit-breaker suitable for isolation: (<2mA/1.1 Ue)	-	N/A
8.3.4.4	Verification of temperature-rise		-
	- the values of temperature-rise do not exceed the those specified in tab. 7.	-	N/A

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	Temperature rise of main circuit terminals. < 80 K (K):	-	N/A
	conductor cross-sectional area (mm^2):	-	N/A
	test current Ie (A):	-	N/A
8.3.4.5	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: <1 h when In < 63A, <2h when In > 63 A	-	N/A
8.3.4	TEST SEQUENCE II/III (Ics=Icu):		-
8.3.4.1	Test, of rated service short-circuit breaking capacity		-
	Test sequence of operation: O -1 - CO -1 - CO		-
	Type designation or serial number		-
	Sample no:	–	-
	Rated current: In (A)		-
	Rated operational voltage: Ue (V)		-
	Rated service short-circuit breaking capacity: (kA)		-
	Rated control supply voltage of closing mechanism: Uc (V)	-	-
	Rated control supply voltage of shunt release: Uc (V)	-	-
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Compliance	P
	closing mechanism energized with 85% at the rated Uc: (V)	-	N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.	Compliance	P
	Test made in free air:	Compliance	P
	Distances of the metallic screen's: (all sides)		P
	The characteristics of the metallic screen:		
	- woven wire mesh	-	N/A
	- perforated metal	Compliance	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	Compliance	P
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:	-	N/A
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long	Compliance	P
	Circuit is earthed at: (load-star- or supply-star point)		P
	Conductor cross-sectional area (mm^2):	–	P
	If terminals unmarked: line connected at: (underside/upside)		P
	Tightening torques: (Nm)		P
	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		-

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	pole singly.		
	Time specified by the manufacturer:	–	P
	Operation time: (s) L1: L2:		P
	L3:		-
	Test sequence of operation: O -1 - CO -1 - CO		-
	test voltage U/Ue = 1,05 (V) L1: L2:		P
	L3:		-
	r.m.s. test current AC/DC: (A) L1:		P
8.3.5.1	L2:		-
	L3:		-
	power factor/time constant:		P
	- Factor "n"		P
	- peak test current (A):		P
	Test sequence "O"		
	max. let-through current: (kApeak) L1: L2:		P
	L3:		-
	-Joule integral $I^2dt(A^2s)$		-
	L1:		P
	L2:		-
	L3:		-
	Pause, t: (min)		P
	Test sequence "CO"		-
	max. let-through current: (kApeak) L1: L2:		P
	L3:		
	Joule integral $I^2dt(A^2s)$ L1: L2:		P
	L3:		-
	Pause, t: (min)		P
	Test sequence "CO		
	- max. let-through current: (kApeak) L1: L2:		P
	L3:		
	- Joule integral $I^2dt(A^2s)$ L1: L2:		P
	L3:		-
	Melting of the fusible element	No	P
	Holes in the PE-sheet for test sequence "O"	No	P
	Cracks observed	No	P
8.3.4.2	Operational performance capability with current.		-

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	Rated current: In (A)		-
	Maximum rated operational voltage: Ue (V)		-
	Conductor cross-sectional area (mm^2):	–	-
	Number of operating cycles per hour		P
	Number (5% of the number given in columm 4, tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)		P
	Applied voltage: closing mechanism (V)		P
	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:		-
	- test voltage U/Ue = 1,0 (V) L1: L2: L3:		P
	-testcurrent I/Ie = 1,0 (A) L1: L2: L3:		P
	- power factor/time constant:		P
	- frequency: (Hz)		P
	- on-time (ms):		P
	- off-time (s):		P
	Electrical components do not exceed the value indicated in tab. 7.	-	N/A
8.3.4.3	Verification of dielectric withstand		-
	- equal to twice the rated operational voltage with a minimum of		P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA/1,1 Ue)		P
8.3.4.4	Verification of temperature-rise		-
	- the values of temperature-rise do not exceed the those specified in tab. 7.		P
	Temperature rise of main circuit terminals. < 80 K (K):		P
	conductor cross-sectional area (mm^2):		P
	test current Ie (A):		P
8.3.4.5	Verification of overload releases		-
	Test current: 1,45 times the value of their current setting at the reference temperature: (A)		P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		P
8.3.5.4	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:	–	P

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	- Operation time: (s) L1: L2: L3:		P
8.3.4	TEST SEQUENCE II/III (Ics=Icu):		-
8.3.4.1	Test of rated service short-circuit breaking capacity		-
	Test sequence of operation: O -1 - CO -1 - CO		-
	Type designation or serial number		-
	Sample no:	–	-
	Rated current: In (A)	–	-
	Rated operational voltage: Ue (V)		-
	Rated service short-circuit breaking capacity: (kA)	–	-
	Rated control supply voltage of closing mechanism: Uc (V)	-	-
	Rated control supply voltage of shunt release: Uc (V)	-	-
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Compliance	P
	closing mechanism energized with 85% at the rated Uc: (V)	-	N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.	Compliance	P
	Test made in free air:	Compliance	P
	Distances of the metallic screen's: (all sides)		P
	The characteristics of the metallic screen:		
	- woven wire mesh	-	N/A
	- perforated metal	Compliance	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	Compliance	P
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:	-	N/A
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long	Compliance	P
	Circuit is earthed at: (load-star- or supply-star point)		P
	Conductor cross-sectional area (mm^2):	–	P
	If terminals unmarked: line connected at: (underside/upside)		P
	Tightening torques: (Nm)		P
	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		-
8.3.5.1	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:	–	P
	- Operation time: (s)		P

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	L1:		
	L2:		-
	L3:		-
	Test sequence of operation: O -1 - CO -1 - CO		-
	- test voltage U/Ue = 1,05 (V) L1: L2:		P
	L3:		-
	- r.m.s. test current AC/DC: (A) L1:		P
	L2:		-
	L3:		-
	power factor/time constant:		P
	- Factor "n"		P
	- peak test current (A):		P
	Test sequence "O"		
	- max. let-through current: (kApeak) L1: L2:		P
	L3:		-
	- Joule integral $I^2dt(A^2s)$ L1: L2:		P
	L3:		-
	Pause, t: (min)		P
	Test sequence "CO"		
	- max. let-through current: (kApeak) L1: L2:		P
	L3:		-
	- Joule integral $I^2dt(A^2s)$ L1: L2:		P
	L3:		-
	Pause, t: (min)		P
	Test sequence "CO"		
	- max. let-through current: (kApeak) L1: L2: L3:		P
	-Joule integral I2dt(A2s) L1: L2: L3:		P
	Melting of the fusible element	No	P
	Holes in the PE-sheet for test sequence "O"	No	P
	Cracks observed	No	P
8.3.4.2	Operational performance capability with current.		-
	Rated current: In (A)	-	-
	Maximum rated operational voltage: Ue (V)	-	-
	Conductor cross-sectional area (mm2):	-	-
	Number of operating cycles per hour	-	N/A
	Number (5% of the number given in columm 4, tab. 8) of cycles with current (total)	-	N/A

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	(closing mechanism energized at the rated Uc)		
	Applied voltage: closing mechanism (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:		-
	- test voltage U/Ue = 1,0 (V).....L1: .....L2: L3:	-	N/A
	-testcurrent I/Ie = 1.0(A)..... L1: .....L2: L3:	-	N/A
	- power factor/time constant:	-	N/A
	- frequency: (Hz)	-	N/A
	- on-time (ms):	-	N/A
	- off-time (s):	-	N/A
	Electrical components do not exceed the value indicated in tab. 7.	-	N/A
8.3.4.3	Verification of dielectric withstand		-
	- equal to twice the rated operational voltage with a minimum of		P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA/1,1 Ue)		P
8.3.4.4	Verification of temperature-rise		
	- the values of temperature-rise do not exceed the those specified in tab. 7.	-	N/A
	Temperature rise of main circuit terminals. < 80 K (K):	-	N/A
	conductor cross-sectional area (mm^2):	-	N/A
	test current Ie (A):	-	N/A
8.3.4.5	Verification of overload releases		
	Test current: 1,45 times the value of their current setting at the reference temperature: (A)		P
	Conventional tripping time: <1 h when In < 63A, <2h when In > 63 A		P
8.3.5.4	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:	–	P
	- Operation time: (s) .....L1: ..... L2: L3:		P
8.3.4	TEST SEQUENCE II/III (Ics=Icu):		-
8.3.4.1	Test of rated service short-circuit breaking capacity		-
	Test sequence of operation: O -1 - CO -1 - CO		-
	Type designation or serial number		-
	Sample no:	–	-
	Rated current: In (A)	-	-
	Rated operational voltage: Ue (V)		-

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	Rated service short-circuit breaking capacity: (kA)		-
	Rated control supply voltage of closing mechanism: Uc (V)	-	-
	Rated control supply voltage of shunt release: Uc (V)	-	-
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Compliance	P
	closing mechanism energized with 85% at the rated Uc: (V)	-	N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.	Compliance	P
	Test made in free air:	Compliance	P
	Distances of the metallic screen's: (all sides)		P
	The characteristics of the metallic screen:		-
	- woven wire mesh	-	N/A
	- perforated metal	Compliance	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	Compliance	P
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:	-	N/A
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long	Compliance	P
	Circuit is earthed at: (load-star- or supply-star point)	Load-star	P
	Conductor cross-sectional area (mm^2):		P
	If terminals unmarked: line connected at: (underside/upside)		P
	Tightening torques: (Nm)		P
8.3.5.1	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:	–	P
	- Operation time: (s) .....L1: L2:		P
	..... L3:		-
	Test sequence of operation: O -1 - CO -1 - CO		-
	- test voltage U/Ue = 1,05 (V).....L1: L2:		P
	..... L3:		
	- r.m.s. test current AC/DC: (A) L1:		P
	..... .L2:		-
	....L3:		-
			-
	power factor/time constant:		P
	- Factor "n"		P
	Conditions, make/break operations:		-

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	- test voltage U/Ue = 1,0 (V) L1: L2: L3:		P
	-test current I/Ie = 1.0(A) L1: L2: L3:		P
	- power factor/time constant:		P
	- frequency: (Hz)		P
	- on-time (ms):		P
	- off-time (s):		P
	Electrical components do not exceed the value indicated in tab. 7.	-	N/A
8.3.4.3	Verification of dielectric withstand		-
	- equal to twice the rated operational voltage with a minimum of		P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA/1,1 Ue)		P
8.3.4.4	Verification of temperature-rise		
	- the values of temperature-rise do not exceed the those specified in tab. 7.	See Remarks	P
	Temperature rise of main circuit terminals. < 80 K (K):		P
	conductor cross-sectional area (mm^2):		P
	test current Ie (A):		P
8.3.4.5	Verification of overload releases		
	Test current: 1,45 times the value of their current setting at the reference temperature: (A)		P
	Conventional tripping time: <1 h when In < 63A, <2h when In > 63 A		P
8.3.5.4	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:	–	P
	- Operation time: (s) L1: L2: L3:		P
8.3.4	TEST SEQUENCE II/III (Ics=Icu):		-
8.3.4.1	Test of rated service short-circuit breaking capacity		-
	Test sequence of operation: O -1 - CO -1 - CO		
	Type designation or serial number		-
	Sample no:	–	-
	Rated current: In (A)		-
	Rated operational voltage: Ue (V)		-
	Rated service short-circuit breaking capacity: (kA)	–	-
	Rated control supply voltage of closing	-	-

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	mechanism: Uc (V)		
	Rated control supply voltage of shunt release: Uc (V)	-	-
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Compliance	P
	closing mechanism energized with 85% at the rated Uc: (V)	-	N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.	Compliance	P
	Test made in free air:	Compliance	P
	Distances of the metallic screen's: (all sides)		P
	The characteristics of the metallic screen:		
	- woven wire mesh	-	N/A
	- perforated metal	Compliance	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	Compliance	P
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:	-	N/A
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long	Compliance	P
	Circuit is earthed at: (load-star- or supply-star point)		P
	Conductor cross-sectional area (mm^2):	–	P
	If terminals unmarked: line connected at: (underside/upside)		P
	Tightening torques: (Nm)	–	P
8.3.5.1	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:	–	P
	- Operation time: (s) L1: L2:		P
	L3:		-
	Test sequence of operation: O -1 - CO -1 - CO		-
	- test voltage U/Ue = 1,05 (V).....L1: L2:		P
	L3:		-
	- r.m.s. test current AC/DC: (A) L1:		P
	L2:		-
	L3:		-
	power factor/time constant:		P
	- Factor "n"		P
	- peak test current (A):		P
	Test sequence "O"		-
	- max. let-through current: (kApeak)		P

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	L1: L2:		
	L3:		
	-Joule integral $I^2dt(A^2s)$.....L1: L2:		P
	L3:		-
	Pause, t: (min)		P
	Test sequence "CO"		-
	- max. let-through current: (kApeak) L1: L2:		P
	L3:		
	Joule integral $I^2dt(A^2s)$ L1: L2:		P
	L3:		
	Pause, t: (min)		P
	Test sequence "CO"		
	- max. let-through current: (kApeak) L1: L2:		P
	L3:		
	- Joule integral $I^2dt(A^2s)$ L1: L2: L3:		P
	Melting of the fusible element	No	P
	Holes in the PE-sheet for test sequence "O"	No	P
	Cracks observed	No	P
8.3.4.2	Operational performance capability with current.		-
	Rated current: In (A)		-
	Maximum rated operational voltage: Ue (V)		-
	Conductor cross-sectional area (mm^2):		-
	Number of operating cycles per hour		P
	Number (5% of the number given in columm 4, tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)		P
	Applied voltage: closing mechanism (V)		P
	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:		
	- test voltage U/Ue = 1,0 (V) L1: L2: L3:		P
	-testcurrent I/Ie = 1,0 (A) L1: L2: L3:		P
	- power factor/time constant:		P

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	- frequency: (Hz)		P
	- on-time (ms):		P
	- off-time (s):		P
	Electrical components do not exceed the value indicated in tab. 7.	-	N/A
8.3.4.3	Verification of dielectric withstand		-
	- equal to twice the rated operational voltage with a minimum of		P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA/1,1 Ue)		P
8.3.4.4	Verification of temperature-rise		
	- the values of temperature-rise do not exceed the those specified in tab. 7.		P
	Temperature rise of main circuit terminals. < 80 K (K):		P
	conductor cross-sectional area (mm^2):		P
	test current Ie (A):		P
8.3.4.5	Verification of overload releases		
	Test current: 1,45 times the value of their current setting at the reference temperature: (A)		P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		P
8.3.5.4	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:		P
	- Operation time: (s) L1: L2: L3:		P
8.3.5	TEST SEQUENCE III (Ieu)		-
	Rated ultimate short-circuit breaking		-
	Except where the combined test sequence applies, this test sequence applies to circuit-breaker of utilization category A and to circuit-breaker of utilization B having a rated ultimate short-circuit breaking capacity higher than the rated short-time withstand current.		-
	For circuit-breakers of utilization B having a rated short-time withstand current equal to their rated ultimate short-circuit breaking capacity, this test sequence need not be made, since, in this case, the ultimate short-circuit breaking capacity, is verified when carrying out test sequence IV.		-
	For integrally fused circuit-breakers, test sequence V applies in place or this sequence.		-
	Type designation or serial number		-
	Sample no:		-

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	Rated current: In (A)		-
	Rated operational voltage: Ue (V)		-
	Rated ultimate short-circuit breaking capacity: (kA)		-
	Rated control supply voltage of closing mechanism: Uc (V)		-
	Rated control supply voltage of shunt release: Uc (V)		-
	This test sequence need not be made when Ieu = Ies		-
8.3.5.1	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:		N/A
	- Operation time: (s) L1: L2: L3:		N/A
8.3.5.2	Test of rated ultimate short-circuit breaking capacity		-
	The test sequence of operations is O -1 - CO		-
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		N/A
	closing mechanism energized with 85% at the rated Uc: (V)		N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.		N/A
	Test made in free air:		N/A
	Distances of the metallic screen's: (all sides)		N/A
	The characteristics of the metallic screen:		-
	- woven wire mesh		N/A
	- perforated metal		N/A
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65		N/A
	- size of hole: <30mm^2		N/A
	- finish: bare or conductive plating		N/A
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		N/A
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long		N/A
	Circuit is earthed at: (load-star- or supply-star point)		N/A
	Conductor cross-sectional area (mm^2):		N/A
	If terminals unmarked: line connected at: (underside/upside)		N/A
	Tightening, torques: (Nm)		N/A
	Test sequence of operation: O -1 - CO		-
	- test voltage U/Ue = 1,05 (V)		N/A

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	L1: L2:		
	L3:		-
	- r.m.s. test current AC/DC: (A) L1: L2:		N/A
	L3:		-
	power factor/time constant:		N/A
	- Factor "n"		N/A
	- peak test current (Amax):		N/A
	Test sequence "O"		-
	- max. let-through current: (kApeak) L1:		N/A
	L2:		-
	L3:		-
	-Joule integral $I^2dt(A^2s)$L1: L2:		N/A
	L3:		
	Pause, t: (min)		N/A
	Test sequence "CO"		
	- max. let-through current: (kApeak) L1:		N/A
	L2:		-
	L3:		-
	-Joule integral $I^2dt(A^2s)$ L1: L2:		N/A
	L3:		-
			-
	Melting of the fusible element		N/A
	Holes in the PE-sheet for test sequence "O"		N/A
	Cracks observed		N/A
8.3.5.3	Verification of dielectric withstand		-
	- equal to twice the rated operational voltage with a minimum of		N/A
	- no breakdown or flashover		N/A
	- the leaking current for circuit-breaker suitable for isolation: (<6mA/1,1 Ue)		N/A
8.3.5.4	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:		N/A
	- Operation time: (s) L1: L2: L3:		N/A

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8.3.6	TEST SEQUENCE IV		-
	Rated short-time withstand current		-
	Except where the combined test sequence applies, this test sequence applies to circuit-breakers of utilization category B and to those circuit-breaker of category A covered by note 3 of table 4, and comprises the following tests:		-
	Where integrally fused circuit-breaker are of utilization category B, they shall meet the requirements of this sequence.		-
	Type designation or serial number		-
	Sample no:		-
	Rated current: In (A)		-
	Rated operational voltage: Ue (V)		-
	Rated short-time withstand current: (kA/s)		-
	Rated frequency: (Hz)		-
8.3.6.1	Verification of overload releases		-
	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:		N/A
	- Operation time: (s) L1: L2: L3:		N/A
8.3.6.2	Test of rated short-time withstand current.		-
	For this test, any over-current release, including the instantaneous override, if any, likely to operate during the test, shall be rendered inoperative.		-
	- test frequency: (Hz)		N/A
	- duration of the test: (s)		N/A
	- test frequency: (Hz)		N/A
	- power factor / time constant (ms):		N/A
	- factor "n"		N/A
	-testvoltage: (V) L1: L2:		N/A
	L3:		-
	r.m.s. test current: (kA) L1: L2:		N/A
	L3:		-
	- highest peak current: (kA)		N/A
8.3.6.3	Verification of temperature-rise		-
	- the values of temperature-rise do not exceed the those specified in tab. 7.		N/A
	Temperature rise of main circuit terminals. < 80 K (K):		N/A
	conductor cross-sectional area (mm2):		N/A
	test current Ie (A):		N/A
8.3.6.4	Test of short-circuit breaking capacity at the max.		-

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	short-time withstand current.		
	Rated short-time withstand current: (kA/s)		-
	Test sequence: O -1 - CO		-
	max. available time setting of the short-time delay short-circuit release, (s)		N/A
	- test frequency: (Hz)		N/A
	- power factor / time constant (ms):		N/A
	- factor "n"		N/A
	Test sequence "O"		
	-testvoltage: (V) L1: L2:		N/A
	L3:		-
	- r.m.s. test current: (kA) L1:		N/A
	L2:		-
	L3:		-
	- highest peak current: (kA)		N/A
	- the circuit-breaker shall remain closed for the short-time corresponding to the max. available time setting of the short-time delay short-circuit release and -		N/A
	- the instantaneous override, if any, shall not operate.		N/A
	-pause: t (s)		N/A
	Test sequence "CO"		
	- test voltage: (V) L1: L2: L3:		N/A
	- r.m.s. test current: (kA) L1: L2: L3:		N/A
	- highest peak current: (kA)		N/A
	- the circuit-breaker shall remain closed for the short-time corresponding to the max. available time setting of the short-time delay short-circuit release and -		N/A
	- the instantaneous override, if any, shall not operate.		N/A
	- if the circuit-breaker has a making current release, this requirement does not apply to the CO operation, if the prospective current exceeds the pre-determined value, since it will then operate.		N/A
8.3.6.5	Verification of dielectric withstand	•	-
	- equal to twice the rated operational voltage with a minimum of		-
	- no breakdown or flashover		N/A
8.3.6.6	Verification of overload releases		N/A
	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.		-

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	value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:		-
	- Operation time: (s) L1: L2: L3:		N/A
8.3.7	TEST SEQUENCE V		-
	Performance of integrally fused circuit-breakers		-
	STAGE 1		-
	Type designation or serial number		-
	Sample no:		-
	Rated current: In (A)		-
	Rated operational voltage: Ue (V)		-
	Value of prospective current equal to the selectivity limit current, as declared by the manufacturer. (kA)		-
	Type of integrated fuses (all details)		-
	Rated control supply voltage of closing mechanism: Uc (V)		-
	Rated control supply voltage of shunt release: Uc (V)		-
8.3.7.1	Short-circuit at the selectivity limit current		-
	Test sequences "O"		-
	Fuses shall be fitted		N/A
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		-
	closing mechanism energized with 85% at the rated Uc: (V)		N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.		N/A
	Test made in free air:		N/A
	Distances of the metallic screen's: (all sides)		N/A
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal		N/A
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65		N/A
	- size of hole: <30mm^2		N/A
	- finish: bare or conductive plating		N/A
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		N/A
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long		N/A
	Circuit is earthed at: (load-star- or supply-star point)		N/A
	Conductor cross-sectional area (mm^2):		N/A
	If terminals unmarked: line connected at: (underside/upside)		N/A
	Tightening torques: (Nm)		N/A
	- test voltage U/Ue = 1,05 (V) L1:		N/A

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	L2: L3:		
	- r.m.s. test current AC/DC: (A) L1:		N/A
	L2:		-
	L3:		-
			-
	power factor/time constant:		N/A
	- factor "n"		N/A
	- peak test current (Amax):		N/A
	Test sequence "O"		
	- max. let-through current: (kApeak) L1: L2:		N/A
	L3:		-
			-
	-Joule integral $I^2dt(A^2s)$ L1: L2:		N/A
	L3:		-
			-
	- fuses shall still intact L1: L2:		N/A
	L3:		-
8.3.7.2	Verification of temperature-rise		-
	- the values of temperature-rise do not exceed the those specified in tab. 7.		N/A
	Temperature rise of main circuit terminals. < 80 K (K):		N/A
	conductor cross-sectional area (mm^2):		N/A
	test current Ie (A):		N/A
8.3.7.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of		N/A
	- no breakdown or flashover		N/A
	STAGE 2		-
	Type designation or serial number		-
	Sample no:		-
	Rated current: In (A)		-
	Rated operational voltage: Ue (V)		-
	1.1 time the value of prospective current equal to the selectivity limit current, as declared by the manufacturer. (kA)		-
	Type of integrated fuses (all details)		-
	Rated control supply voltage of closing mechanism: Uc (V)		-
	Rated control supply voltage of shunt release: Uc (V)		-
8.3.7.4	Verification of overload releases		N/A
	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		-

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	pole singly.		
	Time specified by the manufacturer:		
	- Operation time: (s) L1: L2: L3:		N/A
8.3.7.5	Short-circuit at 1,1 times the take-over current		-
8.3.7.1	Short-circuit at the selectivity limit current		-
	Test sequences "O"		-
	Fuses shall be fitted		N/A
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		
	closing mechanism energized with 85% at the rated Uc: (V)		N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.		N/A
	Test made in free air:		N/A
	Distances of the metallic screen's: (all sides)		N/A
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal		N/A
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65		N/A
	- size of hole: <30mm^2		N/A
	- finish: bare or conductive plating		N/A
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		N/A
	Fuse "F": copper wire: diameter 0.8 mm, 50 mm long		N/A
	Circuit is earthed at: (load-star- or supply-star point)		N/A
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		-
	closing mechanism energized with 85% at the rated Uc: (V)		N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.		N/A
	Test made in free air:		N/A
	Distances of the metallic screen's: (all sides)		N/A
	The characteristics of the metallic screen:		-
	- woven wire mesh		N/A
	- perforated metal		N/A
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65		N/A
	- size of hole: <30mm^2		N/A
	- finish: bare or conductive plating		N/A
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		N/A
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long		N/A
	Circuit is earthed at: (load-star- or supply-star		N/A

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	point)		
	Conductor cross-sectional area (mm^2):		N/A
	If terminals unmarked: line connected at: (underside/upside)		N/A
	Tightening torques: (Nm)		N/A
	- test voltage U/Ue = 1,05 (V) L1: L2:		N/A
	.L3:		-
	- r.m.s. test current AC/DC: (A) L1:		N/A
	L2:		-
	L3:		-
			-
	power factor/time constant:		N/A
	- factor "n"		N/A
	- peak test current (A):		N/A
	Test sequence "O"		
	- max. let-through current: (kApeak) L1: L2:		N/A
	L3:		-
8.3.8	Combined test sequence		-
	At the discretion of, or in agreement with the manufacturer, this sequence may be applied to circuit-breaker of utilization cat. B:		-
	Type designation or serial number		N/A
	Sample no:		N/A
	Rated current: In (A)		N/A
	Rated operational voltage: Ue (V)		N/A
	Rated short-time withstand current: (kA/s)		N/A
	Rated frequency: (Hz)		N/A
8.3.8.1	Verification of overload releases		-
	The operation of overload releases shall be verified twice 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:		-
	- Operation time: (s) L1: L2:		N/A
	L3:		-
8.3.8.2	Test of rated short-time withstand current.		-
	For this test, any over-current release, including the instantaneous override, if any, likely to operate during the test, shall be rendered inoperative.		-
	- test frequency: (Hz)		N/A
	- duration of the test: (s)		N/A
	- test frequency: (Hz)		N/A
	- power factor / time constant (ms):		N/A
	- factor "n"		N/A

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	- test voltage: (V) L1: L2:		N/A
	L3:		N/A
	- r.m.s. test current: (kA) L1:		N/A
	L2:		N/A
	L3:		N/A
	- highest peak current: (kA)		N/A
8.3.8.3	Test of rated service short-circuit breaking capacity		-
	At the highest voltage applicable to the rated short-time current.		-
	Test sequence of operation: O -1 - CO -1 - CO		-
	Type designation or serial number		-
	Sample no:		-
	Rated current: In (A)		-
	Rated operational voltage: Ue (V)		-
	Rated service short-circuit breaking capacity: (kA)		-
	Rated control supply voltage of closing mechanism: Uc (V)		-
	Rated control supply voltage of shunt release: Uc (V)		-
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		-
	closing mechanism energized with 85% at the rated Uc: (V)		N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.		N/A
	Test made in free air:		N/A
	Distances of the metallic screen's: (all sides)		N/A
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal		N/A
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65		N/A
	- size of hole: <30mm^2		N/A
	- finish: bare or conductive plating		N/A
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		N/A
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long		N/A
	Circuit is earthed at: (load-star- or supply-star point)		N/A
	Conductor cross-sectional area (mm^2):		N/A
	If terminals unmarked: line connected at: (underside/upside)		N/A
	Tightening torques: (Nm)		N/A
	Test sequence of operation: O -1 - CO -1 - CO		
	The highest voltage applicable to the rated short-time current.		N/A
	- test voltage U/Ue = 1,05 (V) L1:		N/A

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	L2: L3:		
	- r.m.s. test current AC/DC: (A) L1: L2: L3:		N/A
	power factor/time constant:		N/A
	- Factor "n"		N/A
	- peak test current (A):		N/A
	Test sequence "O"		
	- max. let-through current: (kApeak L1: L2:		N/A
	L3:		-
			-
	- Joule integral $I^2dt(A^2s)$ L1: L2:		N/A
	L3:		
	Pause, t: (min)		N/A
	Test sequence "CO"		
	- max. let-through current: (kApeak) L1: L2:		N/A
	L3:		-
	- Joule integral $I^2dt(A^2s)$ L1: L2:		N/A
	L3:		-
	Pause, t: (min)		N/A
	Test sequence "CO"		
	- max. let-through current: (kApeak) L1: L2:		N/A
	L3:		-
	-Joule integral $I^2dt(A^2s)$ L1: L2:		N/A
	L3:		-
	The circuit-breaker shall remain closed for the short-time corresponding to the max. available time setting of the short-time delay short-circuit release.		N/A
	During this test the instantaneous override shall not operate		N/A
	- and the making current release shall operate		-
8.3.8.4	Operational performance capability with current.		-
	Rated current: In (A)		N/A
	Maximum rated operational voltage: Ue (V)		N/A
	Conductor cross-sectional area (mm^2):		N/A
	Number of operating cycles per hour		N/A
	Number (5% of the number given in column 4,		N/A

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	tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)		
	Applied voltage: closing mechanism (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:		N/A
	- test voltage U/Ue = 1,0 (V) L1: L2: L3:		N/A
	-testcurrent I/Ie = 1,0 (A) L1: L2: L3:		N/A
	- power factor/time constant:		N/A
	- frequency: (Hz)		N/A
	- on-time (ms):		N/A
	- off-time (s):		N/A
	Electrical components do not exceed the value indicated in tab. 7.		N/A
8.3.8.5	Verification of dielectric withstand		-
	- equal to twice the rated operational voltage with a minimum of		-
	- no breakdown or flashover		N/A
	- the leaking current for circuit-breaker suitable for isolation: (<2mA/1,1 Ue)		N/A
8.3.8.7	Verification of temperature-rise		-
	- the values of temperature-rise do not exceed the those specified in tab. 7.		N/A
	Temperature rise of main circuit terminals. < 80 K (K):		N/A
	conductor cross-sectional area (mm^2):		N/A
	test current Ie (A):		N/A
8.3.8.7	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: <1 h when In < 63A, <2h when In > 63 A		N/A
	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:		-
	- Operation time: (s) L1: L2: L3:		N/A
Annex C	Individual pole short-circuit test sequence		-
	Circuit-breaker for use on phase-earthed systems		-
C.2	Test of individual pole short-circuit breaking capacity		-

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	A short-circuit test is made with a value of prospective current (Isu) equal to 25% of the ultimate rated short-circuit breaking capacity (Ieu)		-
	Type designation or serial number		-
	Sample no:		-
	Rated current: In (A)		-
	Rated operational voltage: Ue (V)		-
	Rated ultimate short-circuit breaking capacity: (kA)		-
	Rated control supply voltage of closing mechanism: Uc (V)		-
	Rated control supply voltage of shunt release: Uc (V)		-
	The test sequence of operations is O -1 - CO		-
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	-	N/A
	closing mechanism energized with 85% at the rated Uc: (V)		N/A
	The circuit-breaker is mounted complete on its own support or an equivalent support.		N/A
	Test made in free air:		N/A
	Distances of the metallic screen's: (all sides)		N/A
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal		N/A
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65		N/A
	- size of hole: <30mm^2		N/A
	- finish: bare or conductive plating		N/A
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		N/A
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long		N/A
	Circuit is earthed at: (load-star- or supply-star point)		N/A
	Conductor cross-sectional area (mm^2):		N/A
	If terminals unmarked: line connected at: (underside/upside)		N/A
	Tightening torques: (Nm)		N/A
	Test sequence of operation: O -1 - CO		-
	Test circuit according figure: 9		N/A

	test voltage U/Ue = 1,05 (V)		N/A
	L3:		-
	short-circuit test current (Isu): equal to 25% of the ultimate rated short-circuit breaking capacity (Ieu)		N/A
	- r.m.s. test current AC/DC: (A):		N/A
	power factor/time constant:		N/A
	- Factor "n"		N/A
	- peak test current (Amax):		N/A
	Test sequence "O" L1		
	- max. let-through current: (kApeak).....		N/A
	- Joule integral I^2dt (A^2s).....		N/A
	Pause, t: (min)		N/A
	Test sequence "CO" L1		
	- max. let-through current: (kApeak).....		N/A
	- Joule integral I^2dt (A^2s).....		N/A
	Test sequence "O" L2		
	- max. let-through current: (kApeak).....		N/A
	- Joule integral I^2dt (A^2s).....		N/A
	Pause, t: (min)		N/A
	Test sequence "CO" L2		
	- max. let-through current: (kApeak).....		N/A
	- Joule integral I^2dt (A^2s).....		N/A
	Test sequence "O" L3		
	- max. let-through current: (kApeak).....		N/A
	- Joule integral I^2dt (A^2s).....		N/A
	Pause, t: (min)		N/A
	Test sequence "CO" L3		
	- max. let-through current: (kApeak)..... L3:		N/A
	- Joule integral I^2dt(A^2s)..... L3:		N/A
	Melting of the fusible element		N/A
	Holes in the PE-sheet for test sequence "O"		N/A
	Cracks observed		N/A
C.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of		N/A
	- no breakdown or flashover		N/A
C.4	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:		-
	- Operation time: (s) .....L1: ..... L2: L3:		N/A
Annex H	Individual pole short-circuit test sequence		-
	Circuit-breaker for use in IT systems		-
H.2	Test of individual pole short-circuit breaking capacity		-
	A short-circuit test is made on the individual poles of a multipole circuit-breaker at a value of prospective current ($I|_T$) equal to 1,2 times the max. setting of the		-

	short-time delay release tripping current or, in the absence of such a release, 1,2 time the max. setting of the tripping current of the instantaneous release, or, where relevant 1,2 times the max. setting of the definite time delay release tripping current, but not exceeding 50kA.		
	Type designation or serial number		-
	Sample no:		-
	Rated current: In (A)		-
	Rated operational voltage: Ue (V)		-
	Rated ultimate short-circuit breaking capacity: (kA)		-
	Rated control supply voltage of closing mechanism: Uc (V)		-
	Rated control supply voltage of shunt release: Uc (V)		-
	or, where relevant 1,2 times the max. setting of the definite time delay release tripping current, but not exceeding 50kA.		N/A
	- r.m.s. test current AC/DC: (A)		P
	power factor/time constant:		P
	- Factor "n"		P
	- peak test current (Amax):		P
	Test sequence "O" L1		
	- max. let-through current: (kApeak)..... I 1-		P
	- Joule integral I^2dt (A^2s)..... I 1-		P
	Pause, t: (min)		P
	Test sequence "CO" L1		
	- max. let-through current: (kApeak)..... / V		P
	- Joule integral I^2dt (A^2s)..... I		P
	Test sequence "O" L2		-
	- max. let-through current: (kApeak)..... I?-		P
	- Joule integral I^2dt (A^2s)..... I?-		P
	Pause, t: (min)		P
	Test sequence "CO" L2		
	- max. let-through current: (kApeak)..... I?-		P
	- Joule integral I^2dt (A^2s)..... I?-		P
	Test sequence "O" L3		
	- max. let-through current: (kApeak)..... IS		P
	- Joule integral I^2dt (A^2s)..... IS		P
	Pause, t: (min)		P
	Test sequence "CO" L3		-
	- max. let-through current: (kApeak)..... I 3*		P
	- Joule integral I^2dt (A^2s)..... I 3"		P
	Melting of the fusible element	No	P
	Holes in the PE-sheet for test sequence "O"	No	P
	Cracks observed	No	P
H.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of		P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<6mA/1,1 Ue)		P

H.4	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:		P
	- Operation time: (s) .....L1: ..... L2: L3:		P
H.5	Marking		-
	Circuit-breaker for which all values of rated voltage have not been tested according to this annex or are not covered by such testing, shall be identified by	Compliance	P
	the symbol which shall be market on the circuit-breaker immediately following these values of rated voltage		-

- End of Test Report -

Type of equipment, model: Motor Protection Circuit Breaker,
YCP5-25-ME, YCP5-80-ME, YCP6-32P

Details of:

View:

[X] general

[ ] front

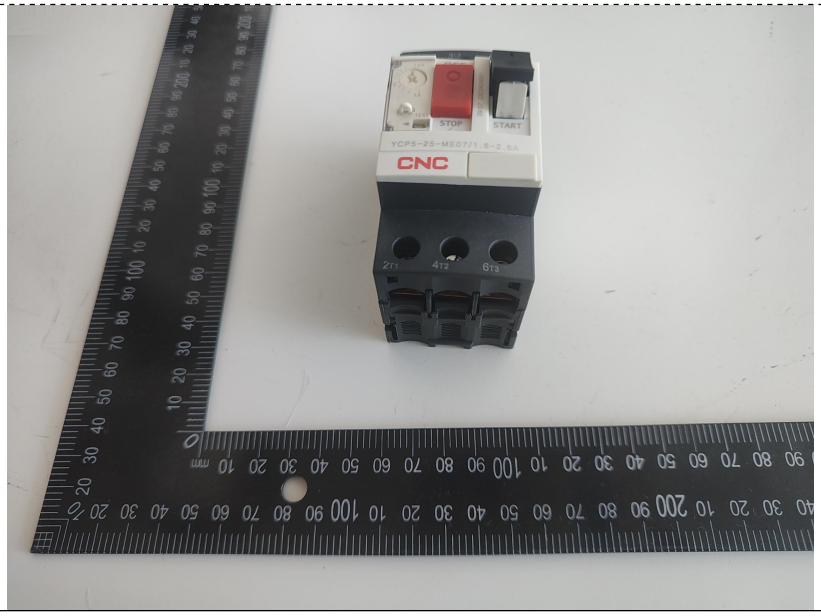
[ ] rear

[ ] right

[ ] left

[ ] top

[ ] bottom



Details of:

View:

[X] general

[ ] front

[ ] rear

[ ] right

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[ ] top

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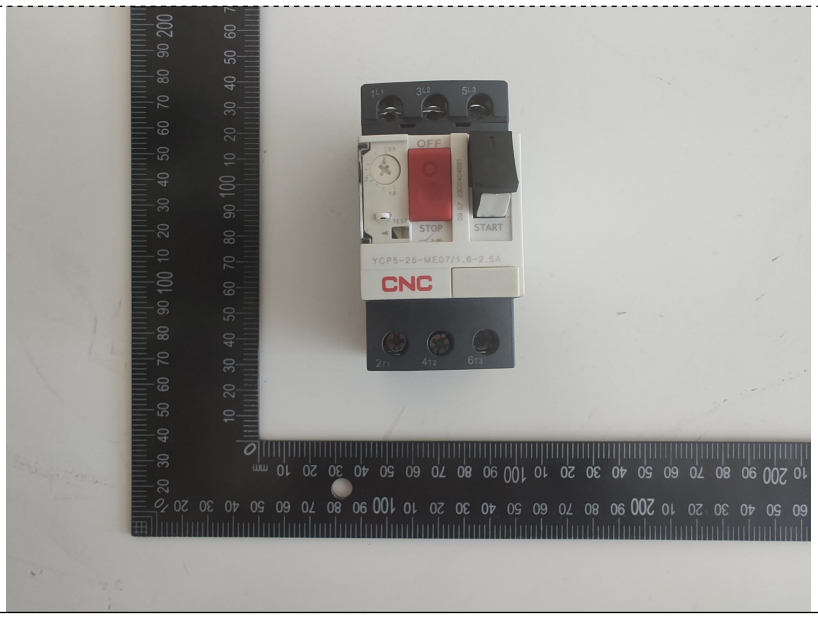

Details of:

View:

[X] general

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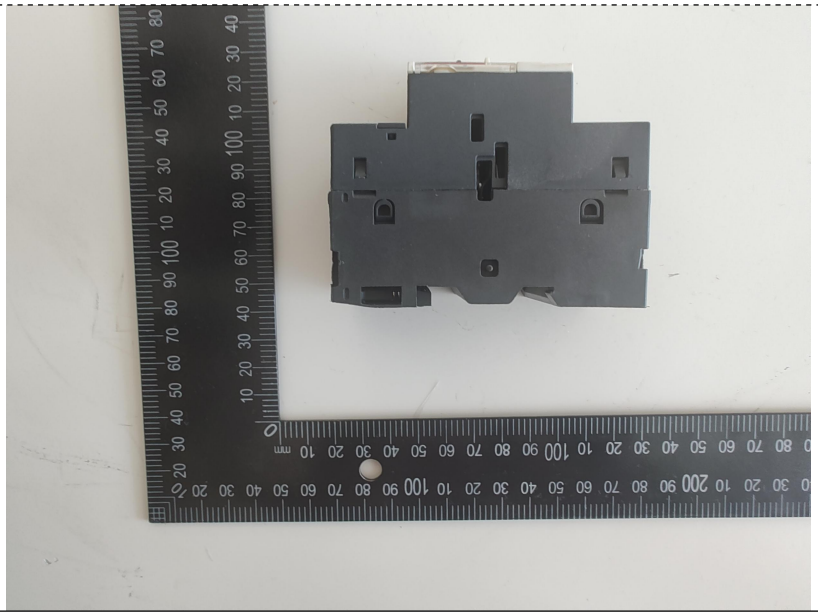

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View:

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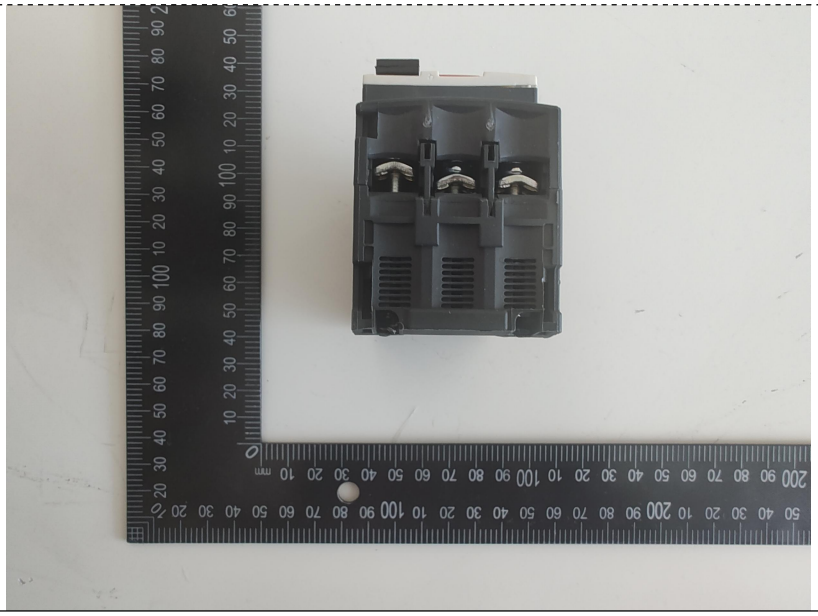

- End of Annex I -